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Scales of Vulnerability: Resettlement and Exposure to Multiple Stressors and Shocks in Zimbabwe

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ABSTRACT The purpose of this study was to determine the extent to which agricultural land resettlement provided its beneficiaries with opportunities for coping better with stresses and shocks. The study was carried out in Mufurudzi resettlement scheme in Zimbabwe, and involved the collection of socio-economic data through a questionnaire survey, interviews and focus group discussions that were conducted on five randomly selected former commercial farms. The existence of three distinct categories of land reform beneficiaries was revealed: the better-off, worse- off and middle income earners, each with its own livelihood trajectories, and differentially equipped with capabilities of coping with stresses and shocks. The worse- off and middle income categories were the most vulnerable due to the resource gaps that featured in their livelihoods. Though land reform may be a necessary condition for reducing poverty and livelihood vulnerability, its importance in playing this role depends on the livelihood trajectories that individual beneficiary households choose to follow.

INTRODUCTION

In recent years Zimbabwe has been grappling with serious socio-economic and political challenges. Combined with recurrent stress and shock, these challenges have posed a serious threat to the livelihoods of most average Zimbabweans, rendering them vulnerable. Stresses are small, regular, predictable disturbances that generate cumulative effects, while shocks are large unpredictable disturbances that cause an immediate deleterious impact on livelihoods (Scoones 1998). The gradual worsening macro-economic environment in Zimbabwe qualifies as a stress, while drought is an example of a shock. In their multi-dimensional form, combinations of stresses and shocks can yield multiple stressors.

Informed by the sustainable livelihood perspective, and also by the people's history and political economy paradigms (Beck 1989; Chambers 1989), this study contributes to a growing body of knowledge on the relationship between access to natural resources and livelihood vulnerability. Livelihoods perspectives recognize the complexity of rural life (Carney 1999) and have been central to rural development thinking and practice since the past decade (Scoones 2009). The sustainable livelihood approach is used to design development programmes at the community level (Hahn et al. 2009). Under normal circumstances poor people try to diversify their portfolio of activities as well as their investment, stores and claims so that they are better able to deal with contingencies and difficult times by minimizing irreversible loss (Chambers 1989; Swift 1989; Chambers and Conway 1991; Knutsson 2006). However, the ability of the poor to adapt to adversity depends on their vulnerability context (O'Brien et al. 2004a).

O'Brien et al. (2004a) note that there has been no methodology to operationalize vulnerability in the context of multiple stressors, yet exposure to these stressors is a real concern in developing countries, especially in Sub-Saharan Africa (SSA). This concern was highlighted by Ellis (2003: 4), who noted that in SSA livelihood diversification, for mitigating seasonality and spreading risk, occurs when the natural resource-based livelihoods cannot provide long-term security.

The reasons cited by Ellis (2001) were partly used to frame this study. These generic reasons prompt the question whether greater access to a wider natural resource-base accorded by land resettlement enables resettled communities to secure long-term livelihoods and provide them

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with a mechanism to cope better with the shocks and stresses that occur in their environment. Previous research on resettlement has not been conclusive. For instance, longitudinal studies on Zimbabwe's resettlement schemes present a glowing picture showing how resettlement has improved the livelihoods of its beneficiaries (Kinsey 1998; Kinsey 1999; Hoogeveen and Kinsey 2001; Kinsey 2002; Chimhowu 2002). To the contrary, Kinsey (2004) states that those opposed to far-reaching land reform feel that an expanded resettlement programme would have a negative impact on agricultural output, employment and the diversity of agricultural exports. While one of the primary objectives of implementing land reform in Zimbabwe was to reduce poverty, not much attention was given to the scope of land resettlement as a tool for reducing vulnerability to shocks and stressors or to how vulnerability to these adverse conditions varies according to level of affluence or poverty. However, evidence from recent research indicates that resettlement can carry a high risk of maladaptation, with adverse social and environmental outcomes (Barnett and O'Neill 2012). In some cases resettlement has deep seated socio-economic and cultural consequences (Bang and Few 2012). Therefore this study sought to examine whether resettlement in Zimbabwe sufficiently prepared its beneficiaries to cope better with stresses and shocks. In this respect both the theoretical context of understanding rural livelihoods and the context of the livelihood vulnerability of the resettled villagers were examined. Understanding this context is central to vulnerability assessment, defined here as the diverse set of methods that examine the interactions between humans and their physical and social surroundings (Hahn et al. 2009).

Background to Zimbabwe's Environment

Zimbabwe has experienced socio-economic hardships characterised by a shrinking economy, hyper-inflation, high interest rates, the burden of a failed structural adjustment, increasing HIV/ AIDS infections and drought. Additionally, the persistent political crisis has worsened the vulnerability of the poor. Contributing factors are the adoption of a Structural Adjustment Programme (SAP), the awarding of unbudgeted gratuities to war veterans by government in 1997, and the country' participation in the Democratic Republic of the Congo (DRC) and Mozambican wars.

