

Environment and Poverty in Southern Africa – regional linkages

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Susan Parnell¹

¹ Department of Environmental and Geographical Sciences, University of Cape Town, Private Bag Rondebosch, 7700. Parnell@enviro.uct.ac.za.

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Contents

1. Introduction

2. The relationship between poverty and environment

3. The poverty/environment matrix in Southern Africa

3.1 Poverty and environmental governance

3.2. Poverty, disasters and risk mitigation

3.3 Poverty, the environment and livelihoods

3. 4 Poverty and environmental degradation

3.5 Poverty and environmental justice and entitlement

4. Relative importance of issues

4.1 Issues for regional action

4.2 Country specific issues

4.3 Issues for national attention across the region

4.4 Trade offs between local and international development objectives

4.5 Gaps and data weakness

Executive Summary

1. Objectives

The objective of this report is to provide an overview of the linkages between poverty and environment in Southern Africa. It is neither a synopsis of environment, nor of poverty, but rather focuses on the interface and inter-relationship of these issues in the region.

2. The poverty/environment matrix

On the basis of the international literature dealing with the relationship between poverty and environment a framework of analysis is proposed. Application of the matrix highlights the differential impacts associated with a focus on either governance issues, disaster mitigation, strengthening livelihood strategies, the health and other costs of degradation or opportunities for mobilising around environmental issues.

The poverty/environment matrix in Southern Africa

	Poverty and Environmental governance	Poverty, disasters and risk Mitigation	Poverty, the environment and livelihoods	Poverty and environmental degradation	Poverty and environmental justice and entitlement
Land					
Water					
Coastal zone					
Plants					
Urbanisation					
Mining					
SUMMARY OF CRITICAL ISSUES ACROSS SECTORS					

3. Regional variation in poverty and environment

The application of the matrix to the regional scale masks the very significant variation between and within nations of Southern Africa. A portrait of some of the differences in environmental and poverty profiles is presented in the Appendices. The Bibliography gives details of the extensive empirical material available on these issues in the region.

4. Key findings

The three major points to come out of this report:

- a. Poverty and environment are inextricably connected in Southern Africa.
- b. The relationship between poverty and environment is complex, varying geographically and sectorally.
- c. Different conceptual understandings of the causes and dynamics of poverty influence the evaluation of how environment and poverty are connected. Five related but distinct perspectives are identified in the report. It is argued that they need to be simultaneously accounted for in policy and practice that aims to mainstream poverty and environment into development practice.

Other general points to emerge are:

- The most pressing issues in the poverty/environment nexus in Southern Africa are urbanisation and land tenure reform.
- Key issues at the environment/poverty interface that can only be addressed only at the regional scale are migration (and the associated issues of urbanisation and HIV/aids), water scarcity, trade agreements and debt.
- There is some national specificity of issue. The political tensions in Zimbabwe, Swaziland, Lesotho and Mozambique all directly undermine efforts to achieve sustainable development. The uniqueness of the South African reconstruction programme and the scale and diversity of its economy pose particular challenges for sustainable development. The most pressing country specific challenge is to end the thirty year long war in Angola.
- Some issues are reflected within countries across the region. The overview of issues from the poverty/environment matrix highlights the importance of each Southern African country addressing, among other issues – the following key areas:
 - land redistribution
 - devolution to local government
 - disaster mitigation
 - environmental health
 - *urban environmental problems*
 - *land tenure reform*
- The regional scale of analysis is too broad and does not allow sufficiently detailed evaluation to inform local project support.

1. Introduction

1.1 The brief

The objective of this report is to provide an overview of the linkages between poverty and environment in Southern Africa.² It is neither a synopsis of environment, nor of poverty, but rather focuses on the interface and inter-relationship of these issues in the region. The scope of this task is great, too great to do justice to the local dynamics and variations within and across 10 nations. The approach adopted in the paper is thus to establish a way of approaching the complexity of relationships embedded in the poverty/environment nexus, and to illustrate how essential it is that these issues are linked if development is to occur in Southern Africa.

The report is structured as follows. Section 2 provides a conceptual basis for analysing the interface between poverty and environment in Southern Africa. Section 3 details specific trends in the region using the framework of a poverty/environment matrix. Section 4 highlights important overall issues, noting specific challenges. The imperative of disaggregating the regional experiences is highlighted in Appendix 1 that provides an overview of the varied poverty and environmental landscapes within the region. This perspective of regional diversity is underscored by the statistical profiles of poverty and environment that are set out in Appendix 2. A bibliography of material consulted is also included.

1.2 The conceptual approach

The interface between poverty and environment is widely recognised as particularly important in Southern Africa, one of the world's most vulnerable natural and social regions. Yet curiously little overt conceptual attention has been directed at understanding the relationship between the poor and their environment in Southern Africa, or at targeting development resources at the poverty/environment interface. This paper thus begins with a wider conceptual discussion on the environment/poverty nexus (Section 2). The objective is not to review or to critique the burgeoning empirical literature on the subject of the relationship between poverty and environment (see bibliography), but rather to develop a framework for analysing the issues in the Southern African region in a more systematic fashion. To this end, a poverty/environment matrix is proposed as a structure to guide the regional assessment (Figure 1).

1.3 Sources

Addressing the environment/poverty interface assumes the availability of data on the relevant topics. In this region, which lacks a strong intellectual or scientific community of active researchers, information is not always available. Research is often dated or is reliant on poor quality primary data. Nevertheless, a fairly comprehensive *State of Environment Report* exists for Southern Africa. Further substantial information exists on aspects of the bio-physical and built environments, and gaps in this knowledge base are slowly being addressed through initiatives such as the IPCC and the World Commission of Dams. Still, understanding of the natural environment and its challenges for people is

² Defined as Angola, Malawi, Zambia, Zimbabwe, Mozambique, Botswana, Lesotho, Namibia, Swaziland and South Africa.

best described as patchy and incomplete. The position for socio-economic data on the region is worse, especially outside of South Africa where the information is weak. Figures on resource dependence and consumption, environmental diseases and vulnerability to disasters is not typically collected in any country. Comparative profiles of poverty are non-existent, although some countries, for example Lesotho, are embarking on poverty monitoring programmes as part of the donor poverty reduction strategy paper (PRSP) effort to secure international development targets (see Background Paper in this series). The lack of systematic data is especially problematic given the enormous diversity within the region (see Appendix 1). Appendix 2 provides what comparative statistical information is available on environment and poverty across the region.

The discussion of specific sectors and issues (Section 3) relies on published secondary and 'grey' material from donors, NGOs and governments. The nature of these sources means that comparisons across the region are not possible. The text therefore provides case studies and illustrative material on the core themes identified in the poverty/environment matrix.

2. The relationship between poverty and environment

There was a time, pre Brundtland, when the debate over the relationship between poverty and environment could be reduced to the assertion that the poor caused environmental damage and the counter assertion that it was the poor who bore the brunt of negative environmental management. The international consensus that was built around sustainable development and the Rio Declaration has overtaken this polarised debate and drawn attention to local forces that shape poverty and environmental degradation. The field is now much more sophisticated. It is also more fragmented. While in the post-Rio climate it is common place to agree that poverty and environment are linked, there is still no consensus on the precise nature of their relationship. Where there is broad agreement, it is that the problems of poverty and environment cannot be addressed in isolation and that their resolution is interconnected. Donors and development agencies seeking to act on such sentiments, by linking support for poverty reduction and environmental enhancement, are faced with a number of choices on the best way to achieve this integration.

What follows is a synopsis of five of the major 'schools' of thought on how poverty and environment are connected in development. The starting point is poverty and its relationship to environment, rather than environment and its relationship to poverty. The distinction is a matter of emphasis. There is no implied opposition in the five 'schools' presented here. Rather, the differential understanding and emphasis of each position is drawn out to highlight the complex trends in the Southern African region. The drawing together of the different perspectives into a poverty/environment matrix (Figure 1) is based on the assumption that, especially in Southern Africa, the interface between poverty and environmental issues is multifaceted, requiring diverse responses and multiple kinds of interventions. The range of emphasis presented within the matrix also draws attention to the varied opportunities for donors to mainstream poverty reduction and environment into developmental support. An advantage of using the matrix at the regional scale is that recurring themes and special issues is highlighted (see Section 4).

