

**COUNTRY PROFILE
ON
ENVIRONMENT**

ZIMBABWE

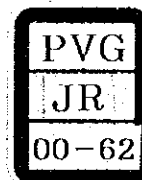
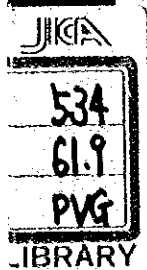
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JAPAN INTERNATIONAL COOPERATION AGENCY



USERS GUIDE: Contents of the Report

This report consisted of the following Chapters on environmental information of the country.

1. Keywords of the Environment

Various features and principal environmental issues and their related matters of the country are schematized within 1 page to easily understand the country's natural and social environmental issues on the whole.

2. Fact Sheet

Principal indices and natural and social environmental characteristics of the country such as economy, demographic statistics, socio-economic conditions, various important resources available in the country are described.

3. Institutional Context

3.1 Environmental Agency

Matrix table on governmental agencies related to the environmental issues in the Chapter 4 is described to grasp the role of the agencies easily. Responsibilities and organizational structure of the principal responsible agency for the environment, and responsibilities of related agencies are explained. Main activities of the various environmental non-governmental organizations are described in the table.

3.2 National Environmental Policy

Environmental policy of the country such as national environmental action plan is explained.

3.3 Environmental Laws and Regulations

Environmental laws and regulations of the country including their status of applications are described.

4. State of the Environment

In this Chapter, status of the various environmental issues as follows are covered with information on related agencies, related standards, laws and regulations, examples of the issue are explained. In the section 4.3, other kind of considerable environmental issues in the country are described based on the report which local consultant prepared.

| | |
|--|---|
| 4.1 Air Pollution | 4.7 Waste Water Management |
| 4.2 Water Pollution | 4.8 Forest Conservation/Desertification |
| 4.3 Other Pollution | 4.9 Biodiversity |
| 4.4 Waste Management | 4.10 Natural Resource Management |
| 4.5 Energy Conservation and Alternative Energy | 4.11 Natural Disaster |
| 4.6 Water Supply | 4.12 Environmental Education |

5. International Relationship

Status of the implementation of the economic and technical assistance projects in the country are outlined. International conventions and agreements on environment which the country agreed and ratified are listed up in section 5.1, and environmental projects which are funded and/or implemented in the country by donor countries and international organization in the section 5.2. In addition, location map of the project funded and implemented by using the Official Development Assistance (ODA) of Japanese government are showed.

6. Sources of Information

Governmental environmental agencies related institutions and NGOs are listed with the some information such as contact address and e-mail address.

7. References

References used in the report are listed.



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1. KEYWORDS OF THE ENVIRONMENT

1.1 Features of the Country

Related pages

① Gross Domestic Production (GDP)

US\$525 per capita (Japan : US\$33,857, China : US\$361)
Total : US\$5.6 billion

=> 2. Fact Sheet p. 3

② Low Rainfall and Drought

400 mm/year in low lying areas
900 mm/year in catchment area, 1,500 mm in eastern districts

=> 2. Fact Sheet p. 3

=> 4.1, 4.2, 4.4

③ Landlocked Country

Importance of the inland water systems
(Zambesi river, Lake Kyle, etc.)

=> 2. Fact Sheet p. 3

1.2 Keyword of Environmental Issues

Related page

① Soil degradation

=>

4.3 Other pollution p. 12

- Drought
- Deforestation
- Agro-chemicals

=>

4.11 Natural Disaster p. 19

=>

4.8 Forest conservation p. 18

=>

4.3 Other pollution p. 12

② Water Resource

- Water scarcity
 - Water pollution
 - Urban (Harare & Chitungwiza): industrial, domestic
 - Rural: agro-chemical, mining chemical
- => water hyacinth weed problem

=>

4.6 Water supply p. 16

=>

4.2 Water pollution p. 10

③ Mining Activities

- Water pollution
- Waste management

=>

4.2 Water pollution p. 16

=>

4.4 Waste management p. 13

④ Poverty in Rural Area

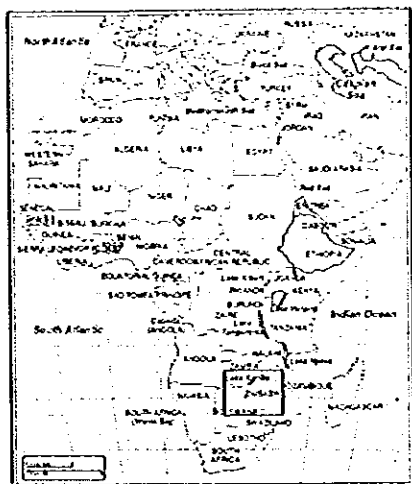
- Soil degradation
- Deforestation

=>

4.3 Other pollution p. 12

=>

4.8 Forest conservation p. 18



Republic of Zimbabwe

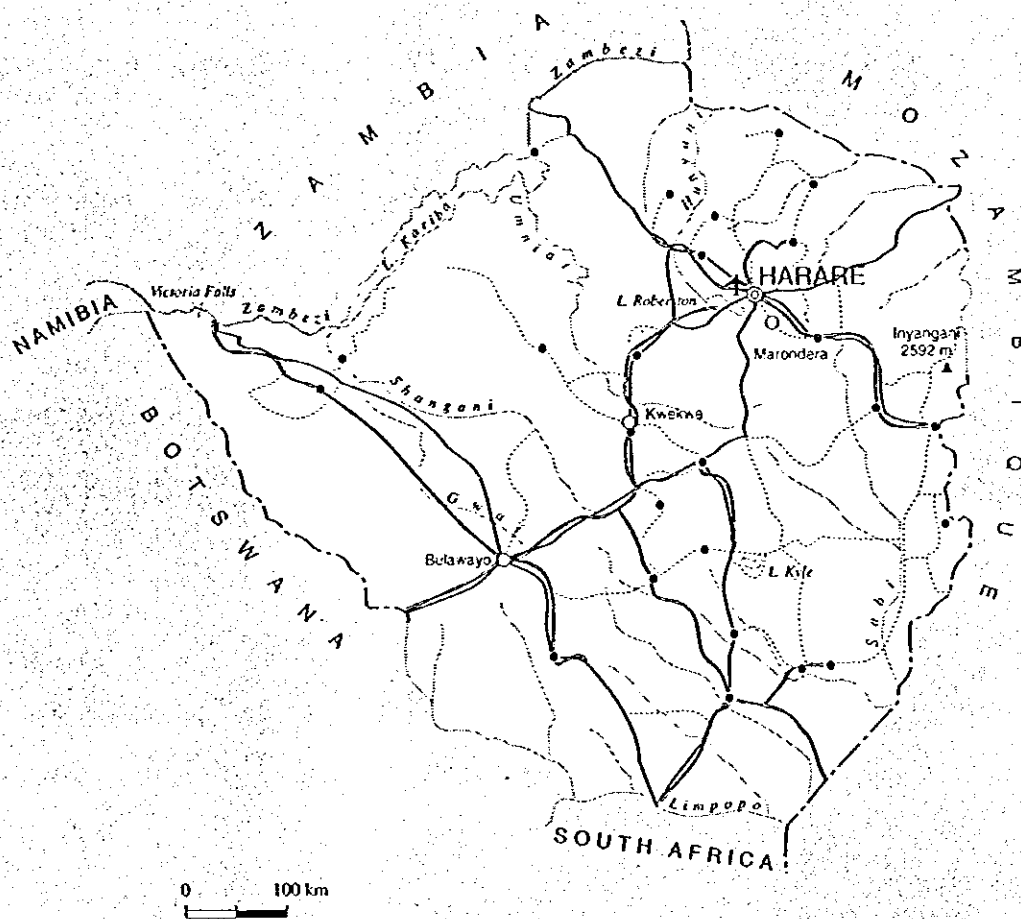


Figure 1 Location of Zimbabwe

2. FACT SHEET

2.1 Socio-economic Index

| Index | Data | Data year | Reference |
|--|---|----------------|-----------|
| Population | 11.26 million (annual average incremental rate : 2.6% (1990~95)) | 1995 | b) |
| Race | Shona: 71%, Ndebele: 16%, Other african black(Karanga, Zebune, Zezuru, Korekore, Nyanja, etc.): 11%, Asian: 1%, White: 1% | no information | f) |
| Religion | Traditional religion, Christianity | no information | f) |
| Literacy rate | Adult female : 77% Adult male : 88% | 1990 | b) |
| Urban Population rate | 32% (3.62 million) | 1995 | b) |
| Life expectancy | 54 (1990~1995 average) | 1990-95 | b) |
| Under-5 mortality rate | 83 (per 1,000) | 1993 | b) |
| GNP ^{*1} | \$5,584 million (\$520/person) | 1993 | b) |
| GDP ^{*1} | \$5,635 million (\$525/person) | 1993 | b) |
| GDP structure | Agriculture : 15% Industry : 36% Service industry & others : 48% | 1993 | b) |
| Prime industry | Mining, garments, chemical, light industry | 1996 | f) |
| Prime resource | Gold, nickel, asbestos, copper, coal, tobacco, sugar cane, cotton, corn, wheat | 1996 | f) |
| Safe water (% of population with access) ^{*2} | Urban : 95% Rural : 80% | 1980-1995 | b) |
| % of sewerage population ^{*3} | Urban : 95% Rural : 22% | 1980-1995 | b) |
| Human Development Index (HDI) | 0.513 (World rank 129, GDP per capita rank 119 in same year) | 1994 | e) |

*1 : The estimated value of the GNP was exchanged and adjusted from local currency into US\$ by means of 3-year average of exchange rates. The estimated value of the GDP was presented in US\$ of 1993 based on the exchange rate.

