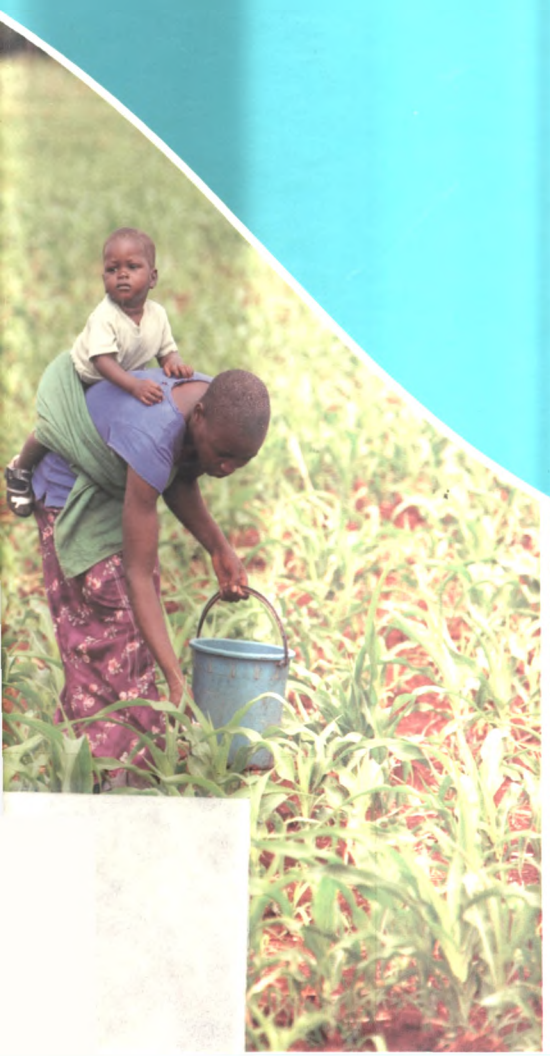
# Understanding Poverty, Promoting Wellbeing and Sustainable Development

## A sample survey of 16 districts of Zimbabwe



eanette Manjengwa, Sara Feresu and Admos Chimhowu

**Contact details**
Institute of Environmental Studies,
2nd Floor, Computer Science Building,
University of Zimbabwe,
PO Box MP 167, Mount Pleasant,
Harare,
Zimbabwe.

Telephone No.: +263 (0)4 302 603
Fax No.: +263 (0)4 332 853
E-mail address: secretary@ies.uz.ac.zw
Internet: http: www.ies.ac.zw

Cover photographs: T. Mukwazhi, K. Kujinga

**ISBN number: 978-0-7974-51-80-3**
**EAN: 9780797451803**

**Sable Press, Harare**

**November 2012**

## About the Contributors

Lead author and editor

**Jeanette Manjengwa.** Dr Manjengwa is a senior lecturer and Deputy Director of the Institute of Environmental Studies, University of Zimbabwe. She is the Principal Investigator for the Moving Zimbabwe Forward: An Evidence-Based Policy Dialogue Initiative.

**Admos Chimhowu.** Dr Chimhowu is a lecturer in the Institute of Development Policy and Management, School of Environment and Development, University of Manchester. He is an Associate Director of the Brooks World Poverty Institute which collaborated in the Moving Zimbabwe Forward Policy Dialogue Initiative.

**Dominica Chingarande.** Dr Chingarande is a lecturer in the Sociology Department, Faculty of Social Studies, University of Zimbabwe. She carried out qualitative analysis of the Moving Zimbabwe Forward Wellbeing and Poverty study data.

**Sarah Feresu.** Professor Feresu is the Director of the Institute of Environmental Studies, University of Zimbabwe. She provided administrative support to the poverty survey and is co-editor of the report.

**Rudo Gaidzanwa.** Professor Gaidzanwa is the Dean of the Faculty of Social Studies, University of Zimbabwe. She is a social scientist and gender specialist.

**Ibrahim Kasirye.** Dr Kasirye is a Senior Research Fellow and the Head of the Sectoral Department at the Economic Policy Research Centre (EPRC), Makerere University, Uganda.

**Krasposy Kujinga.** Mr Kujinga is a Doctor of Philosophy student at the Okavango Research Institute, University of Botswana.

**Ngonidzashe Mararike.** Ms Mararike is the managing consultant for Black Crystal Environmental Consultants based in Harare. She was the Knowledge Manager for the Moving Zimbabwe Forward Policy Dialogue Initiative.

**Wiseman Masunda.** Mr Masunda works in the Sociology Department, Faculty of Social Studies, University of Zimbabwe.

**Collen Matema.** Mr Matema is a Doctor of Philosophy student with the Centre for Applied Social Sciences (CASS), University of Zimbabwe.

**Admire Nyamwanza.** Mr Nyamwanza is a Doctor of Philosophy student with the Brooks World Poverty Institute, University of Manchester, UK.

**Charity Nyelele.** Ms Nyelele is a Masters of Philosophy student at the Institute of Environmental Studies, University of Zimbabwe, registered in the Department of Geography and Environmental Science.

# Chapter Eight

## Environment, Natural Resources and Poverty Reduction: Capturing and Sharing the Gains of Natural Resources Exploitation

*Jeanette Manjengwa*

### Main messages

- *Natural resources have great potential to move people out of poverty. They can be used commercially as well as for household consumption and food security.*
- *Zimbabwe has one of the highest endowments of natural resources, such as gold, diamonds and platinum, which can fuel economic development and wealth creation.*
- *Economic hardships and poverty have pushed more people to over-use and misuse the environment and natural resources causing significant degradation.*
- *Natural resources must be utilised and managed in a careful manner to be sustainable.*
- *Agricultural productivity should be enhanced, while maintaining ecosystems integrity and environmental quality.*

### Introduction

On a global scale, Zimbabwe has one of the highest endowments of natural resources (Chasi, 2012). The government's Medium Term Plan 2011-2015 (GoZ, 2011) points out that natural resources serve as a cornerstone for economic development and wealth creation. The country's economy relies heavily on natural resources, with the mining sector accounting for about 50 per cent of the country's exports (GoZ, 2011). The agricultural resource base supports the livelihoods of at least 70 per cent of the population in the rural areas (GoZ, 2011) who depend directly on the productivity of the environment for their livelihoods. For the rural poor, this dependence is nearly absolute, to the extent that they depend on subsistence agriculture and the extraction and harvesting of natural resources from their environment (Frost, 2001). Indeed, it is these abundant natural resources which provide opportunities for a wide range of livelihood strategies which are invaluable for the survival of households, especially during times of shocks and stresses when the environment remains the only safety net for most of the vulnerable rural communities. Thus the environment and natural resources must be an integral part of Zimbabwe's poverty reduction strategy.

This Chapter identifies the various natural resources that are used for household food consumption, livelihoods, and commercially. There is potential for these resources to be used more effectively and the Chapter explores how natural resources can be exploited in a more commercial manner, and be made more lucrative by value addition, so as to be more profitable and effective at raising incomes.

One of the ways in which natural resources can be used and managed more effectively is through community empowerment initiatives. This Chapter looks at some of these initiatives, such as, community share ownership trusts, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) and natural product enterprises. These initiatives have important multiplier effects on food security, income generation and job creation. The Chapter explores issues around gold panning, putting forward suggestions for a sustainable gold panning approach that can benefit poor communities, while maintaining environmental quality. Besides valuable minerals, the Chapter also looks at a range of wild foods that are essential for food security and improved nutrition, as well as having significant economic potential to raise incomes of the poor.

The deterioration of the economy over the past twelve years has driven more Zimbabweans to rely on nature and natural goods than ever before. Globally poverty normally drives those that can access nature to 'mine' resources with little regard to what may happen in the future. In Zimbabwe, poverty is driving environmental degradation and the two are locked together in a downward cycle that is widening (Feresu, 2010). Cliffe (1988) argued that ecological problems in Zimbabwe can only be addressed when poverty is eliminated. The Chapter therefore begins with looking at the links between environment, natural resources and poverty and examines Zimbabwe's progress

towards sustainable development.