Figure 1: The poverty/environment matrix in Southern Africa

	Poverty and Environmental governance	Poverty, disasters and risk mitigation	Poverty, the environment and livelihoods	Poverty and environmental degradation	Poverty and environmental justice and entitlement
Land					
Water					
Coastal zone					
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SUMMARY OF CRITICAL ISSUES ACROSS SECTORS					

2.1 Governance

The notion of promoting governance regimes that require the state, civil society and the private sector to collaboratively allocate, regulate and manage resources has dominated development thinking since the 1980s. There is now consensus that improving governance in Southern Africa is essential to reducing poverty. Many poverty reduction strategies are now framed by the logic of promoting good governance, although these national programmes have not typically prioritised environmental concerns. Yet, 'governance' is an approach to development that lends itself to the mainstreaming of environmental concerns. Governance implies the involvement of all affected parties and, at least in theory, leaves open the question of where ultimately authority for the resource is located. Good governance implies both greater efficiency and more extensive participation in access to and the management of resources.

There are two important scales at which the governance structures impact on environment/poverty interface in Southern Africa. The first is the international scale, where nation states and NGOs have participated in a series of global forums that have crucial impact in the region. As signatories to Rio and Istanbul, and as participants in the IPCC and other international environmental agreements, such as the United Nations Framework Convention on Climate Change, many of the countries in Southern Africa have begun to develop environment and poverty policies and programmes. In practice the shifting of donor support to developments that are environmentally sustainable has been a crucial aspect of the reorientation. In practical terms the current international governance framework manifests itself in Southern Africa primarily through the establishment of Local Agenda 21 programmes, PSRPs, and environment and poverty related international development targets, rather than through meeting of Kyoto type targets on resource consumption and pollution regulation (see other Background Papers and Appendix 1).

The second scale at which the trend towards more inclusive governance has influenced environment/poverty debates in the region is at the sub-national or municipal scale. The devolution of responsibilities to the local scale is a move widely supported by environmentalists and proponents of democracy. However, the legacy of colonialism, apartheid and war in Southern Africa means that the system of local government is either not operational (as in Angola or Lesotho) or it is a fragile institution with limited capacity to deal with even the most basic of demands (as in Zambia, Zimbabwe or South Africa). Notwithstanding serious constraints within municipalities or districts, there are notable changes in local governance arrangements that herald a new era of integrated environmental/poverty management.

The way the governance debate has unfolded around mainstreaming poverty and environment has varied between urban and rural areas. In rural contexts the focus on a partnership between communities and the state has seen the evolution of an approach known as 'community based natural resource management' (CBNRM). In urban areas, where the community is more difficult to define, there is a move to more participatory and integrated planning that links spatial, environmental and infrastructural concerns to each other and to the budget. In both cases there has been a conceptual shift associated with the rise of the 'new institutionalists'. New institutionalists focus on the importance of partnerships and flexible government in holistic planning. They also emphasise land and other environmental rights of access and governance (see Section 2.5). Typical examples of these rights include access to productive land or potable water.

As the case study discussion in Section 3 shows, the focus on devolution of government and the promotion of participatory governance has created significant opportunities, especially in rural areas, to link poverty reduction efforts to environmentally sustainable resource management. Within the donor community a governance framework recognises the symbiotic relationship between economic, social and environmental issues (e.g. 1992 *World Development Report*). Governance is thus an especially useful approach to understanding the ongoing, everyday relationship between poverty and environment. It is less useful for dealing with extreme environmental events that regularly thrust the people of Southern Africa into poverty.

2.2 Disasters, vulnerability and risk mitigation

Much of the popular interest in global environmental change stems from the apparent escalation of earthquakes, floods, and other extreme hazard events or disasters. Southern Africa has had more than its fair share of drought and flood over the last decade, and the poor have been the major victims of these destructive 'natural' events. In fact 'disasters' such as floods or famine are rarely entirely natural. Increasing population pressure, urbanisation, inadequate settlement regulation and anthropogenic climate change can all contribute to the incidence of disasters.

In order to understand how the poor are likely to be affected by increasing environmental variability and the subsequent *disasters*, the concepts of *vulnerability* and *risk* are invoked within a school of action research concerned with *mitigation* of risk (Box 1).

Box 1: Key concepts associated with poverty, environment and disasters

Disasters – cumulative or large scale negative impact on the livelihood of vulnerable people due to an extreme natural event

Vulnerability – social processes or conditions that predispose individuals or groups to shock making them unable to maintain their ability to meet their own basic needs

Risk - a combination of vulnerability and hazard. Risk is reduced when vulnerability is reduced

Mitigation – action taken to reduce risk either through reducing vulnerability or in forecasting hazards.

The vulnerability/risk/mitigation perspective provides clear indications for policy interventions that are simultaneously focussed on the poor and the environment. The approach helps mainstream environmental and poverty concerns, simultaneously dealing with issues of global climate change and the impacts of human behaviour. Although focus is on extreme or unusual events the mitigation emphasis locates the perspective firmly within the development ambit and draws explicit attention to the relationship between poverty and environment.

The root causes and dynamic pressures that create vulnerability are identified in a 'pressure and release' model developed by Blaike *et.al.* First they identify root causes that lie in the political, economic and social system that may appear to be unrelated to the disaster, but reflect the power in a society and the ability of vulnerable groups to prepare for and respond to disasters. Next, they point to the dynamic pressures of processes that expose vulnerable people to risk. Population pressure, structural adjustment programmes or mining activity would be examples of dynamic pressures in the model. As a result of the root causes and the dynamic conditions vulnerable people are forced to live in unsafe conditions, such as on riverbanks or work in dangerous jobs. When these unsafe places become exposed to hazards, disasters occur. Although much is known about unsafe conditions, little attention has been given to the more complex understanding of the link between root causes and the people who live or work in unsafe places. By their nature the root causes involve large scale, complex power relationships that are difficult to address in specific policy terms. The dynamic processes of the model, while still concerned with broad issues, offer more opportunities for tangible interventions. Blaike *et.al's* model identifies population growth, urbanisation, international financial interventions, land degradation, global environmental change and war as key causes of vulnerability. These dynamic pressures have informed our discussion of issues in the poverty/environment matrix.

2.3 Livelihoods

Unlike the risk/mitigation perspective in which the environment is generally depicted as a threat, the environmental livelihoods perspective embraces the opportunities afforded by natural resources and highlights the social conditions required to maximise these opportunities. The starting point for a livelihood approach to development is the relationships within a household and within the community. These micro-level relationships enable the poor to access resources, and provide the lens through which they

relate to their wider neighbourhoods, the broader economy and natural systems. In the absence of adequate employment or social safety nets, the livelihood perspective has gained considerable attention as a means of reducing poverty by assisting the poor to build on their own assets.

Within the broad framework of a livelihoods approach a number of different perspectives have emerged, ranging from Chamber's original conception of rural livelihood, to Moser's work on assets and vulnerability, to Beall and Kanji on urban livelihoods. What these writers share is a focus on how the poor organise and maximise their opportunities in non-monetary ways. As such, the livelihoods perspective provides a useful tool for linking environment and poverty and has been a major vehicle for innovation in both theory and practice.

Implicitly and explicitly livelihood analyses of poverty focus on natural and social resources. This perspective offers a guide on how to mainstream poverty and environment concerns within the development agenda. Of the five 'schools' of thought outlined here it has become the dominant one, informing international donor, national government and NGO initiatives. Within the environmental domain livelihood analyses emphasise how access to or distribution of properly managed, protected and controlled natural resources can augment livelihood strategies. In the Southern African context there is now an extensive literature on rural livelihoods, but there is less on urban livelihoods and less still on the impact of migration either as a livelihood strategy or as a factor impacting on livelihoods (see Section 4).