*2 : "Safe water" includes treated surface water, and untreated water which is pumped up from protected spring / excavated well and sanitary well.

*3 : "Sewered population" should be met conditions that the population in urban area can use public sewerage and indoor facility such as dug hole outdoor toilet, pouring water toilet, private sewerage system, public community toilet, and similar facilities, and that the population in rural area can use dug hole outdoor toilet, pouring water toilet, or other proper treatment methods.

2.2 Geographical Characteristics

| |
|--|
| Area : 390,757 km ² (1.1 times as Japan's) |
| Geographical features: under cultivation: 11.4 mil. ha (29%), grassland : 23,000 ha (6.0%), bare soil or rock outcrop : 1,200 ha (0.3%), water bodies : 780 ha (0.2%), forest cover : 205,000 ha (52.4%) |
| Highest place : Inyangani(2,592 m) |

Source: a)

2.3 Meteorological Characteristics

| |
|--|
| Climate : (no information) |
| Season : rain season November to March |
| Average temperature: 23 ~30°C except in October when reaches 31°C. Daily minimum temperature range from 6°C in July to 17°C in December. |
| Average annual rainfall: 400 mm/year in the low lying areas, 900 mm/year in the central watershed, 1,500 mm/year in the country's eastern districts. |
| Climatic classification : (no information) |

Source: a)

2.4 Ecological Characteristics

| |
|--|
| Ecological zones: |
| 1) Natural region I (5,835 km ²) : eastern highland slopes of Manicaland Province, high altitude, cool, 1,000 mm/year high rainfall, intensively used for dairying, forestry, tea, coffee, tree-fruit, vegetables, maize |
| 2) Natural region II (72,745 km ²) : intensively cropped farmland of northern Mashonaland (incl. Harare), 700~1,000 mm/year rainfall, rein-fed maize, tobacco, winter wheat, cotton, vegetables |
| 3) Natural region III (67,690 km ²) : semi-intensively cultivated area in Mashonaland and Midlands Province, 650~800 mm/year rainfall, cotton, soybeans, sorghum |
| 4) Natural region IV (128,370 km ²) : hot, lower-lying, north and south of the semi-intensive cultivated area, 450~650 mm/year low rainfall, animal husbandry, maize cultivation, drought |
| 5) Natural region V (112,810 km ²) : very hot low-lying zone, less than 450 mm/year rainfall, animal husbandry, lake Kyle |
| Animals and plants: (no information) |

Source: a)

2.5 Hydrological Characteristics

| |
|--|
| Main river : Unniati, Shangani, Gwai, Hunyani, Sabi, Zambezi |
| Lakes : Kariba, Robertson, Kyle |
| Falls : Victoria falls |

Source: a)

3. INSTITUTIONAL CONTEXT

3.1 Environmental Agency

3.1.1 Governmental Agency

(see "6. SOURCES OF INFORMATION" on each agencies and its contact address.)

| Governmental Agency \ Environmental Issues (Each No. consist with Section No.) | 4.1 Air pollution | 4.2 Water pollution | 4.3 (1) Land | 4.4 Waste | 4.5 Energy | 4.6 Water Supply | 4.7 Waste Water | 4.8 Forest | 4.9 Biodiversity | 4.10 Resources | 4.11 Disaster | 4.12 Education |
|--|----------------------|------------------------|-----------------|--------------|---------------|---------------------|--------------------|---------------|---------------------|-------------------|------------------|-------------------|
| Ministry of Mines, Environment and Tourism (MMET) | ○ | — | — | ○ | — | na | ○ | — | na | ○ | — | — |
| Department of National Parks and Wildlife Management (DNPWM), Ministry of Mines, Environment and Tourism (MMET) | — | ○ | — | — | — | na | ○ | — | na | — | — | — |
| Department of Natural Resources (DNR), Ministry of Mines, Environment and Tourism (MMET) | — | ○ | — | — | — | na | — | ○ | na | — | — | — |
| Forestry Commission, Ministry of Mines, Environment and Tourism (MMET) | — | — | — | — | — | na | — | ○ | na | — | — | ○ |
| Department of Environmental Health (DEH), Ministry of Health and Child Welfare | ○ | — | — | — | — | na | — | — | na | — | — | — |
| Department of Occupational Health and Safety, Ministry of Public Service and Social Welfare | ○ | — | — | — | — | na | — | — | na | — | — | — |
| Department of Water Affairs, Ministry of Rural Resources and Water Development | — | ○ | — | — | — | na | — | — | na | — | — | — |
| Zambezi River Authority | — | — | — | — | — | na | ○ | — | na | — | — | — |
| Department of Agricultural Technical and Extension Services (AGRUTEX), Ministry of Lands and Agriculture | — | — | ○ | — | — | na | — | ○ | na | — | — | — |
| Department of Energy, Ministry of Transport and Energy | — | — | — | — | ○ | na | — | — | na | — | ○ | — |
| Ministry of Local Government and National Housing | — | — | — | — | — | na | — | — | na | — | — | — |
| Curriculum Development Unit, Ministry of Education | — | — | — | — | — | na | — | — | na | — | — | ○ |
| Institute of Environmental Studies, University of Zimbabwe | — | — | — | — | — | na | — | — | na | — | — | ○ |
| Others | ○ | ○ | ○ | ○ | ○ | na | ○ | — | na | — | ○ | ○ |

Note: 1) : ○ → related — → No relation na → no information

2) : 4.3 other pollutions,

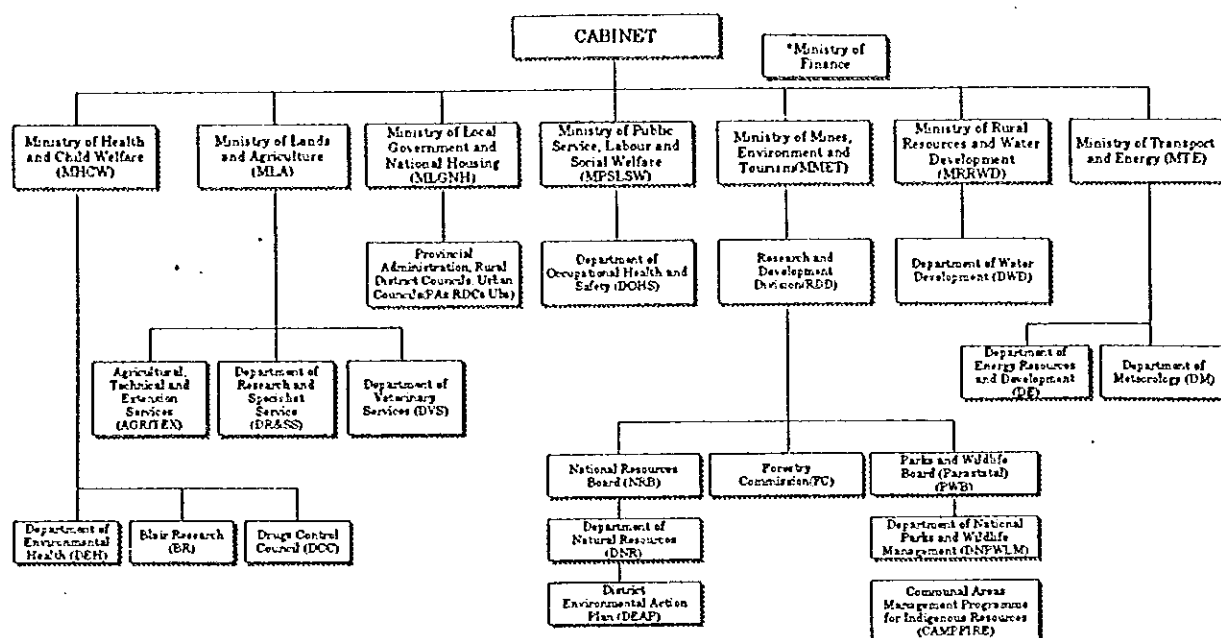
4.3(1) Land degradation, 4.4 Waste management,

4.5 Energy conservation and alternative energy, 4.7 Waste water management,

4.8 Forest conservation / desertification, 4.10 Natural resource management,

4.11 Natural disasters, 4.12 Environmental education

3) : Refer to each section related to other agencies when column is filled by ○.



