



**SMAS**

Renforcer la gestion durable du système aquifère sénégalo-mauritanien  
pour assurer l'accès à l'eau des populations confrontées  
au changement climatique

## **Strengthening the sustainable management of the Senegal-Mauritania Aquifer System to ensure access to water for the populations facing climate change**

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### **TERMS OF REFERENCE**

**Recruitment of a Transboundary Diagnostic Analysis (TDA)  
National Consultant Expert to develop a TDA for Groundwater in  
the national portion of the Senegal-Mauritania Aquifer System  
(SMAS)**

*(Gambia, Guinea Bissau, Mauritania and Senegal)*

**[AC/OSS/SMAS\_Développement-ADT/250325-16]**

**March 2025**

## 1. CONTEXT

The Sahara and Sahel Observatory (OSS) is an international Organization with an African vocation, created in 1992 and based in Tunis since 2000. Its members include 35 countries (28 African<sup>1</sup> and 7 non-African), 13 regional Organizations, UN Organizations. The OSS mission is to support its African member countries in the sustainable management of their natural resources in a particularly adverse climate change context. Its activities are primarily located in the arid, semi-arid, and dry sub-humid regions of Africa.

As part of its efforts to promote sustainable water resources management, the OSS focuses on the collaborative management of transboundary aquifers in Africa, including the Senegal-Mauritania Aquifer System (SMAS)<sup>2</sup>, shared between Gambia, Guinea-Bissau, Mauritania and Senegal. This aquifer system is crucial for the livelihoods of local populations, particularly in arid regions where water resources are limited. However, overexploitation of the aquifers and the risk of groundwater pollution are major challenges to contend with.

In May 2020, a Regional Working Group (RWG) for transboundary cooperation on the Senegal-Mauritania Aquifer Basin (SMAB) was established. Its members are the four states sharing the basin (Gambia, Guinea-Bissau, Mauritania and Senegal), the Gambia River Basin Development Organization (OMVG)<sup>3</sup>, the Senegal River Basin Development Organization (OMVS)<sup>4</sup> and the OSS, which are involved in this regional dialogue. The purpose is to strengthen transboundary cooperation between the SMAB countries and to encourage them and the Transboundary Basin Organizations (TBOs) to establish a sustainable mechanism for collaborative transboundary management of the SMAB. The regional dialogue on the SMAS is currently facilitated and supported by several international Organizations, including the Geneva Water Hub, the Secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE), and the International Groundwater Resources Assessment Centre (IGRAC).

Since its establishment, the RWG has engaged in the design of a joint program and action plan to fulfill its mission. This program was validated by the ministers of the four countries in September 2021.

The "Strengthening the Sustainable Management of the Senegal-Mauritania Aquifer System to Ensure Access to Water for the Populations Facing Climate Change - SMAS project" is part of the RWG program and will be implemented in close synergy with it. The Project Identification Form (PIF) was developed with UNEP and approved by the GEF in November 2021 following a consultation, development, and review process, followed by the development of the SMAS project document, which was approved by the GEF in June 2022. The financing agreement was signed in January 2024, marking the official launch of the project, which is funded by the GEF (Global Environment Facility) through the United Nations Environment Program (UNEP). The project was officially launched in July 2024 in Senegal.

This regional project covers all four (04) countries AND AIMS to promote cooperation between THEM and to strengthen institutional capacity for the protection and sustainable management of the Senegal-Mauritania transboundary aquifer in order to improve water and food security as well as resilience to climate change. THE OSS is the lead executing agency for the project and will work closely with the national agencies of the participating countries, and transboundary basin ORGANIZATIONS such as OMVG and OMVS.

