

# Flooding, resettlement, and change in livelihoods: evidence from rural Mozambique

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*Post-disaster development policies, such as resettlement, can have major impacts on communities. This paper examines how and why people's livelihoods change as a result of resettlement, and relocated people's views of such changes, in the context of natural disasters. It presents two historically-grounded, comparative case studies of post-flood resettlement in rural Mozambique. The studies demonstrate a movement away from rain-fed subsistence agriculture towards commercial agriculture and non-agricultural activities. The ability to secure a viable livelihood was a key determinant of whether resettlers remained in their new locations or returned to the river valleys despite the risks posed by floods. The findings suggest that more research is required to understand i) why resettlers choose to stay in or abandon designated resettlement areas, ii) what is meant by 'voluntary' and 'involuntary' resettlement in the realm of post-disaster reconstruction, and iii) the policy drivers of resettlement in developing countries.*

**Keywords:** floods, livelihoods, Mozambique, resettlement, Sub-Saharan Africa

## Introduction

Development policies implemented after a natural disaster can have major impacts on communities. On the one hand, there is growing recognition that the social upheaval that often follows a natural disaster can provide an opportunity to improve the living conditions of the poorest and most vulnerable members of society (Pelling and Dill, 2010). On the other hand, natural disasters can lead to the long-term impoverishment of those affected through a loss of social networks and control of physical resources. Involuntary resettlement—defined as the planned, physical displacement of people to a new, permanent location—has been a preferred approach to post-disaster reconstruction in developing countries in recent years (Badri et al. 2006). Recent high-profile disasters, such as the floods in Pakistan in 2010, combined with increasing concern about climate change, have raised the profile of resettlement as a potential response to climate-related disasters among governments and the international development community (Bogardi and Warner, 2008).

One country that has been grappling with these issues in recent years is Mozambique, ranked 185<sup>th</sup> out of 187 countries in the United Nations Development Programme (UNDP)'s *Human Development Report 2011* (UNDP, 2011). More than 80 per cent of Mozambique's population depends on agriculture (ISDR and The World Bank, 2009), much of which takes place in the country's extensive low-lying floodplains where the best soils are located. These areas, however, regularly experience extensive flooding,

which can rapidly overwhelm local coping capacities (Brouwer and Nhassengo, 2006). Probably the best known disaster occurred in 2000 when widespread flooding in south and central regions resulted in 700 deaths, the displacement of some 491,000 people, and millions of dollars of damage (The World Bank, 2000). However, major flooding events have become nearly an annual event over the past decade. For example, the floods in the central Zambezi river valley in 2007 affected around 285,000 people, with more than 163,000 seeking shelter in government-managed accommodation centres (Stal, 2009).

The Government of Mozambique has responded to the flooding problem—with the support of international donors—with a suite of disaster risk management programmes, including early-warning systems, risk mapping, and community awareness and education projects (see ISDR and The World Bank, 2009). A less recognised component of these programmes, though, is the government's policy of permanently relocating farmers from floodplains to higher areas of land. The overall number of people who have moved is not clear, although estimates exist in relation to individual flooding events. For example, in the months and years following the 2000 floods, approximately 43,400 families were permanently relocated in a programme planned and executed by the Ministry of Environmental Affairs (MICOA) and the Ministry of Public Work and Housing (MOPH) at an estimated cost of USD 13 million (The World Bank, 2000). The government also reported in May 2007 that it had appealed for USD 70 million to resettle permanently 140,000 people who had been displaced by the Zambezi floods (WFP, 2007).

Planned resettlement, it is argued, is a key component of vulnerability reduction in areas at risk of flooding in Mozambique, and brings resettlers closer to international development programmes and government services (OCHA, 2001). But little is known about the long-term effects of such programmes on livelihoods, and their success or otherwise in helping to resolve the problems posed by flooding (Wiles, Selvester, and Fidalgo, 2005). Most reports to date have been relatively anecdotal in nature, and the debate rarely has extended beyond the development agencies working with resettled populations in the country (cf. Bobb, 2007). This is at a time when there are calls to improve understanding of different approaches to enhancing local development by conducting comparative analyses of displacement and resettlement in developing countries (Koenig, 2005, p. 133).

This paper helps to bridge this evidence gap by presenting comparative case-study research of how and why resettlers' livelihood activities change as a result of resettlement, and relocated people's views of such changes. It examines two rural communities in Gaza and Manhiça Provinces in southern Mozambique that underwent the resettlement process following the floods of 2000 when populations living in the Incomati and Limpopo river valleys were moved to areas of higher land. Mozambique is a particularly rich case-study context due to its high exposure to climate extremes and the relatively advanced nature of its resettlement programme. It is also representative of the challenges faced by many other countries in eastern and southern Africa that are developing policies and interventions in response to climate shocks and stress.

In this way, the issue of resettlement, which is of both applied and theoretical importance to the international disaster risk management community, can be investigated empirically, and the results used to frame relevant questions about other settings (cf. James, 2006).

The rest of this paper is structured as follows: section two reviews the linkages between livelihoods, natural disasters, and resettlement, while section three explores this nexus within Mozambique, paying particular attention to the country's historical context. Section four explains the methods that were employed to collect data, and section five presents the case-study findings. Section six connects these findings to wider debates about resettlement theory and practice in Mozambique and beyond. The final section contains some conclusions.<sup>2</sup>

## **Livelihoods, natural disasters, and resettlement**

Many discussions of disasters and their consequences start with an assessment of vulnerability: the well-being of individuals, households, and communities in the face of a changing environment (Coetzee, 2002, p. 33). According to the Sustainable Livelihoods Framework of Scoones (1998), this level of well-being is directly related to access to a range of resources—economic, human, natural, and social capital—which are combined in the pursuit of different strategies—agricultural intensification or extensification, livelihood diversification, and migration. Livelihoods is a useful concept when considering the impacts of a disaster because it helps to describe how social units draw on and transform different bundles of resources or assets into readily usable goods to respond to and cope with external sources of stress. Different strategies might be employed in response to different types of impact, or existing strategies might be intensified and new strategies developed (Moser, 1996). In conditions of extreme stress, strategies can deplete a household's asset base to a point at which the damage done is irreversible, resulting in extreme vulnerability (Devereux, 1999).