The MZF study investigated issues of environmental management because for resources to be sustainable their use has to be regulated and properly managed. The Chapter also looks at environmental awareness and knowledge, and implementation of natural resource rules and regulations. It ends with a number of policy suggestions of how the environment and natural resource base can contribute towards poverty reduction and sustainable development.

## The link between environment and poverty

Zimbabwe has espoused sustainable development which integrates human development and environmental conservation. Despite the popularity of this concept, worldwide there is evidence that poor people are getting poorer and the environment continues to be degraded. The linkages between poverty and environment are complex and context specific. Environmental degradation in Zimbabwe is being driven by poverty which has its roots in the economic and conservation dualism of colonial policies. This was manifested in the unequal racial distribution of land resulting in overpopulation in the communal areas most of which have low agro-ecological potential on one hand, and under utilisation of land in the commercial farming lands. Inequitable access to land was perceived by the current government as being at the heart of poverty, food insecurity and lack of development in Zimbabwe, which observed that sustainable development is not possible without agrarian reform (GoZ 2003). Although the land reform programme has assisted in decongesting the overcrowded communal areas, which resettled of over 244,000 households since 1980, this has not kept pace with natural population increases in communal areas, and consequently decongestion has been negligible (Hanlon *et al.*,2012).

## Progress towards sustainable development in Zimbabwe

For sustainable development to occur it has been suggested that the poor are not the problem but are the solution (Chambers 1988). The poor must be able to sustainably manage and benefit from the rich and abundant natural resources to address poverty and promote inclusive growth in Zimbabwe. Poverty reduction and sustainable development can be achieved through effective implementation of the sound and progressive environmental policy framework, namely the National Environmental Policy and Strategies, and the Environmental Management Act [Chapter 20:27] and its regulations, together with other national legislation such as the Indigenization and Empowerment Act.

The Ministry of Environment and Natural Resource Management's slogan is 'The environment is everybody's responsibility' and one of the principles of the Environmental Management Act is that development must be socially, environmentally and economically sustainable. Another of the Environmental Management Act's progressive provisions is the recognition of environmental rights as human rights and principles of environmental management. Section 4 (1) (c) states that 'it is everyone's right to participate in sustainable management and use of natural resources while promoting justifiable economic and social development'. Traditional leaders are the custodians of environmental management at local level.

**Table 8.1: Agricultural conservation in rural areas**

| Agricultural conservation measure | Number of rural households | % of total rural households |
|---|---|---|
| Application of manure | 594 | 27.3 |
| Mulching | 124 | 6.2 |
| Crop rotation | 427 | 21.2 |
| Intercropping | 143 | 7.1 |
| Permaculture | 22 | 1.1 |
| Use of nitrogen fixing plants | 21 | 1.0 |
| Contour ridging | 331 | 16.5 |
| Terracing | 14 | 0.7 |
| Afforestation (planting trees) | 25 | 1.2 |
| Gully reclamation | 27 | 1.3 |
| Fallowing | 71 | 3.5 |

Zimbabwe has also adopted the Millennium Development Goals (MDGs) as a planning framework for a strategy to achieve sustainable development. National time-bound targets and indicators for the eight goals were set through a consultative process and are being monitored.

On MDG Seven: 'Ensuring Environmental Sustainability', progress has been made in the last ten years in environmental management with afforestation programmes, land reclamation and natural resource conservation programmes being put in place (GoZ, 2009). However, capacity to gather statistical data and tracking of environmental indicators is weak due to limited technical and financial resources. There has been no progress on water and sanitation as these facilities have deteriorated in both rural and urban areas (GoZ, 2009).

## The Moving Zimbabwe Forward study

In recognition of the integral link between environment and poverty, the Moving Zimbabwe Forward (MZF) Wellbeing and Poverty Study included themes on the environment and natural resources in both the questionnaire and focus group discussion question guide. This builds on the work done in the national Poverty Assessment Survey Study implemented in 2003 by the Department of Social Services, where Chapter 18: 'Environment', looked at the linkages between land degradation and poverty and the benefits of incorporating environment into sustainable development (GoZ, 2006).

The household questionnaire used in the MZF survey contained a number of questions relating to natural resources, namely on land, water, harvesting wild/forest products and minerals. The focus group discussions with communities included environmental issues and natural resource use.

## Land

### *Agriculture and conservation*

Land is a crucial natural resource in Zimbabwe which must be utilised in a sustainable manner. Zimbabwe has a long history of agricultural and conservation extension and farmers are generally knowledgeable and practice conservation measures on their land. However, in the past, during the Liberation War of the 1960s and 1970s, government-prescribed conservation measures such as contour ridging, were purposely neglected by many farmers as a token of resistance to the oppressive UDI (Unilateral Declaration of Independence) regime, as well as being deemed inappropriate methods of conservation (see for example Witoshynsky, 2000). This association of contour ridges with repression continues today, and in some areas, small-scale farmers resist constructing ridges. The MZF survey found that farmers are involved in a wide range of conservation activities. The most popular conservation measures are application of manure and crop rotation (see Table 8.1).

The survey found that the majority of farmers (54 per cent) used animal drawn ploughs for tilling their land while 28 per cent dug their field with a hoe (badza), and 16 per cent used zero tillage. Some of the land was left fallow (see Table 8.1), possibly because ploughing is preferred to zero tillage. In fact, responses from focus group discussions indicate that the preferred method of tillage was by tractor, but only a few farmers had access to a tractor, as only two per cent of the households indicated that they used tractors.

## Water

Zimbabweans obtain their water from a number of different sources, which vary between rural and urban households. The MZF survey found that the majority of rural households used protected wells or boreholes (37 per cent) as their main water source for drinking and washing. About 21 per cent used piped water, mainly from outside the house or from a community tap. However, 19 per cent obtained water from unprotected wells, while another 19 per cent sourced water from rivers or dams.

In the urban areas, the picture was different with 56 per cent having piped water into their houses while a further 35 per cent used piped water from outside the house or from a community tap. Only two per cent used unprotected wells. Although this is relatively low, it has serious implications regarding water borne diseases such as cholera and typhoid. For example, a serious typhoid outbreak in Bindura, Mashonaland Central Province in early 2012, cost several lives and was found to have originated from an unprotected well in a new suburb on the outskirts of the town, which was not connected to the municipal water supply.

In urban areas, only four per cent of households had to travel more than 500 metres to obtain water, while in the rural areas, 52 per cent had to travel more than 500 metres, 31 per cent up to one kilometre and 17 per cent more than a kilometre to collect water for the household.

Regarding perceptions of water quality, overall 62 per cent perceived their water to be of very good or good quality. Slightly more of the rural sector households (66 per cent), compared to the urban sector (57 per cent) perceived their water to be of very good or good quality. Just over nine per cent of the urban households and seven per cent of the rural households thought that their water quality was very bad. Again, although this is a relatively low percentage, it has serious health implications.

Access to water in urban areas is increasingly becoming problematic due to constant municipal water shortages. Water cuts, often for several weeks, are common in both

low and high density suburbs. The Urban ZIMVAC (2011) found that 60 per cent of the sampled households reported that they had experienced water supply interruptions. This situation has led to a proliferation of shallow wells in urban areas which are potentially unsafe. There is also an increase in the number of boreholes and this will have implications on the water table and underground water reserves. Furthermore, some households are buying water.

## Harvesting wild products

A large proportion of Zimbabweans obtain significant nourishment from wild foods found in natural habitats. Over 54 per cent of Zimbabwe is covered by woodlands and forest, with an estimated 6,000 plant species, 672 bird species, 156 reptiles, 196 mammals and 132 fish species (GoZ, 2010). Thus Zimbabwe is rich in biodiversity. A wide range of wild products are harvested including wild fruits, wild vegetables, mushrooms (fungi), insects, honey and fish. Other natural products such as fuelwood, grasses and medicines are also harvested from the woodlands and forests.

