

# Natural hazards and education : the impact of floods on primary school education in Zambia

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## VALORISATION ADDENDUM

Zambia has a population of about 12 million people, with a quarter living in flood prone areas. When floods occur, the education of primary school children is affected due to damage to school infrastructure, restricted mobility, forced displacements of households, and the absence of teachers who are already limited in number and in capacity. As a result the education of primary school children is disrupted. Although households themselves engages in *ex ante* and *ex post* coping, this coping may still have adverse consequences as far as children's schooling is concerned. Furthermore, due to the covariate nature of the risks of flooding, measures to build resilience have to take into consideration that the entire community is similarly affected. This requires a co-ordinate approach from the various stakeholders including government, schools and development agencies to ensure that floods do not have adverse impact on the educational achievement of children in Zambia's flood plains.

Based on the above premise, the study has been designed to investigate how floods affect primary education in the flood plains in Zambia, the environmental and socio-economic characteristics that exposes households and communities to the effects of flooding and how households cope with children's education under this circumstance. The interventions from government and other stakeholders to respond to the problems posed by floods and the subsequent impact of those interventions on children's education have also been discussed.

The study focused on the Western Province of Zambia where the Zambezi River crosses. The river creates a large span of area in Western Province of Zambia called the Baroste Flood Plains. In total, the Barostse Plain covers an area of about 550,000 hectares and has an estimated population of 1.2 million. The people residing in this flood plain are from the Lozi ethnic group usually referred to as the "plains or water people". Basic social services, such as roads, sanitation, electricity and potable water services are limited in the plains. Also, education is limited: only primary educational facilities exist. These facilities tend also not to be robust: most primary schools are makeshift structures and are repeatedly damaged during floods.

The livelihood of the community is mainly in subsistence farming, consisting of animal rearing and fishing. During the dry season (between April and October), there are several economic activities in the plain. When the rainy season starts in November, the plains often become flooded and economic activities are reduced. Flooding also damages homes, schools and destroys books and other learning materials. When flooding becomes a disaster, it leads to mass displacements of households, deaths by drowning, and associated calamities including snake bites and disease associated with floods.

The methodology that was used to understand how the above perennial flooding in the Baroste Plain affects primary education and how it can be prevented from disrupting primary education included both qualitative phenomenological and quantitative comparative methods.

Two communities in the same area (those affected by floods and those not affected by floods) during a 5 years period (2008 to 2012) were drawn for the study. The rationale for the qualitative approach was to conduct an in-depth investigation and capture the perceptions - based on 'lived experiences'- of the local communities in flood prone areas and the perceptions of stakeholders from government and non-governmental organizations (NGOs) on floods impact on primary education, household vulnerability factors, communities' coping mechanisms and the effects of stakeholder interventions on primary education. The quantitative inquiry was done using a comparative analysis of school records from 20 selected primary schools in the 2 communities and from the MoE to understand the relationship between the incidence of floods and the state of primary education.

It was found that children in the flood plains compared to those in the upper land have low net school enrolment, the rate of repeating classes is high, dropout rate is high and performance in national examination is low. Schooling for children is not an utmost priority for the communities in the flood plains, as reflected in the coping strategies of households. For instance households tend to prioritize coping mechanisms that result in quick income and more secured livelihoods. Education is often not prioritized as most parents have not acquired higher level education themselves (secondary and/or tertiary), therefore the value attached to education is minimal. Moreover, the motivation of parents to send their children to school is limited due to the cost involved. Many parents cannot afford the cost, especially after primary school.

The general environment in which children attend primary school in the Barotse Plain is not conducive for learning. Most schools are makeshift structure. When floods occur, the structures are damaged, school materials lost. Despite being makeshift, repairs take an unexpectedly long time. Hygienic sanitary facilities are missing. Other basic services such as hospitals, safe drinking water, electricity and good roads are also not available. This situation diminishes the motivation and the learning outcomes of children.

Another major problem for primary education in the flood plains, especially for younger children in lower grades (who are normally younger than 10 years) is the difficulty encountered in accessing schools even during low-intensity floods. Often they are excluded from education for a period of 4 to 5 months. The water levels are simply too high for the children to walk to school and they are not strong enough to paddle to school on locally crafted boats. Even for those who can paddle with boats, it is very risky and therefore most parents do not allow the children to travel to school during the floods period. Due to increased flooding in recent years (a possible result of climate change), the period of flooding has increased from 4 months to 6 months, meaning that pupils are absent from school for a significant part of the school year.

The ratio of teacher to pupil is much lower at schools in the flood plains than in schools in the upper lands. Most teachers in the flood plains are not experienced: they tend to be teachers who have just completed high school (sometimes without achieving their teaching certificate) and need a career start. They take up teaching jobs in the plains as a last resort, when all other options have failed. It was also found that teachers in the flood plains are often not motivated due to the challenges associated with floods in the plains.

A major contribution of the present study was to identify the vulnerabilities of households and communities to the impact of floods, and how these, and their coping, negatively affected primary school education. The continuous habitation of people in the plains due to their livelihood strategies, culture and traditional attachment put them at a risk. The government's attempts to relocate people permanently from the flood plains have failed because better alternatives have not been provided. The existing early warning systems that are supposed to inform households of the onset and intensity of floods are not effective. Most households do not have financial capacity to have alternative homes in the upper land. The local administration (government) in

the Barotse Plain is weak, making it difficult for local authorities to limit or respond to the covariate risks facing the flood plain communities.

The vulnerabilities of communities and their children's education to flooding are often due to poor coping mechanisms. This study established that many of these coping mechanisms have a negative impact on children's education. In fact little resources are invested in education. Some households cope by constructing houses on top of mounds to protect their houses from the damage of flood waters. Others construct alternative homes in the upper land, so that they relocate on a temporary basis during the flood period.

Boats have been known to be of great importance for transporting people during the flooding period. Diversification of livelihoods with some families cultivating crops, fishing and rearing animals at the same time ensured that not all is lost during difficult times, but children are required to provide part of the labor. There are situations where households move to bigger towns to look for jobs on a temporary basis during the flood periods in order to earn a living and return back to the plains when water recedes. In most cases, when households move to the upper lands to cope, children are subjected to work to assist in the upkeep of the homes instead of going to school.

The government and other stakeholders provide support to communities mainly during and after floods – this support is important given the covariate nature of the risk of flooding. This thesis found that some of these interventions do indeed have a positive effect on children's education, but can be more effective. For instance, when households are displaced and placed in camps, the government and humanitarian organizations provide some relief aid with food, medical supplies and non-food items. The government makes arrangements through the MoE to enroll children in upper land schools close to the camps and children with special needs are also catered for. Some families receive support from relations abroad (remittances) which helps the home upkeep and in some cases part of the money is used for children schooling in the upper lands. As the water recedes and households return to the flood plain, government and humanitarian agencies support the repatriation process. Support is also provided to rehabilitate public services after the floods, though that support is not on a large scale and also not immediate.