MANAGING ENVIRONMENTAL AND DISASTER RISKS AFFECTING INFORMAL SETTLEMENTS: LESSONS FROM SOUTHERN AFRICA

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Introduction

Informal or 'spontaneous' settlements located in the cities of the developing world have long been the subject of international donor agency debates and spending (Abrams, 1966; Davidson, 1984; Van de Laar, 1980; Marcuse, 1992), academic discourse (Bond, 1996; Huchzermeyer 1999; Hindson & McCarthy 1994; Kellet & Napier 1995), civic organisation activism (Dev.Action Group 1996) and official government angst (Turner 1976).

Advocacy groups who have directed their efforts at addressing the problems of inadequate urban housing have been involved in the ongoing attempt to get governments to priorities shelter issues. Governments used to be urged to address the problem of sub-standard housing because of the sanitary threat unserviced and overcrowded settlements posed to formal residents of cities (McGranahan, Jacobi, Songsore, Surjadi & Kjellen; 2001). Subsequently the discussion was contextualised within the demographic trends of population growth, migration and urbanisation (Abrams, 1964; Gilbert and Gugler, 1992). A recurring theme for more than thirty years has been the importance of systems of land tenure, and the need to grant appropriate forms of tenure to the urban poor (Angel, 1983). More work was done around the environmental health aspects of living in unhealthy housing and an attempt was made to alert authorities to the real costs of ill health and loss of productivity that resulted from life in informal housing (WHO, 1999; Ranson, 1991). Recently work on urban poverty alleviation has demonstrated the sensitivity or vulnerability of the livelihoods of people living in poor urban circumstances (Moser, 1998; DFID, 2000), and how households attempt to cope with the challenges of living in urban areas often without official recognition or assistance, and therefore having to depend on a range of types of capital to survive. Almost completing the circle back to the Victorian concerns about the sanitary threat which is posed to wealthier residents of the global village, is the growing interest in demonstrating how unmanaged waste streams coming out of informal settlements directly affect the broader environment.

What is particularly interesting is how the discussions about informal settlements and the livelihoods of people occupying such settlements have begun to intersect with the discussions and rhetoric around environmental hazards and disaster risk management (Napier, de Bustilos, Santosa & Rubin, 2002). The attempt to combine thinking around these issues highlights issues of the location, planning, shelter, services and the nature of livelihoods of people in informal settlements. By focusing on the dire impacts of manmade and non-manmade disasters to which people in informal settlements are particularly exposed, it becomes clear that these events unfold against a background of the slow motion disaster of poverty and homelessness (Kecia, 2002).

Given that so many avenues have been tried by so many commentators and practitioners to pressure governments to address the issues faced by people living in informal settlements, and despite this the political will and voting of resources by governments and international agencies has remained unequal to the task of adequately housing urbanising populations, what can be learnt from governmental responses in situations of crisis? Is this perhaps another way to pressure governments to count the real cost of not making sufficient land and urban services available to people who need it?

This paper focuses on the South and southern African situation. What have been the responses of the authorities in South Africa when the plight of people in situations of poverty is suddenly brought to the fore by a disaster of some kind? How have the longer term planning and development arms of government combined with the departments responsible for shorter term disaster management? How have disasters and the mobilisation of government resources to cope with the impacts of disasters led to changes in the ways that government views longer term human settlement planning and design? Have the concepts of disaster risk management permeated the thinking of more departments of State than only those directly responsible for the initial crisis response? Do responses to disasters and the management of risks take into account good practice in longer term (or indeed sustainable) development? And ultimately do official responses to emergencies place the people affected in a stronger position socio-economically (i.e. do responses strengthen livelihoods or undermine them?) and lead to longer term benefits to all urban residents through improved disaster awareness and preparedness?

Vulnerability in South Africa

It is firstly necessary to give a brief description of the nature of vulnerability and the incidence of hazards in South Africa. This gives a simplified overview of the risks to which people (particularly in informal settlements) are exposed (Moor, 2001).

South Africa's population of around 40.5 million people is roughly equally divided between urban and rural areas (54% urban: 46% rural) (Statistics South Africa, 1997). It has been stated that "the poorest 40% of [South African] households (equivalent to 50% of the population) receive only 11% of total income, while the richest 10% of households (equivalent to only 7% of the population) receive over 40% of total income" (May, Budlender, Mokate, Rogerson & Stavrou; 1998). The same commentators argue that poverty is concentrated mainly in rural areas, applying the logic that: "…while 50% of the population of South Africa is rural, the rural areas contain 72% of those members of the total population who are poor" (May, Budlender, Mokate, Rogerson & Stavrou; 1998). However it is also clear that there has been a growth in absolute numbers of people living in poverty in large metropolitan areas (Merrifield, 2000).