The MZF survey investigated natural resource use and found that a relatively high proportion of the population, predominantly those in rural areas, regularly harvested wild foods to supplement household nutrition and contribute to food security.

Table 8.2 shows the harvesting of various wild products by rural households by poverty categories, non-poor and poor. There were 2,012 rural households in the MZF sample of which 95 households were non-poor and 1,917 were poor. Wild products were harvested by both poor and non-poor households. The proportion of the poor harvesting wild products was generally slightly more than the non-poor. However, in the case of wild fruits and mushrooms, the proportion of non-poor households who harvested these was higher than the proportion of poor households, although numerically there were more poor households harvesting them. Previous studies have shown that poorer households tend to depend more on natural resource extraction than relatively wealthier households (Clarke *et al.*, 1996; Cavendish, 1997).

### *Wild fruits*

Fruits are particularly nutritious. Vietmeyer (1990) asserted that wild fruits were once Africa's most nutritionally important food resources, being especially critical to the lives of children, but now fruits are one of Africa's most neglected food resources as all emphasis is on cultivated crops, especially grains. The fruits and nuts which are obtained from indigenous fruit trees are good sources of relatively cheap plant protein and other essential nutrients such as minerals and vitamins (Okafor, 1988). Furthermore, they are obtainable at strategic periods of the year when cultivated annual staples are largely unavailable or scarce. Fruits are also important sources of nutrition during famine.

The MZF survey found that 5 per cent of rural households indicated that eating wild fruits was a coping strategy during food shortages. Research in Wedza District, found that wild foods, particularly fruits, contributed 20 per cent of the wealthier farmers and 40 per cent of the poorer farmers' energy intake (Mapfumo, 2011). Figure 8.1 shows the importance of wild foods in times of drought to farmers in Wedza. In times of famine, wild fruits can also be traded for grain. For example, during the drought of 2007, some households in Binga who had critical food shortages sold 70 buckets of baobab fruit for 70 buckets of maize (Chasi, 2012).

There are more than 63 species of wild fruit trees in Zimbabwe, 42 of which are also known to have medicinal properties (Mutimba, 1996). Fruits are widely eaten in the country and many households plant fruit trees around

**Table 8.2: Harvesting of non-timber forest products by households in rural areas**

| Wild products harvested | Non-poor | | Poor | | Total harvesting | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| Wild fruits | 47 | 49.5 | 826 | *43.1* | 873 | *43.4* |
| Wild vegetables | 31 | 32.6 | 613 | *30.0* | 644 | *32.0* |
| Insects | 15 | 15.8 | 338 | *17.6* | 353 | *17.5* |
| Honey | 10 | 10.5 | 248 | *12.9* | 258 | *12.8* |
| Mushrooms | 25 | 26.3 | 431 | *22.5* | 456 | *22.7* |
| Medicine | 14 | 14.7 | 293 | *15.3* | 307 | *15.3* |
| Fish | 14 | 14.7 | 318 | *16.6* | 332 | *16.5* |
| Thatching grass | 28 | 29.5 | 723 | *37.7* | 751 | *37.3* |
| **Total** | **95** | **100** | **1,917** | *100* | **2,012** | *100* |

their residences. Furthermore, farmers tend to leave wild fruit trees in the fields when clearing for agriculture. The MZF survey showed that over 43 per cent of all rural households surveyed had harvested wild fruits in the last 12 months. There was little difference between poor and non-poor households, as Table 8.2 indicates that almost half of the non-poor rural households harvested wild fruits. This points to the importance and popularity of supplementing diets with wild fruits by all income groups.

Some important wild fruit trees used by Zimbabweans are described in Box 8.1.

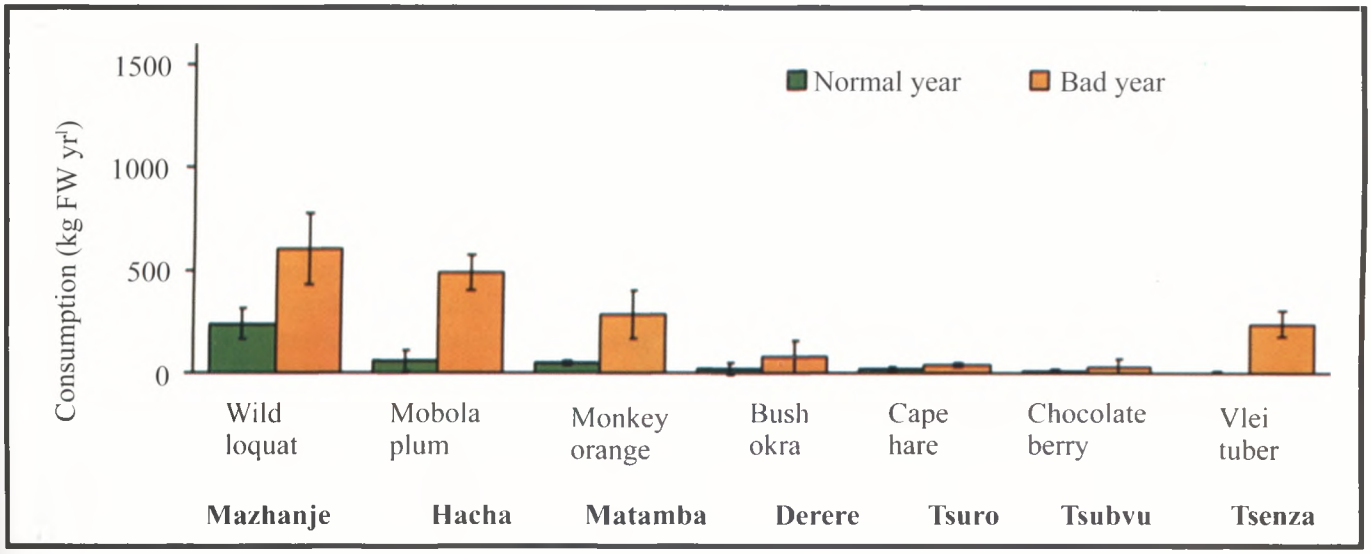



**Figure 8.1: Wild food consumption in Wedza Zimbabwe**

*Source: Mapfumo, 2011*

**Box 8.1: Wild fruits of Zimbabwe**

Wild loquat/ *muzhanje/ mushuku/ Uapaca kirkiana* is an example of a tree that is often left in fields and around homesteads as it produces poplar fruits rich in Vitamin C. Local customs sanction the harvesting of fruit for sale and cutting down of fruit trees. However, these customs are now generally overlooked due to commercialisation of the fruit which is sold along the main highways and in urban centres (Mutimba, 1996).

Mobola plum/ *muhacha/ muchakata/ Parinari curatellifolia* is another popular fruit tree which has fruits *(chakata/ hacha)* that are eaten directly and also made into a paste *(mahanya)*. The juice is used to sweeten porridge, and also for beer (Mutimba, 1996).

Collectively people in Africa eat the fruits of more than 60 tropical wild fig trees /*Ficus species/ mutsabvi/ muonde/ inkiwane/ umkhiwa*. There are about 31 species of wild fig trees in Zimbabwe. Figs contain sugar and fibre. They are rich in calcium, iron and phosphorus. They contain moderate amounts of Vitamins A and B, but only small quantities of Vitamin C.

The fruit of *Sclerocarya birrea/ marula/ mupfura* is consumed fresh as well as made into juice and is the basis for several alcoholic beverages, including mukumbi, and the commercially produced Amarula. Traditionally oil from the nut is used as culinary oil, and also for preserving meat. Marula is a very marketable product with huge commercial potential. The mapfura fruits are also used to make porridge in times of drought. In fact, it appears that these wild fruits are produced in abundance during drought years, particularly in the drier Agro-ecological Regions, IV and V, of Zimbabwe.

Water berry/ *mukute/ muisu/ Syzygium guineense*, and the chocolate berry/ *mutsvubvu/ mukubvu/ Vitex payos* are two more of the numerous examples of trees which produce commonly eaten fruits. The fruits of both trees are rich in Vitamin C and minerals including potassium and calcium (Mutimba, 1996).

