Zimbabwe National Statistics Agency

FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES) IN ZIMBABWE

October, 2016

CAF-RISM

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Acronyms

ARI	Acute Respiratory Infections
AU	African Union
AWQ	Ambient Water Quality
CAMPFIRE	Communal Areas Management Programme For Indegenous Resources
CBD	Convention on Bio Diversity
CH_4	Methane
CITES	Convention on International Trade on Endangered Species
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COMESA	Common Market for Eastern and Southern Africa
DHIS	Demographic Health Information System
EA	Environment Africa
EAT	Education, Awareness and Training
EIA	Environmental Impact Assessment
EMA	Environmental Management Agency
EMP	Environmental Planning and Monitoring
ENSO	El Nino Southern Oscillation
EPS	Environmental Protection Services
FC	Forestry Commission
FEE	Forum for Environmental Education
GHGs	National Greenhouse Gases
INC	Initial National Communications
INC	Initial National Communications
IPCC	Intergovernmental Panel on Climate Change
MEAs	Multilateral Environmental Agreements
MEWC	Ministry of Environment, Water and Climate
NR	Natural Regions
N_2O	Nitrous Oxide

NANGO	National Association of Non-Governmental Organisations
NBSAP	National Biodiversity Action Plan
NCCRS	National Climate Change Response Strategy
NEAP	National Environmental Action Plan
NMVOCs	Non- Methane Volatile Organic Compounds
NO_x	Nitrogen Oxides
PM	Particulate Matter
PWMA	Parks and Wildlife Management Authority
REGs	Regional Economic Groups namely
SADC	Southern African Development Community
SNC	Second National Communications
SO_2	Sulphur Dioxide
UNCBD	United Nations Convention on Biological Diversity
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCCC UNCCD	United Nations Framework Convention on Climate Change United Nations Conventions on Combating Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UV	Ultra Violet
VIDCO	Village Development Committee
WADCO	Ward Development Committee
WEZ	Wildlife and Environment Zimbabwe
WHO	World Health Organisation
ZERO	Zimbabwe Environmental Regional Organisation
Zim Asset	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZIMSTAT	Zimbabwe National Statistics Agency
ZINWA	Zimbabwe National Water Authority

Acknowledgements

The ***Framework for the Development of Environment Statistics 2013*** is an outcome of a participatory process by institutions in the field of environment. This was made possible by the active participation of various experts from the member institutions who constitute the Environment Statistics Committee.

The following is the list of institutions that participated in the production of the report: Zimbabwe National Statistics Agency (ZIMSTAT); Ministry of Environment, Water and Climate; Scientific & Industrial Research & Development Centre (SIRDC); Forestry Commission; Meteorological Services Department (MSD; University of Zimbabwe, Department of Geography and Environmental Sciences (U. Z, DGES) Environmental Management Agency (EMA); University of Zimbabwe, Institute of Environmental Studies, Parks and Wildlife Management, Ministry of Industry and Commerce; University of Zimbabwe, Department of Psychology; University of Zimbabwe, Department of Agriculture and Animal Science; Zimbabwe National Water Authority(ZINWA); and City of Harare.

Sincere appreciation is extended to Professor S. Feresu (University of Zimbabwe, Institute of Environmental Studies) and Dr Tinyiko Halimani (University of Zimbabwe, Department of Agriculture and Animal Science) who reviewed the report. Last but not least is ZIMSTAT's gratitude to all the institutions who generously provided the data that are contained in this report.

Preface

The Framework for the Development of Environment Statistics (FDES) 2013 is a multipurpose conceptual and statistical framework that is comprehensive and integrative in nature and defines the scope of environment statistics. It provides an organizing structure to guide the collection and compilation of environment statistics at the national level bringing together data from the various relevant subject areas and sources. The framework is broad and holistic in nature, covering the issues and aspects of the environment that are relevant for policy analysis and decision making.

The Common Market for Eastern and Southern Africa (COMESA)'s Medium Term Strategic Plan, 2011-2015 (MTSP) recognizes statistical development among the cross cutting areas for its implementation. The objectives of this cross cutting area of statistics are to ensure the availability of high quality and harmonized statistics in the region. COMESA mobilized resources through the Regional Integration Support Mechanism (RISM) to facilitate implementation of the FDES 2013.

Zimbabwe has a functional Environment Statistics Committee co-chaired by the Ministry of Environment, Water and Climate and Institute of Environmental Studies, University of Zimbabwe. The Zimbabwe National Statistics Agency (ZIMSTAT) is the secretariat of the Committee. The Committee is composed of 18 key stakeholder institutions in the field of the environment.

The FDES 2013 programme was implemented by the Environment Statistics Committee with ZIMSTAT coordinating the process. A draft programme of implementation was developed by ZIMSTAT which was shared with committee members in the first meeting who suggested changes to the programme that included the timing of activities. The Draft FDES 2013 manual was shared with committee members. The tools were discussed with committee members providing guidance depending on mandate of institution and theme under discussion. A prioritized set of indicators for continuous reporting was adopted.

A national assessment/survey on environmental statistics was conducted in July 2015. The data collection exercise was national in scope with Environment Statistics Committee members participating in the survey. The collected data was based on the prioritized indicators and follow up data requests were done by ZIMSTAT officers. The main data suppliers were represented in the Environment Statistics

Committee. Some institutions had a functional data collection system/programme such that the data was collected at one location. The main challenge was with the residuals data which are found scattered across the country where ever they exist.

Data collation and entry was conducted in September 2015 by some selected Environment Statistics Committee members with support from ZIMSTAT officers. Data cleaning and validation was a continuous process during programme implementation. A workshop dedicated to data cleaning and validation was conducted in October 2015. Areas with missing data were noted and assigned to some committee members for action.

The report consists of eight chapters, with Chapter 1, an introduction covering the national circumstances which includes the geographic profile, the population, soils of Zimbabwe, climate, natural resources, environmental challenges, political and decision making structure, institutional arrangements, national and economic development programmes and population. Chapter 2 is on physical conditions and quality while Chapter 3 is on environmental resources and their use. Chapter 4 is on residuals and is followed by Chapter 5 covering extreme events and disasters. Human settlements and environmental health issues are covered in Chapter 6, followed by Chapter 7 on enviroment protection, management and engagement. Conclusions and recommendations are covered in Chapter 8.

In future, it is important to continuously review the Environment Statistics Self-assessment Tool (ESSAT) to allow for continual updating of existing tables and filling in of data gaps.

M. Dzinotizei
DIRECTOR-GENERAL, ZIMSTAT

HARARE, 2016

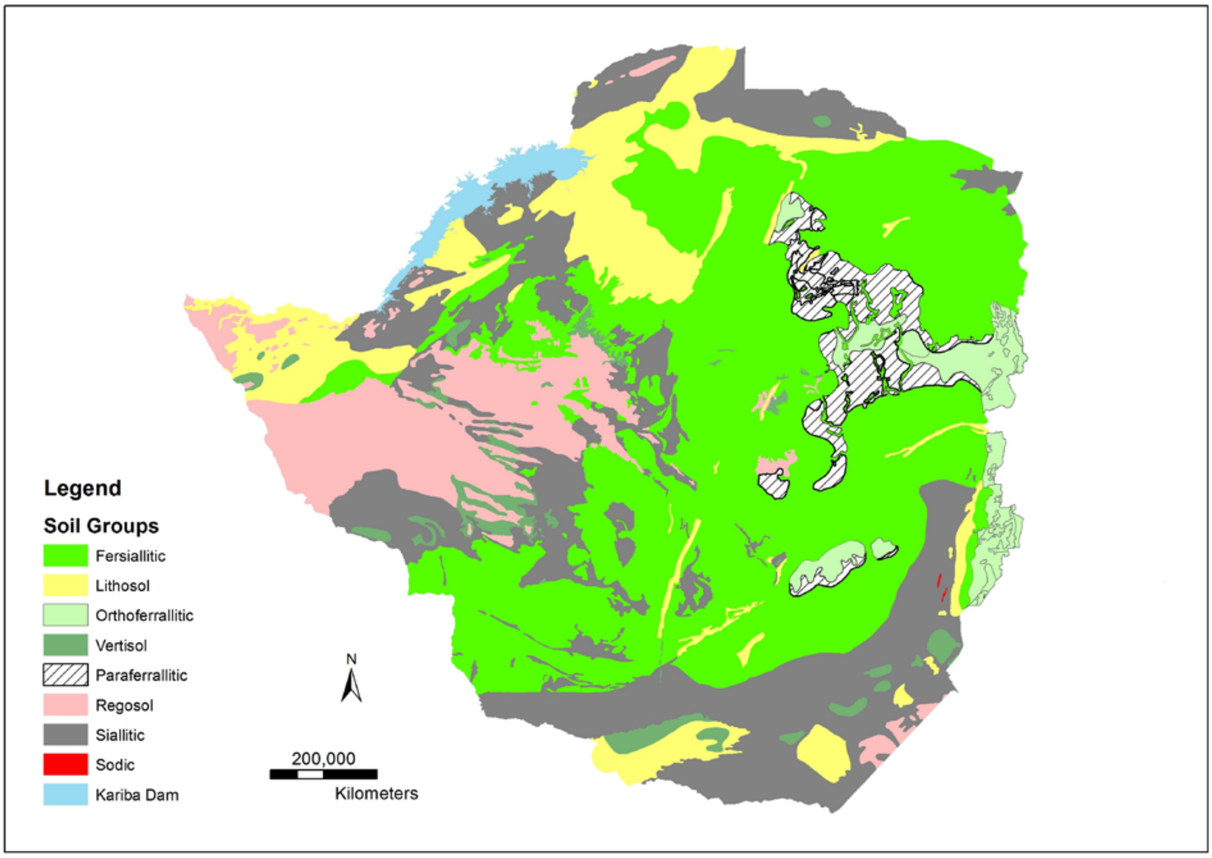
Chapter 1: National Circumstances

1.1 Geographic Profile

Zimbabwe is situated in Southern Africa between latitudes 15° 30″ and 22° 30″ South of the Equator and between longitudes 25° and 33° 10″ East of the Greenwich Meridian. It lies just north of the Tropic of Capricorn between the Limpopo and Zambezi rivers. It is part of a great plateau, which constitutes the major feature of the geology of Southern Africa. Almost the entire surface area of Zimbabwe is between 300 and 2 600 m above mean sea level. The total land area of the country is approximately 390 757 square kilometres.

1.2 Soils of Zimbabwe

Zimbabwe's soils are classified into eight major groups namely the regosols, lithosols, vertisols, siallitic, fersialitic, paraferralitic, orthoferralitic and the sodic, figure 1.1.



Source; Generated from the Department of Surveyor General's Office Maps

Figure 1.1: Distribution of soils in Zimbabwe

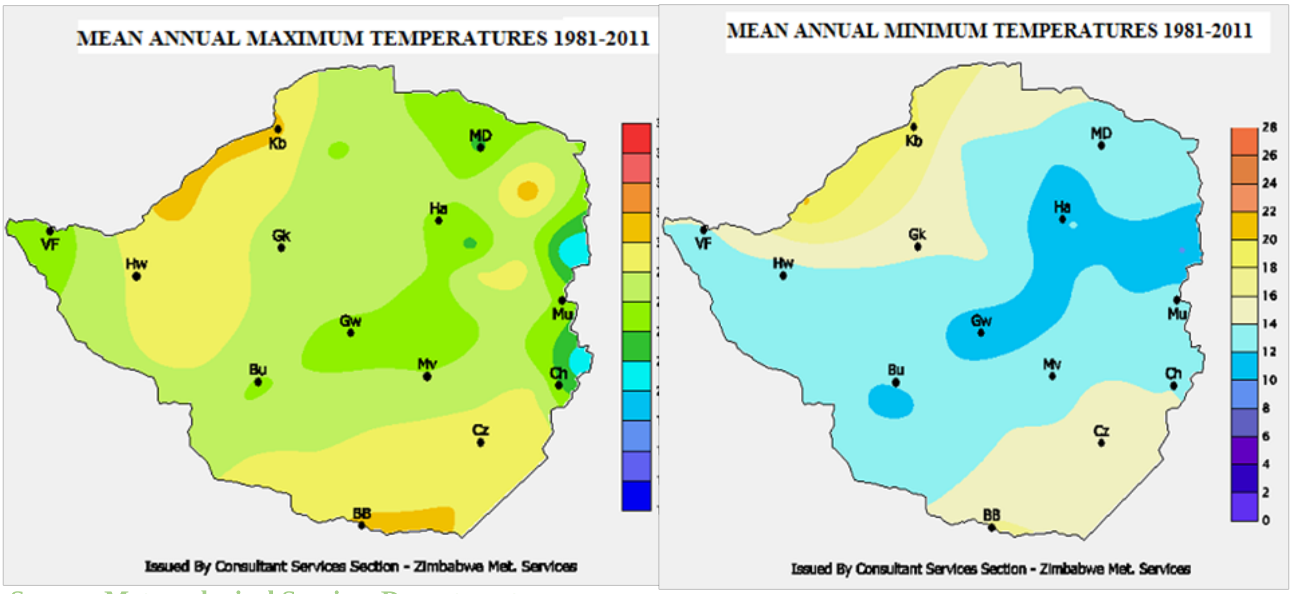
1.3 Climate

Zimbabwe experiences four seasons which are the cool season (mid-May to August), hot season (September to mid- November), the main rainy season (mid-November to mid-March) and the post rainy season (mid-March to mid-May).

The major seasons are winter and summer which correspond to the dry and wet season, respectively. The dry season, characterised by low rainfall and humidity, runs from May to October. The wet season runs from November to March. Mean annual maximum temperatures range between 22°C in the Eastern Highlands and 32°C in the Lowveld. The corresponding mean annual minimum temperatures are 10°C and 16°C, respectively, Figure 1.2.

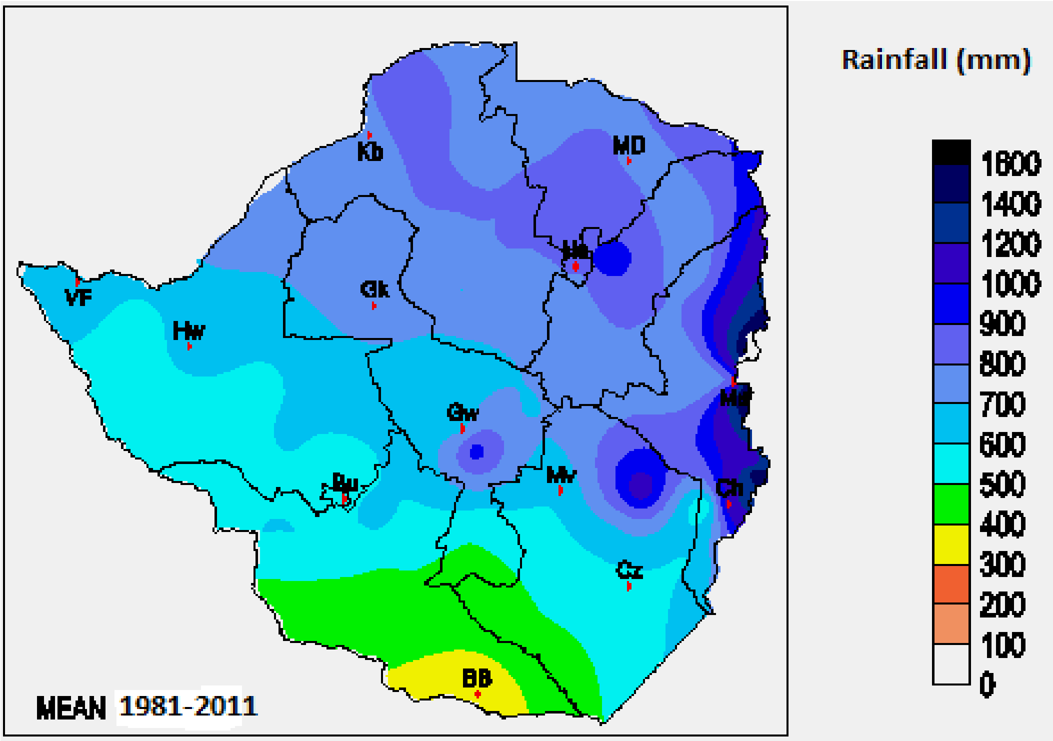
The three types of rainfall received in Zimbabwe are Orographic/Relief, Frontal and Convectional. Convectional rainfall, which accounts for about 90% of the rains received is mainly influenced by Inter Tropical Convergence Zone in the Northern part of the country, South Easterlies in the South and cloud bands in the West.

Zimbabwe‘s rainfall is affected by the El Nino Southern Oscillation (ENSO) phenomena and the Botswana Upper High Influence. Rainfall ranges from about 500 mm along the Limpopo Valley to about 1 000 mm in the Eastern Highlands, Figure 1.3.



Source: Meteorological Services Department

Figure 1.2: Distribution of mean temperature ranges, 1981 – 2011



Source: Department of Meteorological Services

Figure 1.3: Rainfall pattern

1.4 Natural Resources

The country has abundant natural resources that include minerals, wildlife, forestry and water resources. The major minerals are asbestos, chrome, cobalt, copper, gold, graphite, iridium, nickel, paladium, phosphate, platinum, rhodium and rhuthenium.

Zimbabwe is home to the 'big five' which are the lion, leopard, elephant, buffalo and the rhino found in several national parks and conservancies. Hwange National Park which is part of the Kavango- Zambezi Transfrontier Conservation Area is the largest park in the country and hosts over 100 species of mammals, about 400 species of birds and nearly 100 species of trees and shrubs. Forests constitute about 53% of the total land area of Zimbabwe. The main products derived from forests are timber and non-timber.

There are seven catchments in the country, namely Manyame, Mazowe, Gwayi, Runde, Sanyati, Save and Mzingwane.The country has about 10 000 small, medium and large dams which are mainly used for irrigation, and hydropower. Zimbabwe relies on surface water resources for 90% of its requirements while groundwater supplies the remaining 10%. There is commercial fishing in Zimbabwe which occurs mainly in five lakes and dams; Lake Kariba, Lake Chivero, Lake Mutirikwi, Mazvikadei dam and Manyame dam. Kariba fisheries are the largest and contribute 60-70% of Zimbabwe's total fish output with the kapenta being the main fish type. The smaller dams, rivers and ponds support small scale (artisanal) fisheries and provide fish for subsistence purposes.

1.5 Environmental Challenges

Zimbabwe is a signatory to the following international conventions and protocols that address environmental challenges:

United Nations Framework Convention on Climate Change (UNFCCC); United Nations Convention on Combating Desertification (UNCCD); United Nations Convention on Bio-diversity (UNCBD); Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Mangement of Hazardous Waste within Africa. Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal; Rotterdam Convention, Stockholm Convention on Persistent Organic Pollutants; Montreal Protocol on Substances that Deplete the Ozone layer; Ramsar Convention on Wetlands; and Convention on International Trade in Endangered Species (CITES). The conventions and protocols have been domesticated to tackle localized environmental challenges.

Climate change is the overarching environmental problem faced in the country which exacerbates other environmental problems such as deforestation, loss of biodiversity and loss of wetlands. There has been a shift in the onset and cessation of the rainy season; increased midseason dry spell duration; a change in the areal extent of the agro-ecological regions; an increase in the intensity and duration of extreme weather events and an increase in temperatures in recent years.

There has been an increase in the pollution of the environment. Air pollution is increasing due to industrial emissions, use of fossil fuels for energy and transportation, veldt fires, as well as burning of solid waste. The main sources of water pollution are the discharge of untreated or partially treated municipal, industrial, mining, and agricultural chemicals. Improper waste disposal practices have resulted in the mushrooming of solid waste dumps. Disposal of electronic waste is posing a serious challenge as some components contain hazardous substances such as mercury and lead that are poisonous and cause a threat to human health.

1.6 Political and Decision Making Structure

Zimbabwe is a unitary, democratic and sovereign state with an elected executive President who serves as both head of State and Government. The 2013 Constitution defines the legal system and the Government has three tiers which are the national government; provincial and metropolitan councils; and local authorities. The parliament consists of the Upper House (Senate) and Lower House (National Assembly) which have five-year terms. For the period 2013 – 2018, the Senate consists of eighty senators and the National Assembly consists of two hundred and ten elected members. The National Assembly elects a presiding member regarded as the Speaker of Parliament.

The Constitution is the fundamental law which determines Zimbabwe's governmental structure. It provides for three arms of the State, namely the Executive, the Judiciary, and the Legislature. The Ministers are selected from the members of Parliament and are appointed by, and are accountable to the President. However, there are some non-member of parliament ministers appointed by the President. The President is the head of State as well as the Commander in Chief of the Defence Forces. He/she must be a Zimbabwean citizen by birth or descent, aged 40 or above, and reside in Zimbabwe. The President is elected for a five-year term by registered voters. The Constitution provides for two Vice-Presidents at a time who are appointed by the President.

Judicial authority is vested in the Constitutional Court, Supreme Court, the High Court and subsidiary Majestrate Courts established by an Act of Parliament. Local courts are headed by chiefs and/or headmen. The President appoints the Chief Justice, who is the head of the judiciary and Constitutional, Supreme and High Court judges after consultation with the Judicial Service Commission. Figure 1.4 shows Zimbabwe’s political boundaries.

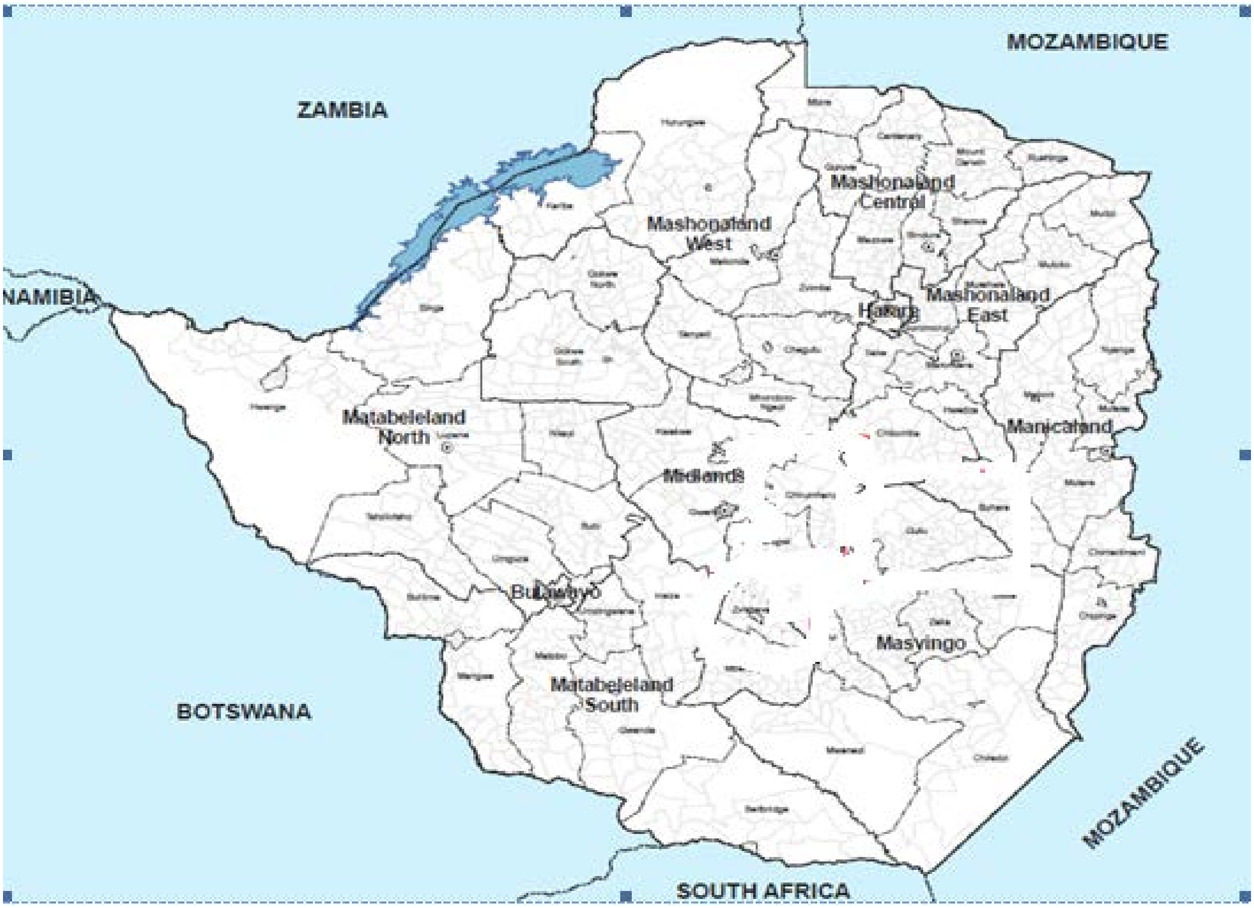


Figure 1.4: Political boundaries of Zimbabwe-

Source: Generated from the Department of Surveyor General's Office Maps

1.7 Institutional Arrangements

The Government of Zimbabwe has created the Ministry of Environment, Water and Climate which is responsible for environmental affairs. There are other line ministries and government departments, parastatals, academia and research institutions, development partners, civil society organizations and the general public involved in addressing environmental issues.

1.8 National Economic Development Programmes

Zimbabwe is a member of Regional Economic Groups (REGs) namely Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA) and the African Union (AU). In addition to the REGs guidelines, the Government formulated and adopted a medium term plan, the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim Asset, 2013-2018), that guides all Government policies and programmes. Zim Asset was crafted to achieve sustainable development and social equity based on indigenization, empowerment and employment creation through the judicious exploitation of the country's human and natural resources. The blueprint has four clusters namely:

- Food Security and Nutrition;
- Social Services and Poverty Reduction;
- Infrastructure and Utilities; and
- Value Addition and Beneficiation

The programme has two other sub-clusters which are fiscal reform measures and public administration; and governance and performance management.

1.9 Population

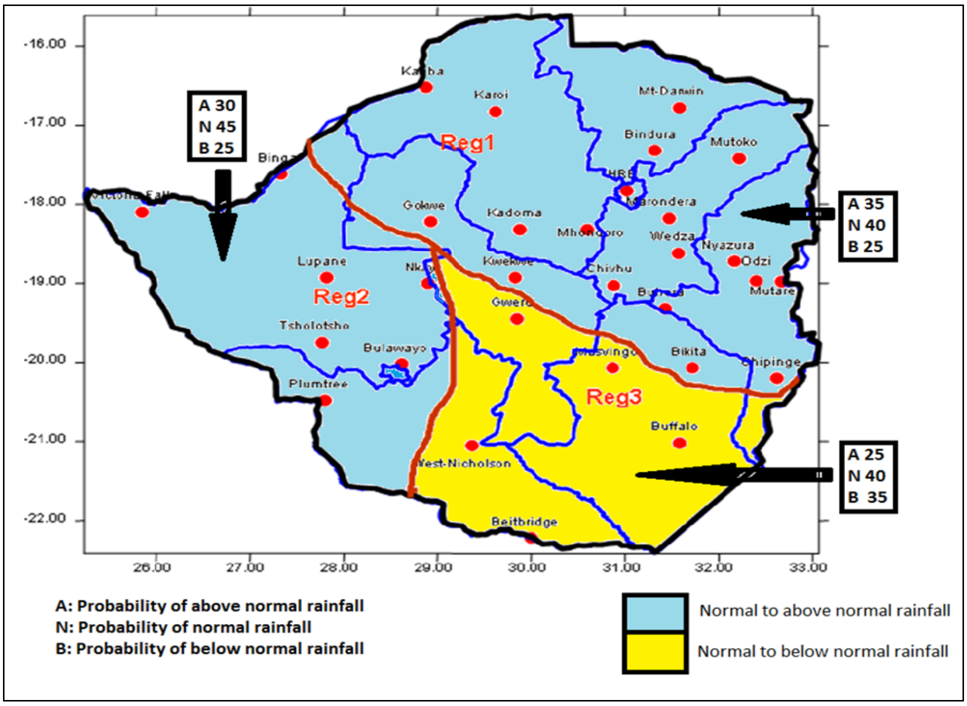
The 2012 Population Census estimated the total human population of the Country at about 13 million with 52% being females and a sex ratio of 93 (number of men per 100 women). The population pyramid is broad based with 41% below the age of 15. Sixty seven percent of the population is rural. There are about 3 million private households with an average size of 4 persons. Persons of African ethnic origin make up almost the entire population while those of non-African ethnic origin account for approximately 58 thousand.