* The ministry of Finance generally approves projects and is the recipient of donor funds where a government department is the implementing agency.

Source: a)

Government Organization Concerning Environment

(2) Governmental organization concerning environmental issues

| Organization / Outline of activities | Annual budget | Number of staff |
|---|----------------|-----------------|
| Ministry of Mines, Environment and Tourism (MMET) <ul style="list-style-type: none"> • Research and Development Division (RDD) <ul style="list-style-type: none"> - Reviewing, formulating and co-ordinating policy in support of environmentally sustainable development - Developing an action plan for the national conservation strategy - Co-ordinating the review of legislation pertaining to environmental management and natural resources development - Preparing processes and procedures for conducting environmental assessment and review of development proposals - Defining the institutional and administrative arrangements for co-ordinating environmental assessment and review in Ministries • Department of National Parks and Wildlife Management (DNPWM) <ul style="list-style-type: none"> - Advising government on conservation policy and legislation - Protecting, developing and managing national parks and wildlife estates - Adopting all legal and enforcement measures to prevent illegal use of wildlife - Developing guidelines and environmental impact assessments for development in national parks and estates - Promoting conservation management and the sustainable use of wildlife in communal areas e.g. through CAMPFIRE projects • Department of Natural Resources (DNR) <ul style="list-style-type: none"> - Exercising general supervision over natural resources, - Advising government on conservation policy and legislation, - Stimulating public interest in natural resources management, - Where necessary imposing restrictions over the use of natural resources • Forestry Commission • District Environment Action Plan (DEAP) • Communal Areas Management programme for Indigenous Resources (CAMPFIRE) • National Remote Sensing Facility (NRSF) <ul style="list-style-type: none"> - It offers technical services to remote sensing users and produces maps. Remote sensing is used to compile and update information on vegetation, erosion, water pollution, and water levels. The information also includes land use patterns, soil properties and their changes | no information | no information |
| Ministry of Transport and Energy (MTE) <ul style="list-style-type: none"> • Department of Energy Resources & Development <ul style="list-style-type: none"> - Planning and mobilising resources to ensure the provision of adequate energy supplies to the country - Assisting the formulation of energy policies - Research and development in the energy sector • Department of Meteorology <ul style="list-style-type: none"> - Weather forecasting - Early warning on climate change - Maintaining a data base | no information | no information |

| Organization / Outline of activities | Annual budget | Number of staff |
|--|----------------|-----------------|
| Ministry of Lands and Agriculture (MLA) <ul style="list-style-type: none"> Agricultural Technical and Extension Services (AGRITEX) <ul style="list-style-type: none"> Planning, designing, constructing of smallholder irrigation schemes, promoting and establishing grazing schemes and fish farming projects so as to transform drought prone areas into production lands Providing agricultural, technical and extension services in communal and resettlement areas Researching into soil erosion and irrigation technology Department of Veterinary Services <ul style="list-style-type: none"> Improving animal health and productivity of livestock Maintaining the viability of wildlife through the eradication, prevention, surveillance and control of animal diseases and pests Promoting public health through the control of communicable animal diseases such as rabies, anthrax, brucellosis and tuberculosis Department of Research and Specialist Service (DR & SS) | no information | no information |
| Ministry of Health and Child Welfare <ul style="list-style-type: none"> Responsible for drug control, and environmental issues pertaining to health Department of Environmental Health (DEH) <ul style="list-style-type: none"> Developing and managing mining, health and sanitation regulations for the provision of safe water, good housing, and sanitation for employees Monitoring food processing plants under the Food and Food Standards Act Co-ordinating the management and supervision of solid waste and liquid waste disposal systems Collaborates the Department of Occupational Health and Safety Blair Research Laboratory (DEH) <ul style="list-style-type: none"> Research into occurrence, transmission, control and prevention of vector borne disease | no information | no information |
| Ministry of Rural Resources and Water Development <ul style="list-style-type: none"> Department of Water Development <ul style="list-style-type: none"> Formulating and administering Government policy on the development and management of water resources Undertaking investigations, design, construction, operation and maintenance of Government water conservation works, irrigation and water supplies Borehole drilling for water supplies at growth points, district service centres, and primary water supplies to communal lands Collecting, processing and analysing hydrological, hydrogeological and water pollution control data | no information | no information |
| Ministry of Public Service, Labour and Social Welfare <ul style="list-style-type: none"> Responsible for occupational health and safety | no information | no information |
| Ministry of Local Government and National Housing <ul style="list-style-type: none"> Co-ordinates development projects in rural areas through Rural District Councils | no information | no information |
| Central Statistical Office (CSO) <ul style="list-style-type: none"> CSO is a department within the Ministry of Finance, compiles and publishes national and sector statistics | no information | no information |
| Department of Surveyor General | no information | no information |
| Government Publications and Sales Office <ul style="list-style-type: none"> The office sells government publications, pertaining to laws and regulations, Ministry reports, and reports of commissions of inquiry set up by the executive | no information | no information |
| Henderson Research Station | no information | no information |
| Institute of Agricultural Engineering | no information | no information |
| National Herbarium and Botanic Garden | no information | no information |
| Natural Resources Board (NRB) <ul style="list-style-type: none"> The board is a parastatal responsible for controlling and monitoring the activities of the DNR | no information | no information |
| Parks and Wildlife Board | no information | no information |
| Provincial Water Engineer (MATEBELELAND) | no information | no information |
| SADC Food Security Unit <ul style="list-style-type: none"> Co-ordinates the SADC food security needs providing data on food requirements in the region | no information | no information |
| Zimbabwe Investment Centre <ul style="list-style-type: none"> The Centre provides guidance and information to potential investors | no information | no information |

Source: a)

3.1.2 Non-governmental Agency (NGO)

| Name of NGO | Established year | Main activities |
|---|------------------|--|
| a) Africa 2000 Network | no information | Africa 2000 provides financial and technical assistance to activities of grassroots organisations and NGOs aimed at conserving natural resources and promoting developing in ways that are environmentally sensitive. It has been involved in projects in afforestation, reforestation, agroforestry, natural forest management, erosion control, water harvesting, and food preservation and storage. |
| b) Campfire Association | no information | Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is a rural-based programme that is involved in sustainable management and utilisation of natural resources such as wildlife and forestry. |
| c) Centre for Applied Social Science (CASS) | no information | CASS conducts research on the social aspects of resources management. It is a member of IUCN, the World Conservation Union. CASS is involved with the CAMPFIRE project, through the CASS Trust. A list of publications is available on request. |
| d) Environmental Liaison Forum | no information | no information |

| Name of NGO | Established year | Main activities |
|--|------------------|---|
| e) Environment 2000 Foundation | no information | • The Foundation mission is to fight for the protection of the country's environmental heritage. It has been involved in the protection of the rhinoceros, and other species. It undertakes community outreach programmes. The Foundation is locally funded. |
| f) Manicaland Development Association | no information | • no information |
| g) Mukuvisi Woodland Association | no information | • The association's mission is to educate children and adults in conservation and environmental studies. It promotes field studies and research, and promote the development of Mukuvisi Woodlands, a wild-life park on the outskirts of Harare. |
| h) National Conservation Trust of Zimbabwe | no information | • The trust aims to promote the preservation and protection of land, flora, and fauna, and other objects of historical interest. It works with the department of National Parks and Wildlife Management, and Natural Resources Board. |
| i) Southern Centre for Energy and the Environment (SCEE) | no information | • SCEE provides a facility for policy intervention in the areas of energy development and environmental preservation. It also provides a resource centre for environmentally sensitive technologies and techniques at all level of production. The centre offers an information base on the assessment of environment impact of large scale economic projects and general national policy on the environment. SCEE is considered to be technically the most competent organisation on climate change issues in Southern Africa. It has developed a very strong capability in energy and environmental management in industry. |
| j) University of Zimbabwe Publications (UZP) | no information | • UZP publishes original research papers and books, a small selection of which deal with environmental issues. |
| k) Wildlife Society of Zimbabwe | no information | • The Wildlife Society promotes wildlife conservation in Zimbabwe through education and research. |
| l) Zambezi Society | no information | • The Society promotes environmental awareness through education, and research. It particularly focuses on Wildlife and pollution. |
| m) Zimbabwe Trust | no information | • The Zimbabwe Trust promotes institutional development, management skills, and the productive capacity |

Source: a)

3.2 National Environmental Policy

| Policy/Project Name and Contents | Funding or Implementing Agency |
|---|--------------------------------|
| National Conservation Strategy (1987) | no information |
| Integrated Sustainable Resource Use with Every Aspect of the Nation's Social and Economic Development | no information |

Source: a)

