

[translation from French]

CASE STUDY

WATER GOVERNANCE

IN THE CENTRAL AFRICAN REPUBLIC

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WATER, FISHERIES AND FISH FARMING

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ABBREVIATIONS

APN	African Parks Network
CEMAC	Economic and Monetary Community of Central Africa
DMESS	Directorate for Monitoring, Evaluation and Statistical Systems
FAO	Food and Agriculture Organization of the United Nations
SDGs	Sustainable Development Goals of the 2030 Agenda for Sustainable Development of the United Nations
UNDP	United Nations Development Programme

I. CONTEXT AND JUSTIFICATION

1.1. *Reminder of the goals for the development of the blue economy*

The Central African Republic is a vast country (623,000 km²) with low population density (around 4 million inhabitants) but with immense natural wealth (forests, fauna, minerals, etc.) and a very dense inland freshwater system.

With regard to the achievement of the development objectives of the blue economy for economically vulnerable States, the Central African Republic, a landlocked country with no coastline, is often confronted with a lack of: (i) vision, (ii) governance, and (iii) major investments, that should logically lead to the achievement of the Sustainable Development Goals (SDGs) as recommended by the United Nations (see box 1). Provisions for goals related to the blue economy are particularly relevant, in particular Goal 1 (eradicating poverty) and Goal 14 (protecting undersea life). The Central African Republic is aligned with that vision, in particular with Goal 1, which underpins the unrelenting search for solutions to provide subsistence to its population to contain poverty as the country emerges from several difficult periods of security-related instability.

Box 1: Essential elements for the development of the blue economy: vision, governance and investment

- 1) Develop a vision. The African countries are signatories of the Sustainable Development Goals (SDGs) of the United Nations, many of which are particularly relevant to the blue economy, especially Goal 1 (poverty eradication) and Goal 14 (protecting life under the sea). Most African Governments have submitted projected Nationally Determined Contributions to the United Nations Framework Convention on Climate Change. African nations are also parties to several regional agreements whose frameworks have been designed for coordination and synergy, including the African Charter on Maritime Transport, Africa's Integrated Maritime Strategy (which produced the 2050 AIM Strategy), the United Nations Economic Commission for Africa, which adopted a roadmap for the blue economy, and in particular Agenda 2063 of the African Union, which is aligned with the United Nations 2030 Agenda for Sustainable Development. These declarations and plans must translate into action under the auspices of African nations.
- 2) Promote good governance. It is crucial for governance reforms and management decisions to be based on good governance based on science, data and technology, whether this is to guarantee the sustainable management of fish stocks or the stewardship of critical natural habitats during oil exploration. **Guaranteeing the land rights of well-organized communities has also proved effective in restoring fishing grounds and livelihoods.**
- 3) Grow investment. In order to fully realize the potential of the blue economy, significant investment will be necessary to improve governance, community initiatives and an environment that enables responsible and sustainable engagement.

The fabric of the economy of the Central African Republic has deteriorated much more drastically in recent decades due to frequent coups d'état and repeated uprisings. The country was frequently disrupted by political and military crises between 1965 and 2003, and again more recently in 2012–2013. Security-linked instability creates a difficult economic context that places the Central African Republic among the poorest countries, with a Human Development Index among the lowest, at 180th out of 186 countries (UNDP, 2015) and a per capita gross domestic product (GDP) of USD446 in 2016.

A country in a post-conflict situation, the Central African Republic ceaselessly seeks support through community initiatives to improve governance and create an enabling and sustainable environment for natural resources to be exploited for the good of the population. In that context, the water, fisheries and fish farming sectors should be explored as a way to improve the livelihood of its population in the context of the blue economy.