One problem with the livelihood perspective is that its' micro focus tends to understate the formal economy and the wider political economy. Global issues addressed directly by the disaster or governance approaches become less important by default, as the emphasis moves to micro social processes. There is also the danger in using the livelihoods approach that the environment is depicted only as a resource to be more effectively exploited by participatory and inclusive processes. Sadly, the relationship between environment and poverty in Southern Africa is rarely benign.

2.4 Degradation, war and disease

A perspective that is more grounded in the structural constraints of how the poor experience the environment in negative ways has recently reasserted itself. New authors (see UNDP and EC initiative on Environment and Poverty launched this year) are less optimistic about the poverty/environment nexus than the livelihood school. The most recent writing on the environment/poverty interface revisits traditional arguments about environmental degradation and disease. Satterthwaite and his colleagues at the IIED have, as part of a drive to shift the focus from issues of physical degradation to the social costs of unsustainable consumption and production, have developed rigorous frameworks to analyse the environmental performance of cities and the environmental health of residents. Central to their work are the various scales (household, neighbourhood, city, region and globe) of pollutants and disease vectors.

Unlike earlier writing, the ‘new degradationists’ locate their arguments about how the poor are disproportionately exposed to environmental hazards and degradation in a wider social, moral and political context that embraces the notion of human and environmental rights. In this way the new focus links to questions of environmental justice and environmental entitlement. Given the violent and destructive history of the Southern African region, this approach more readily acknowledges the role of war and civil conflict in environmental destruction and disease. For the purposes of the regional analysis we have separated the issues of justice and entitlement into a separate ‘school’ in the poverty/environment matrix.

2.5 Environmental Justice

While it is quite clear that the poor bear the costs of unsustainable and unjust environmental practices, the notion of the poor as victims is partial. Increasingly, environmental degradation, pollution and inappropriate land use are becoming the platform from which the poor are mobilising. The notion of environmental justice, or the mobilisation for social justice in environmental matters, refers to the wellbeing and rights of past and future generations. It is a movement that emphasises the overarching structures of inequality, for example in water rights, the location of waste and other hazards. Opposition to degradation has, alongside the struggle to improve livelihood opportunities, become a new political vehicle of the poor of Southern Africa (see Section 3).

Internationally, there is growing attention to the *environmental entitlement* movement. This movement emphasise the rights of the poor to good quality and healthy neighbourhoods that are free of hazards and pollutants. Central to this perspective is the recognition of *environmental degradation* and the prevalence of *environmental disease*, especially in urban areas. A related, although vastly under-researched area is that of the brutal social and environmental consequences of war and the associated struggle for peace.

Environment in other words has become a social movement. In the regional context there are two important related concepts of *environmental racism* (originally a US term that referred to the disproportional environmental costs borne by black Americans – a concept with obvious resonance in Southern Africa), and *indigenous environmental knowledge* (the recognition and valuing of traditional African knowledge systems). Increased donor support for environmental issues has seen a reconfiguration of NGOs and CBOs around environmental concerns. As a result organised civil society now articulates calls for the improvements in living conditions, the reduction of inequality and the promotion of justice in ‘environmental’ language.

2.6 Poverty/Environment matrix

These five ‘schools of thought’ on the relationship between environment and poverty that are described above permeate current development policy and practice. They offer related but differential perspectives on the priorities for action. In seeking to establish the major trends in environment and poverty across the region each of the emphases has something

to contribute. They are thus integrated for purposes of analysis within the poverty/environment matrix (Figure 1).

The poverty environment matrix provides a tool for assessing the interface between poverty and environment that acknowledges the range of environmental elements, the complex experiences of poverty and the multi-factoral nature of the relationship between environment and poverty. In this paper it is applied to the regional scale, but it could as readily be used for national or local analyses.

Defining environment is a notoriously difficult task. In Southern Africa some elements of the environment, such as land regulation or water scarcity, are critical to the regions' well being and future development. Others, such as forests or industrial pollutants, are less significant issues in Southern African than they are in other regions. The poverty/environment matrix includes issues of particular relevance to poverty in Southern Africa (see vertical axis). Each environmental 'issue' is addressed in the thematic sub-sections (governance, disasters, livelihoods, degradation and justice) that make up the horizontal dimension of the matrix. Section 3 is thus structured around the matrix to highlight the interfaces between the experiences of poverty and different aspects of the environment.

3 The poverty environment matrix in Southern Africa

The following section works through the Poverty/Environment matrix (Figure 1). Obviously this is not a comprehensive discussion of each of the issues. The objective is to provide an overview of the region and to be able to assess the dominant trends the poverty/environment nexus in Southern Africa. Instead of the conventional environmental approach of dealing with elements such as land or water, the sections are structured around concepts associated in the first instance with poverty, namely governance, vulnerability, livelihoods, degradation and mobilisation.

3.1 Poverty and environmental governance in Southern Africa

As indicated in Section 2, environmental governance in Southern Africa is being negotiated at different scales, although these scales of organisational and institutional transformation do not necessarily relate to each other (see other Background Papers for details). The overall picture is of a region that is receptive to reform and increasing participation by civil society in the areas of environment and poverty reduction, but is also bound by vested interests, and highly unequal social, political and economic relationships (see Appendix 1 and 2).

- Internationally the most significant agreements for the governance of environment in the region are the areas of aid and trade agreements, that shape the economies of some of the poorest nations in the world. What literature exists on this macro-economic question for Southern Africa is generally related to poverty, rather than to environment, although questions of privatisation, trade liberalisation, foreign direct investment and fiscal policy impact directly on water, crop production, urban development and other aspects of the environment.

- Regionally, SADC is concerned with economic affairs, but not overtly with poverty. SADC has a limited environmental capacity, with dedicated staff for water, agriculture, forestry and other core environmental concerns. Currently SADC appears to lack the capacity to identify and influence the regional environment/poverty agenda in any holistic way. According to Rowlands, the tendency is for SADC to prioritise national autonomy at the expense of regional integration. The very divergent interests and realities in the region, the ongoing dominance of South Africa in the organisation, and the special interests of local elites all explain the relatively poor performance of SADC in reaching regional consensus on economic and natural resource issues. However, there are some sectoral initiatives, such as the Southern African Development Community Action Plan that have been implemented. On issues of water, energy and urbanisation the region's future is clearly interconnected.
- Several Southern African nations are addressing both their poverty and environment policies (see other Background Papers and Appendix 1). Key sectoral poverty/environment issues such as urbanisation, land tenure and water scarcity are also under scrutiny. In South Africa and Mozambique especially, but also in other countries, the last decade has seen massive policy reform in the areas of poverty and environment. A notable exception to this pattern is Angola.
- At the sub-national scale the devolution of power and responsibility dominates the Southern African environmental governance debates. The move towards municipal and district scale responsibility for both environment and poverty has generated substantial excitement, but also much concern over the financial viability and human capacity to execute new policy frameworks. Given the constraints, it would seem that urban areas have most to gain from devolution.
- In local terms the shift towards more participatory governance of natural resources and the embracing of community partnerships with government and the private sector has been the most visible governance shift in Southern Africa over the past decade. The South African transition is critical in this respect. Positive impacts of this focus on participation and partnership in environmental management have been most obvious in rural areas. The impact of the increasing application of environmental law on local dynamics must also be acknowledged.

Governance issues vary not only according to scale, but also importantly according to sector. Using the Poverty/environment matrix the following points emerge.