Chapter 2: Physical Conditions and Quality

2.1 Physical Conditions –Atmosphere, Climate and Weather

Tables 2.1 to 2.10 give trends of weather conditions in Zimbabwe. The mean minimum temperatures range from 5.6ºC in June and July to 18.7ºC in December and January. The mean maximum temperatures range from 21.3ºC in June and July to 30.6ºC in December and January (*Table 2.1 and 2.2*). Humidity sometimes drops to 41% in October and rises above 82% during the wet season *(Table 2.3)*. Mean atmospheric pressure ranges from 864 to 893.4 bars *(Table 2.4)*. The mean radiation is lowest in June and July (around 16 MJ/m^2) and it rises above 23 MJ/m^2 in the period from September to April *(Table 2.5)*.

The mean sunshine hours are lowest during the rainy season and are highest between August and September *(Table 2.6)*. Tables 2.7 to 2.10 show the mean monthly rainfall for the years 1979 to 2009. Table 2.7 shows the national mean monthly rainfall. The country is driest between June and September and most rainfall is received in December and January. Tables 2.9 and 2.10 show mean monthly rainfall disaggregated by metereological region. The three metereological regions are shown in Figure 2.1 while Figure 2.2 shows the mean wind speed.



Source: Meteorological Services Department

Figure 2.1: Meteorological regions

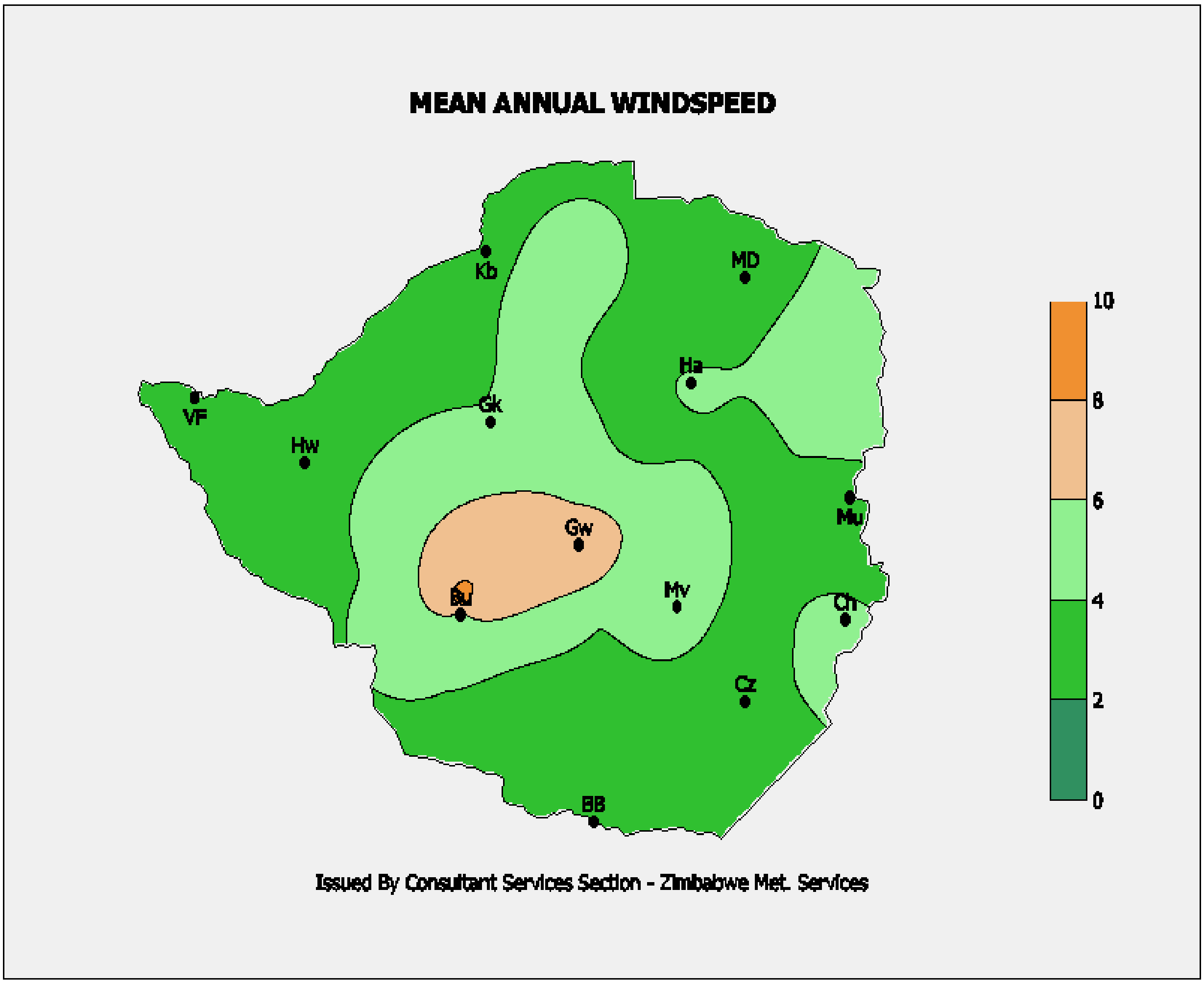


Figure 2.2: Meteorological regions

Conversions: 10 Knots = 5.1 m/s 8 Knots = 4.1m/s 6 Knots = 3.1m/s 4 Knots = 2.1
2 Knots = 1.0m/s

Table 2.1: Mean Minimum Annual Temperatures (^{0}C)

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	16.1	16.7	15.7	12.4	9.6	7.1	6.5	9.3	13.2	16.2	16.6	16.3
1980	16.6	17.7	15.6	13.5	9.1	5.7	5.6	8.6	12.8	14.6	17.3	17.3
1981	18.0	17.7	15.8	12.5	9.3	5.6	6.0	8.6	11.5	13.6	16.7	16.4
1982	17.3	16.7	15.3	13.9	9.3	7.3	7.6	8.7	11.8	14.6	16.9	17.5
1983	18.4	17.4	16.9	14.7	12.1	9.0	8.2	8.0	13.0	15.1	17.9	17.4
1984	16.9	16.8	16.6	13.7	11.4	8.1	8.6	8.8	13.6	16.5	16.5	17.1
1985	17.7	16.6	16.5	12.8	10.0	6.9	7.6	8.7	12.9	14.8	15.8	17.3
1986	17.0	16.6	15.7	14.6	9.6	6.5	6.4	8.5	11.9	15.4	16.2	16.8
1987	17.1	17.2	16.6	13.9	11.8	7.1	6.3	10.2	14.3	14.5	17.9	18.7
1988	17.8	17.6	16.9	15.4	10.4	8.1	7.5	8.9	12.3	15.8	15.3	16.5
1989	17.2	17.5	16.0	13.7	10.4	8.8	7.6	10.1	12.8	15.0	16.9	17.5
1990	17.8	16.9	15.9	14.8	11.3	9.5	8.2	9.1	11.7	16.1	16.6	17.8
1991	18.0	18.0	16.8	12.3	10.4	7.7	7.4	9.2	14.1	15.7	17.0	17.2
1992	17.9	18.0	17.9	15.0	11.5	8.5	7.8	9.1	13.7	17.4	17.6	18.1
1993	17.4	17.8	16.0	15.0	11.5	7.9	9.3	9.3	12.5	16.6	17.1	17.5
1994	17.2	16.2	15.0	13.3	9.7	7.3	6.0	8.6	12.3	14.4	17.7	17.3
1995	17.6	17.2	16.2	14.1	12.4	7.0	7.9	11.1	13.2	18.0	17.7	17.3
1996	17.8	17.3	15.5	12.5	11.4	7.6	6.4	10.0	13.5	16.0	17.8	17.7
1997	18.2	16.8	16.8	13.5	9.0	8.7	8.0	8.9	14.2	14.8	17.8	17.6
1998	18.7	17.7	17.4	13.8	9.6	6.9	7.6	9.9	13.1	16.6	17.9	17.7
1999	17.7	17.3	16.6	13.8	10.2	7.8	8.4	9.7	12.2	14.4	16.9	16.9
2000	17.3	17.9	17.3	14.0	10.3	9.5	7.2	8.2	12.8	15.0	16.2	16.9
2001	16.7	17.9	16.9	14.2	10.3	7.6	6.6	10.2	13.1	14.9	17.7	17.8
2002	16.9	16.9	16.1	13.6	9.4	7.5	7.5	9.9	12.6	15.6	16.1	17.3
2003	17.2	17.8	15.4	13.7	9.6	8.5	6.5	8.8	12.3	15.5	16.5	16.5
2004	17.1	16.5	15.8	13.1	8.7	7.5	7.7	9.7	12.2	15.0	16.7	17.5
2005	17.8	17.1	16.1	13.6	9.9	8.4	6.9	10.5	12.6	15.5	17.8	17.1
2006	18.3	18.2	16.6	13.9	10.5	8.1	7.1	9.4	11.8	17.1	17.6	18.7
2007	17.8	17.9	16.4	14.0	9.2	8.0	6.9	9.0	12.5	16.3	17.3	17.5
Lowest	**16.1**	**16.2**	**15.0**	**12.3**	**8.7**	**5.6**	**5.6**	**8.0**	**11.5**	**13.6**	**15.3**	**16.3**
Highest	**18.7**	**18.2**	**17.9**	**15.4**	**12.4**	**9.5**	**9.3**	**11.1**	**14.3**	**18.0**	**17.9**	**18.7**

Source: Meteorological Services Department

Table 2.2: Mean Maximum Temperatures (^0C)

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	27.9	28.5	27.1	27.3	24.8	22.0	22.0	25.8	28.8	29.3	28.0	26.7
1980	28.5	28.6	26.9	26.9	25.6	22.1	21.3	24.1	27.4	29.1	29.4	27.9
1981	27.9	26.0	26.6	25.2	22.6	21.9	22.1	25.0	26.9	27.2	30.2	28.7
1982	28.3	27.9	28.7	27.1	24.1	23.3	22.1	24.6	26.7	27.6	29.6	30.1
1983	30.6	29.6	29.3	28.4	26.8	24.3	22.9	23.5	29.5	28.6	31.1	28.3
1984	29.5	28.0	27.6	26.3	25.4	22.1	22.4	24.6	29.0	29.8	27.6	27.7
1985	27.4	26.5	27.8	26.4	24.2	22.2	22.6	24.5	27.3	28.9	28.7	27.2
1986	26.8	27.4	27.8	25.5	24.4	22.2	22.7	26.1	27.7	28.9	29.1	28.0
1987	28.9	30.0	30.2	29.0	27.0	22.8	22.9	24.9	28.7	29.0	31.5	28.5
1988	29.2	27.4	27.0	27.2	24.2	23.3	23.1	25.4	28.6	29.4	28.6	27.5
1989	28.0	26.1	27.6	25.7	25.1	23.0	23.1	25.5	28.2	28.8	29.4	29.3
1990	27.3	27.4	29.0	27.3	25.3	24.4	24.7	24.5	27.2	30.7	30.3	29.7
1991	28.9	28.7	27.9	26.4	25.4	23.5	23.1	26.0	29.8	30.5	29.6	28.7
1992	30.6	32.1	29.8	28.9	26.7	23.8	23.1	24.7	30.1	31.4	30.0	28.5
1993	27.9	27.1	27.4	27.5	27.2	23.5	22.3	24.4	28.4	30.8	28.1	28.9
1994	27.4	27.4	29.4	28.0	25.7	22.9	21.8	24.5	28.8	27.6	31.8	29.9
1995	29.2	29.3	29.2	28.0	24.9	23.1	23.3	26.2	29.6	32.4	30.7	27.5
1996	27.5	26.8	26.8	25.4	23.8	22.2	22.4	26.1	29.6	31.5	30.4	28.5
1997	27.0	26.3	27.3	25.8	24.1	25.2	22.1	26.3	27.9	28.5	30.6	30.1
1998	28.2	29.1	29.5	28.2	27.0	24.8	23.6	25.1	28.8	30.8	29.8	27.5
1999	27.4	26.7	27.5	27.3	26.0	23.5	22.5	25.2	28.0	28.9	29.9	29.1
2000	27.6	26.9	27.6	26.1	23.8	22.3	22.0	23.9	28.7	29.7	28.7	28.0
2001	29.0	26.6	26.5	26.8	25.0	23.2	22.2	27.5	29.3	30.6	29.5	28.3
2002	29.7	29.3	28.7	27.7	24.4	23.2	23.4	26.2	28.5	29.8	29.0	29.1
2003	29.9	29.1	27.4	26.7	25.1	22.5	23.0	26.3	29.0	29.5	30.2	29.3
2004	28.7	27.9	26.6	25.8	24.6	22.8	22.7	26.8	28.3	29.0	31.3	28.4
2005	29.1	29.9	29.1	28.4	26.7	25.2	23.2	27.4	29.5	31.5	31.0	27.3
2006	28.3	28.6	38.2	27.3	25.8	23.3	24.0	25.4	27.9	31.3	30.3	30.4
2007	28.0	28.8	29.7	27.6	26.4	24.7	23.7	26.6	30.2	30.7	30.1	26.7
Lowest	**26.8**	**26.0**	**26.5**	**25.2**	**22.6**	**21.9**	**21.3**	**23.5**	**26.7**	**27.2**	**27.6**	**26.7**
Highest	**30.6**	**32.1**	**38.2**	**29.0**	**27.2**	**25.2**	**24.7**	**27.5**	**30.1**	**32.4**	**31.8**	**30.4**

Source: Meteorological Services Department

Table 2.3: Mean Humidity (%)

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	72.0	69.4	74.0	64.2	62.3	60.7	57.8	53.7	48.7	53.1	67.3	72.7
1980	69.3	73.7	75.0	67.3	57.1	57.5	59.9	52.8	55.9	52.7	62.7	73.4
1981	78.8	85.0	78.0	72.1	72.0	64.2	61.6	56.5	51.5	58.5	59.3	65.5
1982	73.1	73.0	66.2	66.1	62.7	58.5	58.7	51.0	50.3	57.7	59.0	60.4
1983	61.0	66.7	66.1	61.2	59.5	59.0	59.7	51.8	42.8	51.7	53.2	67.3
1984	62.5	70.0	72.0	69.0	61.2	63.9	62.5	52.0	48.4	52.9	67.5	72.2
1985	78.9	79.0	75.3	67.2	63.9	61.6	61.2	52.8	54.0	51.0	57.7	72.7
1986	77.1	74.7	70.3	76.5	68.5	63.0	60.0	47.8	49.1	58.1	59.0	70.0
1987	70.2	66.0	61.8	57.4	52.3	53.3	51.4	55.7	51.1	49.1	51.3	74.9
1988	71.7	78.2	79.7	75.4	68.0	62.1	63.2	52.4	46.6	54.2	57.6	69.0
1989	70.1	80.1	73.1	72.5	65.8	64.2	58.8	56.0	47.3	53.7	62.2	67.2
1990	79.7	78.1	68.4	73.3	65.4	59.8	56.4	55.4	49.5	48.0	54.4	65.6
1991	75.8	75.9	76.8	68.2	64.2	62.7	57.9	50.1	47.1	47.8	58.1	64.7
1992	63.1	56.4	65.7	58.9	54.6	55.0	53.9	49.6	42.0	44.8	58.1	72.0
1993	75.2	80.4	76.1	71.9	57.0	59.4	64.4	57.3	46.8	51.3	66.9	72.2
1994	77.1	74.7	65.4	60.9	56.9	55.9	55.6	51.1	45.2	73.2	47.9	62.1
1995	67.8	68.2	64.4	59.5	67.8	57.9	56.0	54.9	41.6	44.2	54.0	71.8
1996	75.9	80.3	75.9	68.6	72.5	65.8	60.8	55.3	46.2	46.4	58.9	74.2
1997	85.9	82.3	80.3	75.2	67.6	60.1	66.6	48.0	58.1	57.5	60.4	66.4
1998	82.9	75.9	75.7	65.6	54.5	56.5	58.5	53.4	48.1	52.1	62.3	82.3
1999	82.1	83.2	77.3	69.4	64.5	61.9	63.5	55.7	48.2	55.2	61.6	68.8
2000	80.1	85.4	82.3	78.1	74.8	75.4	67.2	59.8	50.7	48.7	68.6	75.1
2001	68.0	-	-	-	-	-	-	-	-	41.0	68.0	-
2002	72.0	59.0	62.0	57.0	60.5	66.0	60.5	65.5	50.5	55.0	56.0	65.0
2003	61.5	64.5	77.0	67.0	63.0	74.0	64.5	47.0	47.0	54.5	58.5	65.0
2004	65.0	69.0	68.0	68.0	63.0	70.0	66.0	56.0	51.5	55.5	45.5	67.0
2005	65.0	64.0	65.5	66.0	61.0	58.5	60.5	52.0	44.0	47.5	55.0	78.0
2006	69.0	65.5	72.5	67.0	55.0	61.0	52.5	47.5	45.0	48.5	61.5	52.5
2007	52.0	63.5	54.0	68.5	-	70.0	61.0	49.0	-	-	-	62.0
Lowest	**52.0**	**56.4**	**54.0**	**57.0**	**52.3**	**53.3**	**51.4**	**47.0**	**41.6**	**41.0**	**45.5**	**52.5**
Highest	**85.9**	**85.4**	**82.3**	**78.1**	**74.8**	**75.4**	**67.2**	**65.5**	**58.1**	**73.2**	**68.6**	**82.3**

Source: Meteorological Services Department

Table 2.4: Mean Pressure (Bars)

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	886.6	885.2	886.1	887.6	890.3	892.9	893.3	890.0	889.0	887.5	886.1	886.4
1980	885.2	885.0	886.5	887.6	889.8	891.8	893.4	892.6	888.8	888.2	886.3	884.9
1981	885.1	884.5	886.5	888.2	892.2	892.0	891.9	890.1	889.4	888.0	886.1	886.0
1982	884.5	884.2	886.0	887.3	889.7	891.6	892.4	891.6	890.3	888.0	886.2	887.9
1983	888.5	888.4	887.1	888.2	888.8	890.6	891.6	891.7	889.3	887.9	887.1	885.5
1984	884.0	883.8	886.3	888.4	889.3	891.9	891.5	891.1	888.5	887.2	886.7	884.4
1985	884.2	883.6	885.4	887.7	889.4	891.9	892.1	892.1	888.7	887.8	886.8	885.0
1986	885.2	885.0	886.1	887.9	889.9	891.5	892.7	890.4	889.9	887.5	886.7	886.1
1987	885.2	886.0	885.6	888.1	889.6	892.2	891.5	891.0	888.6	888.2	887.3	886.2
1988	885.0	884.8	886.0	887.4	890.7	890.9	891.2	890.5	889.1	887.0	887.8	886.6
1989	884.1	883.7	885.4	888.2	890.4	891.7	892.4	890.7	888.0	887.6	886.3	885.2
1990	885.4	885.4	887.4	887.6	889.7	891.1	887.5	888.1	886.3	884.2	881.3	881.5
1991	881.8	880.6	882.9	885.3	885.8	886.8	888.6	887.4	885.1	883.0	883.4	882.2
1992	882.2	881.8	882.2	884.1	885.7	887.2	889.1	888.5	884.8	882.5	882.5	870.6
1993	881.5	880.1	883.3	884.1	884.9	888.6	889.2	887.9	885.9	884.3	882.0	882.7
1994	881.0	883.4	883.0	886.4	888.7	889.4	891.2	889.1	885.7	885.9	882.7	884.4
1995	881.6	871.4	881.9	883.8	886.5	887.0	887.1	886.7	884.9	883.9	882.7	882.3
1996	878.8	882.4	872.8	872.2	875.4	877.6	877.2	874.8	873.4	872.6	871.3	868.1
1997	864.0	870.9	873.1	874.1	878.5	875.5	879.5	876.9	872.2	874.5	871.1	869.9
1998	868.5	865.9	873.1	875.3	875.2	877.9	877.8	876.9	874.9	873.7	872.2	868.6
1999	870.4	870.6	871.8	875.6	873.0	877.1	878.3	876.5	874.4	874.2	872.6	872.1
2000	869.5	869.4	871.5	874.5	875.9	877.9	877.8	877.6	874.0	873.7	870.2	871.3
Lowest	**864.0**	**865.9**	**871.5**	**872.2**	**873.0**	**875.5**	**877.2**	**874.8**	**872.2**	**872.6**	**870.2**	**868.1**
Highest	**888.5**	**888.4**	**887.4**	**888.4**	**892.2**	**892.9**	**893.4**	**892.6**	**890.3**	**888.2**	**887.8**	**887.9**

Source: Meteorological Services Department

Table 2.5: Mean Radiation (MJ/m^2)

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	24.0	24.5	22.1	23.1	19.5	17.5	18.3	20.1	22.6	22.0	21.7	21.3
1980	25.4	22.2	22.4	21.6	20.6	18.0	18.3	20.7	22.1	24.2	22.5	23.7
1981	22.5	18.9	21.3	20.8	18.2	18.4	18.2	20.5	21.9	22.5	23.4	24.9
1982	23.9	23.5	24.0	20.8	19.0	17.5	17.4	20.6	23.0	22.3	23.4	24.9
1983	24.5	25.3	23.6	21.7	19.2	17.7	17.6	20.7	23.8	23.4	24.6	23.0
1984	25.8	24.4	21.4	20.8	19.1	16.8	16.7	21.1	23.0	23.0	22.1	22.6
1985	21.5	22.9	22.3	22.2	18.9	17.4	17.7	20.7	21.8	23.6	24.9	21.1
1986	22.5	22.9	23.2	19.5	19.3	18.5	18.6	21.1	22.6	22.3	24.4	23.2
1987	24.8	25.7	24.2	23.0	19.4	18.4	19.4	20.2	22.2	25.2	25.6	21.2
1988	25.7	21.5	21.3	20.5	18.4	17.3	18.4	21.4	24.4	23.1	25.0	22.3
1989	22.6	18.0	22.2	20.2	19.8	17.0	18.2	20.2	22.9	23.3	23.8	23.9
1990	20.5	22.4	23.2	20.8	19.2	16.9	18.4	20.8	22.8	24.3	25.4	24.0
1991	22.6	22.9	21.7	22.6	19.3	17.7	18.5	21.1	22.2	24.4	23.6	23.1
1992	25.0	27.1	21.7	21.8	19.6	17.8	18.9	21.3	24.0	24.8	24.3	21.6
1993	23.1	21.2	21.9	21.1	20.5	18.2	17.5	20.8	23.5	25.3	21.8	23.2
1994	21.8	23.6	25.1	22.8	20.3	18.0	18.4	20.7	24.5	23.7	25.6	24.9
1995	24.8	24.6	24.3	22.2	18.6	18.7	18.8	20.6	23.6	23.7	24.4	21.7
1996	20.7	21.5	22.8	21.3	16.8	17.5	18.1	21.5	23.5	25.8	22.6	23.1
1997	20.0	20.6	20.7	21.0	20.0	18.0	17.2	21.7	21.2	23.3	23.3	25.0
1998	20.3	24.0	23.8	23.5	21.6	19.1	19.2	20.7	23.4	24.6	23.0	21.0
1999	22.3	21.5	22.6	22.7	20.6	18.4	17.3	21.2	23.8	25.3	24.6	25.5
2000	22.4	20.1	21.8	21.8	18.5	16.1	18.1	21.6	22.9	24.9	25.0	22.9
Lowest	**20.0**	**18.0**	**20.7**	**19.5**	**16.8**	**16.1**	**16.7**	**20.1**	**21.2**	**22.0**	**21.7**	**21.0**
Highest	**25.8**	**27.1**	**25.1**	**23.5**	**21.6**	**19.1**	**19.4**	**21.7**	**24.5**	**25.8**	**25.6**	**25.5**

Source: Meteorological Services Department

Table 2.6: Mean Sunlight Hours

Year	January	February	March	April	May	June	July	August	September	October	November	December
1979	7.8	8.4	7.2	9.7	8.9	8.5	8.9	9.5	9.5	7.9	6.7	6.3
1980	8.8	7.0	7.7	8.2	9.7	9.2	9.1	9.2	8.9	9.1	7.1	7.2
1981	6.4	4.3	6.8	8.1	8.0	9.5	9.2	9.6	8.8	8.2	7.7	8.6
1982	7.7	7.8	9.1	8.1	8.5	8.7	8.3	9.4	9.2	7.9	7.8	8.4
1983	8.1	8.6	8.3	8.4	8.9	8.9	8.7	9.4	10.0	8.5	8.2	6.9
1984	9.0	8.1	6.9	8.2	8.5	7.8	7.5	9.6	9.4	8.4	6.5	6.6
1985	5.5	7.1	7.3	8.6	7.9	8.3	8.3	9.3	8.5	8.9	8.3	5.2
1986	6.1	7.2	7.9	6.6	8.9	9.0	9.2	10.0	9.3	7.8	8.4	7.2
1987	8.0	9.5	8.8	9.7	8.8	9.1	9.7	8.7	8.9	9.2	9.1	5.5
1988	8.4	6.6	6.8	7.8	8.1	8.5	9.2	9.9	10.0	8.4	8.7	6.9
1989	6.9	4.3	7.5	7.8	9.2	8.2	8.8	9.1	9.2	8.3	8.0	7.7
1990	5.5	7.1	8.5	8.2	8.4	7.8	9.3	9.4	9.2	9.2	8.9	7.5
1991	7.6	7.4	7.4	9.4	8.8	9.1	9.1	9.9	9.3	9.2	7.6	7.5
1992	8.9	10.5	7.2	8.9	9.3	8.9	9.4	9.4	9.9	9.3	8.2	6.0
1993	7.1	6.5	7.6	8.3	9.7	8.9	7.5	9.2	9.5	10.1	7.1	7.6
1994	6.6	7.8	9.8	9.4	9.5	8.8	9.1	9.3	9.9	8.4	9.2	7.8
1995	8.6	8.6	9.2	8.8	7.8	9.2	9.2	9.0	9.8	8.8	8.3	6.1
1996	5.7	6.9	8.0	8.5	7.1	8.6	8.7	9.5	9.7	10.2	7.5	7.2
1997	4.9	6.4	6.9	7.9	9.1	9.1	7.9	10.5	8.2	8.5	7.6	8.6
1998	5.6	8.3	8.3	9.7	9.7	9.7	9.4	9.2	9.5	9.2	7.1	5.0
1999	6.0	5.9	7.8	9.1	9.7	9.0	7.6	9.2	9.4	9.2	8.3	8.1
2000	6.3	5.7	7.1	8.5	8.7	8.3	8.0	9.1	9.1	8.8	7.8	6.9
2001	6.2	6.0	7.2	8.4	8.0	8.5	8.4	9.5	9.5	9.1	8.2	6.6
2002	6.2	7.1	7.8	8.4	7.3	8.6	8.4	9.5	9.6	8.2	8.3	5.6
2003	6.1	6.8	7.7	8.5	8.1	8.4	9.0	9.8	9.8	9.2	7.8	6.8
2004	6.1	6.4	7.1	8.2	8.5	8.3	8.7	9.5	9.6	8.2	9.3	5.5
2005	6.8	8.7	8.1	9.7	9.8	8.8	9.1	9.8	9.5	10.5	6.7	5.2
2006	5.3	6.2	6.4	8.9	8.7	8.1	8.5	9.7	9.9	9.2	8.0	7.0
2007	5.5	6.3	8.6	8.6	9.5	8.4	8.6	10.1	9.5	9.5	7.5	3.7
Lowest	**4.9**	**4.3**	**6.4**	**6.6**	**7.1**	**7.8**	**7.5**	**8.7**	**8.2**	**7.8**	**6.5**	**3.7**
Highest	**9.0**	**10.5**	**9.8**	**9.7**	**9.8**	**9.7**	**9.7**	**10.5**	**10.0**	**10.5**	**9.3**	**8.6**

Source: Meteorological Services Department

Table 2.7: National Rainfall (mm)