1.2. Diagnostic analysis of the water, fisheries and fish farming sectors

A diagnostic analysis of the water, fisheries and fish farming subsectors reveals a number of significant advantages:

Table 1: Advantages and opportunities in the water, fisheries and fish farming sectors

Sector	Advantages	Opportunities
Water, fisheries and fish farming	<ul style="list-style-type: none">• <i>Physical advantages</i>	<ul style="list-style-type: none">- Dense inland freshwater system (has been described as a water reservoir of Central Africa)- Rich and varied ichthyologic fauna- Terrain appropriate for fish farming
	<ul style="list-style-type: none">• <i>Human advantages</i>	<ul style="list-style-type: none">- A young population that is 80 per cent rural- Men, women and young people are involved in the industry
	<ul style="list-style-type: none">• <i>Economic advantages</i>	<ul style="list-style-type: none">- Significant inventory of water resources- Fish trade within and between communities- Transit route via rivers

II. POTENTIAL IN THE WATER, FISHERIES AND FISH FARMING SECTORS

2.1. Inland freshwater system of the Central African Republic

2.1.1. Surface water

2.1.1.1 Rainwater

Rain, the only precipitation received in the Central African Republic, is the source of most of the country's water resources. The rains cause run-off and replenish groundwater. Analysis of rains in the Central African Republic reveals the uneven distribution that characterizes the three main types of climate. Annual rainfall averages between 800 mm in the north-east of the country to 1800 mm in the south-west. Based on measured average annual rainfall of 1200 mm for the country as a whole, the country receives a volume of 746.4 billion m³ of water through precipitation.

2.1.1.2. Waterways

Surface water is part of the terrestrial phase of the water cycle. This phase can only be understood through the notion of the watershed, the only entity within which run-off phenomena can be measured. The Central African Republic has been privileged by nature, which gifted it with a dense inland freshwater system that covers almost the entire national territory. This system is subdivided into two great watersheds that split the country in two from east to west.

The Central African Republic has two major river systems: the Lake Chad basin and the Congo River basin.

The rivers of the Lake Chad basin are characterized by flooding between July and September and low water levels in the two major rivers, Chari in the North-East and Logone in the North-West, spread over the rest of the year.

The tributaries of the Eastern Logone (1,000 km) have average annual flow of 250 m³/s;

The tributaries of the Chari (370 km), which are the Oukam and the Aouk, experience considerable variation in annual flow: for the Ouham, 50 m³/s from March to April and 800 m³/s from August to October. Most rivers spill over into the floodplains during the rainy season.

The Congo basin has two sub-basins:

To the far West, the basin of the Sangha and its tributaries, which meet the Oubangui (608 km) in the Republic of the Congo to form the Congo River.

The basin of the Oubangui, which covers the entire southern part of the country from the east to the west, and has numerous tributaries: the Mbomou, Kéré, Ouara, Chinko, Mbari, Kotto, Ouaka, Ombella; the M'Poko, and the Lobaye.

2.1.1.3. Ponds, marshes and lakes

These areas are immense reservoirs of fish. The country also has lakes, ponds (the Am Timan, Tizi, Gata, Danal, Makia, Amdafok, Mamoun, Kididji and Tiringoulou ponds) and artificial reservoirs that cover a total estimated surface area of 20 km².

- Lake Mbali, formed by the Boali III dam located in the Oubangui watershed, has a capacity of 250 million m³ and allows for the regulation of the Boali I and II plants;
- The 12 hillside reservoirs used for irrigating grazing lands, with a capacity of 60,000 m³ each for a total of 720,000 m³ distributed over four livestock raising prefectures;
- Lac des Caïmans (the lake of Caymans), used only for tourism (no data available on its physical characteristics).

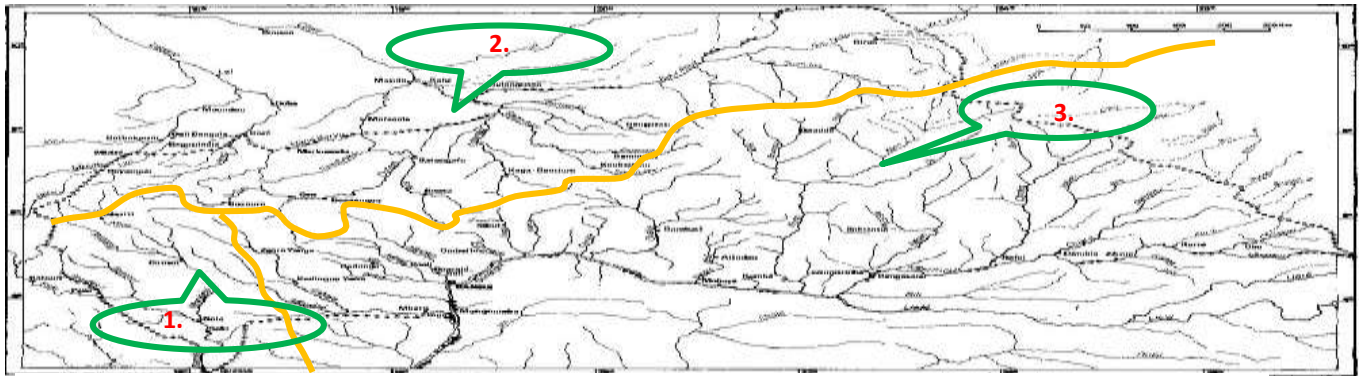
In 1994, there were 3,260 productive marshes used for fish farming, for a total surface area of 74.98 ha.