3.1.1 Land

There is an overarching governance concern in the land sector. It is not land redistribution, although this moral issue of settlers returning land to indigenous peoples is of serious import. This is especially the case in reversing the gross overcrowding that characterises the communal areas of Zimbabwe and the reserves of Namibia and South Africa. In Zimbabwe, although 10 per cent of agricultural land comes from resettlement, this is not sufficient to meet demand for productive land. The consequences of this failure are erosion and land degradation as well as social turmoil and political uncertainty, factors that in turn influence the macro economic environment. Likewise, in South Africa the land restitution process has not been able to create a class of self-sufficient small-scale farmers. So, because many of the poor continue to live on traditionally regulated land holdings, and not redistributed commercial land, land

restitution alone is not sufficient to meet the needs of the rural poor. It must be accompanied by tenure reform.

Land tenure refers to the conditions under which land is held, used and transacted. Land tenure reform seeks to increase the security under which the poor hold land. There is a considerable debate in the literature over the desirability of fully private or individual tenure, with several authors promoting the maintenance of some form of rationalised traditional or collective tenure. Others stress the imperatives of enhancing transferability, eroding the distinction between the traditional and modern systems and making access more transparent under individualised private tenure. Despite the debate about what form of tenure is the most appropriate for the environment and for the poor, it is clear that the current situation is undesirable. Insecurity of tenure results not only in abuse of the land, but in inadequate access to land, especially for women.

The problem of traditional land tenure is increasingly an urban problem. As cities expand onto traditional land local authorities do not plan peri-urban settlement. Servicing of the urban sprawl and the associated brown environmental problems have emerged as critical issues in Zambia, Swaziland, Lesotho and parts of South Africa.

Despite the acknowledged positive implications of tenure reform for both environment and poverty reduction, there is general reticence of governments to institute the changes. Adams, Siabanda and Turner describe the land tenure reform dilemma in Zimbabwe in the following terms:

An 'across-the-board' conversion of subservient statutory right (e.g. permits to occupy) into more secure property rights would not be possible. Overlapping rights and boundary disputes have to be resolved before land rights can be confirmed. Tenure reform must grapple with overcrowding in the Communal Areas and overlapping rights, as well as cases of exploitation by traditional leaders, officials and politicians and extortion 'warlords'. Finally, resources for establishing and/or revitalising land administration have to be procured from increasingly hard-pressed government budgets.

In neighbouring Botswana the imperatives of accessing and maintaining productive land have had the catalytic effect required to overcome obstacles to tenure reform. Matuba, from the Botswana Ministry of Land and Housing describes the imperatives thus:

There have been some evolutionary changes over the years because of population increase and environmental changes. For example, arable landholders did not always have exclusive rights to their land. They enjoyed exclusive occupation and the use of land only during ploughing season. After that other users could also utilise the land for other uses such as grazing their livestock. These other rights over arable land were therefore partly private and partly communal. Over the years land holders fenced their land and used it exclusively throughout the year. This one of the evolutionary changes that did not wait for official action.

In Botswana, tenure reform has shifted land from the control of traditional authorities to Land Boards who have specified responsibilities under both customary and common law. While the process has not been without problems, it appears to have eased access to land. The new land management structure also underpins the practice of Community Based

Natural Resource management, pioneered in Botswana but adopted in almost every part of the region.

3.1.2 Water

As a precious and scarce resource, water is at the centre of a number of governance innovations and threats. Namibia is already a nation of water shortage. South Africa will soon suffer water stress and in less than thirty years will face absolute water shortages, as will Lesotho. Even Mozambique and Zimbabwe will soon face shortages. Increasing population and escalating consumption will see rising demand across the region. Urbanisation is an important force in increasing piped water demand. In South Africa domestic consumption is predicted to treble by 2010. The spectre of violent conflict, even war, over water competition makes the regional governance of this resource's exploitation critical.

We will deal with three aspects of the governance of water here. First the challenges of river catchment management. Second, the governance of dams and finally the co-management of fresh water fishing.

a) Rivers

There are 15 river basins in the SADC region, 11 of these are shared water courses. Not all of the rivers have agreements over their use and development, although SADC has a Protocol on Shared Watercourse Systems. The real danger is that richer nations, especially South Africa, will dominate and exploiting the water resources of poorer nations (see Appendix 1).

b) Dams

Demand for urban industrial water often implies highly investment intensive management (pipelines, dams) which are not readily compatible with the water needs of residents within the catchment. The case of the Zambesi Basin is germane. Swatuk argues that the people who use the basin are largely subsistence farmers who stand to gain little from the export of hydro power and who may well lose from debt-driven gains associated with water transfers to industrial centres. Some authors on the Highlands Water Scheme provide counter arguments to this, where Lesotho's economy has grown dramatically, largely due to the U.S. \$7.5 bn project. However, with one of the highest levels of inequality in the region it is unclear if Lesotho's poor have gained much from this Highland induced growth (see Appendix 1).

The question of dams and the environment/poverty interface is hotly contested. Southern Africa is one of the least industrialised regions in the world, and the increase in formal employment hinges on a stable supply of water. This implies dams and piped water. Dams are a major issue in the Southern African context, where rainfall variability, water scarcity and the demand for transferred water to industrial hubs that were located far from water sources because they were based on mining (Gauteng and the Copperbelt), makes reliable water supply costly and investment dependent. While a case can be made for dam construction in the interests of economic growth and urban job creation, the experience to date suggests that dams generally impact negatively on the rural poor. Experiences from Lesotho Highlands and the Cabora Bassa Dams, among others, suggest that social issues

are inadequately incorporated into the planning and execution of the dams and that these concerns persist into the ongoing running of the projects. Part of the problem in establishing effective and equitable governance structures is that dams impact on populations across borders and their most severe consequences are felt beyond the construction phase.

If environmental concerns are underplayed by the engineers and financiers, attitudes to the importance of social issues are worse. Resettlement and inadequate compensation, poor social impact assessment procedures relating to livelihood disruption, insufficient community involvement and failure to attend to the longer term costs of debt and flow release are some of the main issues of concern evident in the fairly substantial literature on dams. The recently released World Commission on Dams used the Kariba Dam as one of its 10 global case studies to review the impact of large dams. Overall the dam received positive assessment, but not for its impact on the poor. The Kariba case (Box 2) underscores the imperative of establishing temporally sustainable governance structures that go beyond initial community consultations and monetary allocations to deal with longer term ramifications be they environmental, financial or political.

Box 2: Selected impacts of resettlement associated with the Kariba Dam

The pre-project planning document (1951) estimated the number of people to be resettled at 29,000. In the Kariba 1955 project document, there is little detail on the resettlement programme, except for a budget allocation of 4 million pounds that was to be spent on this programme. A decision was made that each of the governments of Zambia and Zimbabwe would have responsibility for managing resettlement in their country. This decision meant that the resettlement was removed from the main project. The number of people to be resettled increased from 29,000 to 57,000. The budget for resettlement remained unchanged...The resettlement plan aroused the Tsonga anger and caused strong anti-government feelings. Some were prepared to fight and even die for their land...Actual resettlement took place in 1957 and 1958. It was reported that the people to be resettled 'were treated like animals.'...Much of the new land was of poor quality and easily erodable. Also no recession agriculture was possible due to the far distance to the river, only one crop per year could be produced...In later years many more problems occurred, caused by lack of water, breakdown of wells and other basic infrastructure... For a dam to be considered effective, the benefits from the dam must be enjoyed by those displaced by the dam. This is one area in which the stakeholders found Kariba to have failed the test of development effectiveness because the Tsonga who were displaced by the dam benefited little from the project.

c) Freshwater fishing

The governance of water resources in Southern Africa extends to freshwater fish. Unlike the management of dams, which remains top down and highly centralised, the management of fishing is increasingly locally based and dependent on access-regulating mechanisms to prevent overexploitation. Co-management, or the sharing of responsibilities between communities and the state is now the preferred approach, not least because it is perceived as being more cost effective. Thus the 1990s have seen a

proliferation of co-managed fishing initiatives. In terms of the transfer of skills, the approach appears to have much merit. However, co-management is not an unproblematic approach. Already a number of lessons can be extracted.