As part of the SMAS project, a Transboundary Diagnostic Analysis (TDA) will be conducted to identify the main challenges and opportunities related to the sustainable management of the Senegal-Mauritania Aquifer System (SMAS). This TDA will provide an essential technical basis for developing the SMAS Strategic Action Program (SAP). To inform the regional TDA, national TDAs will be developed in each participating country (Gambia, Guinea-Bissau, Mauritania and Senegal). These national analyses will be based on several thematic

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<sup>1</sup> Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Ivory Coast, Djibouti, Egypt, Eritrea, Ethiopia, Gambia, Guinea-Bissau, Guinea Conakry, Kenya, Liberia, Libya, Mali, Morocco, Mauritania, Niger, Nigeria, Uganda, Central African Republic, Senegal, Somalia, Sudan, Chad & Tunisia

<sup>2</sup> Senegal-Mauritania Aquifer System: Acronym reserved for the project financed by the GEF

<sup>3</sup> Gambia River Basin Development Organization (OMVG)

<sup>4</sup> Senegal River Basin Development Organization (OMVS)

studies covering the impacts of climate change, the environment, socioeconomics and the legal framework. National consultants will be recruited in each country to conduct these specific studies, with the support of the National Inter-ministerial Committees to ensure the quality and relevance of the analyses at the local level. This document is the ToRs for the recruitment of a national consultant to develop the Transboundary Diagnostic Analysis (TDA) for the shared groundwater of the portion of the SMAS in the country.

## 2. THE GEF TDA/SAP APPROACH

The Transboundary Diagnostic Analysis (TDA)/Strategic Action Program (SAP) approach advocated by the Global Environment Facility (GEF) is a highly collaborative process (fully involving key stakeholders) that has proven to be a key strategic planning tool for GEF projects related to international waters over the past 20 years. The TDA is the analytical (and technical) component that identifies and analyzes transboundary environmental issues, their impacts, and their causes. The TDA uses available and verified technical and scientific information to examine the state of the environment and the underlying causes of its degradation. The analysis is conducted across sectors, focusing on transboundary issues without ignoring national concerns and priorities. The TDA is a mechanism designed to help participating countries "agree on the facts" and build mutual trust around common problems. The TDA provides the evidence for formulating a SAP.

The SAP is a negotiated policy document that should be approved at the highest levels of government across all relevant sectors. It establishes clear priorities for action (e.g., policy, legal, institutional reforms or investments) to address the priority transboundary issues identified in the TDA.

The components of the TDA and SAP must be highly collaborative and fully engage with key stakeholders affected by the aquifer system.

## 3. LINK BETWEEN THE TDA AND THE SAP

The link between the TDA and the SAP, or the transition from the TDA to the SAP, is a critical step in the GEF-IW TDA/SAP process. This link must be strong enough to ensure that the actions to be implemented in the SAP align with the priority transboundary issues identified during the development of the TDA.

In this context, the countries selected strategic themes that will guide pilot projects demonstrating best practices for the sustainable management of shared groundwater resources. The selection of these themes is based on the challenges and priorities identified in previous studies on the SMAS.

- Theme 1: Effective groundwater management;
- Theme 2: Reducing high groundwater mineralization (fluorides, etc.);
- Theme 3: Combating pollution from various sources (mining, domestic, agricultural, industrial);
- Theme 4: Adapting to climate extreme events;
- Theme 5: Integrated surface - groundwater management/planning (agro-pastoral activities).

To this end, in defining cause-and-effect relationships, it is essential to determine where interventions (or leverage points) offer the greatest potential for positive influence on the transboundary aquifer system. A leverage point is a location in a complex system (in this case, the SMAS) where a small shift (or modification) at one point in time can produce significant changes elsewhere.

Determining these leverage points thus makes it possible to identify points where modifications can be made to the System. Leverage points come in different forms: a change in policy regarding the management of the shared resource, a change in technology (water-efficient), for a better preservation of the resource.

## 4. PURPOSE OF THE CONSULTATION

The main objective of this consultation is to carry out an in-depth Transboundary Diagnostic Analysis (TDA) of the Senegal-Mauritania Aquifer System (SMAS), in order to identify major transboundary issues, understand their causes and impacts, and formulate strategic recommendations for coordinated and sustainable management of groundwater resources. This will involve:



- Identify the causes and impacts of priority transboundary issues, integrating interactions with human activities and climate change, while assessing associated ecosystems;
- Evaluate existing institutional, legal and regulatory frameworks, highlighting inconsistencies, overlaps and gaps to improve national and transboundary groundwater management;
- Propose strategic recommendations and concrete guidelines to align transboundary governance, develop the Strategic Action Program (SAP), and strengthen consultation mechanisms between the affected countries.