Before the formation of the government of national unity (GNU), in 2009 the Zimbabwean economy was experiencing a continuous decline. The GNU was formed between the Zimbabwe African Union – Patriotic Front (ZANU-PF) and the two factions of the Movement for Democratic Change (MDC). Since its founding in 1999, the MDC, comprising a loose coalition (alliance, according to Lahiff 2000), of trade unionists, academics, leading businessmen, captains of industry, civic organizations, unemployed youths (mostly from urban areas) and white commercial farmers, has posed a formidable challenge to ZANU-PF. Those opposed to the MDC, especially in ZANU-PF, perceived it as an instrument of a much larger western imperialistic machinery and political hegemony (Lahiff 2000). Power jockeying between the MDC and the ruling ZANU-PF during parliamentary and presidential elections, which were marred by violence, worsened the country's image by creating a political impasse.

The Gross Domestic Product (GDP) fell from - 0.2 per cent in 1995 to – 4.8 and – 11.9 per cent in 2000 and 2002, respectively (Mumvuma et al. 2003). Foreign debt stood at US$4.5 billion in 2001, six times its 1980 level and the country has not been able to service its debts with the International Monetary Fund, World Bank, Africa Development Bank and other lending multilateral institutions, while 36.6% of the population is living on less than US$1 per day (AFRODAD 2006). By 2004 the foreign debt had reached US$6 billion, even though the country was not classified as a Heavily Indebted Poor Country (HIPC) (ICG 2004).

The economy was further crippled when the US government passed the Zimbabwe Democracy and Economic Recovery Act (ZDERA) in 2001. The ZDERA bars Zimbabwe from accessing financial support from ten multilateral financial and development institutions, including the IMF, African Development Bank and African Development Fund (Government of the United States 2001). Two outcomes emerged from ZDERA. The first outcome was that investors' confidence was eroded. Similarly, multilateral institutions and international donors withdrew their support from the country. The second outcome was the worsening of political tension. Some Zimbabweans actually believed that the MDC was a puppet political party that was part

of the west's neo-colonial project to covertly control their country. Many resettled peasants even believed the formation of the MDC was an attempt to reverse the process of land reform of which they were beneficiaries.

One feature that characterized Zimbabwe's economic crisis was widespread food shortage. The Zimbabwe Vulnerability Assessment Committee (ZVAC) estimated that 2.9 million Zimbabweans required food assistance during this period. In 2005 the World Food Programme (WFP) assisted about 4 million people with food while the Zimbabwean government planned to import 1.2 million tonnes of maize (FEWS 2005). The recurrence of drought in 1982-84, 1991-92, 2001-02 and 2004-5, exacerbated the vulnerability of the population (Bird and Shepherd 2003). The droughts caused large scale crop failure and widespread death of livestock. Another factor that contributed to the worsening of food shortages was the countrywide invasion of white owned commercial farms, which started in 2000. Farm invasions disrupted commercial agriculture and reduced the country's foreign currency earnings, thus undermining the country's capacity to import food. The negative publicity that the country has experienced since then has ruined Zimbabwe's status as a destination for international tourists. The shunning of the country by tourists and investors, particularly from western countries, has led to the decline of Zimbabwe's foreign currency reserves, thus leading to the further dwindling of the country's economic fortunes. The cumulative effect of economic decline, political chaos and recurrence of drought has created multiple stressors that have made the livelihoods of most Zimbabweans vulnerable.

Theoretical Context of Study

Fraser et al (2011: 3) identified three components to be included in any assessment of the vulnerability of a social-ecological system, namely an assessment of the agro-ecosystem, a livelihoods-based evaluation of socioeconomic affluence, and a determination of institutional capability.

In order to assess vulnerability we need to first understand what it is. Chambers (1989: 1) notes that individual or household vulnerability may be external (risks, shocks, and stress) or internal (defencelessness with lack of means to cope without damaging loss). Loss can include physical weakness or harm, poverty, social dependence, and humiliation. Vulnerability is often the result of interacting stressors (Vogel and O'Brien 2004) and is a function of exposure and sensitivity to stressors, as well as the adaptive capacity and coping strategies manifested by those exposed to the stressors (Luers et al. 2003). It is important to decompose the concept vulnerability into its components, namely exposure, sensitivity and adaptive capacity, though Hinkel (2011) warns that this process is not necessarily an adequate blue-print for assessing vulnerability. However, exposure to multiple stressors "is a real concern in developing countries where food security is influenced by political, economic and social conditions in addition to climatic factors" (O'Brien et al. 2004a: 1). Vulnerability denotes a potential for loss (Cutter 1996) and is defined by three processes, namely entitlement (economic capability), empowerment (political/social power) and political economy (historical/structural class based patterns of social reproduction) (Watts and Bohle 1993). In this study adaptive capacity means the ability of people to cope with perceived risk and its determinants including the range of available technological options for adaptation; the availability of resources and their distribution across the population; the structure of critical institutions and decision-making; human capital, including education and personal security; social capital, including property rights;…access to risk spreading processes; the ability of decision-makers to manage information; and public's attribution of the source of stress (O'Brien et al. 2004b: 3-4).

