Land tenure and natural disasters

ADDRESSING LAND TENURE IN COUNTRIES PRONE TO NATURAL DISASTERS

UN-HABITAT
FOR A BETTER URBAN FUTURE

Early Recovery

GLOBAL LAND TOOL NETWORK

FAO
FIAT PANIS

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F A O
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Contents

Introduction

The impacts of natural disasters such as hurricanes, floods, earthquakes and tsunamis have been increasing steadily since the 1950's, particularly for developing countries. According to a World Bank external evaluation report "natural disasters destroyed US$652 billion in property worldwide in the 1990s alone – an amount 15 times higher in real terms compared to the 1950s. Approximately 2.6 billion people were affected by natural disasters over the past ten years, compared to 1.6 billion in the previous decade. Developing countries have borne the brunt of these catastrophes, accounting for over 95 percent of all casualties" (IEG, 2006). Asia has been the most affected region with 79 per cent of deaths from natural disasters during the period 2000-2007[1]; while *Small Island Developing States* (SIDS) are among the most vulnerable. This trend is not likely to change. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007) has confirmed that frequency and intensity of extreme weather events such as heat waves, tropical cyclones, floods and droughts are likely to increase with climate change.

In addition to loss of life and the severe impacts on national economies, some of the most drastic effects of natural disasters on peoples' livelihoods, relate to disruption of land tenure systems and property loss. Access to land and security of tenure are very often damaged as a result of natural disasters, leaving people unable to access their land either for production or for housing purposes. The effects can result from destruction of land tenure records like land titles, cadastre maps, land registry records, identity cards, and insurance claims. They can involve the total or partial destruction of physical evidence of property boundaries; the disappearance or death of people who have the memory of property boundaries; the emergence or intensification of conflicts over land tenure that were already present but deteriorated as a result of the disaster, such as conflicts over inheritance of land rights. In case of the need for resettlement, there can be difficulties involved in addressing land rights in resettlement areas, especially if there is lack of proper legislation to facilitate access to land to those who have lost it. Where property rights are unclear and people have left their land as a result of a natural disaster, land grabbing and abusive building practices can happen where there are not suitable norms to avoid it. All these effects can severely impact peoples' livelihoods if the security of the use and property of the land is affected.

International and development agencies working with disaster management and mitigation have confirmed the importance of land tenure security and access for the long-term reconstruction of communities' livelihoods. They consider that building up communities'

[1] Centre for Research on the Epidemiology on Disasters (CRED), 2008 Disasters in Numbers. Department of Public Health, Université catholique de Louvain, Belgium; and ISDR: Brussels.

resilience involves recovering and protecting property rights to land, which in turn will lay down a solid basis for reconstruction, physical planning, compensation and economic growth.

Despite growing awareness of the importance of land tenure and property related issues to disaster risk reduction and the efficiency and effectiveness of post-disaster responses, the international humanitarian community currently possesses limited understanding of the precise nature of these linkages on the one hand, and their implications for relief, early recovery and rehabilitation programmes on the other. In addition, there has been very limited awareness of the practical tools and approaches that could be used to incorporate land tenure issues into future responses and programmes to enhance mitigation and preparedness, as well as favour good disaster response operations. This has been in part, the result of a lack of clear overall understanding of the importance of land tenure issues in the disaster context. There has been also a commonly-held perception that land issues were either too "complex" or too politically sensitive to merit consideration in emergency settings.

In 2007 the Inter-Agency Standing Committee (IASC), the main mechanism for inter-agency coordination for humanitarian assistance[2], agreed on the need to coordinate efforts on land tenure issues addressed after natural disasters. Accordingly UN-HABITAT, FAO and the IASC Early Recovery Cluster developed a set of guidelines for the support of national and international efforts on land tenure issues in natural disasters[3]. Within this same initiative FAO and UN-HABITAT have published several country briefs (Philippines, Indonesia, Honduras, Mozambique, Madagascar, Bangladesh and Ecuador) on land tenure and land administration issues in natural disasters emergency settings. The briefs are addressed to UN staff and nationals working on the coordination and execution of emergency activities to make them aware of the importance of dealing with land tenure rights and property issues for both disaster risk reduction including preparedness and mitigation measures, and the efficiency and effectiveness of post-disaster responses.[4]

As part of this inter-agency awareness creation, FAO has selected four of the country case studies that were carried out for the preparation of the briefs, in order to publish them in their complete version. These case studies address land tenure in natural disasters in Mozambique, Bangladesh, Philippines and Ecuador. There is very limited literature and data that examines the direct impacts and effects of natural hazards on tenure at national and local

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[2] The IASC is formed by 9 UN Agencies which are full members of IASC and 9 international agencies working on emergency operations and human rights, which are standing invitees. See: http://www.humanitarianinfo.org/iasc/

[3] UN-HABITAT, FAO, IASC Early Recovery Cluster, Global Land Tool Network. Land and Natural Disasters. Guidance for Practitioners. UN-HABITAT, Geneva, June 2010.

[4] FAO, UN-HABITAT, Land Tool Network. On Solid Ground. Addressing land tenure issues following natural disasters. FAO, Rome, January,2010

levels. Land tenure is usually identified in the disasters and poverty analysis, but it is not dealt with in depth as an issue. The analysis carried out in this publication will help to improve understanding of land tenure in the context of natural disasters, and to foster more analysis and data collection to better assess the relationships between natural disasters and land tenure at national and local levels, especially in those countries that are prone to natural hazards.

The Mozambique case study identifies important lessons from the analysis of the impact that floods have had on land tenure in the Limpopo (2000) and the Zambesi valleys (2001 and 2007). The authors, Paul De Witt and Simon Norfolk, consider that the approach undertaken into national and legal frameworks helped to minimise the effects of the floods. This comprised the national policy on Disaster Management passed in October 1999, the legal framework for land including the Land Law (1997), the accompanying Regulations (1998), and the technical Annex on Community Delimitation (2000). While the Disaster Management policy marked an important shift from a reactive to a proactive approach towards disaster management and prevention, the land tenure legal framework promotes the involvement of local-level institutions in land access and management, with a focus on identifying and securing local land rights. The combination of both has been very useful in the way Mozambicans have addressed the main land tenure security issues that emerged after the floods.

The Bangladesh paper deals with the difficulties that Bangladesh, with long experience in the development of national and local mechanisms to respond to natural disasters, has had in addressing impacts on land tenure issues within such mechanisms. The author Salma Shafi, analyses how Bangladesh addresses the impacts of natural disasters in one of the most disaster-prone countries in the world, with a high population density and more than 45 percent of people living below the national poverty line. In Bangladesh the government developed several programs and mechanisms to respond effectively to the effects of natural disasters; these have included programmes at national and local level, with measures that enhance the capacity of the communities to deal with disaster risk reduction. Through the description of the current land tenure system characteristics and the related institutional setup, the author analyses the difficulties that such disaster management mechanisms have in the development of adequate measures to deal with the effects of natural disasters on land

tenure issues, including the political constraints. The author examines the 2007 Sidr cyclone to illustrate those difficulties. The study finally argues that more attention should be paid to land tenure and land use in national policy frameworks as well as in the specific land tenure, land use and disaster management programmes, concluding that failure to consider these issues effectively can be a key factor increasing poor peoples' vulnerability to disasters.

In the Philippines case study the author, Luis Eleazar analyses the consequences of the major natural disasters that have hit the Philippines from 1990 to 2006, including the consequences on land tenure issues. The Philippines, consisting of over 7000 islands, has experienced 520 disasters from various types and intensities during this period. The author identifies three factors that played an important role in increasing or decreasing the severity of the consequences of these disasters: whether the affected people had secure or insecure tenure rights; whether the disaster caused lasting damage to the property; and finally whether the affected people had the capacity to recover their lost property, or to restore their tenure security. In the Philippines according to the author, this capacity is mainly defined by socioeconomic status. Important obstacles dealing with disasters include: the absence of a complete cadastre and the presence of incorrect cadastral surveys; the existence of incomplete and outdated land records; the cumbersome legal procedures for title records reconstitution or recuperation of title copies[5]. When analysing the impacts of natural disasters on land tenure within a framework of disaster risk management, the author mentions four major issues that land tenure emergency work should address for prevention and mitigation: (i) the formalization of land rights or the issuance of titles in areas considered highly vulnerable to disasters, (ii) the lack of an appropriate land use and development policy; (iii) the existence of dense human settlements in vulnerable areas, (iv)properties located in recently identified high-risk zones. In relation to the emergency response phase, the author underlines the need to give importance to the development of good assessments on property damage and the tenure rights situation of affected people, especially those who have been displaced as a result of the effects of the natural hazard. For the recovery and preparedness phase the author argues for the importance of support for land tenure issues related to the poor, vulnerable and food insecure households affected by the natural disasters. Finally, the author analyses the capacity and situation of the institutional set-up supporting land tenure and related natural resources access, both at national and local levels.

[5] Some of these difficulties are already being addressed by technical assistance projects funded by international donors working in the field of land administration.

Fausto Jordán and Raúl Sánchez analyse the reactive response approach that government institutions in Ecuador had towards natural disasters during the period 1997-2008 and the new initiatives that the government of Ecuador has undertaken since 2008. In line with the process of adopting a new approach and developing a national disaster risk management system, the 2008 national Constitution includes the concepts of prevention and mitigation for natural disasters risk management, as well as the need to deal with the management of risks on a decentralised basis. The Constitution states the need to establish a national system for the prevention and management of natural disasters. Since May 2008 a new government agency has been created to deal with risk management. This institution includes land tenure access and security responsibilities. The analysis draws on the impacts of several types of natural hazards like volcanic eruptions, floods, and landslides that have not been covered in the other country studies. The importance of the collaboration between public and private sector in a decentralised manner, is also highlighted in the analysis as a very important part of the national disaster risk management system in Ecuador.

This publication was prepared by Adriana Herrera Garibay, Land Tenure Officer from the Land Tenure Team in the FAO Climate, Energy and Tenure Division, with the help of the authors, Paul De Witt and Simon Norfolk, Salma Shafi, Luis Eleazar, Fausto Jordán and Raúl Sánchez; with the support of the editors, Nicoliene Oudwater and Damian Bohle; and with the close collaboration of Claudia Tonini, responsible for the layout of the publication. The country case studies papers received valuable comments from UN-HABITAT and the Emergency Unit in FAO.

Rome, September 2010

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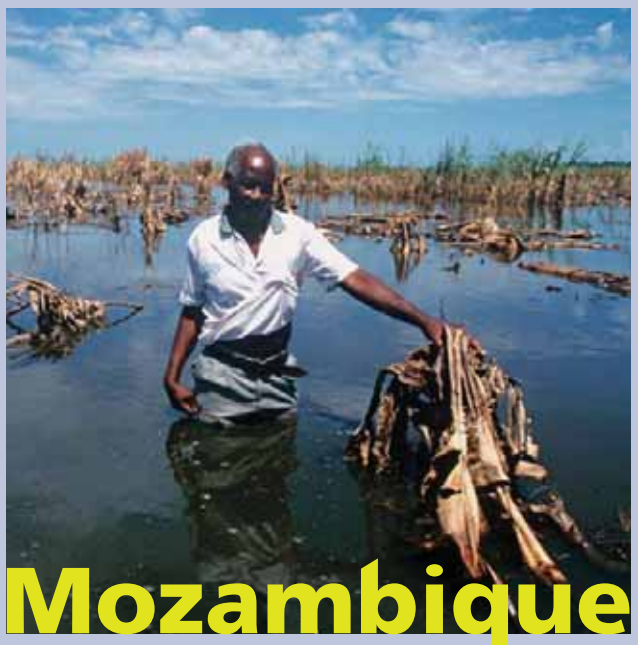


Mozambique

Mozambique

by Paul De Wit and Simon Norfolk*

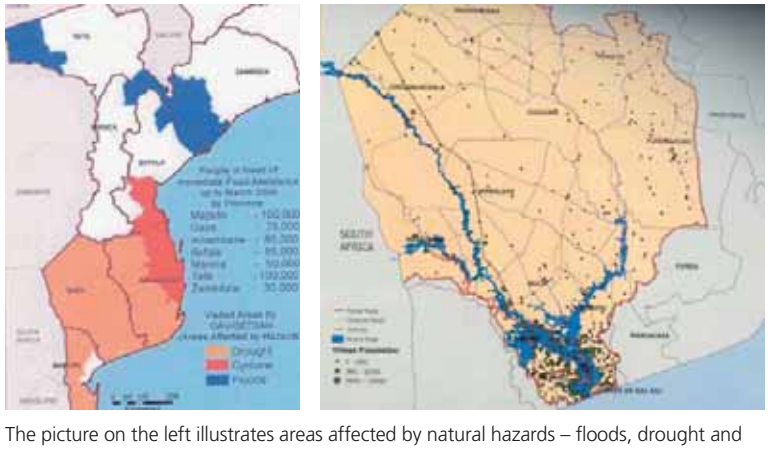
■ 1. MOZAMBIQUE – RECURRENT FLOODS, CYCLONES AND DROUGHT ■

Mozambique's geographic location makes it susceptible to natural disasters of a varying nature. It includes the lower parts of two major southern African watersheds, the Limpopo and the Zambezi. Water collected in the four Limpopo river basin countries (South Africa, Zimbabwe, Botswana and Mozambique) drains through the Gaza province of southern Mozambique before reaching the town of Xai–Xai and the Indian Ocean. The Zambezi watershed is the fourth-largest river basin in Africa, and waters from Tanzania, Malawi, Zambia, Angola, Namibia, Botswana, Zimbabwe and Mozambique all flow through the lower Zambezi valley in the provinces of Sofala and Zambézia. This situation provides Mozambique with a series of excellent economic opportunities – such as harbours, hydro-electric power plants, fertile valley land, highly-valued tourist sites, and specific ecologic settings such as mangroves – but also exposes rural people to frequent floods.

Throughout its history Mozambique has had to cope with a succession of cyclones and related floods, which have had a devastating impact on the country. Between 1970 and 1998, Mozambique experienced 11 flood events and more than 16 drought events. In the 11 flood events, it is estimated that more than 1585 people died. Apart from the immediate threat to human life, such natural disasters seriously impede economic growth. In August 2007, for example, Mozambique's National Institute for Disaster Management (INGC) announced that the joint effects of drought, cyclone 'Favio' and the floods that hit the country in the first quarter of 2007, had reduced agricultural production by 30 percent in the central and southern regions of Mozambique.

A significant part of the country is also susceptible to drought. Most of the Mozambican Limpopo valley lands have annual rainfall that rarely exceeds 800 mm, with most areas receiving less than 600 mm. The irregular and erratic distribution pattern of this rainfall turns the lower Limpopo valley into a drought-prone area, with the river itself being the spine of rural survival. The state and the local populations have adapted

FIGURE 1 – Geographic areas of natural disasters in Mozambique



The picture on the left illustrates areas affected by natural hazards – floods, drought and cyclones – as identified by historic data and the floods of 2008 (GAC/SETSAN on www.alertnet.org/thenews/newsdesk/FEWS/52674e740d15acf800ac87f 591341527.htm). It is clear that the southern part of Mozambique is very susceptible to regular droughts, whereas floods are a major hazard in the centre, especially in the Zambezi valley. The occurrence of regular lower-Limpopo floods are indicated in the right-hand picture (Atlas for Disaster Preparedness, 2003). The latter considers a flood scenario on the basis of a slightly reduced flood as compared with the unprecedented 2000 floods.

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* Mr. Norfolk is a land tenure and administration expert in Mozambique. He has been collaborating in the formulation and implementation of land tenure projects and research papers in Mozambique with national and international institutions such as FAO, Millennium Challenge Corporation, World Bank and others.

their strategies to these extreme climatic conditions: over the years the state has developed major irrigation schemes (in Chokwe and Xai–Xai districts), while local populations explore the fertile lowlands whenever they can.

Of Mozambique's 138 districts, 20 are 'highly prone to drought', 30 to flooding, and another 7 to both risks (Rohrbach *et al*, 2001, page 39). Overall, 48.2 percent of the population suffers one, the other, or both risks.

In addition, the 2500 km of Mozambican coastline is directly exposed to the very active tropical cyclone belt of the southwest Indian Ocean basin, which accounts for 10 percent of the entire world's cyclones. Tropical cyclones hit the Mozambican coast line on average once a year (most risk prone areas are located between Pemba and Beira), with minor events occurring some three to four times a year. Climate change is likely to increase the frequency of these events. Cyclones bring direct destruction of infrastructure, but also high-intensity rainfall in extreme volumes, which often results in flash floods and adds to the downstream water floods from upper catchment areas.

Population densities in coastal flood-prone areas seem to be higher than in a number of neighbouring, mainly inland, districts (Quelimane, Chinde and Caia along the Zambezi; Xai–Xai, Chibuto and Chokwe along the Limpopo).

The recurrent nature of the floods in Mozambique creates a significant financial burden on the government. It is estimated that the total costs of the 2000 floods was equal to almost 20 percent of GDP, and slowed down the economic growth rate by 2.1 percent. However, dry estimates of costs and recovery needs do not necessarily capture the hardship and long-lasting effects of natural disasters on the livelihoods of ordinary rural people. The massive loss of livestock in Gaza province in the year 2000, for instance, undermined the livelihood strategies of an important part of the population and left rural communities much more vulnerable than they were before the floods. Similar impacts can be observed with the fishing communities along the river in the Zambezi valley. Immediate emergency and relief operations – which among other measures generally include the distribution of seeds and tools, fishing nets, and the introduction of sweet potatoes – are of course essential, but do not necessarily address the structural losses, or help to replace the core assets needed for people to make a durable recovery.

TABLE 1 – Overview of the major natural disasters over the last 30 years

Flooding		Drought		Cyclones	
Event	Impact	Event	Impact	Event	Impact
1978 – Limpopo	350 killed; 400 000+ affected	1980 South and central including Limpopo basin	5 million affected; 100 000 killed (partially in combination with war)	1984 Cyclone Domoina	350 000 affected; 109 killed
1981 – Limpopo	500 000 affected	1981–83 South and central including Limpopo basin		1988 cyclone Filao	90 000 affected; 100 killed
1985 – Southern Provinces	500 000 affected	1983–84 Limpopo basin		March 1994 Cyclone Nadia	900 000 affected; 52 killed
1990 – Pungue-Sofala	12 000 displaced	1987 Inhambane	8000 affected	January 1996 Cyclone Bonita	200 000 affected; 11 killed
1996 – Southern rivers and Zambezi	200 000 affected	1991–93 whole country	13 million affected	January 1997 Cyclone Lisette	80 000 affected; 87 killed
1997 – Central rivers and Zambezi	300 000 affected; 78 killed	1994–95 South and central Mozambique including Limpopo	15 million affected	February 1997 Cyclone Gretelle	300 000 affected
1999 – Inhambane and Sofala provinces	70 000 affected; 100 killed	1999	100 000 affected	February 2000 Cyclone Connie	See the of the impact 2000 floods
2000 – Southern rivers including Limpopo basin	2 million affected; 700 killed	2002 South and central Mozambique including Limpopo	43 entire districts affected	February 2000 Cyclone Eline	
2001 – Zambezi	500 000 affected; 115 killed			March 2000 Cyclone Gloria	
2007 – Zambezi				January 2003 Cyclone Delfina	47 killed
2008 – Zambezi				March 2003 Cyclone Japhet	23 000 affected
				February 2007 Cyclone Favio	40 killed; 120 000 affected

■ 2. RECENT NATURAL DISASTERS AND THEIR IMPACT ■

Three major flood events, those of the Limpopo valley in 2000 and those in the Zambezi valley in 2001 and 2007, are considered especially relevant to addressing and analysing land issues in post-disaster situations.

2.1 Flood events in the Limpopo valley, 2000

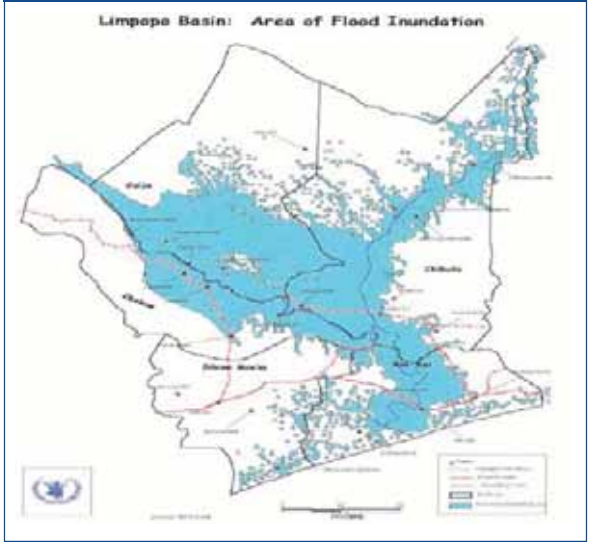
There is no doubt that the Limpopo valley floods of 2000 were the worst natural disaster in the history of modern Mozambique. It is estimated that up to 700 people died; some 500 000 to 650 000 people were displaced and temporarily sheltered in over 100 camps set up by the GoM; 27 percent of the total population were affected in one way or another. The towns of Xai–Xai, the provincial capital of the Gaza province, and Chokwe, a district capital, were hit hard. Xai–Xai had developed as a small inland harbour town, with most of its facilities (such as administration, commerce, food storage places) located in the lower part of the town, which was highly flood-prone. The surrounding dunes and other higher parts are considered to be an extension of the centre, populated mainly by new dwellers and returnees after the civil war. Chokwe is a town located in the centre of a wide flood plain, upstream of Xai–Xai, and known for its irrigation scheme. After the 1977 floods some 12 000 victims were resettled on government land within this irrigation scheme. The presence of the scheme in the valley illustrates well the dual challenge that rural people and the GoM face when dealing with natural disasters. On the one hand, irrigated agriculture is a mitigation measure against the recurrent periods of extreme drought in the region. On the other hand, promoting settlement in the valley can result in major consequences when extreme floods occur.

Damages in both urban areas were severe; thousands of houses were destroyed, as well as most of the infrastructure such as roads, bridges, railways, water and sanitation systems and electricity supplies[1]. The main national North–South road linking a large part of Mozambique with the capital, Maputo, was blocked for several months, causing major problems for the transfer of goods across the country. The impact on the rural population in Chokwe (approximately 50 000 people affected; 247 casualties in total) was far greater than in Xai–Xai (1500 people affected; 38 casualties in total). This was largely due to settlement patterns (communal villages in the uplands of Xai–Xai, valley villages in Chokwe), and the distance to safe havens (a maximum of 3 km in Xai–Xai, but up to 30 km in Chokwe). Figure 2 illustrates clearly the different breadths of the flood inundations around Xai–Xai (south of the picture) and Chokwe (north of the picture)[2].

The floods decimated the agricultural sector which remains the major economic activity of most affected

[1] In an early assessment the World Bank estimated a direct cost of US$ 270 million, and an indirect cost of US$ 215 million. The reconstruction costs were estimated at US$ 428 million. Some 11 000 houses were destroyed in Chokwe alone, and an estimated 36 160 all over the country.
[2] http://www.reliefweb.int/rw/RWB.NSF/db900LargeMaps/SKAR-64GC75?OpenDocument&emid=FL-2000-0012-MOZ&rc=1.

FIGURE 2 – Areas of the 2000 flooding in the lower Limpopo valley



people. FAO[3] estimated that due to the prolonged nature of the inundations some 140 000 hectares of crops (over five provinces, but with Gaza accounting for 41 percent or 57 000 hectares), mainly food crops such as maize and sorghum, were destroyed or seriously damaged, as well as major irrigation systems and pump installations in Xai–Xai (Magula, Ponela, Chimbonhanine), but even more so in Chokwe, which was once the pride of 'modern' agriculture in Mozambique. Later in the year, cereal production on receding and residual soil moisture proved to be extremely high.

The estimated loss of livestock varies considerably, from 30 000 (by the World Bank in the early stages) to 350 000 destroyed or seriously injured animals (estimates at the national level made by FAO at the end of March 2000; the March 2000 FAO Appeal). There is evidence that a significant number of cattle holders did not want to abandon their livestock, even when the floods reached high levels. Comments such as 'Cattle are our bank' reflect the value of livestock in the smallholder sector. Other comments such as 'When drifting under the tree tops towards the sea, animals were crying' indicate the close link between people and cattle.

Direct losses to the agricultural sector were estimated at US$65.81 million, with the damages to the smallholder sector accounting for half of that amount. Artisan fishermen in the Limpopo basin, who had reported catching about 650 tonnes of fish in 1999 using mostly gill nets, saw their catch drop dramatically in 2000, down to about 200 tonnes, due to flood-induced equipment losses (Barnes *et al.* 2002).

The population was exposed for some months to an increased risk of disease, especially cholera and malaria, but efficient public health services adequately dealt with these threats. Annex 3 gives details on the disaster-related costs covering all sectors (US$488 million), as well as an assessment of the relief needs (US$65 million) and reconstruction needs (US$428 million).

2.2 The Zambezi valley floods of 2001 and 2007

In the Zambezi valley the patterns of flooding have changed considerably over the last 50 to 60 years. Before the construction of the Kariba Dam in 1959, there was usually an annual flood in February or March of each year. A second dam was built at Cahora Bassa in 1974, to further control the water levels. The new dams halted these annual floods, which encouraged many people to move into the lowlands around the Zambezi, where the soil is more fertile. However, while the dams can control the flooding in normal years, they do not have the spillway capacity to cope with the very large floods that occur on the river every five to ten years. At best, the dam operators can slow down the sudden rise in water levels by phasing the spillage of water over a period of a few days, which gives the people living downstream a little more time to evacuate their homes (Foley, 2007).

Estimates of the impact of the 2001 floods included 113 deaths, with over 230 000 people displaced and over 550 000 people affected around the Zambezi river valley and within rain affected areas of Zambézia province (Leira, 2001).

The economic impacts were widespread. In March 2001 the retail price of maize rose by 26 percent in Beira, the provincial capital of Sofala; in Chimoio, the capital of Manica, prices rose by 38 percent (maize) and 16 percent (beans and peanuts). By April 2001 it was reported that 42 000 hectares of food crops had been lost due to the flooding, although FewsNet later reported a figure of 79 000 hectares (FewsNet, 2001). First season production was said to have decreased by 40–80 percent, following two successive seasons of crop loss. In November 2001 maize prices were at a record level of 350 000 meticais per 70 kg sack. Data from the Banco de Moçambique indicated that the metical had depreciated against the dollar by 9 percent in the first three months of 2001, partly caused by the destruction of infrastructure as a result of the floods.

[3] Revised 2000 Mozambique FAO Appeal. http://reliefweb.int/rw/rwb.nsf/db900sid/ACOS-64D3E8?OpenDocumentref.

The floods of 2007

From the end of January 2007 the level of the Zambezi river again began to rise rapidly because of local heavy rain in the Zambezi valley, as well as discharges from the Kariba Dam upstream and the flow from the river's tributaries. By February it had burst it banks and flooding occurred throughout the lower reaches of the river. The situation was aggravated in Sofala province, affected by Cyclone Favio which struck in late February.

During the floods of 2007 over 400 000 people were said to have been affected by the combined severity of the flooding and the cyclone which struck Inhambane and Sofala provinces. The flooding caused 45 deaths, extensive crop damage, and the evacuation of around 163 000 people from low-lying areas.

A further 122 000 Mozambicans lost crops when their fields were flooded, although their homes and storehouses survived. Cyclone Favio devastated the town of Vilanculos, resulting in 10 deaths and 70 injured, and causing extensive damage to infrastructure and property. An estimated 150 000 people were affected in the districts of Vilanculos, Inhassoro, and Govouro, as well as along the Buzi river in southern Sofala province.

Estimates by the Ministry of Education indicated that the flooding in the provinces of Zambézia, Tete, Sofala and Manica prevented 130 000 pupils from attending school, just as the school year was beginning, in 392 schools in the four provinces.

Ministry of Health nutritional surveys conducted inside and outside accommodation centres in selected districts in Sofala, Tete, Zambézia and Manica found high levels of malnutrition among children under five years of age, ranging from 12.3 percent to 19.9 percent.

Box 1 shows the results of a survey by SCF–UK, conducted in October 2007, concerning the areas affected by the floods during February and March 2007 in Zambézia Province. One hundred and eighty one households were surveyed in 13 communities; seven in Mopeia district and six in Morrumbala district. Members of the households were interviewed from both inside and outside the resettlement areas.

BOX 1 – IMPACTS OF THE FLOODS IN MORRUMBALA

Livelihood and food security impacts of the 2007 floods included:

- The majority of the households in the flood-affected areas had managed to harvest cereals during the second cropping season, but on a lesser scale than previous years.
- The main food source for households in resettled areas was food aid, followed by household production (25 percent) and the purchase of food (20 percent).
- Outside the resettlement areas the main source of food was household production (44 percent) followed by the purchase of food (41 percent).
- The main sources of income for the households affected by floods are fisheries, seasonal work/piece jobs, informal trade, and sale of crop production.
- Fewer households in resettlement areas fish as a primary source of income, largely due to the loss of fishing equipment during the floods.
- 61 percent of the households in resettlement areas do not have any fishing equipment, compared with 60 percent of households with fishing equipment outside the resettlement areas.
- Ownership of livestock is very low, with 35 percent of the households in the surveyed zones owning no livestock, and 25 percent owning only one animal.
- Households in the resettlement areas have significantly less livestock than those outside of the resettlement areas.
- 99 percent of the households in resettlement areas have access to water from a well or a borehole with a pump, compared with only 35 percent outside of the resettlement areas.
- Overall 17.2 percent of households changed the location of their cultivated land since the last planting season, of which 73 percent stated that they had moved due to the floods (this was followed by 23 percent that moved due to infertility of the soil and 3.8 percent due to drought).
- All households confirmed that they planted more cereals during the second agricultural season in April 2007 due to the weak harvest of the first season crops; however, the overwhelming majority said that in total the production was less compared with the 2006 second season crop.

Source: SCF–UK, 2007.

■ 3. CRITICAL LAND ISSUES AFTER THE NATURAL DISASTERS ■

3.1 An enabling environment to prevent natural disaster related disputes

An examination of land rights and land issues in the post-disaster situations that Mozambique has faced reveals a common thread: major disputes and conflicts are generally absent. This is true of the post-conflict period, as well as the post-flood events that form the focus of this paper. It is worthwhile examining some of the principle reasons for this, as they will provide some important lessons on efforts that may be required to prevent these disputes happening in the future.

- **Resilience to disaster.**
  Over the past ten years, work on disasters has increasingly focused on the capacity of affected communities to recover with little or no external assistance. This requires a stronger emphasis on approaches to risk reduction and humanitarian and development work that put resilience, rather than just need or vulnerability, at the heart of the debate (IFRC, 2004). After independence from Portugal in 1975 Mozambique endured a 16-year civil war that was ended by the 1992 Peace Agreement. During this period, hardship was exacerbated by a number of natural disasters: the floods of 1977 and extreme droughts in the early and mid 1980s. It appears that the Mozambican people have established a high degree of resilience to the recurrent character of these disasters.
- **Livelihood strategies to respond to the occurrence of disaster.**
  In the Gaza province and other dryland areas, strategies to minimize risks of economic hardship have been developed over time. These include a diversification of agricultural production in time and space, having access to different types of lands and soils, and making alliances with neighbours to secure this access. Losing one or two parcels due to the occurrence of a disaster is compensated for by arranging access to parcels in different locations.
- **Solidarity and social networks.**
  Strong forms of solidarity remain part of Mozambican society. In rural Gaza, the *Changanas* (dominant regional social group) have developed solidarity systems such as *Kofunana* and *Tsima*. Similar traditional mutual help systems exist in the Zambezi valley, such as *Macuti* and *Cufuisa*.
- **Absence of major ethnic, social and political differences.**
  Mozambique is a multi-cultural society but has remained largely immune to confrontations or conflicts defined along ethnic lines.
- **Land availability.**
  Post-disaster situations are not, as yet, being used by groups or individuals to gain access to land or natural resources, and in general there remains a relative abundance of land for agricultural development. Private land concessions are an established practice in the Limpopo valley and seem to meet the consent of local populations. Larger concession holders are not yet massively encroaching upon smallholders or communal land (although more recent reports indicate an increasing interest from the agro-fuel sector). In the Morrumbala and Mopeia districts of Zambézia the threats to land access have so far manifested themselves through the marginalisation and exclusion of some communities from the hardwood timber forest areas, rather than from the arable or pasture land in the low-lying valley areas. Land remains in reasonable abundance in both Mopeia and Morrumbala and the limits to land production tend to be related to the availability of family labour. However, it is possible that this situation will begin to change as stocking levels of livestock begin to recover, a process that has only happened slowly to date. The history of the river margins in Mopeia and Morrumbala is one of extensive use of pasture land, and local community elders still remember the days when vast herds of cattle belonging to colonial companies were corralled all along the banks of the Zambezi river. There are already some localised conflictive incidents, largely as a result of the stocking of water buffalo, which are allowed to graze un-herded and cause significant damage to local *machambas*.
- **Informal but strongly legitimate land rights and local institutions.**
  Decision-making on land management, including dispute resolution, continues to be dealt with primarily via informal but mostly legitimate institutions at the local level. Both displaced people as well as those who receive the disaster victims often use these same institutions to take care of their problems and challenges. The strength of the institutions' legitimacy is recognized by the Land Law: customary land rights exist and are recognized as such. They do not need to be prescribed. Local people also accept these rights, which are based on the occupation of and use of the land. This offers major advantages in that formal documentation is absent. It also empowers oral testimony in case this is required, and local solutions to problems.

3.2 Land issues for the displaced

In the Limpopo valley floods of 2000, the temporary settlement of up to 650 000 people was an operation that went ahead without any significant preparatory efforts. There is evidence that some of the selected sites coincided with locations that were used after the 1977 floods. However, most of the sites were identified on the spot, sometimes in places where rescuers dropped off flood victims from helicopters or rubber boats.

The distance between the places of origin and the accommodation camps varied according to the morphology of the valley and the presence of safe havens

on high ground. The accommodation camp of Xai–Xai 2000, also called *Ndambine* ('floods' in the Xangana language), which turned into a permanent and to some extent 'example' resettlement village, is situated in the outskirts of Xai–Xai town, less than 10 km from the flooded centre, just outside the municipal boundary[4]. One of the biggest resettlement camps in Chokwe district, Chiaquelane (accommodating up to 60 000 displaced people at one stage) is, however, located at a distance of 30 km from the flooded centre. Another refuge town, Macia, is some 60 km from Chokwe town. All three centres have developed from places of temporary shelter into permanent resettlement sites.

Similarly, in Zambézia in 2001, and to a lesser extent in 2007, local populations either fled themselves, by canoe, or were evacuated to areas of safe higher ground which were easiest to access. Thus in 2001 and 2007 the community of Cocorico, which occupies an island within the river system, was forced to head for the Sofala bank instead of to Mopeia on the Zambézia side, an area where they felt more 'at home' from a cultural and administrative perspective. In 2008 the regulo and his people managed instead to reach Mopeia, which is closer to their area of origin, and where there have been attempts since the 2001 floods to establish permanent resettlement areas. In Morrumbala, the situation is different: here, most of those displaced in 2007 and 2008 were able to return to land that they had already been allocated in the higher areas during the 2001 floods.

Strengthening tenure arrangements through visible occupation

Upon arrival, flood victims were registered by relief agencies or the state authorities, making them eligible for emergency assistance. It was also on this basis that plots of land were allocated in the resettlement villages. In the majority of cases, this registration, supplemented by an index map where each plot number corresponds with the name of a resettled person or family, is the only documentation that secures any tenure over the land and property. None of the communities interviewed in Zambézia had any documentation relating to their newly allocated parcels of land and, although they were aware that a general map of the residential area had been compiled by the provincial services of MICOA, a copy of this was not available locally, even at district level.

Maintaining secure access to productive assets such as land in the area of origin, but also to employment, is a core livelihood strategy that flood victims have adapted as part of a post disaster response. Permanent occupation of land, or the exercising of highly-visible land use, is an accepted way of establishing strong rights over land. This is part of the customary heritage of all social groups. Successive post-independence governments have also embraced this policy, on the basis that 'land belongs to those who use and cultivate it'. Resettled flood victims have used this strategy to strengthen their tenure security. They have tried to occupy both the lands that they had to leave and the newly-allocated lands. When distances between the two sites become too important, families tend to split up, and establish some form of presence on each plot.

The use of customary embedded practices by resettled people to acquire stronger rights over their allocated land continues to be used widely. The planting of fruit trees is very popular in resettlement villages. The presence of fruit trees on land (cashew, mango, papaya, etc.) establishes strong rights over that land. It is proof that the land belongs to someone, and, when occupied by an outsider, it may be reclaimed. Some NGOs have been promoting fruit tree planting as part of resettlement efforts. There are also efforts in some flood-susceptible locations to plant trees along the parcel boundaries.

The 'removal' of fruit trees that are found standing on an allocated plot in a resettlement village is a common strategy to erase proof and support a potential future claim over the land. These claims do sometimes occur and are lodged by living members of the host community, who still use the land. It is by decision of the state that they are excluded from land use on their own land. This practice creates common disputes.

The integration into existing structures of host communities, and acquiring land through local customary authorities, is a method used by a number of resettled households that want to have secure access to additional land in the neighbourhood of resettlement sites. However, upland is much easier to access in this way than more valuable lowlands.

Resettlement on community land

Resettlement programmes are organized by the local authorities (often district administrations), or local (municipal) and provincial governments. For a number of resettlement places in the vicinity of towns, some sort of outdated town plan usually exists. These plans have no provisions for emergency resettlement. In the best cases, areas earmarked as possible extension sites for town development could have been used for the

[4] This is important as municipalities have a different land administration system from rural areas that are located outside municipality boundaries.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resettlement of flood victims. In practice this did not happen, mainly because local governments did not want to see their future prime land being occupied permanently by displaced people.

Most people are actually resettled on community lands in rural areas. This is a laudable policy, as it may offer at least the minimum conditions necessary to engage in economic activities that will support local livelihoods. Local communities have established rights over these lands through long-term occupation, according to local rules and customs. Community land rights are recognized by the Land Law, and can be made visible by the community land delimitation processes. Local land management institutions, as well as a significant part of the community members, often have a clear idea of the position and extent of the community boundaries. The land policy and law embrace negotiations and community consultations as mechanisms for outsiders to obtain access to community land. The community, represented by a local land management body, agrees or disagrees with the request for access to land and the use of this land under certain conditions. The latter may refer to the duration of the right to use the land, but also to the benefits that this temporary transfer entails for the community.

Resettlement locations on community land are identified by the local government authorities or district administrations, with the involvement of local community representatives. There is evidence that community representatives are not necessarily the same people as those identified in the Technical Annex to the Land Law, i.e. the so-called G9[5]. They correspond more with local political leaders, who have established privileged relations with the state (in Gaza), or local traditional leaders, who have greater legitimacy within the local context than the state or state-recognized leaders (in Zambézia). The consultation process that identifies suitable resettlement spots is more likely to correspond with a decision taken after some 'superficial consultation', rather than a decision based on negotiation. This fast action appears to be justified by urgency, but may result in friction and problems later on between the resettled peoples and the host community.

Consequently, public institutions such as the former INPF (now integrated in MICOA), the Provincial delegations of Public Works and the SPGC, initiate a process of surveying and parcelling plots. Surveying appears to have presented major challenges in the past. There is a weak capacity to deliver services, a lack

[5] A G9 is a (s)elected representation of a rural community, between 3 and 9 people, who are responsible for officially exercising functions and signing a number of forms to delimit the community land rights, according to the Technical Annex.

of coordination between different agencies, and a lack of norms and standards. As part of recent resettlement efforts in Zambezia, MICOA and other partners seem to rely now on the training of locally-selected youngsters to provide basic surveying services. Young volunteers from local communities who have acquired a minimum threshold of school education are trained on-the-job in basic surveying techniques, and in the production of simple parcel layout plans. Once a certain level of expertise is reached, these 'basic parcelling technicians' are considered to be trainers for other small teams in neighbouring areas[6].

Trust in the state to guarantee land and property rights

The only security of tenure that resettled flood victims acquire over their land and home is based on trust in the local administrative state structures. They are not issued any kind of certificate or DUAT for the acquired plot; neither do they obtain a building licence for the shelter or home. The state is still very much respected, at least in the southern parts of Mozambique, and this trust may provide certain levels of perceived tenure security. But, in most of the cases in Gaza and in at least one area in Zambézia, the state did not in fact acquire the land for resettlement through an 'official legal' agreement from the host community. The host community could, in principle, question at any moment the validity of the resettlement site. In this context the question arises as to why the state does not sign a legally-binding agreement with the host community, such as an official community land delimitation, followed by a genuine negotiation of access to community land according to the Land Law. The lack of any preventive action, combined with the urgency to act when a disaster occurs, is probably the major reason why a negotiated agreement is substituted by a more imposed form of agreement.