This is also indicated by the growth in numbers of people living in urban informal settlements. According to information from the South African 1996 census, 11.6% of households lived in freestanding informal settlements, and a further 4.5% lived in shacks in the back yards of formal (normally township) houses. So over 16% of households were living in urban informal housing, and a further 18% lived in traditionally constructed houses which would be located mostly in rural areas (Statistic South Africa, 1997). These figures are only broadly indicative of exposure to risk, because the location of the settlements and the quality of the construction is not evident. Nevertheless, over a third of all households in the country can be said to be living in housing types which are potentially dangerous or unhealthy, and just under half the population is living in situations of income poverty (May, Budlender, Mokate, Rogerson & Stavrou; 1998) and therefore experiences a degree of vulnerability when it comes to recovering from shocks such as disasters and other emergencies.

Informal housing is concentrated in cities and towns, and the large cities contain high proportions of informally housed people. The situation is outlined in the following graph

which shows proportions of housing in four of South Africa's six metropolitan areas. Where figures are available, informal housing is broken down into freestanding settlements, backyard shacks, and sites and services (denoted by 'S&S').

Proportion of informal housing stock to total stock
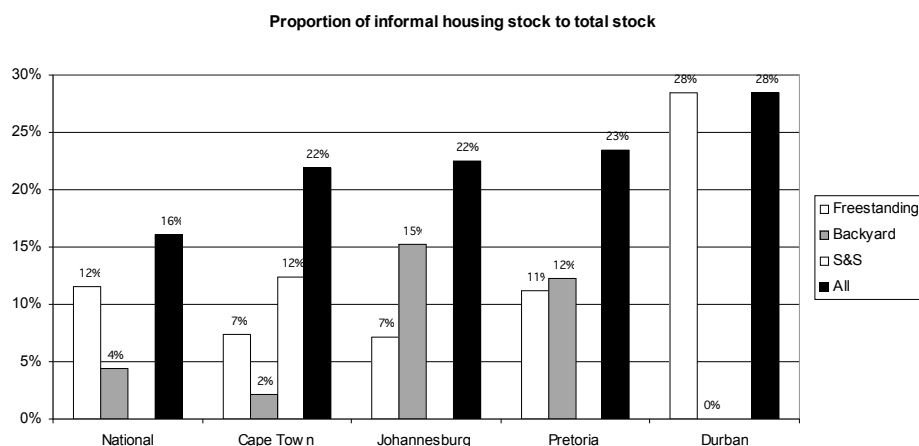
In the larger metropolitan areas, between twenty and thirty percent of the population lives in informal housing. This is a relatively high proportion of urban residents to be living in housing and locations with a high degree of risk. Not only is there a risk to residents but also to municipalities who are obliged to respond to the disasters and emergencies which arise as a result of this vulnerability.

The 12% of households living in freestanding informal housing are most often located on the far distant periphery of cities. They experience the added risks associated with lack of services and land which is often inappropriate for settlement. Vulnerability to disaster is increased as a result of certain qualities of the location, such as settlements on steep slopes (Inanda, Durban), within flood planes (Alexandra, Johannesburg), close to mine dumps (East Rand, near Johannesburg), close to heavy industrial areas (Wentworth, Durban), or even on landfill sites. Other hazards arise from the nature of the settlement itself, such as risks of rapidly spreading fire, or health risks from rising damp, poor indoor air quality, and collapsing structures. Exposure to risk can be increased (or decreased) suddenly through eviction by authorities from formal or informal housing.

Exposure to environmental health risks can also be extrapolated from levels of access to urban services. Some 12% of South Africa's population did not have access to clean water in 1999. A full 30% still depended on pit latrines and a further 14% used bucket toilets or had no access to sanitation (Statistics South Africa, 2001). In informal settlements the situation

was much worse, with a full 44% using pit latrines, 12.5% using buckets and 10% having no access to sanitation (Statistic South Africa, 2001).

Although 70% of households had access to electricity by 1999, an improvement of 6% over a four year period, the percentage of households using electricity for heating and cooking had dropped. Of the 70% of households with connections, only 53% used it for cooking, and 48% for heating. This indicates a situation in which the national electricity supplier is being successful in connecting households to the national grid, but that households are unable to afford to use the electricity supplied especially for heating and cooking which would improve indoor air quality. This is reflected in air quality indicators which show that township residents in a Gauteng industrial area who have household electricity are exposed to over six times the World Health Organisation's safety level, and those without electricity are exposed to seven times the safety limit. (Energy Research Institut, 2001; Du Pless & Landman, 2002).

These figures show that despite being classified as a country of medium human development (ranked 103rd in the world on the human development index). (UNDP, 2000), the spread of benefits and access to a safe and healthy living environment in South Africa remains patently unequal. Despite ambitious government service delivery programmes over the last eight years which have been successful at delivering services and housing to large numbers of people, the levels of disconnection and dislocation remain a product of the inherited backlog from the previous regime. In some cases, current policies and practice worsen exposure to risks by continuing to support poor location and inadequate housing quality.