Despite the applicability of the livelihoods approach to understanding disaster effects and post-disaster recovery and reconstruction, there is relatively little empirical evidence of the livelihood implications of resettlement due to environmental impacts. The focus here is on planned resettlement as a distinct area of policy and practice initiated by governments, development agencies, and private-sector agents as opposed to forced displacement owing to disturbances such as social conflict, which generally is not intended and can be temporary in nature. Much of the planned resettlement literature concerns large-scale floodplain-related programmes in Asia. The Asian Disaster Preparedness Centre (ADPC) has reported on these schemes, concluding that 'resettlement can be favourable in certain conditions where financial instruments and resources are available. Yet, in most parts of Asia, this mitigation measure has proven to be less successful, costly, and economically, politically and socially sensitive' (ADPC, 2005, p. 100). Of particular concern is the possibility that powerful actors can use the excuse of reducing community exposure to environmental hazards to conduct forced migration for political or economic gain (Barnett and Webber, 2009).

In addition to flooding, livelihood studies have been undertaken in response to earthquakes (Badri et al., 2006), the Indian Ocean tsunami of 2004 (De Silva and Yamao, 2007), and landslides (Kjekstad and Highland, 2009). As in the case of Asia, the studies' authors are able to point to examples of success, but conclude that, overall, relocation has resulted in major socioeconomic challenges for affected populations. In Africa, there is particular concern about the Government of Ethiopia's resettlement and 'villagisation' programmes, which, in the past few decades, have moved millions of people from drought-prone highland areas in the west of the country to more fertile regions in the south, and led to considerable hardship among those relocated (Hammond, 2008). The drivers of Ethiopia's schemes are complex, and rooted in concerns about overpopulation and agricultural stagnation (Devereux, Teshome, and Sabates-Wheeler, 2005), although critics also have pointed to covert political aims of the government (see, for example, Woldemeskel, 1989).

Given the relative scarcity of information on resettlement and the environment, Warner et al. (2009) have suggested that policymakers draw on existing knowledge in the field of forced relocation derived from economic development projects, such as hydropower and resource extraction. Far more research has been conducted in this area because development-induced resettlement allows for more comprehensive and participatory planning by governments and private-sector agents than often is the case following a natural disaster (Badri et al., 2006). Large dams have been scrutinised most in this respect, most notably the Chinese Three Gorges Project (cf. Li and Rees, 2001), although studies of large-scale irrigation projects (Hussain, 2007) and conservation-led displacement (Cernea and Schmidt-Soltau, 2006; Seymour, 2008) also have been undertaken. Most influential here is the 'livelihood risks and reconstruction' model of Michael Cernea (1997), which identifies key risks and impoverishment processes during resettlement, including homelessness, joblessness, and landlessness, and recommends risk reversals through explicit strategies backed up by adequate financing. This approach has led to the compilation of a considerable body of evidence to demonstrate the negative consequences of development-induced resettlement as a poverty-causing phenomenon (Cernea, 2008, p. 5).

In recognition of these difficulties, policymakers have paid greater attention to improving the outcomes of involuntary relocation of poor and vulnerable people over the past decade. This has involved a shift away from an economics-centred concept based on compensation of losses incurred towards the reconstruction of resettlers' livelihoods for which broader development investments are necessary (Cernea, 2004). However, one should not assume that special development projects intended to remedy the negative outcomes of relocation will necessarily result in major improvements in resettlers' livelihoods. For example, Mathur (2008) shows how, in a major resettlement programme conducted by Coal India Limited, subsistence farmers struggled to adopt new non-farm, self-employment options being offered by the company. Greater understanding of the various opportunities and challenges associated with linking development assistance with resettlement theory and practice is required therefore before real improvements can occur in peoples' lives. With these issues in mind, the paper next considers the connections between flooding, livelihoods, and resettlement in Mozambique.

## Flooding, livelihoods, and resettlement in Mozambique

Research on livelihoods in Mozambique has alternated between an emphasis on the localised, contextual aspects of rural poverty on the one hand, and the wider structural features on the other. For example, Pitcher (1998) takes a localised perspective, highlighting historical differences among regions and the need to disaggregate the complexity of rural livelihoods. Cramer and Pontara (1998), however, see broad, historic patterns of ‘proletarianisation’ and accumulation of capital reflected in the lives of people. O’Laughlin (2002) argues that Pitcher is correct to stress diversity in rural livelihoods but wrong to dismiss wider structural considerations, such as Marxist class analysis. She goes on to assert that the multiplicity of, and the variation in, rural livelihoods in Mozambique today are the outcome of a historical process of forced labour during the colonial period. The approach of this paper, therefore, is to examine livelihood activities and change in a situational, case-study-based manner, and to locate these specific places within a broader historical context.

In Mozambique, this context is provided by the governing state, which, in addition to subsistence farmers, has played a crucial role in shaping land-use and livelihood patterns in and around river basins. Since the late nineteenth century, Mozambique has moved through four major socioeconomic and political transitions characterised by Portuguese colonialism, Mozambican independence and implementation of socialist policies, a protracted and low-intensity civil war, and a more recent commitment to the privatisation of state assets (Pitcher, 1998). Associated with these transitions is a series of government-led interventions, including forced labour and agriculture schemes, ‘villagisation’ (*aldeamento*), and mass resettlement.

Agricultural policy also has had an effect on the shaping of land use, most notably government reforms during the early socialist period. These allowed for four types of farms: state, cooperative, private, and ‘family’ (Wardman, 1985). Whereas state farms were used to overcome food shortages, the government’s long-term plan, the socialisation of the countryside focused on cooperatives. As set out in the Cooperative Law of 1979, unions of cooperatives were formed to act on behalf of ‘cooperativists’ and were guided by a constitution (Wardman, 1985). Private farms, though, represented the remnants of the colonial period and the government did not actively encourage them (Bowen, 1989). ‘Family’ farms, or individual smallholdings, which usually comprised between one and three hectares per person, were the form of agriculture most neglected by government.