On the other hand, the state has access to other mechanisms to secure land for resettlement; for instance, by using expropriation for a public purpose, as happens in urban areas. This is a much stronger and less negotiated form of accessing community land, but also guarantees, when implemented well, that the host communities will receive adequate compensation. It also strengthens the position of the state, or local authorities, in providing sufficient tenure security for the resettled flood victims, at least when there is a desire to do so.

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Gradual strengthening of weak tenure arrangements

Initial trust in the state to secure tenure for resettled flood victims appears to fade away when the victims are confronted by host community members who reclaim their land, sometimes with outsiders who spontaneously settle on the outskirts of resettlement villages (to take advantage of new opportunities created), or with local state authorities themselves. There are cases where the infrastructure allocated as part of resettlement schemes has been re-allocated to outsiders by the local authorities. There is also anecdotal evidence of some plots being traded by local authorities, or of the multiple allocation of plots to different beneficiaries. All of these situations undermine good faith in the state as a guarantor of tenure security.

After several years, when initial gratitude has given way to real-life challenges, plot beneficiaries realize that they require a more direct form of tenure security. For instance, in Xai–Xai 2000, individual households are applying now for (i) the registration of their plot as a formal DUAT, to secure the plot, and (ii) a (post-factum) building licence to secure the infrastructure on the plot. This pro-active registration process originates in the resettled community itself, as a response to a perceived

[6] Interview with DjeDje Arlindo, Director DNPOT, MICOA.

feeling of tenure insecurity. The public cadastral services (SPGC) understand well that people want to secure their tenure, but consider this to be an on-demand process, and deal with it exclusively on an individual client/public-service-provider basis. This approach brings with it many hurdles involving logistics, costs and other considerations, especially against a background of poorly-staffed institutions. Generating income for these services may be one of the driving forces for maintaining this on-demand approach. There is, however, no doubt that a more systematic campaign approach would drastically reduce costs, and be more in line with existing service provision capacities.

There are also calls for subsidization of the costs to secure land-use rights and obtain building and construction licences in resettlement villages. This could be achieved by a campaign approach. It is also conceivable that a set of simplified procedures could be considered, to reduce real costs. In the case of a resettlement village, for instance, a local consultation process for each individual application does not seem appropriate. Another common opinion is that the most vulnerable groups, especially female-headed households and single women, should be able to secure legally their rights at no cost.

These concerns – essentially, upgrading tenure security through official means – were much more observable in the peri-urban context around the city of Xai–Xai in Gaza than in the deep rural settings of Mopeia and Morrumbala in Zambézia. There are several reasons for this. Firstly, the vast majority of people are not aware of the formal mechanisms for securing rights, and consider that the legitimacy of their occupation flows from their membership of the community (more on this below). Secondly, and closely linked to this, most of the resettled, although they have moved from the *baixa* areas, are still now occupying land that remains within the traditional boundaries of their particular community. They therefore consider themselves to have as much right as anyone else to occupy it. Thirdly, the supply side of the equation is much less in evidence: whereas in Xai–Xai 2000, the district administration appeared to have been actively soliciting the residents to upgrade their occupation (and therefore increase the local revenue stream for the district coffers), the authorities in Mopeia and Morrumbala in Zambézia do not have the mechanisms or the authority to provide such services. Whether, in fact, the district authorities in Gaza have any legal authority to register the land rights for the people of Xai–Xai 2000 is questionable.

Securing land rights as a group

Acquiring land for displaced people as a group is another option being tested. For example, a Muslim church in Macia requested a piece of land from the district administration, which was subsequently issued in the church's name and sub-divided into 50 plots. These were then allocated to flood victims who remained in Macia after the rescue operations. The beneficiaries themselves have never received any documentary proof that establishes a direct and unconditional right over their plot. The church apparently initiated a process to obtain a DUAT, but after some years there is still no trace of this request at the offices of the provincial cadastre. This specific case demonstrates again that the first right-holder (the church) did not necessarily acquire the land according to the prevailing legislation. It also points out, yet again, the weak position of the beneficiaries in that they need to rely on the good faith of intermediaries. Some beneficiaries, and especially their children, are taking the initiative now to secure their plots using legal provisions, i.e. they are attempting to acquire individual DUATs.

A lack of information

Information on the nature and costs of the legal procedures required to secure tenure appears to constitute a major hurdle for displaced people. Very few are informed about the possibilities that the Land Law offers them in initiating a land registration process. Since their resettlement, Xai–Xai 2000 residents have not been exposed to any kind of organized events for the dissemination of information. None of the communities interviewed in Zambézia were aware of the Land Law or its provisions. Meanwhile, new financing possibilities for securing tenure are put into place, such as the ITC fund. In Gaza, the provincial fund management does not seem to be aware of the need for flood victims to secure their allocated plots; neither are the beneficiaries of resettlement areas aware of the existence of such a fund. The NGOs and other civil society groups do not seem to take up this challenge, either. It appears that the involvement of NGOs and others in emergency work is limited to providing relief immediately after a disaster, including the building of shelter. Securing the land on which this shelter is built seems to be less of a concern: as one interviewee from an NGO in Zambézia stated, '*tenure is not part of the equation*'.

Emergence of parallel mechanisms for securing land

In the absence of an organized response from the appropriate public sector institutions, new mechanisms


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to secure tenure seem to emerge, parallel to the existing legal procedures. A significant number of people rely on local authorities (at the administrative post level, or even lower) to obtain some sort of written declaration stating their ownership of land or infrastructure. The local authorities charge a fee for these services. The documents and the process of registration are all handled at district level. Given that the only legally-recognized cadastre, outside of the municipality areas, is at the provincial level, and that land rights must be authorized by the provincial government, these procedures do not seem to have any legal backing. They do, however, appear to be legitimate for the incumbent and to the local authorities.

Similar declarations from local leaders state the good faith and capacity of the incumbent to engage successfully in a project. These declarations are accepted by some commercial banks as a guarantee for access to credit. This is an interesting evolution, which departs from the deeply-rooted liberal wisdom that a legal individual landownership title is required as collateral, in that it relies more on local evidence of legitimacy.

3.3 Land issues for the returnees

The imperative for tenure security in flood-susceptible areas

Resettlement often only gives flood victims an opportunity to acquire a residential plot in a safe haven. An overwhelming number of resettled people continue to be engaged in agricultural activities; in the rural Mozambican setting, alternative opportunities are rare. Resettlement, as a permanent option, is not generally conducive to the establishment of a new livelihood; it does not provide the access to land assets on which livelihoods can be built in this agrarian society. This remains a strong 'push factor', moving people away from resettlement areas and back to their areas of origin, where people encounter better conditions and established social networks to rebuild their livelihoods. Rural people are thus extremely aware of the need to maintain their access to the lowlands and the grazing lands from which they were evacuated. In the case of the resettlement of livestock producers, it is clear that their cattle will mainly remain in their areas of origin.

Some examples of this were evidenced in the wake of the 2000 floods. After the flooding, DFID provided finance, through a Knowledge and Research project, for the development of sustainable flood mitigation strategies for three communities in the Limpopo valley. Information on sustainable flood mitigation strategies were collated in a 'Source Book' and then applied to these communities (Carre, Languene and Matidze). The implementation work was carried out by HR Wallingford Ltd, in collaboration with the Eduardo Mondlane University, the Department of Health, the Department of Agriculture and the local district administrations.

These planning processes led to the identification of a series of flood mitigation measures in each of the areas. Two of the most important measures, common to all areas, were the provision of drinking water during

floods and pest-resistant seed, both of which were subsequently implemented with external support and funding.

However, in relation to resettlement initiatives, the villages expressed a very clear preference for remaining in their areas of origin, rather than moving to the resettlement areas. In Languene, it was reported that:

> *'The Government has provided a re-settlement area. Houses have been built using local materials and there is a concrete school. However, there are few jobs and people have returned to the floodplain.*
>
> *… little Government support is provided. It is however noted that the Government provided re-settlement areas and a school. It appears to be Government policy to resettle people outside flood risk areas, but the people have no source of income in these areas. They therefore return to the floodplain in spite of the risk. The issue of employment and livelihoods for people in resettlement areas should be discussed between the Community and the District Administration.'* (HR Wallingford, 2005)

Similarly in Carre:

> *'The people want a school in the village. The Government will not build one because of the flood risk. A school could provide a valuable safe haven during floods if designed for this purpose, although the Government may not wish to consider a school in the Community now that one has already been built in the evacuation area.'* (HR Wallingford, 2005a)

This study has identified different interaction scenarios between residential resettlement areas and the flood-prone lands of origin. In Xai–Xai and some areas in Zambézia, the relocation areas are close to the flooded areas, and people tend to move between the two locations on a regular basis, sometimes daily, sometimes weekly. During the cropping season, small farmers may erect some form of temporary shelter close to their fields and remain there for extended periods. Others, mainly young family members, graze cattle in the wide Limpopo plains. In Chokwe, however, there is more of a tendency to maintain permanent shelter structures in both the resettlement area and the area of origin, mainly because the distances between the two are more significant. In both cases, resettlement and host areas generally fall under different local land management structures (or different communities).

In Zambézia province, the distances between the areas tend to be greater. Over time and after the flood waters have receded, the temporary visits to the *machambas* in the *baixa* become longer, more family members begin to make the journey to tend the fields, and eventually there is fairly permanent relocation back to the flood-prone area. Here, both the areas of origin and the areas of resettlement usually form part of a single community territory. In other cases, the two areas fall under the jurisdiction of different communities, which may have customary leaderships that are more politicized and sometimes more polarized than in the southern provinces.

Overall, the bottom line is that displaced people want to continue having access to the lands they left when taking up residence in a resettlement site. For them, the establishment of strong rights over land that may only be temporarily inhabited at best (or that is not necessarily permanently or highly-visibly used) and which needs to be evacuated with regular frequency, is essential. Where there is a perceived risk that people may eventually lose access to these lands, they will not be encouraged to leave the areas when the floods arrive. Providing secure tenure to their lands of origin, whilst also securing access to a residential plot in a safe haven, is therefore key to any successful flood mitigation policy. A failure to achieve the two challenges simultaneously will result either in poverty and destitution or in continuous exposure to the dangers of recurrent floods.

The role of local institutions in providing security of tenure

People who return to exercise a permanent occupation of their land have not, in general, encountered any problems in re-establishing their rights. This applies to both urban and rural land. In residential town areas, the return after the floods has not resulted in illegal secondary occupation. Infrastructure was badly damaged, but not wiped out completely, leaving clearly-visible indications of previous occupation. The local leadership, neighbourhood secretaries and other local dignitaries have played an important role in confirming previous occupation and ownership when required. It does not appear that the loss of documentation – in urban areas, mainly building permits – has negatively impacted on the re-occupation of property.

In rural areas, such as in the irrigation scheme of Chokwe, some parcel boundary markers such as trees and even shrubs, were still in place when flood waters

receded. In Zambézia, none of those interviewed (all of whom had been displaced and had returned twice to their areas of origin in the last 10 years), reported any problems in relation to re-occupying either residential or agricultural plots that they had been forced to abandon. Some minor boundary disputes occurred in Chokwe, but were successfully addressed by local leaders. Generally speaking, there is a high level of respect among small- and medium-sized farmers for land belonging to others, especially their immediate neighbours. The concept of occupation in good faith is a reality in Mozambican society, at least among people who stand on the same level of the societal ladder.

It is essential to highlight the existence of 'the living cadastre', a local institution of mainly elder people who maintain mostly memorised records of local land use and ownership. These institutions will also often witness informal local land transactions. The living cadastre plays an essential role in the normalisation of post-disaster land occupation. Legitimacy and reliance on local structures takes on an important dimension when most land was allocated in an informal way, even by the state, and never documented.

The concept of the local community and its role in land management is also essential to secure land rights for returnees. Members of a local community gain access to the use of land and natural resources by virtue of their membership. This membership is lasting and does not expire when a community member is absent for some time. Of course, local dynamics will play here, but in principle community members do not lose their right to secure land access when they are displaced.

Winners and losers

The largely successful reconfirmation of legitimate rights in both urban and rural areas upon return does not mean that some returnees haven't been prejudiced in the process. The municipality of Chokwe grasped the 2000 floods as an opportunity to re-plan some of the urban areas within its jurisdiction. Plots within certain parts of the town had previously consisted of 30 lots of 40-metre parcels, and generally included a small agricultural field used as a home garden. The municipal authorities have now decided to reduce these plot sizes and prohibit the plot owners from undertaking any agricultural activity. Compensation for lost property (such as fruit trees or land itself) is not considered, although most plot owners feel that such compensation is due to them.

There is a perception that the payment of compensation by the authorities is directly related to the legal registration of the land and property. Most town plots have a record at the municipal services (a property rights registration or *registo de propriedade*), but legal registration of the property is rare. Plot owners argue that registration is only for the 'rich', although in practice the costs of registration are low and well within the budget of an average plot-holder. It appears once again that the lack of information (on procedures to be followed and on the costs involved) is an obstacle to the registration of land and property. It must also be remembered that the registration of land and property is not compulsory in Mozambique.

The post-flood period has also created some new dynamics in the transfer of land. The 2000 floods have resulted in a reduction of the population of the Chokwe municipality from 63 000 in 1997 to 54 000 in 2007, although the district as a whole has seen an 8 percent increase over this period. Emigration out of Chokwe municipality has made available a number of urban plots, with a significant number being exchanged and occupied by family members, as part of the diversification strategy (having access to different urban plots in flood prone and flood safe areas). Other plots have been sold by their owners, which, strictly speaking, is unlawful in Mozambique. Nevertheless this again proves that land markets are an integral part of the system. Other parcels were re-allocated by the administration (municipal and local), a process that was sometimes associated with corruption and nepotism.

3.4 Land issues for the host communities

Recognition of host community needs and contributions vis-à-vis newcomers

Land issues and the tenure rights of host communities should also be addressed in the context of resettlement within their areas. Resettlement mainly occurs on community land, most of which is neither delimited nor registered. Compared with earlier post-disaster resettlement efforts (in the late 1970s), the GoM has embraced other land policies and legislation. Whereas in the late 1970s the state, under a socialist-inspired regime, was the sole owner and manager of land, the present land law recognizes strong rights of communities over land. The underlying philosophy is that land can be alienated from community land, and can be used by outsiders under certain conditions, and on the basis of negotiation. This is a mechanism to attract investment in rural areas, and involve non-community members in the development of rural areas. The mechanism can, or rather should, also be used for identifying areas to resettle victims of natural disasters. The land law, especially the TA, provides mechanisms

to handle the local consultation process. Negotiation is of course only possible when it is known (i) over which area the rights of a certain community extend, and (ii) who represents the community as a negotiation partner. The community land delimitation process achieves both of these pre-conditions and makes the community land rights visible to outsiders, including the state.

The common practice now is that resettlement occurs via local government or district authorities alienating a part of the host community lands without following the necessary procedures as described by the law. Consequently, this land is re-distributed to flood victims, who, after some time, will procure some form of individual tenure security for the plots that were allocated by the state. This results in resettled people acquiring rights over land that may be perceived as stronger than the rights of their hosts. This is, of course, exacerbated when the latter community land rights are not delimited and registered.

In general, principles of solidarity are used and accepted by host communities in giving refuge to their 'brothers and sisters' when these are the victims of a natural disaster. When this solidarity turns into unconditional alienation of their own land, undermining their own rights, pressuring their own natural resource base (and not necessarily with their full consent), and without bringing any benefits, it is understandable that conflicts may arise. This is certainly exacerbated by the emergency and recovery aid channelled to resettled victims, of which the host community members are mostly deprived.

The case of Xai–Xai 2000 exhibits some of the elements of such a scenario. The municipal and provincial authorities identified a site for resettlement, together with local leaders of the host community, the communal village of Fidel Castro. Fidel Castro village itself is the result of the response to the 1977 floods, when it emerged as a resettlement site. At that time, community members were concentrated in a very rudimentary village structure, without many services and amenities. The community members continued to cultivate their scattered parcels in the highlands, planting cashew and mango trees on these plots. It is on this agricultural land that the new site of Xai–Xai 2000 was constructed. New residents are strengthening their tenure over this land, whilst the remnants of any previous occupation are being systematically removed. Some compensation is agreed through sharing the production of the fruit trees between former and new holders of land-use rights. At the time of 'negotiation' between the authorities and the host community, it appears that more serious promises of compensation and sharing of benefits were made by the former. These promises (or outcomes of a rather superficial negotiation deal) faded away over time and leave the host community feeling a degree of simmering resentment. Seven years after the fact, these could potentially turn into conflicts at local level.

Similar situations were encountered in Zambézia, generally centring on the provision of improved housing for the re-settled. In the resettlement areas of Braz and Noere, for example, people from Nhangoma in Tete province have come to be resettled in an area that forms part of a different community. The state policy of providing access to zinc roofing sheets and assistance in the construction of brick houses, has lead to a situation in which the resettled second-tier traditional leaders (*sapandas*) from Nhangoma have better housing than the first-tier paramount chief (*regulo*) of the host community. This fact was remarked upon by several community members as being unfair, not recognising sufficiently the *regulo's* contribution in hosting the displaced community.

In a different area, Mponha, the state was more alert to this issue and the local third-tier traditional leader (*fumo*) of the host community was given the same access to materials and assistance as the flood-affected displaced; the population here claimed that only the *fumo* was given this privilege and that there was no jealousy within the community about this, because it was the *fumo* that had to sacrifice his time in the fields in order to attend to resettlement business.

Unnecessary state interventions

In Zambézia there is evidence that some of the government's initiatives in securing land for the displaced have caused unnecessary confusion and have actually been at odds with a correct application of the land law and with local land management issues. Although it has not been possible to identify exactly from where these initiatives have arisen, it appears that through the intervention of the provincial government in Zambézia, post-2007, a number of areas have been demarcated in the cadastral atlas for agricultural use by displaced groups. According to the provincial SPGC, the intention behind these initiatives is laudable: they are driven by a perceived need to protect these areas from encroachment by private interests, and ensure that there is sufficient land access to meet the agricultural needs of the displaced. The manner in which they have been implemented, however, has been legally suspect, largely disempowering the local communities (both the displaced and the host groups) and, at least


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in one case, leading to the halting of a community-driven process to identify and register its local land rights through a delimitation process.

It is important to note that all these cases involve flood victims that are being resettled from valley land to higher grounds, but within the same rural community. From interviews conducted in 2008 within local traditional structures, it was apparent that the identification of resettlement areas and the areas available for cultivation had already been handled very well at a local level. The intervention of the provincial government in demarcating other areas, largely through the SPGC, was considered to have been unnecessary and confusing to some people. However, in most areas, even the *regulos* appeared to know little about it.

From a legal perspective, the following issues arise:

- The demarcations are done without the corresponding DUAT being awarded. The areas are merely marked in the cadastral atlas and there are no procedural mechanisms to approve the land rights or identify its status.
- The SPGC claim that the areas demarcated in this way are registered on the cadastral atlas in the 'name of the community'. However, without following the Technical Annex of the Land Law it is not legally possible to identify a 'local community'. The provincial office of MICOA had a different explanation and claimed that the areas had been declared '*reservas do estado*' (areas reserved to the state).

From a process perspective, it would appear that the demarcations only served to undermine the local land management institutions:

- The demarcations were done by outsiders, technicians from the provincial level, who appear to have had little or no contact with the local traditional structures or to have consulted anyone other than the district administrations.
- There are no local maps of these demarcations in the area, not even within the district administrations, and none of the *regulos* in the areas visited in 2008 were aware of the maps or the areas that they demarcated.
- In one case, the community of Nhacatundo was, with the help of a local NGO, ORAM, already undertaking a delimitation of their customarily-acquired land rights when the process was halted under instructions of the SPGC, ostensibly because SPGC wanted to complete the separate process of demarcating these agricultural areas for the displaced. This was done even though the affected people were from the same area, and would therefore be co-title holders with the same rights to the land as anyone else from the community. The area demarcated by the SPGC is considerably smaller than the area that would have been secured through the delimitation process; it would also have been legally awarded instead.

There is little doubt that when rural communities register their land rights through a legally-sanctioned delimitation process, and prepare, as part of this, a simple

land-use plan for the area, they are more likely to (i) accommodate victims of natural disasters (ii) be more actively involved in encountering local and acceptable solutions for managing the resettlement and (iii) benefit from recovery efforts. An enabling environment of local land management accountability is more likely to prevent disputes between hosts and newcomers than an imposed intervention from state authorities.

3.5 The loss of formal records

The loss of formal land and property records was a major land-related issue highlighted in the early assessment missions in 2000. This is not surprising considering that most administration buildings in Xai–Xai and Chokwe were flooded for weeks, offices were abandoned for some two months, and upon return the documentation was buried under a layer of mud. Records that were destroyed included:

- Cadastral records of the SPGC–Gaza, located at the Provincial Directorate of Agriculture in Xai–Xai; of some 1322 records, two thirds were unique documents without copies available at the central level.
- Property records of the municipality of Chokwe (*Tombo geral da propriedade*), located at the municipal administration; an estimated 70 percent were damaged.
- Provincial registry information of the Gaza province (*Conservatório do Registo*), located in the Ministry of Justice in Xai–Xai; 22 volumes of the register were destroyed or partially destroyed.

Notary documentation was also lost. ORAM, a leading national NGO on land issues, lost a number of processes relating to the registration of farmers' associations, which are time-consuming and costly processes; the registration process of the associations had to be restarted from scratch.

There is a strong belief that most of the damages done to land, property, civil data and registers could have been avoided. The arbitrary response to the alerts given through the public early-warning system is considered a major reason for the loss of documentation. The floods were well predicted, but in fact the dimension of the third flood, beginning at the end of February, took Chokwe by surprise. Notwithstanding the timely alerts, there was widespread disbelief that the height of the flood would exceed 1977 levels. The Xai–Xai population, however, including the civil services, were alerted at least two days in advance that the flood levels would reach the town, but very little precautionary action was taken. The SPGC staff removed their computers from the ground floor offices to the first floor, but all hard-copy documentation remained in the filing cabinets on the ground floor, as well as all the surveying equipment.

Within the context of the existing land administration environment of Mozambique, the most pertinent questions concern whether the destruction and damage to official land and property records has had any significant negative impact on the daily life of land and property holders, and whether, as a consequence, it has created any land and property-related disputes. The answer to both questions is probably 'no', at least in respect of rural land rights.

Firstly, an overwhelming part of the existing land rights in rural areas have not yet been subject to any cadastral surveying, and these rights are thus not documented as official cadastral records. Of a population of 1 116 000 for the Gaza province (with some 100 000 urban-based people registered in Xai–Xai town – Census, 1997) only around 1300 rural land parcels were issued, or in the process of being issued, at the time of the floods. The loss of these records, in the grand scheme of things, was therefore not catastrophic.

Secondly, all documented DUATs that were approved after 1998 have, in principle, been subject to a process of consultation with local leaders and authorities, as part of the legally-approved procedures to acquire a DUAT[7]. This local consultation process always leaves traces that can be tracked down when needed. When documents are destroyed, there is always a local reference able to confirm whether a person or entity has been through a process of acquiring a DUAT.

Recording property rights in urban areas has been more widespread. The inclusion of a property right in the municipal *Tombo de Propriedade* (the register of the infrastructure on the land, not the land itself) is written proof that a person has erected a construction on a plot according to the legal procedures. Again, there are strong social-control measures as regards land occupation within urban areas, exercised by local authorities such as *chefes de quarteirão* and *chefes de bairo*. This is a remnant of the social-control system instigated by the socialist regime in the 1970s, and comes in handy when there is a need for oral testimony to confirm land and property rights.

[7] Land-use rights approved before 1998 have also been, again in principle, subject to a validation process to bring them in line with the provisions of the new land law regulations passed that year.

The loss of formal records has had little impact on people's lives in the aftermath of the disaster. This does not, however, imply that lost documentation does not need to be restored, or land rights do not require documentation. When community land rights are not made visible through delimitation and recording, it is difficult for community structures and members to exercise their rights. Undocumented community land rights are easily encroached upon by outsiders who may acquire incompatible overlapping rights in bad faith. Documented individual DUATs are needed for a number of situations, such as accessing credit, securing investment, and avoiding overlapping land rights.

The response of the government in addressing the recuperation of lost documentation, and preventing similar situations from occurring in the future, has been tentative. No special campaign was set up to rapidly retrieve or restore lost documentation. Each service or department was responsible for handling its own business, according to procedures that were not well defined. Efforts on recovery and restoration of documentation were normally part of the regular programme of the service. There was no recruitment of extra staff, although there was some occasional help from headquarters-based staff. There is no sign that specific measures were taken, or specific procedures approved.

It must also be noted that the recovery and restoration efforts have not directly induced a systemic change. The lost or damaged records were restored as best they could be, but the recording system itself was not improved. The data of the Property Register (*Registo Predial*) is transcribed, once again by hand, in new books, a process that is still ongoing a full eight years after the events. According to the registrar in Xai–Xai, the introduction of a digitised Property Register is one of the lowest priorities among the ongoing modernisation efforts in the Ministry of Justice.

A number of simple measures to prevent a similar impact on formal records were identified by national staff of different departments, including:

- A better and more organized response to early warnings is essential. Flood alerts need to be taken seriously and decision-making on safeguarding public goods and documentation should not depend on personal interpretations of such alerts. Although early-warning systems are better and more reliable than they were in 2000, people need to acquire more confidence in the early-warning institutions. These also need to become more legitimate for the ordinary citizen. The way alerts are given is not always accessible: clear messages need to be conveyed, such as a description of the present colour coding system, rather than abstract information on expected water levels delivered in meteorological language.
- Keeping official records in safer places is an obvious response to avoid future 'paper disasters'. The cadastral records at the SPGC are now kept on the first floor – although the peak water levels of 2000 floods easily reached this height. The Xai–Xai municipality is gradually locating new administrative infrastructure in the higher flood-free parts of town. This is part of a new town plan that appears to consider flood risk as an important planning parameter.
- The information flux between the different cadastre levels, provincial and national, has improved. Processed data at the provincial level are transferred to the national level on a monthly basis. Efforts to digitise the cadastral records at the provincial level are ongoing. The new information system is not fully functional, and still has major flaws. There is no online connection with the central system, and the system itself is susceptible to virus attacks. In principle, regular backups are made, but it is not clear whether standard procedures exist to do this, nor that the backups are held off-site in safer areas. The existence of a fully-operational digitised system would be a significant improvement.
- A number of logistical weaknesses have been identified, but not all are addressed in a coordinated fashion, according to adopted standard procedures. These include: proper filing systems in closed filing cabinets (existing filing cabinets are not waterproof); the use of waterproof ink for handwritten documentation and registers; keeping multiple copies of cadastral maps and other documentation; barred windows and doors in offices (the SPGC offices in Xai–Xai had bars, preventing records being washed outside the building by the flood waters).

The recovery and restoration of cadastral data has left a number of pertinent questions that still need to be addressed. One set of legal uncertainties refers to the legality of reconstructed data. Most of the damaged documents with original signatures have been copied, and there is a doubt as to whether copied signatures have the same legal value as the originals. There is no knowledge about any legal measures that eventually dealt with this issue.

There remains a lack of clarity on how to proceed with DUAT and community land delimitation processes that were not finalised at the moment of destruction or damage. The processing and approval of a DUAT is subject to a number of local authorisations, a local consultation

process, and further authorisations at provincial or national level, depending on the size of the requested area. Doubts arise as to whether processes that were in the pipeline for approval should restart all the legal procedures, or whether these processes can be finalised by adding the missing additional information and authorisations. Of course, this is only the case when some existing but damaged documentation was retrieved. This is often difficult, because DUAT requests that were still being processed were not filed, but simply kept in piles on staff desks. These files suffered most from the floodwaters. There also remains a question regarding the additional costs and whether these should be charged to the client (for example, if it is necessary to repeat some steps of the process).

■ 4. LESSONS LEARNED FOR ADDRESSING LAND ISSUES ■

4.1 The enduring role of 'traditional' institutions

One of the clearest lessons from the post-flood experiences in Mozambique is that the 'traditional' institutions of land management in rural areas of the country remain the most important, enduring and flexible mechanisms for the majority of people in securing access to land and resolving conflicts. Given the lasting weaknesses of the formal land administration system, especially at district level and below, the vast majority of the population rely on traditional authority structures and their overseeing role in respect of land access. In matters related to resettlement in residential areas, accessing new land for cultivation in the higher areas, and in the event of conflict when people return to their areas of origin, it is these institutions that play the most important role by far. The hierarchy of traditional chiefs in the rural areas represent a repository of information regarding land allocations, boundaries and entitlements; in effect they are a 'living cadastre', the point of reference to which everybody turns.

The GoM has adopted formal policies in the land and natural resource sectors that recognize this important role, and has enacted laws to provide mechanisms for their integration. Despite this favourable policy environment, the day-to-day state administration of land access, land allocation and conflict resolution still exhibits many past characteristics and has yet to make full use of the tools available. This is also evident in the planning and implementation of disaster response activities, as we have shown in this paper.

4.2 The need for better pre-emptive planning

Resettlement as a disaster mitigation policy

There is no doubt that resettlement is at the core of the GoM's flood disaster mitigation strategy. Resettlement, though, has a long history, and has developed astrong negative connotation among rural communities in Mozambique. During the colonial period, these communities were pushed away from productive land, ironically often flood-prone valley lands in Zambézia and Gaza. They were settled in villages on marginal land, and used as a work force in the estates (see O'Laughlin, 2001). The post-independence FRELIMO leadership turned these private estates into national enterprises, where rural communities were again considered as merely one of a number of production factors. The 'communal villages' arose partly as a response to flood disasters, at least in Gaza, but more so in order to implement a collective form of agriculture, whereby the ruling party and government were able to exercise a strong degree of social control. The villages were not accepted by local people: they were detested and the strong living memory of hardship clearly remains present today.

Recently, the main opposition party has been using these old realities to rhetorically disagree with and contest the present disaster mitigation policies, centring on the provision of housing materials and the encouragement given to the displaced to settle in established upland village areas. In late 2007, between two major floods events in the Zambezi valley, several RENAMO deputies claimed the government was trying to recreate the communal villages (Panapress, 16 November 2007). This accusation was repeated by the leader of RENAMO, Afonso Dhlakama, after the latest flood events of 2008, when he stated that the resettlement programme was just a plot by the ruling FRELIMO Party '*to recover ground lost to RENAMO during the war of destabilisation*'. According to Dhlakama, '*The FRELIMO government has understood that every year the people return to their original homes after critical flood periods or after receiving food … so it has found a way of keeping them in these new places. To stop them from returning, the government shares in house-building by providing zinc sheeting and cement, and thus obliges people to stay there.*' (AIM, 5 March 2008).

In 2000 and 2001, resettlement was implemented as a reactive emergency planning response to the floods. Resettlement villages were erected rapidly, on the spot, often in locations where victims happened to be dropped off after being rescued. There was simply no time to plan.

Decisions were made quickly; any obstacles that may have been encountered when implementing these decisions were ignored, massaged with promises, or coercively removed. In times of crises, state interference may be overly-inflated and decision-making may take on illegal forms. There is evidence to suggest that the response in 2007 was much improved, and that considerably more and more genuine consultation was undertaken with the local leadership of affected host and displaced communities.

It is clear that the quick remedial approach to resettlement was the major cause of land and property uncertainties, where these exist. This applies to the flood victims who were resettled, but even more so to the communities on whose land this occurs. Sometimes this problem does not arise, i.e. when people are resettled on land belonging to their own community, as has happened in most of the Zambezi valley areas.

Resettlement on community land is probably the only solution for future flood victims. Land registered in the name of the government is becoming scarce after the privatization efforts. Remaining government land, such as parts of the Chokwe irrigation system, is mainly situated in flood-prone areas. The more marginal community lands now become the preferred safe havens for flood victims. The challenge is to turn resettlement, initially a first-response mitigation strategy for natural disasters, into something that responds to the needs of the potential victims. It is a voluntary process; to make it attractive and successful an enabling environment needs to be created.

Where people continue to live in vulnerable flood-prone areas, coping strategies must be discussed with them and their rehabilitation needs must be understood. The concerns of both men and women need to be incorporated into rehabilitation and resettlement strategies. Settlement plans need to be made in discussion and negotiation with local communities. There is a need to understand how land use and land tenure systems affect settlement patterns, and whether changes in these could be used to encourage people to move to safer areas.

Pre-emptive action

There are a number of reasons to propagate a pre-emptive approach to the planning of resettlement, rather than maintaining an emergency reactive approach. It appears that most of the tools for resettlement planning are available, such as the long-awaited territorial planning policy and law, the existing land policy and law, and the housing policy, among others. These tools all adhere to the same set of basic principles, which include participation and inclusiveness in decision-making, local consultation, seeking consensus, possibilities for appeal, and giving public notice before finalising decisions. However, it is just not possible to adhere to all of these principles in an emergency response mode. And by failing to do so, the outcomes are often neither legal nor legitimate, as shown throughout this study, and become a source of conflict later.

On the other hand, there are no reasons to believe that resettlement planning and voluntary resettlement itself cannot be considered a pre-emptive exercise. The recurrent character of floods is a reality, especially in the lower Zambezi watershed. Early-warning systems in Mozambique are now well-developed; national and international institutions have established tools that make it easy to identify districts that are susceptible to recurrent flooding (CENACARTA, University of Eduardo Mondlane, INGC, INIA, MICOA, FEWS NET). Most of the steps that need to be taken in such a pre-emptive planning exercise are part of the overall government programme. It is a question of prioritizing, and making pre-emptive action even more a part of the government programme.

Sustainable resettlement – an action package

Sustainable resettlement does not amount simply to addressing the basic needs and services in resettlement sites, but must also encompass action in the areas of origin that are subject to flooding. Providing tenure security in these areas is even more important than in the victims' new homes. The permanent occupation of the latter provides reasonably strong forms of tenure security; in the areas of origin, where land occupation is not necessarily permanent any longer, the risk of losing access to land and natural resources is more pronounced. This may result in people staying for prolonged periods in these areas, even when flood risks are high, merely because their permanent and visible occupancy is a good measure against the potential loss of access to the land, on which their livelihoods depend.

Sustainable resettlement therefore encompasses actions that are taken simultaneously both in the area of resettlement and the area of origin. There are a cluster of activities that need to be considered, as part of a holistic package, in order to promote sustainable resettlement efforts.

Securing land and property tenure for host communities

Resettlement brings stress to those who play host to the displaced. In Mozambique this situation is still

reasonably under control, mainly because of a number of favourable social factors which have been identified in this paper. In most areas of Zambézia, as attested to by the traditional leaders who were interviewed, there is also still plenty of land available in areas that can be accessed by those with the energy and means to put it into production. However, in other areas, a significant part of the 1097 resettled households, amounting to some 6000 people, need to share the same resource base with a host community that has a considerably lower population. Inevitably, this results in pressure on the natural resource base (data from Xai–Xai 2000 village).

The disastrous environmental impact of resettlement camps on host communities throughout the world has been documented and televised. This paper also demonstrates the fact that the present resettlement approaches on communal land can result in the permanent alienation of host community land. Why should a rural community host a significant number of people, if they know that this will result in a loss of assets? In this context, it is essential that tenure security is established over the land and natural resources of the host community, and that access to it is then negotiated through formal and legal processes. It corresponds with establishing a safety net for the host community, to ensure that they do not lose access to land and natural resources through the unilateral decision-making of others.

Land use planning on host community's territory

In line with international standards and best practices, Mozambique supports participatory methods of territorial and land planning, and these constitute an integral part of the policy and legal framework. Decisions on future development and land use within a community should to a large extent be made by the community itself. This is not necessarily the case in emergency planning, where the state, together with some notable or local political figures, makes quick decisions. A community planning exercise is the only legal and legitimate approach to decide on a number of issues. These include the location of resettlement villages, compensation for the customary landowners, conditions for the flood victims to access other land and natural resources, and the need and possibility for development of the resource base (e.g. new small irrigation schemes, development of new *machongo* areas). In fact, a major outcome of a community plan would be a development or recovery portfolio, which would include development actions for the host community, but also recovery and development actions for the newcomers. This is an excellent instrument to create synergies between hosts and newcomers[8].

Securing individual tenure for newcomers in resettlement villages

Field evidence presented in this paper makes it clear that many resettled people, particularly in peri-urban areas, want to acquire strong forms of tenure security over their allocated plot, and over the infrastructure that is built on it. There is a fear that the state may reclaim what it has given to flood victims, sometime in the future. Local community members who lost their lands to flood victims also continue to reclaim their lost access and productive assets (mainly fruit trees), albeit in a peaceful and low-key way.

Individual security appears to be essential for a number of reasons: (i) the populations of resettlement villages are not necessarily socially coherent and homogeneous, and a strong organizational structure to manage common property well may be absent (ii) collective ownership in resettlement villages has a legacy of failure and non-acceptance (iii) it weighs heavily on a number of fundamental principles such as inheritance and the transferability of land and property (iv) common property models in peri-urban resettlement situations, such as in Macia, do not necessarily provide tenure security for individual families.

Provision of basic services in resettlement villages

If basic services are not made available within the shortest possible time, flood victims tend to return to their areas of origin. This fact is supported not only by historical evidence, but also by more recent events. The promotion of self-help programmes for construction and the provision of other services appears to constitute a good tool for (i) providing newcomers with some new skills and the possibility of developing a new livelihood, and (ii) the hosts to have access to new markets.

[8] As a practical example of a synergy, one can cite the *machongo* development of the Fidel Castro community, which hosts the 6000 flood victims from Xai–Xai 2000 village. Until recently, this community did not have access to a developed *machongo*. The wetlands close to the village were covered with reeds. This area has now been cleared of natural vegetation, a drainage system has been put into place, and the area has been parcelled into small plots. The investment was costed by an outsider. The condition for development was that the number of parcels made available for production would be divided among members of the host community and the resettlement village. This win–win situation is the result of a holistic vision on development and resettlement planning, fully integrated in the government programme.

Securing tenure in flood prone areas for resettled people

Securing tenure over land and natural resources in the regularly-flooded areas of origin is essential, as evidenced throughout this paper. A failure to do so puts the livelihoods of the flood victims or the people themselves at a high risk. Tenure insecurity in the areas of origin is a push factor away from resettlement areas. Securing these lands as community land appears to be the way forward. These displaced communities have strong structures, with functional local management institutions which are capable of regulating land use and land management in these areas.

Provision of minimum physical protection against floods

The protection of regularly-flooded areas seems to remain a challenge. Destroyed protection dykes are not always rehabilitated, while the construction of additional dykes does not appear to be high on the agenda of the GoM and its partners. These lowlands are among the most productive in the country, and require more protection. There is probably a need to search for viable partnerships with the private sector, which of course has an interest in reducing damage by floods to its infrastructure and agricultural production capacity.

Linking sustainable resettlement and district planning

The planning of sustainable resettlement clearly needs to take place at the community level. Here, decisions can be made on the location of resettlement villages. Similarly, the mechanisms and conditions of access to land can be decided upon by people who have a direct stake in the challenges ahead. The 'local community' has been formerly recognized in the Land Law as a unit of land management and decision-making on land allocation and land use.

Community land-use plans could propose negotiated development or recovery portfolios, to meet the needs of host communities and resettlement villages. Some good examples of this kind of planning exist, such as the reports produced by HR Wallingford with DFID support after the 2000 floods. These portfolios need to be marketed, however. The necessary financial resources to implement the proposed actions must be found and service providers need to be identified[9].

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There are a number of obstacles that make community planning inefficient when it comes to the implementation phase. The distance between the communities and most of the budget-holders, who often remain at the provincial or even the national level, can be vast. The capacity of most communities to develop and market a portfolio remains weak. The community is not recognized as a planning unit in the newly-approved territorial planning policy and law, and the Local Government Bodies Law has not really delivered on community planning. A Ministerial Decree (MAE, 2003) recognizes the importance of community participation in planning (it proposes local and community development committees), but does not institutionalize community planning.