Conservative estimates of the volume of surface water resources are based on annual minimum flows. This work was done for Oubangui and its main tributaries and we have observational data from the dry period endured by the Central African Republic.

For the watersheds fed by tributaries of the Chari, proposed orders of magnitude were established by comparing with the nearby tributaries of the Oubangui. Based on these estimates, surface water resources in the two watersheds into which the country is divided were estimated to amount to a minimum of **47,130,000,000 m³ per year** (*source: Etude thématique 3 : Ressources en eau, utilisation et cadre technique de gestion [Thematic study 3: water resources, use and technical management framework], Pierre LEBARAMO 2006*).

Still according to this study, calculating the uses of surface water from the Congo Basin shows that surface water is used the most because the capital city and other main cities are located in this basin.

Figure 1: Hydrographic chart of the Central African Republic



1. The Sangha River and its tributaries 2. Lake Chad Basin 3. Basin of the Congo

Image: Yves Boulvert, ORSTOM, 1987

2.2. Fishing regions

The inland freshwater system of the Central African Republic, as shown in the map above, is split into three (03) fishing regions as follows:

- The Chari basin in the north with a surface area of 205,000 km²;
- The Oubangui basin in the south with a surface area of 304,000 km²;
- The Sangha in the extreme south-west with a surface area of 73,000 km².

