Netherlands Commission for
Environmental Assessment

Strategic Environmental and Social Assessment for Hydropower Development on Sanaga Basin in Cameroon

A case study description

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1. Introduction

Cameroon's installable hydropower potential is estimated at 13,700 MWh. The Sanaga basin represents 53% of this capacity and covers 25% of the national territory. Five protected areas are located within the Sanaga basin. In the Sanaga basin 7 hydropower projects exist and 26 new projects are identified. To exploit this potential the Government of Cameroon, has developed a Hydropower Master Plan (HMP) of the Sanaga Basin and simultaneously a Strategic Environmental and Social Assessment (SESA). These were initiated and funded by the World Bank.

Objective of the SESA was to integrate environmental and social aspects into the HMP and select a hydropower project with least environmental and social effects, it aimed to:

- Establish an environmental and social reference database for the Sanaga River watershed;
- Identify and analyse the main Environmental and Social (E&S) issues related to hydropower development on the Sanaga basin;
- Develop key Environmental and Social (E&S) indicators;
- Analyse the cumulative impacts of different hydropower development scenarios;
- Propose adaptations and mitigation measures;
- Develop an implementation guide for the proposed strategic measures.

2. Institutional structure

The following bodies had a key role in preparing, coordinating, consulting and decision-making of the Hydropower Master Plan and SESA:

- Prime Minister Cabinet holds the political responsibility: it authorizes the elaboration of the Hydropower Master Plan and the SESA and will provide the financial resources for the implementation of the recommendations outlined in the Hydropower Master Plan and the SESA.
- Electricity Development Board (EDC) is the Project owner, acting on behalf of Cameroon Government as the State's strategic agency for the development of the electricity sector. They were responsible for preparation and coordination of the Hydropower Master Plan and SESA.
- Steering Committee composed of the key ministries (Planning; Water and Energy; Environment; Social Affairs; Forestry and Wildlife; Fisheries, Mines and Land Registry).
- Representative panel was established to represent the following stakeholders: key ministries, financial donors, hydropower developers, International Non-Governmental Organizations, regulatory agencies (electricity, climate) and civil society which represent affected communities. The panel was informed and consulted throughout the studies (Hydropower Master Plan and SESA).

3. Approach and results

The Hydropower Master Plan is a strategic program and therefore a Strategic Environmental and Social Assessment was mandatory in accordance with Cameroonian environmental legislation (2013). One approach was developed to integrated the SESA and the HMP, see table 1.

A representative panel of 50 key stakeholders was established at the start consisting of representatives of ministries, Electricity Development Corporation, regulatory agencies, hydropower developers, non-governmental organizations, donors and funding agencies. The panel was informed and consulted six times throughout the studies.

Table 1: Overview of the SESA Steps and the Integrated Approach for Master Plan Development

SESA process		**Integrated process for the development of the Hydropower Master Plan**
1. Reach consensus on the need for the SESA and its link to policy planning process		1. Analysis of previous projects and programs and identification of the need for strategic planning
2. Prepare the Terms of Reference for the SESA		2. Prepare the Terms of Reference for the Hydropower Master Plan
3. Recruitment of consultants 4. Development of scoping reports for both studies (review of the legal and regulatory framework, definition of the study scope, and adjustment of the working methodology) Development of a detailed stakeholder engagement plan		
5. Collection of Environmental and Social (E&S) data to establish the baseline E&S status of the Sanaga Basin.		5. Collection of topographic, hydrological, and geophysical data.
6. Develop a shared vision of the issues and opportunities at the watershed scale.		
NA		7. Technical analysis – Identify potential hydroelectric production sites – Model the flows at each site and determine the potential generation capacity.
8. Identify and analyze the key E&S issues related to the development of hydropower on the Sanaga River Develop key E&S indicators to be integrated into the development of the hydropower master plan		NA
9. Estimate the costs of mitigation measures for the social and environmental impacts of individual projects.		8. Economic and financial analysis – Estimate the financial costs, – Compare the economic and financial performances of individual projects by incorporating environmental and social costs.