## 5. RESPONSIBILITIES AND DUTIES OF THE CONSULTANT

Under the supervision of the project coordinator based at the OSS, the national consultant responsible for the development of the Transboundary Diagnostic Analysis (TDA) will work in close collaboration with national stakeholders and other project experts and will:

- Collect and analyze relevant documentation, including reports, studies and work produced as part of the activities of the Regional Working Group (RWG) on the SMAS, as well as any other source useful for understanding the challenges of transboundary groundwater management;
- Synthesize hydrogeological, environmental, socioeconomic, and institutional data, drawing on contributions from national consultants and the National Inter-ministerial Committees of Gambia, Guinea-Bissau, Mauritania and Senegal;
- Conduct an in-depth analysis of national legal, institutional and regulatory frameworks, highlighting the interactions between groundwater and surface water, as well as the challenges related to transboundary management;
- Identify weaknesses in management frameworks, including gaps, inconsistencies and overlaps, and formulate proposals for their alignment with a view to sustainable and coordinated management;
- Integrate relevant ongoing or recent initiatives at the national, regional and international levels, considering the impacts of climate change and anthropogenic pressures on groundwater resources;
- Conduct consultations with key stakeholders, including ministries, public agencies, regional Organizations and other stakeholders, to gather data, identify challenges and propose appropriate solutions;
- Ensure effective coordination with other national consultants and regional experts to ensure consistency and integration of contributions within the TDA framework;
- Elaborate a draft TDA document, including a comprehensive analysis of transboundary issues, strategic recommendations and guidelines for developing the Strategic Action Program (SAP);
- Present the results at a national workshop, gather feedback from participants and incorporate these observations into a revised version of the TDA;
- Produce a final report, incorporating input from the consultations and the national workshop, with strategic recommendations to strengthen transboundary groundwater management within the SMAS;
- Submit the final report to the OSS for validation, ensuring its compliance with the project objectives and expectations.

## 6. EXPECTED RESULTS

- A comprehensive Transboundary Diagnostic Analysis (TDA) report for the groundwater of the Senegal-Mauritania Aquifer System (SMAS) in the country, based on the report structure presented in the Annex;
- A thematic map, including vulnerable areas and identified transboundary issues, produced using GIS tools to support strategic recommendations;
- A summary presentation of the document at the national restitution and validation workshop, allowing for the gathering of comments and the finalization of the TDA with national stakeholders.

## 7. METHODOLOGY

The consultant will follow a concise and structured methodology, divided into main steps to ensure a consistent national Transboundary Diagnostic Analysis (TDA) aligned with the objectives of the SMAS project.

### 7.1 In-depth documentary review

The first step will be to analyze the available information on the SMAS. The consultant will examine existing reports, legal frameworks and socio-economic, environmental and climate data. He or she will identify gaps and inconsistencies to guide the analyses. Data from the work of the Regional Working Group (RWG) and other relevant sources will serve as a basis for structuring the recommendations.

### 7.2 Integration of thematic results

Working with the thematic consultants, the consultant will integrate the analyses to develop a comprehensive vision of transboundary issues. They will establish links between key themes (socioeconomics, environment, climate, governance) and propose strategic recommendations aligned with national and regional priorities.

Furthermore, the consultant will be required to integrate these steps into a participatory approach. This involves close collaboration with national and local stakeholders, including the National Inter-ministerial Committees, the Regional Working Group (RWG), and other thematic consultants involved in the project.

The methodology must be explicitly detailed in the proposal, specifying the tools and techniques used, the data collection and analysis steps, as well as the consultation and validation mechanisms to ensure usable results that align with the SMAS project objectives.

## 8. PROFILE AND QUALIFICATIONS OF THE CONSULTANT

### 8.1. Training/Education

A university degree (Master, Engineer or Ph.D.) in natural resources management, hydrology, geosciences, or a related field, with a particular emphasis on groundwater.