Table 1 provides a summary of Mozambique’s transitions, their main characteristics, and the economic and political motivations behind state-led interventions in rural areas. The table is based on a literature review and informal discussions with Mozambican key informants. It helps to develop the wider historical perspective referred to above.

Table 1 shows that the Mozambican state, whether colonial or independent, has attempted repeatedly to gain control over the national territory and its various populations for a variety of economic and political reasons. Many of these experiences appear to have been negative for the populace. For example, there was widespread

**Table 1.** Major socioeconomic and political transitions in Mozambique, 1891–present day

Period	Characteristics	Interventions	Economic motivations	Political motivations
Colonialism, 1891–1975	<ul style="list-style-type: none"> <li>• Commencement of modern colonial period.</li> <li>• Mass labour migration to South African mines.</li> <li>• Forced labour (chibalo) and agriculture schemes.</li> </ul>	<ul style="list-style-type: none"> <li>• Land withdrawn from indigenous agriculture in major river valleys in favour of Portuguese farmers.</li> <li>• Resettlement of residents from dispersed lowland homesteads to highland ‘villages’.</li> </ul>	<ul style="list-style-type: none"> <li>• Portuguese labour requirements (Briggs and Velton, 2002).</li> <li>• Prioritisation of the needs of poor Portuguese farmers by colonial government (West and Myers, 1996).</li> </ul>	<ul style="list-style-type: none"> <li>• Rationalisation of state control at the local level (Kyed and Buur, 2006).</li> </ul>
Socialism, 1976–82	<ul style="list-style-type: none"> <li>• Independence and implementation of socialist policies.</li> <li>• Nationalisation of the country’s institutions and industries.</li> <li>• Adoption of a development strategy based on agriculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Villagisation programme based on population resettlement and transformation of productive relations.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic crisis caused by mass exodus of Portuguese settlers and the laying off of Mozambican workers from South African mines (van den Berg, 1987).</li> </ul>	<ul style="list-style-type: none"> <li>• Socialisation of population, and increase in access to social services (Coelho, 1982).</li> </ul>
Civil war, 1983–89	<ul style="list-style-type: none"> <li>• South African policy to destabilise Mozambique.</li> <li>• Mass migration away from rural conflict zones to protected urban and agricultural production centres.</li> </ul>	<ul style="list-style-type: none"> <li>• Slowdown of villagisation programme.</li> <li>• Government focus on development of major irrigated river valleys.</li> <li>• Agricultural policies to prioritise and designate land use.</li> </ul>	<ul style="list-style-type: none"> <li>• Requirement to maintain national economy in face of destructive internal conflict (Dinerman, 2001).</li> <li>• Financial failure of state-owned farms.</li> </ul>	<ul style="list-style-type: none"> <li>• Government loss of control of rural areas to South African- and Rhodesian-supported war bands (Cramer and Pontara, 1998).</li> </ul>
Privatisation, 1990–present day	<ul style="list-style-type: none"> <li>• New constitution unveiled by Mozambican government denouncing socialist policies.</li> <li>• End of civil conflict and introduction of multi-party democracy.</li> </ul>	<ul style="list-style-type: none"> <li>• 2001 Public Reform Strategy identifies privatisation and decentralisation as main ways to improve state services.</li> <li>• Decentralisation of key rural services including agriculture, land, and water policy.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing national economic crisis.</li> <li>• Donor policy on Structural Adjustment Plans and Poverty</li> <li>• Reduction Strategy Papers.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognition of failure of the socialist system.</li> <li>• Need by government to regain influence in rural areas.</li> </ul>

discontent among rural populations about the creation of communal villages during the independent government's period of socialisation. This is because the problems in such settlements were not very different from the ones farmers had faced previously during the Portuguese *aldeamento* process. Communal villages often were badly designed (Coelho, 1982) and residents were reluctant to exchange the fertile, irrigated lowlands of the rivers for new places they knew would be less productive (Kyed and Buur, 2006). The second wave of displaced persons in the period after independence angered smallholder farmers, many of whom left the communal villages at the earliest opportunity (Myers, 1994).

There is evidence that drought and flood have also had an influence on the historical pattern of intervention in Mozambique. For instance, in 1977, at the beginning of national independence, the government's new villagisation programme was accelerated by the occurrence of widespread floods, which led to mass resettlement schemes from floodplains to higher areas of land, and limited families to one hectare of land each (Boudreau, 2001). However, as decentralisation has progressed from the early 1990s to the present-day, direct government intervention in rural areas has lessened or taken new, more subtle forms (cf. Kyed and Buur, 2006). Concurrently, displacement and resettlement policy has been linked to flooding increasingly by researchers and policymakers. This has produced the complex contemporary situation in which mass, post-disaster displacement is taking on a more and more permanent character, partly due to government and NGO incentives, such as better housing and localised development projects, aimed at areas of higher land (Stal, 2009). The paper now turns its attention to two such regions where these processes have occurred.

## Study locations

Mozambique is divided into 10 provinces and one city (Maputo, the national capital), which are, in turn, subdivided into districts, and then localities and *bairros* (villages). Research was carried out in two resettlement *bairros* in southern Mozambique. The first case study was conducted in Chicomo Locality, which is located in Manhiça District, Maputo Province, and the second in Jofane Locality, which is located in Chokwé District, Gaza Province.