Writing about inshore fishing in Zambia, Malasha points out that the programmes work more effectively when an already cohesive group (ethnically or kinship linked) of fishers is involved. In practice co-management arrangements are often externally initiated and provide new platforms for political organisation and even conflict. In the case of Kariba fishing, co-management has not only impacted on the target group (of artisanal fishers), but has spilled over to other users and affected parties including chiefs. Related experiences can be found in Malawi where tension emerged between elected representatives of a co-management structure and hereditary leaders. In that country the legitimacy of the fishing management hinged in part on whether it was a government led initiative or a community inspired strategy. Even more important was the extent to which the Beach Village Committees (the co-management structure) were able to incorporate the existing power and authority of the chiefs. The overall message is clear – vested interests and established political power cannot be ignored in fine sounding sentiments about community generated, bottom up development.

A further cautionary word on the depiction of co-management as the panacea of mainstreaming environment and poverty comes from recent research on co-management in SADC countries. Jul-Larsen's concerns relate less to the implementation politics of co-management programmes than to their effectiveness in either stemming overexploitation or in regulating equitable access to fish resources. Indeed he suggests that with respect to freshwater fishing in the region it makes little or no difference to pressure on fishing if the waters are managed by a top down agency or a local co-management arrangement. Rather, what dictates pressure on fish resources are external factors, such as alternative livelihood options. In times of economic stress the number of fishers is likely to increase as the poor turn to exploiting natural resources for survival. Ironically, co-management governance strategies, introduced to assist the poor, may make it more difficult for outsiders to fish by creating a form of social exclusion. Co-management thus appears to be a micro governance approach that must be implemented cautiously, with full cognisance of the wider political economy.

3.1.3.Coastal zone

If co-management is the micro level innovation in governance, coastal zone management is a meso scale intervention. Mozambique, Namibia and now South Africa have all launched integrated Coastal Zone Management (CZM) initiatives. Of the region's coastal nations only Angola has yet to do the same. Although there is much in common in the CZM policies of the three countries, there are some differences.

- Namibia's CZM gives special attention to the integration of management structures and procedures. The emphasis is on developing appropriate management instruments, information needs, capacity building and the co-ordination of sectors involved in the coast. The developmental impacts are understood to accrue through improved efficiencies and better co-ordination.
- In Mozambique, the CZM was designed to link directly to other national development strategies. Interventions are based on sector specific coastal action (e.g. into fishing,

transport or tourism) that are designed to meet general development objectives, as well as to protect the coast. The key to sustainable development is through enhanced co-ordination and integration.

- In South Africa the CZM programme is more overtly committed to the interface between environment and poverty than in the other two cases. It also adopts an area based strategy for implementation. A deliberate attempt is made in the White Paper to give economic value to coastal resources and to ensure that there is equitable access and that the distribution of coastal assets reaches all South Africans.

It is early days yet to evaluate the impact of the various CZM approaches, but the introduction of these inter-sectoral, inter-governmental frameworks that aim to include coastal communities is an ambitious and interesting initiative in mainstreaming environment and poverty in development.

3.1.4 Plants

It is impossible to untangle the impact of the governance of plants for sustainable development on the poor without careful reflection of both micro and macro realities. The forces shaping commercial agriculture and the subsistence sector are very different. The latter has been very much influenced by co-management arrangements, changes in land tenure and the crisis over traditional leadership (especially in Lesotho and Swaziland).

But the poor are not all subsistence farmers. Global agreements on endangered species, ISO 14000, international regulations on trade (for example on fruit exports), currency fluctuations and northern consumer fashion all directly affect commercial agricultural production in Southern Africa. Farm-work, albeit seasonal and badly paid, is a major form of employment for rural people and residents of small towns. At the meso scale legislation on land, labour and water all determine the opportunities for agriculture and forestry. Marketing agreements, drought and subsidy programmes are also important in determining where and what will be grown. South Africa in particular has a history of subsidising unsustainable commercial farming. At the micro level, commercial farmer security (in South Africa and Zimbabwe, but also Mozambique and Angola) is an issue shaping the agricultural landscape and the associated jobs.

3.1.5 Urban

The complexity of the urban system has made the question of governance the key item on the policy agenda for poverty reduction and environmental protection. The endorsement of principles of sustainable development by many national governments has compounded the challenge to city authorities and residents who are already battling to cope with the contradictory demands associated with ensuring economic growth, service provision, preventing social exclusion and maintaining and local democracy. Across the region, urban poverty has become a markedly more significant political agenda. Urbanisation, the negative impact of structural adjustment and the spread of HIV/Aids are among the factors that have witnessed a resurgence of interest and concern over urban poverty in Southern Africa. At least in terms of rhetoric, sustainable development and inclusive governance are the frames for improving the lives of the urban poor. In practice, however, the situation is fraught. Local government is an empty shell in Lesotho and Swaziland. In South Africa the cost of political transition has exhausted the staff of even the functional municipalities. Civil society has not yet managed to reconstitute itself as

the powerful force that it was during the anti-apartheid years. There is, moreover, a gap between the predominately green agendas of many official agencies and the agendas of community groups, who do not necessarily use the language of environment (green or brown), even when they are mobilising around questions of water, waste and pollution.

3.1.6 Minerals

Southern Africa is mineral rich (see Appendix 2). South Africa, especially, enjoys the greatest mineral wealth per square kilometre anywhere in the world. The social engineering required to extract this mineral wealth is without doubt one of the most significant causes of poverty in the entire region. The gold sector remains a significant employer of unskilled and semi-skilled labour, and provides a substantial proportion of migrant work. These factors, plus the ongoing use of low grade coal as the primary energy source in the region, make mining regulation and control a critical issue for both poverty and environment. Because the development of the sector generally falls within the control of the private sector, the governance issues differ from those of many other natural resources. Currently the South African government holds over 70 per cent of mineral rights, a control it wishes to maintain 'for the national good'. While national government seeks to deregulate the industry and promote alternative energy sources, the international market is ultimately more significant than national policy changes in determining the extent and nature of mining in the region.

3.2. Poverty, disasters and risk mitigation in Southern Africa

From the discussion in 3.1, 3.3; 3.4 and 3.5 it is clear that regardless of the environmental sector selected, there are issues of governance, opportunities for livelihood improvement, threats of degradation and possibilities for political mobilisation. Failure to grasp the challenges associated with each of these issues compounds the probability and severity of disasters occurring when extreme natural events happen. Poor people are most vulnerable to these hazards and the experience of a hazard may induce poverty and increase vulnerability. The other major variable in this equation is climate change.

Although there is a growing literature on the different aspects of climate change, and care has been given to identifying the human impacts of increased variability in rainfall and temperature, there is only sketchy attention to what the projected changes may mean for the poor. Figure 2 adapts a summary of climate change for South Africa to make the relationship between poverty and climate clearer. It would obviously be advantageous to develop this evaluation for particular places and specified hazards using the model set out in Section 2.2 with more detailed information about the governance structures, the livelihood strategies and the other vulnerabilities of the community. Obviously the most critical aspect of potential climate change is the prospect of increases flooding and drought. Recent experiences in Zimbabwe (in the 1998 drought) and Mozambique (in the 2000 floods) provide ample evidence of the costs of such events to the poor.

The management of hazards through social development rather than just the introduction of more sophisticated forecasting, is a relatively new idea in Southern Africa. Assessments of flooding and drought as well as other less extreme events (such as the incidence of fire in informal settlements) in the region has been done by organisations

such as CARE and the Disaster Mitigation Project. Their work offers pro-active strategies for action at the poverty/environment interface. Significantly much of the advice on how to mitigate disasters is grounded in a livelihood approach.