### 8.2. Experience and skills required

- An understanding of the principles and approaches of integrated aquifer systems management, particularly in a transboundary context;
- Proven experience in TDA and SAP development processes, including good command of GEF methodologies and GEF IW:Learn best practices;
- Proven experience in drafting high-quality reports, including technical and strategic analyses adapted to complex contexts;
- Expertise in the use of methodologies and tools related to integrated water resources management;
- Ability to integrate socio-economic, environmental and legal dimensions into a multidisciplinary approach;
- Excellent proficiency in standard office software (MS Word, MS Excel, MS PowerPoint);

## 9. DURATION, EXPECTED DELIVERABLES AND PAYMENT TERMS

### 9.1. Duration of the assignment

The duration of the assignment is estimated at 90 calendar days.

### 9.2. Deliverables

- **Deliverable 1:** Inception report including a detailed work plan, a precise timeline, and initial methodological guidelines for collecting and analyzing the data required for the TDA. This report must be submitted within **fifteen (15)** days of the scoping meeting with the OSS;



- **Deliverable 2:** Preliminary version of the national TDA including a detailed analysis of priority transboundary issues, strategic recommendations and a thematic map presenting the vulnerable areas and identified transboundary issues. These documents must be submitted **sixty (60)** days after signing the contract.
- **Deliverable 3:** Final report of the national TDA structured according to the template presented in the appendix. This report must be submitted within **thirty (30)** days after the validation of the preliminary version (deliverable 2). It will be presented at a national workshop.

**Table 1 - List of deliverables, efforts and deadlines**

Deliverable	Delivery dates
<b>D1:</b> Inception report	<b>Fifteen (15) days</b> from the date of signature of the contract and after the scoping meeting
<b>D2:</b> Preliminary version of the TDA and thematic map	<b>Sixty (60) days</b> after the contract is signed
<b>D3:</b> Final report of the TDA structured according to the model presented in the appendix	<b>Thirty (30) days</b> after the validation of <b>deliverable 2</b> and after the national workshop
<b>Total</b>	<b>90 days</b>

ON : The time periods reserved for the validation of deliverables are not counted.

### 9.3. Payment Terms

The consultant will receive a maximum lump sum of **USD 6,000** for the entire assignment. Payments will be made in three installments, as follows:

**Table 2 - Payment terms**

Installments	Conditions de paiements	Montant
<b>Installment 1</b>	Validation by the OSS of Deliverable 1 (Inception Report)	<b>20 %</b> of the total amount of the contract
<b>Installment 2</b>	Validation by the OSS of Deliverable 2 (Preliminary version of the TDA and thematic map)	<b>40 %</b> of the total amount of the contract
<b>Installment 3</b>	Validation by the OSS of Deliverable 3 (Final TDA report including adjustments from the national validation workshop) by the OSS	<b>40 %</b> of the total amount of the contract

## 10. PRESENTATION OF THE FILE

### 10.1. Technical proposal

A technical proposal of no more than 5 pages justifying their qualification to deliver, satisfactorily and on time, high quality services at the end of the consultancy requested, the proposal of a succinct methodology explaining the approach, the way in which the consultancy will be carried out as well as a work plan including the various deliverables whose completion will be linked to the payment terms;

- A Curriculum Vitae setting out the level of training required and the expert's experience in consultancy or similar fields (in accordance with the standard OSS CV template which can be downloaded from the following link: [\[OSS CV template\]](#));
- A table detailing the references relevant to the proposed expert's mission;
- Other references considered useful;
- Duly completed model declaration on honour (Annex 3)

## 10.2. Financial offer

The financial offer must include the following documents:

- A financial bid submission form in accordance with the form in appendix 1;
- A breakdown of the fixed price in accordance with the form in appendix 2 (expressed in USD), indicating all the costs of the assignment, broken down into reimbursable expenses

## 11. SELECTION PROCESS

The selection of bids will comprise two stages: A first stage relating to the evaluation of the technical offers followed by a second stage relating to the evaluation of the financial offer.