### Case study one

Chicomo Locality was situated in the *zona alta* (high area) approximately two kilometres west of the Incomati River and one kilometre from the national road, and about 150 kilometres from Maputo city. It was populated by some 9,000 people living in five *bairros*, and was served by one primary school but no hospital. Chicomo was established as a communal village following the Incomati River floods of 1977. Since then there have been two major movements of people in and around the area: the first was linked to the civil war in the 1980s, when families fled to the relative safety of Manhiça town and Maputo city; and the second after the floods of 2000, when



thousands of families were displaced to the high area. Prior to 2000, local services and community development projects were relatively scarce in Chicomo, and were initially limited to an international NGO called GlobalAid, which operated primarily in the low area. Following the floods, displaced people were accommodated and supported in two emergency settlements—constructed by the government and GlobalAid—out of a total of 18 that had been erected in Manhiça District. As the waters began to subside in subsequent months, the government encouraged many families to stay in these settlements on a long-term basis and to continue farming in the low area. Settlers were assisted through the provision of World Food Programme (WFP) food handouts and, in the longer term, via the provision of cattle and water pumps through a food security programme implemented by GlobalAid. Government services in the area included local radio early-warning schemes, extension services, and veterinary support.

Following consultation with local government and NGOs in Chicomo, the resettlement village, 1<sup>st</sup> Bairro, was selected as the first case-study community as this was judged to be representative of such sites in the district. It was located in the western area of Chicomo around 500 metres from the national road. The settlement was home to approximately 1,200 people, 290 (24 per cent) of whom were adults (that is, more than 16 years of age). It was made up of 301 pole and reed houses and 10 latrines.

Two general stores in the *bairro* supplied a range of basic goods. The community had four boreholes for water supply—provided by GlobalAid—but no electricity. In the centre of the *bairro* there was a meeting point (the *centro*) where local authorities held community meetings approximately once a month. Buses and minibuses (*chapas*) to Maputo city were frequent. The *bairro* was led by a government-based ‘secretary’ and his group of advisers who were mainly male traditional leaders.

## Case study two

Jofane Locality consisted of some 20,000 people living in six *bairros* located 10 kilometres from the national road and a four hour drive from Maputo city. It was located in the *zona alta*, approximately five miles from Xaia town in the *zona baixa* (low area) and seven miles from the Limpopo River. During the colonial and early socialist period, Chokwé District was known as the ‘granary of Mozambique’ because one-half of the country’s cereal output was produced there (Wardman, 1985). Jofane and Xaia developed as a result of this activity, and colonial buildings and residences were still in use in the settlements at the time of the research. Due to its history of intensive agricultural production, there have been three major population movements in the region since the mid-twentieth century:

- The first occurred in the 1950s when the colonial government established the *Colonata da Vale do Rio Limpopo* (Colony of the Limpopo River Valley), the largest irrigation scheme in the country, covering more than 30,000 hectares. This resulted in many farmers living in the territory of the scheme being forced to abandon their lands and move elsewhere (Bowen, 1989).



- The second happened during the civil war, which saw a large influx of people due to government fortification of the district.
- The third took place during the 2000 floods when Jofane's population size increased rapidly to around 50,000 owing to the arrival of people from surrounding areas, many from Xaia (Kondo et al., 2002). Many people were temporarily accommodated in emergency settlements and provided with humanitarian relief by WFP. Once the floods subsided, the temporary accommodation sites were disassembled and families returned to their old residences in the *zona baixa*. WFP food hand-outs continued until 2005.

In 2001, the national NGO, the Community Development Group (CDG), initiated a project to construct a resettlement community in Jofane called 2<sup>nd</sup> Bairro. It began by conducting a survey in Xaia to identify flood-affected families that lacked cattle or land. These families, which were enrolled to participate in the construction of 2<sup>nd</sup> Bairro, were permanently relocated to the new settlement in 2003. At the same time, the CDG designated a section of agricultural land approximately four kilometres from the settlement and provided residents with one hectare each from this. Residents were organised into a cooperative called the Union of Agricultural Producers for commercial tomato production. All agricultural services were provided via this Union, including credit and extension services. 2<sup>nd</sup> Bairro was located in the south of Jofane Locality, roughly two miles from its commercial centre. Most respondents claimed to be from Xaia, although one-third originated in the nearby district of Chibuto from where they had been displaced by civil war in the 1980s. The settlement was composed of 206 concrete and zinc-roofed houses, accommodating approximately 950 people, 245 (26 per cent) of whom were adults.

The settlement was relatively unique as its houses were made from 'modern' materials, with concrete floors and walls, and zinc roofs. It was chosen as a study site because the relatively resource-rich CDG intervention provided an interesting comparison to the situation in Manhiça District where the work of government and GlobalAid was distributed across a larger number of settlements. It was served by a bakery, market, plant nursery, and primary school, and had five boreholes. Electricity was available in all homes but most residents reported being unable to afford it. The *bairro* was led by a 'secretary' who worked closely with a 'vice-secretary'. There was regular public transport between Xaia, Jofane, and Chokwé town by *chapa*.

## Methodology

The empirical information in this paper is based on data collected between 2004 and 2006. The research design and methods were subject to the standard ethical review procedures employed by the authors' research institutions. Permission was acquired from local leaders and district government before data collection commenced. Semi-structured interviews were chosen as the main method of data collection as they were considered to be the most effective way of eliciting accurate information

from respondents on livelihood changes and their causes. They were considered to be more efficient than asking respondents detailed questions about specific assets as some found it difficult to recall accurately information from before the floods of 2000. In each case study, 35 group-based interviews were held with men and 35 with women; two individuals per group were consulted, resulting in a total of 140 people. This sample size represented 48 and 57 per cent of the total adult population in 1<sup>st</sup> and 2<sup>nd</sup> Bairros respectively. During the interviews, respondents were asked to supply information on basic household characteristics, and to identify and rank the activities that provided them with the greatest sources of income both before and after the floods. Discussions also were held with respondents on the causes of change in livelihoods, and their views on quality of life before and after the floods.

For the purposes of the study, a household was defined as those in the same compound, and who worked or contributed food or income to the unit. It was decided to interview in groups of two as respondents reported feeling more comfortable in the presence of the interviewer and translator this way. Groups were chosen in consultation with key informants to represent the main formal and informal institutional divisions present based on gender, farming practices, and local status as a leader or non-leader. This helped to ensure that participants represented a cross-section of the communities. In addition, secondary data on local services and development initiatives in the form of local government and NGO reports were collected. The mixture of methodological techniques ensured that information could be cross-checked. Participatory farm visits, attendance at local NGO meetings, and time spent living in both communities, as well as repeat visits, also aided the triangulation process.