Hazards and disasters in South Africa

Similar to the rest of sub-Saharan Africa, South Africa is most affected by floods and droughts. The Climate Information Project (www.cip.ogp.noaa.gov, 2002) summarises South African natural and technological disasters between 1975 and 2001. During this period, there were nine droughts and famines which affected over half a million people. There were 16 floods which led to the loss of 1 179 lives, directly affecting another 76 300 people and leaving 22 835 people homeless. Other events which had less impact were earthquakes (usually caused by collapsing mines and affecting miners) (34 deaths), land slides (34 deaths), epidemics (such as cholera outbreaks)(32 deaths), extreme temperature variations (30 deaths), wild fires (29 deaths) and wind storms (127 deaths). The rules which the keepers of this

database apply need to be borne in mind since, for example, the deaths from cholera and other outbreaks are much higher than indicated here.

Natural disasters which affect people in informal and traditional settlements most adversely are flooding, famine, drought, fires, wind storms and epidemics. As noted earlier, the creeping disasters which relate to conditions of poverty such as high infant mortality, death from HIV/AIDS, and other illnesses are also not captured in these figures.

Technological disasters, most of which do not affect informal settlement residents especially more than other residents, included transportation accidents (59 large scale events between 1975 and 2001, killing 1 551 people), industrial accidents (11 events killing 674 people), and other miscellaneous accidents which accounted for the loss of another 154 lives. The miscellaneous accidents category included fires in informal settlements and again the number of deaths from such events was vastly under reported.

The Green Paper on Disaster Management (Dept. of Const. Dev, 1998) gives a list of severe floods between 1994 and 1996 which affected the KwaZulu, Mpumalanga and Limpopo Provinces and caused R680 million of damage (approx. US$ 68 million). It also highlights the drought of 1991 and 1992 which led to the loss of 49000 agricultural jobs and 20000 non-agricultural jobs. Non-natural disasters are also mentioned including the Merriespruit Slimes Dam collapse which claimed 17 lives and caused R45 million of damages.

The Green Paper then outlines the kinds of impacts that disasters have had, such as the migration of people to urban areas (as a result of drought), in the hope of finding employment. The drafters of the Green Paper link all these factors in a scenario in which the formation of informal settlements is attributed to rurally-based disasters, the settlements themselves are hazardous to live in, and are in turn a main cause of environmental degradation:

> The migration has resulted in uncontrolled urbanisation on vacant land that is unsuitable for safe housing. In addition, the informal settlements have been subjected to the rapid spread of fires and flash floods. (The Cape Town metropolitan area and Greater Johannesburg are typical examples.) … Disasters have also resulted in environmental degradation and have increased poverty. Several areas near rivers are occupied by informal settlements without any or with only inadequate essential services. This has resulted in high levels of pollution of the rivers and the immediate

environment. On farms, poor farming practices have increased the degradation of the land (Dept. of Const. Dev, 1998).

In this scenario the linking of the causes of urbanisation to disasters and the occurrence of disasters to the types of settlements in which urbanised people first settle is perhaps not supported by the evidence, in that there are many more causes for urbanisation and vulnerability. Elsewhere we have shown that informal settlements do not have the scale of impacts commonly ascribed to them (Napier, de Bustillos, Santosa, Rubin; 2002) mainly because the levels of consumption of resources is so much smaller than for wealthier settlements. However, it is true that the impacts of such settlements are very visible locally (particularly in water courses), and that life in such settlements is hazardous at all levels.

Very importantly, the types of natural disasters that occur are linked to the climate and topography of the region:

> *Most of South Africa lies within a region of Southern Africa that* has a semi-arid to arid climate. This region is subject to climatic extremes, including droughts, floods and other meteorological (weather) phenomena. There are indications that South Africa's climate is becoming increasingly variable. As in many other areas in Africa, our vulnerability to these climatic extremes has increased over the years as a result of poverty, distorted settlement patterns due to apartheid policies and the consequent heavier exploitation of natural resources. In South Africa, threats such as droughts, floods and a growing risk of HIV and malaria are a constant drain on our country's human, economic and natural resources. For instance, an El-Nino event (a "creeping emergency") could reduce the gross value of our agricultural production by 16%, while agriculture's contribution to the gross domestic product would decrease by 11,7%. For farm workers and households dependent on farm labour for their livelihoods, the implications of this are immense. During the 1992 El Nino event, for example, some 50 000 jobs were lost in the agricultural sector alone. (Dept. of Const. Dev, 1998)

The link between hazards and the vulnerability to those hazards because of the nature and location of settlements is clearly drawn, and it is obvious that there is a relationship between development and disasters. Sound, or sustainable, development should take into account recurring disasters, that is, there should be better risk management to prevent increased exposure to disasters as a result of development, whether that is formal, state-led development or informal, popularly led development. The Green Paper also highlights the social impacts of disasters such as "trauma, depression and grief as a result of losses [which] continue for long periods after the disaster. These longer-term effects have a negative impact on community life and economic activity." (Dept. of Const. Dev, 1998).