Season	January	February	March	April	May	June	July	August	September	October	November	December
1979	111.4	93.0	76.3	7.7	1.3	1.9	1.6	4.8	0.6	44.9	93.8	179.0
1980	97.3	132.0	71.0	24.7	2.4	0.2	1.0	1.9	28.3	33.4	110.4	159.6
1981	226.3	251.5	80.5	41.9	11.2	0.2	1.7	3.6	7.7	34.7	110.3	90.2
1982	137.3	130.1	23.8	24.1	10.5	2.0	4.2	2.0	5.3	74.0	46.9	72.5
1983	77.4	87.5	54.1	17.1	17.3	3.9	21.1	7.7	0.1	27.7	60.5	117.1
1984	75.2	97.0	125.3	16.9	13.5	4.7	6.2	1.5	16.6	34.9	95.2	155.5
1985	268.5	159.7	116.2	10.6	11.7	4.0	4.9	2.3	12.1	28.0	48.1	206.5
1986	225.3	113.0	81.6	115.9	5.2	0.8	2.2	0.0	2.9	60.4	60.0	154.1
1987	125.2	54.0	50.5	5.4	4.0	1.9	0.0	1.9	13.3	28.2	53.9	238.9
1988	141.4	186.3	169.6	45.3	8.8	23.3	3.1	2.5	1.4	65.1	58.2	110.1
1989	155.4	267.6	58.6	31.9	3.2	4.5	0.9	13.3	2.7	44.7	73.9	115.2
1990	235.8	150.0	28.4	49.1	5.2	3.9	0.4	3.9	3.6	10.5	63.1	125.3
1991	125.4	123.7	116.0	2.1	5.6	0.5	0.6	0.9	7.6	17.7	64.1	93.7
1992	88.4	18.9	73.5	18.1	1.7	2.9	1.4	0.6	0.2	15.6	71.2	204.8
1993	133.1	191.7	64.0	31.6	0.9	3.8	13.2	4.6	7.1	12.9	153.3	113.2
1994	170.0	84.2	21.9	12.7	3.2	0.5	1.0	1.7	4.1	59.4	21.8	149.4
1995	94.6	83.3	43.5	12.6	12.3	1.2	3.1	4.2	1.2	28.0	70.1	154.4
1996	291.9	166.8	53.6	14.6	54.6	7.6	10.3	2.4	4.4	4.7	117.2	141.2
1997	314.0	184.5	119.3	76.0	4.1	0.9	7.5	0.1	44.1	24.3	93.2	70.2
1998	282.2	71.2	84.9	6.6	0.5	1.1	3.6	1.5	2.6	16.1	108.4	218.8
1999	243.9	199.0	94.1	14.9	2.4	1.0	5.1	9.1	6.2	29.9	113.5	113.1
2000	208.2	324.1	154.0	45.3	43.1	28.9	5.5	1.1	2.6	22.5	117.4	136.7
2001	88.4	321.8	172.2	20.2	3.7	4.7	13.0	0.6	8.6	17.2	127.8	208.3
2002	73.0	39.6	38.4	90.7	3.1	18.3	4.2	5.6	8.7	97.2	81.1	94.1
2003	108.8	140.6	244.8	7.9	11.9	25.2	1.0	0.3	9.2	78.5	64.7	96.7
2004	164.1	143.6	154.8	46.6	3.3	3.5	3.5	2.4	12.5	65.3	44.1	202.4
2005	135.8	62.3	53.8	13.9	2.4	4.9	5.0	0.2	1.6	3.7	83.9	258.5
2006	212.0	176.1	142.0	17.7	6.9	4.2	0.9	1.6	0.5	25.9	102.0	120.0
2007	143.2	122.5	55.6	41.6	0.4	5.3	1.2	2.4	12.0	23.6	107.8	372.6
2008	274.4	49.9	40.4	14.3	4.1	1.5	1.9	1.9	8.2	12.7	113.2	203.9
2009	168.3	138.8	105.3	8.8	39.3	6.1	1.5	0.0	3.0	68.8	128.4	141.2

Source: Meteorological Services Department

Table 2.8: Rainfall Met Region 1 (mm)

Season	January	February	March	April	May	June	July	August	September	October	November	December
1979	121.4	128.6	86.2	10.2	0.7	2.5	1.4	5.0	0.5	39.3	96.1	230.7
1980	122.5	130.1	110.7	39.9	3.4	0.2	1.6	2.0	34.1	52.3	105.1	225.4
1981	238.6	349.1	99.9	59.4	3.7	0.3	1.8	0.3	6.4	41.3	117.0	114.0
1982	165.2	159.4	19.3	22.4	9.5	1.4	1.2	0.0	2.1	62.6	35.5	78.3
1983	90.2	68.2	45.6	5.7	10.6	3.7	15.4	5.9	0.0	20.6	55.0	156.4
1984	89.9	120.2	124.9	17.3	14.3	4.6	2.6	0.3	13.1	25.0	77.1	171.0
1985	261.8	153.7	146.8	9.8	6.8	0.6	5.3	0.6	2.9	25.3	47.6	229.2
1986	247.5	145.8	85.7	89.9	5.0	0.2	2.4	0.0	1.1	62.1	61.0	177.1
1987	137.5	62.8	65.4	3.4	8.4	2.6	0.0	2.3	3.8	21.4	41.2	197.7
1988	198.1	176.5	159.3	57.7	7.0	20.8	4.8	0.4	1.0	66.3	54.8	137.9
1989	203.8	297.4	64.6	18.7	4.5	3.0	0.4	12.0	0.6	40.7	64.8	133.9
1990	249.5	195.8	54.2	56.5	4.1	3.4	0.1	4.6	1.4	12.6	87.6	150.6
1991	138.8	148.4	93.9	1.9	3.6	0.2	0.1	0.9	7.6	34.0	68.1	115.6
1992	97.9	22.6	90.3	24.8	2.2	3.5	1.7	0.4	0.1	4.8	66.8	201.3
1993	157.7	220.4	88.0	44.8	0.2	3.6	4.9	4.8	3.4	23.2	120.1	125.6
1994	220.5	103.5	31.0	22.9	1.3	0.2	0.4	1.8	3.1	76.7	22.4	159.9
1995	123.0	71.8	23.1	12.3	3.0	1.1	1.5	6.6	0.6	46.1	60.9	168.6
1996	282.8	163.9	65.7	13.8	78.7	6.0	3.2	0.6	5.9	3.6	100.6	174.2
1997	363.0	233.5	92.9	84.7	3.4	2.2	6.3	0.0	48.2	24.6	117.3	86.3
1998	294.7	109.0	114.9	2.5	0.0	1.0	2.4	0.0	0.8	12.5	108.9	260.5
1999	329.1	236.5	104.4	13.4	0.8	0.3	2.7	11.7	4.4	39.6	87.0	134.3
2000	180.5	225.9	177.9	59.1	73.1	16.9	2.3	1.6	1.0	27.3	122.7	164.6
2001	114.1	331.6	190.5	17.4	1.6	2.9	10.8	0.3	2.0	13.1	111.8	251.0
2002	102.6	49.7	56.3	86.7	0.0	17.4	6.6	6.9	10.4	94.8	89.4	103.3
2003	154.8	210.8	233.7	5.8	11.1	9.9	0.0	0.0	11.1	44.8	69.6	117.5
2004	131.1	180.4	132.1	37.3	0.0	0.2	1.0	4.6	34.9	71.3	64.5	241.5
2005	147.7	76.6	51.5	14.5	3.1	5.0	6.8	0.0	3.5	1.8	93.6	261.4
2006	219.7	158.1	146.8	6.9	4.5	2.5	0.1	0.3	1.1	35.2	93.5	124.5
2007	209.4	108.4	64.1	40.8	0.1	3.5	1.4	2.4	7.2	23.8	117.5	395.9
2008	266.8	59.7	58.3	5.8	1.1	1.7	1.5	0.7	1.5	30.0	115.1	201.4
2009	160.3	117.4	197.1	22.7	52.7	0.0	0.6	0.0	0.1	0.5	158.8	174.1

Source: Meteorological Services Department

Table 2.9: Rainfall Meteorology Region 2 Measured in Millimetres (mm)

Season	January	February	March	April	May	June	July	August	September	October	November	December
1979	126.8	68.7	73.2	4.6	0.6	0.2	0.1	1.0	0.0	63.7	69.8	113.1
1980	56.1	130.1	26.9	10.5	0.0	0.0	0.1	0.2	7.7	12.9	144.9	81.8
1981	260.7	196.5	102.1	28.1	4.0	0.1	0.0	0.4	0.1	20.5	97.1	35.9
1982	43.4	18.6	24.0	16.4	2.3	0.3	2.1	0.8	1.2	68.2	56.5	47.9
1983	115.0	43.5	27.9	35.2	6.1	0.9	4.5	2.0	0.0	13.6	63.0	74.4
1984	34.6	50.3	67.4	11.4	0.1	3.1	8.6	0.0	23.9	55.0	80.3	91.4
1985	152.5	80.3	20.0	11.1	4.9	0.3	0.3	0.0	1.2	27.0	25.2	180.0
1986	106.6	56.3	49.9	144.5	0.0	0.0	0.0	0.0	2.7	64.6	97.9	115.2
1987	82.8	50.0	32.8	0.0	0.1	0.0	0.0	0.0	1.5	13.5	69.8	256.2
1988	65.9	265.1	179.9	27.3	1.2	17.9	3.9	1.1	0.0	44.3	42.0	84.6
1989	136.3	232.1	34.3	37.7	0.1	0.8	0.0	0.1	0.0	39.6	97.0	66.6
1990	150.4	112.6	16.2	37.6	9.0	0.0	0.0	0.0	0.0	16.0	20.1	106.0
1991	143.4	90.0	157.7	0.0	0.0	0.0	0.0	0.0	0.1	13.7	68.4	135.8
1992	82.3	23.2	73.7	6.6	0.3	0.0	0.0	0.0	0.4	27.7	74.3	178.1
1993	104.0	153.6	56.4	18.4	3.0	0.4	3.7	0.0	18.3	6.3	179.3	98.4
1994	118.0	75.7	7.7	1.3	4.6	0.0	0.0	0.0	0.0	41.3	29.9	82.9
1995	69.1	62.2	49.7	15.5	13.9	0.0	0.0	0.0	2.1	14.2	81.6	152.9
1996	247.6	146.2	36.8	5.7	40.2	0.0	4.2	0.0	2.3	4.6	130.1	119.1
1997	246.1	87.5	137.8	57.3	3.2	0.0	0.3	0.0	43.9	24.5	72.9	78.7
1998	270.8	35.9	50.6	4.6	0.0	0.0	0.0	0.0	0.8	3.8	80.6	160.3
1999	153.8	86.7	47.5	0.8	0.0	0.0	0.2	2.1	7.8	21.1	122.2	95.6
2000	219.8	266.4	164.8	27.4	11.1	31.7	0.5	0.0	0.3	8.4	115.9	105.4
2001	59.7	294.2	107.9	15.3	3.4	0.5	1.5	0.0	13.4	26.3	117.5	132.5
2002	55.0	27.2	20.3	94.1	6.9	5.3	1.3	0.0	9.9	94.7	32.0	131.7
2003	47.9	111.4	67.6	13.2	2.9	8.8	0.0	0.0	2.3	83.0	50.9	91.9
2004	179.0	173.0	142.9	38.6	0.0	0.0	0.0	0.0	0.1	16.6	30.0	152.4
2005	105.2	33.0	66.8	10.3	4.4	0.0	0.0	0.0	0.0	0.9	92.8	249.2
2006	229.4	189.0	90.8	20.6	3.0	1.2	0.0	0.0	0.5	18.8	115.5	120.7
2007	72.5	70.6	71.4	38.1	1.6	9.8	0.1	0.0	5.9	32.6	76.4	267.3
2008	301.3	56.9	40.8	19.6	6.1	0.0	0.0	0.0	0.0	2.8	134.2	182.1
2009	162.2	113.7	77.5	0.2	24.4	18.0	0.0	0.0	8.6	197.7	127.4	156.3

Source: Meteorological Services Department

Table 2.10: Rainfall Meteorology Region 3 Measured in Millimetres (mm)

Season	January	February	March	April	May	June	July	August	September	October	November	December
1979	101.4	56.7	63.4	4.2	2.7	2.8	3.8	7.7	1.5	51.2	103.8	149.5
1980	89.8	167.5	26.8	9.7	3.4	0.3	1.2	4.1	39.2	25.7	110.3	135.8
1981	230.5	202.6	49.0	33.0	28.8	0.3	0.3	10.0	11.1	32.8	123.9	32.2
1982	101.1	55.7	7.0	22.3	10.2	0.3	2.6	2.6	5.3	73.0	33.5	46.3
1983	22.0	65.1	35.5	14.4	16.6	2.3	22.8	9.0	0.1	40.1	58.8	89.5
1984	52.7	67.1	115.1	7.5	7.7	2.6	6.5	0.7	21.4	49.3	120.2	129.7
1985	262.8	123.8	42.2	1.5	18.0	5.0	3.7	1.1	28.1	28.2	38.3	161.6
1986	131.9	80.2	51.6	117.9	6.0	1.1	0.6	0.0	2.4	49.4	35.6	99.1
1987	77.7	41.4	27.6	3.5	0.7	0.5	0.0	0.7	28.9	33.6	56.3	253.4
1988	78.8	141.1	115.8	30.1	10.4	33.3	1.0	4.6	0.6	49.0	54.5	68.5
1989	37.1	176.3	31.4	41.6	0.4	7.4	0.2	23.5	2.2	51.7	68.1	78.3
1990	231.5	61.8	1.3	40.3	1.6	1.2	0.1	1.9	7.1	5.4	40.0	87.4
1991	86.7	106.1	96.6	2.1	8.7	0.8	0.3	0.2	3.0	7.6	36.2	30.2
1992	61.6	11.4	40.2	5.4	1.7	2.7	0.7	0.2	0.2	26.6	66.2	244.5
1993	97.8	166.9	12.1	16.4	0.5	4.5	29.7	4.2	0.2	6.8	159.2	109.3
1994	95.8	42.1	12.5	7.0	6.0	0.0	2.2	2.6	3.9	57.5	16.2	158.3
1995	70.7	107.1	61.3	11.0	18.2	0.7	3.9	1.5	0.7	12.0	65.2	100.5
1996	325.6	147.0	29.9	15.6	25.1	6.3	18.6	3.7	4.4	1.9	134.5	107.7
1997	233.8	140.4	113.9	76.4	5.5	0.2	7.0	0.3	28.9	14.9	76.8	40.3
1998	219.0	19.2	43.0	6.3	0.7	0.2	3.5	2.6	1.0	22.6	133.3	193.9
1999	141.4	188.7	96.1	13.7	2.1	2.4	7.0	6.6	9.8	27.0	134.6	105.5
2000	238.4	454.7	107.6	25.1	27.5	39.1	11.3	0.3	2.8	21.2	95.4	106.4
2001	34.6	251.8	138.2	14.3	3.0	5.7	23.1	0.2	11.7	20.3	173.3	218.1
2002	28.2	17.0	11.4	91.2	0.2	12.7	0.2	1.9	12.0	40.0	92.5	36.0
2003	85.4	70.6	255.9	3.0	7.7	58.7	2.5	0.7	9.8	135.4	59.6	62.4
2004	173.1	86.2	135.7	56.0	1.1	2.7	8.6	0.1	4.4	64.8	10.5	189.5
2005	121.4	63.8	35.6	7.1	2.0	1.0	8.4	0.0	0.1	2.5	52.7	293.5
2006	149.8	117.6	136.2	24.2	3.4	5.4	0.3	0.2	0.0	16.1	114.4	96.5
2007	52.3	107.6	37.5	47.1	0.0	2.1	0.8	2.0	21.5	13.7	100.6	429.8
2008	201.0	15.2	20.1	1.1	0.8	0.8	0.0	2.2	0.9	3.0	94.5	165.4
2009	177.8	117.3	60.7	6.2	24.5	1.8	0.7	0.0	3.1	21.3	114.0	76.1

Source: Meteorological Services Department

2.2 Physical Conditions- Hydrological Characteristics

There are approximately 262 registered large inland man-made reservoirs in Zimbabwe ranging in capacity from 450 000 m^3 to 18 000 000 m^3 *(Table 2.11)*. The single biggest reservoir is Lake Kariba on the Zambezi river with a capacity of 1 806 000 000 m^3. The Lake is jointly run by the Zimbabwean and Zambian governments through the Zambezi River Authority which was established through parallel legislation in the respective countries. There are ten inland reservoirs with a capacity between 500 000 m^3 and 1 000 000 m^3, eight with a capacity above 1 000 000 m^3 but below 2 500 000 m^3, seven with a capacity between 2 500 000 m^3 and 5 000 000 m^3.

Lake Mutirikwi is the largest inland reservoir with a capacity of 14 000 000 m^3. Its capacity is expected to be exceeded by the Tokwe-Mukosi project which is under construction (18 000 000 m^3). Most of the reservoirs, especially the high capacity ones, are owned by the Zimbabwe government or proxies such as local authorities.

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Table 2.11: Hydrological Characteristics

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
U/C	Ailie	-	-	18	750	-	-
1966	Alexander	Odzani	Manicaland	29	6 710	740	GoZ
1980	Amapongokwe	Mapongokwe	Midlands	28	40 000	5 300	GoZ
1975	Anchor Yeast	Ngamo	Midlands	15	3 200	160	Private
1971	Antelope	Shasani	Matabeleland	23	14 970	2 900	GoZ
1995	Arbendruhe	Madoda	Mashonaland	15	3 000	93	Private
1995	Arcadia	Pote/Nyamashanga	Mashonaland	30	55 000	7 800	Private
1984	Ashford	Tsatsi	Mashonaland	21	1 300		Private
1994	Auridiam	Mfabas	Matabeleland	19	3 300	73	Private
1992	Banga	Banga	Mashonaland	21	966	230	Private
1963	Bangala	Mutirikwi	Masvingo	51	130 020	11 330	GoZ
1987	Bangazaan	Buzi	Manicaland	27	2 330	340	GoZ
1992	Barwick	Mukwadzi	Mashonaland	18	12 500	275	Private
1984	Beitbridge	(ORS)	Matabeleland	24	5 575	1 040	GoZ
1997	Bembezaan	Bembezaan	Midlands	30	65 000	9 100	Bembezaan Syndicate
1978	Bert Hacking	Siwa	Mashonaland	16	4 400	1 050	Private
1986	Biri	Biri	Midlands	15	2 500	750	GoZ
2001	Biri (Stage1)	Manyame	Mash.West	37	174 000	17 500	Private
1982	Blackmore Vale	Suri Suri	Mashonaland	23	17 500		Private
1977	Blockley	Mwami	Mashonaland	21	4 850	900	GoZ
1994	Brawlands	Mazowe	Mashonaland	19	2 500	81	Private
1985	Brecon	Pote	Mashonaland	29	8 100	1 130	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1977	Bumururu	Musengezi	Mashonaland	16	2 370	400	GoZ
1944	Cactus Poort	KweKwe	Midlands	18	3 100	770	GoZ
1995	Castledene Pines	Shavanhowe	Mashonaland	22	5 520	949	Private
1981	Cecilmour	Rukute	Mashonaland	24	3 800	600	Private
1973	Charliesona	Bembesi	Matabeleland	17	14 100	3 510	Private
1992	Chembada	Chirareri	Mashonaland	22	2 700	395	Private
1997	Cheswene	Bubye	Masvingo	27	4 600	1 150	Private
1997	Chikake	Chikake	Mash. Central	29	4 830	800	Private
1988	Chimanda	Runwa	Mashonaland	22	5 300	750	GoZ
1997	Chimedza	Mzingwane /T	Mat .South	34	6 081		Private
1994	Chimwe	Chimwe	Midlands	25	6 500	1 440	GoZ
1995	Chingford	Saruwe	Mashonaland	15	3 200		Private
1993	Chinyama-Tumwa	Chinyamatumwa	Masvingo	19	2 255	4 710	GoZ
1994	Chiparawe	Nyagui	Mashonaland	29	3 200		Private
1998	Chipudzana	Chipudzana	Manicaland	27	4 000	576	Private
1973	Chivake	Chivake	Mashonaland	22	6 000	4 620	GoZ
1952	Chivero	Manyame	Mashonaland	40	250 040	26 300	GoZ
1991	Churchill	Matormanzi	Mashonaland	18	2 770	820	Private
1972	Claremont	Maroro	Manicaland	22	2 500	260	Private
1973	Claw	Umsweswe	Mashonaland	28	67 300	12 150	GoZ
1987	Clifton	_	Mashonaland	19	11 000	2 070	GoZ
1985	Cowley	Munzi	Mashonaland	20	3 410	1 350	Private
1993	Dandaresh	Dere/T	Mashonaland	22	884	134	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
U/C	Dande	Dande	Mashonaland	45	160 000	16 000	ARDA
1955	Doddie Burn	Sibizini	Matabeleland	19	3 650	1 080	Private
1997	Dora	Dora	Mashonaland	36	13 600	1 675	Private
1991	Dormervale	Nyakambiri	Mashonaland	18	2 961	700	Private
U/C	Dotito	Karoi	Mashonaland	16	2 350	593	GoZ
1998	Dudley	Mutoromanzi	Mashonaland	23	9 465	1 369	Private
1989	Dundori	Mazowe	Mashonaland	19	2 500		Private
1991	Eastwolds	Musengezi	Mashonaland	27	24 000	3 090	Private
1995	Edmonston	Munera/T	Mashonaland	20	647	128	Private
1995	Egdon	Pembi	Mashonaland	21	3 180	490	Private
1987	Eirene	Wenimbi	Mashonaland	20	2 430	520	Private
1981	Endeavour	Mvumi	Mashonaland	21	2 640	520	Private
1972	Exchange Block	Gweru	Midlands	18	9 180	3 230	GoZ
1985	Firhill	Swatadzi	Mashonaland	20	3 700	600	Private
1978	Forrester	Dere	Mashonaland	15	2 000	400	Private
1989	Frogmore	Ruya	Mashonaland	22	4 617	950	Private
1991	Ghost Acre	Muneni	Mashonaland	24	11 500	1 950	Private
1995	Gilnockie	Mapheni	Mashonaland	30	5 000	801	Private
1993	Gomo Lot 1	Dande	Mashonaland	20	1 800	25	Private
1996	Gota	Chirareri	Mashonaland	34	7 763	7 750	Private
1993	Groenvlei	Karoe	Mashonaland	22	2 700	650	Private
1993	Guitingwood	Nyamanu	Mashonaland	20	3 000	48	Private
1999	Gungwa Weir	Mutirikwi	Masvingo				Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1992	Gwagwadza	Chirareri/T	Mashonaland	31	4 898	490	Private
1958	Gwenoro	Runde	Midlands	30	32 050	32 050	GoZ
1978	Hale	Gwebi	Mashonaland	16	6 000		Private
1988	Hama	Mavaire	Midlands	20	2 400	415	GoZ
1973	Harava	Manyame	Mashonaland	18	9 250	2 150	City of Harare
1992	Hariana	Ruya	Mashonaland	19	3 180	70	Private
1968	Ingwesi	Ingwesi	Matabeleland	40	69 810	8 500	GoZ
1976	Insiza	Insiza	Matabeleland	44	176 000	19 900	GoZ
1987	Insukamini	Ngamo	Midlands	18	7 850	2 040	GoZ
1972	Inyankuni	Inyankuni	Matabeleland	40	81 800		City of Bulawayo
1992	Jiri	Jiri	Masvingo	20	20 000	4 000	Private
1996	Journeys End	Muda	Manicaland	20	1 650		Private
1992	Jumbo	Murowodzi	Mashonaland	32	21 000	2 660	Private
1990	Kalope	Jalope	Matabeleland	15	2 100		GoZ
1959	Kariba	Zambesi	Mashonaland	128	180 600 000	5 100 000	Zambezi River Authority
1992	Kazilo	Mupinge	Mashonaland	20	1 350	27	Private
1997	Kelston	Msitwe	Mash. Central	25	5 000	920	Private
1928	Khame	Khami	Matabeleland	26	3 440	890	City of Bulawayo
1989	Kisanzi	Urundi	Mashonaland	16	2 540	590	Private
1986	Kombi	Munganwa	Mashonaland	25	7 400		Private
1976	Kudzwe	Kudzwe	Mashonaland	18	2 100	540	GoZ
1993	Kushinga-Pikelela	Nyakambiri	Mashonaland	20	7 910	1 260	GoZ
1972	Lesapi	Lesapi	Manicaland	41	68 000	6 150	GoZ

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
U/C	Lilstock	Ruya	Mashonaland	32	25 000	3 200	Private
1995	Lions Head	Mubvinzi	Mashonaland	17	4 923	936	Private
1988	Lonely Park	Chinyika	Mashonaland	24	2 940	600	Private
1960	Longlands	Nyambuya	Mashonaland	17	2 270	1 090	GoZ
1952	Lower Mujeni	Mchabezi	Matabeleland	20	10 470	2 370	GoZ
1936	Lower Umgusa	Umgusa	Matabeleland	20	1 330	260	GoZ
1954	Lower Zivagwe	Sebakwe	Midlands	22	5 340	2 830	GoZ
1992	Lungwalala	Lungwalala	Matabeleland	24	10 800	4 480	GoZ
1967	Mabgwe Matemba	Mabgwe	Midlands	17	2 300	550	GoZ
1993	Mabvute	Musuche	Masvingo	22	3 100	711	GoZ
1981	Machere	Ruya	Mashonaland	20	1 160		Private
1993	Machere	Ruya	Mashonaland	19	2 720	450	Private
1989	Macumbiri	Mwenji	Mashonaland	26	4 500		Private
1991	Magudu	Mwedzi	Masvingo	19	5 840	1 300	GoZ
1995	Magunje	Murereshi	Mashonaland	21	8 000	1 869	GoZ
1989	Mahusekwa	Mupfure	Mashonaland	23	3 100	660	GoZ
1969	Makashi	Bubi	Matabeleland	16	3 270	940	Private
1997	Makuti	Bembezaan	Midlands	15	5 000	1 600	Private
1995	Malangani	Mwanezana	Masvingo	26	7 223		Private
1998	Malilangwe (Raised)	Nyamasikana	Masvingo	22	7 830		Malilangwe Cons. Trust
1967	Mamande	Nata	Matabeleland	18	11 540	3 160	GoZ
1990	Mamina	Ngezi	Midlands	24	10 400	2 670	GoZ
1997	Mandindindi	Masawera	Mashonaland	19	2 000	30	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1986	Mangwe	Mangwe	Matabeleland	30	9 600	1 670	GoZ
1967	Manjirenji	Chiredzi	Masvingo	51	285 000	20 230	GoZ
1976	Manyame	Manyame	Mashonaland	28	490 000	81 000	GoZ
1975	Manyuchi	Manyuchi	Midlands	15	3 280		GoZ
1989	Manyuchi Ii	Mwenezi	Masvingo	41	319 000	33 000	GoZ
1992	Masembura	Pote	Mashonaland	42	27 150	2 582	Private
1993	Mashoko	Chinyerere	Masvingo	21	1 500	356	GoZ
U/C	Matezwa	Mungezi	Masvingo	21	6 000	2 240	GoZ
1901	Matobo	Maleme/T	Matabeleland	21	4 300	670	GoZ
1920	Mazoe	Mazowe	Mashonaland	37	35 120	4 450	Anglo American Corp.
1988	Mazvikadei	Mukwadzi	Mashonaland	63	365 000	23 000	GoZ
1997	Mbagedziwe	Mutorashanga	Mash. West	23	4 500	680	Private
1988	Mbindangombe	Turgwana	Masvingo	23	22 600	3 150	GoZ
1988	Membge Njaro	Karimba	Mashonaland	21	3 800		Private
1992	Mexico	Ngezi	Midlands	18	3 490	810	Private
1972	Mhende	Mhende	Midlands	15	2 270	500	GoZ
1971	Mhlanga	Mhlanga	Matabeleland	16	4 310	760	GoZ
1982	Middle Gwina	Gwina	Mashonaland	20	3 600		Private
1998	Mlelesi	Mlelesi	Mat South	16	3 900		Private
1986	Mondynes	Musengesi	Mashonaland	19	4 500		Private
1990	Moodie's Rest	Nyanhombo	Manicaland	24	671	88	Private
1999	Moodiesville	Mezi	Manicaland	16	4 500		Private
1998	Mountain Home	Mutare	Manicaland	27	4 950	670	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
U/C	Mpudzi	Mpudzi	Manicaland	32.5	13 000	650	GoZ
1996	Mteri	Mteri	Masvingo	32	75 000	8 700	Hippo Valley Estates
1994	Mtshabezi	Mtshabezi	Matabeleland	51	52 200	3 750	GoZ
1992	Mtsike	Mtsike	Mashonaland	15	8 151	2 240	Private
U/C	Mukorsi	Tokwe	Masvingo	89	1 802 600	96 400	GoZ
U/C	Mundi-Matanga	Mundi	Midlands	32	39 000	570	GoZ
1971	Muneni	Dondo	Mashonaland	18	2 510	490	Private
1997	Munera	Munera	Mashonaland	36	10 670	1 074	Private
1995	Munyera	Munyera	Mashonaland	23	3 000	37	Private
1969	Mupfurudzi	Mupfurudzi	Mashonaland	25	12 730	2 050	GoZ
1991	Musaverema	Musaverema	Masvingo	13	7 526	2 500	GoZ
1938	Mushandike	Mushandike	Masvingo	38	38 260	4 370	GoZ
1982	Mushowe	Mchowe	Mashonaland	16	2 350	580	Private
1996	Mutakura	Sterkstroom	Manicaland	28	7 200	853	Private
U/C	Mutawatawa	Zvirigudzi	Mashonaland	28	2 700	470	GoZ
1960	Mutirikwi	Mutirikwi	Masvingo	67	1 425 000	91 050	GoZ
1992	Mutora	Mutorashanga	Mashonaland	28	15 485	2 035	Private
1992	Mutorashanga	Mutorashanga	Mashonaland	27	1 500	240	Private
1994	Mutshila-Shokwe	Mutshilashokwe	Matabeleland	14	3 300		Private
1990	Muzhwi	Shashe	Masvingo	43	110 140	11 700	GoZ
1995	Mvebi	Squatodzi	Mash. West	20	1 800	220	Private
1971	Mwarazi	Mwarazi	Manicaland	31	6 420	890	GoZ
1970	Mwenje Ii	Mwenje	Mashonaland	36	42 030	4 760	GoZ