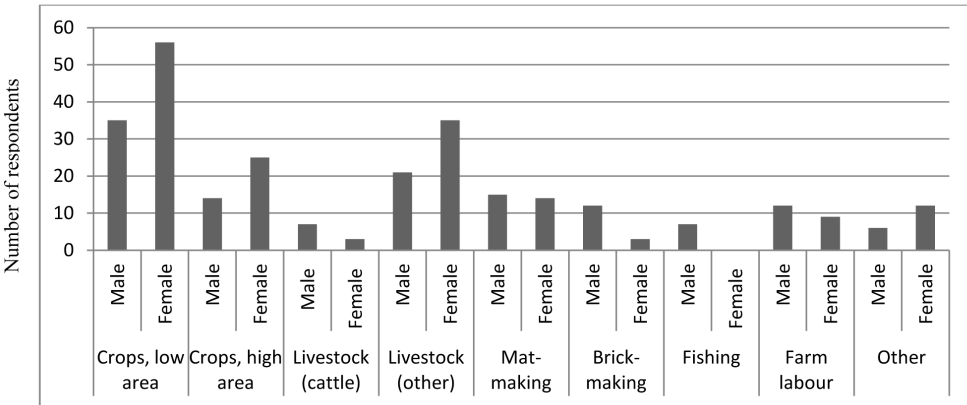
Data were analysed using counting techniques, and a process of coding, categorising, linking, and connecting data bits to explore patterns and trends. Preliminary results were shared and discussed with community members, local government, and NGOs in workshop format. These sessions provided an opportunity to feed back findings to local stakeholders and for the researchers to discern what sense was being made of data interpretations. In the next section, these findings are first presented for 1<sup>st</sup> Bairro, Chicomo Locality, and then for 2<sup>nd</sup> Bairro, Jofane. This is followed by a discussion that draws out common themes in the two case studies.

## **Resettlement and livelihood changes in the case-study communities**

### **1<sup>st</sup> Bairro, Chicomo Locality, Manhiça**

Eighty-five per cent of households in 1<sup>st</sup> Bairro were in possession of a 'family' farm, which meant that the same family had owned a small plot of land for many generations. This is because 1<sup>st</sup> Bairro residents had fallen outside of the wider communalisation and land redistribution process that took place in the late 1970s when Chicomo Locality, of which resettlers were now a part, had been formed. Cattle ownership was relatively rare, with only seven households in possession of one or more cows, although

**Figure 1.** Participation of men and women in livelihood activities, 1<sup>st</sup> Bairro



Source: authors.

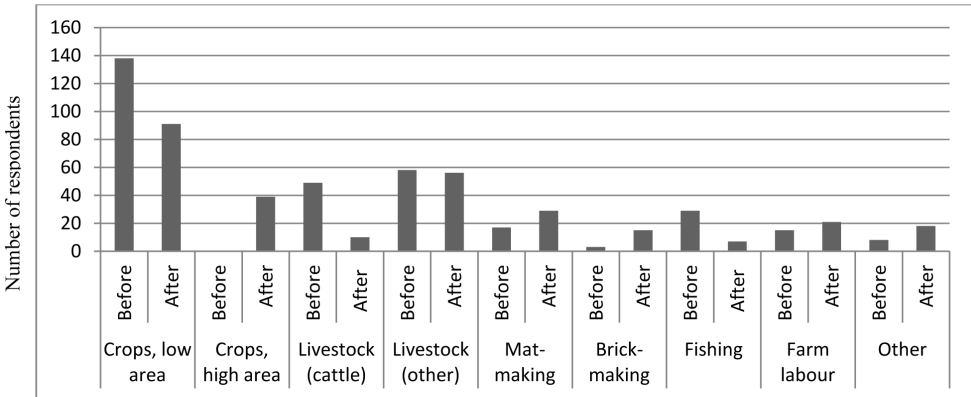
approximately one-third of households owned livestock of some kind, such as chickens, goats, or pigs. In addition, one-quarter of households reported the absence of a male family member at the time of the research owing to labour opportunities in Maputo city or South Africa’s mines. Most of these individuals regularly sent back a proportion of the money earned to their families in the form of remittance. Figure 1 shows the main livelihood activities that male and female respondents were engaged in at the time of the research (2004).

Figure 1 shows that agriculture in the *zona baixa* was the most important activity, particularly for women. This reflects the fact that ‘family-based’ agriculture is commonly associated with women in southern Mozambique due to a significant part of the male labour force traditionally being absent because of mining (Bowen, 1989). This form of agriculture was subsistence-based, focusing on staple crops such as beans, cassava, and maize, although half of the respondents reported that they also took produce such as peanuts or tomatoes to the nearby market in Manhiça town for cash. Only five 1<sup>st</sup> Bairro farmers reported having access to irrigated agriculture, for which water was taken direct from the Incomati River, although no one could afford artificial fertiliser on a regular basis. Agriculture was supplemented by a range of other activities, the most important of which were brick- and mat-making and fishing. On the whole, Figure 1 shows that men, who traditionally took on the role of seeking alternative income sources to subsistence agriculture, were more active in these supplementary activities than women. Farm labour served as a seasonal form of local employment, and 25 men and 26 women reported being active at the nearby Magara commercial sugar farm.

As a result of the 2000 floods and subsequent resettlement, the livelihood activities that people relied on in 1<sup>st</sup> Bairro changed substantially. Figure 2 sums up these changes before and after 2000.