Figure 2: Potential impacts of climate change in South Africa on poor people

Sector	Issues of concern	Potential impact on the poor
Water	<ul style="list-style-type: none"> • Higher temperatures would reduce surface availability • Increasing rainfall variability 	<ul style="list-style-type: none"> • Decreased availability of (free) surface water and increased dependence on (costly) infrastructure for reliable water supply • <i>Increasing drought/flood episodes</i>
Disease	<ul style="list-style-type: none"> • Increase in diseases associate with temperature e.g. malaria 	<ul style="list-style-type: none"> • Decrease life expectancy • Reduce productivity
Livestock	<ul style="list-style-type: none"> • Higher carbon dioxide will lead to less protein in the grass • Less rainfall would lead to less animal production 	<ul style="list-style-type: none"> • Reduced opportunities for small scale agricultural livelihoods
Forestry	<ul style="list-style-type: none"> • Limited potential to expand forestry and to sell the sink potential under the joint implementation system 	<ul style="list-style-type: none"> • Reduce debt, releasing resources for social development
Fisheries	<ul style="list-style-type: none"> • Changes in ocean currents causes shifts in fish resources 	<ul style="list-style-type: none"> • Job loss in the formal fishing industry and reduction of small scale fishing opportunities
Biodiversity	<ul style="list-style-type: none"> • Rapid changes of climate expected over the next century could undermine the rich plant diversity, especially of the Cape Floristic region 	<ul style="list-style-type: none"> • Loss of jobs associated with eco tourism • Conflict between development and conservation agendas
Coastal zone	<ul style="list-style-type: none"> • Sea level increase of 3-5mm per year may threaten infrastructure (not a significant threat in SA). 	<ul style="list-style-type: none"> • Increased maintenance costs for urban areas, detracting from social expenditure

3.3 Poverty, the environment and livelihoods in Southern Africa

3.3.1 Land

- In achieving the twin objective of poverty reduction and environmental sustainability land tenure is a key lever for establishing better livelihood strategies in rural communities. Quan makes the case for the centrality of the land question in securing better livelihoods in Southern Africa (Box 3). His call is substantiated in a rich body

of empirical studies detailing the opportunities, constraints and contradictions of land based livelihood strategies across the region.

Box 3: Land and Livelihoods

Since land is a primary means of both subsistence and income generation in rural economies, access to land, and security of land rights, are of primary concern to the eradication of poverty. In rural areas, land is a basic livelihood asset, the principle form of natural capital from which people produce food and earn a living. Access to land enables family labour to be put to productive use in farming, generates a source of food, and provides a supplementary source of livelihoods for rural workers and the urban poor. The grazing of livestock on extensive rangelands is a basic livelihood activity for pastoralists and access to pasture land is also important to supplement the livelihoods of arable farmers. Gathering fruit, leaves and woods from common lands is an important and regular source of income for women and poorer households, as well as constituting a coping strategy for the wider population in times of drought and famine. Land can be loaned, rented or sold in times of hardship, and thereby provides some financial security. At the same time, as a heritable asset, land is the basis for the wealth and future of rural generations.

Notwithstanding the advances made in integrating poverty and environmental policies through the livelihood framework, there are several problems with land based livelihoods in Southern Africa:

- Not all land is suitable for subsistence agriculture (especially in Namibia, Botswana and the drier parts of South Africa)
- War disrupts all livelihood strategies
- Many urbanised people no longer have automatic access to land
- Traditional authorities in some areas abuse the distribution of land rights
- Women do not have equal access to traditional land anywhere in the region
- Land restitution in Zimbabwe, Namibia and South Africa has not restored land to all claimants
- Overcrowding of land is eroding livelihood opportunities (e.g. in Malawi)
- There is tension between migrants and permanent rural dwellers in areas of land shortage (in Zambia and Zimbabwe)

3.3.2 Water

Not all livelihood strategies are productive, legal or in the general interest. Water scarcity and the low level of safe potable water available in the region (see Appendix 1 and 2) has created the demand for water vending. The sale of water to poor residents who have no piped water at inflated prices is one of the most common illegal livelihood strategies, especially in peri-urban areas. Unregulated water sales compound the spread of disease. Protection of water markets in some instances (e.g. Winterveld north of Pretoria) underpins extortion. Pirate piping of water in peri-urban areas increases runoff, which in areas with septic tanks can pollute the ground water. The region is replete with examples of such bad practice.

3.3.3.Coastal zone

Coastal environments in Southern Africa have the capacity to enhance the livelihoods of the poor. Rich natural (especially fish and forestry) resources, untapped economic opportunity associated with tourism, off shore mining and coastal urban development are all areas with scope for better utilisation by the poor. But in many coastal areas the social capital of communities has been eroded by war (Angola and Mozambique), migrancy (Mozambique and South Africa), physical isolation (Namibia and Angola) and political disenfranchisement. Poor education, the denigration of indigenous knowledge and the marginalisation of women from leadership position undermines the intellectual capital of communities all along the coast, thereby eroding their ability to generate new livelihood strategies.

3.3.4 Plants

In areas of poor soil and water resources, without access to capital and technology the poor are often innovative in finding ways to enhance output. Reporting on a particularly deprived region in Zambia, Mwambazi notes the importance of recognising the multiple livelihood strategies adopted within communities. Livelihood opportunities are differentiated socially. The poorest people focus on survival not innovation. Survival may take a variety of forms, from migration to working for someone else for a short period. In Malawi this a common strategy known as *Ganyu*. The low wages associated with *Ganyu* (often locking households into a cycle of food insecurity) confirms that just because the poor resort to a particular livelihood strategy, it may not be just or an efficient response to need.

Gender is a clear area of differentiation in livelihood responses. Women's involvement in food production, harvesting of fruit and the collection of wood and herbs makes them an obvious target for measures designed to enhance the environmental sustainability of subsistence practices. CAMPFIRE, the Zimbabwe NGO that promotes rural livelihood support, focuses its efforts on women - despite the patriarchal culture that makes men the natural resource decision makers. By building the leadership capacity among women CAMPFIRE has bolstered managerial skills and technical skills and has included women's views in decisions about CAMPFIRE investments. The result has been the supplementation of rural household's incomes and the improvement of rural infrastructure to alleviate the burden of work.

3.3.5 Urban

The natural environment is generally ignored as a source for livelihood enhancement in cities and towns (although a network for development and research on urban agriculture exists for Southern Africa). Yet urban agriculture programmes have been shown to not only enhance access to food, but also to offer opportunities for community organisation. Urban agriculture and greening projects enhance food production, reducing wage dependence. Livelihood strategies such as urban agriculture have gained prominence because of the negative impact of structural adjustment programmes on the urban poor. A survey of Harare residents on the impact of economic structural adjustments on food availability conducted by Potts highlighted the negative impact on household nutrition. Rising participation in the informal sector and the escalation of dependence on rural connections were some of the livelihood responses to ESAPs. Other natural resource

based strategies include illegal settlement in river beds where there is access to land and water, and the cutting down of trees for fuel. Waste picking is a further livelihood strategy of direct relevance to the poverty/environment interface. Almost every city in the region has examples of these practices.

3.3.6 Minerals

Mining offers only very limited livelihood opportunities. In Namibia, however, efforts are being made to organise small-scale miners generally and women specifically to use mining as a subsistence activity.

The mining industry in Southern Africa has traditionally depended on migrant labour, and migrancy is now a feature of labour in the region. The pattern of splitting households between urban and rural places continues to shape the livelihood strategies of the poor even in the post-mining epoch. Although migration is clearly dysfunctional in many ways, Potts makes the argument that the poor utilise migrant remittances to increase agricultural livelihoods in positive ways. Bozolli and others suggest that spreading the family between places may be a device for minimising risk and maximising opportunity. Migrancy in other words is itself a multi-faceted livelihood strategy.