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1958	Mzingwane	Mzingwane	Matabeleland	38	57 000	4 560	City of Bulwayo
1943	Ncema	Ncema	Matabeleland	51	18 240	1 520	City of Bulawayo
1996	Negomo	Ruya	Mashonaland	25	5 000		GoZ
1993	New - Creagorry	Munenga	Mashonaland	24	9 130		Private
1979	Ngezi	Ngesi	Midlands	52	74 000	5 650	GoZ
1945	Ngezi	Ngezi	Mashonaland	22	26 800	5 800	GoZ
1967	Ngondoma	Ngondoma	Midlands	22	7 500	1 980	GoZ
1996	Nora	Nora	Mash. East	27	5 230	630	Private
1995	Norfolk	Changa	Mashonaland	17	3 000		Private Syndicate
1979	Nova Doma	Kamorirare	Mashonaland	22	1 810		Private
1996	Nyadora	Nyadora		23	2 760		B&K Estates
1961	Nyajena	Mutirikwi	Masvingo	15	11 050		GoZ
1995	Nyamafufu	Nyamafufu	Midlands	21	11 000	2 390	GoZ
1992	Nyamagodo	Nyamakovera	Mashonaland	18	2 160	360	Private
1975	Nyamaropa	Nyaruwaka/T	Manicaland	21	1 625	270	GoZ
1995	Nyamurungu	Nyamarungu	Manicaland	18	5 300	1 430	Private
1985	Nyapi	Msenji	Mashonaland	25	6 500		Private
1985	Nyatare	Nyatare	Masvingo	16	3 000	750	GoZ
1994	Nyava	Nora	Mashonaland	20	2 300	440	GoZ
1996	Nyawamba	Nyawamba	Manicaland	30	17 024	1 572	Private
1987	Nyedzi	Bubjana	Matabeleland	17	4 600		Private
U/C	Nzvimbo	Munwanzou	Mashonaland	20	1 700	290	GoZ
1993	Osborne	Odzi	Manicaland	67	400 900	25 000	GoZ

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
U/C	Padres Pool	Kwekwe	Midlands	18.8	3 200	655	ZINWA
1970	Pampoen Poort	Koce	Matabeleland	22	8 550	1 400	Private
1995	Penrose	Aliatswa	Mash. Central	21	1 800	350	Private
1968	Pioneer	Umtsabezi	Matabeleland	16	10 910		Private
1968	Ranga	Sebakwe	Midlands	15	3 900	1 090	GoZ
1985	Rarie	Susuje	Mashonaland	20	3 300	650	Private
1985	Ratelshoek	Chibudzana	Manicaland	26	2 920	400	Private
1964	Ripple Creek	Bubye	Matabeleland	18	4 060	2 650	Private
1991	Roswa	Roswa	Masvingo	22	3 100	480	GoZ
1997	Royal Visit	Mafuri	Manicaland	28	5 490		Private
1985	Rufaro	Nyambuya	Mashonaland	28	5 500	820	GoZ
2001 (1976)	Ruti	Nyazvidzi	Masvingo	34	151 600	17 150	GoZ
1975	Sable	Rusawi	Mashonaland	14	5 000		Private
1992	Safari	Wenimbi	Mashonaland	17	10 261	2 480	Private
1984	Saruwe	Saruwe	Mashonaland	22	13 000	2 230	Private
1989	Scorror	Chinekwa	Mashonaland	17	13 500		Private
1957	Sebakwe	Sebakwe	Midlands	47	265 730	23 000	GoZ
1997	Seke		Midlands	17	6 000		Private
1994	Serui Chingford	Serui	Mashonaland	15	3 200		Private
1972	Shangani	Shangani	Midlands	27	14 430	3 120	GoZ
1992	Sharon	Setorwe	Mashonaland	20	1 745	270	Private
1992	Shashani	Shashani	Matabeleland	33	27 920	4 030	GoZ
U/C	Sholliver	Dondo	Mashonaland	16	4 530	1 030	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1995	Shubara	Angwa	Mashonaland	18	9 000	180	Private Syndicate
1973	Shurugwi	Impali	Midlands	18	2 270	320	GoZ
1967	Silalabuhwa	Insiza	Matabeleland	30	23 450	4 050	GoZ
1991	Siwazi	Siwazi	Matabeleland	16	2 400	680	GoZ
1976	Siya	Turgwe	Masvingo	66	109 000	8 100	GoZ
1989	Smaldeel	Shenekwa	Manicaland	30	3 600	392	Private
1985	Smallbridge	Odzani	Manicaland	30	15 300	1 750	GoZ
1998	Solusi University	Luhumbe	Mat.North	15	2 000	41	Private
1989	Sovelele	Soveli	Matabeleland	17	5 000		Private
1986	Strathlorne	Umwindsi	Mashonaland	22	4 800	1 040	Private
1971	Suri Suri	Suri Suri	Mashonaland	17	9 090	2 130	GoZ
1997	Susuje	Susuje	Mash. West	26	28 000	3 940	Private
1995	Tchinungu	Marirangwe	Mashonaland	16	3 800	1 100	Private
1992	Tengwe	Tengwe	Mashonaland	19	9 000	1 840	Private
1967	Thornville	Sibakatzi	Matabeleland	22	3 450	1 010	Private
1999	Tingamira (Jupieter)	Chipita	Manicaland	23	1 000	157	Private
1991	Tokwane	Tokwe	Masvingo	29	14 300	2 300	Private
1965	Tokwe Weir	Tokwe	Masvingo	16	9 820	3 450	Triangle Estates Ltd
1992	Tre Pol & Pen	Munene	Mashonaland	20	3 321	410	Private
1997	Tsatsi	Tsatsi	Mashonaland	25	12 000	1 880	Private
1997	Tshankwa	Tshankwa	Matabeleland	15	2 600	650	GoZ
1988	Tugwane	Tugwane	Masvingo	17	3 200	570	Private
1967	Tuinplaats	Dora	Mashonaland	20	1 590	350	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1966	Tuli Makwe	Tuli	Matabeleland	31	8 330	1 660	GoZ
1982	Two Tree	Munwa	Mashonaland	21	14 300		Private
1983	Umrodzi	Umrodzi	Mashonaland	24	19 600	3 200	Private
1992	Una	Welton	Mashonaland	18	3 180	51	Private
1968	Upper Insiza	Insiza	Matabeleland	23	9 130	2 500	GoZ
1973	Upper Ncema	Ncema	Matabeleland	36	45 460	7 690	City of Bulawayo
1947	Upper Umgusa	Umgusa	Matabeleland	16	3 040	770	GoZ
1997	Valley	Mwewe	Matabeleland	22	5 880		GoZ
1999	Vermont	Chipita/T	Manicaland	30	1 168	135	Private
1992	Viewfield	Mutuwa	Mashonaland	21	819		Private
1986	Vureneme	Vureneme	Mashonaland	21	1 100		Private
1986	Walton	Munzi	Mashonaland	21	5 200	1 200	Private
1998	Wapley	Msengezi	Mash. Central	27	5 000	580	Private
1992	Waterhead	Nyamakovera	Mashonaland	23	3 839	501	Private
1996	Weardale	Chinyika	Mash. East	16	2 000	490	Private
U/C	Wenimbi	Wenimbi	Mashonaland	31	21 260		GoZ
1948	Whitewaters	KweKwe	Midlands	15	4 790	1 520	City of Gweru
1994	William Laurie	Garamapudzi	Mashonaland	28	20 000	288	Private
1978	Woodlands	Munendi	Masvingo	17	2 500		GoZ
1993	Yomba	Musongwa	Mashonaland	22	2 250	960	Private
1986	Zanadu	Garamapudzi	Mashonaland	16	3 000		Private
1995	Zhove	Muzingwane	Matabeleland	26	133 000		GoZ
1987	Zineve	Msevi	Masvingo	17	9 275	240	Private

Table 2.11 Continued

Year of Completion	Name of Dam	River	Region	Depth of Dam (m)	Reservoir Capacity (10 m^3)	Area of Reservoir (10 m^2)	Owner
1998	Zonwe	Zonwe	Manicaland	25	5 563	360	Private
1995	Chawora	Muzare	Mashonaland	18	1 150	300	Private
1995	Chibuli (2)		Mashonaland	17	1 000	190	Private
U/C	Lee	Nyamujara	Manicaland	18	1 230		Private
U/C	Norfolk	Nyagui	Mashonaland	16	1 330		Private
1997	Kireka	Mavare/T	Mashonaland	20	1 308		Private
1998	Chipiri Ii	Dora/T	Mash.Central	15	450	14	Private
1998	Chirunje	Dora/T	Mash.Central	16	1 130	31	Private
1997	Nyazura		Manicaland	19	1 710	33	Private
	Nyamanyoko	Nyamanyoko	Mash. West	19	1 830	37	Private

Note: U/C = Uncompleted
Source: Zimbabwe National Water Authority

2.3 Physical Conditions - Soil Characteristics

There are 8 soil groups in Zimbabwe *(Table 2.12)*. The fersiallitic soil group covers most of the country (16 869 248 ha) followed by lithosols (6 831 745 ha), siallitic (6 454 395 ha), regosols (4 671 595ha), paraferallitic (1 590 642 ha), orthoferallitic (1 336 353 ha), vertisols (858 289ha) and sodic soils (306 365 ha). See also Figure 2.3 for Bulawayo soils.

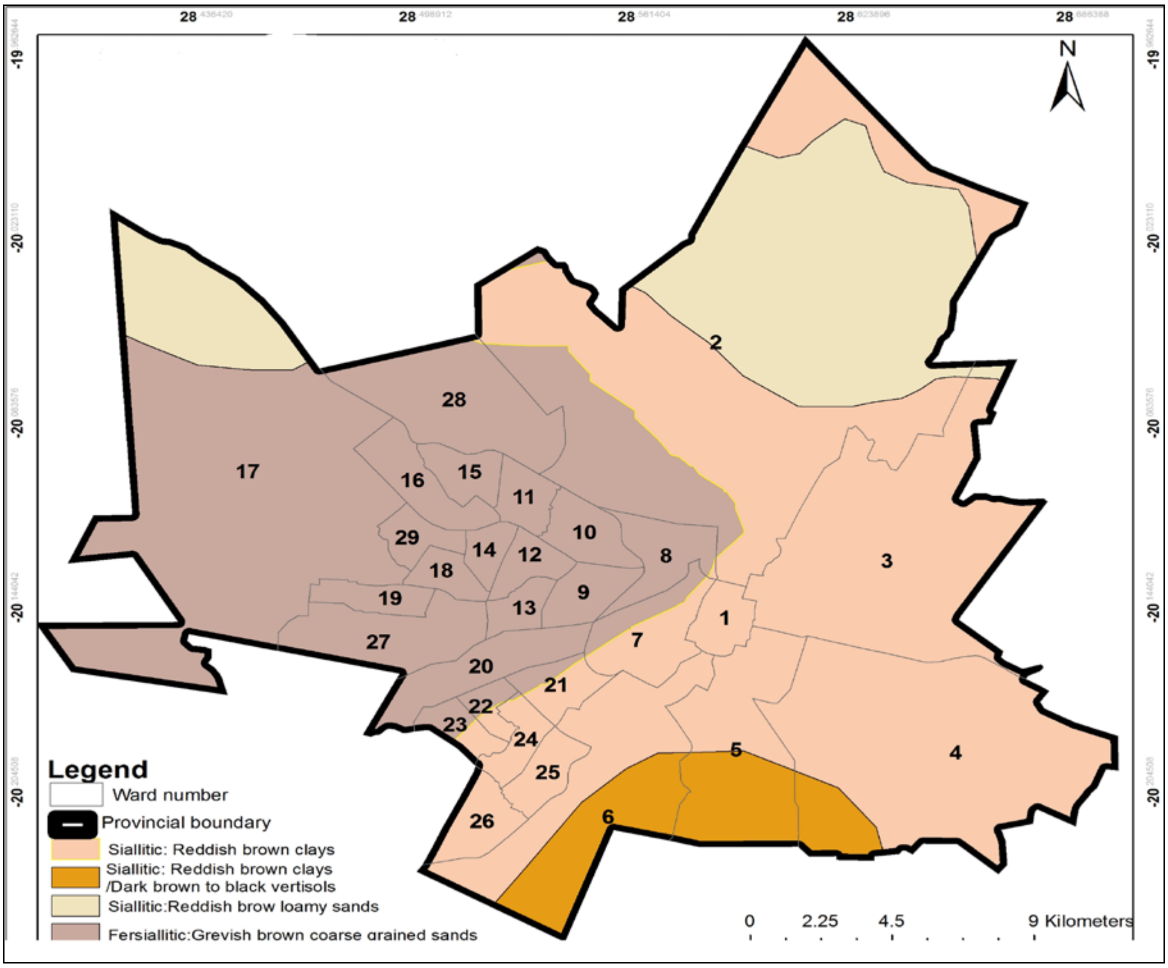
Table 2.12: Zimbabwe Soils

Province	Zimbabwe Soils		
	Soil order	**Soil group**	**Soil coverage (Ha)**
Mashonaland Central			
	Kaolinitic	Fersiallitic	1 559 339
		Paraferallitic	134 659
		Orthoferallitic	50 621
	Calcimorphic	Vertisols	15 504
		Siallitic	744 797
	Armomic	Lithosols	312 005
Mashonaland West			
	Kaolinitic	Fersiallitic	2 850 471
		Paraferallitic	2 315
	Calcimorphic	Vertisols	7 009
		Siallitic	589 303
	Armomic	Regosols	46 870
		Lithosols	1 805 639
	Natric	Sodic	272 383
Midlands			
	Kaolinitic	Fersiallitic	2 893 690
		Paraferallitic	232 916
	Calcimorphic	Vertisols	76 598
		Siallitic	1 005 921
	Armomic	Regosols	568 016
		Lithosols	382 186
Masvingo			
	Kaolinitic	Fersiallitic	2 533 789

Province	Zimbabwe Soils		
	Soil order	Soil group	Soil coverage (Ha)
		Paraferallitic	157 542
		Orthoferallitic	178 109
	Calcimorphic	Vertisols	516 373
		Siallitic	1 536 653
	Armomic	Regosols	147 262
		Lithosols	579 486
	Natric	Sodic	819
Matabeleland North			
	Kaolinitic	Fersiallitic	513 709
	Calcimorphic	Vertisols	57 806
		Siallitic	1 440 863
	Armomic	Regosols	3 745 341
		Lithosols	1 675 354
Matabeleland South			
	Kaolinitic	Fersiallitic	2 643 430
	Armomic	Regosols	144 099
		Lithosols	1 825 499
	Calcimorphic	Vertisols	45 395
		Siallitic	715 466
	Natric	Sodic	31 109
Manicaland			
	Kaolinitic	Fersiallitic	1 784 344
		Paraferallitic	225 734
		Orthoferallitic	916 652
	Calcimorphic	Vertisols	108 269
		Siallitic	312 384
	Armomic	Lithosols	230 047
	Natric	Sodic	2 054
Mashonaland East			
	Kaolinitic	Fersiallitic	2 039 114
		Paraferallitic	794 266
		Orthoferallitic	190 971
	Calcimorphic	Vertisols	31 335
		Siallitic	109 008
	Armomic	Lithosols	21 529
		Regosol	20 007

Province	Zimbabwe Soils		
	Soil order	Soil group	Soil coverage (Ha)
Harare			
	Kaolinitic	Fersiallitic	51 362
		Paraferallitic	43 210
Bulawayo			
	Kaolinitic	Fersialitic	19 710.90
	Calcimorphic	Siallitic	34 855.87

Source: Environmental Management Agency



Source: Environmental Management Agency

Figure 2.3: Distribution of soils in Bulawayo

2.4 Land Cover, Ecosystems and Biodiversity

2.4.1 Land Cover

Forestry resources are a strategic issue in the Zimbabwean economy. They account for about 3% of the country's Gross Domestic product and are a source of livelihood for the bulk of the citizens. They provide foundations for life on earth through ecological functions, by regulating the climate and water resources and by serving as habitats for plants and animals. Forests also provide a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services. That explains why the maintenance, enhancement or restoration of forestry resources is viewed as a means for achieving the country's socio-economic development and not as an end in itself.

Forests cover about 53% (20 952 846 ha) of the total surface area of Zimbabwe (SADC, 2011).

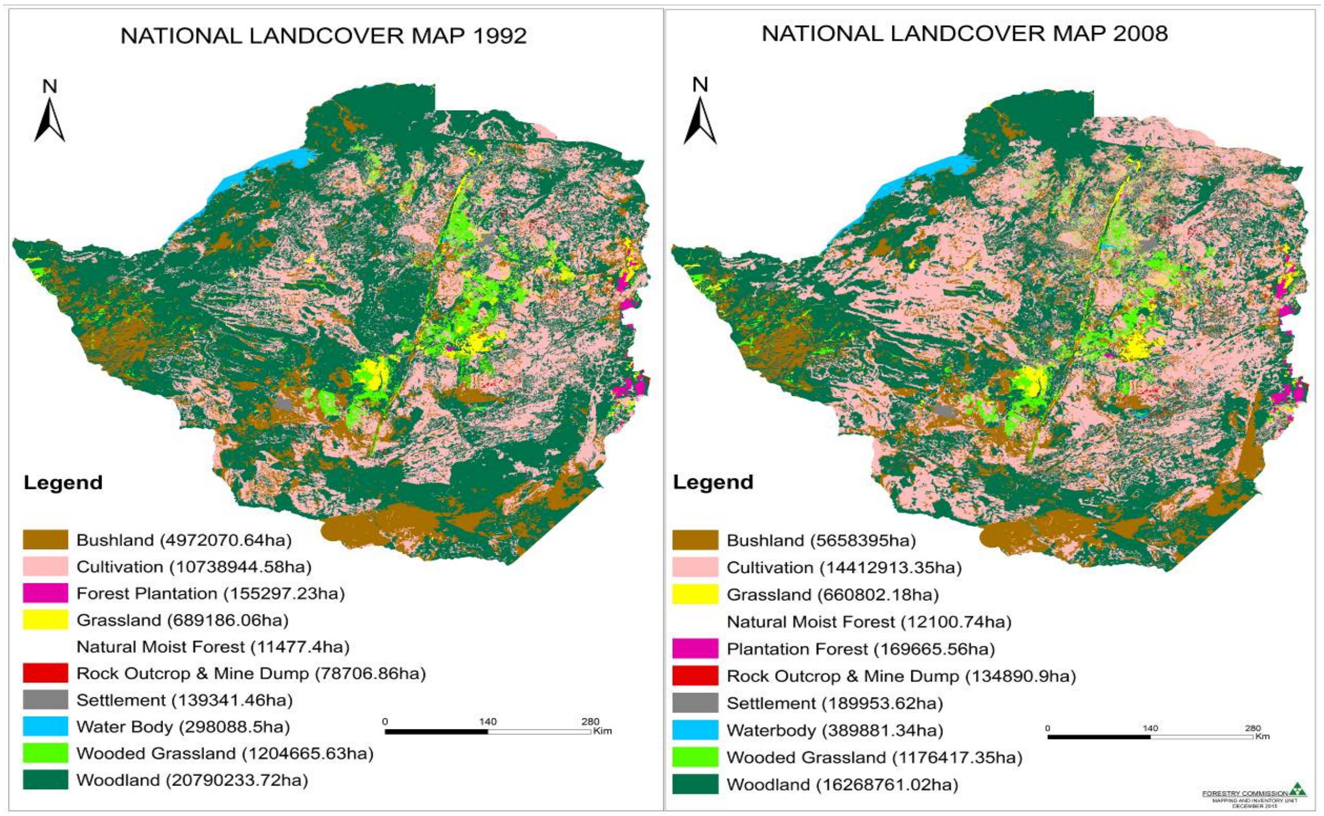
Out of this area, 800 000 ha have been gazetted as forest reserves while about 168 581 ha are under exotic plantations. The predominant woodland types found in Zimbabwe are the miombo, mopane, teak, acacia and terminalia/combretum. Woodland is the dominant forest type covering large areas in the western, southern and northern parts of the country.

Forests and woodlands cover are on a downward trend as shown on Table 2.13. The decline is attributed to agricultural pressures, infrastructural development, droughts, veld fires and illegal settlers, Figure 2.4.

Table 2.13: National Land Classification System (Area in hactres)

National Classes	Year	
	1992	2008
Natural moist forest	11 477	12 100
Plantation	155 297	169 665
Woodland	20 790 234	16 269 059
Bush-land	4 972 071	5 655 322
Wooded grassland	1 204 666	1 176 417
Grassland	689 186	660 802
Cultivation	10 738 945	14 411 074
Rock outcrop	78 707	134 891
Water-body	298 089	389 881
Settlement	139 341	189 954
Total	**39 078 013**	**39 069 165**

Source: Forestry Commission



Source: Forestry Commission

Figure 2.4: Land cover 1992 and 2008

2.4.2 Habitat Fragmentation and Protected Terrestrial

The country's gazetted forest reserves measuring approximately 800,000 ha are located in the western part of Zimbabwe. These areas are managed by the Forestry Commission on behalf of government. The need to conserve and protect these forests arises from the fact that they are located on ecologically fragile soils, the Kalahari sands. Consequently, any indiscriminate cutting of trees in these areas can easily turn them into deserts and drastically reduce the number and range of animal species present. In addition, the forests "house" commercial indigenous timber species such as *Baikea plurijuga* (teak), *Pterocarpus angolensis* (mukwa) and *Guibourtia coleosperma* (mchibi).

The indigenous hardwood industry, which is mainly based on the indigenous hardwoods from the Zambezi teak woodlands, employs an approximately 2,000 people and a significant number in the downstream furniture industry. In the quest for agricultural land, some people have been illegally moving into demarcated forest areas. This has contributed to the following:

- Uncontrolled and unplanned cultivation of land involving the cutting down of trees and clearing forests resulting in land degradation.
- Rampant soil erosion caused by over grazing, removal of forests for construction and agricultural purposes and forest fires which are used as methods of hunting and land preparation.

Figure 2.5 shows the gazetted indigenous forest areas of Zimbabwe for the years 1992 and 2012. In the 20 years the area covered by woodland has shrunk from 728 480 ha to 671 302 ha while the area under cultivation in these gazette zones has more than doubled from 31 180 ha to 77 700 ha. Settlements, water bodies and bushland have also increased.

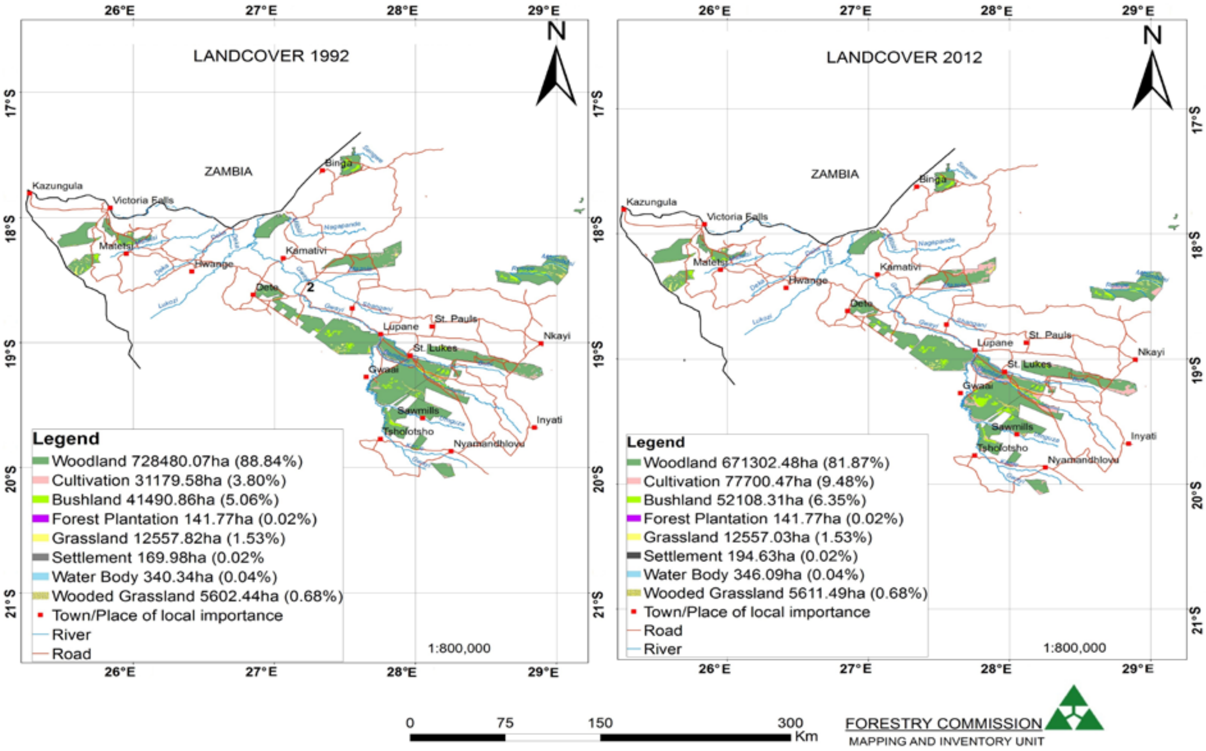


Figure 2.5: Gazetted indigenous forests 1992 and 2012

Table 2.14: Area of Gazetted Forests in Hectares

Class	1992	2012
Woodland	728 480	671 302
Cultivation	31 180	77 700
Bush-Land	41 491	52 108
Forest Plantation	142	141
Grassland	12 558	12 557
Settlement	170	195
Water-Body	340	346
Wooded Grassland	5 602	5 611
Total	**819 963**	**819 960**

Source: Forestry Commission

2.4.3 Wood stocks demand and supply

Generally the woodlands in Zimbabwe have very low growth rates averaging 0.8 m3/ha/year. This coupled with the high population pressure has resulted in the fragmentation of the communal woodlands. The official deforestation rate in Zimbabwe is about 300,000 ha/year, or 0.8% of the total forest area. The demand for fuel wood, which is the main product from natural woodlands, is estimated to be 13 million m^3 per year. Table 2.15 shows the estimate of total wood stocks of natural forests and woodlands.

Between 10-20% of rural households use woodland resources mainly as alternative sources of income (Bradley and Dewees 1993). Benefits from woodlands in Zimbabwe can be placed in the following categories; direct, local private benefits (e.g. fruits, fuel wood), indirect, local private benefit (e.g. nutrients, fodder and browse), indirect regional and semi-public benefits (e.g. soil erosion control, water catchment and recreation) and indirect global public benefit (e.g. carbon sequestration and biodiversity conservation).

Table 2.15: Estimate of Total Wood Stocks of Natural Forests and Woodlands

Land Tenure Category	Wood Stocks (million tonnes)
Communal Land	104
Resettlement Land	11
Commercial Land	252
National Parks	269
Forest Reserve	1
TOTAL	637

*plantation forests are not included

Source: Timber Producers Federation, 2013

2.4.4 Commercial Plantations

The major forest plantation species grown in Zimbabwe are Pinus patula, P. elliottii and P. taeda, Eucalyptus grandis, E. Cloeziana and Acacia mearnsii. The pines are used mainly for structural timber production, and pulp and paper; eucalyptus for poles, and pulp and paper, and the black- wattle (A. mearnsii) for the production for tannin. Exotic plantations cover about 156,000 ha.