The analysis by O'Brien et al. (2004a) evokes questions about whether the enhanced access to agricultural land accorded to land resettlement beneficiaries has prepared them to cope better with the stressors and shocks that have affected ordinary Zimbabweans. Has access to land (availability of resources), within the framework of the existing institutional arrangements (critical institutions and decision-making) through environmental information and indigenous knowledge systems (human capital and information management) created conditions for coping better with multiple stressors and shocks (adaptive capacity)? For this question to be addressed satisfactorily the vulnerability context of the villagers who were resettled had to be examined, using a case study approach.

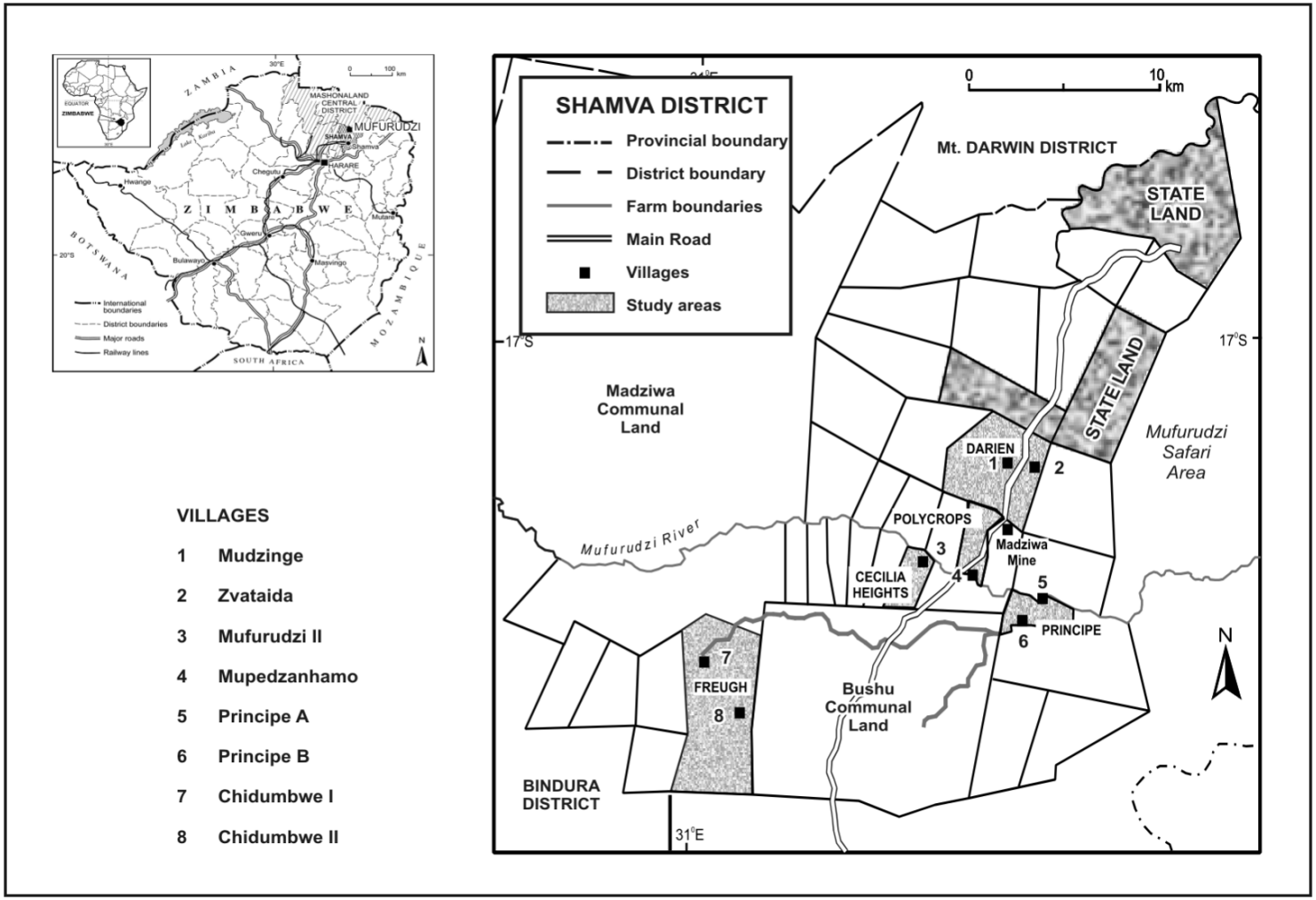

Fig. 1. Location of Mufurudzi resettlement scheme (adopted from Mukwada 2009)

Objective

The objective of this research study was to evaluate the adequacy of the adaptive capacity of land resettlement beneficiaries in coping with environmental stressors and shocks.

METHODOLOGY

Research Design

A case study approach was employed, involving a questionnaire survey, interviews and focus group discussions to determine how households in different income categories in Mufurudzi (Fig. 1) coped with the socio-economic hardships and natural hazards. Mufurudzi resettlement scheme comprised 33 former commercial farms, located along Mufurudzi River in the Shamva district of Mashonaland Central province of Zimbabwe.