Territorial planning under MICOA, decentralised development planning under MPD and local governance under MAE, all recognize the district as the lowest level of formal planning. It is the clear link between the rural populations and the provincial and national government. Reconstruction, recovery and development portfolios, negotiated at the community level, can however be

[9] In the present policy environment, recovery and development actions are financed by a number of actors. Several donors have joined the GoM to promote a budget support development model, while other donors continue to provide direct support via projects, as well as through INGOs and NGOs. Other funding modalities exist, such as the multi-donor ITC, which is specifically conceived to respond to needs for securing tenure, land-use planning and management.

integrated into the district development plans. This makes the activities identified by those communities eligible, in a structured way, for the disbursement of public funds from provincial and national budgets. Districts, as well as municipalities, are better armed to promote the portfolios and generate interest from the private sector and from NGOs, to respond to and invest in disaster mitigation needs.

Streamline the GoM programme with disaster mitigation activities

The major financial contributor to resettlement activities is likely to remain public funds, even more so because of the budget-supported aid from several donors. If disaster mitigation activities are seriously part of the GoM agenda, its programme should target specifically those areas that need support. This will probably occur on the basis of identifying 'priority districts'. There exist rough estimates that some 30–35 districts, out of a total of 128, should be targeted as priority districts for flood mitigation activities. A more correct picture can be drawn on the basis of existing early warning tools.

Mechanisms through which the GoM can streamline its programme to meet the urgent needs of disaster mitigation include:

- **The Five-Year Government Programme**, which sets out broad strategic and longer-term goals, and which places particular emphasis on poverty alleviation.
- **The Three-Year Public Investment Plan (PTIP)**, a 3-year rolling investment programme, executed both by line ministries and provincial administrations, and one of the main instruments for implementing the strategic priorities of the Government Programme. The PTIP has recently been renamed the PIP (Programme of Public Investment) as part of its insertion into the new Medium Term Expenditure Framework (MTEF).
- **The Economic and Social Plan (PES)**, which at the national level defines the principal annual social and economic objectives of government, and the operational plans and resources required to meet them. The PES provides the justification for securing parliamentary approval of the annual state budget.

In practice, the streamlining of the GoM programme with the priorities of disaster mitigation imply that the identified districts are considered as priorities for public investment by the different line ministries: education, health, water sanitation, housing, public works, agriculture.

It is worth noting that the Disaster Management Policy[10] includes the following general objectives:

- the incorporation of disaster prevention in the global process of national development;
- the guaranteeing of effective coordination with, and participation of, the public and private sectors in the management of disasters.

It also has a specific objective related to the harmonisation of development and emergency initiatives and the following strategies:

- the involvement of civil society in the design of programmes and plans of action related to prevention, assistance and rehabilitation;
- the integration of preventative actions sectorially, and within development programmes.

Create incentives for district planning

It is not clear how provincial and national budget allocations are decided for districts, but it appears that population numbers, size and location are the probable parameters. The securing of budget allocations exclusively on the basis of static parameters does not create initiative. Best practice experience indicates that the provision of incentives to districts that pro-actively engage in planning and plan implementation is a far better strategy for getting things done. Under such a scenario, all districts would have access to a minimum budget, but increments to this would be 'gained' on the basis of initiative. Further incentives could include the provision of a district planning budget, available on the basis of progress already made in developing plans. It may be argued that this could create local imbalances, but this is not necessarily the case if all the priority districts are given the same line-up: a minimum threshold of capacity-building to enable them to engage in planning exercises. After that, progress mainly depends on action and creativity.

In practice, priority districts would be eligible to access complementary funds to finance actions that directly respond to a disaster mitigation plan. The existence of such a plan could well constitute the minimum threshold to access the fund. This proposed approach is actually in contrast to the current thinking of some policy-makers, who have adopted a '*pelo negativo*' approach that would see the withholding of any funds from districts that make no progress in planning.

Potential synergies between a district planning land fund and the already existing Community Land Initiative (ICT) fund are clear. Activities that directly support

[10] Resolução n. 18/99 de 10 de Junho.

challenges of land tenure formalisation, community planning and management (in resettlement villages and the areas of origin), and which are identified locally but integrated in a district plan, could be financed by the ICT.

4.3 The need for actions that strengthen local institutions

We have seen throughout this report that there is a strong imperative for the proper involvement of local-level institutions in mitigating the impact of the floods generally, and particularly so in the area of land access and management. The Land Policy, the Land Law and the accompanying Regulations and Technical Annex provide the rationale, the legal basis and the necessary tools for achieving this involvement, but it is still more common to find central or provincial state-driven approaches that tend to marginalize both the affected communities and the host communities..

An argument often advanced to explain this state of affairs is the lack of capacity at a local level. This therefore seems good evidence of the need for a concentrated and sustained effort to build this capacity (within local government generally, and particularly within land administration institutions, both at district level and within communities), rather than the adoption of processes which serve merely to perpetuate the situation.

Some steps in this direction have been taken. MICOA's approach, which involves the formation of groups from within affected communities to assist in the demarcation and allocation of residential plots, is one example. However, these have tended to be ad hoc and limited. Evidence from 2008 fieldwork points to a breakdown in this system, largely because the MICOA has not put in place a longer-term institutional strategy for sustaining these approaches. There is no evidence that the state has made any moves to encourage a more central and high-level involvement of the *regulos*, for example, in which they are brought together to form consultative fora with a mandate to discuss land-related issues in a post-flood context. As the central institution in local-level land conflict management, both in fact and de jure, the absence of a coordinating mechanism, supported by the state, among the traditional structures is notable. It is these institutions that constitute the 'living cadastre' of land rights and allocations in the rural areas.

In some areas, the emergence of local-level solutions, that have a greater level of legitimacy compared with other state initiatives, has also been noted. This includes the 'invention' in Xai–Xai 2000 of a district cadastre, where residential land rights are recorded, despite the fact that it has no legal basis. The advent of such a system is the result, as much as anything else, of the failure of the provincial land administration services to offer an affordable and accessible system. It is even seen in the commercial sector, where bank loans for agricultural purposes are beginning to appear on the basis of local declarations, rather than the existence of any formal collateral. Mozambique has been moving along the path of greater participation and consultation, at least at the level of policy intentions. What remains is for this kind of approach to become more broadly and deeply embedded across the range of state interventions in the post-disaster context. It is particularly important when addressing land issues and should, if necessary, involve sustained and on-going initiatives to build sufficient capacity at this level.

One notable issue is that the state does not seem to have captured existing capacities through the involvement of local NGOs with specialist knowledge of land and natural resource management issues. NGOs, such as the CCM, are used for relief initiatives, but there was very little evidence, for example, of any cooperation between the state and ORAM, despite the long years of experience that this NGO possesses in implementation of the land law and dealing with community-level land management and land planning processes. The same can be said of the ITC, which, despite the fact that it represents a flexible mechanism for funding some of the local land-use planning processes, does not appear to have been asked to play a role here.

One obvious area that would have a strengthening impact would be to provide more information to local institutions, both state and non-state. Despite the fact that the Land Law has now been on the statute books for over 10 years, it is notable that there is still a relative dearth of information, regarding both the conceptual approach that it adopts to land rights, and the concrete possibilities it offers for dealing with some of the problems arising in the post-flood context. This is true mostly within the rural community groups, but also affects local government administrations and even, at times, the provincial authorities. These sometimes remain rather stuck in the rhetoric and concepts of the old socialist era Land Law, such as the reference by MICOA in Zambézia to 'land reserved for the state', a category of land holding which was abolished by the 'new' Land Law of 1997. Much could be achieved through a strengthening of state support for the broad dissemination of information about the law; this has generally been weak over the last few years. NGOs that have been involved in communicating the contents of the law, using separate donor funding, would be well-placed to deliver such services.

4.4 Adopt better and more efficient systems

The cadastre

One of the harshest lessons learned from the Limpopo floods in Xai–Xai was the need to improve both the organization and the protection of the cadastre. A generalized lack of capacity throughout the system, and an uneven understanding of how the administration of the cadastre fits within broader land administration systems, left it vulnerable to the loss of valuable information, and led to ambiguous situations such as the demarcations completed in Zambézi.

Much effort and state and donor funding has been expended over the last few years in attempts to place the cadastral system on a firmer technical footing and make it more efficient and transparent. Unfortunately, the implementation of these initiatives has had little positive impact to date. Three areas have not received sufficient attention in the planning of these interventions: the accuracy of the system, the affordability of the system to its users, and its sustainability. Perhaps the greatest constraint to sustainable development of the land administration system, though, is the fact that there is no overall development strategy. The development of the cadastre, as a result, has been sporadic.

Once there is a more appropriate conceptual basis for the cadastral system, within a broader strategy for land administration, the issues that have arisen in the post-flood context can be better addressed. The technical development of the system will only be sustainable once these foundations are in place. The focus would then need to move towards the systematic building of capacity within the land administration system. The failures to date – such as the lack of backups, the failure to copy information to a central level, the absence of a proper tracking system, and the irregular maintenance of systems – are all fundamentally related to the extremely thin capacity within the relevant services. These are as much management capacity failings as technical ones, and need to be addressed as such.

Systems for land registration and systematic land titling in disaster hotspots /resettlement areas

The permanent resettlement of people in peri-urban areas requires a more comprehensive land tenure approach than at present. As noted in the Xai–Xai 2000 settlement, and in other areas such as Macia, people are increasingly searching for ways to formalise their access to new residential plots through the awarding of secure and formal tenures. It is in the peri-urban context that the traditional institutions, which provide security in rural areas, have less influence, and where residential land, acquired through a state-sponsored process of resettlement, needs to be accompanied by the state's recognition of formal tenure in respect of that land.

As we have noted in this report, a process of awarding formal land rights has started in Xai–Xai 2000. But this is driven by the revenue-raising imperatives of the local district administration, and has an ambiguous legal status as a result of not being integrated formally into the national cadastre. Completing this through an ad hoc demand-driven process also offers no economies of scale. It would seem appropriate in these situations to adopt a simplified and systematic titling process that would compensate, if necessary, any interest- or rights-holders from the area, and award secure tenure to the resettled population as part of a single campaign. It would also be possible to offer free or subsidised land registration for vulnerable groups.

■ 5. TOOLS AND LOCAL SERVICE PROVISION CAPACITY ■

This section gives a succinct overview of a number of tools that can be used to address underlying land tenure challenges in a natural disaster context. Most of these tools are available in Mozambique; some of these have even been developed in the country itself. There is no doubt that the present policy and legal framework for addressing land tenure and land use, which we might simply call territorial planning, is by far the strongest tool. The land and territorial planning tools were developed over a period of ten years, in an inclusive and participatory fashion.

The section also provides some insight into the national capacity available to use the tools. In general this capacity remains weak, despite serious efforts on training and institution building over the last years. The de-concentration of efficient public services, such as the cadastre and also district planning, continues to cause problems. CSOs and NGOs tend to focus more on providing emergency assistance after natural disasters than on efforts to mitigate their outcomes. The NGOs' capacity to delimit community land, for instance, has probably not increased over the last five years. Hence building the capacity of all actors remains essential.

Categorizing tools and service provision according to the different phases of post-disaster situations is rather artificial. Most if not all of the measures that require specific attention can be considered as part of a preparedness phase, which coincides with the normal path of development. The advantage in Mozambique is that all the actions can indeed be implemented before natural disasters strike. All action can be turned into reality within an existing legal framework and the development vision of the country.

5.1 Identification of natural disaster hotspots

The identification of disaster-prone hotspots is a core element of any disaster mitigation strategy. The mapping and zoning of fragile areas, mainly lands that are susceptible to frequent flooding, is important. If district planning is to be used as a framework to plan and programme disaster mitigation measures, the identification of these districts is essential for the GoM and its partners in streamlining their interventions.

Of course, reliable and effective early-warning tools remain essential. There is no doubt that considerable progress has been made on the latter since the floods of 2000. The Mozambican institutions have developed, over time, a series of information tools to identify with some degree of confidence the areas that are susceptible to natural disasters (including flooding and drought) and to forecast upcoming events. These include:

The Famine Early Warning Systems Network – FEWS[11]

The Famine Early Warning Systems Network (FEWS NET) is a USAID-funded initiative that collaborates with international, regional and national partners to provide timely and rigorous early-warning and vulnerability information on emerging and evolving food security issues. In Mozambique, FEWS NET works closely together with the INGC, the University of Eduardo Mondlane and INIA. They monitor and analyse relevant data and information to identify potential threats to food security. The parameters of this monitoring include disaster alerts, assessment of the impact of weather hazards, assessment of the progress of the rainy seasons, and drought predictions (using a number of specific tools such as rainfall estimates, vegetation indices, and water requirement satisfaction indices). The impacts of these factors on livelihoods and markets are assessed. FEWS NET also focuses its efforts on strengthening early warning and food security networks. Activities in this area include developing capacity, building and strengthening networks, developing policy-useful information, and building consensus around food security problems and solutions.

CENACARTA[12]

The National Center of Mapping and Teledetection (CENACARTA) is an institution subordinate to the Ministry of the Agriculture, created by decree nº 38/90, of 27 December. CENACARTA coordinates and executes geo-cartographic tele-detection activities, and disseminates information to public and private users, including images and geo-cartographic data.

As part of a partnership with IUCN and Gartner Lee Ltd (under the project 'Application of Teledetection and the GIS in the Integrated Management of Watersheds – Vulnerability Evaluation and the Formulation of Adaptation Strategies in the Limpopo River Basin'), it has developed a cartographic decision-making tool to identify, mitigate and handle natural disasters.

DTA – IIAM

Since the mid 1980s, the Land and Water Department (DTA) of IIAM has developed a comprehensive database on land and water information within the national territory. This database includes a national agro-ecological zoning map, a national soil database, and various detailed soil survey data sets (especially in areas of high agricultural potential such as the Limpopo and Zambezi valleys), a climatic database, a landscapes database (SOTER – Global Soil and Terrain database), and specific drought-related information. DTA has also developed several land-use plans at different scales (provincial, district, local), as well as specific studies looking into aspects of disaster mitigation and relief.

The DTA data probably deserve much wider use than they actually enjoy at the moment. Provincial and more detailed soil maps, in combination with physiographic information, can be used as a tool to identify regularly-flooded areas (hydromorphic soils). The DTA has also developed approaches to zoning land for different purposes, including drought hazards. The DTA information, in combination with similar datasets available in neighbouring countries, has been used to compile the study ' *Drought impact mitigation and prevention in the Limpopo river Basin*' prepared by the FAO Sub-Regional Office for Southern and East Africa (FAO, 2004).

[11] (http://www.fews.net).
[12] (http://www.cenacarta.com).

5.2 Community rights mapping and registration: the Technical Annex as a legal tool

Securing land rights for communities that are exposed to frequent natural disasters, as well as for those that can be identified as safe havens where displaced communities can resettle on a temporary or permanent basis, is considered a central element of the disaster mitigation strategy. Mozambique has a strong tool to implement this strategy: the Land Law (1997), the accompanying Regulations (1998) and the Technical Annex on Community Land Delimitation (2000).

The Technical Annex provides the legally-prescribed tool for undertaking delimitation. It involves a participatory approach, and when applied in different places and cultural contexts, results in a 'local community' that reflects the specific livelihood strategies, ecology and socio-cultural conditions of the community in question. Thus a 'local community' in the south might look very different to one in the north, but both are 'local communities' in terms of the law.

It is extremely important to follow the prescribed methodology correctly – if not, the validity of a delimitation, and therefore of the rights it proves and protects, could be called into question. Article 5 of the Technical Annex identifies the different steps involved:

- awareness raising;
- Participatory Rural Appraisal (PRA);
- topographic sketch map (*esboço*) and descriptive memory, including geo-referencing;
- devolution of information;
- registration in the national cadastre.

The adopted methodology clearly identifies the need for specific services:

- sensibilisation and dissemination of information;
- participatory facilitation services;
- surveying and mapping;
- registration and information management.

Community land delimitation is generally implemented by a partnership of service providers: a civil society group leading the process (information dissemination and PRA work) and the SPGC supporting the surveying work. The SPGC is then responsible for registering the data in an information management system and issuing the certificate.

No single state agency is adequately trained or equipped to carry out the procedure on its own. With the exception of the 21 trial cases implemented by the Land Commission to test and develop the methodology, virtually *all* delimitations done so far have been carried out with NGO technical and material support. As far as can be determined, there are presently no private sector providers or others operating in this market.

An assessment on service provision (CTC, 2003), has identified the following NGOs as potential service providers (see table 3).

There is no doubt that further training of present and potential service providers is essential. Between 1998 and 2000, as part of the process of developing the methodology and drafting the Technical Annex, a comprehensive training manual for technicians was produced by the Land Commission with FAO/ Netherlands support. Over a period of 4 years, some 124 field staff (52 public sector staff and 72 NGO staff) were trained in the methodology of community land delimitation. Evaluation reports, mid-term reviews and other appraisal reports all conclude, however, that even experienced NGOs such as ORAM still need to improve the quality of their service provision[13].

TABLE 3 – Potential Service Providers (CTC, 2003)

Experienced and potential service providers by province		
PROVINCE	EXPERIENCED SERVICE PROVIDER	POTENTIAL SERVICE PROVIDER
Niassa	Accord	UCA, OPORTUN
Cabo Delgado	Helvetas, Omukazi	UACC, Un Catolica, PROSA, Com. ACILAMICA
Nampula	ORAM, Diocese, Kulima	PAN, ADCIC
Zambezia	ORAM	World Vision
Tete		LWF, World Vision
Manica	ORAM, Kwaedza Simukai, Caritas, SPFFB	UCAMA, CIES
Sofala	ORAM	UPCES, LWF, Amai Apa Bana
Inhambane	ORAM	
Gaza	ORAM, Helvetas	UNAC
Maputo	Helvetas, ORAM	UNAC, APOJ

[13] See, for example, Bias *et al* (2001) and Pijnenburg (2003).

Problems that have been observed include:

- preconceived ideas about the community concept – the community is often not really allowed the space to auto-identify itself, resulting in a number of conflicts;
- PRA methods are used in a mechanistic and extractive way, with blueprint approaches being more common than creativity. As stated on one occasion 'the PRA is perceived as a necessary bureaucratic step in the process of delimitation';
- limited knowledge on survey techniques and limited use of remote imagery even when this is available.

5.3 Community land use planning: Participatory Negotiated Territorial Development

Community land-use planning is part of a holistic mitigation strategy to arrive at negotiated agreements between host and resettled communities after a natural disaster. The resettlement of the victims of the natural disaster may take place in several distinct ways. In Gaza province, flood victims and hosts often belong to different communities, whereas in Zambézia victims are mostly resettled within their own community territory. In both cases it is essential to:

- identify, on a consensual basis, the resettlement or possible accommodation areas;
- determine the conditions for providing access to this land and its natural resources;
- come to an agreement on compensation for the hosts, among other things.

In the Mozambican context, community land-use planning is organically interwoven with community land delimitation. The National Land Policy is very clear on this when it states that the overall objective is:

> *'To secure the rights of the Mozambican people over land and other natural resources, as well as promoting investment and the sustainable and equitable use of these resources.'*

The land policy statement clearly identifies that the major objective of securing land rights for the Mozambican people is to use these to promote sustainable and equitable development. It requires, however, that outsiders are permitted to arrive and use community land in some way, on the basis of agreements and contracts, with the state ultimately taking a facilitating and monitoring role. This approach is summed up in the 'open border development model' that can be described as integrationist, in which the community and other land users exist side by side, in an extensive area managed by the community in collaboration with recognized state institutions. The community can approve or disapprove requests for the allocation of land

and natural resources to outsiders on the grounds that the land is required for future community needs, or that it has some communal or socially-important use attached to it. Alternatively, the community can approve requests for access to land and natural resources for others: provided that this agreement is achieved by consensus, with benefits for the development of the community.

Practical implementation and use of the methodology is not yet widely established. A number of initial pilot schemes have been implemented in Zambézia and Manica provinces[14], with the participation of NGOs (ORAM, Kwaedza Simukai, Caritas), public services (SPGC, SPFFB, DPADR). The different steps of the tool can be identified as follows:

- preparation of a good inventory to analyse the potential of the area;
- identification of land that is available for allocation through negotiation;
- identification of current and potential partnerships between the community and the outsiders (in particular, existing new land-rights holders);
- identifying the need for and possibilities of self-help action, to better manage land;
- identification of public investment needs: road rehabilitation, agrarian extension, marketing infrastructures;
- alternatives for the use and management of abandoned association and co-operative land with infrastructure;
- re-evaluation of some land concessions, leading to an eventual re-dimensioning and new agreements with local people;
- resolution of existing land conflicts between the community and new land-rights holders.

The use of this approach to community land-use planning is not without its problems. An important remaining obstacle is the present capacity of the communities themselves to engage fully in such a participatory process. Rural communities are heterogeneous and membership rules are fluid and diverse. Local power structures tend to be autocratic, ambiguous as to the reach of different authorities, and heavily patriarchal in most of the country. Few rural communities can lay claim to a local institution that represents diverse local interests. Rural women in particular are often marginalized from control over community land or even household land. It is difficult to see how they would be represented or how they would benefit directly when deals are made with outsiders who want to access and use local resources. This situation requires serious efforts to strengthen local community structures.

Community land-use planning approaches are implemented without solid and institutionalised forms of participation and representation. Community Land Committees, or 'G9s', may be selected during a delimitation, but then may fail to maintain a role for themselves once delimitation is complete, and they could soon disappear. The legal underpinning of community land-use planning is also doubtful. The new territorial planning law does not include specific provisions for community land-use planning, given that the lowest planning level is restricted to the district and municipality levels.

Experiences in Mozambique, Angola and Sudan (among others) in the use of this approach have resulted in the development of a consolidated methodology that is being promoted by FAO as the '*Participatory Negotiated Territorial Development*' approach. At the 2006 International Conference on Agrarian Reform and Rural Development in Porto Alegre, the approach was identified as a way forward in addressing land and natural resource management in an integrated and territorial way, through negotiation, dialogue and participation. A set of documents exists that can be used as a reference[15]. A specific two-week training manual was also developed[16], as well as a distance-learning course (available on CD-ROM – 'Institutions for Rural Development: Digital Media No.4' – through NRLA–FAO, Rome).

The local service provision capacity for using the community land-use planning tool in Mozambique remains weak. In the first instance, it is essential that the targeted communities are organized, requiring support to local land management institutions.

Different elements of community land-use planning are being implemented by various service providers from the public and private sectors. Under its support project to the former Inter-Ministerial Land Commission, FAO has taken a lead in the early 21st century, together with the NGO ORAM and SPGC in Zambézia. A number of field training exercises were organized in Nicoadala district (Zambézia province); meanwhile other on-the-job training schemes targeted two other NGOs (Kwaedza Simukai and Caritas), together with DPADR staff in Manica province (Manica district).

[14] Under the 'International Technical Assistance for the Implementation of the National Land Programme' project (UTF/MOZ/070/MOZ), FAO and partners tested the development and use of local land-use planning as part of a strategy to devise options for the implementation of the National Land Policy.
[15] http://www.icarrd.org/en/icard_doc_down/TD1.pdf.
[16] 'Territorial Facilitation: a two-week training course', FAO 2007; available on CD Rom.

Perhaps the principal national agency in land-use planning, though more at district and provincial level than community level, is the Soil and Water Department (DTA) of the former National Institute for Agronomic Research (IIAM). Other Mozambique-based service providers that may be directly involved in soil and land inventory work include consulting companies that specialise in environmental and related issues, and others that hire expertise as needed by their clients. The main players in these categories are Impacto Lda, FEED, RuralConsult, Austral–COWI, Bioconsult, Holt Ltd and Bergman–Ingerop. National universities are also becoming more involved in service provision, with the Faculty of Agronomy and GRMB of UEM figuring prominently.

The Centre for Sustainable Development of the Ministry for Environmental Coordination (MICOA) is an autonomous agency responsible for strategic planning programmes on a regional or specific-area basis. The CDS in Xai–Xai, for example, has helped to develop coastal-zone management plans in several parts of the country. The CDS centre in Xai–Xai is therefore well-equipped and staffed for zoning and land-use planning activities. It has demonstrated its capacity in important areas that are also ecologically- and socially-sensitive, such as the Tofo, Barra, Tofinho and Rocha coastal areas of Inhambane Province. A similar centre in Chimoio, the Centre for Rural Development, is operating with Finnish support, and intends to develop a capacity for land and natural resource planning and management.

Since 1995, several institutions have acquired similar experiences and skills through the implementation of approximately 50 community-based natural resource management projects (CBNRM) that have been launched in Mozambique. These initiatives have generated a wealth of information and experience for developing new approaches to rural development using the Land Law, land rights registration, and community-based planning and management, as cornerstones of any strategy. Initially projects were linked to wildlife management (Tchuma Tchato, Chipanje Chetu). With the support of a Netherlands-financed FAO project however, the National Directorate for Forestry and Wildlife (DNFFB) started several new community-based forest management projects from 1997 onwards.

There is no doubt that major training efforts are required to support present and future service providers. It appears that these efforts should be channelled through MICOA, but should also target a wider public, including some NGOs such as ORAM.

5.4 District planning

Public Investment Planning: MAE and MPD

District planning has a long history in the ministries of Territorial Administration (MAE) and Planning and Development (MPD). Since the phasing out of socialist-inspired planning, new tools were developed from the early 1990s onwards for improving community access to basic infrastructure and public services. In order to achieve this objective the planning programme promotes, among other things, the development of long-term strategic and multi-sectoral district plans. Initial guidelines published in 1998 were followed by a more comprehensive package consisting of the following three distinct tools, all published in 2002 by the Ministries of Planning and Finance, Territorial Administration, and Public Works & Housing:

- Planificação Distrital Manual No 1 O Plano Distrital de Desenvolvimento;
- Planificação Distrital Manual No 2 Ciclo Anual da planificação;
- Planificação Distrital Manual No 3 Dialogo com a Sociedade Civil.

When compared with methodologies for participatory land-use planning, community land delimitation and land use/natural resources management, it appears that district development planning adheres to the same principles and uses similar instruments. All of these also have a strong local capacity-building component, and contribute to strengthen local accountability and governance. During the different processes, technical teams are trained and acquire the experience necessary for replicating the experiences later.

A major difference, however, is the outcome of the process, with district planning mainly considering public investment in social infrastructure, in contrast to the land and natural resource emphasis of the other processes. District planning is strongly oriented towards interest groups, while land-use planning is mainly area-based with strong territorial aspects. There is also a tendency for district planning to emphasise public sector investment, while land and natural resource development strongly considers the private sector as a privileged target group for promoting local development.

The challenge now is to bring the different processes together and to produce mutual benefits that will respond more directly to the overall objective of poverty reduction in rural areas.

Overall capacity of municipal governments and district administrations to implement district planning activities is weak. District planning was given a new

impulse recently by the extension of the UNCDF programme to Cabo Delgado, and a World Bank proposal for district planning activities in the four central provinces (Zambézia, Tete, Sofala and Manica), covering a total of 64 districts. The latter will adopt strategies and methodologies that are derived from previous experiences but that include a number of new elements that are extremely interesting. The programme includes activities designed to strengthen institutions.

Environmental Planning: MICOA

MICOA has been the driving force behind the new Territorial Planning Policy and Law. District planning remains a central issue in this new legal framework. MICOA has not yet developed a consolidated tool to approach this from an environmental perspective, but is relying more on existing methodologies that were tested elsewhere, among others by IIAM (see below). On a number of occasions, MICOA has solicited technical assistance from FAO to develop such a methodology, but this has not been realised so far. There appears to be a need to turn a somewhat linear and vertical structure of nested national, regional, provincial and district plans (as indicated in the present planning law) into something that stands closer to the reality of rural populations and districts.

The CDS approach identifies different economic areas and management areas. It is accompanied by a Strategic Environmental Assessment (SEA) that makes decision-making more transparent, through the consultation and participation of all stakeholders. SEA is a systematic decision support procedure that evaluates potentially significant environmental effects of development options, throughout the process of formulating policies, plans or programmes. It brings together communities and the private and public sectors around a negotiated and consensual approach to resource allocation and management. There are many points at which the approach echoes the methodology of the Land Law Technical Annex, including participatory work with communities, which are encouraged to identify their resources and think about how best to use them.

Over the last few years, the National Directorate of Territorial Planning (DNPOT) appears to have established itself as a privileged partner of INGC in the handling of resettlement planning in post-disaster situations. It seems that these efforts mainly focus on the layout and surveying of resettlement sites, and less so on communal or district planning. The capacity of DNPOT and its provincial delegations to take on these new challenges is extremely weak, and even more so for district planning as a more comprehensive exercise.

Rural Land Use Planning: DTA

The Land and Water Department (DTA) of the IIAM is the institution responsible for putting participatory land-use planning on the map in Mozambique. Since 1993 it has implemented pilot schemes in Gaza, Manica and Zambézia, and on this basis has produced a manual that is still used as a guideline (Nyamuno *et al*, 1995). During the period 1994–1995 as part of the Pre-Programme, a land-use plan for the district of Xai–Xai was prepared and discussed with the involvement of provincial and district authorities and services, the communities and their leaders, and the private sector (Nyamuno *et al*, 1995a). Key elements for its elaboration were: in-depth knowledge of the realities in the field (the permanent presence of a team for two years); continuous interaction with and a pro-active role for the communities and local leaders; appropriate technical mechanisms to assess land use and management options; dialogue and negotiation.

Specific tools used for the plan's elaboration are:

- rural appraisal, with emphasis on agrarian systems;
- soil surveying and land evaluation, including evaluation of land suitability, generated by farmers;
- land management zoning;
- social surveying with identification of community territories and their leaders;
- consultation and dialogue at grass roots level;
- appreciation of indigenous knowledge and the views of the community on long-term development;
- community negotiation of technical proposals.

At the time of the 2000 floods, the provincial and district administrations, as well as all the relief organizations and institutions, did not consider this plan as a tool for the eventual tailoring of recovery and rehabilitation interventions. The Xai–Xai land-use plan was never adopted by law as a development tool.

The Pre–Programme experiences of district and local land-use planning were subsequently refined in other parts of the country (Nicoadala district in Zambézia) and some other countries where FAO was promoting land-use planning activities (Ghana, Bosnia and Herzegovina). Ultimately these activities resulted in a consolidated manual, 'Participatory Land Use Development', which gives guidance for municipal and district level land-use planning[17].

[17] Participatory Land Use Development in the municipalities of Bosnia and Herzegovina; Project GCP/BiH/002/ITA; http://www.plud.ba/.

Institutions that deal with district planning are mentioned in the sections above: Ministries of Planning and Finance, Territorial Administration, Public Works and Housing, Environmental Coordination, Agriculture (through DTA). There is no doubt that all services need institutional strengthening.

A number of NGOs are providing support to the GoM in handling district planning. SNV is taking on a leading role in Nampula province. It provides services and capacity-building to Local and Community Development Commissions (CDL, CDC) as well as to District Consultative Councils (CCD). There is no doubt that these local bodies will require specific attention for taking up their role in future district and local level planning. Both CDL/CDC and CCD are institutions that were formalised as a follow up to new laws for local government bodies.

5.5 Land Information Management System – LIMS

The DNTF has for some time been developing a new web-based information system, the Land Information Management System (LIMS). The LIMS, when fully operational, will provide a framework for the storage and manipulation of a variety of land-based information. Eventually it could include the incorporation of all spatial data from a variety of government departments, including the cadastre, mining rights, land and soil resources, potential hazards, environmental information, and tourism and wildlife concessions.

The LIMS has various components:

- an Oracle database for housing data (both attribute data and spatial data): this database is centralised and thus eliminates the need for replication and maintenance of local databases in each province;
- a web application which allows user access to various components of the LIMS via the Internet or intranet (Govnet);
- enterprise Geographic Information System (GIS) components to support the spatial aspect of land information. The GIS is tightly integrated with the attribute data. Components used are sourced from ESRI (the industry standard in enterprise GIS). Included is an Internet map server (ArcIMS), a spatial database engine (ArcSDE) residing in the central Oracle database, various custom GIS components specific to LIMS, and desktop GIS (ArcGIS) in support of the capture and manipulation of spatial data.

The aim of the LIMS is to serve as a portal; that is, it will be the single point of entry to all land-based information in the country. This information should be accessible via the Internet using a normal browser (implementation will therefore be fully compliant with Internet protocols). Once the necessary policies of data protection and privacy are in place, there will probably be much broader public access to this information.

The heart of the LIMS is, at present, the cadastral, parcel-based information regarding land rights; that is, the DUATs that have been awarded or those that have been acquired and registered. An important step towards the implementation of an effective and modernized cadastral system will be the digitization of the national land cadastre information as it presently stands. In Mozambique, this implies the acquisition of backlog data (manual digitization) into the system, i.e. approximately 30 000 paper folders. Each folder – related to a land parcel – contains a 'summary' of two to three pages, blueprints, maps, deeds and other documents (for a total page count ranging from 60 to 100). Although this is a considerable task, it will mean that important information will be safeguarded from the kind of disastrous losses that occurred in Xai–Xai in 2000.

A previous initiative, the Land Licensing and Planning System for Beira City, shows the potential that this kind of tool holds for increasing the efficiency and transparency of land allocations. In 2003 the Beira Executive Council (the local government authority for the city of Beira in Mozambique) initiated development of a decision support system, with a simple geographic information system interface. Operationally the computerised application was intended to speed up decision-making, by automating the processing of the majority of licence requests and revocations, leaving the Planning Department to concentrate on the few that warranted detailed consideration and negotiation. The application triggered warning letters and licence withdrawal notices where legislation and regulations were not being applied. For strategic land-use planning, the application provided planners in Beira with information on land-use and trends, enabling them to better predict the future and match developers with suitable plots. It is not difficult to envisage how a similar tool could assist planners in rural areas and provide the spatial element needed for existing decentralised development and disaster mitigation planning initiatives.

Previously, the Land Registry had consisted of an incomplete and inconsistent paper-based collection of dusty volumes detailing plot usage dating back over a century, much like in the majority of the SPGC offices. No definitive map existed; some showed groups of plots with duplicate or non-contiguous numbering systems, and plots overlaying others shown on different maps. Linking plots on the maps with the information in the Registry was sometimes difficult, providing insufficient information both for routine licences and long-term strategic planning. Digitising the maps and computerising the Registry is an effective way of updating the system, speeding it up and providing better quality information.

Potential uses of the LIMS include:

- the completion of internal land administration and land management responsibilities within the national directorate and its provincial offices, by cross-checking and validating all land rights registration applications;
- inter- and intra-governmental administration and management of land and other natural resources, through cross-checking and validating all concessions (land, forestry and wildlife, water resources, mineral resources, etc.);
- inter- and intra-governmental natural resources planning and management activities;
- provision of a consistent database regarding utilization of land and other natural resources for all users.

The staff of the newly-established DNTF, and especially all the staff from the 10 provinces, require training in the use and handling of the LIMS. It is also obvious that all potential public and private sector users mentioned above under potential uses will need some basic training on how data can be retrieved and used.

5.6 Simplified land registers and bringing these in line with existing legislation

Where registration in rural areas has been attempted using standard procedures according to the received colonial law, the process of registration is usually incomplete. In Sudan, which enacted a Land Registration and Settlement Act in 1925, most of the country is still unregistered. In Uganda, the Registration of Titles Act providing for land registration was passed in 1922, yet only about 12 percent of the land has so far been brought under the Act. In Kenya, where land adjudication and registration started in 1956, there have been programmes of adjudication and registration ever since, yet the process has still not covered more than 10 percent of the country. Many titles lie uncollected in the land offices because the owners are unable to pay the fees or travel costs involved. In such circumstances, the system breaks down because rights are transferred without the transactions being registered. The result is that listed owners in the register (the 'legal' owners) are not necessarily the real owners of the land.

In recent years, however, in response to increased pressure on land, many countries are pushing ahead with land registration to strengthen the land claims of poor people in rural and urban areas. A range of innovative, low-cost mechanisms are being developed to survey and document land rights and transactions. The International Institute for Environment and Development (IIED, 2005) has recently published studies of such work in rural and urban areas in Mozambique, Ethiopia and Ghana. The conclusion from one of these reports is given in Box 2.

The recent experience of Tanzania in the registration of rural land is relevant to Mozambique, as are the experiences of an MCC-supported project in Madagascar and the DfID Land Tenure Reform project in Rwanda. However, every country and possibly every district, is likely to be a special case and it will be necessary to adapt systems to meet the needs and capacities of local people when implementing the first registration of informal rights. It is clear that, if the systematic recording of land rights in rural

BOX 2 – MODELS OF REGISTRATION AND INSTITUTIONAL STRENGTHENING

There are limitations to] those approaches that assume that 'legal empowerment of the poor' may be promoted simply by providing land titles. In reality, different models of land registration exist, local contexts may vary substantially, and overlapping rights on the same piece of land may coexist. Therefore the real issue is not embracing readily-available solutions based on Western models, but learning how to design land registration systems that secure the land rights of poorer marginalised groups in specific geographic and historical contexts. In addition, whether land titles or other registration documents improve land tenure security of local land users depends on the existence of strong local institutions that are able to uphold and defend the rights embodied in those documents. Building the capacity of local institutions over time is therefore a key challenge.

Source: IIED Research Report 1: *Can Land Registration Serve Poor and Marginalised Groups*, November 2005, p.27.

Mozambique is to be viable, the process must be simple, inexpensive and capable of being delivered by local government structures.

Clear principles are evident from these conclusions:

- The procedures leading up to the recording of land rights (e.g. adjudication of rights) must be carried out by local people.
- The land records must be stored locally.
- The survey and mapping procedures that enable the land rights to be recorded must also be simple.
- The content of the land rights, including overlapping rights, should not fundamentally change as a result of recording.

Factors that will determine whether the process of rural registration is equitable include:

- whether the registration process is be carried out systematically and witnessed by the community;
- whether the fee (the premium and/or rent levied on registration) is nominal and affordable;
- whether assistance is provided so that the poorest can access and participate in the system;
- whether the rights of family members, secondary right-holders, vulnerable groups etc., are recognized and recorded.

In a step towards meeting the requirements of a modern cadastre, it may be necessary for the government to survey broad boundaries using GPS equipment (perhaps at the level of a 'local community' as defined in the law), thus creating a series of 'outer figures' within which individual land rights could be recorded using 'uncontrolled' survey methods.

5.7 Alternative conflict management – integrating training, capacity building and legal reform

The GoM has established an Inter-Ministerial Commission for Legal Reform (CIREL), whose mandate includes a revision of the judicial system in the country. The resulting policy and legal framework for the judiciary – including local courts – should be a genuinely Mozambican response to a reality where 'justice' for most citizens is delivered mainly through informal local systems, with formal courts playing a role in relatively few cases.

The tool of building a strong link to local level conflict resolution mechanisms and ensuring that there is a clear 'interface' with the formal system is an effective one in the Mozambican context, which has a history of community courts. These Courts were established in 1978 and were originally formally integrated into the overall national court structure. In 1990, with the emergence of an independent judiciary as part of new post-war constitutional arrangements, they were separated from the 'formal' and newly professional judicial system and judges. They continued to function, but without detailed regulations concerning, for example, who should serve on them and what weight their decisions had in the wider legal and judicial arena.

Measures to consolidate and expand the Community Courts constitute one of the principal activities that are foreseen in the area of justice. Moreover, 'environment' is identified as an important governance issue, while secure

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land rights for the poor are also featured among conditions for combating poverty. The effective implementation of legislation related to land, natural resources and the environment is therefore central to the GoM poverty reduction strategy; this requires effective mechanisms at local level as well as higher up in the formal judicial system. Having legitimate and adequately-trained community judges and other local conflict resolution specialists is an essential part of the overall implementation package for land and natural resources legislation, and can play a significant role in assisting with any post-disaster conflicts. The Land Law, for example, already integrates customary and formal land access and management systems into a single, Mozambican law. Customary practices and local land management institutions are formally recognized and given due place in the law.

The Legal and Judicial Training Centre (CFJJ) has, over the last few years, been implementing a training programme (directed at a range of actors from state and non-state institutions) in paralegal and other skills related to land issues, conflicts and disputes. In addition to the inclusion of alternative dispute-resolution mechanisms in its core training programme for the members of the judiciary, the CFJJ holds seminars at district level for officers from different state institutions, including district administrators, police chiefs, prosecutors and other state officers. These seminars also involve a focus on alternative dispute resolution, with an emphasis on how people at this level can work together to resolve conflict without resorting to the judicial system. In addition, the CFJJ has also been implementing a programme of local level seminars aimed more at paralegals, lower-level state officers, and traditional leaders and community members. These focus on land and natural resource legislation and also contain modules related to conflict resolution. The CFJJ is currently working on the production of two training manuals to accompany these courses; one is for the district officer seminars and the other is for the paralegal training course. These should be published and available for other training institutions to use within the next few months.