The state owns 56% total forestry plantations, private companies 44%. The major forest companies in the country are vertically integrated to include plantation development and saw-milling. Other primary processing plants include manufacturing of doors, block boards, plywood, pulp and paper, and treated poles. Direct jobs involved in plantation and processing of industrial forest products were estimated at 5018 in 2013/14.

The statistic shows a sharp decline as compared to the late 1990s period when the industry had above 16 000 employees.

2.4.5 Forest Products Production, Trade and Consumption

Studies on the supply of timber indicate that the age class structure of pine species is not balanced with most trees in the class (1 -10 years) and less in 25+. This is based on the Annual Report 2013/14 of the Timber Producers Federation. The unbalanced age structure was caused by overharvesting.

Currently, Zimbabwe is self-sufficient in sawn timber, and surplus approximately is exported to neighbouring countries and Europe. The current domestic consumption of soft round wood is about 172,700 m3). Volume figures for the period 2010-2014 are shown in Table 2.16.

Table 2.16: Volumes of Timber and Timber Products, 2010 to 2014.

Forest Production	Volume (m^3)				
	2010	2011	2012	2013	2014
Sawn & Processed Timber	150 288	175 658	184 324	259 028	393 920
Treated Poles	33 718	60 791	71 011	74 293	40 073
Veneer & Plywood	6 170	6 170	6 506	-	-
Particle & Fibreboard	5 882	7 754	8 931	-	-
Paper and Paper Products	-	-	-	-	-
Wattle Extract	3 167	3 412	3 217	0	
Charcoal	9 470	11 968	5 533	0	28 166
Fuelwood	-	-	-	11 629	10 420
Matches	-	-	-	-	-
Total	**208 695**	**265 753**	**279 522**	**344 950**	**472 579**

Source: Timber Producers Federation

The amount of production shows a general increase from the year 2010 to 2014. The increase is attributed to increased demand of the products.

Rapid expansion of rural electricity triggered a sharp increase in demand for poles. However, a significant amount of poles are also exported to regional countries.

Table 2.17: Forested Area Categories (Area is in hectares)

Forested Area Categories	Year						
	1985	1992	1990	2000	2005	2010	2015
Forests (1)	23 798 942	21 509 885	22 163 901	18 893 821	17 258 781	15 623 741	14 061 367
OWL (2)	10 633 608	5 439 880	-	-	-	-	-
OL	4 252 449	11 735 235	16 521 099	19 791 179	21 426 219	23 061 259	24 623 633
Total land area	**38 685 000**	**38 685 000**	**38 685 000**	**38 685 000**	**38 685 000**	**38 685 000**	**38 685 000**

OWL- Other wooded land
OL - Other land

Source: Timber Producers Federation

Table 2.18: Area of Forests in Hectares

Number	Forest Name	Size (hectares)
1	Kavira	28 200
2	Mzolo	67 200
3	Sijarira	25 600
4	Bembesi	55 100
5	Molo	2 900
6	Mafungabusi	82 100
7	Mudzongwe	1 420
8	Ungwe	5 67
9	Gwaai	144 265
10	Lake Alice	39 000
11	Ngamo	102 900
12	Gwampa	47 000
13	Chesa	14 250
14	Inseze	35 200
15	Inseze Extension	8 400
16	Umgusa	32 200
17	Fuller	23 300
18	Kazuma	24 000
19	Mvutu	2 100

Source: Forestry Commission

2.4.6 Ecosystems

Figures 2.6 and 2.7 show the distribution of wetlands in Zimbabwe. They are distributed all over the country and are at various levels of degradation as shown in Figure 2.7.

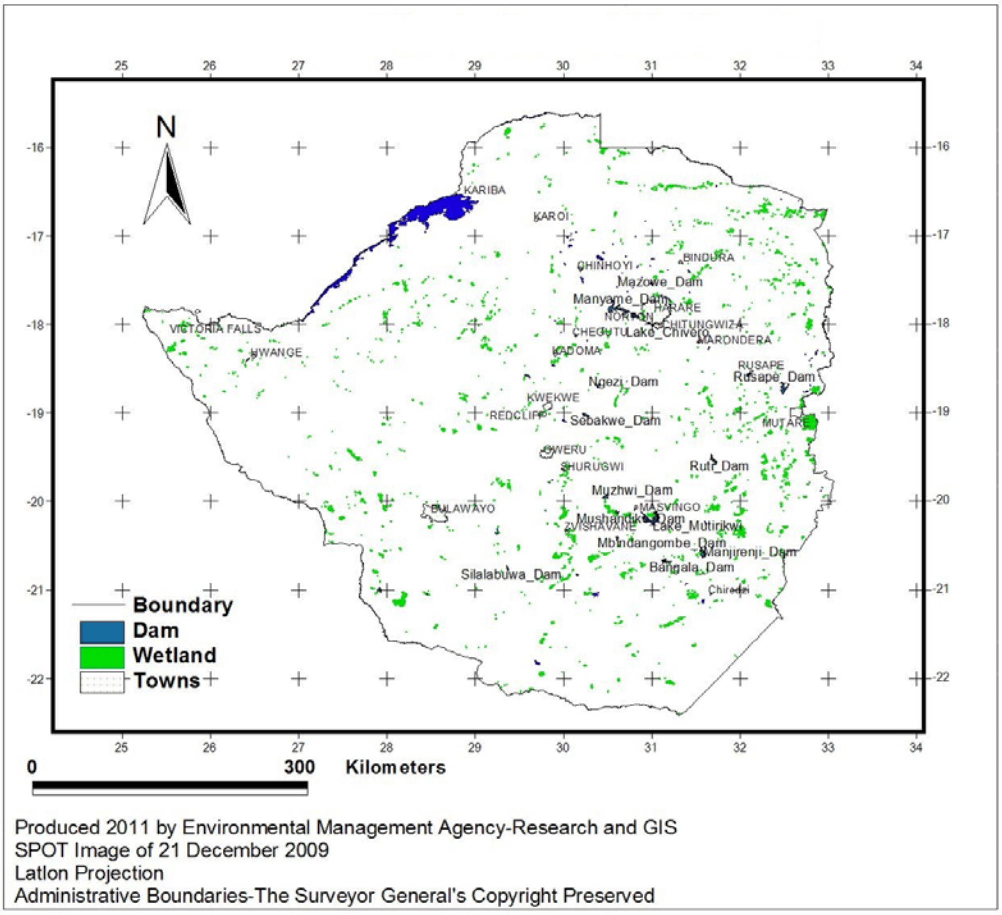
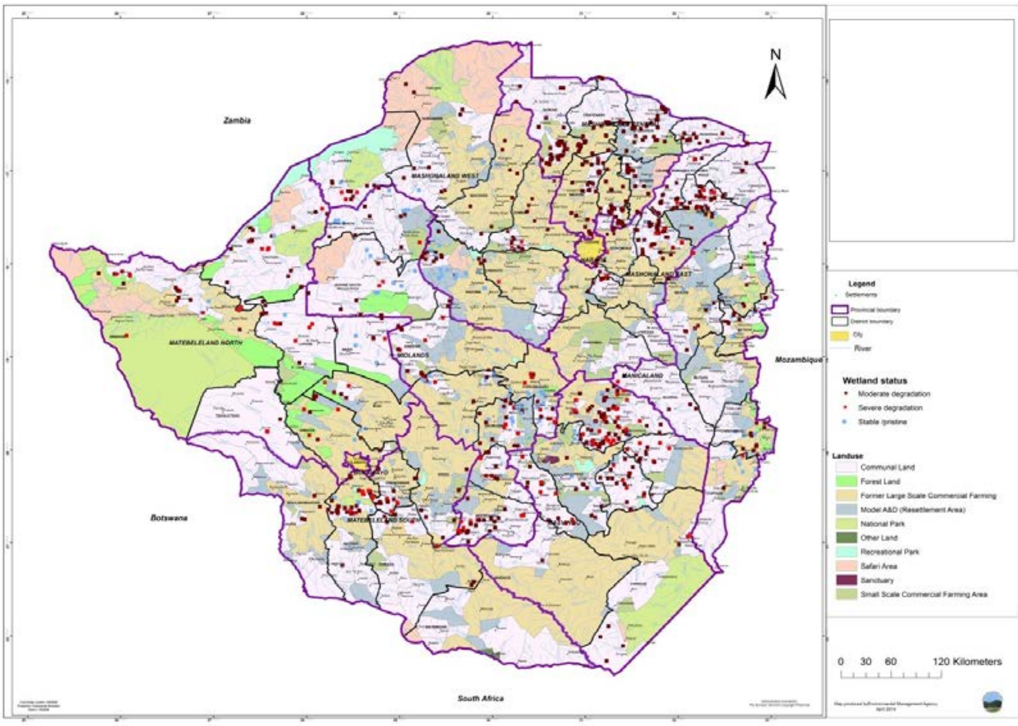


Figure 2.6: Distribution of wetlands in Zimbabwe

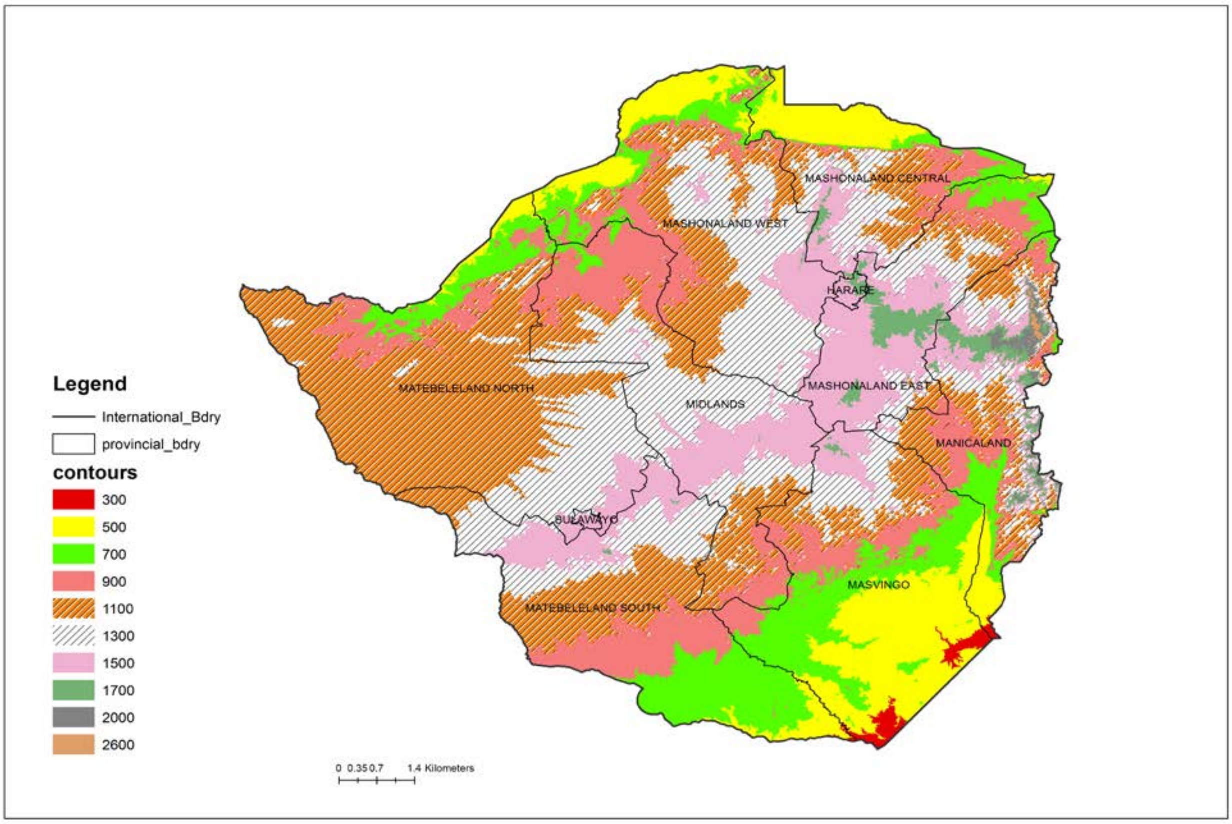


Source: Environmental Management Agency

Figure 2.7: Zimbabwe wetlands showing level of degradation

2.5 Relief

Figure 2.8 is a relief map showing the mean altitude for various areas in Zimbabwe. The elevation ranges from 300 m above mean sea level in South Eastern Lowveld to 2 600 m above mean sea level in the Eastern Highlands



Source: Generated from the Department of Surveyor General Maps

Figure 2.8: Relief map

2.6 Fresh Water Quality

The Environmental Management Agency (EMA) is responsible for monitoring environmental quality. Ambient water quality (AWQ) monitoring is carried out on a monthly basis in Zimbabwe with 346 Ambient water quality monitoring points distributed across the seven catchment areas, which are, Gwayi, Mazowe, Runde, Sanyati, Save, Manyame, Mzingwane. The Ambient water quality monitoring points are shown in Figure 2.9 while data from selected points are given in Tables 2.19-2.25.

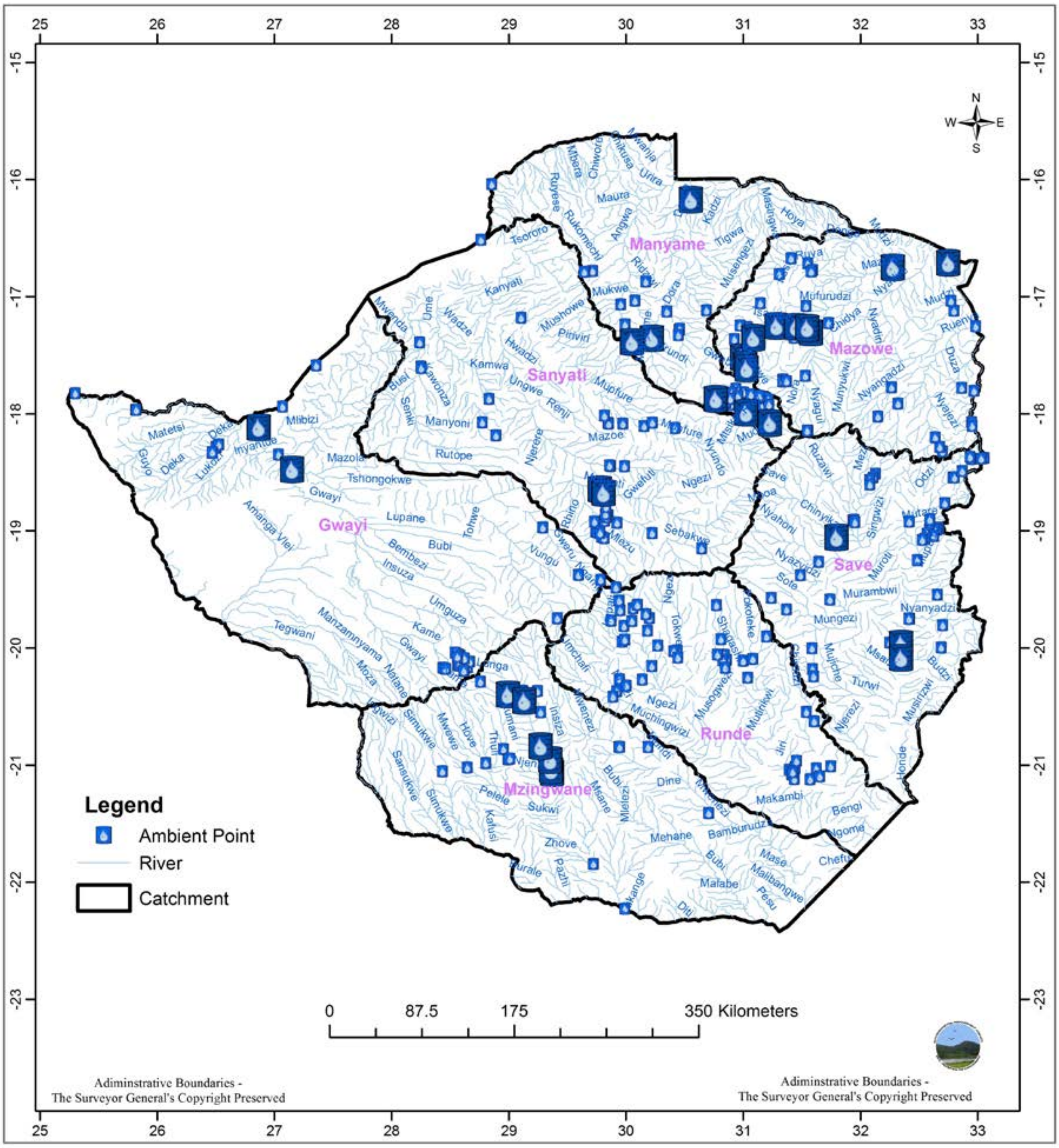


Figure 2.9: Ambient water quality monitoring points

Table 2.19: Gwayi River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Gwayi	MTN29	2011	December	58	<0.01	-	18.19	0.44	-	3.4	0.05	-	0.66
Gwayi	MTN29	2012	April	59.28	<0.01	<20	0.19	<0.01	-	8.19	0.06	13	<0.01
Gwayi	MTN29		May	42.81	<0.01	38	0.21	<0.01	-	7.69	0.1	5	<0.01
Gwayi	MTN29		June	52.59	<0.01	<20	0.28	0.01	-	7.77	0.02	5	<0.01
Gwayi	MTN29		July	54.68	<0.01	71	0.04	0.02	-	7.66	0.04	4	<0.01
Gwayi	MTN29		August	57.44	<0.01	51	0.2	<0.01	-	7.81	0.02	<1	-
Gwayi	MTN29	2013	April	<2	<0.01	<20	0.49	<0.01	0.34	6.91	0.07	<1	<0.01
Gwayi	MTN29		May	9.95	<0.01	<20	0.01	<0.01	0.08	7.82	0.02	<1	<0.01
Gwayi	MTN29		July	<2	<0.01	-	0.04	<0.01	0.26	8.4	0.05	1.95	<0.01
Gwayi	MTN29		August	<2	<0.01	27	0.04	<0.01	0.31	7.64	0.19	15.32	<0.01
Gwayi	MTN29		November	20.38	<0.01	<20	<0.01	<0.01	0.34	8.6	0.05	13.38	<0.01
Gwayi	MTN29		December	8.02	<0.01	24	0.14	-	0.22	8.32	0.02	16.12	<0.01
Gwayi	MTN29	2014	January	26.22	<0.01	99	0.37	<0.01	0.54	7.69	0.09	<1	<0.01
Gwayi	MTN29		February	-	0.01	81	3.66	0.06	0.65	7.04	0.43	<1	0.02
Gwayi	MTN29		March	36.31	0.16	64	0.63	<0.01	6.79	7.49	0.44	9.08	<0.01
Gwayi	MTN29		April	24.53	<0.01	38	0.5	<0.01	0.47	8.13	0.16	2.29	<0.01
Gwayi	MTN29		May	6.38	<0.01	38	0.61	<0.01	0.63	7.65	0.04	<1	<0.01
Gwayi	MTN29		June	2.65	<0.01	28	0.51	<0.01	0.41	6.86	0.15	<1	<0.01

Table 2.19 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Gwayi	MTN29	2014	July	23.49	<0.01	21	<0.01	0.06	0.08	7.04	0.11	10.15	<0.01
Gwayi	MTN29		August	<2	<0.01	59	0.18	<0.01	0.24	7.16	<0.01	12.83	<0.01
Gwayi	MTN29		September	<2	<0.01	39	0.08	<0.01	0.14	7.81	<0.01	<1	<0.01
Gwayi	MTN29		October	<2	<0.01	-	0.72	<0.01	0.38	7.55	0.05	<1	<0.01
Gwayi	MTN29		November	23.44	<0.01	537	0.5	<0.01	0.22	8.88	0.04	14.67	<0.01
Gwayi	MTN29		December	<2	0.3	<20	13.2	<0.01	0.22	8.18	0.04	15.78	<0.01
Gwayi	MTN30	2011	December	60.33	<0.01	-	0.19	0.04	-	8.62	0.02	1 053.00	<0.01
Gwayi	MTN30	2012	April	55.3	<0.01	<20	0.66	<0.01	-	9.18	0.03	12	<0.01
Gwayi	MTN30		May	46.21	<0.01	21	0.35	<0.01	-	9.06	0.09	12	<0.01
Gwayi	MTN30		June	50.75	<0.01	22	<0.01	<0.01	-	8.88	0.02	27	<0.01
Gwayi	MTN30		July	63.41	<0.01	84	<0.01	<0.01	-	8.87	0.05	36	<0.01
Gwayi	MTN30		August	56.47	<0.01	187	393	<0.01	-	8.17	0.03	20	<0.01
Gwayi	MTN30	2013	June	<2	<0.01	<20	<0.01	<0.01	0.27	7.76	0.05	80.63	<0.01
Gwayi	MTN30		July	8.78	<0.01	-	<0.01	<0.01	0.28	7.69	0.05	<1	<0.01
Gwayi	MTN30		August	14.32	<0.01	45	<0.01	<0.01	0.28	8.73	0.18	51.9	<0.01
Gwayi	MTN30		September	18.54	<0.01	33	0.27	0.01	0.53	8.53	0.03	71.26	<0.01
Gwayi	MTN30		November	23.08	<0.01	51	0.12	0.07	0.79	8.96	0.08	73.24	<0.01
Gwayi	MTN30		December	18.11	<0.01	32	0.1	0.07	0.3	8.9	0.05	47.36	<0.01
Gwayi	MTN30	2014	January	9.89	<0.01	128	0.52	0.02	0.77	7.75	0.12	<1	<0.01

Table 2.19 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Gwayi	MTN30		February	-	0.01	67	4.08	<0.01	0.56	6.94	0.62	<1	<0.01
Gwayi	MTN30		March	<2	<0.01	85	2.91	<0.01	0.82	7.86	0.2	<1	<0.01
Gwayi	MTN30		April	28.98	<0.01	58	0.58	<0.01	0.26	8.09	0.23	<1	<0.01
Gwayi	MTN30		May	31.61	<0.01	31	0.05	<0.01	0.91	8.18	0.03	<1	<0.01
Gwayi	MTN30		June	7.29	<0.01	26	0.14	<0.01	0.19	7.38	0.12	2.36	<0.01
Gwayi	MTN30		July	20.11	<0.01	34	0.03	0.07	0.08	7.21	0.11	19.77	<0.01
Gwayi	MTN30		August	22.27	<0.01	45	0.21	<0.01	0.24	7.77	<0.01	33.86	<0.01
Gwayi	MTN30		September	<2	<0.01	44	0.04	<0.01	0.39	8.04	<0.01	46.95	<0.01

