

# Reducing the impacts of Climate Change on Aquatic Ecosystems - upstream part of the Upper Mouhoun



## PROJECT TITLE:

REDUCING THE IMPACTS OF CLIMATE CHANGE ON AQUATIC ECOSYSTEMS – UPSTREAM PART OF THE UPPER MOUHOUN

## COUNTRY:

Burkina Faso

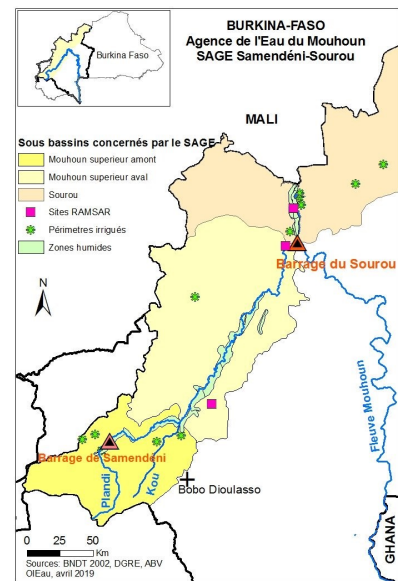
## LOCATION :

Upstream part of the Upper Mouhoun river basin

## SCALE OF INTERVENTION:

Territorial

## INCUBATION LED BY:



Mouhoun Basin © Mouhoun Water Agency

## LOCAL CONTEXT AND ISSUES:

Burkina Faso is located in the Sudano-Sahel region, characterised by variable rainfall (intra and inter-annual) and a considerable level of evaporation that directly impacts the water cycle and runoff. The area is also highly subject to climate change, with a tendency to aridification: increase in average temperatures, decrease in rainfall.

These factors concerning the Sahelian region are combined with the impacts of high demographic growth (annual rate of 3% - INSD 2009), and an increasingly poor and vulnerable population. The financial situation of households in rural areas often depends on the production of their crops or livestock (and sometimes fishing), subject to desertification and deteriorating soil quality:

- Loss of arable land
- Fewer boreholes and drinking points
- Impoverished arable land (less fertile)
- Deterioration of environments due to uncontrolled use of pesticides

The upstream part of the Upper Mouhoun sub-basin, located in the Hauts-Bassins

region, is drained by the Mouhoun's two main tributaries: the Kou and the Plandi. The basin's very dense hydrographic network abounds with springs (some protected), rivers, backwaters and large, shallow water tables (57% of flows at the basin's outlet come from rainwater and 43% from the water table).

This considerable water potential requires the implementation of integrated management of surface and groundwaters to:

- Avoid user conflicts (drinking water, industry, irrigation, livestock, fishing)
- Preserve land and aquatic ecosystems
- Improve the resilience of inhabitants
- Promote economic development (tourism, farm produce, etc.) with a priority focus on food security for users.

A lack of restoration of arable land since the 1970s has led farmers to exploit undeveloped land. The only remaining cultivatable, fertile land comprises fragile ecosystems such as wetlands (lowlands, river and lake banks) and is gradually deteriorating. In addition, increasing water stress in the area (due to disorganised management of irrigation) has modified the Mouhoun's banks, altered land drainage and eroded soils.

Some practices thus counteract policies to protect the environment and combat climate change. In this situation, it is urgent to promote farming practices that guarantee food security while respecting the environment.

## PROJECT GOALS:

The incubation must ensure the protection, restoration, preservation and sustainable management of wetlands in order to contribute to inhabitants' food security and combat poverty thanks to improved knowledge and user resilience.

The area of intervention for the incubation is located at the level of the Plandi and the Samendéni Valley (dam filled in 2017, 40km from Bobo-Dioulasso, with a reservoir capacity of over 1.3 billion m<sup>3</sup>).

The action planned in the project corresponds to the recommendations of the water development and management master plan of the Mouhoun Water Agency (SDAGE 2014-2030), which sets out the following guidelines for the upstream part of the Upper Mouhoun sub-basin:

- Promote efficient use of water in the Plandi sub-basin, upstream from the Samendéni reservoir
- Reinforce the development of ground and surface waters for all uses in the sub-basin through local installations (wells, boreholes, sills, etc.)
- Protect water resources against the risk of pollution by setting up protection zones, and against the risk of siltation of water bodies and streams by taking action to preserve, restore and maintain soil, and measures to protect and restore banks.

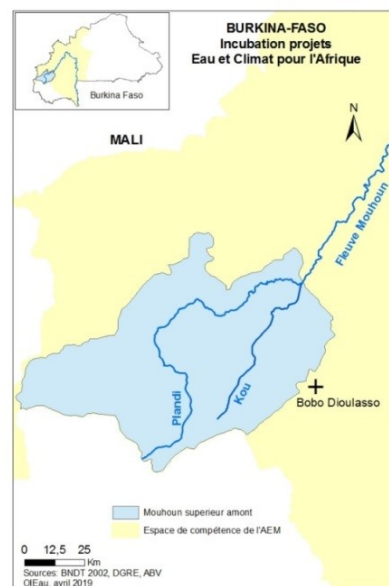
The project's activities will, on the one hand, correspond to the main strategic lines of Burkina Faso's National Policy on Wetlands (PNZH, 2013):

- Improve the sustainability of wetlands
- Build stakeholder knowledge and capacities for sustainable, integrated management of water and aquatic environments
- Contribute to food security by promoting resources in wetlands.