### 11.1 Technical proposal

CVs will be evaluated and compared separately and independently of any financial considerations. **It will be scored out of 100 points on the basis of the criteria set out in the table below.**

To be eligible, the candidate's technical offer must obtain **a minimum score of 70 out of 100.**

Section	Points
<b>General qualifications/diplomas:</b> Minimum 5 years' higher education in natural resources management, with a specialisation in groundwater or hydrology	15
<b>Working methodology:</b> clear and coherent approach, structuring of stages, adequacy with deadlines and specific project objectives	15
Proven experience in the preparation of TDAs in accordance with GEF methodologies or in the preparation of "Master plan for Water Development and Management" or similar documents; Ability to integrate socio-economic, environmental and legal aspects in a multidisciplinary approach	30
Relevant experience in the management of water resources in a cross-border context; Expertise in the use of methodologies and tools related to integrated water resources management;	30
Proficiency in office automation tools and mapping software.	5
Language skills (French + English)	5
<b>Total</b>	<b>100</b>

### 11.2 Financial offer

The financial evaluation will concern only the bids of tenderers pre-qualified after the technical evaluation.

The financial offer scores (Nf) will be calculated as follows:  $Nf = 100 \times Fm/F$ , where:

- Nf: Bidder's financial score
- Fm: Lowest financial proposal of the technically successful bids
- F: Tenderer's financial proposal

### 11.3 Final evaluation

Tenders will be ranked according to their overall score (NG) in accordance with the following formula:  $NG = [Nt \times (70\%)] + [Nf \times (30\%)]$

- - NG: Overall score
- - Nt : Technical score
- - Nf: Financial score

The tender with the highest overall score (NG) will be selected.

## 12. SUBMISSION PROCEDURES AND DEADLINE

Tenders must be sent by e-mail to the following address: [procurement@oss.org.tn](mailto:procurement@oss.org.tn) mentioning the reference: **“Development of National TDA [AC/OSS/SMAS\_Développement-ADT/250325-16]”** in the subject line.

**The deadline for receipt of tenders is April 6, 2025 at 23:59 (Tunis time) and 22:59 (GMT).**



## Annex 1 - Financial proposal submission form

Tender addressed to (procurement and disposal entity):	
Date of financial offer :	
Procurement reference number:	
Subject of the procurement:	

**The total price of our offer is: \_\_**

We confirm that the prices indicated in our financial offer are fixed and firm for the period of validity and will not be subject to any revision or variation.

**Financial offer authorised by:**

**Signature :** \_\_\_\_\_ **Name** \_\_\_\_\_

**Position :** \_\_\_\_\_ **Date :** \_\_\_\_\_

**Authorised for and on behalf of:**

**The consultant :** \_\_\_\_\_

Signature and stamp of the consultant's legal representative

## Annex 2 - Breakdown of lump sum price

*[Complete this form with details of all your costs and submit it as part of your financial proposal. Your costs must be presented in USD]*

Procurement reference number:

FEES				
Name and position of exper	Quantity of input	Unit of input	Rate	Total price
<b>TOTAL</b>				

REIMBURSABLE COSTS AND MISCELLANEOUS				
Description of cost	Quantity	Unit of measure	Unit price	Total price
<b>TOTAL :</b>				

**LUMP SUM IN USD:** \_\_\_\_\_

**Breakdown of fixed price authorised by:**

Signature : \_\_\_\_\_ Name : \_\_\_\_\_

Position : \_\_\_\_\_ Date : \_\_\_\_\_

Authorised for and on behalf of: (J/M/A)

The Consultant : \_\_\_\_\_

Signature and stamp of representative

### Annex 3 - Model declaration of honour

**Subject of the call for tenders:**

I, the undersigned (full name) : .....

Nationality: .....

Acting in the capacity of: .....

Company name: .....

Address : .....

Registered in the Commercial Register under n° .....the .....at.....

Fiscal number: .....

- **I declare on my honour:**

1. I have never been in receivership and have never been the subject of any legal proceedings on any grounds whatsoever,
2. I undertake not to resort, either personally or through an intermediary, to practices that could be described as embezzlement, fraud or corruption in the various procedures for the award, management and performance of this contract,
3. in the event that my tender is selected, to respect the procedures in force at the OSS and the obligation of reserve and professional secrecy for all facts and/or information that I may come to know,

- **Certify** the accuracy of the information contained in this declaration on my honour and in the documents provided in my tender.
- **Certify** that I am not related to any person receiving any remuneration whatsoever from the OSS
- **Acknowledge** that I am aware that any inaccuracies or errors and any shortcomings that may be found in the content of my offer, as well as any failure to comply with the conditions of participation, will result in my application being rejected.