Although not so widely known in Zimbabwe, *Ricinodendron rautanenii* or the Mongongo tree/ *mungongoma,* which is found in northern Zimbabwe, produces a particularly nutritious wild fruit, which has flesh rich in carbohydrates, potassium and thiamine. In addition, it has nuts (seed kernels) that are rich in fats (45-58per cent) and provides good quality vegetable protein (26-29 per cent) and is rich in minerals, such as calcium, magnesium and iron, and vitamins B and E (Peters, 1987). Mongongo can provide high quality nutrients all year round and is important in times of famine.

Wild fruits are also important as animal fodder, for example, mopane *(Colophospermum mopane)* and acacia pods, eaten by livestock, especially in drier areas of Zimbabwe.

### *Other wild foods*

Vegetables provide vitamins, essential minerals, protein and some carbohydrates. The nutritive value of the wild vegetables is as good as, or superior to, most exotic vegetables, especially in carotene. Dark green wild vegetables not only contain more protein than exotic ones, they also contain more calcium and iron (Kumwenda and William, undated).

Indigenous or wild vegetables have always been eaten as relish together with the starch staple in Zimbabwe. There are more than 16 species that are commonly eaten, including spider flower/ *nyevhi/ runi/ Cleome gynandra* and pigweed/ *mowa/ Amaranthus hybridus* which are semi-domesticated as women collect the seed and sow it around the homestead (Mutimba, 1996).

The MZF survey found that 32 per cent of rural households harvested wild vegetables. The wild vegetables are clearly for household food only, as the survey found out that only just over one per cent of those who collected wild vegetables, sold them.

Insects are another nutritious traditionally popular wild food, as they are rich in animal protein. In Zimbabwe, edible insects, which include caterpillars of the emperor moth *Imbrasia belina* (westwood) commonly known as mopane worms/ *madora/macimbi/ masondya;* edible ants such as *ishwa/Hodotermes mossambicus; mandere/ Eulepida mashona; harurwa/ Encosternum delegorguei* and many others are delicacies that provide a source of protein relish (Mutimba, 1996). The MZF survey found that 17.5 per cent of rural households harvested insects.

Edible mushrooms/*howa* provide a seasonal food during the rainy season and are a good source of the B group Vitamins, as well as minerals including selenium, copper and potassium. Some popular wild mushrooms eaten by Zimbabweans are: *uzvutwe, firifiti, nhedzi, dare, dedza, nyakasheche* and *nzeveyambuya* (Mutimba, 1996). The MZF survey found that 22.7 per cent of rural households harvested mushrooms.

Fish are an excellent source of protein and other nutrients and are harvested from streams, rivers and dams. Fishing is a popular activity amongst Zimbabweans. The MZF survey found that nearly 16.5 per cent of rural households harvested fish.

Honey is a good source of carbohydrates and it is collected in the wild, and also from domesticated bee-hives. The MZF survey found that 12.8 per cent of rural households collected honey.

Wildlife can contribute to household food security and provide a rich protein source, particularly for communities adjacent to protected areas where wildlife is abundant. The MZF survey found that communities living in Mbire, Chiredzi, Kariba, and Hwange Districts that are adjacent to National Parks and Safari Areas, benefit from the wildlife. The MZF survey found that 10 per cent of households had access to wildlife meat.

### *Medicines*

Around 80 per cent of the world`s population relies on medicinal plants for primary health care needs. Traditional medicines, derived mainly from plants are widely used in Zimbabwe. The MZF study indicates that about 15 per cent of rural households harvested medicines from indigenous plants. A study carried out in five districts, Chipinge, Chimanimani, Matobo, Mangwe and Bulilima established that an estimated 90 medicinal plant species are used in each district (Chasi, 2012). The study prompted the Environmental Management Agency to develop legislation aimed at community rights over genetic resources. Statutory Instrument 61 of 2009 of the Environmental Management Act provides for equitable sharing of benefits from genetic resources and protection of intellectual property rights (indigenous knowledge systems) (Chasi, 2012).

### *Other natural products*

Thatching grass is an important roofing material, especially in the rural areas. Thatch roofs are not only water proof, they are also good insulators, against heat in summer and the cold in winter. However, the thatch needs to be replaced every few years. Thatching grass *(Hyparrbennia* spp) is widespread throughout Zimbabwe.

The MZF survey found that 37 per cent of rural households collect thatching grass for use in roofing houses and other buildings, such as chicken runs. Those rural households that do not harvest thatching grass buy from others who engage in collection and preparation of the grass.

Some natural products such as ilala palm (*Hyphaene petersiana)* are harvested for making artefacts, such as baskets and mats, and wood from certain trees such as mukwa *(Pterocarpus anglolensis)* is used for carving. The MZF survey found that 11 per cent of households harvested ilala palm, while 12 per cent harvested wood for carving. Both of these are economic activities with potential to be lucrative once the tourism market picks up.

## Natural products enterprises

Fruits and other wild products can also be sold to get income. For example, Madora are collected and processed and have a ready market both locally and across the

region. Trade in natural products has been shown to have the potential to be more profitable than agriculture in southern Africa, and in Zimbabwe in particular (Bennett, 2006). For example the fruit pulp of marula has the potential to produce 880,000 MT/yr in southern Africa, worth USD 260 million, involving 2.4 million households in production (Bennett, 2006).

Community-based natural product enterprises are commercial ventures which seek to supply markets with value-added natural products in order to bring greater benefits to communities that manage and use natural resources. In Zimbabwe, there are a number of successful natural products enterprises such as: the Amacimbi Development Association in Gwanda, which recorded a return on investment of 166 per cent; Creative Oils Investments, in Rushinga which attained self-sufficiency within the first seven months of operation, after repaying a loan of USD 700 for machinery and working capital; the Buwerimwe Honey processing enterprise in Mutare; and Mutoko Bee Keepers Association (Chasi, 2012). The Twalipeda Baobab processing in Binga purchases baobab *(Adansonia digitata)* fruit from producer groups to market the baobab pulp and oil (Chasi, 2012).

However, the MZF survey found that only four per cent of households that harvested fruits, also sold them. This shows that the majority of households use wild fruits for food security and improved household nutrition, rather than as an income generating source.

*There is great untapped potential in the commercialisation of natural products which could benefit the rural poor, especially women. The existing enterprises should be supported and new enterprises encouraged.*

The CAMPFIRE model would work well, where emphasis placed on private sector-community partnerships can

*Baobab tree*
Photograph source: G. LeBreton

improve expertise to run viable community-based enterprises, strengthen financial resources and provide marketing capacity. Key factors for the success in the community-based enterprise model include the availability, quality and quantity of the resource, as well as availability of markets and tangible benefits to the community. Product research and development is needed together with creating incentives to invest in the products. Market linkages are crucial. Communities should understand the market context and be able to raise awareness of a new product within the market.

The importance of natural capital in securing rural livelihoods comes into sharper focus when viewed against the background of fragile agricultural systems and frequent crop failures that characterise the communal lands of Zimbabwe where people live in areas of marginal agricultural potential, such as Regions IV and V. Under these conditions, and in the context of livelihood diversification, commercialising natural resources can have poverty reduction outcomes (Gondo and Mugweni, 2007).

## Fuelwood

One of the most useful natural products is fuelwood, which is the primary energy source particularly in rural areas. Fuelwood is normally dry wood collected from dead branches and dead trees in surrounding woodland. Similar to other surveys such as the PASS (GoZ, 2006), the MZF survey found that in the rural areas, the majority of households (92 per cent) indicated that they used fuelwood as their major energy source for cooking. Use of other natural materials for energy, such as cow-dung, sawdust, gas and coal, were negligible. The category 'other' for energy for lighting consisted mainly of solar. In the MZF survey 'other' was indicated by 15 per cent for rural, and 7 per cent for urban households. Although there are a number of successful solar initiatives, there is still tremendous potential for more solar energy developments.