The farms were bought by government for resettlement purposes. They were acquired on the willing-buyer-willing seller basis, using British funding. Resettlement in Mufurudzi started in the early 1980s and officially about 460 households were resettled on 82,595 hectares of land. The right to reside and cultivate is not guaranteed, but governed by a five year renewable permit system. Consequently, the resettled villagers do not own the land.

Study Area and Approach

The study was carried out in eight villages, which were situated on randomly selected five former commercial farms. A census approach was adopted in the questionnaire survey, and a total of 213 household heads were included. Socio-economic and cultural data were collected. Interviews and discussions were also held with different categories of key informants, drawn both from the local community and technocrats.

The data included the number of households that were established after resettlement, communal area - resettlement area natural resource sharing arrangements, income levels, stocking rates, livelihood strategies for coping with environmental stresses such as drought and crop failure, tree species used for different purposes, preferred tree and grass species, as well as the perceptions of individuals on environmental changes that had occurred in the resettlement scheme. Ethno-botanical data on settlers' knowledge, perceptions and practices regarding forest and woodland resource utilization and management were gathered through the questionnaire and formal interviews.

Households that were better off (earning more than Z$350,000 (US$35) per month) and those that were worse off (Z$35,000 (US$3.5) per month) were identified using the survey data. A similar approach to Ellis and Mdoe (2003) was adopted and household categories were established in focus group discussions, which were held with the villagers prior to the survey. The discussions involved wealth ranking and the identification of households that the villagers perceived as better- off, worse- off and middle income earners, as well as those that were considered as vulnerable, including female and child headed households. One household head from each of the household categories was randomly selected in each village, yielding a total of forty interviewees. The purpose of the interviews was to determine how resettled households from different income categories in Mufurudzi coped with the multiple stressors and shocks that were experienced in their environment. The interviews were recorded and transcribed after interviewee consent was obtained and confidentiality assured.

The Statistical Package for the Social Sciences (SPSS) (version 17.0) was used to analyze patterns and trends exhibited by variables related to use and management of forest and woodland products and livelihoods.To augment the analysis, Microsoft Excel was used to organize the data prior to its input in SPSS. The purpose of the analysis was to determine patterns and trends of villagers' use of forest and woodland resources, perceptions about the state of the resource base, conservation practices and levels of vulnerability to environmental stresses and shocks.

RESULTS

Impacts of Shocks and Stressors on Resettled Communities

Drought, as well as economic and political crises generated multiple stressors that many villagers in Mufurudzi found difficult to cope with. Villagers mentioned that basic commodi-

ties such as maize meal, salt, bread, wheat flour, soap, cooking oil and sugar, as well as agricultural inputs like fertilizers, seed and pesticides were in short supply, while many other market based products were priced well beyond the reach of most villagers. Shortage of fuel undermined the provision of transport, making it difficult to transport the sick to hospitals. This situation seriously affected the majority of the villagers in Mufurudzi because clinics were sparsely located and in some places non-existent, while the only referral hospitals were located in distant towns such as Shamva, Mt. Darwin and Bindura. In southern Mufurudzi, for instance, the nearest clinic was situated at Chakonda Business Centre, in Bushu Communal Area (Fig. 1), which was more than ten kilometres away from some villages, while the only road from which buses can be boarded to the provincial hospital in Bindura was more than eight kilometres away from these villages. The task of replenishing medical supplies for people suffering from AIDS or other serious chronic ailments was daunting, especially for those who were too weak to walk long distances. Without an efficient transport system, specialized health personnel and drugs, the villagers could no longer benefit from the robust health delivery system that Zimbabwe once had.

Shortage of fuel made it difficult for villagers to source agricultural inputs or sell farm produce, firewood and non-timber forest products (NTFPs) like wild fruits in urban markets. The inability to generate income from NTFPs limited the livelihood options of many poor villagers, particularly during periods of drought. Unlike in years preceding Zimbabwe's economic meltdown, access to food aid from donors became limited in Mufurudzi. Previously, Zimbabwe used to rely on its fairly well- developed road and rail infrastructure to supply food to grain deficit areas, especially those in the semi-arid drought prone areas. Lack of fuel for transporting grain left most village communities in Mufurudzi vulnerable, because it undermined government grain delivery services. This situation was worsened by the deterioration of roads as a result of poor maintenance. Cuts to the government's budget towards extension, donor fatigue and withdrawal of NGOs from Zimbabwe further reduced the once robust agricultural extension service to a rudimentary service as travel and subsistence budgets for extension workers in the Department of Agricultural Research and Extension Services (AREX) had to be scaled down drastically.

The plight of the resettled villagers in Mufurudzi was worsened by recurrence of drought. Interviews with the villagers indicated that incomes from agriculture plummeted during times of drought. This seriously affected the livelihoods of most households where 69%, 13% and 91% of the households derived income from cotton, tobacco and maize, respectively. About 50% the household heads reported loss of livestock as a result of drought. While the effects of the multiple-stressors and shocks were universal, the degree of household vulnerability was variable. Some households were more resilient than others, yielding two broad categories, the most and least vulnerable, depending on their levels of resource endowment.