Figure 2: Rivers of the Oubangui Basin

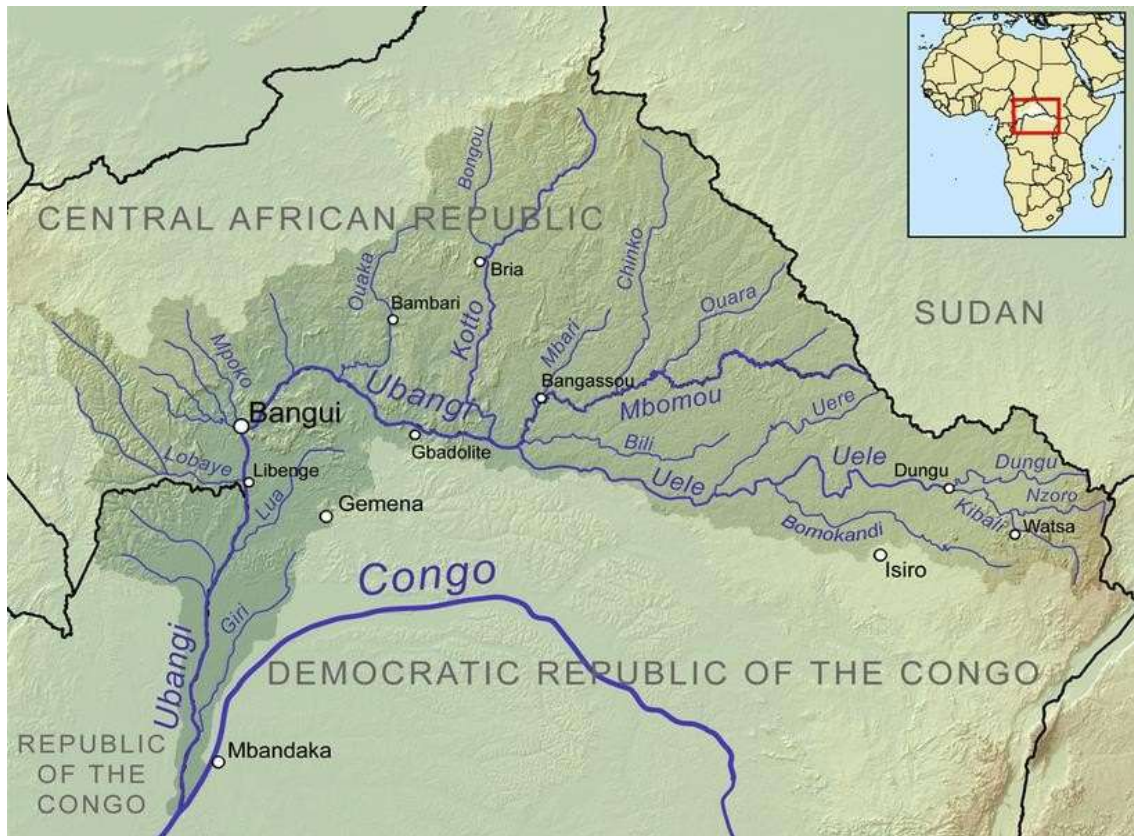


Image: Thierry Aebischer, Expedition on the Chinko-Vovodo River, 2019 (source: APN).

Figure 3: Rivers of the Chari Basin



Photo: Yves Boulvert, ORSTOM, 1987

Figure 4: Riverbed of the Chinko River (Oubangui Basin)



Photos: Thierry Aebischer, Expedition on the Chinko-Vovodo River, 2019 (source: APN).

2.3. Fishery resources

Researcher Muguet (1994) estimated that the fishery resource potential of the Central African Republic varies between 50,000 and 100,000 tonnes per year based on weather variations. Studies on the characteristics of the fauna in sub-Saharan Africa carried out by certain authors such as Poli, Pelegin and Micha noted that the aquatic fauna of the Central African Republic is classified in the category of Ethiopian fauna. This classification includes 260 genuses, including 12 families in the Central African Republic.

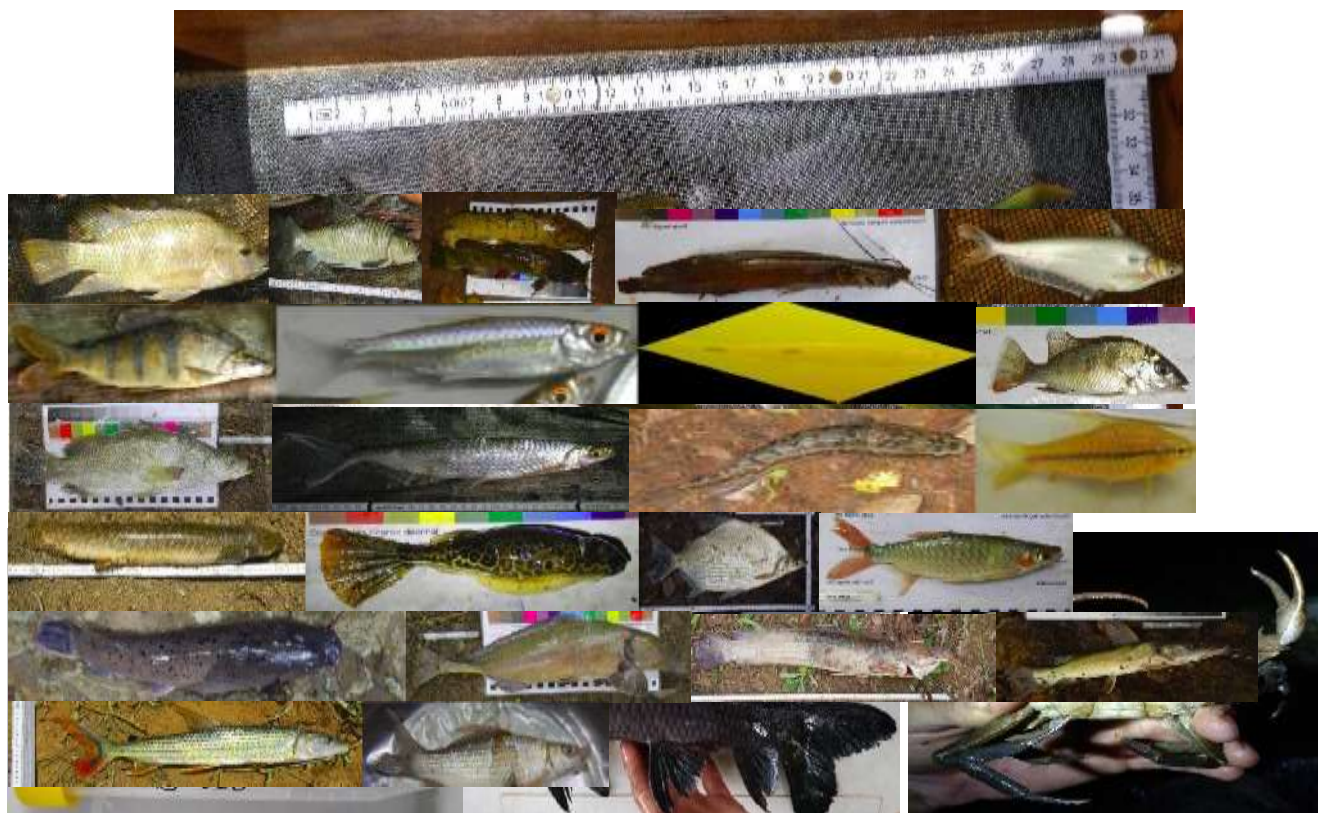
✓ *The 10 most exploited families are the following:*