The results of the MZF survey indicated that 17 per cent of the urban households also used fuelwood for cooking and furthermore, the Urban Zimbabwe Vulnerability Assessment Committee (ZIMVAC, 2011) indicated that nearly 24 per cent of urban households used wood or charcoal. There appears to be a trend in the increasing use of fuelwood in urban areas, as the PASS indicated that in 2003, only 14 per cent of urban households used fuelwood (GoZ, 2006). This increase in the use of fuelwood in urban areas is symptomatic of problems with declining and intermittent electricity supply. Increasingly, use of fuelwood by urbanites is becoming a serious environmental concern as woodlands around cities and towns are rapidly disappearing.

*This is resulting in deforestation in peri-urban areas. Another cause of concern is the use of indigenous woodland to cure tobacco by the rapidly increasing number of small-holder tobacco farmers, now estimated at 70,000 who produce 65 per cent of the crop.*

There are a number of tree planting efforts by the Government of Zimbabwe and non-governmental organisations (NGOs). The Forestry Commission is promoting a 'Plant Ten Million Trees' per year campaign. Although the MZF survey indicated that the majority of Zimbabweans are aware of the regulation that prohibits tree cutting only one per cent of farmers are involved in tree planting conservation activities. Furthermore, the survey also found that four per cent of rural households cut trees and sell wood as a coping strategy in response to shocks. However, more encouragingly, six per cent of rural households also indicated that they would establish a woodlot as a coping strategy in response to shocks. The Forestry Commission is also spearheading a programme of woodlot planting with tobacco farmers. When farmers buy tobacco seedlings, they are also provided with tree seedlings to establish woodlots.

## Minerals

Zimbabwe is richly endowed with minerals, including substantial alluvial gold reserves. The gold price was around USD 300 per ounce from 1998 through 2002 and started rising to USD 400 per ounce in 2005, to USD 800 in 2008, and to more than USD 1,700 in 2011, which made gold increasingly attractive for individual miners and panners. Rising gold prices which made gold panning more profitable than farming, plus the hyper-inflation of 2007-08 meant many more people joined the gold panners.

Panning is uncontrolled and carried out unsystematically, usually in river beds, banks and flood plains with no concern for the environment. Trees are cut down haphazardly, pits several metres deep are dug and alluvial soil is removed resulting in erosion and siltation of rivers as the soil and rocks are washed into the streams. No rehabilitation is carried out. Although the Environmental Management Agency is energetic in issuing tickets and stop orders, gold panning continues unabated and is actually increasing, because it is so profitable. Uncontrolled panning and small scale mining are damaging the environment. Furthermore, local communities are not benefiting much from the mineral resources. Middle-men and gold buyers profit most, with little contribution to communities or the national reserves.

Alluvial gold is widespread throughout the major river

**Box 8.2: Minerals improving wellbeing in Chimanimani**

Focus group discussions with communities in Chimanmani revealed that panning for gold and diamonds was an important livelihood strategy, as well as a coping mechanism. During the economic hardships of mid 2007 to 2009, members of Nemawuyu village in Derera communal area explained that they were involved in diamond panning in the nearby Marange village as a coping mechanism. This uplifted their lives and some of the money was used to build proper houses and toilet facilities. They were also able to use cash when purchasing goods at the business centre, rather than accepting credit facilities payable by month end.

In Nemaramba West, also in a communal area, households relied mainly on farming maize, beans, sorghum and wheat. However, the area is generally dry resulting in low yields over the years. One of the coping mechanisms they had adopted was to engage in illegal diamond panning, whilst a few have been employed by a diamond company which is operating in the area. The fees for Chaseyama secondary school were unaffordable for many families, resulting a high dropout rate. Some of the young boy dropouts were engaged in illegal diamond panning in the Marange area.

In Nyabamba A1 resettlement scheme, some of the new farmers were engaged in gold panning in the Nyabamba River. However, because this panning is done in an unsustainable manner it had disturbed the flow of the river.

basins of Zimbabwe and the MZF survey found that gold panning occurred in 12 out of the 16 Districts sampled. Altogether, 69 households indicated that they were involved in gold panning, while a further 51 households were involved with extracting other minerals, including diamonds, emeralds and chrome. Regarding the households involved in gold panning, 41 per cent of these households were in Chimanimani and 13 per cent in Mazowe. These two Districts are amongst those renowned for gold panning, where panning is now an important livelihood strategy for a large number of households in these Districts (See Box 8.2).

The majority of households involved with mineral extraction are rural based, and furthermore, over 90 per cent belong to the poor category. Altogether, households involved with mineral extraction constituted almost 4 per cent of the MZF sample. However, this may well be an underestimate of the actual number of households engaged in panning; as it is an illegal activity, respondents to the household questionnaire would be reluctant to disclose this information. In 2003 the PASS, found that six per cent of households were involved with mineral harvesting (GoZ, 2006).

Gold panning was regarded as a coping strategy as a response to shocks, experienced by 3 per cent of the respondents in the MZF survey, with a further 2 per cent indicating diamond and other panning as coping strategies in response to shocks (see also Box 8.2).

Of the panners in the MZF survey, only 17 sold alluvial gold, while seven households sold precious minerals. Those that did not sell their gold were most likely part of a syndicate, or employed by middlemen.

Gold is a valuable resource which if managed carefully can give economic benefits, while maintaining environmental quality. In fact, the regression analysis of consumption expenditure of the MZF data to investigate the correlation between wellbeing and poverty shows that being involved with panning and mineral extraction activities in rural areas appears to be very important, as it raised monthly household expenditure by about 29 per cent. There is definitely potential to explore the possibilities of developing CAMPFIRE-type mechanisms for supporting sustainable gold panning. Another model is for small-scale miners to pan and sell to big mines in the area and get technical and material support, similar to contract farming.

To facilitate corporate social responsibility amongst mining companies, the Indigenisation and Empowerment Act Chapter 14:33 (2008) provides for the establishment of Community Share Ownership Trusts to ensure that communities benefit from the minerals in their areas. The mining company provides a one-off payment to the trust to kick-start income generating activities identified by the communities. The trusts then receive revenue from the ten per cent community share-holding. Community Share Ownership Trusts thus provide communities with another source of funds, rather than depending only on limited financial allocation from the national fiscus.

So far forty mines have been targeted and several large-scale mines have established community trust funds where ten per cent shares are ceded to communities. For example, Zimplats Mine allocated 10 million USD for each administrative district in the vicinity of the mine (Mhondoro Ngezi, Chegutu and Zvimba). Similarly, Unki mine in Shurugwi district and Mimosa Mine in Zvishavane have allocated funds under the same scheme

(Chasi, 2012). The money is being used in community development projects as dictated by community needs. Projects include infrastructure development such as the building of schools, clinics and irrigation schemes.

Other materials are extracted from the environment, such as stones, sand and clay. The MZF survey found that 112 households harvested rocks and stones from the environment. Although these households were spread across 13 of the sample districts, almost half of them were in Hurungwe District. Overall, 97 per cent of the households that harvested rocks and stones were in the poor category. Traditionally, clay is used to mould bricks for building, and brick moulding presents a lot of opportunities in sustaining livelihoods for the poor. However, the bricks are usually fired in a kiln using indigenous timber. The traditional kilns are not energy efficient and much timber is wasted. The MZF results indicated that sand extraction is a coping strategy as a response to shocks for three per cent of the households surveyed.

## Environmental rules and regulations

From childhood environmental ethics are instilled both at home from cultural traditions and norms, and at school with Environmental Science in the primary curriculum. Generally, Zimbabweans are environmentally aware and respect the environment and natural resources. Research has shown that secondary school children are environmentally knowledgeable and have relatively high levels of indigenous knowledge (Manjengwa, 1998).

There is a wide range of traditional rules that govern the environment and natural resource use, such as taboos for killing pregnant or young wildlife, and practices of not ring barking trees when collecting medicinal bark, and getting permission from local leaders to cut down trees. However, more recently due to economic hardships, this respect is more often in principle rather than in practice as more people have been driven to exploit natural resources in an unsustainable manner.