Levels of Resource Endowment

The mean monthly incomes of the worse off, middle income and better off households were ZW$16·873 (US$1.6), ZW$101 500 (US$10.15) and ZW$633 927 (63.39), respectively. The number of cattle and goats per capita increased most for the better- off households compared to the other two categories, while the reverse was true for donkeys (Fig. 2). However, there was an anomaly in per capita sheep increase with the middle income registering the highest increase. In Mufurudzi, the worse off households preferred to invest more in goats than in sheep, because goats are more resistant to drought. Thus the strategies that were adopted by different categories of villagers to minimize risk determined the forms of investment they made, with better off households showing a greater propensity to take greater risk.

Table 1 shows the percentage increase of number of livestock per capita between 1981 and 2005. The percentage increase of all categories of livestock ownership varied between the households. Most better off households had very few livestock in 1981 when they were first resettled because they were army personnel based in urban environments or refugees who had been repatriated from neighbouring countries following the country's independence from colonial rule. Some only managed to acquire livestock after resettlement, using their pensions and gratuities. However, with a reliable source

Table 1: Percentage increase of number of livestock per capita between 1981 and 2005

	Better-off	*Middle income*	*Worse-off*
Goats	623	352	112
Sheep	742	1400	342
Donkeys	69	183	388
Cattle	651	169	163

of monthly income from the government they managed to build on their wealth much more quickly compared to those who originated from the adjacent communal areas like Bushu and Madziwa (Fig.1).

From interviews with resettled villagers it was noted that there has always been a gap between essential and available resources. However, the gap was wider for the worse off households. The disparities reflected in levels of resource endowment were manifested in two main categories of households, namely the most vulnerable and least vulnerable categories, each with its own livelihood trajectory, as shown below.

The Most Vulnerable Land Reform Beneficiaries

In Mufurudzi, the most vulnerable households included both the worse off and the middle income earners, constituting 30% and 66% of the households, respectively. Hyperinflation rendered the middle income as vulnerable as the worse off households. The most vulnerable households included resource poor households, among which were child and female headed households. Besides the allocated agricultural land these households lacked any meaningful economic assets. The livelihoods of most of these households depended more on social capital and village charity, especially that which was rendered by relatives and neighbours (social networks), than on income generated from farming. One village head initiated a social security project where villagers took turns to donate food to child headed households. Some vulnerable households relied on social capital to meet needs such as school fees, food and draught power, which they exchanged for manual labour. Oth-

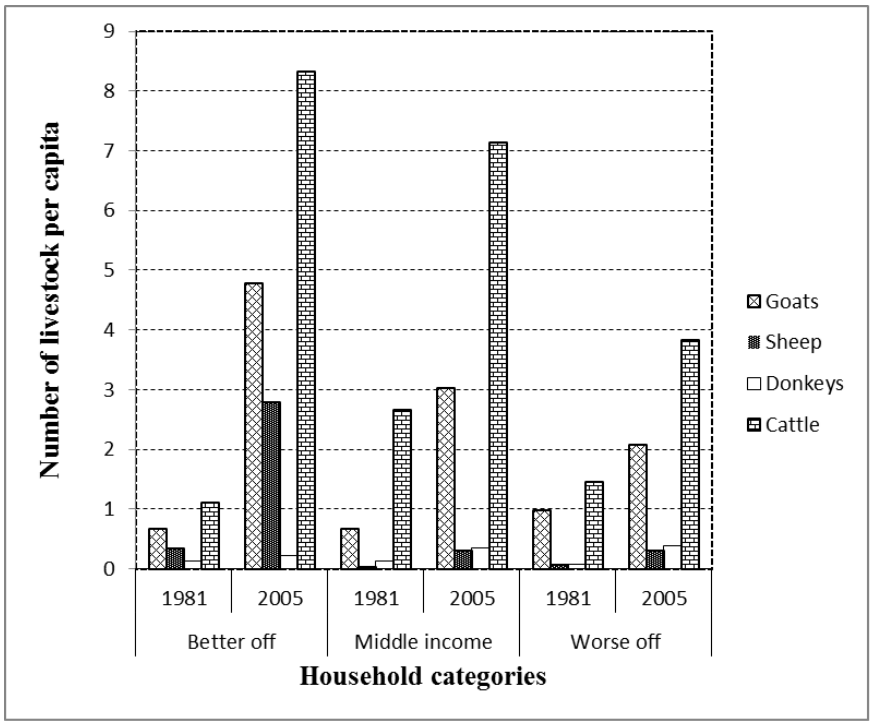

Fig. 2. Number of livestock per capita

ers leased their plots to the better off villagers. Their poverty was worsened by loss of human capital (skills and knowledge) as a result of the death of breadwinners. Economic decline and persistent drought aggravated their plight. The vulnerability of many households could be traced to continual deprivation following resettlement.

The most vulnerable households were forced to restructure their livelihood portfolios because they had no meaningful financial assets like bank savings, remittances or pensions. Without assets to use or dispose during times of drought or economic hardship poor households had fewer options for sustaining their livelihoods. In one child headed household, all the children were below the age of thirteen and had dropped out of school because they could not afford to pay fees.