Done at.....the.....

Signature and stamp of the consultant's legal representative

## Annex 4 - Proposal for a table of contents for Transboundary Diagnostic Analysis

Table of Contents, Figures and Tables

Acknowledgments

Participating Institutions

### Summary

#### 1. Introduction

##### 1.1 Context

##### 1.2 System Description

##### 1.3 Objectives of the TDA

#### 2. TDA approach

##### 2.1 TDA Methodology

*2.1.1 Identification of priority transboundary issues*

*2.1.2 Causal chain analysis*

*2.1.3 Stakeholder analysis*

*2.1.4 Governance analysis*

#### 3 Basic System Information

##### 3.1 Geographic scope

##### 3.2 Features

##### 3.3 Climate characteristics

##### 3.4 Natural resources

##### 3.5 Socio-economic situation

#### 4 Priority transboundary issues

##### 4.1 Introduction

##### 4.2 Transboundary issue 1

*4.2.1 Description of the issue and its transboundary significance*

*4.2.2 Main environmental impacts and socio-economic consequences*

*4.2.3 Links to other transboundary issues*

*4.2.4 Immediate, underlying and root causes (with diagrams)*

*4.2.5 Knowledge gaps*

*4.2.6 Conclusions and recommendations*

##### 4.3 Transboundary issue 2

*4.3.1 Description of the issue and its transboundary significance*

*4.3.2 Main environmental impacts and socio-economic consequences*

*4.3.3 Links to other transboundary issues*

*4.3.4 Immediate, underlying and root causes (with diagrams)*

*4.3.5 Knowledge gaps*



*4.3.6 Conclusions and recommendations*

**4.4 Transboundary issue 3 etc.**

*4.4.1 Description of the issue and its transboundary significance*

*4.4.2 Main environmental impacts and socio-economic consequences*

*4.4.3 Links to other transboundary issues*

*4.4.4 Immediate, underlying and root causes (with diagrams)*

*4.4.5 Knowledge gaps*

*4.4.6 Conclusions and recommendations*

**5 Mapping of major transboundary issues/risks**

**6 Stakeholder analysis**

**7 Governance analysis**

**8. Establishing the link between the TDA and the SAP**

**Summary, conclusions and recommendations**

**Annexes**

## Annex 5 - Example of causal chain of the large marine ecosystem of the Gulf of Bengal (Ca. 2011)

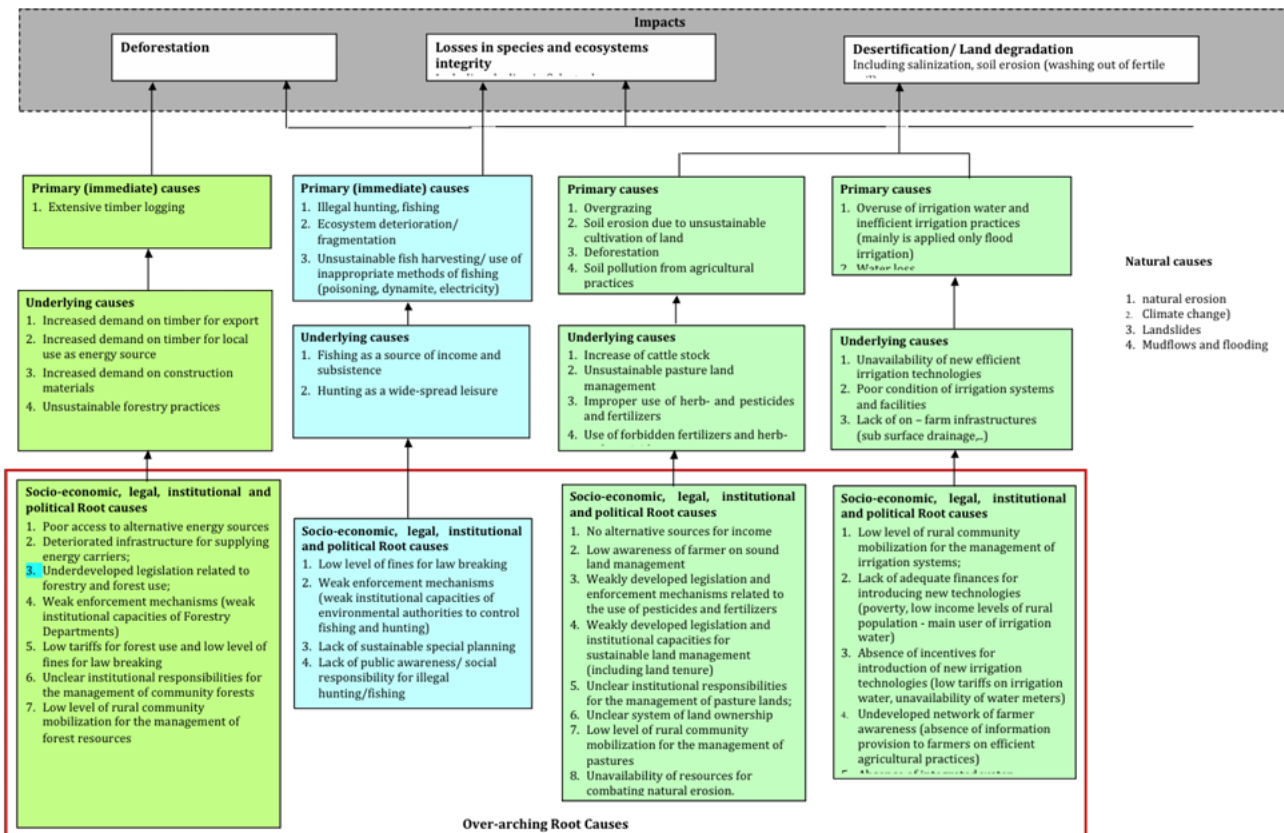
### 1. Overexploitation of marine living resources

Transboundary nature of the concern	Issues	Proximate causes	Intermediate causes	Root causes