On the other hand, the incubation will directly contribute to the implementation of the strategic lines of the National Plan for adapting to climate variability and change (PANA, 2007):

D'autre part, l'incubation contribuera directement à la mise en œuvre des axes stratégiques du Plan National d'adaptation à la variabilité et aux changements climatiques (PANA, 2007) :

- Ensure long-term food and nutritional security



Upper Mouhoun Basin Upstream © Mouhoun Water Agency

- Preserve water resources and improve access to sanitation
- Protect and improve the operation of natural ecosystems

### SDGs TARGETED BY THE PROJECT:



### CHALLENGES FACING THE PROJECT:

Deterioration of water resources and aquatic environments – Restoration of wetlands – Erosion control, silting/filling of Mouhoun tributaries – User resilience – Agroecology – Protection of water catchments – Monitoring of groundwater recharge

### SECTORS CONCERNED:

Agriculture - Tourism – Biodiversity – Water security – Food security – Risk management - Protection and management of ecosystems – User resilience

### EXPECTED OUTCOMES:

#### Nature-based solutions

##### Main action:

Protection, restoration, and preservation techniques and sustainable management of wetlands

##### Complementary action:

- Soft restoration techniques to retrieve the sinuosity of the Mouhoun river bed:
  - Reconstitution of a gallery forest on the Mouhoun's banks by restoring riparian vegetation
  - Installation of blocks on the river bed to diversify the flow and hiding places necessary in aquatic habitats; ponds, dykes, riprap if relevant
  - Erosion control: construction of small anti-erosion dykes, concerted succession planting..
- Protection of the Bobo-Dioulasso water supply intake: re-vegetation and other green techniques, buffer zones to encourage groundwater recharge and protect the springe.
- Conservation of soil and water: weirs, stone barriers, hedges, mulching.

#### Agroecology (complementary action):

- Integrated Soil Fertility Management (ISFM):
  - Fostering of subsistence crops and capacity building to improve user resilience, development of alternatives to pesticides
  - Agroforestry: reforestation and promotion of green energy sources (production of fuel wood, promotion of good timber-felling practices).
- Development of sustainable farming in wetlands.

#### New Information and Communication Technologies (NICT)

- Decision-aid tools: knowledge-building and decision-making with climate and meteorological services
- Monitoring of groundwater recharge levels (installation of piezometers)
- Development of water information systems, monitoring indicators on

wetland restoration.

### **Lowland development engineering (if relevant)**

- Diagnosis of malfunctioning of the Mouhoun and its tributaries upstream from the Samendéni Dam
- Removal of silt from the Mouhoun
- Alterations to rice paddy lowlands
- Improvement and maintenance of irrigation and drainage channels

### **Modernisation and reinforcement of governance**

Citizen consultation

### **Capacity and knowledge building**

- Building of capacities and knowledge of local water committees on the upstream part of the Upper Mouhoun basin
  - Communication and development of knowledge on wetlands
  - Knowledge and resilient practices for using water in between the wet and dry seasons
  - Waste management, agroecology practices
- Environmental education with a priority focus on young people and local inhabitants
- Dissemination of good agroecological practices
- Political lobbying

### **Production of strategies or action plans for climate change adaptation or mitigation**

- Implementation of an action plan for the restoration and sustainable management of wetlands
- Identification of new RAMSAR sites and development of existing protected sites

## **PROJECT STAKEHOLDERS:**

### **Stakeholders involved:**

Local inhabitants – Institutional stakeholders – Technical stakeholders

### **Project leaders:**

Mouhoun Water Agency, International Office for Water

### **Project operators:**

Local Water Committees of the upstream Upper Mouhoun river basin

### **Technical partners:**

Hauts-Bassins Regional Directorate for Water and Sanitation (DREA-HBS)

Water police service for Hauts-Bassins (SPE-HBS)

Governorate of the Hauts-Bassins Region

National Meteorological Agency (ANAM)

Managers responsible for the environment, monitoring-evaluation, technical monitoring on the Integrated Development Programme for the Samendéni Valley (PDIS)

Geographic Institute of Burkina Faso (IGB),

Managers responsible for the sustainable management project for wetlands to

reinforce food security and the resilience of ecosystems in West Africa (GDZHAO)  
ACTEA for synergy in the areas of water and sanitation if relevant  
Agricultural producer associations  
French Research Institute for Development (IRD)

**Funder of the incubation process:**

Seine-Normandie Water Agency

**ESTIMATED COST OF PROJECTS IDENTIFIED FOR INCUBATION**

>1 million EUR

**SHORT-TERM ACTION (3 YEARS):**

**Main action:**

Techniques for the protection, restoration, preservation and sustainable management of wetlands

**Complementary action:**

- Soft techniques to restore the Mouhoun: re-vegetation of the banks
- Removal of silt from the Mouhoun and alterations to lowlands (if relevant)
- Conservation techniques for soil and water: weirs, stone barriers, hedges, mulching.
- Good agroecological practices
- Citizen consultation: impetus from local water committees on the upstream part of the Upper Mouhoun basin
- Capacity-building of water police services
- Trainer network: awareness-raising of resilient practices, IWRM, ISFM, identification and protection of wetlands; knowledge and resilient practices for using water in between the wet and dry seasons
- Environmental education aimed at young people

**LONG-TERM ACTION (10 YEARS):**

- Implementation of the Action Plan for the Restoration and Sustainable management of Wetlands
- Reinforcement of governance and participation mechanisms
- Identification and concerted approval of the implementation of a durable finance mechanism for the action planned.