Source: Environmental Management Agency

Table 2.20: Mazowe River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DL1	2009	June	23.22	<0.01	<20	<0.01	0.17	<0.01	6.99	0.02	29.00	<0.01
Mazowe	DL1		August	49.90	0.03	<20	0.33	<0.01	0.52	7.45	<0.01	26.00	<0.01
Mazowe	DL1	2010	February	5.49	<0.01	44.00	0.50	0.60	0.33	7.14	<0.01	22.11	<0.01
Mazowe	DL1		March	33.71	0.05	22.00	0.35	0.12	0.26	6.73	<0.01		<0.01
Mazowe	DL1		April	25.24	0.09	<20	0.24	0.08	0.21	7.21	0.11	28.00	0.07
Mazowe	DL1		May	22.30	0.01	24.00	0.16	0.03	0.32	7.30	<0.01	13.00	0.06
Mazowe	DL1		June	42.22	<0.01	<20	0.14	<0.01	0.09	7.55	0.05	20.00	0.01
Mazowe	DL1		September	33.01	0.01	<20	0.07	0.01	<0.001	7.57	0.03	21.00	<0.01
Mazowe	DL1		November	31.52	<0.01	<20	0.18	<0.01	0.61	7.50	0.03	20.00	<0.01
Mazowe	DL1		December	33.80	<0.01	25.00	0.15	0.16	0.11	7.83	0.02	20.00	<0.01
Mazowe	DL1	2011	February	1.12	<0.01	<25	<0.01	<0.01	1.13	6.89	0.04	10.00	<0.01
Mazowe	DL1		March	9.73	<0.01	379.00	<0.01	0.15	0.09	7.82	0.05	15.00	<0.01
Mazowe	DL1		April	-	<0.01	17.00	<0.01	0.38	0.10	7.68	0.01	24.00	0.03
Mazowe	DL1		May	12.42	<0.01	10.00	0.04	<0.01	<0.01	7.66	0.05	18.00	<0.01
Mazowe	DL1		June	17.21	<0.01	63.00	<0.01	<0.01	0.14	7.54	0.03	9.00	<0.01
Mazowe	DL1		July	56.82	<0.01	<25	<0.01	0.04	0.05	8.10	0.01	13.00	<0.01
Mazowe	DL1		August	50.70	<0.01	<25	<0.01	<0.01	0.14	8.29	0.05	16.00	<0.01
Mazowe	DL1		September	36.43	<0.01	<25	0.01	0.02	-	8.23	0.02	14.00	<0.01
Mazowe	DL1		October	60.28	<0.01	<25	<0.01	0.03	-	7.46	<0.01	17.00	<0.01
Mazowe	DL1	2011	November	38.21	<0.01	<25	<0.01	<0.01	-	7.74	0.04	12.00	<0.01
Mazowe	DL1		December	58.99	<0.01	<25	<0.01	0.01	-	7.95	0.03	11.00	<0.01
Mazowe	DL1	2012	January	72.56	<0.01	39.00	0.25	<0.01	-	7.63	<0.01	20.00	<0.01
Mazowe	DL1		February	41.25	<0.01	<20	0.04	<0.01	-	7.55	0.02	4.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mazowe	DL1	2012	March	53.30	<0.01	39.00	0.05	<0.01	-	7.81	0.03	30.00	<0.01
Mazowe	DL1		April	62.62	<0.01	<20	0.06	<0.01	-	7.94	0.03	8.00	<0.01
Mazowe	DL1		May	53.78	<0.01	52.00	0.07	<0.01	-	7.62	0.03	13.00	<0.01
Mazowe	DL1		June	54.18	-	<20	<0.01	<0.01	-	7.17	0.06	15.00	<0.01
Mazowe	DL1		July	46.72	<0.01	36.00	0.08	0.01	-	7.65	0.18	2.00	<0.01
Mazowe	DL1		August	61.32	<0.01	43.00	0.04	<0.01	-	7.60	0.01	13.00	<0.01
Mazowe	DL1		September	56.86	<0.01	<20	0.01	<0.01	-	8.03	0.00	11.00	<0.01
Mazowe	DL1		October	43.73	<0.01	<20	0.13	<0.01	-	7.79	0.01	5.00	<0.01
Mazowe	DL1		November	49.94	<0.01	<20	0.27	<0.01	-	8.20	0.01	1.00	<0.01
Mazowe	DL1		December	5.51	<0.01	26.00	0.08	<0.01	-	8.11	0.04	3.00	<0.01
Mazowe	DL1	2013	January	22.28	<0.01	<20	0.34	<0.01	0.23	7.70	0.04	17.00	<0.01
Mazowe	DL1		February	<2	<0.01	32.00	0.28	<0.01	0.46	7.00	<0.01	12.11	<0.01
Mazowe	DL1		March	7.11	<0.01	<20	<0.01	<0.01	0.15	7.86	0.03	16.80	<0.01
Mazowe	DL1		April	10.64	<0.01	<20	0.01	<0.01	0.21	8.34	0.03	8.00	<0.01
Mazowe	DL1		May	22.34	<0.01	<20	0.07	<0.01	0.19	8.13	0.01	10.80	<0.01
Mazowe	DL1		June	29.82	<0.01	25.00	0.09	<0.01	0.23	7.29	0.05	30.20	<0.01
Mazowe	DL1		July	<2	<0.01	<20	<0.01	<0.01	0.21	8.20	0.04	16.80	<0.01
Mazowe	DL1		August	<2	<0.01	29.00	0.10	<0.01	0.24	7.86	0.04	20.37	<0.01
Mazowe	DL1		September	<2	<0.01	-	0.08	<0.01	0.21	7.79	0.01	14.66	<0.01
Mazowe	DL1		October	16.35	<0.01	23.00	0.08	<0.01	0.33	8.00	0.06	18.78	<0.01
Mazowe	DL1		November	<2	<0.01	<20	<0.01	<0.01	0.27	8.20	0.04	12.03	<0.01
Mazowe	DL1		December	46.28	<0.01	21.00	0.15	0.04	0.32	7.88	0.05	29.35	<0.01
Mazowe	DL1	2014	January	27.00	<0.01	20.00	0.23	0.02	0.24	8.39	0.05	28.12	<0.01
Mazowe	DL1		February	18.71	<0.01	<20	0.17	<0.01	0.47	7.74	0.10	20.07	<0.01
Mazowe	DL1		April	11.58	<0.01		0.04	<0.01	0.11	8.18	0.09	10.90	<0.01
Mazowe	DL1		May	23.65	<0.01	<20	<0.01	<0.01	0.12	8.16	0.04	8.07	<0.01
Mazowe	DL1		June	15.75	<0.01	26.00	0.01	<0.01	0.17	7.36	0.08	15.57	<0.01
Mazowe	DL1		July	18.17	<0.01	31.00	0.17	0.12	0.20	7.12	0.05	16.98	<0.01
Mazowe	DL1		August	<2	<0.01	21.00	0.09	<0.01	0.19	7.43	<0.01	16.73	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DL1		September	16.72	<0.01	28.00	0.16	<0.01	0.21	7.25	0.00	8.72	<0.01
Mazowe	DL1		October	26.34	<0.01		0.16	<0.01	0.17	8.13	0.02	15.14	<0.01
Mazowe	DL1		November	<2	<0.01	23.90	<0.01	<0.01	0.27	8.55	0.04	19.40	<0.01
Mazowe	DL1		December	42.48	<0.01	<20	<0.01	0.10	0.19	7.81	0.03	13.73	<0.01
Mazowe	DR12	2009	August	50.96	0.08	<20	0.47	-	0.45	7.54	0.01	35.00	<0.01
Mazowe	DR12		September	44.75	<0.01	26.00	0.85	0.34	0.52	7.46	0.07	78.00	<0.01
Mazowe	DR12		October	66.44	<0.01	<20	0.31	0.41	0.36	7.72	0.04	28.00	<0.01
Mazowe	DR12	2010	February	9.63	0.05	21.00	1.01	0.64	0.30	6.93	<0.01	4.00	0.02
Mazowe	DR12		March	9.84	0.05	39.00	1.01	0.15	0.28	6.75	<0.01	-	0.02
Mazowe	DR12		April	42.11	0.12	<20	0.13	0.05	0.45	7.50	0.07	27.00	<0.01
Mazowe	DR12		June	32.10	0.01	24.00	0.46	0.03	0.54	7.20	0.05	15.00	0.08
Mazowe	DR12		September	15.94	0.07	26.00	0.45	<0.01	0.06	7.88	0.03	39.00	<0.01
Mazowe	DR12		October	30.25	0.05	61.00	0.17	0.07	0.16	7.72	0.04	17.00	<0.01
Mazowe	DR12		November	30.64	<0.01	<20	0.14	0.13	0.40	7.74	0.04	21.00	<0.01
Mazowe	DR12		December	25.75	<0.01	<20	1.14	0.03	0.24	8.04	0.11	38.00	<0.01
Mazowe	DR12	2011	February	8.88	<0.01	-	0.05	<0.01	0.38	7.92	0.02	12.00	<0.01
Mazowe	DR12		March	24.86	<0.01	436.00	0.27	0.11	0.30	7.82	0.05	21.00	<0.01
Mazowe	DR12		April	-	<0.01	<25	0.48	0.37	0.38	8.10	0.03	6.00	0.05
Mazowe	DR12		May	24.54	<0.01	91.00	1.66	<0.01	0.34	7.67	0.22	45.00	<0.01
Mazowe	DR12		June	68.21	<0.01	<25	<0.01	<0.01	0.44	7.61	0.06	16.00	<0.01
Mazowe	DR12		July	30.53	<0.01	41.00	0.01	<0.01	0.48	7.97	0.02	111.00	<0.01
Mazowe	DR12		August	57.11	<0.01	<25	0.20	<0.01	0.44	7.59	0.04	32.00	<0.01
Mazowe	DR12		September	36.43	<0.01	-	0.23	<0.01	-	7.71	0.02	30.00	<0.01
Mazowe	DR12		October	49.90	<0.01	-	1.56	0.01	-	7.70	0.05	55.00	<0.01
Mazowe	DR12		November	62.56	<0.01	-	0.25	0.06	-	7.25	0.03	11.00	<0.01
Mazowe	DR12		December	55.79	0.06	-	2.51	0.04	-	7.69	0.09	44.00	<0.01
Mazowe	DR12	2012	January	61.70	<0.01	39.00	0.86	<0.01	-	8.16	0.02	27.00	<0.01
Mazowe	DR12		February	59.29	<0.01	<20	0.27	<0.01	-	7.89	0.03	14.00	<0.01
Mazowe	DR12		March	31.77	<0.01	<20	0.68	0.03	-	8.32	0.04	21.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DR12		April	65.91	<0.01	<20	0.73	0.02	-	8.23	<0.01	15.00	<0.01
Mazowe	DR12		May	68.04	<0.01	<20	0.28	<0.01	-	7.67	0.03	13.00	<0.01
Mazowe	DR12		June	36.43	<0.01	<20	0.30	<0.01	-	7.55	0.06	25.00	<0.01
Mazowe	DR12		August	58.80	<0.01	31.00	4.88	<0.01	-	7.24	0.13	31.00	<0.01
Mazowe	DR12		September	55.21	<0.01	25.00	0.91	<0.01	-	7.76	0.01	23.00	0.00
Mazowe	DR12		October	53.14	<0.01	5.88	6.40	<0.01	-	7.85	0.13	44.00	<0.01
Mazowe	DR12		November	52.76	<0.01	33.00	4.29	<0.01	-	8.26	0.01	25.00	<0.01
Mazowe	DR12		December	-	<0.01	28.00	1.33	<0.01	-	7.76	0.04	6.00	<0.01
Mazowe	DR12	2013	January	5.46	<0.01	31.00	7.80	<0.01	0.57	7.83	0.30	<1	<0.01
Mazowe	DR12		February	<2	<0.01	<20	0.58	<0.01	0.47	7.55	0.03	20.03	<0.01
Mazowe	DR12		March	17.26	<0.01	<20	0.83	<0.01	0.27	6.75	0.04	<1	<0.01
Mazowe	DR12		April	26.49	<0.01	20.00	1.93	<0.01	0.48	8.52	0.06	<1	<0.01
Mazowe	DR12		May	16.64	<0.01	<20	0.26	<0.01	0.39	6.71	0.02	8.43	<0.01
Mazowe	DR12		June	<2	<0.01	32.00	0.13	<0.01	0.30	8.04	0.05	28.15	<0.01
Mazowe	DR12		July	<2	<0.01	40.00	0.29	<0.01	0.35	8.13	0.04	2.06	<0.01
Mazowe	DR12		August	<2	<0.01	37.00	0.24	<0.01	0.35	7.63	0.04	14.53	<0.01
Mazowe	DR12		September	<2	<0.01	-	0.14	<0.01	0.34	6.78	0.03	11.78	<0.01
Mazowe	DR12		October	12.29	<0.01	<20	0.21	<0.01	0.36	7.91	0.09	7.00	<0.01
Mazowe	DR12		November	12.29	<0.01	<20	0.21	<0.01	0.36	7.91	0.09	7.00	<0.01
Mazowe	DR12		December	48.31	<0.01	41.00	1.25	0.04	0.43	8.16	0.27	<1	<0.01
Mazowe	DR12	2014	January	20.13	<0.01	<20	0.40	0.06	0.41	8.20	0.06	27.46	<0.01
Mazowe	DR12		February	36.50	<0.01	33.00	0.56	<0.01	0.45	7.14	0.09	28.94	<0.01
Mazowe	DR12		March	10.84	<0.01	<20	0.30	<0.01	0.44	8.48	0.03	42.47	<0.01
Mazowe	DR12		April	12.06	<0.01	-	0.86	0.24	0.41	8.10	0.09	<1	<0.01
Mazowe	DR12		May	15.05	<0.01	30.00	1.35	0.08	0.47	7.98	0.07	10.00	<0.01
Mazowe	DR12		June	7.53	<0.01	28.00	0.31	<0.01	0.36	7.33	0.09	20.25	<0.01
Mazowe	DR12		July	13.15	<0.01	21.00	0.38	0.10	0.46	7.69	0.06	15.49	<0.01
Mazowe	DR12		August	6.77	<0.01	30.00	0.35	<0.01	0.38	7.34	0.01	15.55	<0.01
Mazowe	DR12		September	<2	<0.01	26.00	0.83	<0.01	0.45	7.57	0.03	5.13	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DR12		October	43.35	<0.01	-	0.68	<0.01	0.31	6.99	0.06	2.05	<0.01
Mazowe	DR12		November	<2	<0.01	35.20	1.68	<0.01	0.37	8.19	0.93	3.98	<0.01
Mazowe	DR12		December	56.31	<0.01	23.50	0.60	0.05	0.28	8.02	0.06	5.55	<0.01
Mazowe	DR18	2009	June	12.86	<0.01	-	-	0.28	0.16	7.73	<0.01	34.00	<0.01
Mazowe	DR18	2010	June	82.58	0.31		0.91	0.26	0.68	7.91	0.02	47.00	0.16
Mazowe	DR18		November	16.60	0.07	<20	0.47	<0.01	0.40	8.10	0.05	40.00	<0.01
Mazowe	DR18		December	2.31	<0.01	<20	0.26	0.14	0.78	7.89	0.06	33.00	<0.01
Mazowe	DR18	2011	March	27.77	<0.01	385.00	0.03	0.15	0.57	7.96	0.04	25.00	<0.01
Mazowe	DR18		April	-	<0.01	<20	0.06	0.37	0.62	8.47	0.02	25.00	0.04
Mazowe	DR18		May	3.39	<0.01	80.00	0.32	<0.01	0.22	8.14	0.04	31.00	<0.01
Mazowe	DR18		June	58.53	<0.01	19.00	0.04	<0.01	0.62	7.66	0.06	19.00	<0.01
Mazowe	DR18		July	56.53	<0.01	<20	0.14	<0.01	0.58	7.98	0.01	2.00	<0.01
Mazowe	DR18		August	59.24	<0.01	<20	0.27	<0.01	0.71	7.97	0.03	24.00	<0.01
Mazowe	DR18		September	37.11	<0.01	-	0.53	0.02	-	8.06	0.02	23.00	<0.01
Mazowe	DR18		October	42.79	<0.01	-	1.90	0.04	-	7.80	0.10	33.00	<0.01
Mazowe	DR18		November	52.41	<0.01	-	2.07	0.08	-	7.59	0.02	34.00	0.01
Mazowe	DR18		December	63.64	<0.01	-	0.62	0.05	-	7.72	0.08	21.00	<0.01
Mazowe	DR18	2012	January	68.65	<0.01	43.00	0.04	0.13	-	8.17	<0.01	44.00	<0.01
Mazowe	DR18		February	48.91	<0.01	31.00	0.24	<0.01	-	8.19	0.08	16.00	<0.01
Mazowe	DR18		March	39.44	<0.01	41.00	0.30	<0.01	-	6.95	0.04	25.00	<0.01
Mazowe	DR18		April	55.60	<0.01	<20	0.50	0.02	-	8.36	<0.01	22.00	<0.01
Mazowe	DR18		May	52.91	<0.01	<20	0.30	0.02	-	7.99	0.01	14.00	<0.01
Mazowe	DR18		June	46.12	<0.01	<20	0.14	0.01	-	8.45	0.15	25.00	<0.01
Mazowe	DR18		July	62.80	<0.01	<20	0.59	0.02	-	8.41	0.01	18.00	0.01
Mazowe	DR18		August	47.50	<0.01	<20	1.13	<0.01	-	7.64	<0.01	100.00	0.01
Mazowe	DR18		September	58.99	0.12	<20	0.27	<0.01	-	7.83	0.00	22.00	<0.01
Mazowe	DR18		October	55.57	<0.01	6.19	0.86	<0.01	-	7.82	0.04	<1	<0.01
Mazowe	DR18		November	50.24	<0.01	44.00	0.40	<0.01	-	7.68	0.08	12.00	<0.01
Mazowe	DR18	2013	January	4.11	<0.01	37.00	1.35	<0.01	0.80	8.40	0.08	44.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mazowe	DR18		February	<2	<0.01	20.00	0.28	<0.01	0.77	8.07	0.49	19.43	<0.01
Mazowe	DR18		March	<2	<0.01	<20	2.50	<0.01	0.64	8.07	0.05	18.66	<0.01
Mazowe	DR18		April	<2	<0.01	36.00	0.19	<0.01	1.01	8.53	0.01	14.48	<0.01
Mazowe	DR18		May	7.46	<0.01	<20	0.06	<0.01	0.23	7.43	0.01	12.52	<0.01
Mazowe	DR18		June	15.64	<0.01	24.00	0.51	<0.01	0.83	7.78	0.07	49.44	<0.01
Mazowe	DR18		July	<2	<0.01	<20	0.05	<0.01	0.85	8.45	3.35	28.26	<0.01
Mazowe	DR18		August	<2	<0.01	<20	0.36	<0.01	0.79	7.92	0.05	21.40	<0.01
Mazowe	DR18		September	<2	<0.01	-	0.38	<0.01	0.62	7.92	<0.01	16.49	<0.01
Mazowe	DR18		October	20.02	<0.01	<20	0.34	<0.01	0.83	8.04	0.10	46.75	<0.01
Mazowe	DR18		November	<2	<0.01	-	0.58	<0.01	0.57	8.23	0.05	5.64	<0.01
Mazowe	DR18		December	49.18	0.02	100.00	23.90	0.04	1.36	7.80	0.26	<1	0.02
Mazowe	DR18	2014	January	<2	0.01	36.00	1.07	<0.01	0.93	8.18	0.07	36.97	<0.01
Mazowe	DR18		February	34.18	<0.01	33.00	0.40	<0.01	0.80	7.94	0.09	23.22	<0.01
Mazowe	DR18		March	18.96	<0.01	23.00	0.29	<0.01	0.93	8.90	0.05	9.18	<0.01
Mazowe	DR18		April	11.19	<0.01	-	0.61	<0.01	0.86	8.21	0.07	22.51	<0.01
Mazowe	DR18		May	9.73	<0.01	22.00	0.18	0.02	0.94	7.82	0.04	25.04	<0.01
Mazowe	DR18		June	26.19	<0.01	26.00	0.21	<0.01	1.26	7.42	0.09	4.40	<0.01
Mazowe	DR18		July	12.47	<0.01	<20	0.27	0.10	0.85	7.31	0.07	22.66	<0.01
Mazowe	DR18		August	<2	<0.01	34.00	1.24	<0.01	0.80	7.08	0.06	23.03	<0.01
Mazowe	DR18		September	<2	<0.01	29.00	0.31	<0.01	1.06	7.67	0.03	18.78	<0.01
Mazowe	DR18		October	48.18	<0.01	-	0.32	<0.01	0.70	8.38	0.03	25.46	<0.01
Mazowe	DR18		November	<2	<0.01	39.00	0.11	<0.01	0.71	8.62	0.18	25.42	<0.01
Mazowe	DR18		December	4.88	<0.01	<20	0.11	0.05	0.67	8.16	0.01	24.58	<0.01
Mazowe	DR19	2009	January	25.45	<0.01	4.00	0.97	0.02	0.41	7.96	0.12	17.00	0.06
Mazowe	DR19		September	46.98	<0.01	136.00	0.51	0.33	0.23	7.57	0.02	48.00	0.03
Mazowe	DR19		October	65.28	<0.01	<20	0.30	0.42	0.17	7.46	0.03	15.00	<0.01
Mazowe	DR19	2010	February	29.32	0.02	66.00	1.35	0.70	0.34	7.06	<0.01	<0.001	0.05
Mazowe	DR19		March	0.82	0.18	110.00	1.20	0.21	0.31	7.12	<0.01	-	<0.01
Mazowe	DR19		April	30.13	0.18	55.00	0.31	0.05	0.45	8.09	0.03	24.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DR19		June	12.03	0.02	<20	0.33	0.02	<0.01	8.18	0.05	3.00	<0.01
Mazowe	DR19		August	55.55	0.06	28.00	0.20	0.03	0.26	8.26	0.05	16.00	<0.01
Mazowe	DR19		September	21.55	0.04	<20	0.48	<0.01	0.04	7.79	0.04	16.00	<0.01
Mazowe	DR19		November	3.58	<0.01	31.00	0.21	0.02	0.20	8.04	0.04	19.00	<0.01
Mazowe	DR19		December	27.78	<0.01	32.00	0.07	0.06	0.15	8.01	0.05	19.00	<0.01
Mazowe	DR19	2011	February	4.71	<0.01	4.00	<0.01	<0.01	0.58	7.56	0.02	9.00	0.35
Mazowe	DR19		March	21.66	<0.01	-	0.37	0.17	0.33	8.03	0.03	15.00	<0.01
Mazowe	DR19		April	-	<0.01	<25	0.22	0.35	0.29	8.36	0.02	1.00	0.08
Mazowe	DR19		May	17.27	<0.01	21.00	0.01	<0.01	0.12	7.69	0.05	12.00	<0.01
Mazowe	DR19		June	84.23	<0.01	10.00	0.06	<0.01	0.25	7.22	0.06	11.00	<0.01
Mazowe	DR19		July	21.13	<0.01	-	0.11	<0.01	0.14	8.03	0.01	13.00	<0.01
Mazowe	DR19		August	56.04	<0.01	<25	0.12	<0.01	0.18	8.05	0.02	17.00	<0.01
Mazowe	DR19		September	44.58	0.01	<25	<0.01	<0.01	-	7.97	0.05	21.00	<0.01
Mazowe	DR19		October	56.50	<0.01	-	<0.01	0.03	-	7.68	0.03	20.00	<0.01
Mazowe	DR19		November	52.22	<0.01	-	<0.01	0.01	-	7.68	<0.01	16.00	<0.01
Mazowe	DR19		December	61.61	<0.01	-	<0.01	0.03	-	8.10	0.03	17.00	<0.01
Mazowe	DR19	2012	January	69.95	<0.01	55.00	0.50	0.20	-	8.06	0.01	37.00	<0.01
Mazowe	DR19		February	47.26	<0.01	31.00	0.21	<0.01	-	7.98	0.05	20.00	<0.01
Mazowe	DR19		March	35.26	<0.01	<20	0.27	<0.01	-	7.85	0.03	-	<0.01
Mazowe	DR19		April	66.40	<0.01	<20	0.86	<0.01	-	8.07	0.03	7.00	<0.01
Mazowe	DR19		May	39.33	<0.01	57.00	0.22	0.01	-	7.76	0.03	12.00	<0.01
Mazowe	DR19		June	38.86	<0.01	42.00	0.35	0.00	-	7.70	0.03	11.00	<0.01
Mazowe	DR19		July	55.16	<0.01	<20	0.25	<0.01	-	8.08	0.01	24.00	<0.01
Mazowe	DR19		August	61.90	<0.01	28.00	0.11	<0.01	-	7.68	<0.01	15.00	<0.01
Mazowe	DR19		September	62.87	<0.01	<20	0.03	<0.01	-	8.23	0.09	14.00	<0.01
Mazowe	DR19		October	52.75	<0.01	6.22	0.39	<0.01	-	7.84	0.03	17.00	<0.01
Mazowe	DR19		November	61.78	<0.01	20.00	0.46	<0.01	-	8.18	0.02	4.00	<0.01
Mazowe	DR19		December	-	<0.01	<20	0.21	<0.01	-	7.59	0.10	3.00	<0.01
Mazowe	DR19	2013	January	<2	<0.01	20.00	1.94	<0.01	0.41	7.70	0.24	14.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mazowe	DR19		February	<2	<0.01	25.00	1.49	<0.01	0.46	7.38	0.17	21.67	0.13
Mazowe	DR19		March	6.82	<0.01	<20	0.66	<0.01	0.37	7.74	0.05	<1	<0.01
Mazowe	DR19		April	7.84	<0.01	23.00	0.24	<0.01	0.52	8.14	0.02	4.35	<0.01
Mazowe	DR19		May	-	<0.01	<20	0.17	<0.01	0.28	7.84	0.02	<1	<0.01
Mazowe	DR19		June	<2	<0.01	26.00	0.08	<0.01	0.27	6.43	0.05	15.40	<0.01
Mazowe	DR19		July	<2	<0.01	<20	<0.01	<0.01	0.27	7.55	0.05	9.02	<0.01
Mazowe	DR19		August	<2	<0.01	23.00	0.11	<0.01	0.24	7.58	0.03	17.97	<0.01
Mazowe	DR19		September	<2	<0.01	-	0.35	<0.01	0.26	7.79	0.04	11.75	<0.01
Mazowe	DR19		October	25.24	<0.01	<20	0.01	<0.01	0.22	7.73	0.39	10.86	<0.01
Mazowe	DR19		November	<2	<0.01	<20	<0.01	<0.01	0.24	7.57	0.05	4.69	<0.01
Mazowe	DR19		December	31.00	<0.01	26.00	0.33	0.01	0.43	8.13	0.06	9.51	<0.01
Mazowe	DR19	2014	January	8.63	0.10	32.00	0.41	0.01	0.59	8.03	0.11	<1	<0.01
Mazowe	DR19		February	36.89	<0.01	35.00	0.81	<0.01	0.41	7.74	0.05	<1	<0.01
Mazowe	DR19		March	<2	<0.01	21.00	0.40	<0.01	0.41	8.21	0.04	4.10	<0.01
Mazowe	DR19		April	18.83	<0.01	-	0.20	<0.01	0.34	7.58	0.09	<1	<0.01
Mazowe	DR19		May	63.19	<0.01	26.00	0.24	0.01	0.42	7.94	0.03	5.25	<0.01
Mazowe	DR19		June	<2	<0.01	28.00	0.08	<0.01	0.26	7.34	0.10	10.93	<0.01
Mazowe	DR19		July	17.69	<0.01	22.00	0.20	0.11	0.24	7.26	0.06	12.79	<0.01
Mazowe	DR19		September	<2	<0.01	<20	0.25	<0.01	0.24	7.37	0.14	6.46	<0.01
Mazowe	DR19		October	39.00	<0.01	-	0.26	<0.01	0.19	7.93	0.04	2.95	<0.01
Mazowe	DR19		November	4.92	<0.01	-	1.92	0.04	0.29	7.89	0.21	3.04	<0.01
Mazowe	DR19		December	<2	<0.01	33.30	0.74	0.06	0.31	6.93	0.04	<1	<0.01
Mazowe	DR20	2009	September	41.16	<0.01	<20	0.42	0.37	0.41	7.83	0.01	34.00	0.02
Mazowe	DR20	2010	February	63.15	0.12	<20	<0.01	3.23	0.28	7.13	0.04	6.00	0.07
Mazowe	DR20		June	14.24	<0.01	<20	0.27	<0.01	0.35	7.93	0.05	15.00	<0.01
Mazowe	DR20		July	33.50	<0.01	34.00	0.48	-	0.34	8.18	0.07	10.00	<0.01
Mazowe	DR20		December	30.50	0.06	<20	0.09	0.06	0.19	8.06	0.09	16.00	0.04
Mazowe	DR20	2011	February	7.81	<0.01	238.00	0.15	<0.01	0.40	7.70	0.03	4.00	0.46
Mazowe	DR20		March	5.65	<0.01	252.00	0.19	0.16	0.31	8.04	0.04	13.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mazowe	DR20		May	35.79	<0.01	85.00	0.17	<0.01	0.09	8.13	0.04	14.00	<0.01
Mazowe	DR20		June	56.96	<0.01	<25	<0.01	<0.01	0.36	7.90	0.04	8.00	<0.01
Mazowe	DR20		July	69.24	<0.01	<25	<0.01	<0.01	0.11	8.61	0.02	12.00	0.01
Mazowe	DR20		August	54.97	<0.01	71.00	0.21	<0.01	0.11	8.18	0.01	5.00	<0.01
Mazowe	DR20		September	40.60	<0.01	<25	0.07	0.01	-	7.28	0.03	18.00	<0.01
Mazowe	DR20		October	41.07	<0.01	-	<0.01	0.01	-	7.74	0.01	22.00	<0.01
Mazowe	DR20		November	53.67	<0.01	-	0.11	0.01	-	7.71	0.01	19.00	<0.01
Mazowe	DR20		December	64.23	<0.01	-	0.07	0.04	-	8.04	0.03	18.00	<0.01
Mazowe	DR20	2012	January	61.18	<0.01	22.00	1.56	0.20	-	7.84	0.02	25.00	<0.01
Mazowe	DR20		February	60.75	<0.01	<20	1.27	0.02	-	7.71	0.05	19.00	<0.01
Mazowe	DR20		March	47.19	<0.01	21.00	0.27	<0.01	-	7.97	0.03	176.00	<0.01
Mazowe	DR20		April	64.74	<0.01	<20	0.97	<0.01	-	7.95	<0.01	38.00	0.01
Mazowe	DR20		May	63.87	<0.01	66.00	0.58	0.02	-	7.82	0.01	9.00	<0.01
Mazowe	DR20		June	35.46	<0.01	62.00	0.25	<0.01	-	7.42	0.03	10.00	<0.01
Mazowe	DR20		July	56.04	<0.01	39.00	0.27	<0.01	-	8.08	<0.01	19.00	<0.01
Mazowe	DR20		August	57.05	<0.01	39.00	0.10	<0.01	-	7.55	0.01	13.00	<0.01
Mazowe	DR20		September	57.83	<0.01	48.00	0.13	<0.01	-	8.12	<0.01	9.00	<0.01
Mazowe	DR20		October	54.60	<0.01	5.74	0.12	<0.01	-	7.80	0.01	9.00	<0.01
Mazowe	DR20		November	53.34	<0.01	25.00	0.55	<0.01	-	7.87	0.04	13.00	<0.01
Mazowe	DR20	2013	January	9.33	<0.01	25.00	1.32	<0.01	0.35	7.67	0.12	24.00	<0.01
Mazowe	DR20		February	<2	<0.01	<20	0.56	<0.01	0.31	7.73	0.04	<1	<0.01
Mazowe	DR20		March	10.01	<0.01	24.00	0.26	<0.01	0.23	7.74	0.09	7.23	<0.01
Mazowe	DR20		April	<2	<0.01	29.00	0.26	<0.01	0.28	7.89	0.02	3.13	<0.01
Mazowe	DR20		May	19.35	<0.01	<20	0.20	<0.01	0.24	7.67	0.02	<1	<0.01
Mazowe	DR20		June	7.43	<0.01	33.00	0.20	<0.01	0.26	7.99	0.07	11.79	<0.01
Mazowe	DR20		July	<2	<0.01	26.00	<0.01	0.11	0.21	8.23	0.04	9.12	<0.01
Mazowe	DR20		August	<2	<0.01	27.00	1.48	<0.01	0.28	7.83	0.05	23.48	<0.01
Mazowe	DR20		September	<2	<0.01	-	0.65	<0.01	0.21	7.60	<0.01	12.06	<0.01
Mazowe	DR20		October	18.28	<0.01	<20	0.02	<0.01	0.27	8.16	0.18	8.54	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DR20		November	<2	<0.01	25.00	<0.01	<0.01	0.26	8.55	0.04	5.89	<0.01
Mazowe	DR20		December	3.36	<0.01	32.00	0.21	0.04	0.37	8.04	0.06	14.52	<0.01
Mazowe	DR20	2014	January	21.20	<0.01	26.00	0.51	<0.01	0.39	8.36	0.07	8.66	<0.01
Mazowe	DR20		February	17.36	<0.01	38.00	0.82	<0.01	0.55	7.83	0.08	24.03	<0.01
Mazowe	DR20		March	<2	<0.01	27.00	0.63	<0.01	0.38	8.06	0.05	4.31	<0.01
Mazowe	DR20		April	5.78	<0.01	-	0.16	0.75	0.22	8.12	0.08	2.46	<0.01
Mazowe	DR20		May	16.40	<0.01	25.00	0.25	<0.01	0.33	7.85	0.03	<1	<0.01
Mazowe	DR20		June	47.74	<0.01	22.00	0.16	<0.01	0.26	7.45	0.09	5.57	<0.01
Mazowe	DR20		July	8.60	<0.01	<20	0.18	0.11	0.30	7.24	0.07	14.00	<0.01
Mazowe	DR20		August	<2	<0.01	39.00	0.13	<0.01	0.23	7.49	<0.01	12.05	<0.01
Mazowe	DR20		September	<2	<0.01	22.00	0.15	<0.01	0.22	7.33	0.01	5.60	<0.01
Mazowe	DR20		October	41.90	<0.01		0.21	<0.01	0.19	8.05	0.02	2.19	<0.01
Mazowe	DR20		November	<2	<0.01	<20	0.01	<0.01	0.21	8.08	0.04	3.70	<0.01
Mazowe	DR20		December	1.79	<0.01	23.00	<0.01	0.03	0.19	7.72	0.02	<1	<0.01
Mazowe	DR36	2010	February	24.54	0.16	<20	3.43	<0.01	0.53	6.62	<0.01	33.00	0.06
Mazowe	DR36		August	38.80	0.02	7.00	0.29	0.06	0.13	8.31	0.07	4.47	<0.01
Mazowe	DR36		November	<2	<0.01	<20	0.21	0.07	0.15	8.08	0.03	6.00	<0.01
Mazowe	DR36		December	29.05	0.05	62.00	<0.01	0.09	0.20	8.23	0.38	12.00	<0.01
Mazowe	DR36	2011	February	7.62	<0.01	-	0.40	<0.01	0.48	7.35	0.04	5.00	<0.01
Mazowe	DR36		March	24.37	<0.01	86.00	0.80	0.14	0.31	7.63	0.04	21.00	<0.01
Mazowe	DR36		April	-	<0.01	<25	0.55	0.32	0.19	8.39	0.03	12.00	0.06
Mazowe	DR36		May	46.56	<0.01	98.00	0.50	<0.01	0.15	7.32	0.06	4.00	<0.01
Mazowe	DR36		June	50.08	<0.01	39.00	0.03	<0.01	0.21	7.94	0.04	<0.01	<0.01
Mazowe	DR36		July	15.31	<0.01	66.00	<0.01	0.13	0.08	8.30	0.01	5.00	0.02
Mazowe	DR36		August	50.22	<0.01	<25	0.32	<0.01	0.09	7.56	0.09	9.00	0.01
Mazowe	DR36		September	30.61	<0.01	34.00	0.35	0.02	-	8.25	0.02	9.00	<0.01
Mazowe	DR36		October	48.44	<0.01	-	0.07	0.07	-	7.69	0.02	7.00	<0.01
Mazowe	DR36		November	49.18	<0.01	-	<0.01	0.04	-	7.93	0.02	5.00	<0.01
Mazowe	DR36		December	59.86	<0.01	-	<0.01	<0.01	-	8.23	0.04	11.00	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mazowe	DR36	2012	January	65.97	<0.01	46.00	1.07	0.10	-	8.08	0.06	17.00	<0.01
Mazowe	DR36		February	64.56	<0.01	63.00	3.87	<0.01	-	7.75	0.14	46.00	<0.01
Mazowe	DR36		March	59.22	<0.01	<20	1.31	0.10	-	8.19	0.04	8.00	<0.01
Mazowe	DR36		April	62.96	<0.01	<20	0.96	0.01	-	7.74	0.03	14.00	<0.01
Mazowe	DR36		May	60.09	<0.01	86.00	0.41	0.01	-	8.14	<0.00	2.00	<0.01
Mazowe	DR36		June	43.71	1.00	49.00	0.50	<0.01	-	7.32	0.09	6.00	<0.01
Mazowe	DR36		July	55.26	<0.01	40.00	0.60	<0.01	-	8.13	<0.01	12.00	<0.01
Mazowe	DR36		August	58.00	<0.01	51.00	3.75	<0.01	-	7.70	0.08	18.00	<0.01
Mazowe	DR36		September	58.31	<0.01	47.00	1.59	<0.01	-	8.60	0.01	12.00	<0.01
Mazowe	DR36		October	48.19	<0.01	48.00	0.51	<0.01	-	7.95	0.04	7.00	<0.01
Mazowe	DR36	2013	January	10.20	<0.01	191.00	12.72	<0.01	0.58	7.18	1.27	<1	<0.01
Mazowe	DR36		February	<2	<0.01	53.00	2.36	<0.01	0.54	7.52	0.23	<1	<0.01
Mazowe	DR36		March	16.97	0.03	<20	1.55	<0.01	0.19	8.07	0.05	<1	<0.01
Mazowe	DR36		April	28.04	<0.01	27.00	0.37	<0.01	0.42	8.81	0.02	0.64	<0.01
Mazowe	DR36		May	30.17	<0.01	<20	0.50	<0.01	0.27	7.36	0.03	2.33	<0.01
Mazowe	DR36		June	9.26	<0.01	20.00	<0.01	<0.01	0.21	8.42	0.09	<1	<0.01
Mazowe	DR36		July	20.39	<0.01	<20	<0.01	<0.01	0.16	8.23	0.01	<1	<0.01
Mazowe	DR36		August	<2	<0.01	33.00	0.43	<0.01	0.19	7.84	0.03	10.05	<0.01
Mazowe	DR36		October	29.78	<0.01	<20	0.72	<0.01	0.28	7.91	0.09	6.40	<0.01
Mazowe	DR36		November	5.53	<0.01	<20	<0.01	<0.01	0.22	8.28	0.04	4.86	<0.01
Mazowe	DR36		December	45.31	<0.01	22.00	0.23	0.03	0.32	6.92	0.05	8.31	<0.01
Mazowe	DR36	2014	January	14.04	<0.01	143.00	0.44	<0.01	0.87	7.76	0.13	8.39	<0.01
Mazowe	DR36		February	3.54	<0.01	57.00	1.89	<0.01	0.67	7.49	0.09	<1	<0.01
Mazowe	DR36		March	27.85	<0.01	30.00	2.11	<0.01	0.61	8.38	0.12	2.10	<0.01
Mazowe	DR36		April	<2	<0.01	-	0.50	<0.01	0.17	8.07	0.06	<1	<0.01
Mazowe	DR36		May	8.86	<0.01	24.00	0.64	0.01	0.22	8.08	0.13	1.03	<0.01
Mazowe	DR36		June	29.76	<0.01	48.00	1.11	<0.01	0.16	7.79	0.13	<1	<0.01
Mazowe	DR36		July	13.82	<0.01	35.00	0.67	0.10	0.15	6.57	0.05	7.45	<0.01
Mazowe	DR36		August	4.84	<0.01	26.00	0.41	<0.01	0.14	7.46	<0.01	4.08	<0.01