A typical example of a child headed household was that of Margaret, a sixteen year old with four siblings. She started heading the household at the age of thirteen, after the death of her parents. Margaret suspected that her parents died of AIDS. The household owned three thatched huts, a small radio receiver, a hectare of irrigable land, an ox-drawn plough, as well as a few rabbits and chickens.

The most vulnerable households could not afford formal health care and either relied on herb based self-medication or on their local ethnopharmacists *(nga'ngas)* for treatment. This revealed the depth of the crisis in Zimbabwe, and the extent to which vulnerable people incorporated technological options that were available to them, including indigenous knowledge systems or rare skills into their livelihood portfolios. Using their rare skills and tacit knowledge, ethno-pharmacists capitalized on the failure of the country's health system to earn a living because poor households consulted them for a fee.

However, households with human capital in the form of labour supply, rare and specialized skills, or those that had fewer dependents, adopted better strategies of coping with shocks and stresses. In the case of Mufurudzi, households that had supply of labour got piece jobs in irrigation schemes. They performed menial tasks such as ploughing, weeding and harvesting of crops or spreading manure in the fields. In Mudzinge and Zvataida severe droughts forced some villagers to work on irrigable plots in exchange for food, especially vegetables and grain. A few other poor households resorted to selling wooden artifacts or gold panning as a way of coping with crisis. In some cases poor households bartered their livestock for grain or sold livestock and used the proceeds to buy food or other necessities. Livestock transactions, however, favoured wealthier households and further impoverished the poor.

The Least Vulnerable Land Reform Beneficiaries

In Mufurudzi the livelihood trajectories of the better off varied considerably from those of poor households. The better off households comprised only 4%, indicating a small minority. Richer households adopted livelihood strategies that enabled them to cope better with economic hardships or drought. Due to their greater resilience richer households could still afford to practice commercial agriculture under difficult conditions. In villages where dry-land farming was undertaken, better off households could still manage to prepare tobacco seedbeds when the planting season was delayed due to late rains. In Chidumbwe I village, the more affluent villagers could afford to plant tobacco seedbeds at Eben dam, which was located about fifteen kilometres away from tobacco fields.

George belonged to one of the most successful households. He attributed his success to the Master Farmer Training Programme (MFTP), which he completed in 1984. Farmer training programmes in Zimbabwe include the MFTP and Commodity-Based Training Programmes (CBTPs). The MFTP is a government funded programme that was set up well before independence (Chipika 1985; Pazvakavambwa 1994). Some better- off households owned plots in irrigation schemes, and many owned large numbers of livestock. Recurrence of drought and economic decline created a rare opportunity for better off households to rent more land from poorer households. With an abundant supply of livestock manure at their disposal they could still farm successfully even when the shortage of fertilizers was acute. They kept stocks of grain, which they sold during times of scarcity. This strategy helped them reduce competition from other households who normally sold all their produce soon after harvest. The better off households were thus cushioned against seasonal fluctuations of income. During drought they bought

livestock or bartered grain for livestock with the poorer villagers. They also stockpiled maize stubble and stover, which they used as stock feed during times of drought or poor pasture. This helped them to minimize livestock losses. The large number of livestock they owned provided both social security and inputs for on-farm activities.

The better off households could afford more food than other households. Through irrigation better off households produced a variety of foodstuffs, including Irish potatoes, sweet potatoes, green maize, butternut, beans, okra, and a wide range of leaf vegetables. The produce was either consumed by the households or sold to urban markets. Thus, these households were more resilient to malnutrition and poverty due to the coping strategies that they adopted. Vegetable dealers from nearby towns would hire their own transport to ferry produce from the plots owned by these households and in the process the households were spared from the difficulties of sourcing transport. When the macro-economic environment continued to worsen they raised the price of some basic commodities, which they often sold to other villagers. Richer households also generated income from grocery shops, tuck shops, liquor outlets and flour mills. Furthermore, they provided tillage services or loaned their implements to the resource poor in exchange for a fee or for farm labour. Their poorer neighbours constituted a pool of cheap labour, which they relied on all year round.

Resource Gaps and Supplementary Coping Strategies

Levels of resource endowment varied amongst resettled households. A gap existed between level of resource endowment and need. This gap was wider for the worse off than for the better off. To close the resource gap worse off households incorporated forest and woodland resources in their livelihood portfolios. Consequently, forest and woodland resources were viewed by many poor households as important for coping with shocks and multiple stressors and for meeting some of their basic needs. In Mufurudzi, the economic crisis and recurrence of drought increased villagers' reliance on wild products, such herbal medicines and biopesticides. For instance, different parts of trees such as *Lonchocarpus capassa; Gymnosporia buxifolia; Cassia spp.; Zanha africana; Syzygium spp.*, were used to treat a variety of human ailments, including headaches, toothaches, stomach aches, sore eyes, impotence and sexually transmitted infections, while Aloes and *Solunum panduriforme* were used as antihelmenthic products and pesticides, respectively. *Chenje* and *hwakwa*, fruit from *Diospyros kirkii* and *Strychnos pungens*, respectively, played an important role in the diet of many worse off households.