SESA process		Integrated process for the development of the Hydropower Master Plan
NA		9. Multicriteria analysis and strategy development – Combine technical, economic, social, and environmental performances in a multicriteria analysis – Create scenarios and recommend the optimal ones – Propose the most optimal scenario.
10. Analyse the cumulative impacts of the hydropower development scenario; - Propose adaptations and measures; - Develop a guide for implementing the proposed strategic measures.		NA
Presentation of the study results to the Cameroonian government.		

Definition of E&S indicators, site categorisation and multi-criteria analysis

The following indicators were used to assess and score the 26 projects.

Environmental: Reservoir area + 100 m buffer, number of affected protected areas, critically endangered species, endangered species and endemic species.

Socio-economic: Estimated physical project-affected persons, area of infrastructure affected, area of cultivated land affected.

This assessment resulted in ranking of projects. The score of each individual project reflects the environmental and social variability observed in the Sanaga Basin. This ranking was used as an input for the multicriteria analysis (MCA), which helped to determine the most optimal scenario. The MCA includes the above score as well as economic scores and sediment trapping rate. This resulted in the listing of 10 projects, see figure for the location of the selected projects.

A cumulative impact analysis was made resulting in a series of strategic measures related to environmental and social management at the scale of Sanaga basin. These measures range from the creation of a basin agency for integrated water resources management to the development of policy frameworks for impact mitigation plans. Specifically, a major aspect emerging from the analysis of cumulative impacts on biodiversity is the potential risk of “no go” for projects located further downstream due to difficulties that would be encountered in implementing biodiversity offsets in accordance with the requirements of international financial partners. This risk had never been perceived before this SESA.

Regarding the impact of climate change on the program, a separate study confirmed the long-term availability of water resources and the urgent need for adaptability of the dams structure to manage extreme events (floods). This measure is crucial for the sustainability of investments in the Sanaga Basin, particularly concerning dam safety of the older regulation dams. It was also recommended to establish a regulatory framework for dam safety in Cameroon.