5.8 Information on land rights: the campaign approach

One of the effective tools used in Mozambique in the past was the Land Campaign, which was conceived during the debate preparing for the new Land Law during the late 1990s. In that period certain NGOs, churches and academics met on various occasions to discuss the drafts of the Law and to establish a common platform for Mozambican civil society. Once the new Land Law was approved by the Government in 1997, these organizations decided it was appropriate to mount a campaign to publicise the law throughout the country.

The resulting Land Campaign (*Campanha Terra*) had three main goals:

- to disseminate information about the new law;
- to promote justice and defend citizens' rights;
- to stimulate the links between 'family' or subsistence agriculture and commercial agriculture.

The main themes on land rights were identified as the 'delimitation' of the boundaries of community land, women and land, partnerships between the family and enterprise sectors, urban land legislation, and conflict resolution.

Donors such as the Swiss Agency for Development and Cooperation and MS (a Danish NGO) were particularly supportive in their roles. Dr. Jose Negrão of the University of Eduardo Mondlane was contracted to coordinate the initiative. What was initially thought of as a 'dissemination campaign' became, under his leadership, the 'biggest civic movement' in the recent history of Mozambique (Compete, 2000). The Land Campaign was particularly broad-based, bringing together about 200 organizations working at different levels - national, provincial and community - and with different political, religious and social affiliations. It extended to all provinces of the country. A National Committee was created, composed of 22 NGOs and international partners (Box 3). This structure allowed

BOX 3 – MEMBERS OF THE NATIONAL COMMITTEE OF THE LAND CAMPAIGN

Action Aid
AMRU – Association of Rural Women
Association for Progress
CAA – Oxfam Australia
CCM – Christian Council of Mozambique
CEA – Centre for African Studies
CEP – Centre for Population Studies
Diocesan Commission for Justice and Peace
Swiss Cooperation
Oxfam Belgium
Trocaire
UNAC – National Union of Peasants
DANIDA
Netherlands Embassy
FDC – Foundation for Community Development
Helvetas
KEPA – Centre for Services of Cooperation for Development
Kulima
MS – Danish Association for International Cooperation
NET – Land Studies Nucleus
ORAM – Rural Association for Mutual Help
Oxfam's Joint Advocacy Programme
SNV – Dutch Organization for Development

organizations to take part in decision-making through the National Committee, and to feel that the Campaign was theirs, although there may have been trade-offs between speed and effectiveness on the one hand, and wider participation in decision-making on the other.

Given the Mozambican illiteracy rate of around 70 percent, the Campaign did not rely only on written materials to disseminate its message, but also used cartoon strips, theatre and audio materials to reach as wide an audience as possible. The materials were produced in Portuguese and 20 different national languages. Box 4 gives a flavour of the law dissemination toolbox.

At the end of two years in operations, 114 of the 128 districts and 280 of the 385 administrative posts existing in the country had already been covered. Around 15 000 volunteers had been trained as activists in the Land Campaign – these included young people, priests, pastors, evangelists, teachers, extensionists and NGO workers, in a genuine movement for national unity (Negrão, 2000).

BOX 4 – TOOLS OF THE LAND CAMPAIGN

- 180 000 A3 posters: on the front a drawing representing the Land Campaign, and on the back a simple text explaining the topic and the drawing, plus extracts from articles about various laws related to the topic.
- 60 000 A1 posters displaying the six messages, printed in the Land Campaign's colour, used by the organizations in their publicity work.
- 60 000 A3 posters printed on one side only with a representative drawing of the message to be distributed by primary schools in coordination with the 'Zones of Pedagogic Influence'.
- 10 000 A3 posters with the Land Campaign designs, detailing instructions for teachers and children on how to set up a painting competition.
- 1000 small T-shirts printed with the Land Campaign logo and a montage of the posters; these were awarded to the children who won the competitions.
- 1000 medium and extra large T-shirts, printed with the Land Campaign logo and a montage of the posters; these were sold by the committees or provincial nuclei as a means of raising funds. This was the only Land Campaign product which could be sold.
- 3000 copies of an 8-page A5 brochure, titled Guide to Gender Awareness in the Practice of Civic Education.
- Six pages in the newspaper Noticias, highlighting the six messages for the second year, news about the Land Campaign, and a variety of information for the committees and provincial nuclei.

The Land Campaign was most active while the Technical Secretariat of the Inter-Ministerial Land Commission was revising the land regulations. These were approved in 1998 and the Technical Annex, which contains detailed instructions about the procedures to follow in the delimitation or demarcation process of community lands, was approved in 1999. ORAM and UNAC continue to carry out dissemination work at community level.

5.9 Government Civil Society Partnerships

The establishment of protocols between government on the one hand, and NGOs and CBOs on the other, to promote disaster mitigation planning and tenure formalisation, would help make concrete the elements of inclusiveness which are present within central government policy but still lacking in implementation. These could form the basis of a cooperative undertaking in which governmental, non-governmental and community organizations would play complementary roles, coordinating at all levels, planning, implementing, monitoring and evaluating the programmes, and recognising and reconciling differences. The protocols should seek a balance between public and individual interests and would have four main goals:

- to build and strengthen the social infrastructure of the recovery programme;
- to ensure the land tenure security of resettled persons, small farmers and urban dwellers, through their active participation;
- to develop and optimize the use of land in order to increase farmers' income and decrease future vulnerability to external shocks;
- to improve the land law and its implementing policies and guidelines through lessons extracted from field experience.

Such partnerships should be formally instituted in Mozambique with the adoption of a protocol and clear strategy. For the partnership to be successful, a commitment to ensure wider participation and openness in these processes is essential. A formal protocol would provide for a regular schedule of meetings, encompassing civil society organizations involved in the land reform sector and government representatives. The agenda for these meetings would allow some of the detailed issues relating to the implementation of both land and disaster response policy and law to be reviewed as and when they arise.

5.10 The Community Land Initiative

The Community Land Initiative (formerly known as the Community Land Fund) is a multi-donor funding mechanism that aims to make available discretionary and matching grants to community-based clients (groups and individuals). These grants enable them to purchase the necessary services and cover the official transaction costs involved in registering their acquired rights to a range of land and natural resources, and utilise these for local economic development and poverty alleviation.

The four main categories of activities which are eligible for support under the Community Land Initiative are: resource planning and project development, information and training, conflict prevention and resolution, and registration of rights to land and natural resources. As such, a variety of the needs identified in this report could be satisfied by the application of this initiative in the affected areas. These include the systematic formalisation of individual tenure rights in peri-urban resettlement areas such as Xai–Xai 2000, as well as the securing of group tenure rights over lowland agricultural areas, the conducting of information dissemination campaigns, and local training initiatives.

The two phases of the project consist of a two-year start-up phase (to 2008, which the subscribers will review), after which a decision will be made on future support and funding for the following three-year period. The programme works at provincial level and below, and complements rather than replaces public services. These services are important partners with a clear public role in essential areas such as the cadastre, and in providing up-to-date information (DfID, 2005, page 2, paragraph (g)). Provincial Steering Committees (PSCs) – comprising representatives of provincial government and civil society, and with a strong bias towards district-level representation – exist to provide direction and oversight to the provincial fund manager in each province.

The fund is initially being made available to communities in three provinces (Gaza, Manica and Cabo Delgado) as part of a pilot phase leading to the up-scaling of the programme to national level coverage. The donor consortium subscribing to this initiative, presently led by DfID, also includes Sweden, Switzerland, Ireland, Holland and Denmark. The initiative is largely managed through an out-sourced fund management entity, which at present is KPMG Mozambique. The MCC, as part of a broader investment programme with Mozambique, will also start to contribute to the initiative from 2008 onwards; it will make grants available in a further three northern provinces.

The specific outputs through the availability of the fund are defined as:

- stronger and formally registered legal rights of communities to land and natural resources;
- increased knowledge and capacity of local community groups to utilise natural resources in a profitable and sustainable manner;
- reduced and better-managed conflicts concerning land rights and natural resources;
- improved land and natural resource planning and utilisation;
- increased and improved partnership and cooperation between local communities, local authorities and private sector operators for the development and implementation of economic and social enterprises for their mutual benefit[18].

[18] DfID, 2005, page 3.

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Abbreviations and Acronyms

AIM	Mozambican Information Agency (Agencia de Informação de Moçambique)
CBNRM	Community- Based Natural Resource Management
CCD	District Consultative Councils (Conselhos Consultivos Distritais)
CCGC	Coordinating Council for Disaster Management (Conselho Coordenador de Gestão de Calamidades)
CCM	Christian Council of Mozambique (Conselho Cristão de Moçambique)
CDL	Local Development Commissions (Comissões de Desenvolvimento Local)
CDS	Centre for Sustainable Development (Centro de Desenvolvimento Sustentável)
CENACARTA	National Centre of Mapping and Tele-Detection (Centro Nacional de Cartografia e Tele–Detecção)
CFJJ	Legal and Judicial Training Centre (Centro de Formação Jurídica e Judiciário)
CTGC	Disaster Management Technical Council
DCU	Directorate of Construction and Urbanisation (Direcção de Construção e Urbanização)
DEC	Disasters Emergency Committee
DfID	Department for International Development
DINAGECA	National Directorate of Geography and Cadastre (Direcção Nacional de Geografia e Cadastro)
DINAT	National Directorate of Land (Direcção Nacional de Terras)
DNFFB	National Directorate for Forestry and Wildlife (Direcção Nacional de Florestas e Fauna Bravia)
DNPOT	National Directorate of Territorial Planning (Direcção Nacional de Planeamento e Ordenamento Territorial)
DNTF	National Directorate of Land and Forestry (Direcção Nacional de Terras e Florestas)
DPADR	Provincial Directorate of Agriculture and Rural Development (Direcção Provincial de Agricultura e Desenvolvimento Rural)
DPCCN	Department of Natural Disaster Prevention and Relief (Departamento de Prevenção de Calamidades Naturais)
DTA	Department of Land and Water (Departamento de Terras e Aguas)
DUAT	Right of Use and Benefit (Direito de Uso e Aproveitamento)
FAO	Food and Agriculture Organization of the United Nations
FRELIMO	Mozambican Liberation Front (Frente de Libertação de Moçambique)
G9	Group of Nine
GDP	Gross Domestic Product
GoM	Government of Mozambique
ICT	Community Land Initiative (Iniciativa de Terras Comunitárias)
IFRC	International Federation of Red Cross and Red Crescent Societies
IIAM	Mozambican Institute for Agronomic Research (Instituto de Investigação Agraria de Moçambique)
ILO	International Labour Organization
INE	National Statistics Institute (Instituto Nacional de Estatística)
INGC	National Institute for Disaster Management (Instituto Nacional de Gestão de Calamidades
INGO	International Non-Governmental Organization
INIA	National Institute of Agronomic Investigation (Instituto Nacional de Investigação Agraria)
INPF	National Institute of Physical Planning (Instituto Nacional de Planeamento Físico)
IUCN	International Union for the Conservation of Nature
LAHS	Land Application Handling System
LIMS	Land Information Management System
LINK	Mozambican Coordination Body of Civil Society Groups
MADER	Ministry of Agriculture and Rural Development (Ministério de Agricultura e Desenvolvimento Rural)

MAE	Ministry of State Administration (Ministério de Administração Estatal)
MCC	Millennium Challenge Corporation
MICOA	Ministry for Environmental Coordination (Ministério de Coordenação Ambiental)
MoA	Ministry of Agriculture (Ministério de Agricultura)
MPD	Ministry of Planning and Development (Ministério de Planificação e Desenvolvimento)
MPF	Ministry of Planning and Finance (Ministério de Planificação e Finanças)
MSF	Médecine Sem Frontières
MTEF	Medium Term Expenditure Framework
NGOs	Non-Government Organizations
NLC	National Land Commission
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
ORAM	Rural Association for Rural Mutual Assistance (Associação Rural de Ajuda Mutua)
PARPA	Action Plan for the Reduction of Absolute Poverty
PES	Economic and Social Plan (Plano Económico e Social)
PRA	Participatory Rural Appraisal
PROAGRI	Mozambique's Sectoral Reform Programme in Agriculture
PTIP	Three-Year Public Investment Plan
RENAMO	Mozambican National Resistance (Resistência Nacional de Moçambique)
SARCOF	Southern African Regional Climate Outlook Forum
SCF–UK	Save the Children UK
SEA	Strategic Environmental Assessment
SETSAN	Technical Secretariat for Food Security and Nutrition (Secretariado Técnico de Segurança Alimentar e Nutricional)
SIDA	Swedish International Development Cooperation Agency
SPFFB	Provincial Services of Forestry and Wildlife (Serviços Provinciais de Florestas e Fauna Bravia)
SPGC	Provincial Services of Geography and Cadastre (Serviços Provinciais de Geografia e Cadastro)
UNDAC	United Nations Disaster Assessment and Coordination
UNDMT	United Nations Disaster Management Team
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN–Habitat	United Nations Human Settlement Programme
UNICEF	United Nations Children's Fund
UNRCO	UN Residence Coordination Office
USAID	United States Agency for International Development
WB	World Bank
WFP	World Food Programme
WVI	World Vision International

Bangladesh

Bangladesh

by Salma A. Shafi*
edited by Nicoliene Oudwater*

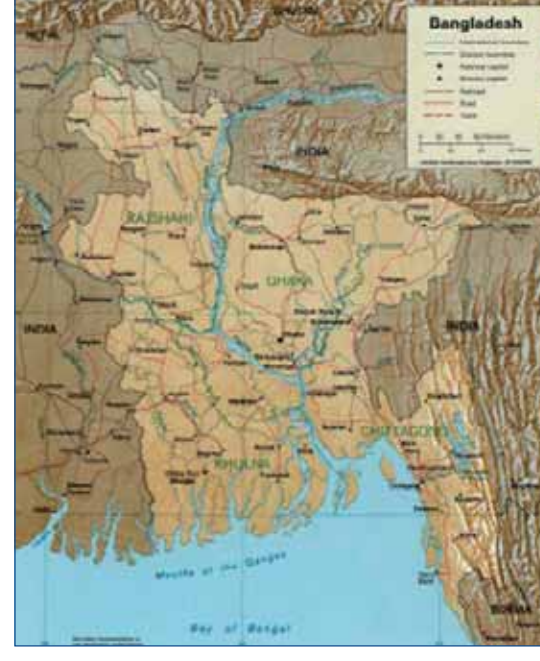
■ 1. NATURAL DISASTERS IN BANGLADESH AND THEIR IMPACT ■

Bangladesh is located in South Asia and is bordered almost entirely by India, except for a small border shared with Myanmar in the south, and a coastline of more than 700 kilometers with the Bay of Bengal, also in the south. Bangladesh's climate is tropical with a mild winter from October to March, a hot, humid summer from March to June, and a warm and humid monsoon season from June to October, during which the country experiences most of its rainfall.

Bangladesh is considered to be the most densely populated country in the world. In an area of just 144 000 square kilometres, an estimated total of around 150 million people live; of these around 45 percent (2004 figures) live below the national poverty line and around 36 percent live on $US1 per day[1]. Agriculture is the largest contributor to the national economy, with 60 percent of employment provided by this sector (including crops, livestock, fisheries and forestry). Meanwhile about 2 percent of the population are employed in mining, 8 percent in manufacturing, and 29 percent in the service sector (1995/6 figures)[2].

While Bangladesh has demonstrated positive progress as regards national poverty indicators in recent years, and has reduced poverty on average by 1 percent per annum since 1990, there are still 68 million people living below the poverty line. Although poverty is a largely rural phenomenon in Bangladesh, rapid urbanization, at an estimated current rate of 6 percent per annum, is anticipated to add 18 million poor to urban areas by 2015[3]. Economic growth has been offset by increasing income inequalities; gender inequality also remains a major concern. Rural poverty is highest but urban poverty is growing. Climate change and changes in the global economy are major threats to the fragile progress made in economic development. All of these factors are an enormous challenge to the government's commitment to address the Millennium Development Goal (MDG) of eradicating extreme poverty and hunger[4].

FIGURE 1 – Bangladesh map



Bangladesh is located in the low-lying Ganges-Brahmaputra river delta, formed by the Ganges, Brahmaputra and Meghna rivers and their tributaries, all of which empty into the Bay of Bengal. Bangladesh's delta is one of the most fertile plains in the world, but at the same time is also extremely vulnerable to floods and politically motivated conflicts

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[1] Estimated 2009 http://en.wikipedia.org/wiki/Bangladesh and UNDP Human Development Report 2006.
[2] Benson, C. and Clay, E. 2002. *Bangladesh: Disasters and Public Finance*. Disaster Risk Management Working Paper, Series No. 6. Washington, The World Bank.
[3] DFID (2003). Country Assistance Plan (CAP) Bangladesh 2003–2006.
[4] DFID (2007). Country Assistance Plan (CAP) Bangladesh 2007–2009.

regarding water issues, as most rivers originate outside of Bangladesh, for example in India and Nepal. Upstream activities such as deforestation enhance the magnitude of damage caused by floods. Similarly the upstream withdrawal of water due to the Farakka barrage across the Ganges in India leads to local drought conditions in some regions of Bangladesh.

1.1 Floods

Many parts of Bangladesh are flooded every year as a result of rainfall and the overflow of river banks; the local population has adapted its livelihood strategies and agricultural practices accordingly. However, natural calamities such as major floods, tropical cyclones, tornadoes and tidal bores occur almost every year, varying in magnitude and intensity. Most parts of Bangladesh are less than 12 metres above sea level, and it has been calculated that about 50 percent of the land would be flooded if the sea level were to rise by just one metre[5]. Floods such as flash floods, monsoon floods and localised floods after cyclones, or when embankments are breached, have a severe impact on people's lives and the wider economy. In September 1998, Bangladesh suffered the most severe flooding in modern world history: two thirds of the country was underwater, there were 1500 deaths and 30 million people were left homeless. The floods caused severe damage to road infrastructure, standing crops and livelihood assets such as agricultural equipment and inputs, productive assets and livestock. The total loss to the economy was estimated at US$1200 million. The severity of the 1998 floods is explained by the unusually high monsoon rains that year, combined with a similarly high amount of melt water from the Himalayas. There was also serious forest and soil degradation throughout the watershed catchment area (upstream and downstream), which increased the water run-off[6].

Due to high population pressure and skewed landownership patterns, farming and settlements are increasingly pushed onto marginal land in areas at high risk of flooding. As a result, large numbers of people, especially the poor, are almost continuously exposed to flood related risks such as loss of life, crop damage, loss of assets (e.g. livestock and fishing equipment) and disruption to their livelihoods in general. When flooding occurs, vulnerable groups often lose their crops and assets, and may not be able to meet their daily needs or pay their loans. As a consequence, they are then forced to sell or lease out their land, resulting in changes in land tenure arrangements. One important example of such marginal, flood-prone areas is the highly unstable *chars*, the temporary lands within and adjoining the major rivers. Because these *chars* may be 'new' land emerging as a result of sand deposition, landownership in these areas is at times highly disputed (see sections 2.5 and 2.6).

FIGURE 2 – Disaster Prone Areas of Bangladesh (by district)

Source: *Country Emergency Situation Profile: Bangladesh, WHO.*

1.2 Cyclones

Cyclones are very strong winds combined with intense rainfall. The 1991 Gorky Cyclone claimed 120 000 lives in Bangladesh and caused serious damage to livelihoods, assets and community infrastructure. The recent 2008 super cyclone, Sidr, affected more than nine million people in the southern districts of the country, and caused serious damage to housing, infrastructure, assets and standing crops. Compared to the Gorky disaster the number of deaths was considerably lower: more effective early warning systems were now in place and cyclone shelters were more widely available. However, the

[5] Ali, A .1996. Vulnerability of Bangladesh to climate change and sea level rise through tropical cyclones and storm surges. *Water, Air & Soil Pollution* 92 (1–2): 171–179.

[6] Usually these events only occur every 50–100 years and they rarely coincide at the same time.

number of cyclone shelters is insufficient to cater for the number of people who need them, and usually the poorest sectors of the population living in high risk areas are too far from such shelters[7].

Like floods, cyclones can have a devastating impact on people's livelihoods, as a result of loss of crops, livestock and other assets. The land they used to farm or live on may disappear completely, or be damaged to the extent that it is no longer suitable for cultivation. Families also run the risk of losing their title deeds and may no longer be able to prove their ownership of the land. For example, in Sri Lanka after the 2003 Tsunami, many families lost their title deeds; as some local government offices were also seriously damaged, there were no land records at all.

1.3 River erosion

Whereas floods and cyclones are recurrent, river erosion is a serious, continuous threat faced by people living near rivers and coastal areas. Given Bangladesh's high population density and unequal land distribution, many of the rural poor are forced to live in flood- and erosion-prone areas along the rivers and the coast. It has been estimated that at least 20 000 families are made homeless because of river bank erosion every year. They are forced to migrate within their locality or to urban areas, joining the growing number of the urban poor. River erosion also affects local community infrastructure such as schools and colleges, mosques, markets, local clinics, hospitals and ports. For example, Chandpur – the biggest river port in the country and an important economic hub – has been severely affected by river erosion. Considerable funds have been invested to protect Chandpur from further erosion, but to little effect, partly because of a lack of strategic planning. When river erosion occurs quickly and suddenly, vulnerable groups may lose everything overnight. In other instances, river erosion is more gradual and people have more time to move their assets to a safer place. However, loss of cultivatable land and their homesteads is often inevitable.

The magnitude of land lost to river erosion can be large and is sometimes referred to as a 'silent tsunami'. National figures on the number of people affected, the areas of land eroded, and the damage caused by river erosion, are daunting. Between 1981 and 1992, 728 000 people were displaced by river erosion, an average of 64 000 each year. In the char areas, an estimated 462 000 people were displaced during this 11-year period, amounting to around 12 percent of the char area population[8]. Recent national figures are even higher, indicating that more than 250 000 people are the victims of land erosion every year, and annual economic losses are estimated at TK 1000 crore[9]. Many of those who lose their land have no other option except to move to major urban centres such as Dhaka. Some find themselves living their lives on the street as pavement dwellers: even a shack in a slum is beyond their reach[10]. According to the Centre for Environmental and Geographic Information Services (CEGIS), 155 280 hectares of land were eroded between 1973 and 2007. Moreover, CEGIS forecasts that for the next few years, about 29 000 people per year living along the major rivers will lose their homes and land. River erosion has always been common in Bangladesh, but its increasing frequency and intensity in recent years is causing concern. Reasons for this trend include climate change, deforestation in the Indian and Nepalese Himalayas, the silting of river beds coupled with the absence of adequate and appropriate river management, and a growing population. Increasing population density means that more people are shifting their lives towards the river banks, making them vulnerable to erosion and flood damage[11].

River erosion also affects national borders. Bangladesh has been losing land to India and Myanmar as a result of border-river erosion. Over time the border rivers Surma and Kushiara have changed direction, shifting the original border so that it is deeper inside Bangladeshi territory, resulting in a huge loss of land to India. According to a government estimate, the country has already lost nearly 15 000 hectares of land, caused by erosion in the 15 rivers

[7] Benson, C. and Clay, E. 2002. *Bangladesh: Disasters and Public Finance.* Disaster Risk Management Working Paper, Series No. 6. Washington, The World Bank.
[8] ISPAN. 1993. *Charland Study Overview: Summary Report.* Environmental study (FAP 16) and GIS (FAP 19). Prepared for the Flood Plan Coordination Organization, Ministry of Irrigation, Water Development and Flood Control.
[9] TK 1000 crore = TK 10 000 million = US$ 145 349 000 (1 TK – 0.0145349 USD).
[10] During 2007, Concern Worldwide Bangladesh carried out a programme appraisal in Dhaka including a livelihoods assessment of the pavement dwellers. Pavement dwellers are defined as people sleeping on the street and having no fixed roof over their head. The total number of pavement dwellers was estimated at 10 000 for Dhaka alone. A significant number of these people mentioned river erosion as one of the reasons for moving to Dhaka.
[11] Integrated Regional Information Networks (IRIN). *Bangladesh: 'River refugee' numbers continue to swell.* 1 August 2008. Available at: http://www.unhcr.org/refworld/docid/4896c473c.html.

that are shared with India and Myanmar. The country's borders, defined in 1974 by the Indira–Mujib border treaty, have now changed considerably, given that the Indian sides of the rivers are better protected against erosion.

1.4 Drought

Although Bangladesh is known as a country with high rainfall, seasonal and contingent droughts caused by irregularities in rainfall do occur. The 1973 contingent drought contributed to the severe nationwide famine of 1974; most recently contingent droughts were also experienced in 1994 and 1995. Often coinciding with seasonal drought is the *Monga* period, when food stocks run out and there are almost no job opportunities during the months of October and November, before the main harvest season in December. Monga is a *seasonal famine* which occurs every year in many regions of Bangladesh, and especially in some of the north-western districts such as Greater Rangpur and Dinajpur, which are severely affected. The situation is worse if preceded by devastating floods.

Thousands of poor people need to survive without adequate food for weeks. According to the WFP's estimates, 80 to 90 percent of the affected people are agricultural day labourers, approximately 20 to 30 million people, who are forced to take consumption loans and migrate to other areas for work, leaving behind their families. Seasonal drought, combined with lack of agricultural wage labour, may put poor rural households under increased pressure to give up sharecropped and/or owned land, leading to further inequalities and concentration of landownership.

1.5 Earthquakes

Bangladesh is located in a region of significant seismic activity. Although most people do not perceive seismic risk to be of great importance, the occurrence of small magnitude earthquakes in Bangladesh is quite frequent. The zones most severely affected include the northern part of Dinajpur, Rangpur, Mymensingh, Sylhet, Tangail; similarly the northern part of Dhaka, Khulna, Jessore, Kushtia, and Chittagong, including the Chittagong hill tracts.

Earthquake records[12] suggest that more than one hundred moderate to large earthquakes have occurred in Bangladesh since 1900, of which more than 65 events took place after 1960. Fifteen new epicenters have been identified inside Bangladesh since January 2001. The data clearly indicate an increased frequency of earthquakes in Bangladesh. Although Bangladesh is increasingly vulnerable to seismic activity, the nature and the level of this activity is poorly defined.

1.6 Landslides

Landslides often occur in the hilly areas in and around Chittagong and the Chittagong hill tracts, triggered by incessant monsoon rains, forest deforestation and hill cutting. A series of recent landslides between 2003 and 2008 have caused loss of human lives, homes and agricultural land. Although the links between deforestation, unsafe housing development practices in hilly urban areas and landslides are known and recognized, the government is not taking any action.

1.7 Climate change and natural disasters

Bangladesh is among the most disaster-prone countries in the world and has already suffered 170 large-scale disasters between 1970 and 1998. The frequency, intensity and scale of floods have increased, with eight major floods occurring between 1974 and 2004. Given current trends in climate change, and other triggers such as man-made disasters (e.g. deforestation, soil erosion), it is expected that the scale, intensity and frequency of disasters will also increase. The population of Bangladesh will need to cope with the impact of floods, droughts, cyclones and other extreme temperatures on a more regular basis[13].

These will not only affect the population and its livelihoods but also seriously affect infrastructure, such as port facilities and coastal embankments and structures.

TABLE 1 – Frequency of disasters, 1980–2009

Years	Cold waves	Cyclones	Earthquakes	Floods	Landslides	Local storms	Droughts
1980–2009	16	46	6 +1 tsunami	66	1	60	2

Source: http://www.emdat.be/database/country profile.

[12] Ali, M.H. and Choudhury, J.R. 2001. *Assessment of seismic hazard in Bangladesh*. Disaster Research Training and Management Centre. Dhaka University.
[13] Tanner *et al.* ORCHID: Piloting Climate Risk Screening in DFID Bangladesh. 2007.

Natural disasters will also destroy quality farm lands and existing irrigation and drainage schemes, disrupt mangroves, fisheries and bird habitats, accelerate coastal and river erosion, increase salt water intrusion into ground water, rivers, agricultural, and coastal forestlands, and affect cyclone and storm surge protection measures in coastal areas[14].

■ 2. LAND TENURE IN BANGLADESH ■

Following the overview in Part 1 on the different types of disasters and their impact on people's livelihoods, Part 2 will provide more detailed background on land tenure in Bangladesh. It aims to show the links between disasters and land tenure, how land tenure arrangements have been affected by disasters, and how the government of Bangladesh has attempted to adapt land policies and implement land reform programmes in response to the impact of disasters.

2.1 A short history of formal land rights in Bangladesh

Bangladesh's current pattern of landownership has its origins in the British colonial period, during which most of the laws, rules and regulations were promulgated. Feudalism in its most extreme form was deep rooted under British colonial rule. A series of struggles by peasants, spread over a whole century, gave them stable rights to tenancy through the Bengal Tenancy Act, 1885. In 1947, Bangladesh (then called East Pakistan) became a province of Pakistan[15] and certain laws as regards land management and administration were adopted. For example, The East Bengal State Acquisition and Tenancy Act 1950, passed by the provincial legislative assembly, was a landmark in the history of land tenure legislation, and a first legal step towards the abolition of feudalism. This Act provided for the abolition of 'Permanent Settlement', created by the then British rulers, whereby collection of revenue was in the power of the Zaminders (land lords) or their intermediate collecting agents. Since the introduction of this Act all land is ultimately owned by the Government of Bangladesh. All ground tenants have come directly under the control of the Government, but have the right to buy, to sell or to mortgage their land. The Act also prohibited acquisition of new agricultural land by any family owning more than 60 bighas (about 20 acres)[16]. The 'surplus' land was earmarked for the settlement of landless and marginal farmers 'in accordance with the rules or the policy of the government'.

Following the Bangladesh Liberation War of 1971, Bangladesh achieved independence but continued to uphold the laws passed and applied during the British regime. Since then, gradual changes and amendments have been introduced.

2.2 Land administration and management mechanisms

Bangladesh has a long history of land administration that dates back to systems developed by the Hindu rulers of ancient India. The country also still lives under the shadow of the elaborated system of land surveys and registration for revenue collection introduced by the British. Presently the administration of land is divided between two Ministries, the Ministry of Land, and the Ministry of Law, Justice and Parliamentary Affairs. The Ministry of Land is formally responsible for conducting cadastral surveys and maintaining land records, the implementation of land reform legislation, and safeguarding tenants' rights. The Department of Land Registration under the Ministry of Law, Justice and Parliamentary Affairs records land mutations arising from sales, inheritance or other forms of transfer. It also reports changes to the Ministry of Land, and collects the Immovable Property Transfer Tax. Other agencies that play a more minor role in the administration of land include the Ministry of Forests, the Fisheries Department, the Directorate of Housing and Settlement, and the Department of Roads and Railways[17].

Land administration as regards legal and fiscal cadastre is managed via Bangladesh's administrative units; the administrative head representing central government is responsible for land-related matters. The country is divided into six divisions headed by Divisional Commissioners who act as the appellate authority with

[14] Ministry of Environment and Forests. 2008. Bangladesh Climate Change Strategy and Action Plan 2008. Government of Bangladesh.
[15] Pakistan inherited land laws introduced by the British rulers.
[16] According to the Land Reforms Ordinance, 1984, although a family already owning 33.33 acres of land is allowed to retain the same, the prohibition applies to persons owning less than 33.33 acres of agricultural lands, by purchase, inheritance or otherwise. A family who acquires more than the ceiling limit by inheritance is entitled to compensation for surrender of such excess land to the Government.
[17] CARE Bangladesh. 2003. *Land Policy and Administration in Bangladesh: a literature revie*w. http://www.carebd.org/Land percent20Policy percent20and percent20Administration.pdf

respect to decisions taken at the district level on matters of land administration. The Commissioner is also the appointing authority for lower level staff engaged in land revenue administration.

The six divisions are divided into 64 districts, headed by a collector who is also the District Magistrate and Deputy Commissioner. The collector is entirely responsible for land revenue administration in his or her district, and approves settlement on government land, changes in the classification of land according to its usage, and the acquisition of land for development. The districts are further divided into 465 sub-districts, the *upazila*, which are the basic administrative unit. The central government at this level is represented by the Upazila Nirbahi Officer (UNO). Among other tasks, this officer supervises revenue administration in his or her area. There are several *Tahsil* offices in each Upazila, which are local field units for collecting land revenue. Sections 2.5 and 2.6 will explain in more detail how government programmes aiming to provide land title deeds to households that have become landless after natural disasters are implemented.

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2.3 Land reform legislation after independence

Two major land reform laws were passed in 1972 and 1984. One revolutionary change introduced by the new independent Government of Bangladesh was the introduction of a land settlement policy in favour of the landless and marginal farmers. Before liberation in 1971, land revenues were the largest single source of income for the provincial government.

As a result, land settlement policy was guided by considerations of income revenues rather than equity and social justice. Surplus or *khas* lands were settled on payment of *salami* (deposits) which were approximately equal to the market price of the land. Only well off and influential people with financial power were able to obtain such land settlements in their own names or in the names of their henchmen. Today, *khas* land is supposed to be settled free of *salami* to the benefit of landless people as defined in the land settlement policy.

Another important provision aiming to improve land tenure security is the prohibition of eviction of agricultural tenants from their homestead lands. Previously, tenants could be evicted from their homestead lands after losing a court auction designed to recover outstanding debts. Other major changes were exemption from land taxes for families owning less than 25 bighas, legal recognition of sharecroppers, and the introduction of minimum wages for agricultural labourers.

Unfortunately, most of these reforms have remained merely paper legislation. A survey in 1991 showed that nearly 90 percent of the rural population was unaware of the tenancy reforms of 1984, and thus could not derive any positive results from them[18]. Because of a lack of effective enforcement of land legislation, and a lack of awareness among the population, policies such as the legal bar on homestead land eviction and the introduction of minimum wages have not had any practical significance so far.

2.4 Land ownership and the landless in Bangladesh

About 28.7 million households are located in rural areas, which is about 88.4 percent of all households in Bangladesh[19]. For most Bangladeshi people, therefore, livelihoods based on land and agriculture continue to

[18] BIDS Pre-Election Survey, February 1991.
[19] Preliminary Report on Agricultural Census 2008. Available at http://www.bbs.gov.bd/dataindex/Pre-report-Agri-census-2008-Final.pdf.

be highly important[20]. Ownership of land determines the status of an individual in the rural society of Bangladesh. Land-rich individuals enjoy political power and yield considerable social influence. The urban elites in many cases are also land-rich people, but they have very little relationship with the production processes of the agricultural land they own. Today, there are essentially four classes of agricultural landowners in Bangladesh:

- people who own homestead land only, but have no land for cultivation;
- people who own homestead and agricultural land and take lease land to increase their farm area;
- people who own agricultural land but lease out part of it because they cannot manage all the land;
- people who own agricultural land but lease all of it to others for cultivation (sharecropping or money arrangements).

There are no up-to-date figures on land distribution and average farm size, but approximately 80 percent of farm households are classified as small (between 0.02 and 1.0 hectares, with an average farm size of 0.35 hectares), and these account for about 40 percent of the agricultural land area[21].

The measurement of landless households in Bangladesh varies according to differing definitions, as found in distinct statistical sources. The Land Occupancy Survey (LOS) of 1977 and 1978, and the national level survey on Land Occupancy carried out by the BBS in collaboration with USAID, developed and distinguished three categories of landless households, including:

- Landless I – Households with no land whatsoever
- Landless II – Those who own only a homestead but no other land
- Landless III – Those who own a homestead and 0.5 acres (0.2 hectares) of 'other' land.

To indicate the degree of landlessness, Januzi and Peach (1980) qualified the above definitions by describing landless I households as 'absolute' and landless II and III as 'near' or 'functional' landless (ownership of no more than 0.5 acres/0.2 hectares of land excluding homestead land). Accordingly, the 1978 Land Occupancy Survey found that 29 percent of people owned no cultivatable land[22]. In 1983–1984 the Agricultural Census reported a total of 1.1 million rural landless households (8.7 percent of all rural households)[23]. More recently the preliminary report on the 2008 Agricultural Census[24] found that 3.26 million rural households were landless (12.84 percent of the total rural households), and that there were 7.9 million rural tenant households (27.8 percent of all rural households). The 4.1 percent increase in rural landless households between 1983 and 2008 means an increase of 2.1 million landless households in absolute numbers.

Although the absolute number of farm households has increased, the percentage of farm households as a percentage of total households is gradually decreasing[25]. In 1983–84, the percentage of farm households in rural areas was 72.7 percent. This decreased to 66.18 percent and 56.74 percent in the years 1996 and 2008 respectively. The causes of this gradual decrease in percentage of farm households are likely to be rapid urbanization throughout the country, and the fact that many labourers are switching to the non-agriculture sector from the agriculture sector.

As explained in section 1.3 above, erosion, and especially river erosion, is causing an increasing number of households to become landless, forcing people to migrate to urban areas or settle on other marginal and disaster-prone land.

2.5 Distribution of *khas* land

As outlined in Part 1, many rural households have become landless after cyclones, floods and river erosion. Floods sometimes make land unsuitable for cultivation and uninhabitable. Cyclones are often accompanied by floods and result in land being washed away or destroyed, as well as causing severe damage to agricultural infrastructure such as dams, irrigation canals, and also housing. People living along

[20] About 1 percent of the total population belongs to an ethnic minority, the tribal group adivasis, who live both in the plains and the hill areas of Bangladesh. The land tenure arrangements for this group are slightly different, and not covered in this case study. The land tenure of this group is increasingly under pressure due to the high population density in Bangladesh in general. Increasing land pressure and economic interests in forest areas put this group's land tenure security at risk.

[21] See information regarding the National Agricultural Technology Project at http://www.worldbank.org.bd/.

[22] Chaturverdi, M and Greeley, M. 2005. *Assets and Access: A Livelihoods Study in South East Bangladesh.* CARE Bangladesh.

[23] The agricultural census of 2008 defined a landless household as one with no land whatsoever. Households with up to 0.04 acres were considered to be non-farm households. The agricultural censuses of 1983, 1984 and 1996 used the same definition of landlessness. Differences exist, however, as regards how urban and rural areas have been defined during the three censuses. For example, in 1983–84, there were only 79 municipalities. These numbers increased to 147 in 1996. In the 2008 Agriculture Census, 6 metropolitan cities of the divisional headquarters and 58 municipalities located at 58 other district headquarters, were included in the definition of 'urban area'. The rest of the country, which included municipalities at the Upazila headquarters, was defined as a 'rural area'.

[24] Preliminary Report on Agricultural Census 2008. Available at http://www.bbs.gov.bd/dataindex/Pre-report-Agri-census-2008-Final.pdf.

[25] The agricultural census defined a farm household as a holding whose net cultivated area is 0.05 acre or more.

BOX 1 – CHAR DEVELOPMENT AND SETTLEMENT PROJECT (CDSP)

CDSP is a joint programme run by the GoB, WFP (World Food Programme) and the Dutch Government (1994–2009). The population of chars consists to a large extent of migrants, originating from other places that were eroded or that could no longer sustain their livelihoods for other reasons. As a result, there is no kinship network. In an environment where vulnerability is the most visible feature, additional investments on the part of the settlers could only be expected if they were provided with some sense of security. Much of the CDSP intervention was geared towards that purpose. Infrastructure brought protection against floods and cyclones, while land settlement enhanced security by providing access to land through legal ownership. Project activities aimed at reducing insecurity and at the same time attempted to realize the development potential that the chars offer. Currently CDSP III is settling 70 000 landless households in 'Boyer Char', a new char in the Noakhali coastal area. (Koen, 2000 and http://www.cdsp.org.bd).

river embankments experience rivers changing their course over time, with land being washed away, but also new pieces of land developing over time due to sand deposition. After losing their farm and homestead land, people need to find new land for living and farming. They often settle on so-called *khas* land, which is officially state-owned, and which is regularly found in marginal areas along the coasts and rivers. Settlement on and allocation of *khas* land is often highly disputed and highly insecure from the perspective of legal tenure.

Since its independence, the Government of Bangladesh (GoB) has enacted many laws and policies regarding the distribution of *khas* land. However, these laws and their supporting regulations and policies are complicated, and their implementation is not always enforced. In 1972, after a catastrophic cyclone in the coastal areas, the Land Administration and Land Reforms Division began rehabilitating landless people by creating seven cluster villages in the *chars*[26] of Noakhali, Lakshmipur and Feni districts. In 1987, the Ministry of Land launched the Land Reforms Action programme, an initiative to strengthen and enforce previous resettlement programmes for distribution of *khas* and unoccupied state-owned land to landless families.