3.3 Environmental Laws & Regulations

| Laws & Regulations | Status | Related Pages |
|--|----------------|---------------|
| Fertilizers, Farm Feeds and Remedies Act. 1952 • Provides for the regulation of the use of fertilisers, farm feeds, herbicides, and pesticides. | no information | |
| Forest Act. 1949 last amended 1990 • Provides for the setting of State forests and the protection of private forests, trees and forest produce; the conservation of timber resources and the compulsory afforestation of private land; the regulation of trade in timber resources. | no information | |
| Hazardous substances and Articles Act. 1971 • Provides for the regulation of the use of hazardous substances including radioactive substances. | no information | |
| Natural Resources Act. 1941 • Provides for the conservation and improvement of natural resources: the construction of works on Communal Land for the conservation of natural resources. | no information | |

| Laws & Regulations | Status | Related Pages |
|--|----------------|---------------|
| <p>Water Act. 1976</p> <ul style="list-style-type: none"> A new water bill (Water Bill, 1988) has been presented to Parliament. This bill repeals and replaces the <u>Water Act [Chapter 20:22]</u>. Its main features are to vest all water in the President so as to remove the concept of private ownership of such a critical national resource and to remove the holding of water rights in perpetuity - both features which plagued water resources management in the country's history and denied access to a great majority of the country's population beyond primary rights such as drinking, washing, watering animals and other basic uses of water. Regulations in the Water Act (1976) and Water Bill (1988) provide for the promulgation and enforcement of effluent and waste water standards. Various cases of water pollution have come to the public attention but very little litigation has resulted. This may be due mainly to the "tragedy of the commons" effect where no one particular individual takes responsibility for forcing authorities to redress the public for losses incurred. | no information | |
| <p>Urban Councils Act. 1995</p> <ul style="list-style-type: none"> Provides for the establishment of municipalities and towns and their administration. The act requires councils to appoint an environmental management committee, and a health committee. | no information | |
| <p>Parks and Wildlife Act. 1971</p> <ul style="list-style-type: none"> Provides for the establishment of national parks, botanical gardens, sanctuaries, safari areas, and recreational parks. | no information | |
| <p>Atmospheric Pollution Prevention Act. 1941</p> <ul style="list-style-type: none"> Provides for the prevention of atmospheric pollution. | no information | |

Source: a)

4. STATE OF THE ENVIRONMENT

4.1 Air Pollution

Limited data is available for ambient air quality and atmospheric pollution. The available data is drawn from a 1988 study [Jannalgotda and Mathuthu, cited in Nhova et al]. The study found that level of SO₂ in the Harare City centre and industrial areas were very high. The annual mean level of SO₂ concentration was 60.1 (S.D.=52.7) micrograms/m³. This was about 44 times higher than the level of the maximum concentration of SO₂ in a farmland area (Mazowe). Concentrations were even higher in the industrial area with an annual mean of 67.2 (S.D.=28.9). Other pollutants with notable concentrations in the industrial area were NO₃ (mean 20.4, S.D.=15.2), NH₃ (mean 24.5, S.D.=13.8) and HCL (mean 35.6, S.D.=11.8).

The major problem in air pollution control is lack of monitoring facilities. The only facilities for air sampling are located at the University of Zimbabwe. Urban Councils are supposed to monitor air quality but they do not have the infrastructure to do it.

The Road Traffic and Construction Act (1976) empowers the police to fine owners of motor vehicles whose emission levels exceed "acceptable levels."

| Related Agency |
|---|
| ① Department of Environmental Health (DEH), Ministry of Health and Child Welfare |
| ② Ministry of Mines, Environment and Tourism (MMET) |
| ③ Department of Occupational Health and Safety, Ministry of Public Service and Social Welfare |
| ④ Motor Trade Association |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--|----------|--|
| ① Law on air pollution | ○ | Atmospheric Pollution Prevention Act, 1941 |
| ② Ambient air quality standard | ? | |
| ③ Emission standard (stationary and/or mobile sources) | ? | |
| ④ Environmental monitoring results | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.2 Water Pollution

The main sources of pollution are urban sewage effluent, industrial effluent, agro-chemicals, mining operations and agricultural activities. Pollution of water reservoirs has created a secondary pollution problem, that is the proliferation of water hyacinth, a water weed which is now basically out of control.

Water hyacinth is widespread in Zimbabwe, with the highest levels of infestation in bodies of water in Mashonaland and Manicaland but more critically experienced in Lake Chivero which is a major water source for Harare and where nutrient levels are so high that the weed flourishes. Water pollution, especially by phosphates and nitrates is the main cause of its proliferation. Attempts to control the weed have not achieved sustained success. The chemical 2,4-Dichlorophenoxyacetic acid (2,4-D) has been used to control the weed, but this has been controversial because of the limited knowledge of the negative effects of the chemical (Maya, 1996). Proposals have been made to use a combination of biological and chemical methods to control the weed [Mpofu, 1997]²⁶. The proposals involve the use of water hyacinth eating weevils for example the *Neochetina eichhorniae*. [Moyo, Ed. *Lake Chivero - a Polluted Lake*].

There are occasional spills or leakages of toxic wastes at mining sites. In 1998, low traces of cyanide were detected in Umzingwane Dam following heavy rains which caused sludge containing the chemical to flow from How Mine near Bulawayo into a supply river (The Herald, February 7, 1998). Earlier, unconfirmed reports of military personnel dying from drinking water at a disused mining town were also reported. Indeed for smaller peri-urban towns, there is very little telling how far such problems have gone as analytical equipment and skills are limited there. See section 4.11.3 for further discussion on effects of mining sites.

Major sources of industrial pollution are pulp and paper mills, fertilizer factories, thermal power stations, abattoirs, and textile manufacturers using dyes and noxious cleaning chemicals. A number of industries dump their untreated or partially treated effluent into the municipal sewage systems [Staneva, 1997]

Some of the discharges are iron ore, limestone, coke, oil, coke oven tar, and suspended slug solids. In addition, unacceptably high levels of heavy metals have been detected in industrial sludge, for example copper and lead.

The main problems of industrial waste is the absence of mechanisms for the strict enforcement of disposal legislation.

Source: a)

| Related Agency |
|---|
| ① Department of Water Affairs, Ministry of Rural Resources and Water Development |
| ② Department of Natural Resources (DNR), Ministry of Mines, Environment and Tourism (MMET) |
| ③ Department of National Parks and Wildlife Management (DNPWM), Ministry of Mines, Environment and Tourism (MMET) |
| ④ Zambezi River Authority (for Zambezi river only) |
| ⑤ Department of Engineering Services, Chitungwiza Town Council |
| ⑥ Department of Works, City of Harare |
| ⑦ Department of Works, City of Bulawayo |
| ⑧ District Development Fund |
| <i>Water hyacinth weed</i> |
| ⑪ Department of National Parks and Wildlife Management (DNPWM), Ministry of Mines, Environment and Tourism (MMET) |
| ⑫ Department of Water Development, Ministry of Rural Resources and Water Development |
| ⑬ Weeds Research Team, Henderson Research Station. |

Source: a)

| Summary List of Urban Water Quality Issues |
|--|
| <ul style="list-style-type: none"> • Demand side issues of water supply are simply not on the national water agenda. • Consumer role and rights on water quality are greatly stifled by lack of information and independent sources of information on water quality. • Problems of recontamination from broken pipes, back-flow and stagnant or trapped water need to be fully assessed and documented • Contamination of mains water from private borehole need to be fully assessed. |

Summary List of Urban Water Quality Issues

- Systematic application of technical and social conservation options absent.
- Occupancy rates exceed planned occupancies in urban households.
- Mechanisms for leak detection absent.
- Network maps for urban water reticulation not known in most cases.
- Status of water quality in most small cities and towns not specified.
- Extent of agro-chemicals and mining chemical depositions in city or town water source not assessed.
- Assessments of lower dam or river pollution from Harare treatment works not conclusive.
- Mechanisms for ensuring public consultation on new policy initiatives absent.
- Present institutional arrangement for water supply and quality management not effective for most "growth point" authorities.
- Public education campaigns on public rights regarding clean water are needed.
- Raw water quality assurance needed.
- Stand pipe areas education campaign on health issues related to shortage needs to be conducted.
- Legal instruments allowing pollution concessions to industry need to be examined.
- Bore-hole locations versus septic tank-survey of practice needs to be conducted.
- Standards situation to be assessed: Zimbabwe to come up with national standards and standardized testing methods among laboratories.
- Information to be produced to support enactment of Group Proceedings Act and to support consumers in making effective litigation through class action suits.