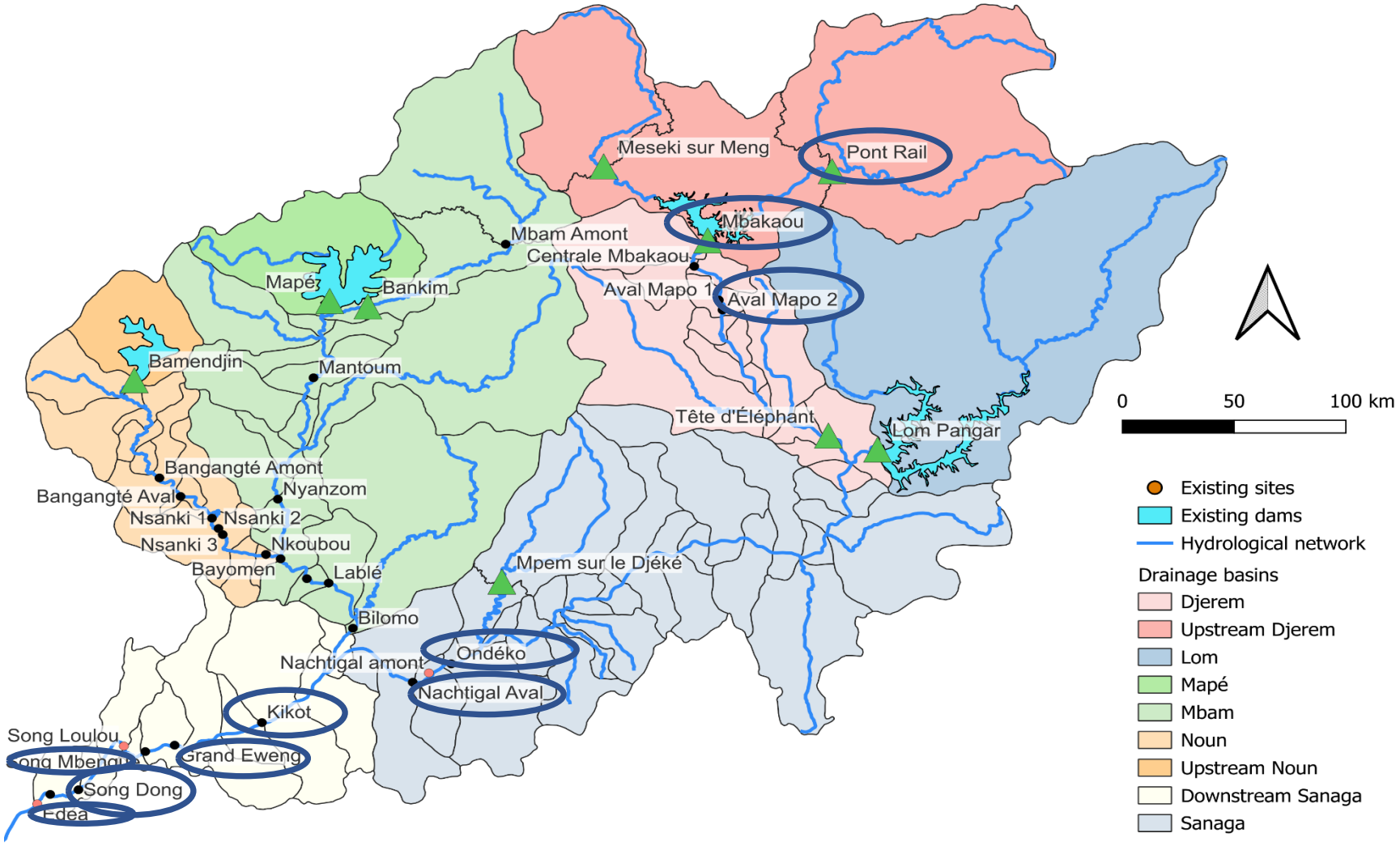

Figure: Location of the selected projects of retained scenario in the Sanaga River Basin

4. Outcome, impact and lessons learned

The debate on hydropower development in the Sanaga basin has moved from considering the localized impacts of individual projects to addressing the development of a hydropower cascade, its cumulative impacts, and its consequences for sustainable watershed management.

The SESA has raised stakeholder awareness of the urgency of establishing environmental and social governance at the watershed level, focussing on hydroelectricity. This governance agency would serve as the legal body bringing together all developers. Pending complaints from local populations regarding the impacts of projects at the boundaries of the areas of influence of two existent adjacent projects would be the first cases to be dealt with by this basin agency.

Of the ten sites selected in the strategy, the Cameroonian government, with World Bank support, decided to immediately launch feasibility studies for the project with the highest environmental and social score. This project is named Mbakaou Hydropower Plant, which will have an installed capacity of 250 MW and will be built at the base of an existing water reservoir.

The cumulative impact analysis resulted in a take-over by the government of biodiversity compensation, which is currently managed individually by private developers. The SESA recommends the realization of a biodiversity inventory on the main Sanaga cascade and the identification of an integrated biodiversity compensation site for all projects. So, all private developers established in the Sanaga watershed will pay the Sanaga basin agency the necessary funds for the implementation of their biodiversity compensations.

The SESA recommends the development of a support plan for economic activities such as fishing, sand mining, and agriculture, as these sectors will be significantly impacted by the implementation of the HMP. The SESA also highlighted the need to standardize the approach to supporting populations affected by projects, particularly those facing involuntary physical and economic displacement. Currently, compensation measures depend on the requirements of the financial partners involved in each project. This creates frustrations within the communities due to the variability of the measures such as compensation rates and livelihood restoration programs for affected populations. To address this, the SESA prescribes the development of a resettlement policy framework to be applied throughout the Sanaga watershed. This framework should take into account vulnerable groups and minorities, actions to improve living conditions, access to public infrastructure, a transparent grievance and conflict resolution mechanism for issues related to cumulative impacts.

Finally, the most significant impact has undoubtedly been the achievement of consensus among key stakeholders on integrating environmental and social aspects into the strategic planning process. For the first time, government officials can now adopt a holistic approach to planning hydroelectric projects at the scale of the Sanaga basin. Moreover, the SESA has made the government aware of the potential "no-go" risk for projects located further downstream in the basin. This means that the government must identify this integrated compensation site mentioned above for all projects, thereby ensuring that net biodiversity losses are compensated at the cascade level. The terms of reference for this activity have been developed, and the government is seeking funding to conduct this study. This is a key action that would demonstrate an operational awareness among government authorities as one of the direct result of the SESA.