Table 2.20 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mazowe	DR36		September	79.46	<0.01	30.00	0.36	<0.01	0.15	6.78	0.01	<1	<0.01
Mazowe	DR36		October	28.27	<0.01	-	0.17	<0.01	0.16	8.44	0.06	<1	<0.01
Mazowe	DR36		November	<2	<0.01	<20	0.05	0.02	0.23	8.73	0.66	3.44	<0.01
Mazowe	DR36		December	<2	<0.01	28.70	<0.01	0.20	0.20	7.94	0.01	<1	<0.01

Source: Environmental Management Agency

Table 2.21: Runde River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0.3	0.3	10	6.0-7.5	0.5	100	0.3
Blue limit (Normal)				30	1	60	1	0.3	10	6.0-9.0	0.5	250	0.5
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Runde	DER14	2010	January	26.76	<0.01	26.00	1.08	<0.01	0.74	8.37	0.07	7.00	<0.01
Runde	DER14	2011	May	44.66	<0.01	<25	0.46	<0.01	0.95	7.29	2.50	4.00	<0.01
Runde	DER14		June	60.69	<0.01	119.00	0.27	<0.01	1.05	7.30	1.61	17.00	<0.01
Runde	DER14		July	67.78	0.05	71.00	0.65	-	1.23	6.97	2.94	32.00	0.02
Runde	DER14		August	53.77	<0.01	108.00	0.62	0.02	-	6.77	0.57	7.00	0.01
Runde	DER14		October	59.43	<0.01	-	0.91	0.05	-	7.33	2.69	14.00	<0.01
Runde	DER14		April	68.23	<0.01	144.00	0.69	<0.01	-	7.03	1.03	23.00	0.06
Runde	DER14		May	67.84	<0.01	-	0.34	<0.01	-	7.24	5.31	40.00	0.01
Runde	DER14		June	47.74	0.03	263.00	0.12	<0.01	-	7.36	2.03	27.00	<0.01
Runde	DER14		August	60.54	<0.01	-	0.58	<0.01	-	7.25	0.11	40.00	0.02
Runde	DER14		September	55.65	0.01	299.00	0.41	<0.01	-	7.20	0.08	21.00	<0.01
Runde	DER14		October	49.84	<0.01	127.00	0.70	<0.01	-	7.54	2.54	16.00	0.01
Runde	DER14		December	-	<0.01	-	1.01	<0.01	-	7.27	2.24	3.00	164.00
Runde	DER14	2013	January	<2	<0.01	41.00	0.16	<0.01	0.52	7.20	0.88	4.00	0.10
Runde	DER14		February	14.20	<0.01	201.00	0.51	<0.01	1.64	7.28	5.07	10.00	0.02
Runde	DER14		March	7.11	<0.01	170.00	0.15	<0.01	1.27	7.23	3.20	<1	<0.01
Runde	DER14		April	10.63	<0.01	199.00	0.44	<0.01	1.31	7.60	4.46	11.87	<0.01
Runde	DER14		May	48.23	<0.01	234.00	0.89	<0.01	1.95	7.32	0.14	<1	<0.01
Runde	DER14		June	29.74	<0.01	179.00	0.62	<0.01	1.98	8.59	4.45	<1	<0.01
Runde	DER14		July	<2	<0.01	-	0.05	<0.01	1.75	7.64	5.86	<1	<0.01
Runde	DER14		August	<2	<0.01	331.00	0.70	0.02	2.06	7.01	3.20	6.44	<0.01
Runde	DER14		September	4.22	<0.01	-	0.76	<0.01	1.28	7.10	0.00	11.54	<0.01
Runde	DER14		October	22.24	<0.01	145.00	0.67	<0.01	1.67	7.13	2.43	7.89	<0.01
Runde	DER14		November	22.50	<0.01	154.00	<0.01	<0.01	2.05	7.75	3.26	4.31	<0.01

Table 2.21 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0.3**	**0.3**	**10**	**6.0-7.5**	**0.5**	**100**	**0.3**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0.3**	**10**	**6.0-9.0**	**0.5**	**250**	**0.5**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Runde	DER14	2013	December	16.95	0.01	195.00	0.53	0.07	1.59	7.61	2.46	3.17	<0.01
Runde	DER14	2014	January	7.10	0.02	33.00	1.01	0.03	2.22	7.89	0.14	6.79	<0.01
Runde	DER14		February	-	<0.01	38.00	1.58	<0.01	1.17	7.95	0.17	<1	<0.01
Runde	DER14		March	21.67	<0.01	26.00	0.19	<0.01	0.55	7.70	0.17	3.40	<0.01
Runde	DER14		April	<2	<0.01	33.00	0.40	0.04	0.27	8.06	0.15	7.28	<0.01
Runde	DER14		May	12.36	<0.01	95.00	0.36	<0.01	0.93	7.67	2.08	10.99	<0.01
Runde	DER14		June	6.18	<0.01	30.00	0.50	<0.01	0.37	7.06	0.12	12.62	<0.01
Runde	DER14		July	46.69	<0.01	76.00	0.45	<0.01	0.66	7.01	-	16.04	<0.01
Runde	DER14		August	10.06	<0.01	<20	0.14	<0.01	0.16	7.49	<0.01	12.06	<0.01
Runde	DER14		September	9.66	<0.01	185.00	0.58	<0.01	1.52	7.16	1.03	15.18	<0.01
Runde	DER14		October	15.39	<0.01	222.00	0.79	<0.01	1.69	6.95	3.55	<1	<0.01
Runde	DER14		November	<2	<0.01	-	0.73	<0.01	1.49	7.73	2.15	5.68	<0.01
Runde	DER117	2010	March	22.55	<0.01	22.00	0.17	0.11	<0.01	8.44	0.05	11.00	<0.01
Runde	DER117		June	22.22	0.35	29.00	0.52	<0.01	0.15	8.05	0.10	-	0.07
Runde	DER117	2011	May	58.09	<0.01	<25	<0.01	<0.01	0.08	8.85	0.06	7.00	<0.01
Runde	DER117		June	32.56	<0.01	26.00	<0.01	0.02	0.43	8.73	0.01	17.00	<0.01
Runde	DER117		July	51.00	<0.01	31.00	0.01	0.31	<0.001	8.29	0.02	22.00	<0.01
Runde	DER117		August	34.37	<0.01	-	<0.01	0.01	-	8.63	0.02	17.00	<0.01
Runde	DER117		September	51.52	0.10	78.00	<0.01	0.03	-	8.94	<0.01	24.00	<0.01
Runde	DER117	2012	March	51.85	<0.01	<20	0.03	<0.01	-	8.62	0.02	8.00	<0.01
Runde	DER117		April	73.28	<0.01	116.00	0.19	<0.01	-	9.01	0.03	13.00	0.01
Runde	DER117		May	53.58	<0.01	<20	0.18	<0.01	-	8.84	0.05	17.00	<0.01
Runde	DER117		June	38.24	<0.01	<20	0.15	<0.01	-	8.89	0.03	17.00	<0.01
Runde	DER117		July	52.97	<0.01	54.00	0.08	<0.01	-	8.65	0.01	17.00	<0.01
Runde	DER117		August	59.96	<0.01	69.00	0.04	<0.01	-	7.79	<0.01	17.00	<0.01
Runde	DER117		September	58.94	<0.01	<20	<0.01	<0.01	-	8.77	0.01	4.00	0.01
Runde	DER117		October	50.71	<0.01	32.00	<0.01	<0.01	-	8.10	0.01	8.00	<0.01
Runde	DER117		November	57.69	<0.01	39.00	0.51	<0.01	-	8.50	0.01	9.00	<0.01
Runde	DER117	2013	February	13.52	<0.01	27.00	0.15	<0.01	0.33	7.69	0.01	<1	0.01
Runde	DER117		March	6.82	<0.01	<20	2.54	<0.01	0.34	7.89	0.06	<1	<0.01
Runde	DER117		April	36.83	<0.01	<20	0.10	<0.01	0.49	8.58	0.02	2.68	<0.01

Table 2.21 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0.3	0.3	10	6.0-7.5	0.5	100	0.3
Blue limit (Normal)				30	1	60	1	0.3	10	6.0-9.0	0.5	250	0.5
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Runde	DER117		May	50.26	<0.01	25.00	<0.01	<0.01	0.43	8.19	0.03	<1	<0.01
Runde	DER117		September	<2	<0.01	-	0.15	0.01	0.18	8.49	<0.01	15.94	<0.01
Runde	DER117		December	10.57	0.01	36.00	1.18	0.07	0.72	7.90	0.09	<1	<0.01
Runde	DER117	2014	January	2.27	<0.01	99.00	4.95	0.16	1.30	7.92	0.16	<1	0.03
Runde	DER117		February	-	<0.01	113.00	0.20	<0.01	0.77	8.26	0.13	<1	<0.01
Runde	DER117		March	5.72	<0.01	24.00	0.57	0.02	0.53	7.65	<0.01	3.55	<0.01
Runde	DER117		May	<2	<0.01	24.00	0.04	<0.01	0.37	8.73	0.02	1.73	<0.01
Runde	DER117		June	21.55	<0.01	57.00	<0.01	<0.01	0.28	8.10	0.12	<1	<0.01
Runde	DER117		July	<2	<0.01	29.00	0.09	<0.01	0.17	7.74	0.13	11.32	<0.01
Runde	DER117		August	<2	<0.01	23.00	0.07	<0.01	0.17	8.09	<0.01	10.34	<0.01
Runde	DER117		September	<2	<0.01	24.00	0.17	<0.01	0.25	8.33	0.01	<1	<0.01
Runde	DER117		October	<2	<0.01	85.00	<0.01	<0.01	0.17	8.66	0.00	<1	<0.01
Runde	DER117		November	23.73	<0.01	318.00	<0.01	<0.01	0.25	9.36	0.01	5.75	<0.01
Runde	ER25	2010	August	72.45	0.03	50.00	0.14	0.01	0.25	8.84	0.04	18.41	<0.01
Runde	ER25	2011	May	68.37	<0.01	60.00	<0.01	<0.01	0.20	7.15	0.03	4.00	<0.01
Runde	ER25		June	43.62	<0.01	69.00	<0.01	0.13	0.25	7.90	0.04	12.00	<0.01
Runde	ER25		August	34.95	<0.01	68.00	<0.01	0.06	-	8.29	0.02	15.00	0.03
Runde	ER25		September	48.75	<0.01	67.00	<0.01	<0.01	-	8.58	0.02	9.00	<0.01
Runde	ER25		October	54.88	<0.01	-	<0.01	0.01	-	7.57	<0.01	18.00	<0.01
Runde	ER25		November	66.46	<0.01	-	0.08	<0.01	-	7.63	0.04	6.00	<0.01
Runde	ER25		December	59.26	<0.01	-	<0.01	<0.01	-	7.94	0.07	498.00	<0.01
Runde	ER25	2012	January	76.33	<0.01	<20	<0.01	<0.01	-	8.17	0.13	16.00	<0.01
Runde	ER25		February	50.69	<0.01	38.00	<0.01	0.10	-	8.21	0.07	13.00	<0.01
Runde	ER25		April	57.08	<0.01	23.00	0.16	0.02	-	8.01	0.06	20.00	0.04
Runde	ER25		May	47.88	<0.01	29.00	0.99	<0.01	-	7.95	0.17	37.00	<0.01
Runde	ER25		June	52.59	<0.01	88.00	0.09	<0.01	-	8.46	0.08	-	<0.01
Runde	ER25		July	54.02	<0.01	22.00	0.04	<0.01	-	8.17	0.02	13.00	<0.01
Runde	ER25		August	55.30	<0.01	114.00	0.05	<0.01	-	8.02	0.02	<1	<0.01
Runde	ER25		October	58.68	<0.01	108.00	<0.01	0.01	-	8.06	0.02	17.00	<0.01
Runde	ER25		November	48.00	0.01	28.00	<0.01	0.03	-	7.75	0.04	108.00	<0.01
Runde	ER25	2013	February	<2	<0.01	<20	<0.01	<0.01	0.21	7.66	0.15	67.76	<0.01

Table 2.21 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0.3**	**0.3**	**10**	**6.0-7.5**	**0.5**	**100**	**0.3**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0.3**	**10**	**6.0-9.0**	**0.5**	**250**	**0.5**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Runde	ER25		March	25.01	<0.01	25.00	2.73	<0.01	0.50	7.78	0.40	<1	<0.01
Runde	ER25		April	12.40	<0.01	<20	<0.01	<0.01	0.29	8.87	0.14	54.12	<0.01
Runde	ER25		May	<2	<0.01	25.00	<0.01	<0.01	0.10	8.27	0.12	8.90	0.05
Runde	ER25		June	30.78	<0.01	32.00	<0.01	<0.01	0.16	7.83	0.13	18.15	<0.01
Runde	ER25		July	<2	<0.01	0.00	<0.01	<0.01	0.19	7.98	0.13	9.65	<0.01
Runde	ER25		August	11.21	<0.01	24.00	0.03	<0.01	0.17	7.73	0.10	27.13	<0.01
Runde	ER25		September	11.70	<0.01	145.00	2.05	<0.01	0.54	7.14	0.11	9.02	<0.01
Runde	ER25		October	<2	<0.01	49.00	<0.01	<0.01	0.20	7.58	0.11	26.63	<0.01
Runde	ER25		November	<2	<0.01	<20	0.66	<0.01	0.47	8.85	0.04	4.89	<0.01
Runde	ER25	2014	January	7.75	<0.01	48.00	8.62	<0.01	1.09	8.31	0.23	124.71	<0.01
Runde	ER25		March	<2	<0.01	27.00	1.52	0.04	0.96	8.33	0.14	4.58	<0.01
Runde	ER25		April	<2	<0.01	<20	1.67	<0.01	0.53	8.02	0.09	<1	<0.01
Runde	ER25		May	<2	<0.01	43.00	1.63	<0.01	0.40	7.65	0.13	5.88	<0.01
Runde	ER25		July	15.08	<0.01	37.00	0.20	<0.01	0.15	7.91	0.13	19.38	<0.01
Runde	ER25		August	<2	<0.01	33.00	<0.01	<0.01	0.34	7.93	0.05	29.48	<0.01
Runde	ER25		September	<2	<0.01	40.00	0.03	<0.01	0.16	7.87	<0.01	8.67	<0.01
Runde	ER25		October	<2	<0.01	26.00	<0.01	<0.01	0.24	8.51	0.01	<1	<0.01
Runde	ER25		November	<2	<0.01	495.00	<0.01	0.01	0.54	9.26	0.10	5.48	<0.01
Runde	ER41	2011	April	65.70	<0.01	43.00	0.31	0.23	0.16	8.08	<0.01	2.00	<0.01
Runde	ER41		May	71.47	<0.01	60.00	<0.01	<0.01	0.18	7.74	0.03	2.00	<0.01
Runde	ER41		December	53.92	<0.01	-	0.20	<0.01	-	7.87	0.06	64.00	<0.01
Runde	ER41	2012	January	63.04	<0.01	36.00	0.64	0.02	-	7.74	0.19	5.00	<0.01
Runde	ER41		June	48.91	<0.01	26.00	0.23	<0.01	-	9.05	0.03	11.00	<0.01
Runde	ER41		September	48.79	<0.01	58.00	0.29	<0.01	-	7.57	0.04	11.00	<0.01
Runde	ER41	2013	January	15.18	<0.01	58.00	32.50	0.02	0.97	7.65	0.16	<1	<0.01
Runde	ER41		February	14.52	<0.01	<20	0.38	<0.01	0.28	7.73	0.10	<1	<0.01
Runde	ER41		April	<2	<0.01	<20	0.33	<0.01	0.20	7.95	0.06	<1	<0.01
Runde	ER41		May	25.14	<0.01	41.00	<0.01	<0.01	0.17	8.45	0.05	<1	<0.01
Runde	ER41		July	<2	<0.01	<20	2.03	<0.01	0.67	8.30	0.14	<1	<0.01
Runde	ER41	2014	January	31.05	<0.01	36.00	4.57	<0.01	0.80	8.35	0.13	<1	<0.01
Runde	ER41		February	7.60	<0.01	98.00	3.82	<0.01	0.85	7.80	0.22	<1	<0.01

Table 2.21 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0.3**	**0.3**	**10**	**6.0-7.5**	**0.5**	**100**	**0.3**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0.3**	**10**	**6.0-9.0**	**0.5**	**250**	**0.5**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Runde	ER41		March	<2	<0.01	38.00	2.13	0.05	1.30	8.12	0.16	<1	<0.01
Runde	ER41		May	23.56	<0.01	42.00	2.35	<0.01	0.40	8.58	0.20	0.07	<0.01
Runde	ER41		June	<2	<0.01	29.00	<0.01	<0.01	0.22	7.55	0.12	<1	<0.01
Runde	ER41		July	8.70	<0.01	<20	0.04	0.04	0.14	7.22	0.09	4.52	<0.01
Runde	ER41		August	<2	<0.01	33.00	<0.01	<0.01	0.15	7.64	<0.01	3.95	0.01
Runde	ER41		October	15.67	<0.01	25.00	0.14	0.04	0.32	8.04		148.33	<0.01

Source: Environmental Management Agency

Table 2.22: Sanyati River Ambient Monitoring Point

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Sanyati	DR60	2012	December	21.94	<0.01	<20	0.02	<0.01	-	8.40	0.10	1.00	<0.01
Sanyati	DR60	2013	March	36.47	<0.01	<20	1.99	<0.01	0.64	7.78	0.04	<1	<0.01
Sanyati	DR60		May	3.30	<0.01	<20	0.40	<0.01	0.22	7.52	0.04	<1	<0.01
Sanyati	DR60		November	6.36	<0.01	30.00	0.12	<0.01	0.51	7.76	<0.01	1.03	<0.01
Sanyati	DR60		December	27.67	<0.01	26.00	2.48	<0.01	0.84	7.64	0.09	3.27	<0.01
Sanyati	DR60	2014	January	37.52	<0.01	85.00	9.00	0.08	0.48	-	0.51	<1	0.16
Sanyati	DR60		February	-	<0.01	49.00	0.48	<0.01	0.46	8.61	0.28	<1	<0.01
Sanyati	DR60		March	15.38	<0.01	<20	0.90	0.05	0.47	7.53	-	7.11	<0.01
Sanyati	DR60		April	9.02	<0.01	-	1.07	<0.01	0.36	7.93	0.08	2.57	<0.01
Sanyati	DR60		May	11.60	<0.01	43.00	1.00	0.07	0.21	6.74	0.06	<1	<0.01
Sanyati	DR60		June	<2	<0.01	24.00	0.67	<0.01	0.66	6.97	0.07	1.99	<0.01
Sanyati	DR60		August	<2	<0.01	82.00	9.20	<0.01	1.20	7.17	0.30	1.59	<0.01
Sanyati	DR60		October	<2	<0.01	41.00	1.26	<0.01	0.38	7.36	0.01	<1	<0.01
Sanyati	DCR7	2010	March	25.42	0.31	24.00	1.35	0.14	0.37	6.98	0.03	-	0.05
Sanyati	DCR7	2011	July	66.42	<0.01	<25	0.15	<0.01	0.83	8.51	0.70	55.00	0.05
Sanyati	DCR7		August	36.21	<0.01	60.00	<0.01	<0.01	-	8.25	0.07	74.00	<0.01
Sanyati	DCR7		October	64.39	<0.01	-	0.02	0.03	-	8.40	0.03	75.00	0.11
Sanyati	DCR7		November	53.91	<0.01	-	<0.01	0.10	-	8.30	<0.01	86.00	<0.01
Sanyati	DCR7	2012	May	37.77	<0.01	26.00	2.99	<0.01	-	8.42	0.07	24.00	<0.01
Sanyati	DCR7		July	56.56	<0.01	79.00	0.44	<0.01	-	7.85	0.02	36.00	<0.01
Sanyati	DCR7		August	60.64	<0.01	59.00	0.08	<0.01	-	7.76	0.01	51.00	<0.01
Sanyati	DCR7		September	58.18	<0.01	42.00	<0.01	<0.01	-	8.10	0.01	47.00	<0.01
Sanyati	DCR7		October	52.83	-	32.00	<0.01	<0.01	-	8.18	0.09	34.00	<0.01
Sanyati	DCR7		November	63.91	<0.01	31.00	<0.01	<0.01	-	7.76	0.01	30.00	<0.01

Table 2.22 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Sanyati	DCR7	2013	January	<2	<0.01	26.00	0.11	<0.01	0.25	7.55	0.04	11.00	<0.01
Sanyati	DCR7		February	25.22	<0.01	40.00	0.67	<0.01	0.97	7.36	0.05	<1	<0.01
Sanyati	DCR7		March	5.56	<0.01	27.00	4.40	<0.01	0.75	8.02	0.07	<1	<0.01
Sanyati	DCR7		April	<2	0.02	<20	0.74	<0.01	1.23	8.44	0.05	1.24	0.01
Sanyati	DCR7		May	50.26	<0.01	30.00	0.26	<0.01	0.34	8.00	0.05	10.15	<0.01
Sanyati	DCR7		June	20.46	<0.01	28.00	0.09	<0.01	0.36	8.34	0.10	56.34	<0.01
Sanyati	DCR7		July	5.30	<0.01	101.00	<0.01	<0.01	0.25	8.06	0.05	175.36	<0.01
Sanyati	DCR7		August	<2	<0.01	35.00	0.41	<0.01	0.23	7.71	0.10	267.56	<0.01
Sanyati	DCR7		September	<2	<0.01	-	0.05	<0.01	0.21	8.37	0.02	22.92	<0.01
Sanyati	DCR7		October	4.94	<0.01	<20	<0.01	<0.01	0.22	8.23	0.01	9.47	<0.01
Sanyati	DCR7		November	10.61	<0.01	26.00	<0.01	<0.01	0.38	7.30	<0.01	66.56	<0.01
Sanyati	DCR7		December	5.16	0.01	40.00	0.15	0.09	0.40	9.26	0.05	99.04	<0.01
Sanyati	DCR7	2014	January	6.72	<0.01	47.00	1.54	<0.01	0.46	7.70	0.11	<1	<0.01
Sanyati	DCR7		February	-	<0.01	85.00	1.12	<0.01	1.15	8.22	0.08	<1	<0.01
Sanyati	DCR7		March	3.21	<0.01	39.00	2.70	<0.01	1.00	8.31	0.07	2.61	<0.01
Sanyati	DCR7		April	<2	<0.01	28.00	1.26	<0.01	0.54	8.21	0.11	3.48	<0.01
Sanyati	DCR7		May	<2	<0.01	38.00	0.55	<0.01	4.84	8.06	0.03	<1	<0.01
Sanyati	DCR7		June	20.48	<0.01	53.00	<0.01	<0.01	0.82	7.75	0.11	25.58	<0.01
Sanyati	DCR7		July	<2	<0.01	31.00	0.07	<0.01	0.27	8.11	0.17	30.29	<0.01
Sanyati	DCR7		August	<2	<0.01	34.00	0.10	<0.01	0.20	8.06	<0.01	47.47	<0.01
Sanyati	DCR7		September	<2	<0.01	<20	0.11	<0.01	0.10	7.54	0.02	<1	<0.01
Sanyati	DCR7		October	10.08	<0.01	32.00	0.02	<0.01	1.57	7.67	0.06	12.47	<0.01
Sanyati	DCR8	2010	September	40.03	<0.01	134.00	0.68	<0.01	0.38	7.40	0.08	9.00	<0.01
Sanyati	DCR8		October	-	-	-	-	-	-	-	-	-	-
Sanyati	DCR8		November	-	-	-	-	-	-	-	-	-	-