The MZF survey looked more closely at how much people know about environmental rules and regulations (Figures 8.2 and 8.3, and Box 8.3).

As can be seen from Figures 8.2 and 8.3 the MZF results showed that there was relatively high levels of awareness of environmental regulations amongst the respondents.


**Figure 8.2: Awareness of natural resources regulations in rural areas**

Respondents were also asked if these regulations were being enforced in their community, and generally, the proportion of respondents who were aware of the regulations was similar to those who thought that these regulations were being enforced. In the case of soil conservation and mineral panning, there were slightly more respondents that thought that the regulations were being enforced, than those who were aware. In the case of gold panning there was generally more ignorance, especially by panners about the specifications of the regulations. However, due to the high profile government campaigns against uncontrolled panning enforced by the police (such as the Operation Chikorokoza Chapera) and the Environmental Management Agency, there was a general perception that these regulations were being adhered to.

In urban areas (Figure 8.3), the main environmental regulations pertain to water and air pollution, solid waste disposal and littering. Most people were aware of the prohibition of littering, but the perception was that littering regulations, included in the Environmental Management Act, were not being well enforced. Indeed, littering is becoming a problem, especially in towns and along main roads where passengers in vehicles routinely throw rubbish out of the windows.

**Box 8.3: Awareness of environmental regulations among participants of focus group discussions, Nyamuzuwe village, Mutoko District**

*'Trees cannot be cut down without the permission of the kraal head, but the problem is that some people are not following the regulations. Although there has been a reduction in tree cutting, it is ongoing because some people are cutting down trees for survival to sell wood because of poverty'*

**Nyabamaba A1 resettlement, Chimanimani District**

*'There are certain penalties levied against those who break the rules with the culprit expected to show up at the headman's dare (court). Some examples of penalties are:*

- *Ten dollars for cutting down a tree*
- *A chicken for cutting down traditional trees such as muhacha and muonde.*
- *25 dollars or a goat for causing a veldt fire'.*

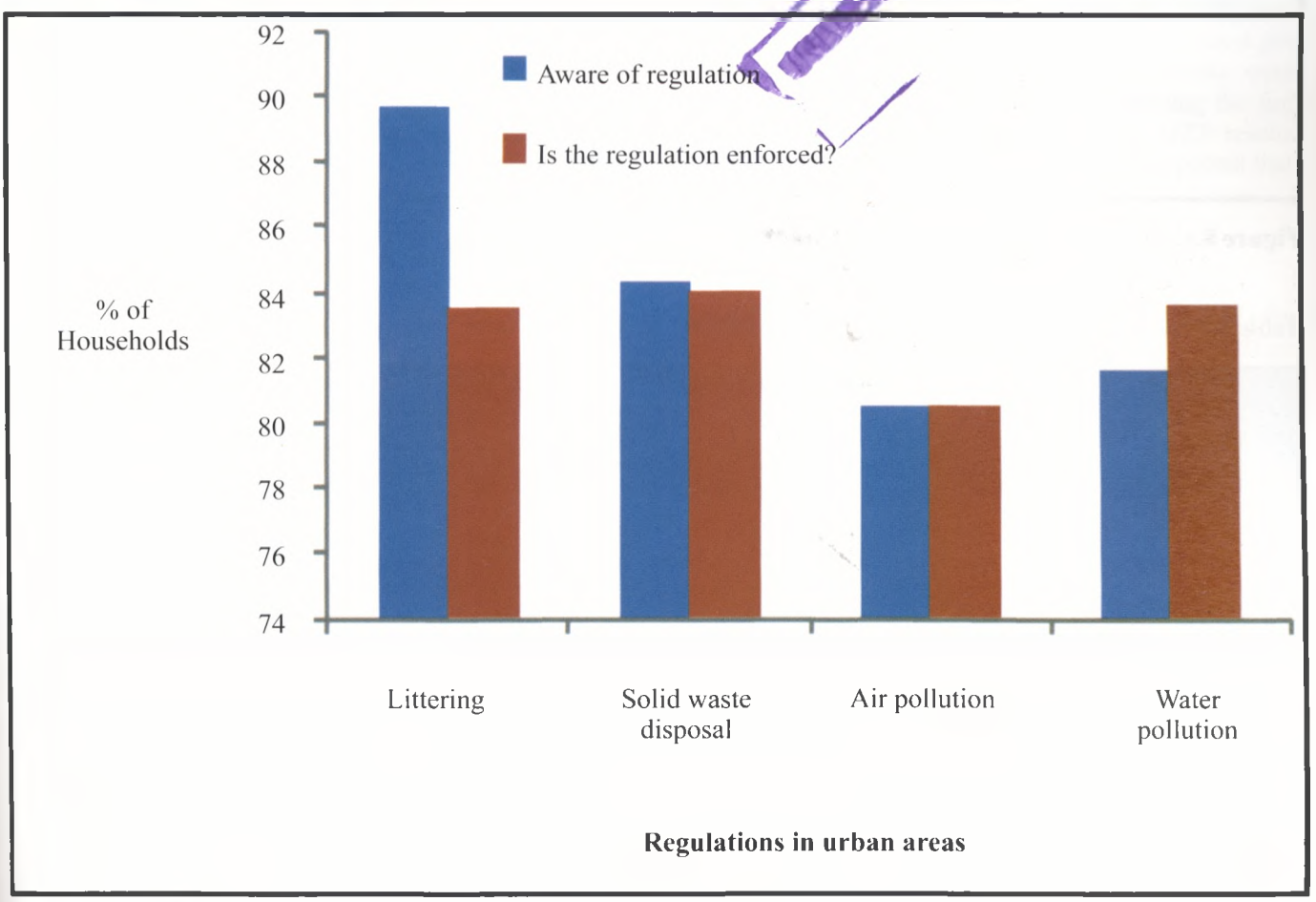



**Figure 8.3: Awareness of regulations in urban areas**

The respondents were asked who they thought was enforcing the various environmental regulations. The responses reflected the different institutional arrangements in the rural and urban areas. The MZF study found that community leaders in rural areas, such as headmen and councillors, were perceived to be the main enforcers of all the environmental regulations, with government agencies (such as Agriculture Extension (AGRITEX), the Environmental Management Agency (EMA), the Forestry Commission (FC); Parks and Wildlife Management Authority), coming a distant second (Figure 8.4).

On the other hand, Figure 8.5 shows that in urban areas local authorities, namely the Municipalities, are perceived to be the main enforcers of environmental regulations, followed by government agencies. Community leaders play a much smaller role in enforcing environmental regulations in urban areas.

Table 8.3 shows that in the MZF study the non-poor were slightly more aware of environmental regulations than the poor. The difference is larger regarding awareness of pollution and mineral panning. Considering that the