Policy context

There are two sides to the policy context. The one is the raft of policies which shape the location and development of new settlements, and which also govern how the issue of illegal informal settlements should be addressed. The other set of policies apply mainly to the state responses to disasters when they do happen, but also make comment on avoidance.

Both the Constitution of South Africa and the housing legislation commit the government to ensuring that all South African citizens are given access to adequate housing, even if this is on a 'progressive' basis (Republic of South Africa, 1997), (in other words, the government will enable people to realise that right over time through a combination of state assistance and individual contributions). Policies and programmes to supply bulk and local infrastructure, as well as health, education and recreational facilities exist to support the formation of fully serviced new settlements. A range of other legislation is designed to ensure that government follows a logical planning and budgeting process which achieves good location as an important outcome. As has been said,

> In South Africa, the main vehicle through which communities can participate in the creation of their settlements is the Integrated Development Planning (IDP) process. The IDP process emphasises participatory municipal planning and building partnerships between local government and the community to reach common developmental goals. In theory, the IDP should enable local authorities to plan according to local needs, thereby providing more appropriate development, which in turn will lead to more efficient use of resources (Du Plessis & Landman, 2002).

The policy tools are therefore in place to ensure the timely delivery of land, services and housing to people who most need it, and therefore essentially to manage the migration of people to cities and the growth of the existing urban population. This has been backed by a housing subsidy scheme which had seen the granting of basic housing to some 1.3 million households between 1994 and 2001 (Dept. of Housing, 1999).

Despite these concerted efforts, informal settlements on badly located land continue to grow (sometimes as a strategy on the part of residents to access government housing benefits more quickly), and new formal settlements with inadequately designed housing in distant and sometimes hazardous locations continue to feature even in the formal South African landscape (Du Plessis & Landman, 2002). The situation is exacerbated by authorities which continue to evict people from informal settlements (Budlender, 2001), despite laws protecting

residents from such events, thus sometimes creating the preconditions for disaster (an issue discussed further below).

In the second area of policy, disaster management legislation is at this stage still ill defined. In 1997, the Interministerial Committee for Disaster Management was appointed by Cabinet to develop a clear policy on disaster management. The committee, chaired by the Minister of the then Department of Constitutional Development oversaw the generation of the Green Paper on Disaster Management, released in 1998. In January 1999, this was followed by the White Paper on Disaster Management. On 1 April 2000, a permanent National Disaster Management Centre was established within the Department of Provincial and Local Government. The policy framework outlined in the White Paper was reflected in the Disaster Management Bill, the first version of which was gazetted in January 2000. Identified as Bill 21 of 2002, this legislation is expected to be promulgated in 2002. (email with Holloway, 2002)

As Dr Holloway of the University of Cape Town observes about the white paper, "A key focus of this policy document was its focus on vulnerability reduction as a key strategy to minimise disaster risk, specifically with respect to poor households and communities. One key aspect of the White Paper was its emphasis on comprehensive disaster management training and community awareness strategies and programmes" (email with Holloway, 2002). Further to this, the white paper outlines the aims of policy as follows.

- Provide an enabling environment for disaster management.
- Promote proactive disaster management through risk reduction programmes.
- Improve South Africa's ability to manage emergencies or disasters and their consequences in a coordinated, efficient and effective manner.
- Promote integrated and coordinated disaster management through partnerships between different stakeholders and through cooperative relations between all spheres of government.
- Ensure that adequate financial arrangements are in place.
- Promote disaster management training and community awareness.

South African policy concurs in many of its principles with the Habitat Agenda's Global Plan of Action for Disaster prevention, mitigation and preparedness, and post-disaster rehabilitation capabilities (Section 11). However, where it is weak is in its emphasis on :
- women's active involvement;

- voluntary relocation to less disaster-prone areas;
- prevention of industrial and technological disasters; and
- post disaster support (relief, rehabilitation, reconstruction and resettlement) is not addressed in any detail. (Meiklejon, 1999)

As Dr Holloway further observes, "the diversity of threats facing rural and urban communities calls for the development of a suite of housing strategies that reduce disaster vulnerability and enhance the resilience of households to resist and recover from natural and other hazards". (email with Holloway, 2002)

Once disaster risk management legislation and mechanisms are adequately developed, the challenge will be to ensure that authorities do not exploit situations by declaring emergency circumstances which allow them to effectively forcefully remove communities from land driven more by more powerful urban interests operating in the vicinity than by a genuine risk assessment.

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