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## Contribution to the identification of responses to the effects of socio-ecological stressors on aquatic ecosystems in Burkina Faso

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### Abstract

Burkina Faso has adopted dam construction as a strategic response to water scarcity, making it one of the countries with the highest concentration of dams in sub-Saharan Africa. However, the sustainability of these water reservoirs is a major challenge. This work aims at analysing how the effects of socio-ecological stressors on aquatic ecosystems imply responses towards sustainable fisheries and water resources management.

Multi-evidence approach was used. We conducted both desk research to collect secondary data and empirical research to gather primary data through strategic simulation, qualitative interviews, and structured interviews.

The research contributed to understanding the complex interaction of multiple stressors that influence the sustainability of inland fisheries in Burkina Faso's aquatic ecosystems: the current decrease of total annual precipitation and the increase of yearly precipitation variability due to climate change result in decreased water level, which impacts, in turn, fish abundance and average size; fish productivity, abundance, and average size were shown as the biotic indicators that are most recognised as being impacted nowadays by climate change in the country; The massive construction of dams and intensive agriculture have affected the status of aquatic ecosystems and fish; the profitability associated with the lack of enforcement can enhance overexploitation since it drives a feedback loop between the increase in the number of fishers, fishing rates, incomes, and profits.

Improving education, management enforcement, infrastructures, alternative livelihoods, energy production, and support towards sustainable livelihoods were identified as the responses i.e., potential actions for sustainable management of aquatic ecosystems.

The understanding, from diverse perspectives, of socio-ecological stressors helped better integrate water and fish-related ecosystem services contributions to human well-being, e.g., secure livelihood and food access, and the need to preserve these resources in the long term through a better knowledge of their interaction and possible effective societal responses.

**Keywords:** Burkina Faso, responses, stressors, sustainability, water resources