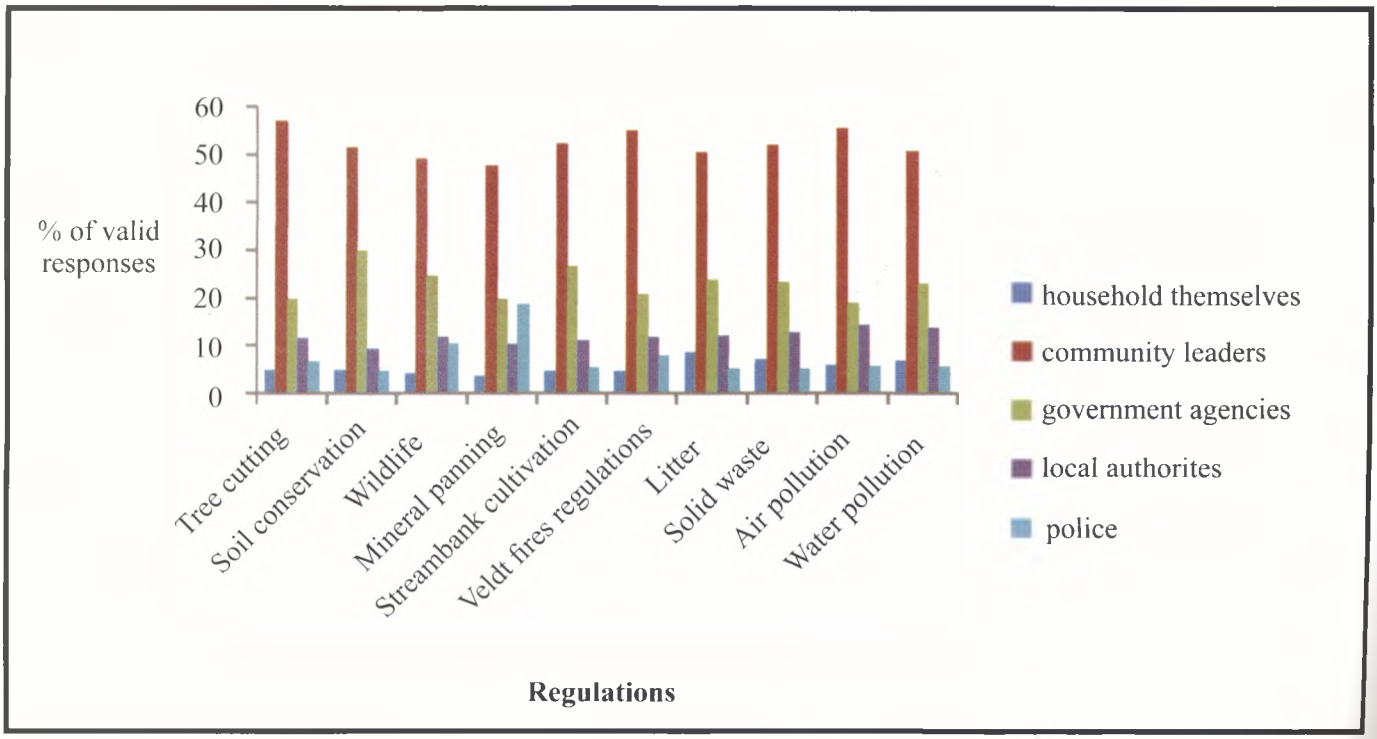



**Figure 8.4: Perceptions about who enforces environmental regulation, in rural areas**

**Table 8.3: Awareness of natural resources regulations by poverty status**

| Regulation awareness | Non-poor | | Poor | | Total | |
|---|---|---|---|---|---|---|
| | Number of households | % | Number of households | % | Number of households | % |
| Cutting down trees | 88 | 92.6 | 1758 | 91.7 | 1846 | *91.7* |
| Soil conservation | 84 | 88.4 | 1560 | 81.4 | 1644 | *81.7* |
| Wild animals | 85 | 89.5 | 1576 | 82.2 | 1661 | *82.6* |
| Mineral panning | 76 | 80.0 | 1294 | 67.5 | 1450 | *72.1* |
| Stream bank cultivation | 80 | 84.2 | 1541 | 80.4 | 1705 | *84.8* |
| Veldt fires | 84 | 88.4 | 1594 | 83.2 | 1766 | *87.8* |
| Littering | 77 | 81.1 | 1296 | 67.6 | 1454 | *72.3* |
| Solid waste disposal | 74 | 77.9 | 1260 | 65.7 | 1412 | *70.2* |
| Air pollution | 72 | 75.8 | 1094 | 57.1 | 1242 | *61.7* |
| Water pollution | 73 | 76.8 | 1263 | 65.9 | 1413 | *70.2* |

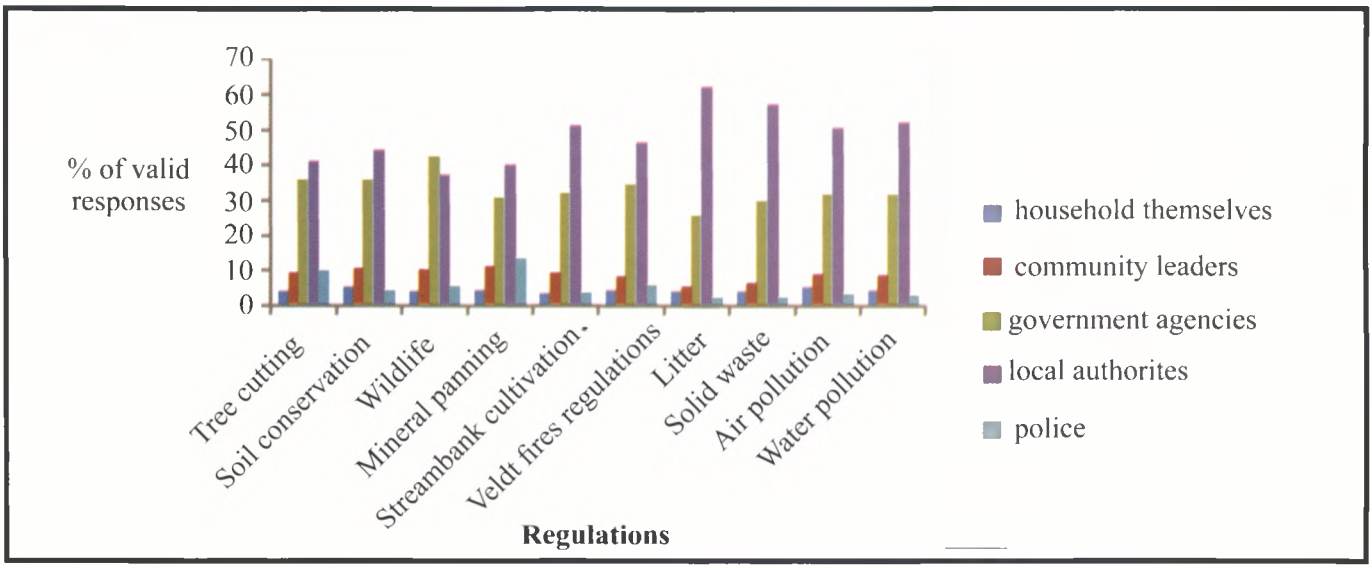



**Figure 8.5: Perceptions about who enforces environmental regulation, in urban areas**

majority of the non-poor are in urban areas, it would be expected that they are more conversant with regulations pertaining to urban issues, such as pollution. For example, air pollution is not an issue in rural areas. Furthermore, access to information regarding environmental issues is generally greater in urban areas than rural areas, and therefore, the relatively high level of knowledge in the rural areas is impressive. The Poverty Assessment Survey (PASS) for 2003, found that the very poor were more aware of environmental regulations while the non-poor were the least aware. This implied that non-compliance and continued environmental degradation by the very poor is driven by factors other than lack of awareness of environmental issues and regulations (GoZ, 2006). Consequently, awareness alone will not effect attitude change of communities to engage in sustainable environmental management practices. They need to be offered incentives to enable them to manage the environment in a sustainable manner.

## Fires

Bush or veldt fires are one of the most difficult environmental problems in Zimbabwe. Low intensity veldt fires are part of the miombo ecology, keeping the undergrowth clear, but there are indications of an increase in frequency and intensity of bush fires in recent years. This is causing massive damage to vegetation and property. The fires also emit tonnes of carbon dioxide into the atmosphere.

Fires are part of the conventional agricultural management practices in Zimbabwe. Cotton farmers are required by law to burn cotton stalks by a certain date after harvest. Cattle farmers burn the dry grass to improve grazing. Sometimes fires are caused by poachers or during hunting of small mammals such as mice and rabbits, or during land clearance. In 2010, the Environmental Management Agency reported over 9,000 fires on over one million hectares; 25 human lives were lost, as well as 29 elephants. An elderly woman and two children were burnt to death in 2010 in a veldt fire at the Xanadu Farm resettlement, Mazowe district.