Several resettlement programmes such as Adarsha Gram (AG)[27], Asrayan and Abashan[28] have been implemented, some of which are still in place to this day. The beneficiary families are selected by the local administration and then settled in communities ranging in size from 30 to 300 families. The families are provided with government *khas* land for homesteads, and agricultural and community purposes; they also receive resources for income generation, production and community development. *Khas* land is legally reserved for distribution to landless households as defined above. However, some groups of landless households are excluded, such as female-headed households headed by unmarried women, or widows who only have daughters or no children at all. In addition, the GoB has imposed ceilings (60 bighas)[29] on landownership, so as to redistribute land from holdings above the ceiling to the landless, or to those with holdings below the size required for a farm to be efficient.

The estimated amount of total identified *khas* land in Bangladesh is 3.3 million acres[30]; however, experts contest these official figures and think they are an underestimation. In 2001, official sources claimed that about 44 percent of 803 308 acres of agricultural *khas* land had already been distributed among landless families, but experts question these official claims[31]. Furthermore, official estimates showed great inaccuracies when checked at the local level. For example, figures for Noakhali district put official estimates at 67 percent of available land redistributed; while direct enquiry at the local level showed a target fulfilment of only 17 percent

[26] Chars are highly unstable temporary lands within and adjoining the major rivers, formed by accretion of sediments.

[27] AG has projects in 369 upazilas in Bangladesh and has provided shelter to 45 647 families during Phase 1, and 25 385 families in Phase 2. Each family receives a homestead with a minimum size of 0.08–0.10 acres in the char areas and 0.04–0.06 acres on the mainland. These include a house, a usable kitchen, and a single water-sealed latrine. There is also a tube-well to be shared by 10 families and a community centre for the whole village; wherever possible, agricultural land and/or ponds are provided for the beneficiaries.

[28] The overall objective is poverty alleviation of the landless through shelter provision and human resource development activities (basic education, health care, and skills development for income-generating activities).

[29] The State Acquisition and Tenancy Act 1950 fixed the land ceiling per family at 33.3 acres (100 bighas), which was revised and raised to 125 acres (375 bighas) in 1959. After the independence of Bangladesh the new government quickly adopted land legislation in 1972 under which the land ceiling was brought down again from 125 acres to 33.3 acres, and also exempted families owning less than 4 acres from paying land taxes. The Land Reform Ordinance 1984 saw a further reduction to 60 bighas (20 acres) maximum.

[30] 0.8 million acres of agricultural land, 0.8 million acres of water bodies and 1.7 million acres of non-agricultural land.

[31] According to the economist Abul Barakat, at most 26 percent of available *khas* land has been distributed, and the rest is illegally occupied by the rich and powerful in society. See also Barakat, A, Zaman, S and Raihan, S. 2001. *Political Economy of Khas Land in Bangladesh*. Dhaka, Association for Land Reform and Development.

by mid 1990[32]. In several other cases, while distribution was shown to have been completed on paper, in reality no actual transfers had taken place.[33]

Table 2 gives an overview of the process of *khas* land distribution and illustrates the number of obstacles and challenges that landless households face when trying to secure this land. It highlights the challenges of putting government policies related to *khas* land into practice.

To date, progress made in redistribution of *khas* land has generally been mixed, because of the vested interests of the landowning class, lack of political will, inefficiencies in the way the local and national administration are organized, and the absence of an updated, systematic and universally accepted source of information on land resource availability and land rights. Given the legal and administrative complexities and associated transaction costs, it is very difficult for poor, often illiterate people to go to court and file land litigation cases. Many landless families cannot afford these delays and lengthy processes, and are forced to migrate to other rural or urban areas in search of viable livelihood options. Meanwhile, continuing river erosion affects resettlement programmes because some of the rehabilitated villages have disappeared due to river erosion. It is not only the complexities of legal policies, weak administration, national and local politics, and corruption that make the redistribution of *khas* land

TABLE 2 – Gaps and obstacles to accessing *khas* land in rural areas [34]

Steps	Procedures	Obstacles / Gaps
Identification	• If land is under ordinary or *diara* settlement the *amin* records the area as part of the cadastral survey and notifies the assistant settlement officer for registration • In non-settlement areas the *tehsildar* is responsible for identifying and recording any new *khas* land (e.g. arising through accretion)	• A large portion of land is not surveyed and/or not recorded • Land is illegally occupied by influential people
Notification	• Microphone announcement by District Information Officer at big market places • Beating of drums at all markets and notices displayed on all public notice boards in *Upazila* and unions • Publicity programme included in the agenda of *Upazila* meetings for two consecutive months	• Allegations are very common that such notifications are only passed on to contacts, friends and relations, with some interested parties not finding out at all, or not until it is too late
Application	• Interested parties fill out an application form stating what type of landless household they are and providing other details • Two members of the local elite (typically a UP chairman or member, or school teacher) must sign • False applications from large-scale landowners	• Illiterate people cannot fill in the form and cannot apply themselves; they depend on others for help, creating obligations toward their 'helpers' • *Tehsildar* often demands a fee for providing, completing or accepting the form
List names	• Qualifications of applicant checked by *tehsildar* • Preparation of a list of all qualified people for being filled out incorrectly	• *Tehsildar* or UP chairman sometimes requires a bribe • Applications are (often falsely) screened out
Selection	• The most qualified candidates are selected using the established criteria by the *tehsildar*, UP chairman and AC (Land). • Details are posted on *Upazila* notice board	• Bribes are paid to pass the selection stage, both by legitimate and illegitimate applicants
Recording	• *Kanungo* surveys the land for registration with AC • The holding number of the *khas* land is placed on the application by AC (Land) and UNO. • The file is sent to the DC for approval	• Bribes must be paid at each stage
Distribution	• Deeds (*kabuliyat*) are issued granting title to the land for 99 years by AC (Land)	• The number of applications exceeds the available plots and many are unsuccessful • Certificates are only handed out after payment of a bribe • Land is given to ineligible people
Utilization	• The recipient cultivates the land and/or file a competing claim (often supported by false documentation)	• Powerful people already own the land and block access • Rich and powerful people, *tehsildar*, or UP members demand a share of the produce
Follow Up	• If obstacles are encountered, the case goes back to the *shalish*, land office or court for resolution	• Powerful people threaten recipients and/or bribe officials to swing outcomes in their favour • Recipients can not afford to proceed with the case because of high expenses and give up

[32] Ibid.
[33] Evidence on Rangunia and Mirsarai, Chittagong in Dainik Ekota, August 24, 1990.
[34] Source: Reports of CARE Bangladesh and Political Economy of *khas* Land in Bangladesh by Abul Barakat.

to the landless a challenge, but also the highly disaster-prone agro-ecological environment in which these programmes have to operate.

Besides the challenges of land tenures issues, other weaknesses in these resettlement programmes include[35]:

- The settlement projects often lack an understanding of people's living patterns and livelihoods; this is reflected in the sometimes inappropriate structural designs and spatial arrangements of shelters and homesteads.
- The location of resettlement villages is often far away from local markets, commercial hubs and access to services such as health centres, government offices and credit facilities. This remoteness limits the scope of livelihood options and income-generating opportunities.
- Settlements are at times not well planned and often use up grazing grounds in nearby villages, leading to conflicts over resources and scarcity of locally-available livestock fodder.

2.6 Land tenure provision in case of natural disasters

Although the Land Reform Ordinance of 1984 included provisions to protect people from being evicted from their homesteads, and also recognized the rights of sharecroppers[36], there are no proper and effective policies in place for people who lost land due to river erosions or floods.

A *Rin Salishi Ain* was passed in 1989 to support poor tenants who were compelled to sell their smallholdings because of floods, drought and cyclones. This law provides for the establishment of debt settlement boards in each Upazila, composed of officials and representatives both of the seller and the buyer. The boards are authorized to declare certain types of sale void, and certain other types as mortgages redeemable after seven years have expired. Advance purchase of crops and deposits of blank stamp papers with signatures or thumb impressions are declared void under this legislation.

The *Sikosti-Poisti* Act (Dilluvion-Alluvion Act), initially formulated during British rule, was adopted with some amendments in 1972, soon after independence. The act stated that any land lost to river erosion and on which accretion occurs after some time[37] would be owned by the government and declared as *khas* land for redistribution to poor and landless families. The spirit of the Act was to rehabilitate poor landless people as well as to check land grabbing and associated violence, which was often seen in flood plains and coastal areas. However, the act could not be enforced as the land was taken away from landless people by politically-influential local elites and large-scale farmers. Often, lengthy litigation discouraged many displaced landless farmers from filing a case, and they lost their claims to their legitimate rights. Consequently, the *Sikosti–Poisti* Act was amended in 1994 to state that the accreted land should be returned to the previous owner, provided that it was developed within the last 30 years. Although this amendment appeared to be a way forward, challenges remained in identifying the actual location or site, as well as the issue of measuring land areas. It was difficult to meet all the claims made by erosion victims, some of whom were often not the real victims. Further, the 30-year clause is too long for poor farmers to wait. Often they prefer to sell the river's submerged land to large-scale landowners at below market prices. This amendment of the Act has led to many conflicts, lengthy litigations, and often armed violence centred on old and newly-accreted areas of land.

2.7 Major challenges for an effective land tenure system in Bangladesh

There are several reasons for the lack of progress in the formulation of a realistic land policy and its effective implementation, including:

- Both policy makers and political circles have in general shown an insufficient appreciation of the overall land constraints facing the country. Per capita availability of cultivable land stands at a miniscule 0.24 acres, indicating a very limited scope for any comprehensive redistribution of land. Failure to appreciate the overall land constraint has led to exaggerated and largely ineffectual attention being given to redistributive land

[35] Chowdhury R.A and Nurullah, A.S. 2004. Coping with Displacement. Riverbank Erosion in North-West Bangladesh. RDRS, Bangladesh.

[36] The new law provides that a sharecropping contract between the landowner and the sharecropper (*bargadar*) should be valid for five years, including a right of inheritance for the able heir. The *bargadar* will also have a prior right to purchase land at the market price. The produce will be divided into three shares. One-third will go to the landowner, one-third to the *bargadar* and the remaining one-third to the party that provides seeds, fertilizer and irrigation. In practice, the value and distribution of shares is determined by local practices and competition. Currently, sharecropping arrangements are mainly applied to non-irrigated traditional cropland, and lease arrangements in lieu of case payments have become very common in the production of high-yielding varieties of rice crops. For many of the rural poor, agricultural wage labour has become a more lucrative and viable option.

[37] Land may be eroded as a result of river erosion, but given changes in the course of a river and deposition of new material (accretion), the land may also be reestablished after many years.

reform, while the more practical issue of optimum utilization of public or state land resources, including urban land, has been relatively neglected. It is obvious that in addition to existing landless households, opportunities for the resettlement of households affected by natural disasters are limited.

- There has been a general lack of awareness of regional variations in the country with respect to land resources and land issues. An important example is the availability of *khas* land for redistribution to the rural poor. Bulk distribution of *khas* land is concentrated in relatively few hands. A successful implementation of *khas* land redistribution would require concentrated efforts as regards these identifiable bulks, rather than a routine administrative approach for the whole country. Failure to consider regional variations when designing implementation strategies has proved to be important in the persistent history of little or no positive benefits coming from land reform programmes. Land reform programmes should also consider the specific challenges of disaster-prone areas, and adapt implementation strategies according to the opportunities and constraints of specific regions, in view of the most common disasters experienced there and their effects on land tenure arrangements.
- There are major flaws in the perception of elite as regards the major bottlenecks to successful land reform. The failed history of land reform implementation has been so widespread and so persistent that the implementation process itself demands to be treated as a priority concern. Vague arguments suggesting a lack of political will are an insufficient explanation for such routine failures of implementation. The system of land administration and associated court processes, the preponderance of ex-officio authorities involved in key decision-making processes as regards land reform programmes, and the subsequent ineffectual attention given to such programmes, appear to be much more likely explanations for the gap between promise and reality. Flaws in the land administration system also contribute significantly to yet another underappreciated source of rural misery: pervasive land violence. Land violence is already very much a part of everyday life; tension and violence is further aggravated when additional households have lost land due to floods and river erosion. Both of these issues – implementation failures and land violence – suggest that a third party item should appear on the land reform agenda (besides redistributive and tenure reforms), namely land administration reforms. Land administration reform should also consider issues related to disasters and land tenure and be linked to current disaster management, and disaster response frameworks and policies (see also Chapter 3).
- The absence of any centralized system of information on land resources and land rights. While a great deal

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of information exists, this is scattered and duplicated in various land-related offices, leading to confusion and conflict. One crucial source of such confusion is in the fragmentation between the Upazila Land Office/Tahsil office and the registration office. The registration office records all land property transfers, while information on ownership is maintained separately in the Upazila land office/Tahsil office. Sometimes, land records documentation at Upazila and Tahsil offices is also damaged and destroyed as a result of floods and cyclones. Because of this fragmentation in information keeping, no routine scrutiny of ownership information takes place at the time of registration. This allows for the registration of numerous false land transfers; as a consequence, court action follows almost routinely. It is true to say that the bulk of civil and criminal litigation in the country arise from such conflicting claims of ownership.

The absence of an up-to-date, systematic and universally accepted source of information on land resource availability and land rights is probably one of the principal barriers to the successful implementation of land reform programmes, as well as the effective handling of land disputes. Technologies such as GIS and satellite mapping could be used to collect and maintain information on land resources and land tenure issues, and could also be made available at local levels of administration. More efforts should be made to map newly accreted and reclaimed land to avoid illegal land grabbing. An interesting example is the Bhoomi project, run by the Karnataka State Government and the World Bank, in India. The project focused on how information technology could be used as a tool for scaling up empowerment of the poor, increasing both their access to and the transparency of information. Under the Bhoomi project all land records in Karnataka have been digitalized, and access to these records is available through information kiosks and fingerprint authentication systems. More than 20 million records of landownership across Karnataka state, covering almost seven million farmers, have been digitalized. Although the advantages are recognized, critics also point out that ICT technologies may also increase inequalities further, because they are partly dependent on socio-economic status and literacy. It has also been suggested that the government missed the opportunities to verify critically the information that was entered into the digital database[38]. However, the existence of digital databases will also reduce the problems rural households face after loss of their land title documents when floods and cyclones occur.

■ 3. DISASTER MANAGEMENT, LAND TENURE AND RESPONSES ■

3.1 Natural disasters and their impact on land tenure issues

The first two parts have highlighted the complexities of land tenure issues and Bangladesh's extreme vulnerability to disasters such as cyclones and floods. Landless people are disproportionately affected by disasters because of highly-skewed patterns of landownership which force them to live in high-risk areas. Disasters also have a negative impact on the wider economy and people's livelihoods, including land tenure arrangements. Floods usually result in high levels of temporary displacements, and the loss of crops, livestock and other assets. As a result some people may then be forced to sell their land; others may not be able to meet their sharecropping or other lease arrangements; both of these situations have a negative knock-on effect on land tenure arrangements. River erosion especially is taking its toll and has already made many people landless; it then becomes a source of conflicts when land re-emerges via accretion at a later stage. Around 45 districts face the risk of river erosion and need to deal with its effects, which include severe loss of infrastructure, economic losses and landless households. Nearly 10 million people have been made homeless in the northern district of Bangladesh over the past 20 years. It is estimated that about one quarter of the total cultivable land will be lost by 2020 if no measures are taken.

Seasonal drought, which usually coincides with *monga* (a seasonal famine caused by lack of wage labour opportunities in the period just before harvesting), puts considerable stress on poor rural households. They are forced to sell their assets, sometimes in the form of land, and need to take out advance consumption loans against providing labour in kind during the harvest season. Many poor families are then trapped in a vicious cycle of debts involving high interest rates and/or providing labour in kind, which reduces their opportunities to take up more favourably-waged labour elsewhere. Table 3 gives an overview of the impact of disasters and their link to land tenure, specifically for Bangladesh.

[38] See also http://www.i4donline.net and India's move to e-governance exposes ancient flaws, available at http://www.panos.org.uk/?lid=19702.

TABLE 3 – Types of disasters, impact on livelihoods and land tenure issues

Type of disaster	Areas affected	Impact on livelihoods and wider economy	Issues related to land tenure and rehabilitation
Floods	Floodplains of the Brahmaputra-Jamuna, the Ganges-Padma and the Meghna river system Haor Basins of the northeast region and southeastern hilly areas	• Loss of agricultural production, damage to standing crops and loss of livestock • Temporary displacement • Disruption of communication and livelihood systems • Injury, evacuation, suffering and loss of human life, and loss of biodiversity • Damage and destruction to infrastructure and property • Disruption to essential services • National economic losses • Applies to both urban and rural areas	• Prolonged floods may make the land unsuitable for previous land use; changes in land use patterns • Illegal land grabbing • Temporary displacement • People become landless • Rise in land tenure conflicts • Large-scale migration • Relocation should be on land relatively safe for future floods, raised homesteads and issuing of land titles • Urban areas more likely to receive timely support and assistance
Cyclones	Coastal areas and offshore islands (Patuakhali, Bhola, Barisal, Barguna, Chittagong and Cox's bazaar district)	• Loss of agricultural production (crops and livestock) due to storms and surge floods • Temporary displacement • Disruption of communication and livelihood systems • Damage and destruction of infrastructure and property • Injury and loss of human life, and loss of biodiversity • Need for evacuation and temporary shelter • National economic losses • Relevant to both urban and rural areas in the coastal belt	• Possible changes in land use • Temporary displacement • People become landless • Rise in land tenure conflicts • Large-scale migration • Relocation to new land outside the high risk areas and issuing of land titles
Drought Monga	Throughout Bangladesh but especially the northwestern region	• Loss of agricultural production • Reduced farm-based income earning opportunities • Increases in food prices • Stress on the national economy • Seasonal to permanent labour migration • Applies mostly to rural areas	• Pose considerable threat to land tenure by forcing migration to urban areas • Recent government budgets include allocation for drought affected areas
River erosion	Banks of the Brahmaputra-Jamuna, the Ganges-Padma and the Meghna, Brahmaputra and Teesta	• Loss of land and homesteads • Displacement of people and livestock • Disruption/loss of agricultural production • Loss of productive assets and property • Evacuation • Relevant to both rural and riverside urban areas	• Permanent displacement • People become landless and lose their homes • Resettlement in new areas combined with challenges finding new homestead land and agricultural land • Fear of eviction when people have no registration papers or land titles in new settlement areas • River protection to prevent further erosion where possible • Requires total rehabilitation in terms of shelter, homestead land, legal protection and viable livelihood opportunities
Landslide	Chittagong and Chittagong Hill Tracts	• Loss of land and homesteads • Loss of life • Displacement of people and livestock • Damage to and loss of productive assets, agricultural production and infrastructure • Evacuation • Relevant to both urban areas (often hilly slum areas) and rural areas	• Permanent displacement • People become landless, loss of homes • Need for enforcement of laws to stop hill cutting and deforestation • Resettlement in new areas; challenges finding new homestead land/shelter and agricultural land • Fear of eviction if people have no registration papers or land titles in new settlement areas
Earthquake	Northern and central parts of the country	• Damage and destruction of property, loss of life and changes in geomorphology • Displacement may occur after major earthquakes • Particularly relevant to urban areas, but also to densely populated rural areas.	• Drastic damage to land and shelter • Requires improvement in mapping of risk zones and enforcement of building codes • Lack of general awareness and government's commitment to put it on the agenda • Protection of land tenure of the poor in case of displacement from high risk zones • Need for awareness and disaster mitigation policies and specific preparedness for earthquakes

Source: Salma A. Shafi, based on various sources (2008).

3.2 Institutional arrangements related to disaster management and land tenure

The Ministry of Food and Disaster Management (MoFDM) is responsible for coordinating national disaster management efforts across all agencies such as the Disaster Management Bureau, and the Directorate of Relief and Rehabilitation. The MoFDM is responsible for coordinating early warning management systems, immediate relief operations, and recovery and rehabilitation programmes. The Ministry is supported by donors and several UN agencies that provide technical support and funding assistance, and also a number of national and international NGOs. Technical support is provided in several ways, i.e. support for the formulation of disaster mitigation and rehabilitation policies, and the implementation of actual relief operations on the ground. In January 1997, the Ministry issued the Standing Orders on Disasters (SOD) to guide and monitor disaster management activities in Bangladesh. A series of inter-related institutions, at both national and sub-national levels, have been created to ensure effective planning and coordination of disaster risk reduction and emergency response management. Field level disaster management and response activities are the responsibility of Deputy Commissioners at the district level and UNO offices at the Upazila level. Activities at the village level are planned and carried out by union offices through the chairperson and its ward members (see Table 4 for more details).

Not listed above are other ministries such as the Ministry of Agriculture and the Ministry of Public Works

TABLE 4 – National and field level committees on disaster management, and their responsibilities

Level	Committees	Headed by	Activities
NATIONAL LEVEL	National Disaster Management Council (NDMC)	Prime Minister	To formulate and review disaster management policies and issue directives to all concerned
	Inter-Ministerial Disaster Management Coordination Committee (IMDMCC)	Minister in charge of the Ministry of Food and Disaster Management	To implement disaster management policies and decisions of NDMC/Government
	National Disaster Management Advisory Committee (NDMAC)	An experienced person having been nominated by the Prime Minister	To carry out advisory activities
	Cyclone Preparedness Programme Implementation Board (CPPIB)	Secretary, Ministry of Food and Disaster Management	To review preparedness activities in the face of the initial stages of an impending cyclone
	Disaster Management Training and Public Awareness Building Task Force (DMTATF)	Director General of Disaster Management Bureau (DMB)	To coordinate disaster-related training and public awareness activities of the Government, NGOs and other organizations
	Focal Point Operation Coordination Group of Disaster Management (FPOCG)	Director General of DMB	To review and coordinate activities of various departments/agencies related to disaster management. Also to review the Contingency Plan prepared by concerned departments
	NGO Coordination Committee on Disaster Management (NGOCC)	Director General of DMB	To review and coordinate activities of concerned NGOs in the country
	Committee for Speedy Dissemination of Disaster Related Warnings/ Signals (CSDDWS)	Director General of DMB	To examine, ensure and discover the ways and means for speedy dissemination of warning signals among the population
SUB-NATIONAL LEVELS (Field Level)	District Disaster Management Committee (DDMC)	Deputy Commissioner (DC)	To coordinate and review disaster management activities at the district level
	Upazila Disaster Management Committee (UZDMC)	Upazila Nirbahi Officer (UNO)	To coordinate and review disaster management activities at the Upazila level
	Union Disaster Management Committee (UDMC)	Chairman of the Union Parishad	To coordinate, review and implement disaster management activities of concerned unions
	Pourashava Disaster Management Committee (PDMC)	Chairman of Pourashava (municipality)	To coordinate, review and implement disaster management activities within its area of jurisdiction
	City Corporation Disaster Management Committee (CCDMC)	Mayor of City Corporations	To coordinate, review and implement disaster management activities within its area of jurisdiction

Source: Ministry of Food and Disaster Management, June 2008


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and Housing, which are also called upon for certain disaster responses. The Ministry of Public Works and Housing may intervene in relation to earthquakes, i.e. to coordinate reconstruction efforts and ensure a proper implementation of the building code. The Ministry of Agriculture is responsible for research and extension activities to support farmers during droughts. However, the SOD does not include any major institutions and line agencies responsible for land tenure issues, even though land tenure issues are crucial issues in many natural disasters.

In 2003, the Comprehensive Disaster Management Programme (CDMP) was approved by the Bangladeshi Government as a key strategy to advance and coordinate risk reduction efforts by the government, NGOs, the private sector and communities themselves. It aims to reduce long-term risk and to strengthen operational capacities for responding to emergencies and disaster situations, including actions to improve recovery from these events. The National Plan on Disaster Management sets out a series of key strategic objectives such as community empowerment, strengthening and improving emergency response, and partnership building among the different agencies and line ministries. Many ministries are involved in different ways but it is striking to notice that the Ministry of Land is neither included in the SOD nor referred to in the National Plan on Disaster Management[39].

The provision of shelter for landless people is an activity to be carried out by the central authority as and when desired, and is dependent on a political decision being taken. In any land settlement programme, the process is begun at the local administrative level with registration of landless people, selection of beneficiaries, and preparation of proposals for settlement on *khas* lands. However, resettlement on *khas* land is a regular and routine administrative process, and not yet aligned with responses to natural disasters and rehabilitation procedures. For example, the case of Sidr landless victims showed that large numbers of landless families awaiting rehabilitation have not yet been resettled (see section 3.7). Also, river erosion can cause a sudden increase in new landless households, which cannot easily be addressed within regular land resettlement programmes. By river erosion alone, an estimated 250 000 people are made homeless every year.

3.3 Disaster management policy within the Poverty Reduction Strategy framework

The Poverty Reduction Strategy Paper (PRSP) includes a policy matrix (number 07) on Comprehensive Disaster Management with respect to poverty reduction and growth. In addition, disaster management is included in three policy matrices: food security, promotion of

[39] Bureau for Disaster Management. 2008. National Plan for Disaster Management 2008–2015. Government of Bangladesh. See also http://www.cdmp.org.bd/reports.

the use of ICT in disaster management, and ensuring social protection for women against vulnerability and risk. The policy matrix 07 on disaster management envisages:

- Mainstreaming disaster management and risk reduction into national policies, institutions and development processes (introduction of Disaster Impact and Risk Assessment (DIRA)
- Strengthening disaster management and risk reduction capacity
- Ensuring knowledge management on disaster risk reduction
- Enhancing community level capacity for disaster risk reduction (community level preparedness, response, recovery and rehabilitation)
- Ensuring social protection of women, children, elderly, people with disabilities and other vulnerable groups, against vulnerability and risk.

But once again, the policy matrix on disaster management within the PRSP does not refer to or highlight the importance of land tenure issues.

3.4 Present mechanism for addressing the causes of natural disasters

Over the years the government of Bangladesh, with support from donors and international agencies, has developed several mechanisms to respond to disasters in terms of their effects, but even more so in terms of their causes. Table 5 gives an overview of disasters, their causes, and responses aimed at addressing some of the underlying causes of these, as far as it is possible to do so.

3.5 Disaster management at the union level

The National Disaster Management Plan 2008–2015 outlines guidelines and procedures for Union Disaster Management Plans (UDMP) for each Union, outlining both disaster risk reduction strategies and emergency response. Union Disaster Management Committees have to conduct participatory community risk assessments, giving particular attention to specific vulnerable groups

TABLE 5 – Type of disasters, their causes and present response mechanisms

Disasters	Cause of disasters	Responses (policy and implementation)	Agency responsible
Floods	• Excess water flow during the monsoon • Unplanned infrastructure development • 92 percent of total catchment area is along river border areas • Drainage congestion due to river bed siltation • Deforestation in upper catchment area	• FAP (Flood Action Plan) • National Water Policy • Flood forecast and inundation modelling • Dredging of river beds • Construction of embankments with sluice gates	• CDMP (Comprehensive Disaster Management Programme) • Disaster Management Bureau • Ministry of Food and Disaster Management
River erosion	• Floods • Flash floods • Heavy rainfall • Farakkha (Overflow of rivers controlled in India)	• River training • Embankment	• Bangladesh Water Development Board
Droughts	• Less and uneven rainfall in the dry season and wet season • Non-availability of surface water in the dry season • Fluctuation of ground water table	• Agricultural research and extension works • Intensive afforestation programmes • Re-excavation of channels and ponds in rural areas • Augmentation of surface water flow • Construction of water reservoirs	• Ministry of Food and Disaster Management • Ministry of Agriculture
Cyclones and storm surges	• Geographic location of Bangladesh • Coastal configurations and bathymetry of the Bay of Bengal • Location of ITCZ near the Equator and its shifting with the apparent movement of the Sun across the Bay	• Strengthening of CPP (Cyclone Preparedness Programme) • Awareness-building programmes for the target group • Reliable and timely warnings and effective warning dissemination systems	• CDMP (Comprehensive Disaster Management Programme) • Disaster Management Bureau • Local Disaster Action Plans for grass roots levels along the coastal belt • Ministry of Food and Disaster Management
Tornadoes	• Intense ground heating and low level moisture incursion from the Bay of Bengal, pre- and post-monsoon • Conjugation of western disturbance with locally developed low pressure areas	• Proper radar network • Reliable and timely forecast capability • Awareness-building programmes • Quick search and rescue system	• Local Administrative Body • Disaster Management Bureau • Ministry of Food and Disaster Management
Earthquakes	• Geographical location of Bangladesh along major and moderate faults	• Proper implementation of building code (1993) • Inventory of equipment for rescue operation	• National Housing Authority • Ministry of Public Works and Housing

within communities[40]. However, the guidelines developed for the community risk assessment do not include issues surrounding land tenure and disasters.

The Union and Pourashava Disaster Management Committees should be responsible for monitoring and maintaining primary contact with landless families during pre- and post-disaster periods, but because of a lack of resources and also policy guidelines, this is not happening. They only certify landless families in response to any specific *khas* land resettlement programmes. Their duties and responsibilities in relation to land tenure issues could be strengthened as follows:

- During participatory community risk assessments: include information on landownership distribution and the reasons for landlessness; identify landless families and those vulnerable to losing land in future disasters.
- Capacity building and preparedness measures should include identification of available land for rehabilitation at the union/ward level.
- People living in areas identified as risk spots should submit copies of their land titles to the Upazila and district administration as proof of their ownership. In the event of loss of property, they could claim for rehabilitation.
- During reconstruction of shelters, agencies will make sure that beneficiaries have safe and secure places in their homes to store their valuables, including land deeds, maps and other documents related to land titles.

3.6 Reducing vulnerability to disasters

While it is impossible to prevent natural events such as the Sidr cyclone and major floods, it is possible to reduce vulnerability to disasters for people living in disaster-prone areas. Initiatives such as early warning systems have shown their merits: during the Sidr cyclone of 2007 the death toll of around 4000 was far less than the previous major cyclone in 1991, which caused 120 000 deaths. Disaster preparedness programmes make communities aware of their needs and teach them how to cope with disasters such as cyclones, floods and river erosion, not only in terms of saving their own lives but also in terms of

[40] The Union Parishad is the lowest administrative unit of Bangladesh. There is a Disaster Management Committee at the Union level (UDMC), chaired by the elected chairman of the respective Union Parishad. Other UDMC members include all government department heads at the union level, members of the Union Parishad and NGO representatives. The committee is required to meet bimonthly during normal periods, and as and when necessary during emergency situations.

identifying ways of protecting their livelihoods (for example, by moving livestock to higher areas). They must be directly engaged in the design and management of early warning systems (including choice of message dissemination), and also in the construction of locally-appropriate infrastructures, such as multi-purpose cyclone shelters and well-maintained embankments.

Both the SOD and the Comprehensive Disaster Management Programme need to be well aligned and committed to activate and strengthen Disaster Management Committees (DMC) at district, *upazila*, and village or 'union' levels. These committees should take the lead in planning and implementing community-based disaster preparedness plans for disasters that are likely to affect their areas. The DMCs should have a broad membership that includes community representatives such as fishermen and farmers. In addition, the government must accelerate its efforts to tackle chronic vulnerability, by guaranteeing access to essential services (e.g. health, education, water, and sanitation) during any type of disasters, giving priority to the vulnerable and poor[41].

Participatory disaster mapping is a valid tool for supporting and planning community-based disaster preparedness programmes. Such maps are drawn by the communities, highlighting important information such as major forms of land use, landownership patterns, physical structures (e.g. schools, clinics, water wells, markets, important roads), disaster-prone areas (e.g. steep slopes, flood prone areas, ground water conditions), and environmental issues. These maps should be widely shared and easily accessible by the communities, and can serve as a first step in the planning process for disaster preparedness programmes. These programmes will be able to address issues such as projected population growth, infrastructure development needs, and people's main sources of income; they may also include environmental components such as conservation areas. The maps and plans can also be used as an important and effective awareness-raising tool, to make communities more conscious of the major potential disaster areas in their locality, the implications of such disasters, and possible plans to mitigate their occurrence and impact.

There are several development programmes that try to reduce people's vulnerability to disasters such as floods. One of these is the DFID-funded Chars Livelihood Programme (CLP), whose work includes physically trying to raise the homestead lands of selected beneficiaries.

[41] *After the Cyclone: Lessons from a Disaster*. Oxfam Briefing Note, February 2008.

Other programmes – such as CARE's Shouhardo and the EU-funded HISAL (Haor Initiative for Sustainable Alternative Livelihood) programme by Concern Worldwide – work closely with UDMCs in a number of ways. For example, they help to strengthen their capacity and help them in realising several flood protection measures, such as replanting indigenous trees along community banks (to reduce wave erosion), and introducing early-maturing rice varieties which can be harvested before flash floods are likely to occur.

However, post-disaster rehabilitation and adequate support for livelihoods, including land tenure, are areas which require more attention from policy makers. Coordination among government bodies and local level institutions is required, as highlighted by the Sidr case below. During early recovery stages, agencies in charge of resettlement planning and programmes must consider for example that the resettlement areas identified are not located in hazardous zones, and ensure that the lease deeds for landownership are clear and registered to ensure tenure security for the resettled households. The beneficiary households should also be clearly identified and belong to the most affected and needy category of households. Too often, resettlement programmes are rushed and not implemented with sufficient care, causing problems during their implementation and also in the long term: people are again affected by natural disasters because they have been resettled in marginal, disaster-prone areas, or registration of land title deeds is disputed, leading to violence over land and disputes over land settlements.

3.7 Case Study: Sidr cyclone

The southern districts of Bangladesh were severely hit by the powerful Sidr cyclone on 15th November, 2007. More than nine million people were affected, and the death toll was around 4000. It is estimated that more than 563 000 houses and 2240 schools and colleges were destroyed; 955 000 houses and 11 490 educational buildings were partially damaged within the affected districts. After cyclone Sidr's landfall, the government, armed forces, local civil organizations and volunteers, all moved quickly to mount search-and-rescue operations and to distribute food, water, clothing and other emergency items to cyclone survivors. The reduced death toll compared with previous cyclones[42] is a testament to improved community preparedness measures and a huge credit to the 43 000 volunteers working under the government-funded 'Cyclone Preparedness Programme'.

Sidr and land tenure issues

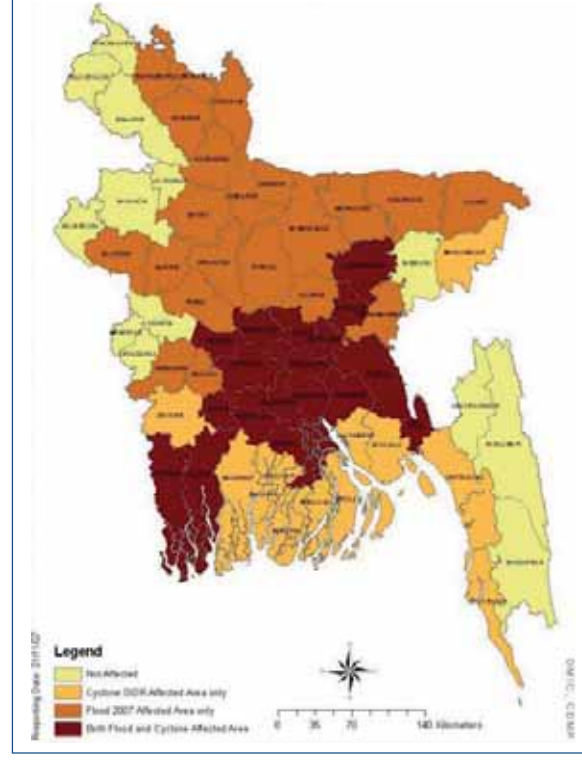
A reconnaissance survey on landlessness in the six Sidr-hit areas was conducted by UN-Habitat to gather in-depth information on shelter conditions of the affected households. The survey results showed that 31 percent had no homestead land whatsoever, and about 66 percent had homestead land with land rights certificates that proved ownership (see Table 6).

TABLE 6 – Land tenure status of Sidr affected households

Land tenure of respondents	Frequency	Percent
Have a land rights certificate	115	63.19
Had a land rights certificate but have lost it	6	3.30
Never had a land rights certificate but occupy land	4	2.20
Don't have any land on which a house can be built	57	31.31
Total	**182**	**100.0**

Source: Socio-economic survey of Sidr hit households, UN-Habitat, Dec 2007.

FIGURE 1 – Flood 2007 and cyclone Sidr affected area



[42] The Cyclone Sidr death toll of approximately 4000 people is 35 times lower than the 1991 Gorky cyclone and 125 times lower than the 1970 cyclone Bhola.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It was found that a significant proportion of the affected households, and one of the most vulnerable groups were landless people, both pre- and post-cyclone. When the Sidr cyclone hit, they were living on the outside of the embankments. They experienced the highest degree of losses to their homes and assets; most of these families continued to live off what remained of the land outside of the river embankment, without any legal land rights certificates. As a result, they are likely to be overlooked or neglected in terms of housing assistance, and displaced if no measures for rehabilitation are taken. Several NGOs including Oxfam International called for the government to take a pro-active approach to support landless people, both in terms of addressing their short- to medium-term shelter and livelihood needs, as well as accelerating existing land policy reforms and government-run resettlement programmes. There has been a strong call by CSOs and NGOs to establish a clear timeframe for *khas* land resettlement programmes and for addressing current policy loopholes, which favour rich landowners over landless people in the re-allocation of land[43].

Post Sidr Government Programme

A recent circular from the MoFDM describes the annual development plan allocation, for 2008–2009, as regards construction of flood shelters in flood prone and river erosion prone areas[44]. About 1000 baracks are to be built for 10 000 Sidr-affected families in eight coastal districts, at an estimated cost of US$ 15 million. Around 74 multi-functional flood shelters will be constructed in the flood prone and river erosion prone areas to provide shelter during disasters. In normal times, these shelters will serve as educational buildings. Critics suggest that these programmes are not well thought through, and merely serve the interests of the programme-implementing agencies and contractors, rather than the affected people. Similar barracks have been built in previous Asrayan and Grihayan projects, and proved not to be sustainable. Often, existing cyclone shelters are not user-friendly, and sometimes do not cater for the specific needs of women and children. It is feared that the proposed flood shelters will show similar design and construction flaws and will for the most part be underutilized. Also, certain issues are not reflected in the proposed government-led Sidr rehabilitation programme, such

[43] *After the Cyclone: Lessons from a Disaster.* Oxfam Briefing Note, February 2008.
[44] Ministry of Food and Disaster Management. 2008. Annual Development Progamme 2008–2009.


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as land tenure conditions, supporting and building up livelihood strategies, and the participation of people during rehabilitation, planning and implementation.

However, an encouraging development is that the Ministry of Land has been granted a donation by the Japanese government for Sidr-affected landless people, to help with their rehabilitation and to guarantee their land tenure rights. The Adarsha Gram project will serve about 40 000 people in 12 districts, covering about 122 resettlement sites located on *khas* land areas already identified and earmarked for resettlement programmes, even before the Sidr cyclone occurred [45].

3.8 The Bhumi Bank: a way to address land tenure issues in disaster prone areas?

The concept of a Land Bank, such as exists in the Philippines, and whose aim is to target the allocation and redistribution of *khas* land to landless people in disaster-prone areas, may also work in Bangladesh. The Land Bank is the fourth largest bank in the Philippines in terms of assets and loans, and is also the largest government-owned bank; it mainly provides services in rural areas. The Bank was established in 1963 as part of the national land reform programme. It acts as an intermediary by purchasing land from large agricultural estates and selling this to small landholders and the landless[46]. The major characteristics of the Land Bank are:

- It is a government financial institution that strikes a balance between fulfilling its social mandate of promoting rural development, and remaining financially viable.
- The Land Bank has successfully managed this balancing act, as evidenced by the continued expansion of its loan portfolio in favour of its priority sectors: farmers and fisher folk; small, medium and micro enterprises; livelihood loans and agribusiness; agro-infrastructure and other employment-related projects.

[45] Ministry of Land. 2008. The Adarsha Gram Project report, June 2008. Government of Bangladesh.
[46] http://www.landbank.com.

- The Land Bank is by far the largest formal credit institution in rural areas of the Philippines. Its credit delivery system is able to penetrate a substantial percentage of the country's total number of municipalities.

Moving on from its initial role as the financing arm of agrarian reform, the Land Bank has evolved into a full service commercial bank. But the essence of its existence has not changed, and it continues to play an important role in the rural economy.

The Philipinnes' Land Bank could serve as a model for a similar public bank in Bangladesh, called the Bhumi Bank, *bhumi* meaning 'land'. The Bhumi Bank might play the following roles:

- Be involved in land valuation, compensation to owners of private agricultural lands, and the distribution of land among landless and migrant farmers;
- Provide credit services to landless and migrant farmers so that they can purchase land;
- Provide access to credit for both small traders and marginal farmers, for demand-driven entrepreneurship;
- Cater to the special needs of disadvantaged groups such as female-headed households, various tribal groups and the disadvantaged elderly;
- Serve a vital role in promoting rural development, covering both farm and non-farm enterprises, with the aim of enhancing rural livelihoods.