Source: Southern Centre for Energy and Environment, Perspectives on Water Quality, 1996 (a))

List of organizations carrying out major rehabilitation projects in the Save Catchment

International organizations

- Environment and Development Activities (ENDA - Zimbabwe)
- IUCN-The World Conservation Union (IUCN - Regional Office for Southern Africa)
- Lutheran World Federations [LWF]
- United Nations Development Programme [UNDP]
- Plan International

Local organizations

- Ministry of Mines Environment and Tourism
- Department of Natural Resources
- Department of National Parks and Wild Life Management
- Agricultural Technical and Extension Services
- Ministry of Rural Resources and Water Development, Department of Water Resources Development
- Forestry Commission
- CAMPFIRE Association
- Zimbabwe Institute of Religious Research and Ecological Conservation (ZIRRECON)
- Save Rehabilitation Action Committee (SARAC)
- Manicaland Development Association

Source: a)

Concentrations of heavy metals in Lake Chivero

| Site | As | Cd | Cu | Hg | Mn | Pb | Zn |
|----------|-----|-----|-----|------|------|-----|-----|
| Lake | .07 | <01 | .02 | .68 | .02 | .49 | .01 |
| Outflow | <01 | <01 | .29 | 1.14 | 11.3 | .68 | .47 |
| Stream | <01 | <01 | .02 | .95 | .02 | .47 | <01 |
| Marimba | .04 | <01 | .02 | .96 | .41 | .47 | .01 |
| Mukuvisi | .13 | <01 | .02 | .45 | <01 | .52 | .26 |
| Manyame | .11 | <01 | .02 | 1.15 | <01 | .55 | .01 |

Source: Hillman C. 1995 (Unpublished MSc Thesis University of Zimbabwe)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|-------------------------------|----------|--|
| ① Law on water pollution | ○ | • Water Act (1976) and Water Bill (1988) |
| ② Water quality standard | ○ | • Water Act (1976) and Water Bill (1988) |
| ③ Effluent standard | ○ | • Water Act (1976) and Water Bill (1988) |
| ④ Drinking water standard | ? | |
| ⑤ Water quality monitoring | ? | |
| ⑥ Guidelines on water quality | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.3 Other Pollution

(1) Land Degradation

100 ton/ha of soil is washed away every year resulting in river and dam siltation and loss of land productivity. Gulley formation is quite critical in many communal areas due to population pressure and loss of vegetative cover.

Source: a)

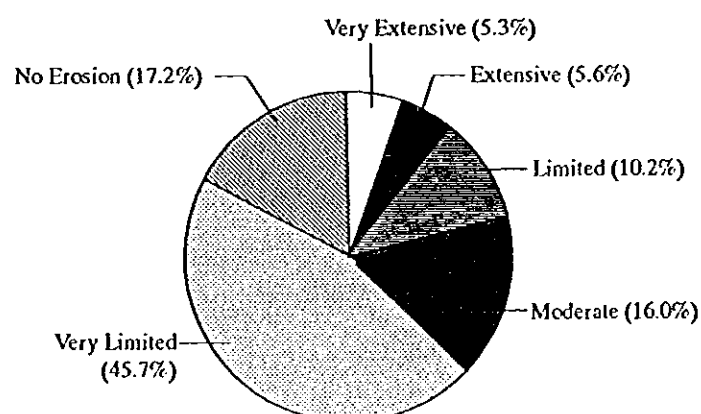
| Related Agency | |
|----------------|---|
| ① | Department of Research and Specialist Services, Soils Laboratory |
| ② | Department of Agricultural Technical and Extension Services(AGRITEX), Ministry of Lands and Agriculture |
| ③ | Institute of Agricultural Engineering |

Source: a)

Extent of Soil Erosion by Land Tenure Categories

| Erosion Class | % of land area in each category | | | Total Area |
|----------------|---------------------------------|------------|-------|------------|
| | Communal | Commercial | Other | |
| No erosion | 7.2 | 14.7 | 55.4 | 17.2 |
| Very Limited | 29.7 | 64.7 | 40.5 | 45.7 |
| Moderate | 20.3 | 15.9 | 3.2 | 16.0 |
| Limited | 19.6 | 3.4 | 0.6 | 10.2 |
| Extensive | 11.3 | 1.2 | 0.3 | 5.6 |
| Very Extensive | 11.9 | 0.1 | 0.0 | 5.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Source: a)



Extent of Soil Erosion by Land Tenure Categories in Percentages

Source: After Whitlaw, R. 1987 (a))

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--------------------------------|----------|---|
| ① Law on land degradation | ? | |
| ② Standard on land degradation | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.4 Waste Management

The main sources of waste are municipal, industrial, and mining activities. Solid waste disposal falls into three main categories, landfilling which is practised by large cities, open disposal sites which are operated by the majority of small towns, incineration which is practised at sawmill sites. None of the disposal sites is protected for leakage or permeability leading to soil and ground water contamination.

While most cities and towns have well planned and managed dumping sites, uncollected waste in some high density suburbs has posed health hazards. The main problem is lack of resources for refuse collection and land-filling.

Poor disposal site management has resulted in heavy metal pollutants (Pb, Cr(III), Cu, and Cd) from land-fill sites. Along Mukuvisi river in Harare, levels are in excess of WHO guidelines for drinking water (Zaranyika, et al, 1993).

| Related Agency |
|--|
| ① Municipal authorities of all urban centres |
| ② Ministry of Mines Environment and Tourism (MMET) |

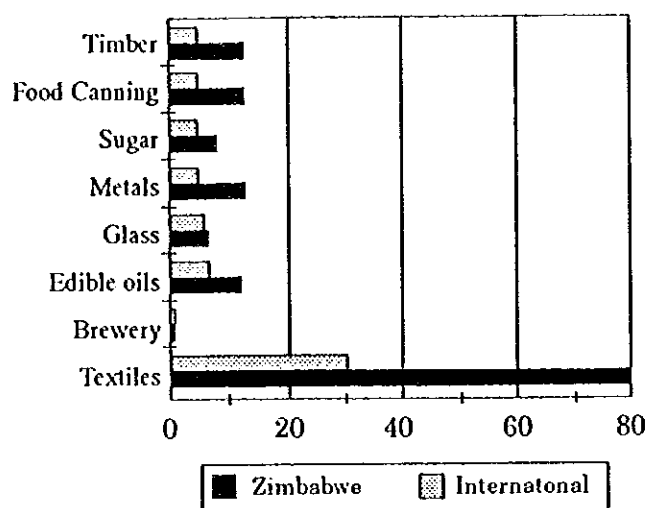
Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|---------------------------|----------|---|
| ① Laws on waste | ? | |
| ② Laws on hazardous waste | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.5 Energy Conservation & Alternative Energy

Zimbabwean industries consume many times more energy per unit of output in various industries than their European counterparts.



Source: Southern Centre-Barriers to Energy Efficiency improvement in Zimbabwe, 1995 (a)

Intensity in Industry (MJ/Unit)

This indicates that there is significant room for energy efficiency improvement in Zimbabwe and already, studies have shown that 25% improvements can be reached with low cost options and up to 40% if high cost options are considered. Very little by way of energy conservation is going on due to barriers which include lack of skills to provide energy services, poor financing mechanisms and lack of information on options and their benefits. [SADC Energy Efficiency Report].

The Department of Energy has been conducting various initiatives to introduce alternative and cleaner energy systems. Major initiatives include the Government of Zimbabwe GEF Solar PV (photovoltaic) Project funded by GEF and UNDP. The project seeks to enhance the diffusion for solar PV devices in low income rural households and to develop institutional capacity to finance such devices. While this project has made significant achievements in terms of building awareness and financing mechanisms for the solar PV market, it also has equally significant failures which could be rectified perhaps in a next phase that is under discussion. These limitations include failure to provide resources to develop a local supply base for solar PV devices, failure to provide resources for complete project packages which would include income generating activities based on the solar energy supplied. So far, supplies were only for consumer items such as lighting and household electric appliances.

Another solar energy project the Solar PV Water Pumping Pilot project financed by GTZ-Energy Programme (Zimbabwe) seeking to improve the technical economics and management approaches to community PV water pumping installations. The SADC FINESSE (Southern African Development Community Project for Financing Energy Use in Small Scale Enterprises) seeks to support entrepreneurship development and investment mechanisms for a wide range of new and renewable sources of energy. Zimbabwe is the founder chairman of the World Solar Programme (1996 - 2005). *Additional information on this programme can be obtained through Mr. J.T. Chigwada, Ministry of Transport and Energy.*

The country has demonstrated keenness to develop tertiary biomass energy technologies along side other form of energy in the country. A project of the Department of Energy on the extraction of oil from the Jatropha Plant in the Makosa Area of Mutoko District is experimenting with extracting oil from the Jatropha seed to replace paraffin use in households and to make soap. The cake residue is being studied for use as fertilizer. The project is funded by Rockefeller Foundation. *Additional information can be obtained through Mr. Mika at Biomass Users Network.* In the early eighties, Zimbabwe built an ethanol plant with a capacity to produce 40 million litres of ethanol from sugar cane in response to the petroleum crisis of that time.

| Related Agency |
|--|
| ① Department of Energy, Ministry of Transport and Energy |
| ② Cleaner Production Centre, United Nations Industrial Development Organisation |
| ③ Department of Occupational Safety and Health, Pneumoconiosis Board |
| ④ Global Environmental Facility (GEF)/UNDP |
| ⑤ Energy Technical and Administrative Unit, Southern Africa Development Community (SADC) |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|---------------------------------------|----------|---|
| ① Laws on energy use and conservation | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.6 Water Supply

Major problems include critical shortage of water for rural and urban households in drought years and for rural populations this extends to dry months of the year unless there is adequate surface water storage or bore-holes to tap underground water; shortage of water for animals, both domestic and wild; and shortage of water for crop production in years of drought.