Natural products from trees increasingly became important substitutes for expensive pharmaceuticals and livestock medicines, most of which had since run out of stock in the whole country. Interviews with villagers in Mufurudzi indicated that the use of non-timber forest products (NTFPs) such as edible insects, oil extracts, cosmetics and herbal teas had increased. While it was not possible to determine the extent to which Zimbabwe's economic crisis forced resettled villagers to adopt a more endophagenous diet, it was revealed in the interviews with the poorer villagers that the worse off households included insects such as *nhowa* (*Anaphe panda*), *harati* (*Cirina forda*), *masinini* (*Lobobunaea* spp.), *macimbi* (*Gonimbrasia belina*) and *majuru,* (*Macrotermes belliscosus* and *M. natalensis*) in their diet. This situation was expected, considering the low per capita livestock ownership of worse off households. In this regard the macroeconomic and natural crises created an opportunity for local communities to 'unlock' their indigenous knowledge systems as well as their natural capital to cope with multiple stressors and livelihood threats. However, off-farm coping activities such as hunting and fishing are often threatened by natural crises. Drought reduced the supply of venison and fish in Mufurudzi. Most households reported that many species of wild animals, including baboon, monkey, wild pig, duiker and other small antelope that some villagers hunt were no longer found in the area due to change of habitat caused by recurrent drought. Many wild animals had migrated to areas close to perennial sources of water in the lower catchment of the Mazowe River.

DISCUSSION

As shown by the findings of this research study, the adaptive behaviour of the villagers in Mufurudzi and the coping strategies they chose

were a function of both endogenous and exogenous drivers. The endogenous drivers included the resources they had and the indigenous knowledge systems related to the plant and wildlife species whose products can be used to cope with crises, while exogenous drivers were the bio-physical, economic and socio-political conditions that characterized the environment. The main implication of these findings for resettlement in SSA is that both types of drivers should be considered when governments design resettlement schemes. However, since resilience varied from one household to another, different households occupied different positions on the vulnerability scale and consequently tended to follow different livelihood trajectories, even to the point of following different investment patterns and choices of off-farm coping strategies. When faced with multiple stressors and shocks poorer villagers incorporated forest and woodland resources into their livelihood portfolios and foraged for NTFPs, including wild foods. They also diversified their household income sources by selling these wild products to richer households or to urban markets as a strategy for plugging the resource gaps that undermined their livelihoods. Cavendish (2000, 2002) reports that 40% of poorer and 29% of wealthier household's income is generated from wild resources. Forests and woodlands are reported to be an important source of raw materials for crafts, jam, jelly, natural oils and extracts, cosmetics, hardwood furniture and herbal teas such as *Makoni* tea (*Fadogia ancylantha*) (Odero 2004). In Mufurudzi, however, the incorporation of forest and woodland resources into the livelihood portfolios was limited by a number of factors, including the scarcity of these products during drought and shortage of fuel for transporting forest products to urban markets.

The failure of the adaptive capacity to cope with multiple stressors and shocks was partly inherent to the resettled community, and an outcome of material poverty, and partly the product of conditions that were beyond their control, especially macroeconomic changes and drought. Ellis' (2001) aptly describes the situation in this study as the deterioration of access to rural public services due to poor national economic performance and cost-recovery policies adopted during SAPs. In Mufurudzi, poor national economic performance eroded government's capacity to provide extension services to resettled households. However, the case of Mufurudzi presents a much more complex picture, which in some cases is at variance with Ellis' observations. A point in case is Ellis' (2001) argument that livelihood diversification results from shortage of land. Findings from this research study indicate that land shortage did not occur in Mufurudzi, and was therefore not the central cause of livelihood diversification. To the contrary, it was the oversupply of land which created a unique opportunity for livelihood diversification for villagers who chose not to till their land. For example worse off households let some of their fields to their richer neighbours in exchange for agricultural inputs, household consumables or money.

Access to land on its own was not sufficient for reducing household vulnerability. In Mufurudzi, those who had financial resources and other assets at resettlement could afford to acquire agricultural implements (physical capital) and cope better with the new environment. This was in stark contrast with those who did not have enough assets. Similarly, resettled villagers who had farming skills and had received training prior to resettlement and who had the requisite human capital at their disposal, were more likely to succeed in improving their livelihoods. Their households were less vulnerable to multiple stresses and shocks. Besides natural capital (land) other forms of capital such as financial, human, social and physical capital are needed for reducing vulnerability (Scoones 1998; Chambers and Conway 1991). The switch to phytotherapy based self-medication and ethnopharmacists by villagers who were adjusting to macro-economic stressors confirmed that when people are exposed to adversity they adopt the available technological options to cope with that adversity (O'Brien et al. 2004b).