Protopteridae, Mochocidae, Claridea, Cyprinidae, Bagridae, Citharinidae, Cichlidae, Mormyridae, Gymnarchidae, Malapteruridae.

✓ *The main species generally found in the market are:*

Mormyrus sp., Lates sp., Hydrocynus sp., Alestes sp., Tilapia sp., Barbus sp., Clarias sp. and Labeo sp.

Figure 5: Halieutic fauna



Images: Thierry Aebischer, Expedition on the Chinko-Vovodo River, 2019 (source: APN).

III. ORGANIZATION OF THE INDUSTRY

3.1. Fishing communities

Moreau in 1994 and Breuil in 1996 estimated that fishing provides jobs to more than 95,000 professional and part-time fishermen, distributed as follows among the basins.

All people residing near rivers are more or less involved. Fishermen are divided into three categories.

Table 2: Classification of communities of fishermen

No.	Classification of fishermen	Categories of fishermen	Number of fisheries workers/basin
1	Professional fishermen	Those whose livelihood comes solely from fishing	- 45,000 fishermen along the Oubangui
2	Fishermen-farmers	Their livelihood depends on both fishing and agriculture or other activities.	- 36,000 fishermen in the Chari basin
3	Part-time fishermen	Includes young people looking for work. They stop fishing as soon as they get a job that pays better.	- 14,000 fishermen in the Sangha River basin

Source: General reports of the Ministry in charge of Water Bodies and Forests (2003)



Net fishing in the Northern Basin (source: WCS).

Table 3: Catch estimates per river basin and per fisherman in the Central African Republic (1997)

River basin	Minimum catch (t/yr)	Maximum catch (t/yr)	Professional fishermen	Fishermen-farmers	Total fishermen	Minimum catch per fisherman	Maximum catch per fisherman
Chari (North)	10,400	41,500	7,697	30,788	38,485	0.270	1.078
Sangha	1,500	1,500	2,797	11,180	13,975	0.107	0.107
Oubangui	8,600	8,600	9,104	36,415	45,519	0.189	0.189
South	10,100	10,100	11,899	47,595	59,494	0.222	0.170
Total CAR	20,500	51,500	19,596	78,383	97,979	0.209	0.526

Source: DMES/Plan.

3.2. Hindrances and threats to the development of the fisheries and fish farming industry

The major obstacles to the development of fisheries and fish farming are listed in table 4.