3.4 Poverty and environmental degradation in Southern Africa

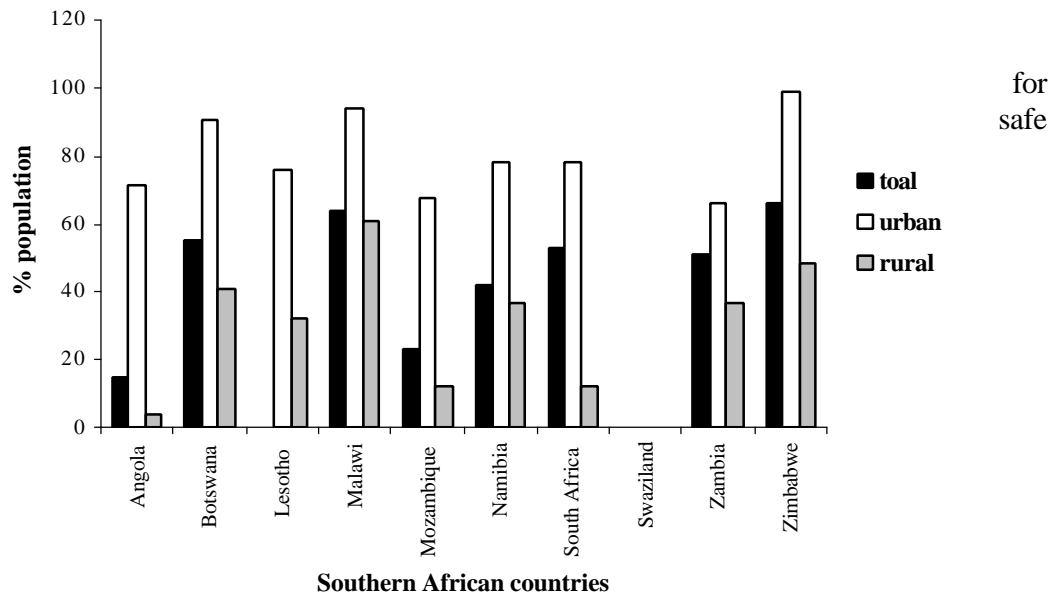
It is clear that the poor contribute to environmental degradation in Southern Africa. Overgrazing, litter, unsustainable water consumption and pollution are not the exclusive preserve of the rich (although the scale of the contribution of the wealthy reflects their greater consumption). There is a substantial record of the causal relationship between degradation and the activities (direct or indirect) of the poor. This is not the focus of this section. Rather, the less well-documented impact of degradation on the quality of life of the poor is stressed.

3.4.1 Land

Degradation of the productive capacity of land does not only occur through overgrazing, inappropriate crop systems or the citing of urban settlements for the poor on (toxic) landfill. Although each of these practices are repeated throughout the region. Poor mobility, and lack of capital for restoration means that the poor continue to live in degraded environments. One aspect of land degradation meriting special attention is land mines, the legacy of civil conflict in Zimbabwe, Mozambique and Angola. Land mines cost only \$3 each to lay, but \$1,000 each to clear. They litter the countryside, limiting access or inflicting enormous pain and suffering to victims. In Mozambique the clearance of land mines is estimated to generate a 3.6% increase in agricultural production. The recent floods in that country have retarded the clearance programme, because the location of the mines (which had been carefully mapped prior to clearance) are no longer clear because they have been swept away by the water.

3.4.2 Water

Reducing the incidence of water borne disease resulting from the lack of potable water is a well documented priority of international development. In Southern Africa the figure



water and sanitation are among the lowest in the world. See above graph of access to sanitation between 1993 and 1996 that is taken from Appendix 1 and 2.

3.4.3. Coastal zone

The degradation of the coast is most acute in urban areas. Urban growth, industrial pollution and the discharge of human waste affect all coastal residents. The problem is worst in South Africa, because of the extensive industrial output of the country. However, Mozambique's Assistant Director of Marine Affairs reminds us of the short-sightedness of de-linking poverty and environment:

Land-based activities causing pollution in coastal eco-systems include the use of agricultural pesticides and agrochemical, dams and untreated domestic and industrial waste, all of which pour into the inshore waters of the coastal cities with negative effects on health, the fishing industry and tourism.

In Mozambique, where 100,000 people (4 percent of the population) are totally dependant on fish for their livelihood, untreated sewerage is already reducing the quality of fish for human consumption.

3.4.4 Plants

Typically the literature identifies the reduction in agricultural output as one of the signs of environmental degradation. Hoffman and Todd, reviewing South African land degradation confirm that areas of communal tenure are significantly more degraded than commercial land. All other things being equal then, output of areas occupied by the poor in Southern Africa are lower than those owned by wealthier private land holders. But there are also examples of degradation experienced by the poor in agriculturally and plant rich regions such as the Western Cape. Some reasons for this pattern include:

- Meeting the standards of ISO 14000 for grapes has been used by wine farmers to evict unskilled farm workers and mechanise production.
- To increase output the fruit industry uses extensive pesticides, negatively affecting worker health. South Africa reports 200 cases annually, but pesticide poisoning is estimated to be 20 times higher than this.

- As a fire tolerant ecosystem fynbos burns regularly, putting informal settlements at risk.
- Protection of one of the ecological hot spots of the world means that the City Council spends less of its parks budget investing in neighbourhoods like Manenburg or Joe Slovo, some of the most blighted plant-free neighbourhoods in South Africa, than it does on protecting plants on 'the mountain'.

3.4.5 Urban

Recognition of the extent of disease resulting from environmental pollution and the inadequate provision of basic services to the poor who live in urban areas underscores the revived focus on degradation and disease. Water, waste, air and traffic induced environmental health problems are the hallmark of Southern African cities. Urban growth and the escalation of urban poverty are associated with residential and industrial environmental pollution. In a survey of health risks in informal manufacturing in one Soweto suburb, Pick found that 29 percent reported inappropriate lighting, 92 percent reported bad ventilation, 10 percent identified excessive noise, significant numbers responded that they failed to wear the required protective clothing for the task leaving him to conclude that workers in the informal sector, while they take some measure to protect themselves, are exposed to health and safety risk

3.4.6 Minerals

Asbestosis and lung disease, alcoholism, unusually high levels of HIV infection and physical disability are among the documented hazards associated with working in the harsh and unforgiving environment of the mining sector.

3.5 Poverty and environmental justice in Southern Africa

3.5.1 Land

The fight against apartheid homelands was not generally seen as a battle for environmental justice. Yet, the overcrowding of African people into limited land reserves has undoubtedly caused some the worst environmental degradation in the region. The battle for restitution and the demand for rural development is, among other things, a fight for environmental justice. Similar arguments could be made for Zimbabwe and Namibia.

3.5.2 Water

The struggle over the relocation of Tsonga people (Section 3.1.2) highlighted the fact that community opposition does not necessarily secure environmental justice. Especially when the opposition involves tackling large-scale, internationally financed mega projects such as a dam, it is difficult for community opposition to succeed. The Environmental Justice Networking Forum has sought to expose how the Kariba dam experience, where the poor were relocated and marginalised, is echoed across the region when dams are built, albeit on a smaller scale.

Not all struggles for environmental justice are initiated by the community. Working for Water is a flagship programme of the South African government. It is founded on the principles of environmental justice. It is committed to creating jobs and combating

poverty through public works programmes that seek to sustainable control alien species thereby increasing available water. Its objectives are clear (Box 4).

Box 4: Objectives of Working for Water

Through the control of alien plants, we shall:

- Enhance water security
- Improve the ecological integrity of natural systems
- Invest in the most marginalised sectors on South Africa and enhance their quality of life through job creation
- Restore productive potential to the land
- Develop economic benefits from wood, land, water and trained people.

3.5.3.Coastal zone

Some of the most impressive environmental political struggles have been forged when conventional 'green' issues are linked to issues of social justice. One example of this cited by Cock in her work on environmental justice in South Africa. In a joint action of the Dolphin Action and Protection Group and the Food and Allied Workers Union, Taiwanese fishermen were challenged on the conditions of workers and the problem of gill netting of Tuna through a single campaign.