In the long term, the Bhumi Bank could play a role in regulating the value of land in local growth centres (i.e. district and Upazila/union centres). It might also be involved with conserving farmland and common property resources, or open spaces such as grazing land (as in the *char* areas), or forests and water bodies. The Bhumi Bank would act as a public authority to hold, manage and develop all land-based properties as noted above. It would play a role in ensuring more effective and equitable property acquisition and disposition (including *sikosti* and *poisti* lands, see also section 2.6). The Bhumi Bank would keep and maintain records on *khas* land, including landholding patterns, patterns of land use, land distribution and information on common property resources. In addition, the Bhumi Bank would perform any other normal banking operations and transactions as carried out by other commercial banks. It could offer various insurance schemes with soft premiums in order to safeguard crops, livestock and homesteads against any natural and man-made calamities. For the Bhumi Bank to be effective, extensive research and strategic planning at all institutional levels would be required, as well as genuine commitment on the part of both central and local governments. Following the example of the Land Bank, the Bhumi Bank could also play an important role in addressing some of the current land tenure inequalities, and strengthen the resilience of people living in disaster-prone areas of Bangladesh.

3.9 Some conclusions

In summary, the poor in Bangladesh, and especially the landless poor, are disproportionately affected by natural disasters. They primarily depend on climate-sensitive sectors such as agriculture and fisheries, have limited scope to respond to and cope with the impact of disasters, and tend to live in more exposed and marginal areas such as the chars, flood plains, and along river and coastal banks. Landownership patterns in Bangladesh are highly skewed, with 10 percent of the population owning almost 50 percent of the agricultural land. This rich 10 percent often comprises absentee landowners living in urban areas who rent/lease their land on cash or sharecropping terms. Many of the rural poor do not own any land and lack opportunities to find agricultural wage labour; as a result, some are trapped into insecure and unfavourable sharecropping arrangements. Others migrate to newly-formed char settlements in high risk areas, their only viable alternative. In the absence of more effective and more equitable land tenure arrangements, the poor and landless will remain extremely vulnerable to disasters and the impact of climate change.

There are several land redistribution programmes in place, but their progress and positive effects are the subject of debate. The absence of an up-to-date, systematic and universally accepted source of information on land resource availability and land rights is one of the key barriers to the successful implementation of land reform programmes, and the effective handling of land disputes. Availability of *khas* land is limited and also concentrated in a few areas. There is a need to consider regional variations when designing implementation strategies, to ensure that land reform programmes are effective. In addition to genuine political commitment, a reform of the land administration to streamline current systems and organizational structures will make land reform programmes more transparent, efficient and effective.programmes more transparent, efficient and effective.

Some legal provisions are made to deal with specific land tenure issues reflecting disaster-prone conditions, such as the *Sikosti-Poisti* Act. In practice, this Act is not a success, because of the ineffectiveness


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of the current land administration and the inherent high transaction costs for the poor and landless: in terms of time, money and limited access to information and support services.

Current disaster management programmes do not pay sufficient attention to the importance of land tenure issues, which are a key factor increasing poor people's vulnerability to disasters. Similarly, post-disaster rehabilitation programmes are ineffective at supporting landless and affected households in rebuilding their livelihoods. The relationship between land tenure issues and disasters is not reflected and integrated in several key policy frameworks, such as the Poverty Reduction Strategy Paper, the National Plan on Disaster Management 2008–2015, and the Standing Order on Disasters. In practice, there needs to be a stronger link between land distribution and resettlement programmes, and disaster preparedness and rehabilitation programmes.

Current initiatives on community-based disaster preparedness are a positive step in the right direction. Involving communities in the mapping of disaster-prone areas, in assessing the major forms of land use and the quality of specific land areas, and in listing vulnerable groups (e.g. landless households, women-headed households and minority groups), will improve disaster preparedness and disaster response programmes by making them more location specific and more effective at the implementation stage, because they will be based on local institutions and knowledge systems. Experiences from the Bhoomi project in the Indian State of Karnataka – where digitalized land records are increasing access to and transparency of information – could prove a viable method of making Bangladeshi rural households less vulnerable to land disputes when title deeds and documentation is lost to natural disasters.

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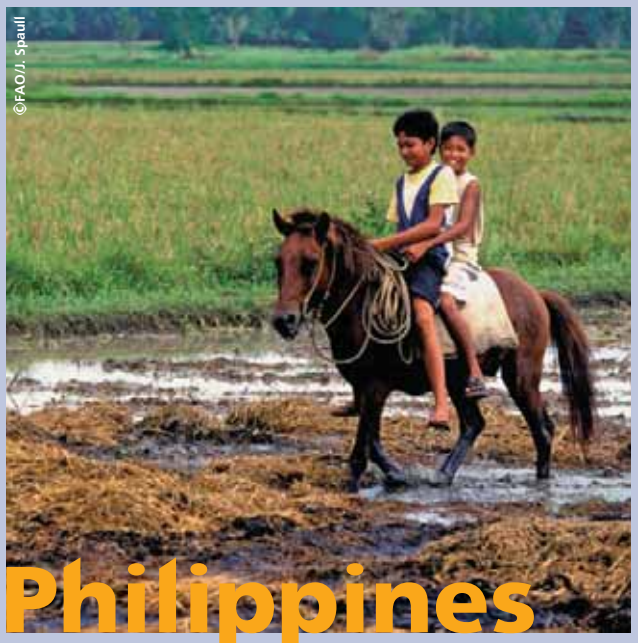
Abbreviations and Acronyms

AC	Area Commissioner
AG	Adarsha Gram
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka (Bangladesh National Currency)
BIDS	Bangladesh Institute of Development Studies
CAP	Country Assistance Programme
CARE	Cooperative for Assistance and Relief Everywhere
CCDMC	City Corporation Disaster Management Committee
CDMP	Comprehensive Disaster Management Programme
CDSP	Char Development and Settlement Project
CEGIS	Centre for Environmental and Geographic Information Services
CLP	Chars Livelihood Programme
CPP	Cyclone Preparedness Programme
CPPIB	Cyclone Preparedness Programme Implementation Board
CSDDWS	Committee for Speedy Dissemination of Disaster Related Warning Signals
CSO	Civil Society Organization
DC	Deputy Commissioner
DDMC	District Disaster Management Committee
DIRA	Disaster Impact and Risk Assessment
DMB	Director General of Disaster Management Bureau
DMTATF	Disaster Management Training and Public Awareness Building Task Force
DFID	Department For International Development
EU	European Union
FAB	Flood Action Plan
FAO	Food and Agriculture Organization
FPOCG	Focal Point Operation Coordination Group of Disaster Management
GIS	Geographic Information System
GoB	Government of Bangladesh
HISAL	Haor Initiative for Sustainable Alternative Livelihoods
ICT	Information and Communication Technologies
IMDMCC	Inter-Ministerial Disaster Management Coordination Committee
IRIN	Integrated Regional Information Networks
ISPAN	Irrigation Support Project for Asia and the Near East
ITCZ	Intertropical Convergence Zone
LOS	Land Occupancy Survey
MDG	Millennium Development Goal
MoFDM	Ministry of Food and Disaster Management
NDMAC	National Disaster Management Advisory Committee
NDMC	National Disaster Management Council
NGO	Non-Governmental Organization
NGOCC	NGO Coordination Committee on Disaster Management
ORCHID	Opportunities and Risks of Climate Change and Disasters
PDMC	Pourashava Disaster Management Committee

PRSP	Poverty Reduction Strategy Paper
RDRS	Rangpur Dinajpur Rural Service
SOD	Standing Orders on Disasters
TK	Taka (Bangladesh national Currency)
UDMC	Union Disaster Management Committee
UN	United Nations
UNDP	United Nations Development Programme
UNO	Upazila Nirbahi Officer
UP	Union Parishad
USD	United States Dollar
USAID	United States Agency for International Development
UZDMC	Upazila Disaster Management Committee
WFP	World Food Programme
WHO	World Health Organization



Philippines

Philippines

by Luis Eleazar*

■ 1. THE PHILIPPINES' VULNERABILITY TO NATURAL HAZARDS ■

Every year, countries throughout the world report on human and economic losses as a result of natural disasters. Most reports share the same common observation: that such disasters are increasing in their frequency, intensity and severity of impact, causing the death and dislocation of people, wiping out their communities and the resources vital to their livelihoods.

The challenge of rebuilding damaged communities and recovering lost property, particularly residential and farm lands, is exacerbated by the destruction of documentation that demarcates affected people's land and other associated assets, the informal land tenure status of many affected people, and the ethnic and gender discrimination that exists in many countries. Disasters particularly affect poor, vulnerable and food-insecure households due to their disadvantaged economic, social and political conditions; these conditions determine these households' vulnerability to such disasters. This particular sector of society largely either owns and cultivates small farms on flood plains, hillsides, and the edges of river systems and coastal areas, or for economic reasons lives informally on fragile public land such as critical watersheds, forests and coastal zones. These people are those most vulnerable to and least capable of coping with disasters, particularly when their impact results in major changes in land use, or changes in the sources of livelihood of the affected communities.

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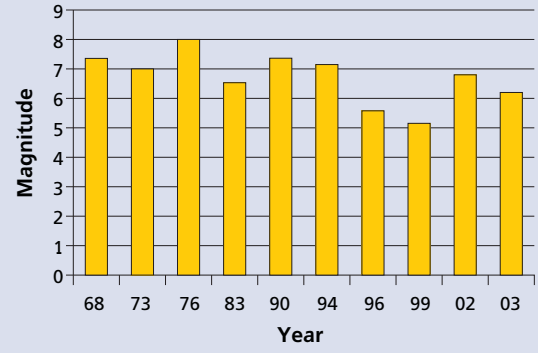
Until recently, significant national and international humanitarian efforts aimed both at reducing disaster risk and responding appropriately post-disaster, have not directly dealt with land tenure rights and property issues. These issues appear to be critical to the improvement of the planning and management of land use and other natural resources in areas vulnerable to natural disasters. The inadequate responses to date have been caused in part by a lack of clear understanding of the importance of such issues in the context of natural disasters. This work aims to depens the understanding of these issues in context of Land tenure in the Philippines.

FIGURE 1 – Magnitude of Destructive Earthquakes1 1968-2003



Note: 1990 figure is average of 3 earthquake magnitude.

1.1 Vulnerability to Natural Hazards

The Philippines is the second largest archipelago in the world, consisting of over 7000 islands, clustered in three major island groups (Luzon, Visayas and Mindanao), with a total land area of 300 000 km^2. Its location in the northwestern Pacific Ocean places the country directly in the path of the world's number one tropical cyclone generator, which brings destructive floods, landslides and storm surges. It also sits on the edge of the 'Pacific Ring of Fire', thereby experiencing periodic earthquakes and volcanic eruptions (CDRC, 1992; Duque, 1991). The combination of these two factors – 'being in an area of frequent tropical cyclones and being at the junction of several tectonic plate boundaries' (World Bank and NDCC, no date) – makes the Philippines the fourth most disaster-prone country in the world, according to the International Red Cross.

Geophysical Hazards

The geologic and tectonic settings of the Philippines are characterized by: (i) being located on two of the seven major tectonic plates – the Pacific Plate and Eurasian Plate – in the Earth's lithosphere (ii) having a major fault zone – the Philippine Fault Zone – cutting across the entire archipelago, and (iii) being subjected to periodic interaction of the different plates, displacements along the Philippine Fault Zone, and movements along other active faults. These factors combine to account for the country's vulnerability to natural hazards such as earthquakes, volcanic eruptions, tsunamis and landslides.

There are about 220 volcanoes in the Philippines, of which 22 are considered active. The country's most active volcanoes in terms of damage caused by eruptions are Mayon, Taal, Hibok–Hibok, Bulusan, Canlaon and Pinatubo. Volcanic eruptions are often characterized by the emission of fine ash and ash-laden gas forming huge clouds, including rocks, and the subsequent mudflows and landslides. Mudflows and landslides at times occur for an extended period of time after the eruptions. For instance, 16 years after Mount Pinatubo erupted in June 1991, the effects of mudflows or lahars from its slopes continue to threaten the rehabilitation of the 364 affected barangays[1] in 23 cities and towns within five provinces (Zambales, Pampanga, Tarlac, Nueva Ecija and Bulacan) in the Central Luzon Region. Lahars from the gullies of Mount Mayon also continue to destroy settlements and farmlands in one city and seven municipalities in Legazpi City, Albay, during tropical cyclones. A more recent project by the Manila Observatory (2005) on mapping the Philippines' vulnerability to disasters identifies the top ten provinces most at risk to volcanic eruption. These are either the sites of the most active or potentially-active volcanoes, or their land areas are small and can therefore be affected entirely by an eruption. The ten provinces are Camiguin, Sulu, Biliran, Albay, Bataan, Sorsogon, South Cotabato, Laguna, Camarines Sur and Batanes.

Earthquakes are another major geophysical hazard that affects the Philippines. These are either tectonic or volcanic in origin. Tectonic earthquakes are found to be more destructive than volcanic ones. From 1970 to 2004, there were 26 033 plotted earthquakes reported by the Philippine Institute of Volcanology and Seismology (PHIVOLCs), with an average of 744 mild

[1] The term "barangay" is almost equivalent to a village, which is the lowest politico-administrative unit in the hierarchy of local government inuts. (LGUs) in the Philippines, next to a Municipality.

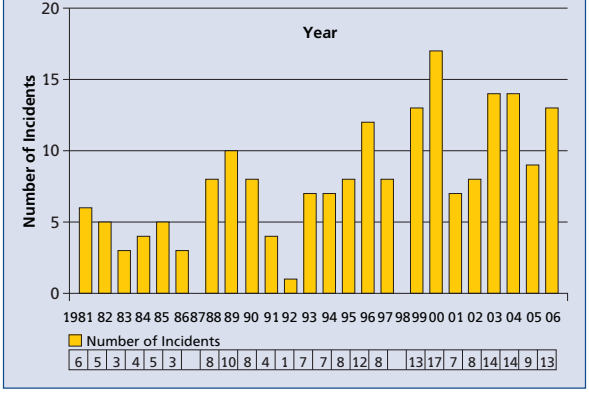
events occurring per year (OCD–NDCC, no date). By 1991, an average of five earthquakes per day occurred in the country. During the next 13 years (1992–2004), a slight increase to six a day was recorded (PHIVOLCS, no date). A total of 12 destructive earthquakes, with an average magnitude of 6.7 on the Richter scale, were reported by PHIVOLCS and OCD–NDCC. Of these, six major earthquakes occurred in Luzon, and three each in Visayas and Mindanao. The ten provinces most at risk of earthquakes – due to the presence of or their nearness to active faults and trenches – include Surigao del Sur, La Union, Benguet, Pangasinan, Tarlac, Pampanga, Ifugao, Davao Oriental, Nueva Vizcaya and Nueva Ecija (Manila Observatory, 2005).

Tsunamis are often caused by volcanic eruptions and earthquakes (at magnitude 7 or above on the Richter scale), although most tsunami occurrences in the Philippines since 1603 have been generated by local earthquakes. The proximity of Southern Mindanao to Celebes Sea, where undersea earthquakes frequently occur, makes this part of the country most vulnerable to tsunamis. Three of the ten provinces most at risk to tsunamis are located in Southern Mindanao, namely Sulu, Tawi–tawi and Basilan. The high vulnerability of Sulu and Tawi–tawi to tsunamis is attributed to the following factors: (i) their location between two nearby trenches (Sulu Trench and Cotabato Trench), and (ii) their high population densities. The other provinces most at risk to tsunamis include Batanes, Guimaras, Romblon, Siquijor, Surigao del Norte, Camiguin and Masbate (Manila Observatory, 2005).

Landslides occur because of the geological instability of a hill or mountain slope when there is an earthquake and/or heavy rain, as well as human activities such as logging and mining. Most of the country's provinces, except Palawan, are at risk of earthquake-induced landslides. From 1981 to 2006, the government monitored 194 landslide incidents (Figure 2), or an average of eight incidents annually (OCD, no date). The provinces most at risk to landslides are Ifugao, Lanao del Sur, Sarangani, Benguet, Mountain Province, Bukidnon, Aurora, Davao del Sur, Davao Oriental and Rizal (Manila Observatory, 2005).

Perhaps unsurprisingly, provinces such as Sulu, Camiguin, Ifugao, Davao Oriental, Sarangani, Benguet, Surigao del Sur and Lanao del Sur, which rank highly as regards their combined risk to the four major geophysical hazards (Manila Observatory, 2005), are also the areas with a High Poverty Incidence Rating (NSCB and World Bank, 2005). Correlation between the composite geophysical risk maps and land use maps of these provinces, made by Manila Observatory, shows that the very high risk areas are plantations and dipterocarp forests, which serve as a source of livelihood for local communities.

FIGURE 2 – Landslide Incidents, 1981-2006



Climate- and Weather-Related Hazards

The majority of climate- and weather-related hazards in the Philippines include tropical cyclones, floods, storm surges, tornadoes and droughts (Figure 3). Tropical cyclones (or typhoons, as they are commonly known in the Philippines) are regarded as the most destructive of all natural hazards in terms of a number of factors: (i) the number of people affected (ii) the total value of the damage they cause (iii) their frequent occurrence (iv) the size of the areas they affect, and (v) the high exposure and vulnerability of affected communities and households. During the 17 years from 1990 to 2006, 303 tropical cyclones occurred in the Philippines' area (Figure 3), amounting to an annual average of 18 cyclones (a little lower than the 19–20 cyclones recorded from 1948 to 2006). However, the greatest number of cyclones took place in 1993, when the country recorded 32, of which six were considered 'most destructive' by the National Disaster Coordinating Council (NDCC).

Areas frequently and hard hit by tropical cyclones are the Northern Luzon, South-eastern Luzon and Eastern Visayas (Manila Observatory, 2005), which face the Pacific Ocean. Tropical cyclones are less frequent in Western Visayas and Northern Mindanao, and rare in Southern Mindanao (CDRC, 1992). In the Philippines, the typhoon season may start as early as April or May and last until December or January, with most of the destructive cyclones usually occurring in the months of July, August and September. However, in recent years, destructive typhoons hit the country mainly in the last quarter of the year.

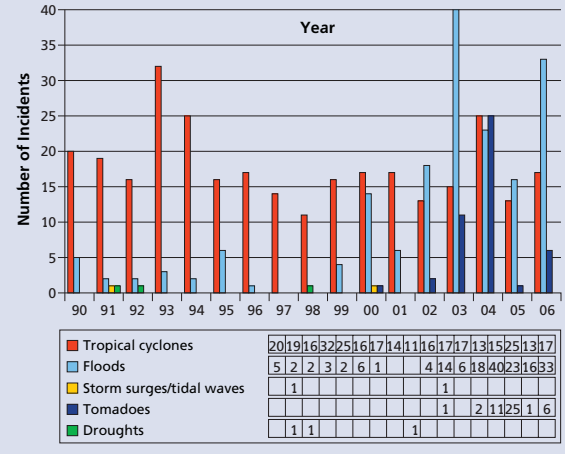
Tropical cyclones combined with heavy rains often produce flooding and flashfloods. In the Philippines several factors trigger the occurrence of floods:

- Expanding housing and settlement areas (both planned and unplanned) in the valleys, flood plains and delta throughout the country – these generally run a grave risk of disaster due to their location;
- The absence of effective vegetative cover – resulting from past and present clearing of the forests, watershed areas, hill and mountain slopes, and successive changes in land use;
- Siltation of the river systems – resulting from environmental degradation caused by anthropogenic activities such as unsustainable upland farming practices and large infrastructure projects;
- Inadequacy of drainage systems, particularly in many low-lying municipalities and cities;
- Subsidence of low coastal areas along the Manila Bay, such as Caloocan, Malabon, Navotas, Valenzuela and several towns in Bulacan, Pampanga and Bataan. The recorded sea-level rises are one meter over the last 30 years – or ten times the rate of global sea-level rise in the last century – caused by the rapid rise of water levels at the Manila Bay due to high extraction of groundwater by a growing population as well as economic activity (UP–NIGS, no date);
- Rising occurrence of persistent torrential monsoon rains, more than the areas' average annual precipitation, as observed in the Ormoc flashflood of 1991, the Camiguin flashflood of 2001, and the Aurora–Quezon–Nueva Ecija floods of 2004.

Between 1990 and 2006, 175 flood occurrences (Figure 3), or an average of about ten per year, have been reported (NDCC–OCD, no date; ADRC, 2002). From 2002 to 2006 the Philippines witnessed drastic increases in the occurrence of floods, even exceeding the flooding caused by tropical cyclones in most years. This indicates the increasing vulnerability of many low-lying and near-river settlement areas to the incidence of frequent and destructive floods, resulting from persistent moderate to heavy rains. Major flood-prone areas identified by the MGB–DENR (Conda, 2007) are in Northern and Central Luzon (Pampanga, Nueva Ecija, Pangasinan, Tarlac, Bulacan, Llocos Norte), Metro Manila, Southern Luzon (Oriental Mindoro) and Mindanao (Maguindanao, North Cotabato). However, the recent flood records show more extensive areas affected, covering the entire archipelago.

Storm surges and tornadoes are other key climate- and weather-related hazards that cause extensive damage, but a complete time series data on their occurrences and effects for the period 1990–2006 is not readily available. Data on storm surges (1990–2000) for the country was obtained from the ADRC's *20th Century Asian Natural Disasters Data Book*, published in 2002, while that on tornadoes came from NDCC's *Tornado Incidents monitored from 2000 to 2006*. Region XII (SOCCSKSARGEN) – particularly the provinces of South Cotabato, North Cotabato, Sultan Kudarat – in Mindanao is the area most at risk to tornadoes, having been hit 20 times from 2000 to 2006, followed by Western Visayas provinces (Negros Occidental, Capiz and Antique) which experienced eight tornado incidents during the same period.

FIGURE 3 – Climate/Weather-Related Hazard Occurrences, 1990-2006



BOX 1 – THE ORMOC FLOOD OF 1991

On 4 November 1991, according to CDRC (1992), 'a combination of flashfloods and landslides killed about 8000 people in Leyte and Samar at the height of storm Uring (International Codename: Thelma). In Ormoc, the floodwaters swept down barren mountainsides and ruined 90 percent of the city, including bridges, schools, buildings and homes. The disaster affected 224 904 people in the Visayas… Total crops and property damages reached PhP 736 million (about $ 17 million).'

'A comparatively weak tropical cyclone at 75 kph, Uring was particularly destructive because of the massive deforestation in Ormoc, abetted by other factors like topography and a six-hour non-stop torrential downpour. Typhoon Uring dumped 140.2 mm of rainfall, an unprecedented event which occurs only once in 50 years.'

Source: ADRC, 1992. Disasters: The Philippine Experience.

If tropical cyclones and floods are more frequent in the Philippines, so in more recent years are droughts, although complete information on this latter hazard is not readily available. Many scientists and researchers have increasingly linked the occurrence of droughts to climate change issues (Greenpeace, 2007; Jose and Cruz, 1999), indicating their effects to be more widespread and devastating, particularly to agriculture which supports the primary livelihoods of two-thirds of Filipinos living in rural areas. Based on the three drought incidents reflected in Figure 3, the areas most at risk to extreme dryness or temperature increase are provinces in Central and Western Visayas and Mindanao, which support the study conducted by Manila Observatory (2005).

When the combined risk to four climate- and weather-related hazards (tropical cyclones, El Niño-induced droughts, projected temperature increases and rainfall changes) in the country was mapped out by Manila Observatory (2005), the areas most at risk to simultaneous incidence of such hazards are Southeastern Luzon and Eastern Visayas. The Observatory explained 'that the risk to typhoons and risk to projected rainfall change dominate the sum'; this confirms the substantial amount of rain dumped on the country, almost all year round, by large-scale atmospheric phenomena. However, the uneven distribution of rain over time and space varies the severity of the impact of disasters across provinces and regions. Half of the top 20 provinces (Albay, Sorsogon, Sulu, Ifugao, Northern Samar, Masbate, Biliran, Western Samar, Basilan, Camarines Sur) that run a higher risk to all climate- and weather-related hazards (Manila Observatory, 2005) also have a High Poverty Incidence Rating (NSCB and World Bank, 2005).

Poverty and Vulnerability

The greater vulnerability to natural hazards of provinces and regions with high poverty incidence emphasizes the importance of understanding the links between poverty and the country's vulnerability beyond its geophysical characteristics. These linkages are illustrated in a recent study conducted by the World Bank and NDCC (no date: 13):

> *''Poverty and vulnerability to natural hazards are closely linked and mutually reinforcing. Poor and socially disadvantaged groups are usually the most vulnerable to hazards, reflecting their social, cultural, economic and political environments … Indeed, at the household level, poverty is the single most important factor determining vulnerability, in part reflecting location of housing (e.g. on floodplains, riverbanks, steep slopes …); level of access to basic services (e.g. refuse collection)*

particularly for illegal squatters; sources of livelihood; and level of access to financial and other assets and resources, leaving limited recourse to inter-temporal consumption smoothing.'

In that same study, the country's poverty incidence is reported at 26 percent in 2000, which remains a major challenge to national development. The study further describes poverty as highly concentrated in rural areas, where about 77 percent of the poor reside; two-thirds of these people rely on the agriculture, fishing and forestry sectors for their livelihoods. Absence or lack of land tenure is a central issue among the poor, forcing many to live and work in high-risk areas (World Bank and NDCC, no date), such as in the danger zones of the six most active volcanoes and practically all deforested mountains, riverbeds, low-lying flood plains and coastal areas in the country. While most of the poor are now aware of the risk and vulnerability of these areas to natural hazards, they have no other choice but to accept or ignore such realities, in order to be closer to their sources of livelihood. These areas attract the poor, who often have no assets in the more developed lowland areas for constructing houses and developing livelihoods. As a result, informal settlements including resettlement sites have gradually expanded in high-risk areas in recent years. Even the remaining natural barriers such as patches of forested slopes and mangroves have not been spared from this informal settlement expansion.

Poverty compels people to build houses from light scrap materials or locally-collected bamboos and palm leaves that are unable to withstand the impact of tropical cyclones, floods, landslides and storm surges. Repair or reconstruction of houses becomes a frequent activity of the poor after every disaster. Lack of secure tenure also reduces incentives for people to invest in housing improvements and in permanent agricultural production systems, or to modify their micro-environment to protect their farms and fishing grounds against floods, landslides, droughts, etc. This desolate condition weakens the capacity of the poor to prepare for disasters, or adapt to changes and recover after such events. Consequently, as the World Bank and NDCC (no date) reports, 24 of the 30 families who suffered from the 1991 Ormoc flood returned to their original areas because they had nowhere else to live, although they recognized the dangers of living on the riverside. In other cases, families returned to their original areas even when resettlement sites were made available to them, due to the proximity of these to their place of work and other means of livelihood[2]. Surprisingly, neither the affected families nor the support organizations have given attention to land tenure issues following disasters.

In major cities, urban poverty is manifested by the uncontrolled expansion of informal settlements on public land and hazard-prone areas. The vulnerability to disasters of informal settlements in key urban areas is magnified by the following: (i) a lack of land tenure or legal ownership of the land (ii) structures are usually made of scrap and lightweight materials (iii) a lack of a logical spatial pattern of settlement, due to the absence of land development plans; hence there is no provision for safety structures such as alleys, roads, easements (iv) the majority are located in easements such as along rivers, creeks or drainage systems and/or danger zones such as under bridges, beside railroad tracks, and inside garbage dumpsites (Vicente *et al.*, 2006). In the area of Quezon City, for example, a tragedy occurred in the biggest dumpsite in Metro Manila called the Payatas area, when a huge mountain of decaying garbage collapsed in July 2000 burying 224 people, injuring 36 and leaving 16 missing. This damaged 103 houses and affected 135 families, or 680 people.

Ecological Degradation

In addition to adverse socio–economic conditions that lead people to inhabit high-risk areas, many people also engage in unsustainable and dangerous livelihoods. In the Payatas landslide, for instance, affected families had been engaged in scavenging and recovery of recyclable materials, despite awareness of the dangers they would be exposed to in this enterprise. The tragic 1991 landslide in Ormoc City, Leyte Province, and the 2004 devastating landslides and flashfloods in Aurora and Quezon Provinces, had been partly attributed to logging (legal or illegal) and other wood-based industries. In the latter provinces, these activities have served as the main sources of people's livelihoods, reducing forest cover to only 20 percent in Quezon Province and 70 percent in Aurora Province (CDRC, 2004). As the areas affected by landslides lie along

[2] For example, an interview with two of the more than 220 affected families after the 2006 Typhoon Reming flood and mudflow (in Barangay Padang within Legaspi City, Albay), found that they returned to their former areas because they could readily find sources of livelihood, such as selling ready-to-eat food and fishing on nearby municipal waters. These sources were not available in the resettlement site located in an upland section of Barangay Taysan. The families also cited the proximity to market, the transport network and the stable supply of potable water in their areas, as compared with the resettlement site, as factors involved in their decision to stay.

the Philippine Fault Line, logging and inappropriate mountainside farming practices make these areas unstable generally and thus more vulnerable.

In urban areas, environmental degradation arises from the unplanned growth of informal settlements, indiscriminate waste disposal and clogging of waterways, and inadequate drainage systems (Vicente *et al.*, 2006). Inappropriate urban land development practices also contribute to disasters, such as that which occurred in an upper middle-class subdivision in the eastern part of Metro Manila. This borough was issued with an Environmental Clearance Certificate (ECC), despite the unsuitability of its geophysical characteristics to support such structures. Overall, improper land development, absence of a sound land-use policy, and the poverty–environmental degradation nexus, combine to increase vulnerability to disasters.

■ 2. MAJOR NATURAL DISASTERS AND THEIR SOCIO-ECONOMIC CONSEQUENCES ■

2.1 Disasters from Major Natural Hazards for the Period 1990–2006

Between 1990 and 2006, the Philippines experienced 520 disasters from seven major natural hazards (Table 1), which killed 20 898 people, injured 20 095 and left 6375 others missing. About 1230 people were killed each year. These disasters affected 19 298 190 families or 94 809 689 people. This suggests that many of these people were repeatedly affected, particularly by tropical cyclones, floods and/or landslides during this period. More than 5.9 million houses were damaged, either totally or partially, mainly because many were made of light materials and semi-concrete structures located in high-risk areas.

Volcanic eruptions. Six volcanic eruptions had been recorded from 1990 to 2006, as shown in Table 1, resulting in the deaths of 958 people and injuries to 201 others, affecting 339 149 families or over 1.6 million people, and damaging 112 698 houses. The Mount Pinatubo eruption of June 1991 was by far the worst disaster in the country's history. This eruption affected a densely-populated area in five provinces in Central Luzon Region – the rice granary of the Philippines – covering 364 barangays, involving 249 371 families or 1.18 million people[3]. They represent about one-fifth of the entire region's population. Of these families, about 8000 families or 35 000 people belong to the indigenous people called Aetas. The Mount Pinatubo disaster accounted for around 74 percent of the total families affected by volcanic eruptions during the period under review. Total damage to agriculture, infrastructure, and personal property was at least PhP 10.1 billion (US$374 million) in 1991 and an additional PhP 1.9 billion (US$69 million) in 1992. Foregone business was estimated at PhP 454 million (US$1.4 million) in 1991, and an additional PhP 37 million (US$1.4 million) in 1992. The costs of caring for evacuees was at least PhP 2.5 billion (US$93 million) in 1991–92, and an additional PhP 4.2 billion (US$154 million) was spent on dikes and dams to control lahar during the same period (Mercado *et al.*, 1999).

The same study also estimated a PhP 1.6 billion, or a 2.3 percent reduction, of gross regional domestic product (GRDP) in the Central Luzon Region from 1990 to 1991 as the economic impact of the disaster. Almost all sectors of the economy were affected by the eruption. Among the hardest hit were manufacturing, mining and quarrying, agriculture and private services. The effect on agriculture was more prominent such that agricultural productivity in 1992 was still below the 1991 level, because the lahars took additional agricultural lands out of production in 1992.

Earthquakes. Of the 12 major earthquakes that hit the country from 1968 to 2006, nine occurred during the last 17 years of this period (1990–2006). The nine earthquakes affected 262 174 families or 1 444 913 people, and caused the deaths of 1394 people, injuries to 3566 others, and left 329 missing. These earthquakes damaged 115 937 houses, around a quarter of which were completely wiped out. In recent decades, the Luzon earthquake of July 1990 was the most destructive, registering a death toll of 1283 people, or 92 percent of total deaths recorded for the period 1990–2006. It also affected 227 918 families or some 1.3 million people, accounting for 87 percent of total affected families and people for the same period. The damage it caused to housing (estimated at 98 554 units) represent 85 percent of total housing units destroyed.

Landslides. From 1990 to 2006, the country recorded 142 landslide incidents, with an average of eight

[3] A much higher number of families and people affected, estimated at 329 411 and 2.1 million respectively, were reported by Mercado *et al.*, 1995 and De Guzman, undated.

TABLE 1 – Major Natural Disaster Impacts in the Philippines, 1990–2006

Disaster Type	Freq	Casualties			Population Affected		Houses Damaged	
		Dead	Injured	Missing	Families	People	Totally	Partially
Volcanic eruption	6	958	201	23	339 149	1 619 029	44 247	68 451
Earthquake	9	1394	3,566	329	262 174	1 444 913	27 276	88 661
Landslides	142	735	387	81	15 422	75 147	719	1574
Tropical cyclones	139	12 274	15 184	4524	15 422 872	76 638 345	1 430 039	4 224 617
Floods	175	5523	685	1364	1 107 405	5 253 367	9234	35 828
Tornado	46	14	72	54	7227	38 950	652	1364
Drought and the El Niño phenomenon	3	0	0	0	2,143,941	9 739 938	0	0
Total	520	20 898	20 095	6375	19 298 190	94 809 689	1 512 167	4 420 495

Source: Data obtained from National Disaster Coordinating Council, Office of Civil Defense.

incidents annually. The frequency of the landslides, however, increased if compared with six for the previous decade (1981–1990). The Guinsaugon landslide of December 2003 in St Bernard, Southern Leyte, was one of the most disastrous events, killing 154 people, displacing and disrupting the lives of 3811 families, and incurring about PhP 115.0 million of damage to agriculture and infrastructure.

Tropical cyclones. These are the single most important cause of disasters in the Philippines. About 46 percent of the 303 cyclones that hit the country during the last 17 years turned destructive, with at least eight occurring annually. Two of these eight destructive cyclones per year were considered 'most destructive', causing the highest number of casualties, affecting families and damaging houses, and incurring the highest cost of damages. Between 1990 and 2006, the 139 cyclones have killed about 16 800 people (including missing people), of which about 6400 died during Typhoon Uring, which submerged the entire Ormoc City in Leyte Province. For the same period, cyclones killed about 990 people and incurred over PhP 8.0 billion of total damages each year.

Floods. The combined confluence of geological and climate factors has caused more flooding incidents than any other hazard that hit the country in the period 1990–2006. There were 175 flooding incidents, which killed 5523 people, affected about 1.1 million families or over 5.2 million people, damaged 45 062 houses, and caused financial losses amounting to around PhP 6.08 million. The misplacement of human settlements, including livelihood sources, in high-risk areas has clearly contributed to the environmental degradation that enhances the occurrence of flood, even in the absence of tropical cyclones. The available limited studies (World Bank and NDCC, no date; Vicente *et al.*, 2006) tend to support this observation.

Storm surges. These are another hazard facing the Philippines, but little information on storm surges is available. ADRC (2002) recorded two occurrences of storm surges in 1991 and 2000, which killed 10 people in Samar and Leyte Islands and left 5250 others homeless. No estimates on economic damages were reported.

Tornados. Forty six tornadoes struck the Philippines during the period 1990–2006, which claimed the lives of 14 people, injured 72 and left 54 others missing. Overall, these incidents affected 7227 families or 38 950 people, the majority living in the provinces of North and South Cotabato, Sultan Kudarat, Maguindanao, Sulu and Zamboanga Sibugay in Mindanao, and Negros Occidental, Leyte, Southern Leyte, and Cebu in the Visayas. In Luzon, although these events were not so significant, tornados also caused human and property impacts in the provinces of Zambales, Tarlac, Nueva Ecija and Bulacan. Total tornado damages have been estimated at around PhP 128.62 million.

Droughts. The El Niño induced drought has recently caused damage on a wider scale in the Philippines. Although there were only three drought incidents during the period 1990–2006, the 1998 drought produced the most extensive damage to the country's economy. Apart from causing severe water supply problems throughout the country (covering all 16 regions), it also paralysed agricultural production in over 368 469 hectares, with an estimated value of PhP 20.6 billion. Extreme dryness also brought about several forest fires in 41 barangays within 17 cities and

municipalities in eight provinces, covering 5482 hectares, with damages valued at PhP 42.8 million. This drought also inflicted damage on various industries because of the reduced capacity for power generation and increased scarcity of water supplies, resulting in partial operations and the dismissal of workers.

2.2 Economic Impacts of Major Natural Disasters

In the Philippines, economic impacts of natural disasters have been measured in terms of direct losses to agriculture, public infrastructure and private property. Between 1990 and 2006, the average annual direct damage to the country as a consequence of the major natural disasters reviewed in the previous section, has been estimated at around PhP 9.2 billion (in current prices; Table 2). This direct damage was equivalent to an average of 0.2 percent of the country's Gross Domestic Product (GDP) every year, a marked difference from an earlier study (calculated at 0.7 percent) prepared by World Bank and NDCC (no date) based on data over a longer time span (1970–2000). However, the problem of data inconsistencies[4] as regards annual damages by disaster type could partly account for the difference in the estimated average percentage of annual direct damage to GDP. Tropical cyclones and earthquakes caused the most damage to the country over the period 1990–2007, with cyclones alone accounting for about 87 percent of total damage, reflecting their high annual frequency (World Bank and NDCC, no date). Earthquakes accounted for about 9 percent of total damage. These two extreme events also caused over 65 percent of total deaths recorded during the same period.

Flooding, which accounted for the second highest death toll and human impact after tropical cyclones, amounted to an additional 4 percent of total damages. This hazard has shown an increasing occurrence in recent years, reflecting the continuing growth and densification of populations and human settlements, as well as the intensification of agricultural activities in high-risk areas. Other natural disasters (tornados, landslides and volcanic eruptions) accounted for only 0.15 percent of total damages, partly reflecting the localized nature of their impacts.

[4] Some tabulated data on different natural disasters obtained from NDCC contain certain discrepancies – even for a similar time period – as regards disaster occurrences, human and housing impacts, and economic damages. This might be explained by the periodic updating undertaken by NDCC, in which the specific dates of data updating or revision are not indicated or reflected.

The agriculture, fisheries and forestry sectors suffered the biggest losses from disasters, averaging PhP 5.5 billion or about 60 percent of total damage per year over the period 1990–2006. These losses were equivalent to an annual average of at least 0.7 percent of GDP originating from this sector. Public infrastructure losses amounted to PhP 3.1 billion or 34 percent of total damage per year, which included damages to agricultural support systems such as dams, and irrigation and drainage facilities. Losses to private property accounted for about PhP 0.6 billion, or 6 percent of total damage per year. The relatively low value of private property losses partly reflects the qualities of the housing and other structures owned or in the possession of affected households.