Table 4: Hindrances and threats to the development of the fisheries and fish farming industry

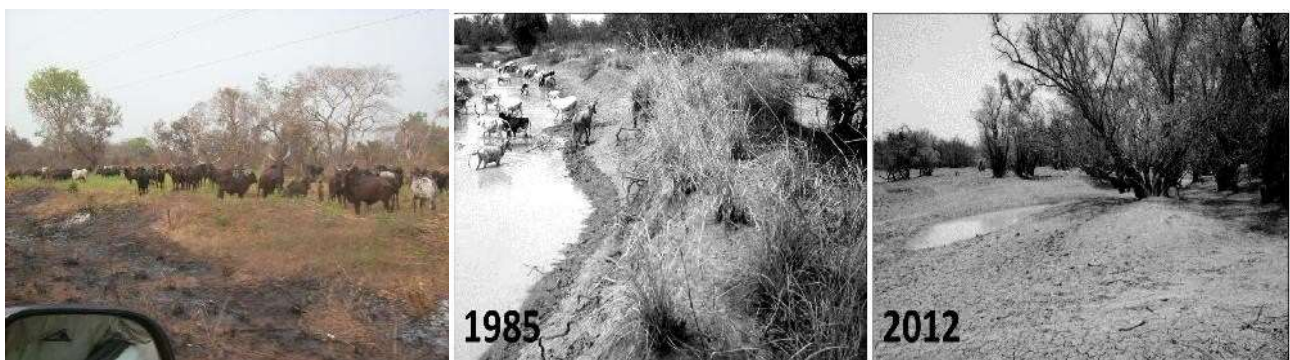
No.	Hindrance	Descriptions
1	Isolation	<ul style="list-style-type: none"> Fishing grounds that are too remote, creating a hindrance to the development of fish production (the large fisheries of North Bamingui-Bangoran and Vakaga, representing approximately 80 per cent of overall production, have problems with access routes) Vakaga cannot be accessed during the rainy season; the Ngarba/Ndélé/Bangui route is possible, and improving it would be an advantage The East is very underexploited due to the lack of access routes Improving roadway infrastructure is a prior condition for any substantial increase in production. This would contribute to lowering the transportation cost and market cost for fish, given that the highest production areas are very far away from major markets
2	Purchasing power of households in the Central African Republic	<ul style="list-style-type: none"> Households in the Central African Republic are in a situation of absolute poverty 63% of the population lives below the poverty line, with low average income of 10,300 CFA francs per year. This makes buying the necessary amount of fish for consumption¹

¹ *Translator's note:* The sentence is incomplete in the French version.

3	Lack of statistical data	<ul style="list-style-type: none"> • Lack of statistical data on assessments of fishing potential • There is a lack of data on local production, imports and the current state of fish stocks • The absence of statistical data is a result of the lack of follow-up and guidance for the industry. Fishing has remained traditional, with most of it taking place in rivers, which is why fishing methods display very little sophistication • Certain regions are intensively fished during the floods (Bahr Aouk, Bantui and Ouham), and should be given assiduous follow-up
4	Lack of means	<ul style="list-style-type: none"> • Lack of financial and material means • The cost of the equipment required to do the job is high • The savings and credit system is not well regarded by fishermen • Fishermen do not save any of their income • All income goes to consumption, which makes it difficult to get new equipment and fishing gear • Fishing activity is not very diversified
5	Specific constraints in each river basin for the development of fisheries (North Basin, South Basin and Sangha River Basin)	<ul style="list-style-type: none"> • <i>In the North Basin</i> <ul style="list-style-type: none"> - Government restrictions on fishing that prevent people from fishing during the most productive seasons - The use of unconventional gear by foreigners is causing the destruction of fish stocks - Harmful sociocultural practices that discourage young people from fishing • <i>In the South Basin</i> <ul style="list-style-type: none"> - Lowered production linked to the use of small-mesh nylon nets - Dams across the bed of the Mobaye upstream on the Oubangui - Depletion of inland water courses because of drought, the pressures of land use, the occupation of riverbanks and the destruction of gallery forests
6	Constraints specific to the development of fish farming	<ul style="list-style-type: none"> • Institutional framework that weakens year after year due to an absence of follow-up and support for the sector • Destruction of the only fisheries school in Landja, an important technical and teaching support for the development of fish farming
		<ul style="list-style-type: none"> • The fairly frequent reflex of providing handouts to fish farmers, and systematic theft, pillage and sabotage slow the development of the industry • Lack of availability of agricultural by-products • Very limited capacity to supply fry, linked to the notoriously weak development of fish farming due to the lack of improved strains of the only variety of <i>Tilapia</i> used in the Central African Republic • The severe droughts of 1984 and 2008 caused 30 to 40 per cent of groundwater ponds and some feeder streams to dry up; some ponds were abandoned • Difficulty in monitoring due to the scattered distribution of fish farmers across areas far removed from each other • Land problems

✓ ***Severe threat in the North Basin:***

Significant risk of widespread, irreversible degradation of fragile ecosystems (gallery forests) under pressure from animal husbandry due to overgrazing and brush fires.