According to the Central Statistics Office (1992) *Zimbabwe National Report*

- 38 % of households have water on their premises.
- 27 % of households walk between less than 500m,
- 22 % of households walk between 500 and 1 000m,
- 13 % of households walk greater 1 000m,

to fetch water and in many cases queue for long hours to obtain water from sparsely located bore-holes. In urban areas water rationing has become commonplace and almost perennial for such cities as Bulawayo located in the drier parts of the country.

In both urban and rural areas the problem of availability and access to water can be attributed to both low official capacity to develop infrastructure and to droughts which are quite recurrent in this region of Africa.

A summary table depicting access by rural households to safe drinking water is presented table 1 below.

Detailed assessments access to water for rural households are given in CSO *Provincial Profiles 1992* and CSO Population Data Sheets 1992.

Government effort to augment the present dam storage capacity of 4 900 million cubic metres [State of the Environment Report, Natural Resources Board 1992] is receiving much needed support from such projects as the Give-a-Dam project which seeks to support small communities in constructing dams and developing small scale irrigation activities around the dams. This project is most active in the Matabeleland region. Despite all these efforts, only limited progress has been achieved in introducing permanent water supply solutions to such places as Bulawayo which are sure to face critical shortage of water each year.

| Related Agency |
|----------------|
| no information |

Access to safe drinking water (piped)

| Provinces and Cities | Percentage population |
|----------------------|-----------------------|
| Bulawayo (Urban) | About 100 |
| Harare (Urban) | About 100 |
| Mashonaland Central | 72 |
| Mashonaland East | 59 |
| Mashonaland West | 77 |
| Manicaland | 70 |
| Masvingo (Urban) | 68 |
| Matabeleland North | 76 |
| Matabeleland South | 71 |
| Midlands | 69 |

Source: CSO Census 1992, Zimbabwe National Report

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--------------------------------------|----------|---|
| ① Laws on water resources and supply | ○ | Water Act (1976) and Water Bill (1988) |
| ② Laws on use of water resources | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.7 Waste Water Management

Sewage effluent

Eutrophication from sewage waste is caused by discharge of nitrogen and phosphorous rich sewage effluent. This causes excessive growth of algae, which decomposes on dying and, depletes oxygen levels, threatening aquatic life, and raising the cost of water treatment.

Industrial effluent

Major sources of the industrial effluent are pulp paper mills, fertiliser factories, thermal power stations, abattoirs, and textile manufactures using dyes and noxious cleaning chemicals. A number of industries dump their untreated or partially treated effluent into the municipal sewage systems (Staneva, 1997).

In the steel towns of Gweru and Kwekwe, there are discharges of iron ore, limestone, coke, oil, coke oven tar, and suspended slug solids. The effects of these pollutants has not been completely investigated.

Unacceptably high levels of heavy metals have been detected in industrial sludge, for example copper and lead concentrations of 2 and 0.4 mg/l have been found (Staneva, 1997). The permissible levels are 0.05 and 0.5 mg/l for lead and copper respectively. Other studies (e.g. Zaranyika et al, 1993; Chibanda, 1992) [cited in Moyo, N. Lake Chivero Chapter 4] have found levels of CO, Ni, Pb, Fe, Cr (III) in Harare rivers that were above WHO quality guidelines.

| Related Agency | |
|----------------------------|---|
| Sewage effluent | |
| ① | Department of National Parks and Wildlife Management (DNPWM), Ministry of Mines, Environment and Tourism (MMET) |
| ② | Zambezi River Authority (For Zambezi river only) |
| ③ | Department of Engineering Services |
| ④ | Chitungwiza Town Council |
| ⑤ | Department of Works, City of Harare |
| ⑥ | Department of Works, City of Bulawayo |
| ⑦ | Various engineering departments of smaller urban authorities |
| Industrial effluent | |
| ① | Confederation of Zimbabwe Industries |
| ② | Environment Sub-committee |
| ③ | Environmental Forum of Zimbabwe |
| ④ | Ministry of Mines Environment and Tourism |
| ⑤ | Various local authorities or city councils |

Source: a)

Access to toilet facilities in 1992

| Type of toilets | Percentage households |
|------------------------|-----------------------|
| Flush toilets | 37 |
| Blair and pit latrines | 29 |
| No toilets | 34 |

Source: CSO Census 1992, Zimbabwe National Report

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|---|----------|---|
| ① Laws on sewerage system | ? | |
| ② Laws and regulations on industrial effluent | ○ | Water Act (1976) and Water Bill (1988) |
| ③ Effluent standard | ○ | Water Act (1976) and Water Bill (1988) |
| ④ Results of monitoring | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.8 Forest Conservation / Desertification

The major causes of deforestation are land clearing for agriculture, household energy use, fencing of gardens, energy use in small scale rural industries.

Between 70,000 and 100,000 hectares of forest are cleared annually for agricultural purposes making agriculture the major cause of deforestation. About 6,000,000 tonnes of wood are harvested annually for household energy purposes. In addition small scale rural industries like beer brewing and brick making as well as tobacco curing make a significant contribution. While at the national level the depletion rates may look sustainable, there are large pockets where deforestation and shortage of timber for all applications has passed critical levels. [UNEP, 1993].

| Related Agency |
|--|
| ① Forestry Commission, Ministry of Mines, Environment and Tourism (MMET) |
| ② Commercial Division and State Forestry Division, Department of Agricultural Technical and Extension Services (AGRITEX) |
| ③ Department of Natural Resources (DNR), Ministry of Mines, Environment and Tourism (MMET) |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--|----------|---|
| ① Laws on forest conservation | ○ | · Forest Act. 1949 last amended 1990 |
| ② Laws and regulation on protection area | ○ | · Parks and Wildlife Act. 1971 |
| ③ Laws on desertification | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.9 Biodiversity Conservation

This is becoming a serious problem as forests become heavily depleted and vegetative cover is destroyed due to droughts and human activity. Traditionally scarce vegetation was treated as sacred and spared destruction by traditional values. These are waning and such species are now being depleted for fuel and construction. A major national biodiversity planning and management is under way and policies and measures are being prepared. There is also a significant loss of such animals as wild dogs (painted dogs). The Ministry of Mines, Environment and Tourism is concerned that elephants and hippopotamus also face significant threat due to loss of habitat. For example, elephants pose a threat to their own habitat and to that of other wild animals as they destroy vegetation when overpopulated. Natural habitat for hippopotamus populations are already restricted by massive river siltation. National Biodiversity Strategy Action Plan is being finalised and is scheduled for release in August 1998. The latest draft available is for March 1998.

| Related Agency |
|----------------|
| no Information |

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--|----------|---|
| ① Laws on protection for fauna and flora | ? | |
| ② Laws and regulations for protection for specific species | ? | |
| ③ Laws and regulations on hunting | ? | |
| ④ Laws and regulations on protection area | ○ | · Parks and Wildlife Act. 1971 |
| ⑤ Listed species in the Red Data Book | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.10 Natural Resource Management

There are occasional spills or leakages of toxic wastes at mining sites. In 1998, low traces of cyanide were detected in Umzingwane Dam following heavy rains which caused sludge containing the chemical to flow from How Mine near Bulawayo into a supply river (The Herald, February 7, 1998). Earlier, unconfirmed reports of military personnel dying from drinking water at a disused mining town were also reported. Indeed for smaller peri-urban towns, there is very little telling how far such problems have gone as analytical equipment and skills are limited there. See section 4.11.3 for further discussion on effects of mining sites.

| Related Agency |
|---|
| ① Ministry of Mines, Environment and Tourism (MMET) |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|--|----------|---|
| ① Laws on conservation of natural resources | ○ | Natural Resources Act. 1941 |
| ② Laws on use and conservation of mining resources | ? | |
| ③ Laws on underground resources | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.11 Natural Disaster

The single most critical disaster affecting Zimbabwe is the impact of increasingly frequent droughts. Other areas of vulnerability are pests and outbreaks of animal diseases such as foot and mouth, and anthrax which threaten human health, as well as beef export earnings. There has been a recurrent cycle of poor rainfall since 1981. The drought of 1992/93 was the most severe. The average rainfall which fell across the country was only 324mm, compared with an historical 30 year average of 662mm [Borsotti, 1993]. The effects of the drought were aggravated by the general decline in precipitation in the preceding years. The effect was a 75% reduction in the amount of cereals produced. The country imported 2.2 millions tonnes of grain at a cost of US\$300 million. Over 1 million herd of cattle died, reducing the communal herd by 23%. The overall economy was affected by the loss of key export commodities (cereals, beef, tobacco), and low water levels on hydro-electric power generation. There was reduction of GDP of 8% over the period. The most significant impact was on the rural poor, small-holder farms and children. There was an increase in malnutrition, and the incidence of water borne diseases.

| Related Agency |
|---|
| ① Plant Protection Unit, Ministry of Lands and Agriculture (locust control) |
| ② Ministry of Local Government and National Housing (emergency preparedness and response) |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|----------------------------|----------|---|
| ① Laws on natural disaster | ? | |

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.12 Environmental Education

The main educational issues are re-orienting education towards sustainable development, promoting specialised training and increasing public awareness.