Many fish stocks shared among BOBLME countries either through transboundary migration of fish or larvae; Fishing overlaps national jurisdictions, both legally and illegally - overcapacity and overfishing in one location forces a migration of fishers and vessels to other locations; All countries (to a lesser or greater degree) are experiencing difficulties in implementing fisheries management, especially the ecosystem approach.	Decline in overall availability of fish resources	Excessive fishing effort and overcapacity; Unselective fishing practices and gear	Increasing fishing effort, especially trawlers and purse seiners; Illegal, unregulated and unreported (IUU) fishing, both national and international; Weak fisheries MCS and enforcement	"Open access" regime; Strong incentives to encroach into areas with better returns; High consumer demand for food fish
	Changes in species composition of catches	Excessive fishing effort and overcapacity; Unselective fishing practices and gear	Increasing fishing effort, especially trawlers and purse seiners; Illegal, unregulated and unreported (IUU) fishing, both national and international Weak fisheries MCS and enforcement	"Open access" regime; Strong incentives to encroach into areas with better returns; High consumer demand for food fish; High consumer demand for seed and fish meal for aquaculture
	High proportion of juvenile fish taken	Unselective fishing practices and gear	Weak fisheries MCS and enforcement	"Open access" regime; High consumer demand for food fish; High consumer demand for seed and fish meal for aquaculture;
	Changes in marine biodiversity plus vulnerable/endangered spp.	Destructive fishing methods	Weak fisheries MCS and enforcement	"Open access" regime; High consumer demand for food fish

### Brief analysis

- Good level of detail
- No link between causes, but very logical
- Linking causes to impacts - a good idea
- Easy for a decision-maker to turn into action.

## Annex 6 - Example of the causal chain of the Kura Aras River Basin (CA. 2006)



### Brief analysis

- Good level of detail
- No link between causes, but very logical
- Linking causes to impacts - a good idea
- Easy for a decision-maker to turn into action