The negative consequences of overgrazing (source: WCS).

IV. LEGAL AND INSTITUTIONAL FRAMEWORK OF THE WATER, FISHERIES AND FISH FARMING SECTORS

Box 2: Legal and institutional framework of the water, fisheries and fish farming sectors

✓ **With regard to water management:**

The Ministry of Water, Forestry, Hunting and Fishing is involved in managing surface water and regulating the exploitation of natural water reservoirs;

The Ministry of the Environment, through the Directorate-General for the Environment, is in charge of creating and implementing environment and sustainable development policy. It assesses and monitors environmental risk and takes the necessary measures to preserve the quality of the environment. However, the tasks of the Ministry in the field of remediation need to be better defined.

The Ministry of Planning in charge of monitoring and research for financing in the sector and for following up on the Poverty Reduction Strategy Document;

The Ministry of Transportation in charge of hydrology and weather;

The Geography Department at the University of Bangui, which carried out important work on the cartography of the river system, access to water and rainwater run-off in Bangui;

Municipalities will be called upon to act as construction supervisors for rainwater drainage, in the context of decentralization;

Associations and NGOs will be called upon to implement projects and mobilize society; and

International development organizations will be called on to finance the sector.

✓ **In the role of water mobilization and use:**

The Ministry of Agriculture and Livestock is involved in water management in that it defines water management policy for agriculture (water for irrigation) and for water consumption by livestock in the context of animal husbandry.

SOCATRAF, a mixed economy company created in 1979 under the Ministry of Transportation and Civil Aviation, is in charge of managing the infrastructure for the roadway between Bangui and Brazzaville.

The national representatives of Centre Régionale pour l'Eau Potable et l'Assainissement à faible coût (Regional Centre for Low-cost Potable Water and Sanitation) (CREPA) launched activities in 2006. It benefits from a head office subsidy and provide services to other actors in the industry (building latrines and hand washing stations, hygiene education).

Nevertheless, it must be noted that the roles and responsibilities of the various ministerial departments are not clearly defined.

In the field of sanitation, AGETIP manages construction oversight for significant rainwater drainage programmes in Bangui. The financial capabilities of local communities, which are in charge of maintaining these works, have been reduced to the point where it is not clear that these investments can continue.

Many NGOs and local associations are involved acting as operational liaisons between NGOs and international organizations, especially in the context of emergency programmes.

The institutional framework is fairly well developed, with numerous structures having been created under the various reforms undertaken. Nevertheless, the framework remains to be implemented, given that in most cases, the institutions created to take charge of the sector lack the means, in particular the financial means, to fully accomplish their missions.

✓ **Regarding fishing and fish farming:**

The Ministry of Water, Forestry, Hunting and Fishing is in charge of protecting surface water and of regulating the exploitation of natural resources, including fish biodiversity;

- *Lack of supervision and capacity-building in fishing techniques and in the establishment of groups and training in information, education and communication*
- *Absence of any framework for dialogue between the State and fishermen*
- *Not enough qualified fishing and fish farming professionals is an obstacle to the development of fisheries*
- *Absence of an appropriate legal framework linked to the absence of a fishing code (draft fishing code awaits adoption by the National Assembly), which is a way for the state to monitor and control as well as to define policies and strategies in terms of developing fisheries*

Nevertheless, the roles, responsibilities and establishment/coordination of actions between the different ministerial departments involved in matters related to water, such as the Ministry of Hydraulics, the Ministry of the Environment, and many other institutions, are not clearly defined.

V. MAIN OPPORTUNITIES²

5.1 *Promoting ecotourism in aquatic settings*

5.1.1 *Recreational fishing*

The Central African Republic can encourage the promotion of recreational fishing in areas where there is tourism, such as community areas and protected areas.