Another important finding of this study relates to the preparedness of households for resettlement. The small percentage of better off households (4%) suggested that the livelihood improvements widely reported in earlier research studies (Kinsey 1998; Kinsey 1999; Hoogeveen and Kinsey 2001; Chimhowu 2002; Kinsey 2002) had either not been widespread in Mufurudzi or else they were wiped out by persistent multiple stressors and shocks. While resettlement provided villagers in Mufurudzi with a better resource-base, the majority did not know how to use the resource-base to effectively improve

their livelihoods, at least to the point of coping with multiple stressors and shocks without outside intervention. Even so, there is reason to believe that with improved access to government input support schemes and better extension services villagers in Mufurudzi could improve their livelihoods through on-farm livelihood strategies. For this to happen, the ZDERA and other restrictions that bar Zimbabwe from accessing multilateral and donor support need to be reconsidered in this light. With a sound macro-economic environment, better access to donor support and functionally viable extension services many middle income households in Mufurudzi could easily join the ranks of the better off households in the scheme and become less vulnerable.

However, even prior to the passing of ZDERA the vulnerability of some households was already evident due to their failure to capitalize on the appropriate anticipatory adaptive interventions that were provided by the government and the donor community. Hostile exogenous biophysical conditions, severe socio-economic stressors, failure to benefit from external interventions or to develop their own appropriate coping strategies had differential effects on the resettled community. This led to the emergence of class structures that exhibited different degrees of livelihood vulnerability and household resilience. Thus, government and donor interventions did not yield uniform results on the resettled population. This situation triggered social differentiation, creating classes of affluent households and pauper households, which were not on the same scale of vulnerability. Poorer households often incorporated drudgery in their coping strategies. As noted by Chambers (1989) "the main asset of most of the poor people is their labour Mufurudzi seem to mirror Lerman's et al. (2008) study of Russian rural incomes and non-farm rural employment. Lerman et al. (2008) observed that rural people are risk averse and prefer the relative security of taking wage employment to individual entrepreneurship. In the case of Mufurudzi the worse off households were forced by multiple stressors to work for their better off counterparts rather than on their own farms. Another risk averse strategy adopted by the worse off households was the selling of livestock during times of crisis. In Zimbabwe this is a widely practiced strategy for coping with drought or for minimizing the associated risks (Mombeshora and Wolmer 2000; Chaumba et al. 2003).

Though forest and woodland resources are important for developing the coping strategies of the poor it is important to note that these resources present limitations when livelihoods are faced with crises. Thus, there is a limit on the vulnerability scale, beyond which forest and woodland resources can be used as a buffer. Nevertheless, as demonstrated in this study, that limit depends on the household's position on the vulnerability scale, the adaptive capacity of the household and the gravity of the crisis. The nexus between resettled communities and forest and woodland resources suggests that government and development agencies involved in designing resettlement programmes should incorporate environmental resource conservation in those programmes

Land resettlement can induce social differentiation and the emergence of new class structures. In Mufurudzi, resettlement triggered a process of social differentiation and the emergence of new classes within what was once a fairly homogenous populace, to create better off and worse off households. For better off households a new set of opportunities were created, which enabled them to use worse off households as willing resident cheap labour. As the better off became richer the poor became poorer, thus defying the philosophy of egalitarianism on which Zimbabwe's resettlement programme was founded. Has resettlement in this case created a new brand of capitalism or feudalism, where the 'landlord' (who does not legally own the land) is part of both the labour force and the market while living side by side with those who control the means of production? What exists in Mufurudzi is unlike the known forms of feudalism or capitalism where the feudal landlord or the capitalist landlord class lets its land to capitalist tenant farmers or feudal tenants "on fixed term leases at competitive rents" (Byres 2009: 33). Though this issue is debatable, what is evident is that the multiple stressors and shocks that threaten the livelihoods of land reform beneficiaries matter most to those who are holding the shorter end of the stick, that is the materially poor. In Mufurudzi, these happen to be the majority.

CONCLUSION

A number of conclusions were drawn about resettlement in Mufurudzi. First, while resettlement presented an opportunity for peasants to build on their wealth it was not the panacea for coping with multiple stressors and shocks resulting from environmental hazards, socio-political upheavals and economic decline. Second, resettlement induced social differentiation and created new class structures. These structures were characterized by different levels of household vulnerability, depending on their level of resilience, which in turn was defined by their adaptive capacity and strategies for coping with multiple stressors and shocks. Third, while it was evident that there was a gap between essential and available resources, the gap was always wider for the worse off households, thus enhancing poorer households' propensity to incorporate off-farm livelihood strategies, including those that depend on forest and woodland resources.

RECOMMENDATIONS

Findings from this research can be used by government and development agencies that employ land resettlement as a development strategy for planning or developing better resettlement options. Since land resettlement does not sufficiently prepare the majority of its beneficiaries to cope with multiple stressors and severe environmental shocks the strategies that these agencies could consider are those that enhance the resilience of resettled communities, including those that incorporate environmental resources on which these communities fall back on when their livelihoods are under threat, particularly those that are based on off-farm activities, like harvesting and processing of forest and woodland resources. Accordingly, further research needs to be done on how value addition of forest and woodland products can be used to create alternative means of livelihood in environments where on-farm livelihoods are threatened by multiple stressors and shocks. More importantly, resettlement programmes should be re-designed to incorporate environmental resource conservation.

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