There is some provision in school curricula for teaching, training and research in environmental education from primary education to university level. Most schools offer this subject at primary level. The Ministry of Education has produced a syllabus on agricultural and environmental science for use in schools but the majority of the teachers lack competence in the environmental field.

Specialist training in agriculture and agricultural extension exists in seven colleges at certificate and diploma level. The Forestry Commission have their own specialist colleges providing diploma level education. The Forestry Industry Training Centre has an enrolment of about 60. None of these colleges offer training in ecology or natural resources management.

There are no undergraduate course on the environment at university level. However, about 16 departments and four research centres include some facet of environmental studies in their teaching and research on the subject of forestry. Post-graduate studies are offered in geography. The Institute of Environmental Studies at the University of Zimbabwe focuses on research and training in environmental matters. The National Herbarium offers specialised training e.g. in plant taxonomy.

Various ministries, NGOs and other organisations are involved in programmes to educate and promote environmental awareness. Examples are Environment 2000, Forestry Commission, Natural Resources Board, IUCN Commission of Education Communication.

| Related Agency |
|--|
| ① Curriculum Development Unit, Ministry of Education |
| ② Forestry Commission, , Ministry of Mines, Environment and Tourism (MMET) |
| ③ Natural Resources Board |
| ④ Institute of Environmental Studies, University of Zimbabwe |
| ⑤ Forestry Industry Training Centre |
| ⑥ Various NGOs (=> listed in section 6) |

Source: a)

| Laws and Regulations | Presence | Name of Laws or Regulations (Reference) |
|---|----------|---|
| ① Laws on education | ? | |
| ② Guidelines on environmental education | ? | |

Note: O : Issued, X : None, Δ : Under planning, ? : Unknown

5. INTERNATIONAL RELATIONSHIP

Zimbabwe is signatory to more than 10 environmental treaties, conventions and agreements. The Ministry of Mines, Environment and Tourism has suggested that all environment related treaties and conventions should be interpreted in domestic legislation and presented to parliament within six months of the date of their ratification.

Zimbabwe borders five other states in the region. There is therefore, the possibility of cross border issues such as air pollution particularly from large scale emission sources such as power plants and water pollution from agriculture. Already the Zambezi river which is used for recreation, fishing and power generation has some effects downstream as the water flows between Zambia and Zimbabwe into Mozambique. This subject however, is yet to be studied in detail.

The Ministry of Mines Environment and Tourism is responsible but various other institutions including NGOs and Government Departments implement projects. See Section 3.2, *Institutions involved in environmental issues*.

In addition to the official channels International co-operation on environmental issues can also be carried out through direct collaboration with implementing agencies such as NGOs, industry, Community Based Organisations (CBOs), and specialised departments of government such as Forestry Commission.

5.1 International Convention

| Name of international Convention | Year |
|--|----------|
| World Heritage Convention (1972)) | |
| Trade in Species Convention (1973) | 16-08-82 |
| Law of the Sea Convention (1985) | 19-05-82 |
| Vienna Ozone Convention (1985) | 24-02-93 |
| Montreal Ozone Protocol (1987) | 03-11-92 |
| London Ozone Amendment (1990) | 03-11-92 |
| Copenhagen Ozone Amendment (1992) | 03-06-94 |
| Biodiversity Convention (1992) | 03-06-94 |
| Desertification Convention (1994) | 11-11-94 |
| Climate Change Convention (1992) | |
| Basel Wastes Convention (1989) | 03-11-92 |
| Bamako Wastes Convention (1991) | 10-07-92 |
| SADC Watercourse Protocol (1995) | 10-07-92 |
| Convention on International Trade in Endangers Species CITES | 19-08-81 |

Source: Ministry of Mines, Environmental & Tourism (a)

5.2 International Cooperation Project

| Name of Project (Project cost: million dollars) | Period | Donor/South African lead agency |
|---|----------------|--|
| Domestic Energy Consumption and its Impact on the Environment | no information | African Development Bank (ADB) |
| Financial and technical assistance to MMET towards the development of commitments to Agenda 21. Current assistance focuses on law reform. | no information | CIDA (Canadian International Development Agency) |
| Forestry (Approaches to shared responsibility for natural resource management in woodland reserves-With the Forestry Commission) | no information | DFID (Department for International Development) |
| Integrated Rural Water Supply and Sanitation Programme (IRWSSP) | no information | |
| Institutional capacity building in rural district councils. | no information | |
| Emergency Food Aid | no information | |
| Pest control (locust control) | no information | |
| Studies on Greenhouse Gas Emissions | no information | |
| Small scale irrigation in the Save catchment area | no information | European Union |
| National Energy Efficiency and Conservation Project | no information | GTZ (Federal Republic of Germany) |
| Solar energy project: PV pumping systems in the rural areas | no information | |

| Name of Project (Project cost: million dollars) | Period | Donor/South African lead agency |
|--|----------------|------------------------------------|
| Co-ordinates the activities of donors through a donors round-table where donors hold dialogues with representatives from government. | no information | UNDP |
| District Environmental Action Plan (DEAP) | no information | |
| Country Studies on Sustainable Energy and Environment. | no information | |
| National bio-diversity strategy and action plan. | no information | |
| Global Environment Facility (GEF) assists in the protection of the environment in three areas: global warming, destruction of bio-diversity, and depletion of the ozone. | no information | |
| The Zambezi River Action Plan (ZACPLAN) involves eight countries of the Zambezi river basin and focuses on ways to guarantee the quality and quantity of water crossing borders through sharing arrangements and compensation. | no information | SADC |
| SADC energy sector Action Plan, based on SADC energy co-operation policy and strategy, 1996. | no information | |
| Greenhouse Gas emissions studies. | no information | U.S. Country Studies Programme |
| Institutional capacity building at Rural District Council level. | no information | SNV (The Netherlands) |
| Water supply projects in rural areas. | no information | |
| Community participation programmes (CAMPFIRE). Funding may be phased out by the year 2000. | no information | USAID |
| Emergency Preparedness (Zimbabwe Emergency Preparedness and Response by Year 2000). | no information | WHO |
| Workshops on the political economy of the environment for decision making. | no information | World Bank |
| Funding for the Global Environment Facility | no information | |

Source: a)

6 INFORMATION SOURCE

6.1 Governmental Agency

| Name of Organization | Contact Address |
|---|---|
| a) Agricultural Technical and Extension Services (AGRITEX) | • Block 2 Makombe Building, H. Chitepo Ave / Harare St. P. O. Box CY 639, Causeway, Harare Tel: 263-4-707311/2 |
| b) Central Statistical Office (CSO) | • Kaguvi Building, 4th Street/Central Avenue P. O. Box CY 342, Causeway, Harare Tel: 263-4-706681-8: |
| c) Department of Energy Resources & Development | • P. Bag 7710, Causeway, Harare Tel: 263-4-791760-9, Fax: 263-4-721967 |
| d) Department of Environmental Health (DEH) | • Kaguvi Building, 18th Floor, 4th Street P. O. Box 8204, Causeway |
| e) Blair Research Laboratory (BR) | • Box CY 573, Causeway Tel: 263-4-739555 or 263-4-703919 |
| f) Department of Meteorology | • Bishop Gaul Avenue P. O. Box BE 150, Belvedere, Harare Tel: 263-4-704955 |
| g) Department of National Parks and Wildlife Management (DNPWM) | • P. O. Box 8365, Causeway, Harare Tel: 263-4-792786/7 |
| h) Department of Natural Resources (DNR) | • Block 1, Makombe Complex, Harare Street/Herbert Chitepo Ave. P. O. Box CY 385, Causeway, Harare, Zimbabwe Tel: (+2634) 705661/71, Fax: (+2634) 793123 |
| i) Department of Research and Specialist Services | • P. O. Box CY 594, Causeway, Harare, Zimbabwe Tel: 263-4-706179 |
| j) Department of Veterinary Services | • Branch Bevan Building 18, Borrowdale Road P. O. Box CY 66, Causeway, Harare Tel: 263-4-791355 |
| k) Department of Water Development | • Kurima House, Nelson Mandela Avenue, Private Bag 7767, Causeway, Harare Tel: 263-4-729223/4 |
| l) Department of Surveyor General | • Electra House, Samora Machel Avenue P. O. Box CY 540, Causeway, Harare Tel: 263-4-794545 |
| m) District Environment Action Plan (DEAP) | • P O Box A 1524, Avondale, Harare |
| n) Forestry Commission | • 1 Orange Grove, Highlands P. O. Box HG 139, Highlands, Harare Tel: 263-4-498436/9 |
| o) Government Publications and Sales Office | • Cecil House, J. Moyo Avenue, Harare Tel: 263-4-724215 |
| p) Henderson Research Station | • P. Bag 2004, Harare Tel: 263-75-223023 |
| q) Institute of Agricultural Engineering | • P. O. Box BW 330, Borrowdale, Harare Tel: 263-4-707311 |
| r) National Herbarium and Botanic Garden | • Downie Avenue, Alexandra Park P. O. Box CY 550, Causeway, Harare Tel: 263-4-725313 |
| s) National Remote Sensing Facility (NRSF) | • P. O. Box 8039, Causeway, Harare Tel: 263-4-79071 |
| t) Natural Resources Board (NRB) | • Block 1 Makombe Building Complex, H. Chitepo/Harare Street, Harare, Zimbabwe • Tel: 705661 |
| u) Parks And Wildlife Board | • P. O. Box 8365, Causeway, Harare Tel: |
| v) Provincial Water Engineer (MATEBELELAND) | • New Government Complex Box 566, Bulawayo Tel: 263-9-69361 |

