

Local Livelihoods Risk Assessment: Construction and Operation of Mphanda Nkuwa Hydroelectric Dam

Location:	Tete, Mozambique
Date:	2006
Sector focus:	Assessment of risk associated with the construction and operation of the proposed Mphanda Nkuwa Hydroelectric dam in Mozambique
Spatial focus:	Two <i>bairros</i> (villages) on the Zambezi River, Tete Province.

Organization

Justiça Ambiental! Maputo, Mozambique

Bibliographical details

James Morrissey (2006) *Livelihoods at Risk: The Case of The Mphanda Nkuwa Dam* (Community Risk Assessment for the Proposed Mphanda Nkuwa Hydroelectric Dam), Maputo, Mozambique, Justiça Ambiental.

Language availability

English, Portuguese

Abstract

This research focuses on the proposed Mphanda Nkuwa Hydroelectric dam, in Mozambique, and on the risks associated with its construction and operation. The proposed dam will be constructed on the lower Zambezi, about 70 km downstream of the existing Cahorra Bassa Dam, in Tete Province. It is envisaged that the dam reservoir will inundate an area of about 100 km², resulting in the forced resettlement of approximately 1400 people.

Focusing on two *bairros* on the Zambezi river the research explores the feasibility of participatory rural appraisal tools in generating an understanding of risk-generating processes. By including the concept of risk to existing participatory development methodologies the study aims at mainstreaming risk within development related decision making. An in-depth understanding of how impacts

generated by the construction and operation of the dam are likely to interact with the existing social and physical environments was gained by using the livelihoods framework. This allowed the researcher to better understand the vulnerability context in the two communities. The information collected was then analysed in terms of the broader political context to further define the overall risk framework.

The findings of the research highlight how the construction of the dam would further exacerbate the specific disaster risk of the area and compromise the livelihoods strategies of the two communities. This would undermine the communities' existing risk management strategies and their capacity to cope with existing developmental challenges such as climate change and HIV/AIDS.

Intended users

NGOs

Background and context of country, location and project

- **Recent disasters?**

The area has already been negatively affected by the construction of the Kariba and Cahorra Bassa dams. Amongst some of the negative impacts of the dams for local communities there are: significantly decreased soil fertility, reduced fishing in the delta, erosion and poor management of regulated-river flooding which have increased their vulnerability.

- **Other recent crises (economic, political)?**

Severe economic crisis during and immediately after the civil war years.

- **Recent displacements and population movements?**

As political intimidation is still very much a part of people's lives, the threat of land grabs by both the to-be-resettled and the host communities is a prominent concern for the planned resettlement process of those communities affected by the dam. The risk of land grabs is heightened by the manner in which women, children and the elderly's access to power is limited.

- **Recent conflict?**

The protracted civilian conflict in Mozambique resulted in significant human displacements with consequent disruption of the social fabric. Political intimidation and affiliation to certain factions during the war also translated in to certain individuals attaining greater access to resources than others. This was also reflected in inequalities in land redistribution when refugees returned to their villages. Past repressions continue to negatively affect people's behaviour and political intimidations continue to exist, often exacerbating the marginalization of the most vulnerable segments in the communities.

Technical description

Hazard/risk type: Dam failure, seismic risk, flooding, increased food insecurity, drought, illnesses (i.e. increased HIV/AIDS infection, malaria, cholera, diarrhea, etc), political risk.

During the threat listing and ranking exercises community members also identified other threats to their livelihood security such as: crocodiles, hippopotami, pests, livestock diseases, snakes and baboons.

Type of assessment: Multi-level assessment of the two *bairros* vulnerability to existing and future threats, livelihoods analysis, identification of existing and future hazards.

CRA process

The study focused primarily on community-level field research and made extensive use of participatory methods. Participatory exercises were carried out in both *bairros* and included: community and resource mapping; hazard listing and ranking; seasonal calendars; transect walks; semi-structured interviews and focus groups discussions. In addition, the researcher made extensive use of observational techniques and informal discussions with community members

Vulnerability analysis: The study details the vulnerability context of people living in the two *bairros* through an in-depth analysis of people's livelihood strategies. An multi-level understanding of vulnerability (from the community to the individual) was achieved by looking at how key resources are acquired, owned and transferred in the communities and at the rules and norms that regulates people's behaviour in the two *bairros*. The greater degree of vulnerability of women, children and the elderly, who find themselves most at risk, is in fact closely related to the different ways in which they interact with their physical environment and how they access resources within the boundaries of the existing societal rules and norms.

Capacity analysis: Capacities were also an integral part of the livelihood approach adopted (see below).

Analytical methods: A livelihoods assessment was used to understand existing livelihood strategies of the two communities and how their livelihoods are likely to be affected by the construction and operation of the proposed dam. The analysis included also an analysis of how livelihoods have historically responded to socio-environmental shocks and stresses.

Tools:

- Community and resource mapping;
- Hazard listing and ranking;
- Seasonal calendars;
- Transect walks;
- Semi-structured interviews;
- Focus groups discussions

Notes on Methods and Tools

Resources Available: *Financial resources:* the study was carried out the support of external funding. *Human resources:* the researcher, a student at the University of Cape Town (South Africa) was supported by the Disaster Mitigation for Sustainable Livelihoods Programme (DiMP) in South Africa and by the NGO Justiça Ambiental! (JA!) in Mozambique.

External Specialist Knowledge was available in the form of the environmental impact assessment (EIA)¹ for the proposed dam. It was available to the researcher as background and for comparison of assessments by villagers of potentials risks associated with the dam.

Limitations of the Approach: the following were identified as limitations by the researcher:

- The geographical remoteness of the two *bairros* and the difficult access via road;
- The difficulties in accessing relevant documents by the researcher (i.e. EIA of the proposed dam);
- The need to have a three-way translation (Nyungwe-Portuguese-English). This affected the research because information was often lost in the process and the researcher was not able to engage directly with the interviewees;
- The serious drought affecting the area when the research was carried out. This could have influenced the ranking that identified drought and food insecurity as main threats/priorities;

¹ Unidade Técnica de Implementação dos Projectos Hidroeléctricos (UTIP) 2002. Mepanda Uncua and Cahora Bassa North Project Feasibility Study, Environmental Impact Assessment, Maputo, Mozambique.

- The highly patriarchal social structure of the communities that led to limited participation of women and children in group discussions.

Lessons learned

- The use of a participatory livelihoods approach provides decision makers with the tools for exploring which individuals will benefit most from and who will be most vulnerable to the changes brought about by the construction and operation of a dam.
- Including a risk framework in a developmental approach can support decision makers to: i) determine which individuals are most at risk from a given development; ii) whether or not this risk is of an acceptable level; iii) which mechanisms are available to transfer/minimize the risk; and iv) ensure that the benefits from the proposed development are more equitably shared amongst affected stakeholders.
- Conducting research on the risks of mega-project development together with a national NGO may have more impact on the process than academic research on its own. In this case some of the findings of the research – particularly those pertaining to the seismic risks associated with the dam- have generated a great degree of interest by the media thanks to the support of the organization Justica Ambiental!.

Key words

Mozambique, dam, hydroelectric, risk, social impact, Mphanda Nkuma, vulnerability, livelihoods, food security, Zambezi, gender.

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