2.3 Consequences on Agricultural Production and Livelihoods

Agriculture, including fisheries and forestry, plays a major role in the Philippines' economy for two main reasons: (i) two-thirds of the total population depend on farming for their livelihood, and about half of the total labour force is employed or engaged in agricultural activities (ii) some 13.0 million hectares or 43 percent of the country's total land area is devoted to agricultural crops (Jose *et al.*, no date). In more recent years (2003–2006), the agriculture sector contributed an average of 15 percent to GDP per year, and registered 3.85 percent growth in 2006 (DA, 2007). The output gains throughout the years, however, have not significantly benefited and improved the lives of farmers, particularly small landowners, landless tenants and farm workers. This could be attributed to the existing farm structure in the country, where a majority of the farms are small (averaging about 2.0 hectares), and about 21 percent of the agricultural farms covering some 8.0 million hectares have yet to be titled, according to the 2002 Census of Agriculture (DA, 2007). Many poor farmers with small farm areas lack the capital to invest in improved production technologies and more drought-

TABLE 2 – Estimated Total Damage from Natural Disasters (at Current Prices), 1990–2006[5]

Year	Geophysical Disasters			Climate/Weather Related Disasters			Total
	Volcanic eruption	Earthquake	Landslides	Tropical cyclones	Floods	Tornado	
	Estimated Damage (Millions of Pesos)						
1990		12 380.04		11 176.00	62.00		23 618.04
1991				3516.00	1044.81		4560.81
1992				5183.00			5183.00
1993			0.01	20 076.00			20 076.01
1994		513.02		3200.00			3713.02
1995				16 255.00	720.00		16 975
1996			0.01	699.00			699.01
1997				1010.00			1,010.00
1998				17 017.00			17 017.00
1999		333.19	0.03	2578.00			2991.22
2000		10.79		7470.00	841.38	15.00	8337.17
2001				6968.00	402.27		7370.27
2002		132.99		829.00	912.84	3.29	1878.12
2003		40.66	41.69	4171.00	449.89	3.38	4706.62
2004			25.72	13 262.46	212.84	97.01	13 598.03
2005			10.32	2552.66	317.46		2880.44
2006			10.12	20 227.03	1224.05	9.94	21 471.14
1990–2006	2.80	2235.10	12.60	8001.20	618.75	25.70	9181.45
average percentage share by disaster type	0.01	8.60	0.06	87.25	4.00	0.08	100

Source: Data obtained from National Disaster Coordinating Council, Office of Civil Defens.

[5] Available data on volcanic eruption obtained from OCD-NDCC has only reflected the total number of events from 1991 to 2006, and the corresponding total damages broken down into the following sectors: agriculture, infrastructure, private property.

resistant crop varieties. Unlike rich landowners with large farms, poor farmers are unable to undertake risk-reducing measures, such as contour farming, tree planting along paddy field borders in hilly areas, and the construction of protective dikes.

Past records show that 'Dramatic increases or decreases in agricultural output have been, in most cases, associated with the occurrence of severe weather events and changes in the climate system' (Jose *et al.*, no date). Between 1991 and 2000, World Bank and NDCC (no date) found that annual 'rice crop losses equivalent to 2.6 percent of actual production (in volume terms) were experienced as a consequence of typhoons and flooding'. Drought caused an annual loss of another 1.5 percent of the actual rice production for the same period. The worst impact of the combined typhoons, floods and drought on agriculture was experienced in 1998 with the highest agricultural losses recorded at about 18 percent of actual rice production (in volume terms). During this year, poverty incidence in the country soared to 28 percent, following a gradual improvement of this measure from a high of 34 percent in 1990 to 25 percent in 1997. As a consequence, agricultural output in 1998 shrunk to about 8.6 million tons, or 24 percent lower than that produced in 1997. Agricultural employment also dropped to about 10.1 million people or 11 percent lower than in the previous year (DA, no date). Freeman, Keen and Mani (2003) estimated that 'about 50 percent of the increase in headcount poverty in the Philippines during the 1998 crisis has been attributed to El Niño'. This 1998 crisis demonstrated how the living conditions of the rural poor in general, and the farmers in particular, could easily worsen in the face of natural disasters. Such disasters not only destroy their houses and other properties, but also severely impact their primary sources of livelihood by destroying crops, killing livestock, etc, resulting in reduced production and income. In extreme events, such as the 1991 Mount Pinatubo eruption, the 2006 Guinsaugon landslide and the 2006 Typhoon Reming, the impact had been a permanent loss of cultivated farmlands for thousands of farmers.

2.4 Consequences on Land Tenure and Property of Affected Households

In the Philippines, there has been no study to examine the direct impacts of natural disasters on land tenure and property. Existing literature only refers to land tenure in relation to poverty in the context of the poverty–disaster nexus (World Bank and NDCC, no date; Vicente *et al.*, 2006). This section therefore draws on the views of government and non-government

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officers who have been involved in disaster relief and mitigation activities, and the experiences of some disaster–affected people from the Province of Albay in Bicol Region.

Disasters cause undue displacement of affected households, thereby resulting in either temporary or permanent changes in land tenure and property. The severity of impact differs in terms of: (i) whether the affected people have secure or insecure tenure on their property (ii) whether the disaster caused lasting damage on the property (iii) the capacity of the affected people to recover their lost property, or to restore and improve their tenure security, which is mainly defined by their socio-economic status.

People with secure tenure are more confident about reclaiming their property if the damage is not permanent. In the case of households that were affected by mudflows from Mount Mayon resulting from Typhoon Reming in Albay, those with titles returned immediately to their properties, given their awareness that the title records kept at the Register of Deeds would confirm legally the location of their boundaries. Moreover, because houses on titled properties are often built of stronger construction materials, finding the exact locations of the properties is not so difficult, because of the high likelihood that parts of the structures may still be intact after the disaster. This was the case for many residential property owners affected by the Mount Pinatubo eruption. In circumstances where the landmarks could not be easily reestablished after the eruption, owners have sought the services of geodetic engineers to relocate their boundary markers, based on the approved survey plans (Gerochi, personal communication, 2007).

In contrast, those affected households with no secure tenure are likely to have greater difficulty in relocating or reclaiming their original occupied properties following a disaster. This is more pronounced in the case of farmlands, especially when trying to locate the original position of farm dwellings. In the absence of boundary marks and permanent structures, returning to the property is made easier by community recognition of each others' rights to occupancy, because neighbours help each other in reestablishing the original boundaries of their formerly-occupied properties, based on trust. This sense of cooperation is strong among affected community members immediately after a disaster, since they share a common experience and a willingness to help each other in coping with its after effects. However, the possibility of boundary disputes may arise once the parcel boundaries are delineated once more via surveys (Oyardo, personal communication, 2007).

Where the damage to land is permanent, affected people, regardless of their tenure, often find themselves eased out of their original communities and relocated in government-designated resettlement sites. This is particularly true for informal settlers, who have no choice but to accept moving to the resettlement sites so as to establish new dwellings and engage in other livelihood activities. However, in many cases, the relocation sites do not provide better alternatives to their former way of life. For instance, affected families in Aurora, Quezon, after the 2004 landslides that were triggered by four consecutive typhoons, were advised that their original community was no longer suitable for habitation because of the dangers it posed to people and property. Nevertheless, affected people thought that the relocation site was too far away from their original area, and would force them to alter their source of livelihood from fishing to farming (Gerochi, personal communication, 2007). In the same vein, the affected families in Barangay Padang, Legazpi city, found themselves landless after Typhoon Reming hit Albay in November 2006; houses were damaged and farms were covered by rocks and mudflows unloaded by flashfloods from the gullies of Mount Mayon, making the farms unsuitable for agriculture (Echaluci, personal communication, 2007). However, many families still chose to stay in the area: the large boulders that piled up in settlement areas and farmlands meant that quarrying emerged as a new industrial activity, although the types of equipment found operating in the area suggest that the operator was not among the affected people. In another affected barangay, in Guinobatan, Albay, former farmers found themselves employed as labourers in quarrying companies. Work in this sand and gravel mining was made possible by the ease of accessibility to the quarries – located in the former barangay – from the new Mabugos Resettlement Site, given that the a distance between them is only about one kilometre. For some farmers who accepted resettlement on the new site, renting farmland has been another option, allowing them to continue their agricultural production activities and eke out a living (Oyardo, personal communication, 2007).

The situation is different for the Aeta people – a hunting and gathering indigenous group hit by the Mount Pinatubo eruption. Documented case studies (Seitz, 2004) reveal that the disaster affected the Aeta people in three ways: (i) some faced up to the inevitability of life in the lowlands (ii) others abandoned the resettlement site and went back to their original habitats (iii) others opted to stay in offsite settlements which the Aetas have established. In each of these

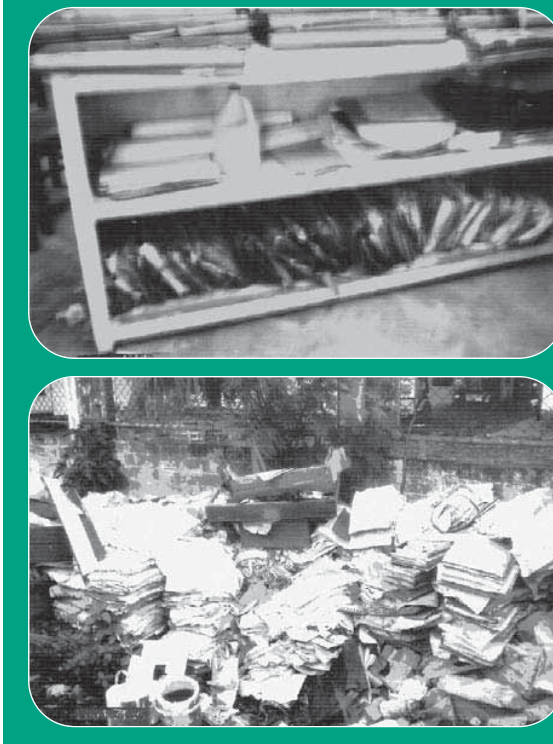
scenarios, the effect is loss of their ancestral domain, and forced adaptation to new ways of life. In the first scenario, they became significantly exposed to Christian Filipinos, and ended up as labourers largely dependent on the government and NGOs for support, eventually losing their jobs and the prospect of alternative employment. As a result, many families returned to the hinterlands of San Marcelino, Zambales. In the second scenario, those who initially stayed in the resettlement sites and went back to their original habitats have imbibed permanent agriculture, such as planting wet rice – a lowland farming practice – instead of growing tubers which had been their tradition. In the third scenario, some adapted a more permanent mode of settlement but separated themselves from the lowland population, which helped to preserve their traditional culture and practices.

2.5 Difficulties in dealing with the Consequences of Disaster Damages on Land Tenure and Property

The main difficulty in dealing with the consequences of disasters on land tenure and property lies fundamentally in the lack of awareness of the importance of land tenure and property in a disaster context. It is very apparent from the documentation reviews and interviews conducted for this task that there is no clear recognition so far of the extent to which land tenure issues come into play in disaster prevention, emergency relief work and rehabilitation. Thus, there is no systematic way of gathering information on the effects of disasters on the land tenure and property rights of affected families. As a result, these concerns do not feature in the current disaster prevention programmes, emergency work programmes, and rehabilitation programmes of governments and other organizations.

However, the field observations, interviews and documentation reviews undertaken have highlighted a number of administrative and legal constraints in the existing land administration system that will make it difficult for governments and other organizations to address these issues. These constraints are as follows[6]:

Absence of a complete cadastre. The land offices (DENR–LMB, RoD, LGU's Assessor Office) do not have complete records of all rights to land. The presence of many agencies involved in land titling and land administration has led to the duplication of and overlaps in records, in some cases resulting in issuance of double titles over the same property. There is no comprehensive set of maps that supports the title records issued, thereby increasing the probability of overlapping titles. In the context of rehabilitation after a disaster, this situation aggravates the probability of issuing multiple titles on the same property.



Land survey records damaged by Typhoon Reming in Albay in November 2006, consisting of:

- Cadastral maps for surveys for the whole province.
- List of survey claimants for surveys, and
- Technical descriptions of surveys.

Source: DENR PENRO/CENRO, Legaspi City, Albay.

Absence of a programme for the maintenance of control points. Many of the control points installed in the past decades throughout the country have been damaged or destroyed, for a variety of reasons. The

[6] Many of these issues were based on the reports and experiences of the Land Administration and Management Project Phase 2 (LAMP2) in the Philippines, funded by the World Bank and AusAID.

government does not have an active monitoring and maintenance programme to reestablish the control points. In the case of the Mount Pinatubo eruption, for instance, the National Mapping and Resource Information Authority (NAMRIA) has not been successful in gaining the funds necessary to reestablish primary control points; these are required to guide subsequent cadastral surveys for relocating the parcel boundaries of property owners.

Many of the land records have been lost, damaged or destroyed. Most DENR field offices have incomplete and outdated land records; these have been lost because of frequent transfers and theft, and damage caused by fire, floods and vermin infestation. The DENR provincial office in Albay, for instance, lost 2445 cadastral maps and other land survey records when the roof of its office building collapsed during Typhoon Reming. Reconstitution of records is difficult and costly, as the DENR does not maintain a systematic filing system for such records. It will need to rely on the file copies of the DENR Regional Office and surveyors to reconstruct the lost or damaged records. This situation is true in many parts of the Philippines. In order to resume the processing of applications for original title, land claimants will have to reconstitute their documents in cases where they were damaged or lost at the DENR. For many affected families who have lost their homes and properties, however, this will take time, as the documents will have to be reconstructed and/or secured again from other government offices. An additional complication is the fact that other land-related offices, such as the RoD in Albay, also experienced damages to an undetermined number of title records due to the flash floods caused by Typhoon Reming. In this case, the owners would have to file for reconstitution of the original file copy at the RoD.

Costly and lengthy process of title reconstitution. This is a legal process whereby the owner files a petition in court to reconstitute the title records that were lost or damaged at the RoD. The owner shoulders all the related costs, including legal fees, which are estimated to be about PhP 20 000 (Villanosa, personal communication, 2007). The process could take months to complete, given that that the RoD does not have a complete cadastre. Experience from the World Bank and AusAID funded Land Administration and Management Project (LAMP) reveals that one of the causes of double titling is judicial reconstitution, whereby the court issues new title copies for records which have been lost or destroyed. A surge in applications for title reconstitution is noted in areas following a disaster (Cledera and Suarez, personal communications, 2007).

Costly and lengthy process of securing title copies. Property owners who have lost their copies of titles will have to secure a second owner's copy at the RoD. This is also a purely legal process whereby the owner petitions the court to grant the RoD an authority to issue a second owner's copy. This process is initiated by the owner, and expenses incurred are again shouldered by the owner. Once more the process could take months to complete, and may cost the owner about PhP 10 000 (Villanosa, personal communication, 2007). An increase in applications for a second owner's copy is also noted in areas following a disaster (Cledera and Suarez, personal communications, 2007).

Costly process of relocating parcel boundary marks. This process is undertaken and paid for at the initiative of the property owner. The Geodetic Engineers of the Philippines (GEP) has set standards for this service, which would cost the property owner an average of PhP 10 000 to 12 000. The government does not have a programme to support affected families in relocating their parcel boundaries following disasters.

Presence of many erroneous surveys. The relocation of boundary marks is made more complex by the presence of many erroneous surveys. The experience of LAMP was that an additional process had to be introduced – called survey validation – to determine whether the quality of survey works warranted the issuance of titles. This has been necessary due to poor survey practices, and a lack of monitoring and supervision of survey works. The end result is the increased probability of misplacing boundary marks.

The above difficulties relate mainly to people who already who have secure titles before a disaster strikes. Informal settlers face a different set of challenges, since there are no records to refer to as basis for reclaiming their former occupied areas. First, there are no existing maps which record the 'metes and bounds' of their occupied areas before the disaster. This information is preserved in the minds of elders and community members, who would recognize the location of each others' properties. Hence, in the event of the deaths of elders and community leaders, this information will be difficult to reconstruct. Second, those who have no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secure rights to land prior to disasters are at risk of being permanently displaced through the relocation sites offered by the government. In many cases, the sites are unattractive and do not match their pre-disaster situations. This was true for many affected people in major disasters such as the 1991 Pinatubo eruption, the 1991 Ormoc City flashflood, the 2005 Aurora–Quezon flooding and landslide, the 2006 Typhoon Reming, and the 2006 Guinsaugon / St Bernard landslide in Southern Leyte. Most of the resettlement sites do not provide enough space, are far from the resettled people's original sources of livelihood, lack basic facilities and services, and offer entirely different socio-economic environments that require the resettled people to adapt their well-established traditions, livelihoods and lifestyles. As a result, these people are forced to return to their former lands despite the fact that these have become unproductive due to the damage caused by the disaster. Alternatively, they must find other suitable areas where they can start a new life and sustain their culture, as in the case of the Aeta, who established their own offsite resettlement sites in the aftermath of the Mount Pinatubo eruption in Zambales. All of these circumstances make the resettled people highly vulnerable to another disaster, which exacerbates their poor socio-economic conditions.

■ 3. LAND TENURE AND LAND ADMINISTRATION ISSUES RELATED TO NATURAL DISASTERS ■

3.1 Current Land Use and Tenure Risks after Natural Disasters

Alienable and disposable (A & D) lands, which are private property, account for about half of the total land area of the Philippines. Between 2002 and 2004, LAMP funded a series of studies on land laws, land markets, tenancy and land tenure. Their key findings give a clear picture of the country's current land use and land tenure issues. LAMP (2004) summed up these findings as follows:

> *'… some 60 percent of the real property of the country is informal. Considering that some 46 percent of the A & D lands are untitled, and much of the forest domain is occupied and used by people without secure rights, it can be seen that this figure of 60 percent, although extremely high, is not unreasonable. Any country with so much wealth remaining informal, can expect that the economy would have a limited contribution from the property sector. In addition to securing ownership for the remaining 46 percent of A & D land parcels, LAMP has proposed in the land laws and the tenancy study reports that secondary rights be registered, such as long-term leases.*
>
> *The land tenancy study showed that there are about 2 million hectares of farms (estimated 1 million parcels of farm lands) for which agrarian reform beneficiaries are yet to receive formal long-term leases. In the urban sector, the number of informal settlers in Manila is some 4 million, and the LAMP land laws study of 2002 suggested that long-term leases could provide immediate tenure security in the absence of or while awaiting the protracted process of transferring full ownership.*
>
> *Further, this land tenure study shows that the forest domain accounts for some 50 percent of the surface area of the country. Unfortunately, estimates of number of land parcels in the forest land could not be obtained from this study. This should be followed up so that cost and impact/benefit analysis to support policy formulation on increasing land tenure security in forest land could be achieved.'*

When the Land Tenure Maps produced by the LAMP study (2004) were overlaid with GMB's Geohazard Maps and cross-referenced with Manila Observatory's Risk

Maps, there are clear indications that most of the untenured people, and often the poor ones, are found in highly vulnerable areas, both in urban and rural settings.

3.2 Existing and Evolving Land Tenure and Land Administration Issues

Land tenure emergency work designed for prevention and mitigation

In land tenure emergency work designed for prevention and mitigation, the major issues facing the Philippines include: (i) the formalization of land rights or the issuance of titles in areas considered highly vulnerable to disasters (ii) the lack of an appropriate land use and development policy (iii) the existence of dense human settlements in vulnerable areas (iv) uncontrolled development in high risk zones.

The absence of comprehensive spatial information prior to land titling results in the issuance of titles to properties located in vulnerable areas. In the case of the residents of Albay, several titles were issued along the flanks of Mount Mayon; some of these were even located within the six kilometers declared as a permanent danger zone by the Philippine Institute of Volcanology and Seismology (PHIVOLCS) (Noble, personal communication, 2007). This was also the case after the Ginsaugon landslide tragedy: an entire barangay was almost completely wiped out when the slopes of a hill collapsed after hours of continuous heavy rains. In this case, the land was declared alienable and disposable and hence subject to private property. The absence of comprehensive hazard maps for all types of hazards results in a misguided land classification system as well as a misguided land use and development policy.

The Philippines has yet to establish a comprehensive national land-use code. The code is supposed to provide the framework for the allocation of lands for various uses in the light of the country's requirements for industrialization, urban and human settlements, agricultural and fisheries modernization, environmental protection, and other uses. At best, land-use planning that directly impacts on land tenure systems is localized, and normally prepared by LGUs following the guidelines of the Housing and Land Use Regulatory Board (HLURB)[7]. The key problem is that localized planning does not consider the broader requirements of the Philippines' growing population and long-term socio-economic development. In addition, the importance of hazard information has only recently been considered in land-use and disaster management planning processes, as a major response to Ormoc City's tragic flashflood in 1991. The preparation of geohazard maps for the entire Philippines to inform land-use planning remains to be completed, aside from the fact that different national government agencies (NAMRIA, MGS, PHIVOLCS, PAGASA) have been involved in this exercise. The production of such maps is hindered by two problems, which Delfin (2006) identified as (i) the use of different scales and geographic information systems (GIS) by government agencies, making data integration more difficult (ii) the lack of accurate political boundaries in many of the country's maps.

The presence of dense settlements in vulnerable areas is partly a function of the weak enforcement of land-use policies, partly a result of uncontrolled urban growth, and partly due to a lack of access by rural landholders to land resources. Uneven investments which favour the highly-developed regions, burgeoning population growth, and a lack of livelihood opportunities in rural areas, only attract additional people out of the provinces. These conditions bring about an artificial scarcity of land and the densification of human settlements in urban areas, which force many people to inhabit drainage systems, easements, areas under bridges, and even coastal areas which are highly vulnerable to and contribute to hazards, because they prevent the free flow of water and present the occupants with higher levels of risk. The Payatas tragedy (see page 7) provides an illustrative case of a disaster waiting to happen, due to the high concentration of poor squatters in the biggest open dumpsite in Metro Manila. In rural areas, uneven distribution of land encourages informal occupation of public lands and an upsurge in seasonal farm labour on large privately-owned lands[8]. Meanwhile the absence of widespread land tenure instruments over open-access areas leads to unsustainable land uses and degradation in critical watersheds, danger zones, protected areas and marginal lands susceptible to high degrees of erosion. Several efforts have been made to estimate the population in the uplands to complete the process, but these have not quite been successful.

Properties located in high-risk zones have only recently been identified due to the late development of hazard

[7] Fernandez, *et al.*, (no date) found that the Comprehensive Land Use Plans required by HLURB for each city and municipality in Metro Manila have not been compiled.

[8] As observed in the Ormoc City landslide tragedy, according to the DENR records, 'nearly 100 percent of the immediate water-shed of Ormoc, an area of 4500 hectares, is owned by six sugar-planting families …' (Severino, 1992; Danguilan-Vitug, 1993) and most of the affected families were farm workers and tenants on these plantations.

maps. In some cases, this discovery would not have been possible without the disaster, as in the case of the 1999 landslide tragedy in Cherry Hills Subdivision located in the mountainous Antipolo City, east of Metro Manila. From this experience, in the context of land tenure and disaster prevention, there is a necessity for the completion of hazard mapping. This will help to guide the future development of land regulations that can be formulated for and strictly enforced in the whole country.

Emergency operations phase

In an emergency operations phase, interviews with government and non-government organizations and some affected families reveal that less attention is given to land tenure issues, as compared with ensuring minimal casualties and supporting relief operations. Government agencies are mandated to assess immediately the impacts of the damage (Presidential Decree 1566 issued in June 1978, which is the current legal basis of disaster management arrangements in the Philippines). However, no assessment has been made as regards the condition of the survey and records infrastructure post-disaster, and the land tenure status of affected households. There are no reports on the damages to survey controls, parcel boundary marks and land records held by the government agencies, all of which are important in determining the support that affected people may require for their rehabilitation. As regards the affected families, no systematic information is gathered on the value and size of the affected properties, their locations and the corresponding land tenures. Reports are more focused on damage to government properties that require funding for repair and/or reconstruction. Estimates of the effects on private property have mainly considered damaged houses and related structures. At best, resettlement sites with free core houses and some basic facilities are set up for all affected families, regardless of their previous land tenure status. These weaknesses affect the ability of the government and other organizations to plan for the recovery, relocation, or rehabilitation of affected communities and households following disasters.

Recovery and preparedness phase

During the recovery and preparedness phase, the key issue is the absence of any support for land tenure issues particularly as they relate to poor, vulnerable and food-insecure households following disasters. No clear public policies exist to facilitate the recovery and rehabilitation of affected lands and other related properties. At present, affected families are left on their own to locate their properties, restore boundary marks, reconstitute lost records, and/or reestablish farmlands. Support for disasters is limited to immediate relief and finding relocation sites for those affected (World Bank and NDCC, no date).

For those who have the means, perhaps the major impediments to returning to their property are the lack of awareness of the procedures involved in surveys and title reconstitution, and a lack of access to records. Studies by LAMP have highlighted the lack of transparency in the land administration system and the high cost of land transactions, thereby forcing owners to stay out of the formal system or secure the services of third parties who are familiar with the procedures. The latter contributes to the added high real cost of land transactions. In this situation the existing government programme directed at supporting the needs of disaster-affected families does not help to address such problems. Each client is treated equally, regardless of whether they are victims of disasters or not (Cledera, personal communication, 2007).

For poor households with no secure tenure, the main impediment is returning to the property, or finding a suitable place to live and practice their livelihood following the disaster. Life in resettlement sites has proven to be difficult for these untenured families because most of the sites do not include agricultural lands for farming and other livelihood activities. Moreover, the standards set for determining appropriate resettlement sites mainly concern themselves with the idea that resettlement areas should be at a lower risk to natural hazards. For example, in Legazpi City the victims of Typhoon Reming have been housed in dwellings of about 12 m^2 each in size, with no farmlands (Asupardo, personal communication, 2007).

Perhaps the communities and families affected by the Mount Pinatubo eruption could be considered more privileged, given the legislated government appropriation of PhP 10.0 billion for recovery and rehabilitation programmes after that event. However, this could be attributed to the enormous extent of the damage caused by the eruption, and the corresponding media coverage, which may have prompted the government to allocate such a huge amount of money. Housing units were developed and equipped with individual titles. Nevertheless, as experienced by other affected communities elsewhere, the settlement sites were bereft of farmland and places of employment were far from the new settlements. Some farming households resorted to returning to their original properties, others found new farms on their own, and still others – such as the Aeta people – returned to their ancestral domains and adapted their farming and hunting practices. It has

become apparent that poor, vulnerable and food-insecure households demonstrate high risk-taking behaviour, because the advantages of disaster-prone areas – open access, low costs (e.g. transport), proximity to employment – are perceived to outweigh the risks.

Agriculture-dependent poor households are less able to cope with the loss of farms following disasters, because in economic terms, they lack the resources that would allow them to make more risk-averse choices. Natural disasters cause major disruptions in their ability to provide food for their families. Without alternative farmlands, families run the risk of hunger after the food supply from temporary shelters run out. Thus, they continue to be impoverished, making them more vulnerable to yet another disaster.


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■ 4. 4.CAPACITY FOR SUPPORTING LAND TENURE AND RELATED NATURAL RESOURCE ACCESS ISSUES IN THE POST-DISASTER PERIOD ■

4.1 National level capacity

The National Disaster Coordinating Committee (NDCC) – under the Office of Civil Defense of the Department of National Defense and through its member agencies prescribed in Presidential Decree 1566 – is responsible for carrying out disaster preparedness, mitigation, response and rehabilitation. However, its mandate does not cover assistance in resolving land tenure and related access issues concerning natural resources. At most, assistance is limited to providing resettlement sites for affected households and giving them support in the construction of dwellings and the issuance of titles over these properties. The support does not include providing farmlands for the families. Thus, marginalized farmers continue to live and work in the foothills of Mount Mayon, disregarding dangers from volcanic eruption and lahar flows, because this area provides them with the opportunity to produce food without secure land titles. It appears that people only obey evacuation orders when the highest level of alert is reached (Heijmans, 2001 as cited by World Bank, no date).

The search for cultivable land, therefore, rests with the affected family, considering that Government support does not include providing farmlands for the families. Once occupied, some people approach government agencies such as DENR to avail of their regular programmes for titling and tenure security. However, when a family is displaced, the chance of them securing a title in public land is nil, because one of the primary criteria for a title is proof of occupation for at least 30 years. There is no special programme designed to provide poor rural households who lost their farms after the disaster with secure tenure to farmlands.

Land-related government agencies, particularly LMS and NAMRIA under DENR, and RoD under the Department of Justice (DOJ), presently have no programme to support disaster-stricken communities in coping with land tenure and property issues (Gerochi, Noble, Cledera and Villanosa, personal communications, 2007). This is mainly because their programmes are all aligned with the approved budget, which does not take into consideration the need to respond to the requirements of disaster after-effects. In the case of the Mount Pinatubo eruption, for example, the DENR did not have funds to reestablish destroyed control points. While funds are available for cadastral surveys, these are allocated in support of titling, and are already earmarked for specific locations which are not necessarily disaster-affected areas.

In terms of responding to the needs of affected communities for the reconstitution of their land records, the DENR and RoD are in no better position to provide this support if their own files have also been damaged. The poor state of records, the absence of cadastral maps to support titles, the absence of records security systems, and the general lack of public understanding of procedures for title reconstitution, all contribute to the difficulty of supporting affected communities. Similarly and as noted earlier, these agencies do not have programmes directed at supporting the needs of affected families. Affected people have to take their own initiative to avail themselves of the services of

these agencies, and go through the normal process that other regular clients are subject to.

The budgets of disaster funds do not cover the expenses required by the agencies to reconstitute their records, reestablish control points, conduct cadastral surveys,[9] or provide land title reconstitution services for affected families. If the agencies were to provide this support they would have to submit themselves to the regular process of budget preparation and approval, and make a case for additional funding to better respond to the needs of affected families[10].

In order to provide better land administration services, the agencies would have to improve their records systems, enhance public understanding of the procedures, and streamline the processes to be more transparent and client-responsive. They would also have to develop more preventive approaches to be better placed to serve the needs of affected families in the event of disasters. These would include, among others: (i) providing for better security of records; creating backup copies: more systematic organization of records to improve access by the public; regular updating; improving consistency in records held by agencies (ii) identifying alternative areas for agricultural production for affected families (iii) relocating vulnerable communities to safer areas and providing secure tenure and farms. Improving awareness of land tenure and resource access issues is also important, so that these agencies and other humanitarian organizations can identify and implement more responsive programmes for marginalized and vulnerable households.

Non-governmental organizations based in Manila, such as the Institute of Church and Social Issues (ICSI) and the Citizens' Disaster Response Center (CDRC), recognize that land tenure issues are not given priority in current disaster emergency relief and rehabilitation programmes (Adem and Lanada, personal communications, 2007). However, CDRC undertakes ongoing activities with affected communities such as the community mapping of properties affected by disasters (in partnership with local NGOs and LGUs), to facilitate tracking down and locating the former properties of affected communities, and to help avoid disputes among neighbours (Lanada, personal communication, 2007).

4.2 Local level capacity

The NDCC structure is replicated at the local level – in each region, province, city, municipality and barangay. At the municipal level, the LGUs are expected to provide direct support for the needs of affected communities within their jurisdictions, with assistance from the field offices of national government agencies. Under the Local Government Code of 1991, the LGUs are required to set aside 5 percent of their estimated revenue from regular sources as a 'Calamity Fund'. This amount is used for relief, rehabilitation, reconstruction, and other works and services carried out during the budget year. But once again, this amount does not cover support for addressing land tenure and related natural resource access issues.

As part of the LGU mandate, land-use planning is undertaken by the municipal and provincial governments. However, this exercise is not always informed by risk assessment and hazard mapping. Very few LGUs – although Marikina City is an exceptional case – have active programmes to relocate communities vulnerable to hazards and informal settlers, and provide them with secure tenure in safer environments. Few cities and municipalities also have the capacity to prevent settlement in disaster-prone areas, particularly by informal settlers. Local land-use policies, rules and regulations, are seldom enforced, even when they exist. In some cases, LGUs allow the entry of informal settlers, as a deliberate vote-raising strategy, even in more high-risk areas (World Bank and NDCC, no date).

The performance of LGUs in disaster management is very diverse. They are expected to draw up risk management plans, but may not put them into practice, particularly in the 4th to 6t^{h} class LGUs. Where plans do exist, they focus largely on relief and rescue operations (World Bank and NDCC, no date). Given their existing fiscal situation and manpower capacity, it is difficult for many LGUs to incorporate land tenure and natural resource access issues in their disaster management plans, or in their local development plans. To date, very few LGUs have been successful in implementing disaster prevention or flood control measures, and in relocating highly-vulnerable households to safer environments[11].

[9] Funding for cadastral surveys after a disaster is allocated only for delineating the boundaries of properties in the resettlement sites, and not to relocate lost boundary marks on the original properties of affected households.

[10] For example, repeated requests by NAMRIA for funding to support the reestablishment of control points in Mount Pinatubo have not been successful. Such requests have only been approved in 2007 (Gerochi, personal communication, 2007).

[11] An excellent example is Marikina City, which used part of its development funds to implement high budget flood control measures, and to relocate hundreds of households from the banks of Marikina River to a safer resettlement site where most important socio-economic facilities and services were provided. The effects on families when the river swells during annual heavy rains are thereby minimized.

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Abbreviations and Acronyms

A and D	alienable and disposable
ADRC	Asian Disaster Response Center
CDRC	Citizens' Disaster Response Center
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DOJ	Department of Justice
GDP	Gross Domestic Product
GDRP	Gross Domestic Regional Product
GIS	geographic information system
HLURB	Housing and Land Use Regulatory Board
ICSI	Institute for Church and Social Issues
LAMP	Land Administration and Management Project
LGU	local government unit
LMB	Land Management Bureau
LMS	Land Management Services
MGB	Mines and Geosciences Bureau
NAMRIA	National Mapping and Resource Information Authority
NASA	Neighborhood Association for Shelter Assistance
NDCC	National Disaster Coordinating Council
NSCB	National Statistical Coordinating Board
OCD	Office of Civil Defense
PAGASA	Philippine Atmospheric and Geophysical and Astronomical Services Administration
PHILVOCS	Philippine Volcanology and Seismology
RoD	Register of Deeds
TOR	Terms of Reference

Ecuador

Ecuador

by Fausto Jordán Bucheli and Raúl Sánchez Mena*

■ 1. LAND TENURE CHARACTERISTICS AND VULNERABILITY TO NATURAL DISASTERS IN ECUADOR ■

Natural disasters have increased in frequency and intensity on a global scale, and have affected a large part of the world's population, with consequent human and economic loss, and deterioration in quality of life.

Countries in Latin America and the Caribbean have also been increasingly affected by natural phenomena such as earthquakes, volcanic eruptions, tsunamis, and hurricanes, amongst others. The El Niño phenomenon has been the principal natural cause of large-scale damage in Andean countries, producing disasters such as floods, droughts and landslides, amongst others.

CEPAL has estimated that in a typical year, these phenomena cause damage to the value of 1.500 million dollars and the loss of more than 6000 human lives, both of which result in stagnation of economic development and in the living conditions of the population of the countries where such events occur[1].

In particular, the people in developing countries that are most vulnerable when disasters occur are poor population living in rural areas or on the edge of cities, because they are settled in the areas of greatest risk and they do not benefit from the infrastructure or resources required to mitigate the effects of natural phenomena, or indeed phenomena that are man-made.

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[1] CAF – The El Niño Phenomenon 1997–98: Memories, Challenges and Solutions – Ecuador.

As far as the security of land access and tenure is concerned, the negative impact of natural disasters on the poorest and most vulnerable population groups should be given form and publicised in order to create a greater conscience in governmental authorities and in the international community. The aim is that these authorities will act to improve security of access to, and tenure of, the land, given that land is an asset which facilitates production processes, sustainability, and the self-esteem of rural communities.

1.1 Ecuador, its characteristics

Continental Ecuador is in the extreme northwest of South America, bathed by the Pacific Ocean and traversed by the two principal branches of the Andes mountain range, including a series of volcanoes, some of them active. This situation – its geographical position and its geological characteristics – mean that phenomena such as earthquakes, volcanic activity and floods are all frequent.

Ecuador is bordered by Peru to the south and east, Colombia to the north, and the Pacific Ocean to the west. Geographically speaking, the country is made up of four regions: Sierra, Coast, Amazon, and the island region of the Galapagos. These cover an area 256.370 km2 with a 2007 population (according to INEC) of 13.605.485 people.

The percentage of poor amongst the national population was 36.3 % in 2006, of which 61,5% were rural poor, compared with 24,9% urban poor.

The agrarian structure

Despite more than 40 years having passed since partial agrarian reform, which occurred between 1964 and 1973, Ecuador's principal farmland is still found in few hands[2]. According to figures from the III National Agricultural Census in 2001, there are 842.882 Agricultural Production Units (APUs) in an area of 12.355.831 hectares. Of the total APUs, 63.5%, or 535.309 hectares, relate to small producers plots with less than 5 hectares. This demonstrates that significant problems still exist in the distribution of productive land within the country: APUs of less than 5 hectares amount to no more than 6.3%, of the total national agricultural land area, whilst APUs larger than 50 hectares amount to 60.7% of such land area.

The agricultural reform process begun in 1964 did not improve distribution of the land, but rather maintained the concentrated structure whereby the best land was held in just a few hands. Smallholders in the Sierra where obliged to occupy the higher lands, whose low quality soils and susceptibility to erosion cause degradation of the high plateaus, misty forests and water sources[3].

The Law on Agricultural Development was promulgated in 1994 with the purpose of driving agricultural modernisation and consolidating a new concentrated structure, supported by the private sector. In this sense productive economic variables became important, whilst social, cultural and ecological ones were sidelined. A market for land was promoted as a strategy for the improvement of efficiency and the levels of production and productivity in the countryside, limiting small peasants' access to the land. Consequently small farmers were forced to move and occupy the highlands with low fertility and high erosion soils.

According to figures from the III National Agricultural Census (MAG – SICA 2000), in Ecuador 68.4% of the APUs are titled, which corresponds to 71.9% of the total agricultural land area. Meanwhile 6.7% of the APUs, equivalent to 992.514 hectares, are worked without title to the land, without a leasing contract and therefore without paying rent, although they have complete use of the land and the APU's activities[4].

In 2008 the newly adopted Constitution has addressed peasants' access to land supporting the promotion of redistributive policies to favour access to land, water and other natural resources. In article 282, the Constitution establishes by law a national land fund that will allow equal access to land to female and male peasants, and forbids land concentration and water privatisation.

Vulnerability in the face of natural disasters

Ecuador is a country highly-vulnerable to destructive natural phenomena, situated as it is in the "Pacific Ring of Fire", and in the subduction zone of the Nazca Plate under the South American Plate. Similarly, geological fault lines separate the country's geological regions, making Ecuador highly vulnerable as a

[2] FEPP – International Land Coalition – IFAD 2005 – The cost of the land – could funds for land acquisition be useful to the poor?
For peasants, land is not only an essential mean of production, but also the basis and meaning of social life, given that family and community are integrated here, and identities are constructed symbolically, via direct work on the plot and the cultural assimilation of territory.
[3] SENPLADES National Development Plan 2007–2010.
[4] MAG–SICA 2003, Agricultural Producers and their Environment.

potential scenario for earthquakes and volcanic activity; this affects the country's potential for development since it is at high risk of natural disasters.

As a consequence of climate change and environmental degradation, Ecuador has experienced sustained increases in temperature, changes in the frequency and intensity of extreme events (droughts, floods, frosts), changes to the water cycle, and the retreat of glaciers.

Various geographical characteristics of the country – such as the presence of the western, central and eastern cordilleras of the Andes mountain system, and the highly-variable climate – contribute to floods, heavy seas, lack of rain, and landslides.

The pattern of natural disasters in Ecuador is characterised by a steady increase in the number of events and also their impact, principally those associated with floods, droughts and extreme temperatures. According to the worldwide EM-DAT (2007) database, between 1990 and 2006 there were a total of 29 large-scale natural disasters, 59% of which were of climactic origin. Although there has been a progressive decrease in the number of deaths caused by such disasters, there still exists a significant increase in the number of victims, mainly amongst the poor.

In recent years Ecuador has experienced a variety of natural phenomena of significant magnitude and extension, resulting in certain catastrophic events causing grave socioeconomic and environmental imbalances, and adversely affecting the development of the nation and the national economy.

1.2 Land tenure legislation and risk management

Land tenure

The Law on Agricultural Development, promulgated in 1994, establishes a policy to foment, develop and protect the agricultural sector, guaranteeing individual and collective land tenure security. In a special way it also facilitates the right of access to land titling.

Similarly, and in accordance with the laws established in articles 282 and 321 of the 2008 Republic's Political Constitution, the State should rule the equal access to land to female and male peasants and guarantee land ownership. This establishes that work on and use of the land can be carried out individually, in cooperatives, in associations, communally, or within a family or limited company, so long as its social and environmental purpose is achieved.

According to the law, the land meets its social function when it is exploited productively, when its renewable natural resources are adequately preserved, when the ecosystem is protected, when all Ecuadorians' nutritional needs are guaranteed, and when surpluses are available for export. The land's social function should translate into an increase and redistribution of income, so that the whole population shares the benefits of development and the profit that comes from this.

Land policy in Ecuador is the responsibility of a complex institutional framework within two branches of the State: the executive (MAGAP–INDA, MAE,

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MIDUVI) and the judicial (Notaries and the Property Register). This fragmentation means that no single entity assumes the leadership role in the formulation and application of land policies that support sustainable development processes.

Responsibility for land administration is the ambit of the Ministry of Agriculture, Livestock, Aquaculture and Fishing (MAGAP), via the National Institute for Agrarian Development (INDA), which is responsible for land legalisation processes and the maintenance of the rural land cadastre.