Figure 6:³ Some fish from the Congo Basin (Chinko River)



Photos: Thierry Aebischer, Expedition on the Chinko-Vovodo River, 2019 (source: APN).

5.1.2 *River tours*

Various attractive sites can be identified and promoted to develop tourism, including waterfalls and cave nests of fish, as in the following photographs.



Photo: Thierry Aebischer, Expedition on the Chinko-Vovodo River, 2019 (source: APN).

5.2 *Institutional and government action programmes for the promotion of fishing and fish farming*

Fishing and fish farming are identified as segments of the economy that can help the State to reduce poverty. The development problem in this industry is of a scope that exceeds the purview of the department under which it falls, which is the Ministry in charge of fisheries and fish farming. However, it appears that there is a need to develop synergy and to include other departments in researching the implementation of a joint mechanism to access the many opportunities offered by development partners under programmes to combat poverty

² *Translator's note:* The subsections are misnumbered in the French version. Corrected here.

³ *Translator's note:* This figure is misnumbered in the French version.

(see box 3).

Box 3: Development opportunities in the water, fisheries and fish farming sectors

1. The wishes of the Government expressed in the Strategic Poverty Reduction programme;
2. The provisions of the Programme for Sustainable Subsistence through Fishing (PSSF);
3. The programmes under the action plan from the World Summit on Food Security:
 - ✓ The FAO Special Programme for Food Security
 - ✓ The Regional Program for Food Security (CEMAC)
 - ✓ CEBEVIRHA (Commission Economique pour le Bétail, la Viande et les Ressources Halieutiques) (Economic Commission for Livestock, Meat and Fishing Resources) managed by CEMAC
 - ✓ Lake Chad Basin Commission
4. UNDP, through programmes against poverty and AIDS;
5. The United Nations Population Fund (UNFPA) is involved in managing the Beijing Declaration and Platform for Action for the inclusion of women in development;
6. The Special Development Programme of the International Organization of La Francophonie, whose central focus is to involve young people from rural and suburban areas in development and women in economic activity;
7. The Development Fund of La Francophonie;
8. The United Nations Conference on Environment and Development (Earth Summit).
9. **Supply and demand projections for fish products:**
 - *Estimates of current consumption: 3.5 kg/inhabitant/year (very insignificant)*
 - *According to FAO, recommended consumption is as follows: 17 kg per person per year for adults and 7 kg for children under 14 years of age, and if the potential is realized, with losses of less than 10%:⁴ 6.8 kg/inhabitant/year in a year of low rainfall and 10 kg/inhabitant/year without imports*
 - *Fish imported in 1995: 230 tonnes*
 - *Fish production in 1998: 300 tonnes*
 - *Installed fish farming capacity after the development projects up to 1990: 3,500 tonnes*

VI. FORECASTS FOR THE DEVELOPMENT OF THE WATER, FISHERIES AND FISH FARMING SECTORS

1. Urgent implementation of a programme to strengthen capacity for institutional support with a view to managing development programmes in the water, fisheries and fish farming sectors;
2. Implementation of the structure to research and define an interministerial cooperation framework with traditional development partners in order to gain access to the different opportunities offered by solidarity funds to combat poverty and hunger and preserve the environment;
3. Implementation of an enhanced information, education and communication strategy for local authorities and grassroots communities;
4. Implementation of a micro-finance system to support the development of the fishing and fish farming industry;
5. Review of management policies for protected areas in order to guarantee the access of grassroots communities to fish resources;
6. Application of existing conventions for the sharing and use of resources near borders;
7. Creation of regional support centres for the development of fishing and fish farming;
8. Contribution by the Fonds Forestier (forestry fund) to a micro-finance fund to support fishing and fish farming;

⁴ **Translator's note:** The French text is not clear.

9. Creation of a framework for cooperation between the Ministry of Water, Forestry, Hunting and Fishing, the Ministry of Agriculture and Livestock and the Ministry of Hydraulics with a view to defining and following up on the implementation of policies for better water management;
10. Free movement of non-imported fish products;
11. Rereading and adoption of the bill for fisheries and fish farming (it appears that the draft Code continues to await adoption at the National Assembly).