Figure 2 shows that the number of surveyed individuals engaged in low-area agriculture fell from 138 to 91 (99 to 65 per cent) following resettlement, a drop of almost one-third. Respondents reported that this change was due to the much greater distances

**Figure 2.** Livelihood changes in 1<sup>st</sup> Bairro before and after resettlement



Source: authors.

from the settlement to farms in the *zona baixa*, a general lack of seeds and equipment, and a shortage of cattle for ploughing. Owing to the floods, cattle ownership declined from 45 to 7 households despite the restocking programme run by GlobalAid. This finding reflects a study by Wiles, Selvester, and Fidalgo (2005) who reported that depletion of cattle remained a problem in rural areas of Mozambique, one that international donors have yet to address adequately. In the face of these difficulties, 39 individuals (28 per cent) reported taking up maize cropping in the *zona alta*, although all respondents reported experiencing drought and difficulties adjusting to the sandier soils. The majority opinion, however, was that family-based farming in the low area was still the most important activity because these farms had been in use for generations, and people had an attachment to them.

Outside of agriculture, there was a rise in participation rates in other areas of activity, with the exception of fishing. The 1<sup>st</sup> Bairro Secretary stated that:

*At the moment the people do not have food because the farms are producing nothing. So, as the Secretary, I have to advise people to go to the low area and get material for mats, or to make bricks.*

Most resettlers were unhappy with these changes and dissatisfaction with the resettlement process was common among respondents. When settlers were asked if life had improved, stayed the same, or got worse because of resettlement, 93 (66 per cent) said that it had got ‘worse’. The dissatisfaction rate among women, though, was higher (74 per cent) than that among men. This is possibly because resettlement in this case appeared to act as a driver of livelihoods diversification, which, as Figure 2 shows, was mainly a male-based strategy. By increasing the distance between people’s homes and the low area, resettlement made agriculture more difficult, and this was an activity more commonly pursued by women.

This dissatisfaction was reflected by the fact that 60 houses (20 per cent of the total) in 1<sup>st</sup> Bairro had been abandoned by their occupants since the creation of the settlement

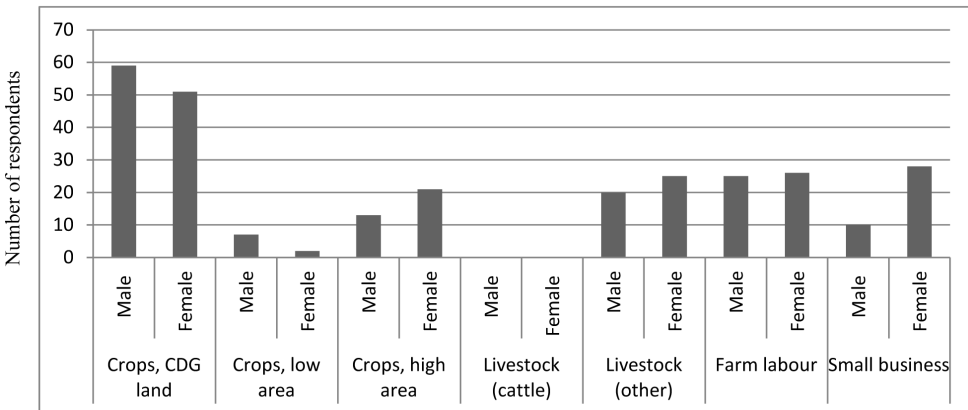
in 2001. Of these 60 houses, 10 were no longer habitable and the rest were deserted by their owners in favour of the low area. About 35 of the abandoned houses had new owners, with the rest remaining empty, a finding that resonates with the claim of Patt and Schroter (2008) that Mozambique’s livelihoods resettlement programme ‘failed’ due to the abandonment of resettlement sites in favour of the low area. The majority of respondents (83 per cent) noted that returnees had been scared to go back to the low area because of the risk of flooding, but they did not have any choice owing to a lack of livelihood opportunities in the *zona alta*. The remaining 17 per cent stated that people returned voluntarily due to a desire to live on their ancestral family land.

**2<sup>nd</sup> Bairro, Jofane Locality, Chokwé**

Eighty per cent of households in 2<sup>nd</sup> Bairro were in possession of a CDG hectare. No households were found to own cattle, although the Union possessed eight cows under a joint-ownership scheme that were used for ploughing. Like 1<sup>st</sup> Bairro, remittances were a common source of household income, with one in five households reporting that a male household member was working in South Africa at the time of the research (2005). This corresponds with the work of Boyd, Pereira, and Zarembo (2000) who found that remittances via migrant labour were a major source of income in Gaza Province, with up to 50 per cent of households declaring this form of support. Figure 3 shows the main livelihood activities in which male and female respondents were engaged.

Figure 3 shows that people’s efforts were focused on land provided by CDG via the Union, with 59 men and 51 women out of a total of 140 (79 per cent) stating that this was their main source of income. Whereas women in 1<sup>st</sup> Bairro were more involved than men in subsistence agriculture, in 2<sup>nd</sup> Bairro a more even gender balance was observed, a reflection of the fact that CDG attempted to balance male and female participation in the Union. In contrast to 1<sup>st</sup> Bairro, almost no agricultural production took place in the *zona baixa*. This is because approximately one-half of respondents

**Figure 3.** Participation of men and women in livelihood activities, 2<sup>nd</sup> Bairro



Source: authors.

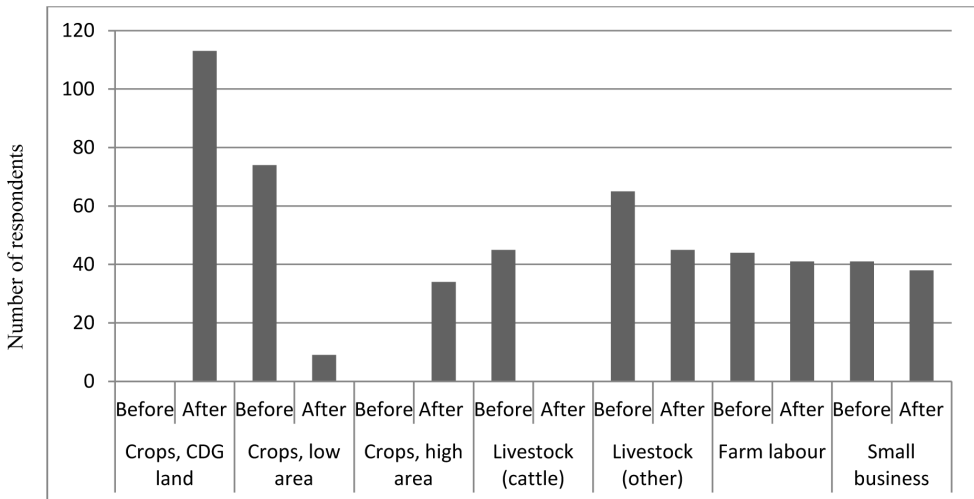
interviewed previously had been landless in the low area due to a combination of government appropriation of land during the colonial and socialist eras, and overcrowding because of an influx of migrants during the civil conflict. Respondents also reported that only the wealthiest landowners, corresponding to the old ‘private’ farm owners, could afford to maintain two farms in the high and low areas simultaneously. Two of these individuals were resident in 2<sup>nd</sup> Bairro at the time of the research.