| Name of Organization | Contact Address |
|--|--|
| w) Resource Development Division (RDD) | • P. O. Box CY 286, Causeway Harare Tel: 263-4-732881/8, Fax: 263-4-793065 |
| x) SADC Food Security Unit | • Security House, Rezende Street P. O. Box 4046, Harare Tel: 263-4736051/2, Fax: 263-4-751613 |
| y) Zimbabwe Investment Centre | • 109 Rotten Row, Harare Tel: 363-4-757931-6, Fax: 263-4-759917 and 757937 E-mail: zic@zic.samara.co.zw and zic@harare.iafrica.com |

Source: a)

6.2 Non-governmental Organisation (NGO)

| Name of Organization | Contact Address |
|---|---|
| a) Bio-Diversity Foundation for Africa | • 2 Fifth Street P. O. Box 60, Bulawayo, Zimbabwe Tel: 263-9-61226, Fax: 263-9-7300 |
| b) Biomass Users Network (BUN) | • P. Bag 7768, Causeway Tel: 263-4-793395/6, Fax: 263-4-793313 |
| c) Environmental and Development Activities (ENDA) - Zimbabwe | • 14 Belvedere Road P. O. Box 3492, Harare Tel: 263-4-708568-9, Fax: 263-4-729204 |
| d) Food and Agricultural Organization (FAO) | • P. O. Box 3730 Harare Tel: 263-4-706032, Fax: 263-4-729563 |
| e) IUCN -- The World Conservation Union | • Regional Office for Southern Africa (ROSA) P. O. Box 745 Harare Tel: 263-4-728266, Fax: 263-4-720738 |
| f) Lutheran World Federation (LWF) | • P. O. Box 988 Harare Tel: 263-4-796556-9, Fax: 263-4-706410 |
| g) United Nations Development Programme (UNDP) | • P. O. Box 4775, Takura House, Union Avenue, Harare, Zimbabwe |
| h) World Food Programme (WFP) | • P. O. BOX 4775, Takura House, 67 Union Avenue, Harare, Zimbabwe Tel: 263-4-739984, Fax: 263-4-734932 |
| i) World Wide Fund for Nature (WWF) | • 10 Lanark Road, Belgravia, Harare, Zimbabwe Tel: 263-3-730599, Fax: 263-4-730599 |
| j) World Vision International | • P. O. Box 2420, Harare Tel: 263-4-703794, Fax: 263-4-703794-5 |

Source: a)

6.3 Regional Organisations

| Name of Organization | Contact Address |
|---|--|
| a) Africa Resource Trust | • P. O. Box A860, Avondale, Harare Tel: 263-4-732625 / 732254, Fax: 263-4-735497 / 731719 |
| b) Regional Network of Environmental Experts (ZERO) | • 44 Edmunds Avenue, Belvedere P. O. Box 5338, Harare Tel: 263-4-791333, Fax: 732858 |
| c) Southern African Research and Documentation Centre (SARDC) | • 13 Bath Road, Belgravia P. O. Box 5690, Harare Tel: 263-4-738695, Fax: 263-4-738693 |

Source: a)

6.4 Local Organisations

| Name of Organization | Contact Address |
|--|---|
| a) Africa 2000 Network | • 60 Selous Avenue P. O. Box 4775, Harare Tel 263-4-703577, Fax: 263-4-728695 |
| b) Campfire Association | • 15 Phillips Avenue, Belgravia P. O. Box 661, Harare Tel: 263-730543/722957, Fax: 263-4-795150 |
| c) Centre for Applied Social Science (CASS) | • University of Zimbabwe P. O. Box MP 167, Mount Pleasant, Harare Tel: 263-4-303211 ext. 1340/1337 Fax: 263-4-333407/3335249 Email: CASS@esaneLzw |
| d) Environmental Liaison Forum | • Mukuvisi Environment Centre Box 4649, Harare Tel: 263-4-747274 / 747213, Fax: 263-4-747407 |
| e) Environment 2000 Foundation | • P. O. Box A639, Avondale, Harare Tel: 263-4-26197, Fax: 26197 |
| f) Manicaland Development Association | • P. O. Box 976, Mutare Tel: 263-20-82143 |
| g) Mukuvisi Woodland Association | • P. O. Box 4665, Harare Tel: 263-4-731596 |
| h) National Conservation Trust of Zimbabwe | • P. O. Box 709, Harare Tel: 263-4-39175 |
| i) Southern Centre for Energy and The Environment (SCEE) | • 31 Frank Johnson Avenue, Eastlea, Harare Tel: 263-4-738315/6 |
| j) University of Zimbabwe Publications (UZP) | • P.O. Box MP 203, Mt Pleasant, Harare Tel: 263-4-303211 |
| k) Wildlife Society of Zimbabwe | • P O Box 3497, Harare Tel: 700451 |
| l) Zambezi Society | • Zimbabwe National Conservation Trust P. O. Box 85 75, Causeway, Harare Tel: 263-4-46105, Fax: 263-4-46105 |
| m) Zimbabwe Trust | • P. O. Box 4027 4 Lanark Road, Belgravia, Harare, Zimbabwe Tel: 263-4-730543, Fax: 263-4-795150 |

Source: a)

6.5 Embassy

| Name of Organization | Person in Charge | Contact Address |
|----------------------|------------------|---|
| Embajada del Japón | • no information | • 18F Karigamombe Centre, 53 Samora Machel Avenue, Harare, The Republic of Zimbabwe |
| Embassy of Zimbabwe | • no information | • 5-9-10 Shirokane-dai, Minato-ku, Tokyo, Japan 108-0071 Tel: 03-3280-0331 |

Source: f)

| List of Abbreviation | | | |
|----------------------|--|----------|--|
| ADB | African Development Bank | LWF | Lutheran World Federation |
| AGRITEX | Agricultural, Technical and Extension Services | MET | Ministry of Environment and Tourism (now MMET) |
| CAMPFIRE | Communal Areas Management Programme for Indigenous Resources | MMET | Ministry of Mines, Environment and Tourism |
| CASS | Centre for Applied Social Science | MSc | Master of Science |
| CBOs | Community Based Organisations | NGO | Non-Government Organisation |
| CIDA | Canadian International Development Agency | NRB | National Resources Board |
| CITES | Convention on International Trade of Endangered Species | NRSF | National Remote Sensing Facility |
| COMESA | Common Market for Eastern and Southern Africa | OAU | Organisation of Africa Unity |
| DDT | dichloro-diphenyl-trichloro ethane | PTA | Preferential Trade Agreement |
| DEAP | District Environmental Action Plan | RDD | Research and Development Division |
| DEH | Department of Environmental Health | SADC | Southern Africa Development Community |
| DFID | Department For International Development | SARAC | Save Rehabilitation Action Committee |
| DNPWM | Department of National Parks and Wildlife Management | SARDC | Southern Africa Research Documentation Centre |
| DNR | Department of Natural Resources | SCEE | Southern Centre for Energy and Environment |
| DR&SS | Department of Research and Specialist Services | SNV | Dutch Aid Organisation |
| ENDA | Environmental and Development Activities | UNCED | United Nations Conference on Environment and Development |
| FC | Forestry Commission | UNCTAD | United Nations Convention on Trade and Development |
| GEF | Global Environmental Facility | UZF | University of Zimbabwe Publications |
| GOZ | Government of Zimbabwe | WFP | World Food Programme |
| IRWSSP | Integrated Rural Water Supply and Sanitation Programme | WTO | World Trade Organisation |
| IUCN-ROSA | World Conservation Union - Regional Office for Southern Africa | WWF | World Wide Fund for Nature |
| LSCF | Large Scale Commercial Farmers | ZACTPLAN | Zambezi River System Action Plan |

Source: a)

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