Alongside shocks such as food shortages, droughts, inflation and illness-related shocks experienced, recorded in the MZF survey, was that of experiencing fire. Apart from isolated incidences of house fires, this refers predominantly to bush or veldt fires. The probability that a community suffered a fire shock on average was 9 per cent. With regard to severity, fire-related shocks were regarded as medium to high severity. Regarding the fire shock recurring during the next year, the MZF results indicate that 13 per cent of the respondents expected that the fire would re-occur.

## Conclusion

Natural resources have been identified as one of the major pathways out of poverty for Zimbabweans. High value natural resources such as minerals can boost the economy and raise the Gross National Product, as well as provide revenue to fund social protection programmes. Furthermore, a host of other resources including land, timber, wildlife and forest products provide improved nutrition, food security, livelihoods and income generating activities for many Zimbabweans. Similar to other surveys, such as the PASS (GoZ, 2006), the MZF survey has shown that a wide range of natural resources are extracted and used, particularly by the poor, and also that natural resources can provide coping strategies during times of experiencing shocks. The regression analysis of the MZF data indicated that mineral extraction activities significantly increased household wellbeing. The environment provides a rich reservoir of goods and services that can move people out of poverty, if used wisely.

There is a need to mainstream environmental issues in the

national developmental framework policies, programmes and strategies, highlighting the linkages between poverty and the environment. However, in an attempt to satisfy basic needs, poverty can drive people to undertake activities that are responsible for environmental degradation. To address this, options and opportunities must be secured to enable Zimbabweans to benefit from the abundant natural resources and utilise them sustainably. Zimbabwe's Medium Term Plan 2011-2015 points out that the key principle of sustainable development is that people have the right to use environmental goods and services for their benefit, but also have the responsibility to look after the environment to ensure that the next generations are able to derive similar benefits (GoZ, 2011)

## Policy points

- The high poverty levels in the rural sector, which is comprised predominantly of smallholder farmers, call for urgent strategies and actions to enhance agricultural productivity, while maintaining ecosystems integrity and environmental quality. Access to land for resettled farmers is no longer the major issue, but rather lack of draught power, equipment and inputs that are limiting production. There is a need to address these problems in order for farmers to optimise productive land use. Off-farm livelihood options should also be promoted.

- Minerals have been identified as an important natural resource which has the potential to move households and communities out of poverty. High gold prices mean gold panning has become a vital source of income for many Zimbabweans and mineral extraction certainly appears to be a major activity in raising household income. However, at present, it is largely environmentally and socially unsustainable. The CAMPFIRE approach could be applied to alluvial gold and other mineral resources, to ensure that farming communities benefit directly from their natural resources and extraction. Communities could monitor and police themselves, and ensure that pits were filled and streams rehabilitated. There is potential to explore the possibilities of developing CAMPFIRE-type mechanism for supporting sustainable gold panning.

- Natural products also have great potential for moving people out of poverty. For example, while wild foods make important contributions to the diet, improving nutrition and food security, especially during droughts, they also have huge commercial potential, which could contribute to the rural economy by generating income, thereby improving the wellbeing of rural people. The existing natural product enterprises should be supported and new enterprises encouraged. Natural products, particularly trees which provide fruits and fuelwood, are renewable natural resources which if utilised and managed in a sustainable manner can greatly enhance people's wellbeing and move them out of poverty and deprivation. Wild products and their many important uses should be popularised through awareness raising campaigns. Commercialisation of natural products requires community-private partnerships where the private sector can secure lucrative international markets.

- Natural resources must be utilised and managed in a careful manner to be sustainable. The policy and institutional frameworks are in place. An audit of natural resources and the environment in Zimbabwe would provide entry points for interventions and ensure that environmental management is effective and natural resources provide a way out of poverty.

## References

Bennett, B. (2006). *Natural Products – The New Engine for African Trade Growth.* Natural Resources Institute, UK.

Cavendish, W. (1997). *The Economics of Natural Resource Utilisation by Communal Area Farmers of Zimbabwe.* PhD thesis, University of Oxford, U.K.

Chambers, R. (1988). Sustainable rural livelihoods: A key strategy for people, environment and development. In: C. Conroy, and M. Litvinoff (eds). *The Greening of Aid: Sustainable Livelihoods in Practice.* Earthscan, London.

Chasi, M. (2012). How Zimbabwe's natural resources can provide a pathway out of poverty. Moving Zimbabwe Forward Pathways Out of Poverty. *Conference Paper Series. No 2, June 2012.* Institute of Environmental Studies and Brooks World Poverty Institute, Harare.

Clarke, J., Cavendish, W., and Coote, C. (1996).Rural households and miombo woodlands: Use, value and management. In: B. Campbell (ed.) *The Miombo in Transition: Woodlands and Welfare in Africa,* pp. 101-135. Centre for International Forestry Research, Bogor, Indonesia.

Cliffe, L. (1988). The Conservation issue in Zimbabwe. *Review of African Political Economy.* 42.

Feresu, S. B. (ed.) (2010). *Zimbabwe Environmental Outlook: Our Environment, Everybody's Responsibility.* Zimbabwe's Third State of the Environment Report. Government of the Republic of Zimbabwe, the Ministry of Environmental and Natural Resources Management, Harare, Zimbabwe.

Frost, G. H. (2001). *Zimbabwe and United Nations Framework Convention on Climate Change,* Working Paper, October 2001, Overseas Development Institute, London UK.

Gondo P. and Mugweni, L. (2007). *A Review and Analysis of Community Based Enterprise Models in Southern Africa.* The Southern Alliance for Indigenous Resources (SAFIRE), Harare.

GoZ (2003). *Report of the Presidential Land Review Committee on the Implementation of the Fast Track Land Reform Programme, 2000-2002.* Harare.

GoZ (2006). *2003 Poverty Assessment Study Survey: Final Main Report.* Ministry of Public Service, Labour and Social Welfare, Harare.

GoZ (2009). *Zimbabwe Millennium Development Goals. 200-2007 Mid-term Progress Report.* A Report by GoZ to the United Nations. Harare.

GoZ (2010). *Zimbabwe's Fourth National Report to the Convention on Biological Diversity.* Ministry of Environment and Natural Resources Management, Harare.

GoZ (2011) *Zimbabwe Medium Term Plan 2011-2015.* Ministry of Economic Planning and Investment Promotion, Harare.

Hanlon, J., Manjengwa J., and Smart, T. (2012). *Zimbabwe Takes Back its Land.* Kumarian Press, Herndon, USA.

Kumwenda, R. C. and William, R. D. (undated). Indigenous Vegetable Research within the Ministry of Agriculture, Malawi.

Manjengwa, J. (1998). Environmental education for sustainable development in secondary schools in Zimbabwe: A focus on gender. *The International Journal of Environmental Education and Information,* 17 (1).

Mapfumo, P. (2011). Fostering vibrancy in Zimbabwe's smallholder agricultural sector. Presentation made at the Moving Zimbabwe Forward Report Launch, February 2011, Chinhoyi University of Technology.

Mutimba, J. (1996). *Food Availability in Communal Areas of Zimbabwe.* SA DC/GTZ Project Promotion of Small Scale Seed Production by Self Help Groups, Harare.

Okafor, J. C. (1988). Domestication and conservation of indigenous fruit trees in Africa. Paper presented at the workshop on Utilization and Exploitation of Indigenous and often neglected Plant and Fruits of eastern and southern Africa, August 1988, University of Malawi, Zomba, Malawi.

Peters, C. R. (1987). *Ricinodendron rautanenii* (Euphorbiaceae): Zambian wild food plant for all seasons. Economic Botany, 41: 494-502.

Vietmeyer, N. (1990). *Wild Fruits Production.* Unpublished first draft, National Academy of Sciences, Washington, DC, USA.

Witoshynsky, M. (2000). *The Water Harvester.* Weaver Press, Harare, Zimbabwe.

ZIMVAC (Zimbabwe Vulnerability Assessment Committee) (2011). *Urban Livelihood Assessment April 2011 Report.* ZIMVAC, Food and Nutrition Council, SIRDC, Harare .