Owing to limited CDG resources, 20 per cent of 2<sup>nd</sup> Bairro households were unable to secure a hectare of land via the Union. Consequently, some resettlers sought other ways to make a living. The most important of these was casual farm labour on larger private farms in the low area, with 25 men and 26 women out of a total of 140 (36 per cent) regularly engaged in this activity, a reflection of the history of agricultural exploitation in the region. Small informal businesses, such as selling clothes or food imported from South Africa, also were relatively important, especially for women. During interviews, many respondents related the high rate of female involvement to the investments made by the socialist government in the district in the early years of independence. Education of women was an important component of this investment, corresponding to a higher literacy rate and a greater ability to do business. To illustrate, 13 out of 70 women reported being literate in the first case study as compared to just three in the second.

As in 1<sup>st</sup> Bairro, the floods of 2000 and the subsequent resettlement programme caused peoples’ livelihoods to change. Figure 4 summarises these changes before and after 2000.

Figure 4 shows that resettlement to 2<sup>nd</sup> Bairro resulted in almost complete abandonment of agricultural production in the low area in favour of CDG land. This is because land under the Union was located closer to the community and was regarded as more profitable. Nearly all respondents interviewed expressed a preference for CDG

**Figure 4.** Livelihood changes in 2<sup>nd</sup> Bairro before and after resettlement



Source: authors.

land. As in 1<sup>st</sup> Bairro, some residents attempted to grow crops close to their homes in the high area, although people clearly were constrained by the drier, unfamiliar soils. There was also a small drop in participation rates in farm labour and small businesses as people moved on to the CDG land, yet supplemental activities remained important.

There were mixed views among resettlers of the livelihood changes described above. When respondents were asked whether their lives in 2<sup>nd</sup> Bairro had become better, the same, or worse as a result of resettlement, 67 out of 140 (48 per cent) said 'worse', 43 (31 per cent) 'the same', and 30 (21 per cent) 'better'. This is in contrast to the first case study in which the majority of respondents were unhappy with the changes to their lives. In addition, the dissatisfaction rate among men and women was more balanced in the second case study as compared to the first, with 55 per cent of 'worse' responses provided by women in Chicomo as opposed to 74 per cent in Jofane. This probably reflects the fact that female participation rates in the CDG farms were almost as high as those of men, and that women were highly involved in supplementary income activities such as farm labour and small businesses. Similarly, the rate of abandonment was lower in 2<sup>nd</sup> Bairro, with approximately 25 houses (12 per cent) abandoned by their occupants since the creation of the resettlement community as compared to 20 per cent in 1<sup>st</sup> Bairro. The difference in rates of abandonment between the two case studies suggests that, with sufficient support for livelihoods, some consolidation of communities in the high area is possible in Mozambique (cf. Wiles, Selvester, and Fidalgo, 2005).

Of the 30 respondents who responded with an answer of 'worse', 21 primarily attributed this to problems securing land in the Union because of a shortage of hectares or high entry fees. Nine farmers, however, said that they were unhappy with the way that people were organised under the cooperative, comparing the community and Union to 'old ways' of working under the Portuguese. Instead, they would have preferred to have worked independently in the low area near Xaia as they did before the floods. This is partly a consequence of the resettlement schemes of the 1970s, when the authorities wrongly prioritised the building of physical infrastructure at the expense of the economic and productive base of villages (cf. Coelho, 1982). It serves as a reminder that the 'past ensemble' of interventions by external actors can significantly shape local perceptions of programmes undertaken by development agencies (Hilhorst, 2003, p. 155). The 30 respondents also believed that Union members were too dependent on the resources that the NGOs made accessible to them. This echoes points made by Stal (2009), who highlighted that resettlement communities in Mozambique remain highly reliant on external aid, and more widely reflects concerns about the long-term sustainability of NGO interventions targeted at the poor (Clark, 2003, p. 23). As one 2<sup>nd</sup> Bairro farmer stated:

*I am not happy with the situation [that CDG] has brought to the community. Back in the old days we worked how we wanted and then we had most things that we needed to farm without the government getting involved. Now, CDG wants to control our lives through the Union. I would prefer to be back in the low area by myself.<sup>3</sup>*



This option, however, was closed to these farmers at the time of the research because of a lack of credit to buy high-value agricultural inputs such as fertiliser and commercial strains of seed.

## **Discussion: rethinking resettlement as a flood response**

In both case studies people's livelihoods changed as a result of the resettlement process. In the first one, flood-induced resettlement from the Incomati river valley caused resettlers to diversify away from agriculture into alternative livelihood activities. Most residents were dissatisfied with this process, especially women, as it was more difficult to earn a living in the high area due to a lack of access to family farms. In contrast to 1<sup>st</sup> Bairro, the second case study shows that men and women largely remained in agriculture in spite of the resettlement process, in large part because of CDG's food security programme. Hence, satisfaction rates among settlers were higher and the abandonment rate was lower. These changes occurred in 1<sup>st</sup> and 2<sup>nd</sup> Bairros because resettlers were required to adjust existing knowledge and skills to their new environments (cf. Downing, 1996, p. 34). Critical factors in people's abilities to do this were availability of natural resources, scope to diversify into alternative livelihood activities, and access to external investment.