Risk management

Until 2008, the responsibility to prevent, reduce and overcome the effects of catastrophes of whatever origin was exercised by the National Civil Defense Body via the Civil Defence System. These were combined public and private sector bodies that, through coordinated integration, executed actions designed to protect the population and its property, from the effects of disasters derived either from a natural phenomenon or from human activity. The approach of this system was mainly of a reactive type after the disaster had occurred, dealing with the aftermath effects through reconstruction and rehabilitation programmes and without an integrated approach to risk management, this approach was delegated on an ad-hoc basis to organisations created for that purpose like CORPECUADOR, COPEFEN and CPOE dealing with El Niño phenomenon (1997-1998) and the Josefina landslide (1993).

Since 2008 important advances in Risk Management have been made at the sectoral level with the incorporation of risk management variables in judicial regulations, such as the Law on Environmental Management, the Law on Forests and Conservation of Protected Areas, the Public Health System Organic Law, and similarly in the National Planning System as managed by SENPLADES. Moreover, as opposed to a reactive approach to natural disasters impacts, the 2008 new national Constitution has included in its Chapter VIII the concepts of prevention and mitigation for natural disasters risk management, as well as the need to deal with the management of risks on a decentralised and local basis. The Constitution states explicitly the need to establish a national system for the prevention and management of natural disasters.

In agreement with this approach to address risk management, and as a result of initiatives that had taken place at regional level within the whole Andean Community, in which Ecuador actively participated[5], in May 2008 the Ecuadorian government via Executive Decree reorganised the Civil Defence responsibilities towards risk management so as to be part of The Risk Management Technical Secretariat attached to the Ministry for the Coordination of Internal and External Security. Presently the Secretariat is working to include an integrated approach to the management of risks in a cross-sectoral and decentralised manner, through the development of a national policy for disaster risk management, as well as other tools that will reinforce the disaster management work in the country. In particular the policy will support and strengthened an integrated approach to disaster risk management considering development as the framework of DRM for the reduction of peoples' vulnerability against disasters. The policy will foster the participation of all public and private sectors within a decentralised manner with the involvement of national, regional and local level institutions and organisations.

In this framework the aim of this Ecuador country study is to extract lessons from the way the impact of natural disasters was managed in selected experiences before 2008, especially with regards to land tenure issues. The authors wish these lessons can be of use for raising awareness both in Ecuador and other countries, on the importance to consider land tenure access and security as key factors in the reduction of household and country vulnerability against the impacts of natural disasters.

■ 2. NATURAL DISASTERS IN ECUADOR (1997–2008) AND THEIR EFFECT ON LAND ACCESS AND LAND TENURE ■

In the last 15 years, Ecuador has suffered a variety of natural disasters of different magnitudes and intensity, which have affected the most vulnerable parts of the population to varying degrees; this population is generally found in rural areas and does not have sufficient resources to deal with the effects of natural phenomena.

The main natural disasters in Ecuador over the last 15 years, and their social and economic effects, are described in the table 1.

[5] Ecuador is an active member of the Andean Committee for Disasters Prevention (Comité Andino para la Prevención y Atención de Desatres), and has been in charge of the Committee presidency twice (2003-2004; 2008-2009)

TABLE 1 – Main natural disaster in Ecuador

Events	Year(s)	Main social and economic effects
Amazonian region earthquake	1987	3.500 dead, oil pipeline breakage and 890 million dollars in losses.
La Josefina landslide	1993	100 dead, 5.631 people affected, and 741 households; 148 million dollars of direct damage.
El Niño phenomenon	1997–98	293 dead, 13.374 directly affected families and 2.882 million dollars in losses.
Caráquez Bay earthquake	1998	3 dead, 40 injured, 750 homeless people, 150 houses destroyed and 250 damaged.
Eruption of the Guagua Pichincha volcano	1999	2.000 people displaced from Lloa y Mindo, health side effects and closure of Quito airport.
Eruption of the Tungurahua volcano	1999–2008	20.000 people evacuated, 17 million dollars in losses in the agricultural sector and 12 million in tourism. In 2001, 50.000 people were evacuated and 39.455 were affected.
Floods in large parts of the country	2008	62 dead, 9 disappeared, 90.310 affected families and 150.000 hectares of crops lost.

Source: DIPECHO Project – 2005 and Civil Defence.

A brief description of the most important natural phenomena that have occurred in the last 15 years will serve as a reference to analyse their effects on land access and land tenure amongst the affected population. It will also help to identify the main lessons learned, and establish certain strategic lines when considering the subject of land tenure within a national strategy for risk management.

2.1 The El Niño phenomenon, 1997–1998

The El Niño phenomenon of 1997 to 1998 caused significant social and economic losses in Ecuador. This natural event was characterised by heavy rains in the Costa region, with floods causing damage to cities, small population groups, roads, houses, farms and plantations; the major incidents took place in the centre of the Ecuadorian coast. This event is considered to have been extremely severe: the event of the greatest magnitude amongst the 28 El Niño events of the last 100 years, causing even greater damage than that caused by the phenomenon of 1982–1983.

On the Ecuadorian coast the provinces most affected by the overflow of rivers and floods in most of their boroughs were Guayas, Manabí, Esmeraldas, Los Ríos and El Oro; to a lesser degree, various urban and rural areas in the cities of Puyo, Tena and Francisco de Orellana in the Amazon region, were also affected.

The El Niño phenomenon of 1997–1998 had significant social effects, causing 293 dead, 162 injured and 6278 families otherwise adversely affected and evacuated, having lost their homes and land. In total, there were 13.374 affected families[6].

The total material damage originating from the El Niño phenomenon of 1997–1998 was 2.882 million dollars, of which 846 million dollars (29% of the total) corresponded to direct damage and 2.036 million additional dollars (71%) corresponded to indirect losses. The total damages represent about 15% of Ecuador's GDP in 1997[7].

Economic losses principally affected the productive sectors, with losses of 1,515.7 million dollars (53% of the total losses), given that the floods mainly caused damage to agricultural production. Damage to the transport industry amounted to around 794.6 million dollars, of which the major part (28%) corresponded to roads and bridges that were mostly destroyed along the coast. Losses in the social sector amounted to 204.7 million dollars, and in the service sector, 35.6 million dollars.

The area of crops lost or otherwise affected amounted to 843.873 hectares, of which 683.630 hectares were losses along the coast and part of the Sierra, affecting more than 100.000 agricultural workers in the regions that suffered damages. Traditional crops such as rice, maize and soy beans were amongst the most affected.

El Niño produced large negative effects on production in the country, causing a reduction in agricultural production, fishing, industrial production and commercial services, with negative impacts on employment and the income of those population groups that have few resources, and whose vulnerability in the face of disasters is very high. These groups also had to deal with significant losses in income, including being left without basic means of

[6] National Civil Defence Division – Final Report on the El Niño Event 97–98.
[7] CAF, The Lessons of El Niño, Ecuador. *Source*: Memories of the El Niño Phenomenon 1997–1998, Challenges and proposals for the Andean Region Orellana H, 1997. Ecuador, high vulnerability to natural and technological disasters. *Source*: Memories I Engineering Day Sessions in Pichincha.

subsistence. This resulted in emigration to urban centres in search of work. In this context it was women who assumed the temporary role of head of household whilst their husbands looked for work in other parts of the country, in order to generate income that would allow them to rebuild their homes or their means of production.

2.2 The "Damming" of the Paute River (La Josefina)

On 29 March 1993 approximately 20 kilometres northeast of Cuenca city, an enormous landslide amounting to 20 million cubic metres of rock and earth blocked the Paute river for 32 days, forming a large dam 100 metres high and one kilometre in length, containing 200 million cubic metres of water. The Government dealt with the event as a National Emergency, given that the Paute Hydroelectric Plant is situated 50 kilometres further down the river: this plant generates 65% of Ecuador's electricity.

As a result of the landslide and the subsequent rupturing of the natural dam, nearly 170 million cubic metres of water were released, flooding large areas of agricultural land and inhabited zones, and inundating population centres such as Paute, Gualaceo, Burgay, as well as farmhouses on the shores of the Paute river. More than 5.000 people sought refuge in 20 camps and shelters, remaining there for around two months whilst the emergency was being dealt with.

It is estimated that around 100 people lost their lives, and that 5.631 people were directly affected by the loss of their homes, land and employment; around 582.000 people were indirectly affected by isolation, destruction of road communications, problems of marketing, etc[8].

A total of 741 households were affected, of which 76% were completely destroyed. A total of 2.473 hectares of farmland were also affected in the provinces of Azuay, Cañar and Morona Santiago. Water above the dam inundated 940 hectares of agricultural land, houses, vacation homes and farmhouses, a 30.000 watt electricity plant, part of the Panamerican highway, and also the railroad. Meanwhile waters below the dam destroyed 1.533 hectares of farmland, 24 kilometres of watering channels, 5 bridges, the road to the tourist centres

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[8] No Place for Hope, Report on the Josefina Disaster – Ecuador 1993. National Polytechnic School.

at Paute and Gualaceo, important agroindustrial installations such as a liquor factory and a flower producer, and an agricultural college. 50 percent of the city of Paute was destroyed, affecting houses, public buildings, electricity and telephone networks, sewage systems and road networks.

A total of 40 kilometres of asphalted roads were damaged. The blocking of the Panamerican highway cut off a number of important population centres, creating a genuine road communication emergency, which affected the economy and the mobility of the population. The effects on the economy were very large, with direct losses of 148.85 million dollars, equivalent to 1 percent of GDP[9].

A preliminary evaluation carried out by the Civil Defence (Cruz, 1993) of the direct losses is summarised in Table 2.

TABLE 2 – Total losses by sector

Sectors	Value
Houses (716)	7.13
Agricultural sector (1,800 Hectares)	22.17
Land and assets	26.06
Agroindustrial companies (15)	8.83
Road infrastructure, irrigation, railroads, electricity plants, networks, etc.	73.56
Bridges (8)	2.56
Educational infrastructure, public works (schools, coliseums, markets, playing fields, abattoirs, potable water systems (?), churches, etc.)	0.69
Other damages	7.85
Total (in millions of dollars)	**148.85**

2.3 The Tungurahua volcano eruption

The Tungurahua volcano is 5.023 metres above sea level and is situated in Ecuador's Central Andean cordillera, 140 kilometres south of Quito, the country's capital. It is one of the country's six active or potentially active volcanoes. Amongst these are the Cayambe Antizana, Tungurahua, Cotopaxi, Sangay, and Chimborazo (see Figure 1).

The Tungurahua volcano began erupting in 1999 and since that date remains active, including periods of great activity and others of relative calm. The direct effects of the eruption, such as pyroclastic flows, mudflows and landslides, are felt in 9 boroughs of Tungurahua's and Chimborazo's provinces (Tisaleo, Pelileo, Baños, Cevallos, Patate, Mocha, Quero, Guano and Penipe); indirect effects such as falling volcanic ash are felt in Pastaza, Bolívar and Los Ríos provinces.

This permanent emergency situation has generated human, material and environmental losses in the region, significantly affecting the lives, health infrastructure, roads, houses, means of production, and other factors that help to maintain the activities of the local populations in the affected zones.

The October 1999 eruption resulted in the evacuation of more than 20.000 people from Baños city, one of the main tourist centres in the Andean region (situated as it is on the slopes of the volcano, approximately 5 kilometres to the north). This provoked thousands of dollars in losses given that all activity in the city ceased; agricultural losses were

FIGURE 1

LEGEND

ACTIVE VOLCANOES (Simkin 1981)

Antisana	Pululahua
Chimborazo	Quilotoa
Cotacachi	Reventador
Cotopaxi	Sangay
Cuicocha	Sumaco
Guagua Pichincha	Tungurahua

Cuaternary Volcanoes

Geological faults

With new investigations that have been undertaken by organizations dedicated to local knowledge (IG-EPN, ESPE, DINAGE) it has been discovered that active volcanoes are increasing sustantially, such as: Imbabura, Mojanda, Ninahuilca, Cayambe, amongst others.

PLANNING OFFICE – PRESIDENCY OF THE REPUBLIC OF ECUADOR

Andean Regional Programme for the Prevention and Mitigation of Risk "PREANDINO"

MAP OF PRINCIPAL ACTIVE VOLCANOES TECHNICAL CHARACTERISTICS IN CONTINENTAL ECUADOR

Source: CODIGEM – DINAGE/BGS PROCESSING AND SYSTEMATIZATION DINAREN/MAG – ODEPLAN INFOPLAN

[9] Orellana H, 1997. Ecuador, high vulnerability to natural and technological disasters. *Source*: Memories I Engineering Day Sessions in Pichincha.


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estimated at 17 million dollars and losses in tourism were estimated at 12 million dollars.

Since 2001 the Tungurahua eruption process has continued with frequent emissions of ash, principally affecting the Tungurahua and Chimborazo provinces, and causing enormous losses to smallholders, as well as affecting the health of those exposed to the ash. It has also been necessary to evacuate more than 50.000 people from Quero, Mocha and other population centres limiting the volcano. According to estimates from the Ministry of Agriculture and Livestock[10], around 28.500 hectares of potato, maize, onion and other food crops were lost, equivalent to 15 million dollars. Civil Defence reported that 39.455 people were affected.

In 2002 the greatest losses occurred in the provinces of Tungurahua and Chimborazo, especially in the towns of Quero, Mocha, Tisaleo and Huambaló, with 50.188 people affected and sometimes displaced. Agricultural land was covered in ash, meaning that it was impossible to feed the animals. Farmers were therefore obliged to sell their livestock at prices far below normal market value, resulting in increased difficulties for family incomes.

In July 2006 the activity of the Tungurahua volcano was reactivated, and its most violent eruption since 1999 began, coupled with continuous earthquakes, explosions, and emissions of ash, vapour and rocks; lava flows also damaged the road between Baños and Penipe, and pyroclastic flows affected the Cusúa community and the Juntas bridge. Falling ash and rocks affected a large part of Tungurahua province, mainly the cities if Ambato, Pelileo and Baños, and the province of Chimborazo in Riobamba and Penipe. The population of several cities was evacuated along with settlements surrounding the volcano, such as Baños, Juive, Paligtagua, Bilbao and Cusua. At least 5 dead were reported, 3 injured and more than 60 disappeared; additionally thousands of hectares of cultivated land were lost due to fallen ash.

On 6 February 2008 the Tungurahua once again began to emit ash and hot rocks, obliging the authorities to forcibly evacuate local populations and declare a maximum state of alert.

In summary, the eruptive activity of the Tungurahua volcano that began in 1999 continues to be latent, with periods of great activity and others of relative calm; this has significantly affected the economy and lives of local populations.

2.4 The 2008 floods

The heavy rains that fell in the first few days of 2008, and which are considered the most significant of the last 10 years, affected at least 13 coastal and sierra provinces in Ecuador: Esmeraldas, Manabí, Guayas, El Oro, Los Ríos, Santa Elena, Cotopaxi, Bolívar, Cañar, Chimborazo, Loja, Azuay and Pichincha. As a result of this the National Government, via executive decree on 31 January 2008, declared a state of emergency in various coastal provinces; later and given that the rains continued with even greater intensity in all parts of the country, a state of emergency at national level was also declared.

Although the effects of the floods and heavy rains have not been quantified exactly, the provisional figures concerning losses in various sectors (presented by Civil Defence in a report published in the Telégrafo newspaper, 7 May 2008), suggest that at least 62 people died, a further 9 disappeared and 90.310 families were affected; additionally 12.490 families were evacuated, 3.298 of which are in temporary shelter; 22.450 houses were affected, of which 401 are completely destroyed; 185 roads were also affected and 41 were completely destroyed. The crops affected by the rains amounted to 166.174 hectares, whilst 150.956 hectares were completely destroyed.

According to the study of agricultural losses carried out by FAO, the APUs affected were mainly concerned

[10] Department of Operations, National Civil Defence Body. Report on the dangers of falling ash from the Tungurahua volcano.

with the cultivation of seasonal crops, especially rice and maize; in Guayas and Los Ríos a total of 78.881 hectares of rice was lost, which in 2007 terms amounted to about 19.3% of the total cultivated land at national level.

The same study establishes that approximately 62% of the most vulnerable households relied on these affected crops as the principal source of their living wage.

For its part the Government has estimated that around 1000 million dollars are required to repair the damage to social and productive infrastructures, and to help the victims resume their productive activities.

■ 3. THE EXPERIENCES AND LESSONS LEARNED IN RELATION TO LAND TENURE (1997-2008) ■

Reactive responses in the face of natural disasters

In general terms the intervention of the State in response to the effects of the described disasters resulting from adverse natural phenomena can be characterised as reactive: priority was given to mitigation post the adverse event, and to rehabilitative and reconstructive action. Over the1997-2008 decade this type of response was increasingly reiterated when attending to crises caused by natural disasters in Ecuador.

During the El Niño event of 1997-98 the priorities of the National Government centred on the reconstruction of physical infrastructures – mainly roads, bridges, educational institutions and health centres – as well as the installation of shelters and the delivery of food rations, victuals and sanitary teams. Action was coordinated by the Emergency Operations Committees (COE) at provincial level and implemented by Civil Defence, with the support of bodies created by presidential decree such as COPEFEN[11] and CORPECUADOR[12], these being charged with the task of reconstruction.

After the Josefina disaster attention was centred on reconstruction further to the damage caused by the release of dammed water: the construction and reconstruction of housing; building new roads and a new alternative ring road; recuperation and rehabilitation of land and crops; formulation of local development plans. To move forward with these activities, the National Government created an

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[11] COPEFEN is the entity assigned to the Presidency of the Republic, and whose objective is to coordinate technological, economic, administrative, financial and operative aspects of natural phenomena.

[12] CORPECUADOR is the autonomous entity for public law charged with the rehabilitation and reconstruction of zones affected by the El Niño phenomenon.

organism called the Emergency Work Programmes Council (CPOE), which was charged with planning and contracting the necessary studies and public works.

During periods of crisis resulting from the eruptive activity of the Tungurahua volcano since 1999, public interventions have prioritised organised responses and attention to emergencies.

Within this general framework and approach, the actions carried out by the National Government and designed to guarantee access to and legalisation of land tenure have not been of priority character. The little action that has occurred to this end has been undertaken by NGOs and the church, occasionally supported by international cooperation, civil society and the public sector.

The church took responsibility for solving the problems of people who lost their homes; to this end it established the Programme known as "Reconstruction of Hope", which involved building 419 homes and reconstructing 217 others in 13 new settlements. The required land was purchased in advance. Funds came from local and foreign donations and also government handouts, amounting to a total investment of 2 million dollars.

Source: "Hoy" newspaper, 7 January 1994.

Affinity with the land

The voluntary movement and evacuation of populations found in high-risk zones is in itself a complicated and difficult undertaking. However, if the feeling of affinity to the land and domestic animals that rural people possess is added to this, then the challenge of overcoming their resistance to abandoning these is even greater, given that they are often the only assets and livelihood that rural families possess.

Uprooting and moving to temporary shelter, or even definitive settlements, will directly affect the emotions and moods of evacuated families, amongst whom children, women and the old are the most vulnerable.

After a maximum state of alert was declared during the first eruption of the Tungurahua volcano, it was decided that the populations settled in areas of highest risk should be evacuated; in many cases this required forced evacuation of families, who had to leave their plots behind and take with them just a few possessions and animals that could be transported in army vehicles and trucks.

If there was no alternative means of moving animals from the farm, rural people either abandoned them or sold them at prices well below the normal market price, critically affecting family incomes.

Once the danger had been reduced or had passed completely, families that were installed in temporary shelters normally returned to their land during the day to tend their animals and protect their assets, assuming these were not destroyed; however, if all had been lost they would emigrate to other cities or move to where other family members would welcome them, away from the danger zone.

Political will to facilitate the resettlement process

The lack of political decisiveness amongst local authorities to activate land expropriation mechanisms, evidenced during the management of the crisis, meant that resettlement programmes for families affected by natural disasters had been delayed.

The commitments and interests of certain mayors in the Tungurahua volcano risk zone, added to the political management of the crisis, can be seen as a factor limiting access to land of certain characteristics that would allow appropriate economic reinsertion of the affected population.

The lack of political decisiveness on the part of local authorities in not applying the law that would allow municipalities to declare as a public good the land required for reconstruction, is evidence of failure in the land acquisition process as applied to resettlement of those peoples affected by the Tungurahua volcano eruption. Similarly, the fact that land acquisition was not exempted from tax is another negative aspect that adversely affected the possibilities of resettlement for local people.

Public–private cooperation

The relationship between the public and private sectors in coordinating their roles towards a common goal in times of crises caused by natural disasters should be taken as a lesson learned for future interventions.

Two interesting examples of public–private cooperation in terms of the resettlement of populations affected by the Tungurahua volcanic eruption, are: the purchase of land by FEPP and financed by the Ministry of Agriculture, Livestock, Aquaculture and Fishing (MAGAP); and the Programme for Human Resettlement managed by the Esquel Foundation with the participation of various public and private entities.

"Cooperation between government, society, the scientific community, NGOs, is the most convenient relationship for the management of disasters."[13]

The Penipe communities' Programme for Human Resettlement is the initiative of Esquel, a private non-profit foundation; this programme allowed for several scores of families from the Penipe borough to be resettled away from the volcano risk zone. These families came from the communities of Anabá, Choglontus, Puebla, El Tingo and Manzano. They were guaranteed dignified living conditions via an integrated development project. In its first phase the Programme delivered to the victims, via public lottery, 45 homes complete with potable water, electricity and sanitary systems; additionally, plots of land totalling 5100 mÇ were delivered for the purpose of starting up productive projects, 10 hectares for communal production and 3.5 hectares earmarked for an ecological protection zone.

Source: "Hoy" newspaper, 30 April 2008.

The funds earmarked by MAGAP and administered by FEPP for the acquisition of land represents an interesting example of cooperation between the public sector and NGOs linked to the church, in managing the resettlement process of families gravely affected by the eruption of the Tungurahua volcano. This has allowed interested parties to make the most of FEPP's experience and knowledge of managing the land situation, the financial resources provided by the Ecuadorian State, and the organization of community participation.

The lack of and subsequent speculation of the land

One of the collateral effects of natural disasters is the indiscriminate increase in the cost of land in areas close to where the disaster took place; this occurs as a result of the lack of availability of land and the eagerness amongst certain agricultural landowners to take advantage of the situation, on occasion sometimes supported by certain local authorities.

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[13] National Polytechnic School – No Place for Hope: Report on the Josefina Disaster – Ecuador 1993.

THE AGREEMENT MAGAP – FEPP

In August 2007 MAGAP endorsed an agreement with FEPP, the purpose of which was to resettle farmers affected by the Tungurahua volcano eruption. These farmers came from the Bilbao, Puela and El Altar communities in the Penipe province of Chimborazo, and from Cusua and Chacauco in the Pelileo borough of Tungurahua. They were given land to help with their economic recuperation; they were also supported in recuperating their animals, crops and productive infrastructure in new settlement zones, and with restarting agricultural, marine and tourist activities by means of training, technical assistance and the strengthening of their social organization.

The agreement establishes the responsibility of the State in financing the acquisition of land. FEPP supports the process of identifying and selecting the families affected, and resettling them in areas free from danger, where conditions allow them to reactivate production as well as adequately reintegrate themselves at the socio-economic level.

A total of 166 families were resettled in 381 hectares acquired through the agreement; of these, 123 families were resettled in 169.7 hectares (Chimborazo province) and 43 were resettled in 211.3 hectares (Tungurahua province). The families that benefited were from the Palitagua, Puela and Bilbao boroughs of Chimborazo and the Cusua community of Tungurahua province. The delivery of land took place at the community level.

Source: Interview with the Director of PROTIERRAS – FEPP.

The urgency and need to acquire land so as to establish definitive resettlement for affected populations (who in the majority of cases lost their land, homes and animals as a consequence of the natural disasters), resulted in unusual demand for large areas of land. Consequently the market and price for land of certain characteristics that will allow for the reactivation of the production for the affected families was altered. These alterations were reflected in the land prices to such an extent that in many cases they quintupled those found prior to the disaster. This price increase became even more evident when the State, through its public institutions, was charged with acquiring the land.

During the process of buying land for the resettlement of the population affected by the "damming" of the Josefina and the eruption of the Tungurahua volcano, the negotiation and formalisation of land purchases failed on a number of occasions, requiring several reattempts, many of which took place in confidential circumstances.

This outcome came about as a result of a lack of planning and identification of adequate land for resettlement, and the lack of application of the legislation and mechanisms that authorize the State to expropriate land for social ends, as is the case in the face of risks caused by natural phenomena.

Respect for the natural habitat

Families affected by natural disasters are displaced and obliged to abandon their place of origin, their land and their homes; this fact alone amounts to a strong psychological impact on people, especially the old and children; they are moved to sub-standard temporary shelter in schools or sports buildings away from the area of risk. This situation becomes even more critical when the victims are moved to places with geographical characteristics and cultures that are completely different from those of their place of origin.

During the eruption of the Tungurahua volcano and the declaration of a red alert, the populations of Bilbao and Sucua, situated on the slopes of the volcano in a high-risk area, were evacuated and moved to the Sucuso estate in the Pallatanga borough, 100 kilometres away from their place of origin, an inter-Andean zone. As opposed to the Andean region, the Sucuso estate has an ecosystem characterised by a hot and humid sub-tropical climate, with a very different production system and cultural characteristics.

Without a doubt this fact produced a high number of desertions amongst families living in the new settlements; they returned to their places of origin for short periods or during the day, to continue with or reinitiate productive activity on their plots, on which they had developed their agricultural activities over many years.

The lack of adequate conditions in the places where the populations affected have been resettled has caused a number of family members, especially the young and males, to emigrate to other cities and countries in search of better living conditions. This is evidenced by the decreased natural death toll of the Penipe population on the slopes of the Tungurahua volcano.

This aspect of resistance and lack of adaptation to different geographical, social and cultural conditions is reflected in the housing programmes promulgated by MIDUVI for the benefit of the victims of the Tungurahua volcano eruption. These homes are generally found in urban population centres with limited space, meaning that whilst families receive this benefit, they do not inhabit the homes permanently. Children are often left to look after the homes whilst their parents return to

their land property of origin to carry on with agricultural activity, resulting in social problems and family rupture.

Security of land as property

The resettlement of the affected population requires clarity on the part of the authorities with respect to the legal status of the affected land plots, in terms of guaranteeing title to the land in the disaster zones and in the new settlements. When public institutions send contradictory and unclear messages to the population in this regard, clarity is then required in order to facilitate the resettlement processes of those affected, and to generate confidence and credibility in official institutions and authorities at the local level.

The lack of land title is an obstacle that prevents the population affected by natural disasters and situated in areas of risk, from gaining access to public and private initiatives related to the supply of credit for the acquisition of new lands, housing, and the reactivation of their agricultural production. Neither will they have the opportunity to sell or cede to the State the property of the land affected by natural disasters.

During the eruption of the Tungurahua volcano and despite the indeterminate risk, peasants evacuated to temporary shelter nevertheless returned to their plots at least on a temporary basis, as a mechanism for guaranteeing physically the tenure of their lands. Added to this the historical sense of property and affinity that these groups have to the land, it is more difficult for them to move and accept their uprooting.

On the Sucuso estate and under the direction on CONSEP, with the support of CEBYCAM–CEM, an NGO linked to the church, around 200 people were resettled, members of 43 families from the Bilbao parish of Penipe borough in the province of Chimborazo; it was this parish that was most affected by the eruption of the Tungurahua volcano in 1999. Even though 6 years have passed and the land is now in the hands of a public body, the land of the families who still remain in the area has not been given legal title as yet; such land has been assigned on a lease basis to the municipality of Penipe, in its capacity as legal representative of those affected.

Source: CEBYCAM–CEM – Interview with Father Jaime Alvarez.

Institutional coordination and the management of information

One of the weaker aspects of intervention from groups supporting reconstruction tasks during the period 1997-2008 was the one related to the lack of institutional coordination and superposition of functions between diverse governmental organisations; this was exacerbated by the lack of a National System for Risk Management, which could regulate the different aspects of prevention and risk reduction, as well as preparation and attention to disasters and rehabilitation/reconstruction.

The military character of the post-disaster actions that were carried out by the Civil Defence, provoked a lack of effective participation on the part of the affected community; additionally there were leadership disputes amongst the local authorities, further complicating the little coordination between institutions involved in managing the effects, measures and norms applied post-disaster.

The many communication problems and the little information shared between institutions present in disaster zones was reflected in the lack of a clear and uniform message coming from the authorities responsible for the management of the crisis; this led to confusion and inadequate interpretation with respect to the judicial and economic conditions established for resettlement; in turn this meant that some of the selected beneficiaries would not accept being moved to resettlement areas, or that they could abandon them shortly after being moved. It is also necessary to point out that sometimes the structure and community culture of the affected was weak; to this end it is necessary to deepen understanding and analysis.

The creation of temporary institutions (by Executive Decree and presidential decision) for the management of emergencies – as was the case with COPEFEN and CORPECUADOR in attending to the emergency produced by the El Niño in 1998, and COPOE for the management of the Josefina crisis – did not resolve the problem of lack of institutional cooperation in the management of those emergencies.

Community organisation

Community organisation is affected after a natural disaster when community members are evacuated to shelters found in different places; this weakens community organisation, which in many cases is the guarantee that defends the rights of the community, and influences community participation in the process of resettlement. This becomes evident when families from various communities are chosen for resettlement and the process becomes quite difficult for them in terms of adapting community life to the new circumstance, and for their participation in community decisions.

The socio-cultural characteristics of rural people affected in areas of risk, is an element that is not taken into consideration when planning action before and after disasters. As a consequence of this it is necessary to deepen knowledge in relation to the characterization of rural communities, their strengths and weaknesses, and the attributes and other specifics of the area they will leave behind.

The rural family economy

The rural economy that depends on agricultural activity is seriously affected by natural disasters, given that land, homes and other assets are destroyed.

Actions post-disaster between 1997-2008 were focused on solutions to the problem of housing as a priority, leaving access to productive land as a secondary objective. In the majority of cases productive land was the only source of income for affected families. The result were that families signing up to the housing plans promulgated by MIDUVI, and who had no other means of agricultural production or any alternative employment, returned to the area of risk in order to cultivate their land, despite the danger. Whenever possible they also emigrated to other places in search of alternative subsistence for their families.

The political management of the crisis

The political focus that different governments have applied to the management of disasters between 1997-2008, manifested during the management of the crisis, provoked delays in the implementation of programmes for resettlement of the affected families. Immediately after disasters occurred, the social communications media offered substantial information and coverage, highlighting as principal actors the governmental authorities who would provide immediate and effective attention to the needs of the affected population; by contrast the actual responses did not demonstrate the same urgency and seizing of the requested actions to deal with the reality of these tragic events.

During the period 1997-2008 the Ministry of Housing and Urban Development (MIDUVI) executied a variety of rural housing programmes aimed at populations in high risk areas affected by the Tungurahua volcano eruption, in the provinces of Tungurahua and Chimborazo. In several of these programmes the houses were not occupied completely due to problems such as: delays in the delivery of housing; lack of certain basic services; the feeling of affinity that rural people had with the land, which generated a natural resistance to easy acceptance of

The "El Comercio" newspaper reported as follows on 28 May 2008 the situation as regards plans for the construction of houses for the victims of the Tungurahua volcano.
MIDUVI financed the construction of 108 homes in the Río Blanco population near Baños, so as to resettle the people of Juive Grande; there the grass has grown quickly in abandoned homes. Only a piece of paper on the front door certifies who its owners are.
In Tungurahua, 200 houses were also built in La Paz, in the borough of Pelileo. The Ministry's technicians last week initiated the supervision of paving and covering operations. These homes are not as yet inhabited.
The situation in the communities of Guano and Penipe in Chimborazo province is similar. Only 45 families from Palictahua, Calpi, Pungal de Puela, Puela, El Manzano, and Chonglontus decided to move to the population centre of Penipe. Three months ago these families were resettled in homes measuring 67 square metres, by technicians from the Ministry of Housing and Urban Development.
Nevertheless, these people do not feel secure. "We do not have any documentation that gives us guarantees as property holders. We do not know if they are going to resettle us or move us to another home," says a worried Patricia Quishpe.
In Guano, a total of 55 homes were constructed for the people of La Palestina and Ilapo. The resettlement process still has not started.

Source: "El Comercio" newspaper, 28 May 2008.


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being moved to another place, where the living conditions and characteristics were very different from those these people were normally used to.

■ 4. STRATEGIC ISSUES THAT CAN GUARANTEE AND SECURE LAND TENURE FOR GROUPS VULNERABLE TO NATURAL DISASTERS ■

The experiences and lessons learned from natural disasters and their effects on Ecuador during the period 1997-2008 allow us to recognise the importance of the present Government efforts for the development of a national system, and related policy on Natural Disasters Risk Management.
Both, the system and the policy should include operational mechanisms to guarantee access to and security of land tenure for the affected population, to which end some specific guidelines are suggested below.

4.1 General strategic guidelines

Some approaches that can help favouring land tenure security for vulnerable groups follow below.

Public Policy on Risk Management

This should be designed to ensure security of land access and land tenure for those populations that are poor and vulnerable to natural disasters. The policy should be part of a much wider political effort, within the framework of a National Policy for Risk Management.

Territorial arrangements

Undertake a territorial planning and reordering at the local level, taking "risk maps" as the initial reference point in order to plan land use, through the conciliation of the environment with development, having human beings as focal point of development.

Land information systems

Implement a geo-referenced information system

concerning rural land plots in each rural borough, with special attention given to those areas considered to be at high risk of natural phenomena; this would make available real and up-to-date information on the physical and tenure characteristics of land plots; it would also serve as a valid instrument to support municipal decision-making in the planning and use of natural resources, and the territory, as well as in the establishment of a municipal land cadastre. In this sense the PRAT[14] Project executed by MAGAP has developed an information system on rural land property (SIG–TIERRAS), implemented in eight boroughs as a national pilot project; the same project would serve as a basis for widening coverage at the national level, with emphasis placed on the boroughs situated in areas threatened by natural phenomena.

Training and information

Develop dissemination and training campaigns for vulnerable populations in areas of risk, and for local and national authorities, with respect to risk management and access to and legalisation for land tenure in natural disaster situations. The purpose is to individuate mutual commitments and count on the local information, to which everyone should have access, to facilitate concrete responses to the needs of poor rural people.

Legislation for the protection of land tenure

In agreement with the new 2008 Constitution, update the legislation with respect to land tenure in natural disaster situations, in order to guarantee access to, legalisation of and registration of land rights. Current technological advances that facilitate data collection for and maintenance of land rights records should be taken into consideration, ensuring special and priority treatment for women who are heads of household, young children, and disabled people.

Programmes for the legalisation of land tenure

Implement a programme of land legalisation in areas of risk, with priority given to the most vulnerable

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[14] Rural Land Regularization and Administration Project.


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members of the population, such as women, children, widows, orphans and indigenous communities. Promote the individual land titling processes, maintaining the communal land tenure on those lands exploited at community level.

Establishment of secure zones for the resettlement of populations

Based on adequate territorial planning move forward identification processes of secure zones for the temporary or definitive resettlement of populations affected by floods and volcanic eruptions, in territorial spaces that combine geographical and environmental characteristics similar to the original areas of risk. The aim is to achieve conditions favourable to the easy adaptation of the affected population.

Protection of the land tenure register

INDA[15], the Property Notaries and Registrars at local level, are charged by law with the responsibility and custody of registers for the legalisation and transfer of land property rights. These registers are at risk of damage from the effects of natural phenomena. For this reason they should be in digital format and accepted as support for the technical file that legalises land tenure, and for the processes involved in asserting land property rights.

Programmes for land purchase

Establishment of mechanisms that facilitate and favour the purchase of land by the State in areas of risk, so that this can be used as an asset or a natural reserve, with the aim of supporting future sustainability and access to assets in the new areas where the population will settle. These mechanisms should be backed by economic incentives for those who are either buying or selling their land to the State; additionally, technical assistance and training should be offered to support the reactivation of agricultural production of affected families.

Disaster management committees at local level

This involves the appointment of local risk management committees established by legal regulations that reinforce institutional structures at the territorial level, and include the participation of the beneficiary groups and communities; mechanisms of social control are used to ensure that the planning and execution processes for action taken before and after natural disasters are carried out transparently and efficiently, involving those

[15] National Institute of Agrarian Development.


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entities whose work is dedicated to administering land property via local experience and presence.

Genuine assessment of land value

This defines clear and transparent mechanisms for valuing land at real prices, in order to control speculation and excessive increases in the value of land in times of crises caused by natural disasters. It is also designed to facilitate and motivate the sale and expropriation of land by the State, that is, land that can be used as a place or site for definitive resettlement of affected peoples.

Single statistics and registers databases of those affected

This establishes a single database registering the victims and those affected, which facilitates the focusing and establishment of a coordinated response by the public and private sectors so as not to duplicate efforts and resources in the development of actions intended to mitigate the effects of natural disasters.

Land legalisation voucher

This prioritises access to MIDUVI's land legalisation voucher for poor families affected by the volcanic eruptions and floods, with the aim of financing the cost of land tenure registration in those plots destroyed by the effects of natural disasters. In this way families are given access to support programmes for the reactivation of agricultural production, and sources of credit for this production; the voucher also provides the legal tenure security that affected peoples require in order to reinitiate their productive activities.

Financing for land acquisition

This establishes a Land Fund whose aim is the acquisition of land property identified for the definitive resettlement of victims after a natural disaster; this should be administered by local governments in conjunction with the affected community and local actors (especially NGOs, which have the accumulated experience in other acquisition and land conflicts resolution processes) which should act as social controllers during the planning and implementation resettlement processes of the affected population.

The programmes developed by public and private entities to facilitate the purchase of land – such as the FEPP's Land Purchase Credit Fund, the BNF's Programme for Land Purchase, and the MAGAP-FEPP agreement – constitute important reference points for the development of the mechanism that facilitates land acquisition.

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Chimborazo Provincial Council – www.cpch.gov.ec
Project SICA – www.sica.gov.ec

Abbreviations and Acronyms

CAF	Corporación Andina de Fomento
(ADC)	(Andean Development Corporation)
CEPAL	Comisión Económica para América Latina y el Caribe
(ECLAC)	(Economic Commission for Latin American and the Caribbean)
CEBYCAM – CES	Centro de Desarrollo Humano en Cultura y Economía Solidaria
	(Centre for Human Development in Culture and Economic Solidarity)
COPEFEN	Unidad Coordinadora del Programa de Emergencia para afrontar Fenómenos Naturales
	(Coordinating Unit of the Emergency Programme for Natural Phenomena)
CORPECUADOR	Corporación Ejecutiva para la Reconstrucción de las Zonas Afectadas por el Fenómeno "El Niño"
	(Executive Corporation for the Reconstruction of Areas Affected by the El Niño Phenomenon)
CONSEP	Consejo Nacional De Control De Sustancias
	Estupefacientes Y Psicotropicas
	(National Council for the Control of Drugs and Psychotropic Substances)
CPOE	Consejo de Programación de Obras de Emergencia (Emergency Works Programming Council)
DIPECHO	Programa de Preparación para los Desastres ECHO de la Oficina de Ayuda Humanitaria de la Comunidad Europea
	(Programme for Disaster Preparedness (ECHO) of the European Union's Office for Humanitarian Aid)
FEPP	Fondo Ecuatoriano Populorum Progresso
	(Ecuadorian Popular Progressive Fund)
INDA	Instituto Nacional de Desarrollo Agrario
	(National Institute of Agricultural Development)
INEC	Instituto Nacional de Estadística y Censos
	(National Institute of Census and Statistics)
MAE	Ministerio del Ambiente
	(Ministry of the Environment)
MAGAP	Ministerio de Agricultura, Ganadería, Acuacultura y Pesca antes Ministerio de Agricultura y Ganadería
	(Ministry of Agriculture, Livestock, Aquaculture and Fishing)
MIDUVI	Ministerio de Desarrollo Urbano y Vivienda
	(Ministry of Housing and Urban Development)
ONG	Organismo No Gubernamental
	(Non-Governmental Organisation (NGO))
PRAT	Programa de Regularización y Administración de Tierras Rurales
	(Rural Land Regularisation and Administration Programme)
SENPLADES	National Planning and Development Secretariat
	(Secretaría Nacional de Planificación y Desarrollo)
SICA	Proyecto Servicio de Información y Censo Agropecuario
	(Service Project for Agricultural Information and Census)

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