3.5.4 Plants

Medicinal plant consumption and production has been an ongoing battle in which environmental traditionalists fought with African traditional healers over endangered species and their trade. The healers' 'struggle' has involved getting establishment recognition for their craft, while scientists have fought to secure renewable sources of over-traded species. Mobilisation around the muti-trade has fostered a productive dialogue between traditional healers and the academic and medical communities of benefit to all. Muti has also been a lead activity in the recognition of indigenous knowledge. Indigenous knowledge is increasingly recognised as an integral part of sustainable social and economic development.

3.5.5 Urban

In urban areas community mobilisation around 'brown agenda' issues of water and sanitation, waste and pollution are increasingly understood as environmental struggles (Box 5). The politics of water, electricity and transport are inherently about the use, costing and quality of resources. Traditionally, poor communities in Southern Africa have opposed 'green style' politics. Even at international meetings such as the African Forum on urban poverty there was suspicion about the conservationists agenda superseding the social agenda if sustainable development were accepted.

3.5.6 Minerals

There are a number of landmark cases of the poor organising to oppose the environmental injustices inflicted by mining. In South Africa the Thor Chemical mercury case and the asbestos mine compensation claims provide example of communities utilising protective national and international environmental law to secure justice. Mine related pollution, a common feature of Southern African landscapes, is spurring a new movement of urban

and rural environmental organisation. The experiences of Meadowlands activists in Johannesburg, as sketched by Beall, Crankshaw and Parnell, is indicative of a new form of environmental politics (Box 5).

Box 5: Environmental organisation and mobilisation in a poor African township

In May 2000 Meadowlands, one of the more established former African townships situated to the south west of Johannesburg and lying coterminous with Soweto, won one of the country's prestigious Green Trust Awards. The Community Projects Award was given to the Meadowlands Environmental Group (MEG) to honour its successful struggle with the Durban Roodepoort Deep goldmine over the company's refusal to take responsibility for the dust emissions from a disused mine dump which juxtaposes this established working-class residential area. The problem of dust blowing from the dump dates back to when the mine started operating in the early 1930s. From the time Meadowlands was established as part of Greater Soweto in the mid-1950s, therefore, poor air quality was a problem. A local newspaper reporting on the award described the environmental struggle thus:

It was a typical David-and-Goliath stand-off: on the one hand the Durban Roodepoort Deep goldmine, part of the global mining industry and a mainstay of the economy; on the other, the community of Meadowlands in Soweto, whose inhabitants were dumped in 1954 at the unattractive end of a huge mine. The main issue was a mine dump. On windy days, Meadowlands was almost obscured by blowing dust. The residents suffered from sinus problems, bronchitis and asthma. Washing hung out to dry turned grey and had to be rewashed. The weight of the dust settling in ceilings sometimes caused the ceilings to collapse. Special expensive detergents were required to remove the fine dust from furniture. During the windy month of August each year, the local school had to close because of the heavy dust. The caretaker used 100 brooms in one year, and the doors of the school had to be boarded shut with newspaper stuffed in the crevices (Mail and Guardian, 2.8.00: 18).

After years of complaints falling on deaf ears or of the mining company making inappropriate efforts to abate the problem in isolation from the community the residents of Meadowlands took up the issue as a major campaign (Sithole et al, 1998). The catalyst was a workshop held by the NGO Group for Environmental Monitoring (GEM) in 1996. They wanted to explore the potential for a waste management project in Meadowlands but the residents had other ideas. As Moeketsi Lephuting, the Meadowlands environmental activist explained, 'We could not do anything on waste management, as our overriding priority was taming the mine dump' (Mail and Guardian, 2.8.00:18). GEM assisted members of the community in setting up MEG, which was also supported by two other NGOs, the Legal Resources Centre and Enviro Green which offered training in personal effectiveness and management as well as environmental rehabilitation. After a year of getting nowhere despite letters to politicians and marches on the mining house and the Johannesburg Stock Exchange, MEG went to the media. Following extensive publicity the head office of Durban Roodepoort Deep was ready to talk in October 1997. The following month an environmental agency had been contracted to cover the dump with vegetation and maintain it for a period of two years. By simply greening the mine dump the dust levels in Meadowlands were reduced by over 90 per cent and respiratory infections declined.

4. Relative importance of issues

From the above discussion it should be clear that no single approach to the interface between poverty and environment is adequate on its own. The analysis presented in this paper suggests that improved governance, the support of disaster mitigation and improved livelihoods, plus greater attention to issues of environmental health and degradation are all elements of pro-active sustainable development strategies. The struggle for environmental justice is likely to become the social movement through which the environment/poverty nexus is advanced.

Poverty and environment do not connect in abstract ways. Looking at the range of issues generated by working through the matrix it is clear that there are some concrete areas that impact on both poverty and environment in critical ways (Figure 3). *The two most important overall issues in the Southern African poverty/environment nexus (outside of the intangible global economic system) are land tenure reform and urbanisation.*

Figure 3: Cross cutting issues within the poverty/environment matrix

	Poverty and Environmental governance	Poverty, disasters and mitigation	Poverty, the environment and livelihoods	Poverty and environmental degradation	Poverty and environmental justice and entitlement
SUMMARY OF CRITICAL ISSUES ACROSS SECTORS	<ul style="list-style-type: none"> • Intergovernmental devolution • Privatisation • Land tenure • International trade regulation 	<ul style="list-style-type: none"> • Urbanisation • War • Climate variability and extreme events 	<ul style="list-style-type: none"> • Land tenure • Gender • Capacity / skills /social capital 	<ul style="list-style-type: none"> • Land tenure • Urbanisation • Capacity/ civil society organisation 	<ul style="list-style-type: none"> • Land restitution • Environmental health • Brown agenda issues, especially in urban areas

4.1 Issues for regional action

Neither poverty nor environment respect political boundaries. *Key issues at the environment/poverty interface that can only be addressed only at the regional scale are migration (and the associated issues of urbanisation and HIV/aids), water scarcity, trade agreements and debt.*

4.2 Country specific issues

Each nation faces specific political challenges in addressing issues of poverty and environment. The tensions in Zimbabwe, Swaziland, Lesotho and Mozambique all directly undermine efforts to achieve sustainable development. The specificity of the South African reconstruction programme and the scale and diversity of its economy pose specific challenges for sustainable development. *The most pressing country specific challenge is to end the thirty year long war in Angola.*

4.3 Issues for national attention across the region

Without national commitment to linking poverty reduction and environmental policies little will be achieved. The overview of issues from the poverty/environment matrix (Figure 3) highlights the importance of each Southern African country addressing, among other issues – the following key areas:

- land redistribution
- devolution to local government
- disaster mitigation
- environmental health
- *urban environmental problems*
- *land tenure reform*

4.4 Trade off between local and international development objectives

This aspect of the brief has not been adequately addressed (see Section 4.5), other than to note the contradictory role of international finance in promoting sustainable development at the local scale. There are a number of areas where there are certainly potential conflicts and trade-offs in the environment/poverty nexus of Southern Africa. The area of genetic modification, the selling off of carbon sinks, the subsidisation of public transport and other clean energy based investments, the establishment of more equitable trade agreements to name a few.

4.5 Gaps and data weakness

The general paucity of reliable comparative material was identified as a problem in Section 1.3. There are further gaps and weaknesses that stem from such a brief and superficial regional overview of a complex topic. The balance between the countries is uneven. In the drive to prevent dominating the document with South African examples, the countries' real importance is underplayed. Information on Angola is especially thin. Appendix 1 and 2 provide some indication of the enormous diversity of the region and the imperative of pursuing the environment/poverty nexus at a less grand scale.

Although they could readily be accommodated in the framework developed in this report some issues are especially poorly represented. They include:

- Trade and finance agreements and their impact on local environments
- Urban environmental problems
- Migration, refugees and the environment
- HIV and environment/poverty nexus
- War and the environment
- Gender and the environment