The considerable differences between the two case-study communities confirm the value of taking a wider, historical approach to understanding local diversity in livelihood activities in Mozambique. The research raises the question of how climate change will be superimposed on to these processes to alter further people's activities in the future alongside other sources of transformation, such as global economic activity (Silva, Eriksen, and Ombe, 2010). The links between climate shocks and diversification of livelihoods are well established both in Mozambique (see, for example, Osbahr et al., 2008) and more widely in rural Africa (see, for instance, Assan, Caminade, and Obeng, 2009; Nielsen and Reenberg, 2010). This study, however, with its focus on externally initiated resettlement, queries what the role of governments and development donors should be in encouraging or mandating movements of populations and associated livelihood activities in anticipation of, or as a response to, climate shocks, and what the implications are for wider, national poverty-reduction strategies. The international community is at a very early stage of considering these issues.

In 1<sup>st</sup> and 2<sup>nd</sup> Bairros, the rate of abandonment back to the low area served as an indicator of resettlers' satisfaction with the resettlement process. A general reluctance among affected populations to relocate after natural disasters has been recognised in the literature since the 1970s. Zwingmann (1973, p. 19) explained this in terms of psychological adjustment to new surroundings, and Oliver-Smith (1977) drew attention to central space theory in geography when accounting for people's tendency to remain or return to hazardous areas. More recently, Patt and Schroter (2008) related this phenomenon in Mozambique to differing perceptions of climate risk among resettlers, policymakers, and programme managers. The study presented here suggests that many farmers were aware of the risks that flooding posed but returned to the

floodplains mainly because they were unable to establish a viable livelihood in their new locations. This finding underlines the importance of ensuring that resettlement communities in Mozambique are socially and economically viable as well as physically robust in an infrastructural sense, echoing the limitations of state-led relocation programmes in earlier periods.

Despite the potential impacts of planned relocation, there is a general reluctance among donors supporting government efforts in Mozambique to implement disaster risk programmes to discuss resettlement.<sup>4</sup> There is a particular need, however, to re-examine what is meant by ‘voluntary’ and ‘involuntary’ relocation in the Mozambican context, and its ambiguous role in the flooding-induced displacement process. At the time of the 2000 floods, the Government of Mozambique was clear that it viewed its resettlement programme as voluntary, although it did admit that the scheme’s success was ‘hard to project’ since the fertile deposits in the floodplain would attract people back to the low-lying areas (Mozambique News Agency, 2001). However, it appears that targeted investments by government and donors in the high area following the floods of 2000 meant that, in reality, some would-be resettlers were given relatively little choice in the matter. The United Kingdom’s Disasters Emergency Committee (DEC, 2001) reflected these concerns in its 2001 review of the floods in Mozambique, reporting that farmers opting to live outside of resettlement areas indicated by government were unfairly denied livelihoods support.

Taken together, these findings suggest that three areas of further research are necessary. First, the overriding importance that resettlers attached to securing a viable livelihood provides support for the call by Warner et al. (2009) for more research into developing alternative livelihood strategies for people displaced by climate shocks, such as drought and flood. However, there also is a need to enhance understanding of which resettlers choose to remain at or abandon designated resettlement sites, and for what reasons, in spite of these programmes. In the case of 1<sup>st</sup> and 2<sup>nd</sup> Bairros, resettlers talked about an assortment of concerns in addition to the practical aspects of acquiring an income, such as ability to farm independently and an attachment to their ancestral land.

Second, it is important to understand better what is meant by ‘voluntary’ and ‘involuntary’ resettlement in relation to natural disasters. As the case of Mozambique shows, neither category adequately captures the intricacies of relocation processes on the ground. This argument resonates with the study by Milgroom and Spierenburg (2008) of Mozambique’s Limpopo National Park, which questioned the use of the term ‘voluntary’ displacement in a context in which restrictions on livelihood strategies were placed on people who refused to resettle outside of the National Park’s boundaries. In such situations it can be difficult to separate voluntary from involuntary resettlement (Schmidt-Soltau and Brockington, 2007), and both state and non-state players can find it convenient to frame discursively non-villager initiated resettlement as ‘voluntary’ (Baird and Shoemaker, 2007).

Third, there is a need to comprehend better the policy drivers of resettlement in Mozambique and other developing countries, which are trying to balance of safety

of vulnerable populations with the need to earn a living on floodplains. As this paper demonstrates, resettlement in Mozambique is not simply a modern-day response to flooding, but is embedded in a complex historical legacy of government intervention in floodplains. These are timely considerations given that resettlement as a response option to climate change is now emerging on international and national agendas, with countries located in deltas and flood-prone coastal areas already pursuing resettlement programmes as a matter of course (Bogardi and Warner, 2008). As well as concern about impacts, and livelihood 'risk and reconstruction', donors should aim to engage in a more upfront manner with wider political debates on resettlement in order to achieve sustainable improvements in people's lives.

## Conclusion

This research provides empirical evidence of how and why people's livelihoods change following planned resettlement, as well as of relocated people's views of such changes, in the context of natural disasters. The findings show that flood-induced resettlement in Mozambique resulted in an overall movement away from rain-fed subsistence agriculture towards commercial agriculture and other non-agricultural activities. The ability of resettlers' to adjust to their new surroundings depended on the availability of natural resources, local options for livelihood diversification, and the presence of external investment by development agencies. The paper highlights that viability of livelihoods is a key determinant of whether resettlers remain in their new location or return to their place of origin. Furthermore, it demonstrates that, as well as being a modern-day response to flooding, resettlement in Mozambique is rooted in a legacy of government intervention in floodplains. This is a significant factor for consideration if development donors are to engage more fully with contemporary debates about the feasibility and suitability of resettlement as a response to climate change and disasters.

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- 2 In all cases, the names of non-governmental organisations (NGOs), *bairros* (villages), localities, groups, and individuals have been changed to protect people's identity.
- 3 Interview with the authors, Jofane Locality, 5 October 2005.
- 4 Personal communication with a GlobalAid manager, 2010.

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