Table 2.22 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Sanyati	DCR8	2011	January	29.67	<0.01	66.00	2.65	<0.01	0.98	7.03	0.14	16.00	<0.01
Sanyati	DCR8		April	66.09	<0.01	<25	0.14	0.41	1.14	7.75	<0.01	7.00	0.16
Sanyati	DCR8		May	70.32	<0.01	115.00	0.04	<0.01	0.98	7.77	<0.01	5.00	<0.01
Sanyati	DCR8		July	80.19	<0.01	<25	0.15	<0.01	0.17	8.53	0.02	<1	0.03
Sanyati	DCR8		August	55.22	<0.01	41.00	<0.01	<0.01	-	8.16	0.08	5.00	0.01
Sanyati	DCR8	2012	January	51.76	<0.01	30.00	1.35	0.18	-	7.92	0.10	29.00	<0.01
Sanyati	DCR8		May	55.62	<0.01	25.00	2.03	0.02	-	7.71	0.07	8.00	<0.01
Sanyati	DCR8		July	61.99	<0.01	48.00	0.93	<0.01	-	8.05	0.01	5.00	<0.01
Sanyati	DCR8		October	58.38	<0.01	31.00	0.10	0.01	-	7.93	0.45	12.00	<0.01
Sanyati	DCR8		December	-	<0.01	-	0.25	<0.01	-	7.46	3.01	3.00	<0.01
Sanyati	DCR8	2013	January	<2	0.01	20.00	0.75	0.01	1.65	7.46	0.02	1.00	<0.01
Sanyati	DCR8		February	18.74	0.01	32.00	0.01	0.01	0.91	7.70	0.07	<1	<0.01
Sanyati	DCR8		March	10.88	<0.01	33.00	<0.01	<0.01	0.96	6.96	0.05	<1	<0.01
Sanyati	DCR8		April	22.72	<0.01	21.00	0.85	<0.01	1.07	8.08	0.05	<1	<0.01
Sanyati	DCR8		May	35.57	<0.01	<20	0.29	<0.01	0.31	6.59	0.04	<1	<0.01
Sanyati	DCR8	2014	February	-	<0.01	71.00	0.69	<0.01	1.04	7.98	0.34	<1	<0.01
Sanyati	DCR8		March	<2	<0.01	34.00	0.90	<0.01	1.59	7.75	0.08	1.77	<0.01
Sanyati	DCR8		April	<2	<0.01	31.00	1.43	0.01	0.58	8.26	0.07	3.20	<0.01
Sanyati	DCR8		May	10.33	<0.01	33.00	0.58	<0.01	0.59	8.23	0.02	<1	<0.01
Sanyati	DCR8		June	<2	<0.01	31.00	0.17	<0.01	0.29	7.55	0.11	3.74	<0.01
Sanyati	DCR8		August	26.88	<0.01	34.00	0.44	<0.01	0.23	7.69	<0.01	2.39	<0.01
Sanyati	DCR8		September	<2	<0.01	<20	0.11	<0.01	0.14	7.37	0.02	<1	<0.01
Sanyati	DCR8		November	8.94	<0.01	740.00	0.47	<0.01	1.32	8.91	0.04	3.53	<0.01
Sanyati	CR122	2011	September	24.98	<0.01	321.00	<0.01	<0.01	-	8.61	<0.01	7.00	<0.01
Sanyati	CR122		October	46.77	<0.01	-	0.07	0.02	-	7.96	0.04	3.00	0.01
Sanyati	CR122		November	58.70	<0.01	-	<0.01	0.02	-	8.24	0.01	5.00	<0.01
Sanyati	CR122		December	27.98	<0.01	-	0.04	0.01	-	7.96	0.14	39.00	0.09
Sanyati	CR122	2012	January	65.10	<0.01	121.00	3.11	0.05	-	8.10	0.55	60.00	<0.01
Sanyati	CR122		February	61.64	<0.01	74.00	2.61	<0.01	-	7.46	0.15	49.00	<0.01
Sanyati	CR122		March	34.78	<0.01	45.00	1.79	0.06	-	7.70	0.06	41.00	<0.01

Table 2.22 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Sanyati	CR122		April	62.41	<0.01	26.00	1.51	<0.01	-	8.05	0.12	16.00	<0.01
Sanyati	CR122		May	59.15	<0.01	32.00	0.17	<0.01	-	7.86	0.04	<0.01	<0.01
Sanyati	CR122		July	61.39	<0.01	<20	0.22	0.02	-	7.59	0.03	2.00	<0.01
Sanyati	CR122		August	62.00	<0.01	24.00	0.08	<0.01	-	7.93	0.01	<0.01	<0.01
Sanyati	CR122		September	53.03	<0.01	<20	0.04	<0.01	-	7.45	0.02	<0.1	<0.01
Sanyati	CR122	2013	February	<2	<0.01	110.00	3.60	<0.01	0.76	7.30	0.35	<1	<0.01
Sanyati	CR122		July	10.84	<0.01	<20	<0.01	<0.01	0.20	7.46	0.02	<1	<0.01
Sanyati	CR122		October	18.57	<0.01	25.00	0.18	<0.01	0.37	8.31	0.07	7.38	<0.01
Sanyati	CR122		November	17.09	<0.01	21.00	<0.01	<0.01	0.37	8.28	0.04	4.74	<0.01
Sanyati	CR122	2014	January	4.08	<0.01	113.00	1.26	<0.01	1.20	7.30	0.29	<1	<0.01
Sanyati	CR122		February	8.24	<0.01	98.00	0.43	0.07	0.63	7.75	0.12	<1	<0.01
Sanyati	CR122		March	8.24	<0.01	98.00	0.43	0.07	0.63	7.75	0.12	<1	<0.01
Sanyati	CR122		April	19.09	<0.01	<20	0.27	<0.01	0.32	8.19	0.08	<1	<0.01
Sanyati	CR122		May	36.61	<0.01	23.00	1.01	<0.01	0.32	8.14	0.09	<1	<0.01
Sanyati	CR122		July	7.83	<0.01	23.00	0.09	<0.01	0.13	6.82	0.08	4.59	<0.01
Sanyati	CR122		August	<2	0.01	24.00	<0.01	<0.01	0.16	7.33	0.00	4.11	<0.01
Sanyati	CR122		September	<2	<0.01	45.00	0.27	<0.01	0.18	7.77	<0.01	<1	<0.01
Sanyati	CR122		October	27.01	<0.01	<20	0.01	<0.01	0.22	8.70	0.03	<1	<0.01
Sanyati	CR122		November	<2	<0.01	1182.00	<0.01	<0.01	0.24	9.41	0.04	3.99	<0.01

Source: Environmental Management Agency

Table 2.23: Save River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Save	ER 101	2007	June	4.04	<0.01	<20	0.85	0.66	0.07	7.96	<0.01	<1	0.04
Save	ER 101	2011	October	39.92	<0.01	-	0.15	0.01	-	6.74	<0.01	5.00	<0.01
Save	ER 101		November	62.40	<0.01	-	0.11	<0.01	-	7.84	0.05	<1	<0.01
Save	ER 101		December	45.59	<0.01	-	0.19	<0.01	-	8.10	0.05	7.00	<0.01
Save	ER 101	2012	January	61.47	<0.01	<20	0.27	0.04	-	7.97	0.06	3.00	<0.01
Save	ER 101		February	35.58	<0.01	53.00	0.41	<0.01	-	7.99	0.06	4.00	<0.01
Save	ER 101		March	59.50	<0.01	<20	0.06	0.16	-	7.92	0.04	4.00	<0.01
Save	ER 101		April	71.24	<0.01	<20	0.17	<0.01	-	7.77	0.03	7.00	<0.01
Save	ER 101		June	53.28	<0.01	28.00	0.25	<0.01	-	8.22	0.01	3.00	-
Save	ER 101		July	54.89	<0.01	<20	<0.01	<0.01	-	8.33	<0.01	6.00	<0.01
Save	ER 101		August	53.26	<0.01	23.00	<0.01	<0.01	-	7.88	0.00	5.00	<0.01
Save	ER 101		September	48.63	<0.01	21.00	0.17	<0.01	-	7.95	<0.01	<1	<0.01
Save	ER 101		October	37.91	<0.01	<20	0.06	<0.01	-	7.50	<0.01	<1	<0.01
Save	ER 101		November	51.88	<0.01	57.00	0.05	<0.01	-	8.17	0.04	2.00	<0.01
Save	ER 101	2013	January	19.91	<0.01	33.00	-	<0.01	0.47	7.82	0.11	<1	<0.01
Save	ER 101		March	14.86	<0.01	<20	1.46	<0.01	0.33	7.30	0.01	<1	<0.01
Save	ER 101		April	28.61	-	<20	0.34	-	0.14	8.02	0.02	<1	<0.01
Save	ER 101		May	42.72	<0.01	<20	0.33	<0.01	0.19	8.05	0.03	<1	<0.01
Save	ER 101		June	22.31	<0.01	25.00	0.13	<0.01	0.16	7.57	0.04	<1	<0.01
Save	ER 101		July	<2	<0.01	97.00	0.04	<0.01	0.12	8.08	0.09	<1	<0.01
Save	ER 101		September	<2	<0.01	24.00	0.09	<0.01	0.14	7.73	0.04	4.00	<0.01
Save	ER 101		October	22.91	<0.01	21.00	0.28	<0.01	0.17	7.20	0.02	8.22	<0.01
Save	ER 101		December	1.26	<0.01	<20	0.21	-	0.13	7.98	0.05	8.80	<0.01
Save	ER 101	2014	January	5.35	<0.01	23.00	1.19	0.01	1.53	7.64	0.08	6.02	<0.01

Table 2.23 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Save	ER 101	2014	March	<2	<0.01	21.00	0.74	<0.01	0.40	7.61	0.05	8.84	<0.01
Save	ER 101		April	8.29	<0.01	25.00	0.61	0.02	0.17	8.14	0.12	3.57	<0.01
Save	ER 101		May	2.02	<0.01	26.00	0.25	-	1.01	8.38	0.03	<1	<0.01
Save	ER 101		June	20.78	<0.01	27.00	0.10	<0.01	0.14	7.83	0.10	6.00	<0.01
Save	ER 101		July	<2	<0.01	78.00	0.24	<0.01	<0.01	7.64	0.13	5.41	<0.01
Save	ER 101		August	<2	<0.01	26.00	0.04	<0.01	0.18	7.15	<0.01	4.57	<0.01
Save	ER 101		September	32.96	<0.01	21.00	0.22	<0.01	0.18	7.33	0.01	<1	<0.01
Save	ER 101		October	<2	<0.01	-	0.16	<0.01	0.08	8.22	0.03	<1	<0.01
Save	ER 101		November	<2	<0.01	<20	0.01	<0.01	0.16	8.10	0.03	11.35	<0.01
Save	ER 101		December	8.07	<0.01	20.50	0.02	0.07	0.12	7.39	0.05	<1	<0.01
Save	ER90	2007	June	2.88	0.01	<20	0.60	0.55	0.20	7.85	0.05	<1	0.03
Save	ER90	2009	June	48.33	0.55	-	3.20	1.87	4.29	7.62	0.08	1.00	0.03
Save	ER90	2011	August	70.69	<0.01	<25	0.16	0.12	-	7.72	<0.01	7.00	<0.01
Save	ER90		October	49.03	<0.01	-	0.21	<0.01	-	7.35	0.02	4.00	<0.01
Save	ER90	2012	January	32.58	<0.01	75.00	0.65	<0.01	-	7.98	0.05	<1	<0.01
Save	ER90		February	52.57	<0.01	42.00	0.25	<0.01	-	8.21	<0.01	3.00	<0.01
Save	ER90		March	52.56	<0.01	21.00	<0.01	<0.01	-	8.04	0.01	1.00	<0.01
Save	ER90		April	54.29	<0.01	<20	0.65	0.04	-	7.89	<0.01	10.00	<0.01
Save	ER90		May	50.09	<0.01	<20	0.76	<0.01	-	8.18	0.04	4.00	<0.01
Save	ER90		June	53.09	<0.01	23.00	0.21	<0.01	-	8.21	0.01	<1	<0.01
Save	ER90		July	47.47	<0.01	<20	0.19	<0.01	-	8.52	<0.01	<1	<0.01
Save	ER90		August	58.05	<0.01	<20	0.13	<0.01	-	7.66	0.01	3.00	<0.01
Save	ER90		September	67.79	<0.01	35.00	0.01	<0.01	-	7.73	0.02	<1	<0.01
Save	ER90		October	-	<0.01	-	0.04	<0.01	-	7.63	0.03	<1	<0.01
Save	ER90		November	50.72	<0.01	35.00	0.82	<0.01	-	7.79	<0.01	4.00	<0.01
Save	ER90	2013	January	23.00	<0.01	43.00	0.02	<0.01	0.69	7.19	0.20	<1	<0.01
Save	ER90		March	36.65	<0.01	23.00	0.30	0.02	0.13	7.35	<0.01	9.67	<0.01
Save	ER90		April	13.53	<0.01	<20	0.40	<0.01	0.14	8.16	0.05	0.86	<0.01

Table 2.23 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Save	ER90		May	16.45	<0.01	<20	0.42	<0.01	0.27	7.71	0.02	<1	<0.01
Save	ER90		June	<2	<0.01	46.00	0.45	<0.01	0.32	7.70	0.14	<1	<0.01
Save	ER90		July	<2	<0.01	<20	<0.01	<0.01	0.16	8.02	0.06	<1	<0.01
Save	ER90		September	<2	<0.01	25.00	0.05	<0.01	0.12	7.56	0.04	5.00	<0.01
Save	ER90		October	14.21	<0.01	<20	<0.01	<0.01	0.17	7.38	0.02	7.99	<0.01
Save	ER90		December	15.76	<0.01	23.00	0.13	<0.01	0.20	8.07	0.04	8.87	<0.01
Save	ER90	2014	January	23.81	<0.01	24.00	1.15	<0.01	0.44	8.00	0.07	6.49	<0.01
Save	ER90		March	15.24	<0.01	25.00	0.52	<0.01	0.48	7.99	0.04	3.55	<0.01
Save	ER90		April	5.30	<0.01	25.00	0.61	<0.01	0.15	8.19	0.12	2.51	<0.01
Save	ER90		May	14.78	<0.01	36.00	0.27	<0.01	0.21	8.08	0.03	<1	<0.01
Save	ER90		June	8.70	<0.01	55.00	0.15	<0.01	0.65	7.85	0.11	5.94	<0.01
Save	ER90		July	<2	<0.01	31.00	0.27	0.01	0.01	7.04	0.12	5.49	<0.01
Save	ER90		August	<2	<0.01	39.00	<0.01	<0.01	0.27	7.95	<0.01	4.51	<0.01
Save	ER90		September	9.76	<0.01	22.00	0.23	<0.01	0.15	7.13	0.00	<1	<0.01
Save	ER90		October	<2	<0.01	-	0.06	<0.01	0.09	8.06	0.06	195.24	<0.01
Save	ER90		December	4.11	<0.01	<20	0.23	0.03	0.20	8.02	0.13	<1	<0.01
Save	ER102	2011	July	63.71	<0.01	28.00	0.06	0.02	0.27	6.79	0.06	5.00	0.01
Save	ER102		August	48.82	<0.01	155.00	0.07	0.05	-	7.89	0.04	3.00	0.01
Save	ER102		September	51.88	<0.01	-	0.04	0.02	-	8.83	0.04	10.00	<0.01
Save	ER102		October	51.33	0.01	-	1.42	<0.01	-	7.19	0.15	23.00	<0.01
Save	ER102		November	59.97	<0.01	-	1.73	0.13	-	8.18	0.12	42.00	<0.01
Save	ER102		December	49.18	<0.01	-	0.27	0.09	-	7.72	1.67	98.00	<0.01
Save	ER102	2012	March	62.21	<0.01	33.00	0.99	0.01	-	7.99	0.13	20.00	<0.01
Save	ER102		April	51.32	<0.01	41.00	1.25	0.02	-	8.01	0.11	21.00	<0.01
Save	ER102		June	52.51	<0.01	34.00	1.02	<0.01	-	8.18	0.12	10.00	<0.01
Save	ER102		July	48.68	0.05	77.00	5.35	<0.01	-	7.81	0.23	27.00	-
Save	ER102		August	55.30	<0.01	73.00	5.48	<0.01	-	7.30	0.34	72.00	<0.01
Save	ER102		September	62.63	0.01	67.00	7.25	<0.01	-	7.96	0.15	70.00	<0.01
Save	ER102		October	44.75	<0.01	40.00	0.42	<0.01	-	7.46	0.07	56.00	<0.01
Save	ER102		November	62.07	<0.01	35.00	3.01	<0.01	-	8.24	0.28	32.00	<0.01

Table 2.23 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Save	ER102	2013	April	31.23	<0.01	25.00	2.85	0.01	0.51	8.64	0.08	<1	<0.01
Save	ER102		June	16.03	<0.01	29.00	1.17	<0.01	0.62	7.82	0.23	<1	<0.01
Save	ER102		July	<2	<0.01	115.00	1.65	<0.01	0.59	8.09	0.20	16.91	<0.01
Save	ER102		September	<2	<0.01	-	6.60	<0.01	0.32	7.39	0.25	4.91	<0.01
Save	ER102		November	<2	<0.01	<20	<0.01	<0.01	0.14	8.32	0.06	4.88	<0.01
Save	ER102		December	12.85	0.02	37.00	3.61	<0.01	0.58	8.14	0.10	<1	<0.01
Save	ER102	2014	January	20.04	<0.01	37.00	2.09	0.02	0.84	8.11	0.16	5.52	<0.01
Save	ER102		February	<2	<0.01	92.00	0.58	<0.01	0.84	7.83	0.37	<1	<0.01
Save	ER102		March	26.21	<0.01	42.00	1.60	<0.01	0.48	7.89	0.12	2.21	<0.01
Save	ER102		April	9.74	<0.01	25.00	0.57	0.01	0.24	7.89	0.14	4.30	<0.01
Save	ER102		June	11.35	<0.01	28.00	0.96	<0.01	0.55	7.77	0.14	<1	<0.01
Save	ER102		July	<2	<0.01	35.00	1.46	<0.01	0.24	6.84	0.21	7.77	<0.01
Save	ER102		August	6.19	<0.01	27.00	4.18	<0.01	0.74	6.40	0.20	6.76	<0.01
Save	ER102		September	7.59	<0.01	<20	11.76	<0.01	0.76	6.99	0.04	<1	<0.01
Save	ER102		October	39.26	<0.01	128.00	2.67	0.02	0.76	7.88	0.20	<1	<0.01
Save	ER102		November	<2	<0.01	25.30	1.44	0.02	0.60	8.81	0.60	<1	<0.01
Save	ER102		December	4.49	<0.01	0.00	0.35	<0.01	0.25	8.48	0.04	<1	<0.01
Save	ER57	2011	July	36.06	<0.01	<25	0.11	<0.01	0.24	7.17	0.04	7.00	<0.01
Save	ER57		August	36.50	<0.01	<25	0.17	0.02	-	7.22	0.05	6.00	0.03
Save	ER57		October	53.75	<0.01	-	0.70	0.12	-	7.62	0.10	14.00	<0.01
Save	ER57		March	55.81	<0.01	49.00	1.97	<0.01	-	8.23	0.15	29.00	<0.01
Save	ER57		April	49.38	<0.01	106.00	2.90	0.03	-	8.28	0.14	36.00	<0.01
Save	ER57		June	48.82	0.02	62.00	1.19	<0.01	-	8.24	0.31	19.00	<0.01
Save	ER57		July	55.18	0.07	39.00	4.28	<0.01	-	8.36	0.27	44.00	0.01
Save	ER57		August	52.39	<0.01	52.00	5.13	<0.01	-	7.08	0.39	98.00	0.02
Save	ER57		September	58.36	0.01	54.00	19.15	<0.01	-	7.80	0.12	132.00	<0.01
Save	ER57		October	45.33	<0.01	40.00	1.13	<0.01	-	7.60	0.14	48.00	<0.01
Save	ER57	2013	April	20.21	<0.01	22.00	2.70	0.02	0.45	8.17	0.03	<1	<0.01
Save	ER57		June	3.85	<0.01	22.00	0.54	<0.01	0.48	7.73	0.18	<1	<0.01
Save	ER57		July	8.01	<0.01	30.00	3.83	<0.01	0.67	8.14	0.28	<1	<0.01

Table 2.23 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Save	ER57		September	7.88	0.04	-	7.20	<0.01	0.26	7.76	0.10	9.03	<0.01
Save	ER57		November	<2	<0.01	63.00	4.83	0.02	0.57	7.72	0.47	<1	<0.01
Save	ER57		December	21.55	<0.01	51.00	3.74	0.00	0.66	8.22	0.12	<1	<0.01
Save	ER57	2014	January	16.17	<0.01	39.00	2.60	0.03	0.85	8.17	0.15	1.66	<0.01
Save	ER57		February	<2	<0.01	115.00	1.09	<0.01	0.74	8.50	0.28	<1	<0.01
Save	ER57		March	<2	<0.01	31.00	2.03	<0.01	0.65	7.91	0.13	1.00	<0.01
Save	ER57		April	14.38	<0.01	40.00	0.72	0.03	0.16	7.89	0.16	4.90	<0.01
Save	ER57		June	<2	<0.01	32.00	1.61	<0.01	0.49	7.24	0.16	<1	<0.01
Save	ER57		July	12.15	<0.01	<20	1.40	<0.01	0.32	7.58	0.18	7.77	<0.01
Save	ER57		August	6.48	<0.01	<20	2.27	<0.01	0.71	7.14	0.01	5.73	<0.01
Save	ER57		September	<2	<0.01	58.00	0.48	<0.01	0.86	6.77	0.11	<1	<0.01
Save	ER57		October	21.96	<0.01	60.00	3.25	0.01	0.91	7.86	0.25	1.32	<0.01
Save	ER57		November	<2	<0.01	24.70	0.57	<0.01	0.54	9.06	0.62	1.04	<0.01
Save	ER57		December	33.74	0.01	21.40	0.36	<0.01	0.54	8.28	0.20	<1	<0.01
Save	ER94	2012	February	46.31	<0.01	44.00	1.97	0.11	-	7.85	0.19	18.00	<0.01
Save	ER94		April	61.80	<0.01	48.00	4.01	0.01	-	7.90	0.11	29.00	<0.01
Save	ER94		June	50.86	0.05	<20	1.03	<0.01	-	8.32	0.09	3.00	4.45
Save	ER94		July	61.68	0.01	24.00	4.33	0.10	-	8.52	0.12	23.00	<0.01
Save	ER94	2013	May	<2	<0.01	62.00	0.82	<0.01	0.16	8.39	0.12	<1	<0.01
Save	ER94		June	<2	<0.01	27.00	0.80	<0.01	0.28	7.68	0.09	<1	<0.01
Save	ER94		July	<2	<0.01	20.00	0.29	<0.01	0.21	7.94	0.09	<1	<0.01
Save	ER94		December	2.99	0.04	41.00	5.23	<0.01	0.45	8.12	0.13	<1	<0.01
Save	ER94	2014	March	<2	<0.01	28.00	1.08	<0.01	0.31	7.89	0.09	<1	<0.01
Save	ER94		April	11.19	<0.01	28.00	1.75	0.03	0.24	7.77	0.14	3.01	<0.01
Save	ER94		June	<2	<0.01	25.00	1.01	<0.01	0.61	7.65	0.25	<1	<0.01
Save	ER94		July	<2	<0.01	27.00	1.37	<0.01	0.33	7.48	0.12	8.62	<0.01
Save	ER94		August	2.13	<0.01	25.00	2.13	<0.01	0.29	7.68	<0.01	6.01	<0.01
Save	ER94		September	28.38	<0.01	163.00	4.50	0.01	0.24	7.37	0.03	<1	<0.01
Save	ER94		November	8.28	<0.01	231.00	1.55	0.01	0.62	8.19	0.67	<1	<0.01

Source: Environmental Management Agency

Table 2.24: Manyame River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR 21	2007	March	4.47	<0.01	<20	0.82	<0.01	0.65	7.30	0.02	5.00	<0.01
Manyame	CR 21		June		0.27	22.00	1.55	0.24	0.38	7.78	0.01	4.00	0.03
Manyame	CR 21	2008	June	101.76	-	-	0.79	0.45	0.55	8.33	0.01	2.00	0.11
Manyame	CR 21	2009	June	16.16	0.12		1.58	1.69	0.26	7.07	<0.01	1.00	0.16
Manyame	CR 21		August	8.73	0.54	28.00	1.70	<0.01	0.41	7.29	0.01	5.00	<0.01
Manyame	CR 21		September	36.11	<0.01	95.00	0.87	<0.01	0.22	6.49	<0.01	<1	<0.01
Manyame	CR 21		October	66.15	0.58	<20	1.58	0.86	0.22	6.55	0.02	4.00	0.01
Manyame	CR 21	2010	January	116.73	0.25	76.00	8.29	0.44	0.80	5.52	0.02	18.00	<0.01
Manyame	CR 21		March	18.21	<0.01	54.00	0.94	<0.01	0.50	6.61	<0.01	<1	<0.01
Manyame	CR 21		April	21.50	0.08	<20	0.76	0.10	0.07	7.36	0.02	5.00	0.01
Manyame	CR 21		July	14.22	<0.01	10.00	0.56	0.02	0.15	7.42	0.07	<1	<0.01
Manyame	CR 21		August	16.64	<0.01	<20	0.81	0.04	0.27	7.16	0.04	8.00	<0.01
Manyame	CR 21		September	47.26	<0.01	197.00	0.52	<0.01	0.20	7.16	0.04	9.80	<0.01
Manyame	CR 21	2011	February	16.80	<0.01	176.00	0.86	<0.01	0.81	6.62	0.03	8.00	<0.01
Manyame	CR 21		March	44.48	<0.01	195.00	0.09	<0.01	0.45	7.60	0.05	9.00	<0.01
Manyame	CR 21		April	55.00	<0.01	91.00	0.33	0.27	0.32	7.77	0.02	8.00	0.07
Manyame	CR 21		May	52.85	<0.01	19.00	0.44	<0.01	0.29	6.65	<0.01	2.00	<0.01
Manyame	CR 21		June	58.67	<0.01	49.00	0.22	<0.01	0.27	7.57	0.07	<1	0.11
Manyame	CR 21		July	63.41	<0.01	<25	0.21	0.16	0.24	7.01	0.04		<0.01
Manyame	CR 21		August	57.59	<0.01	<25	0.36	<0.01	0.18	7.05	0.02	13.00	<0.01
Manyame	CR 21		September	48.58	<0.01	119.00	0.45	0.01	-	6.97	<0.01	5.00	<0.01
Manyame	CR 21		October	57.18	<0.01	-	0.67	0.01	-	6.86	<0.01	6.00	0.01
Manyame	CR 21		November	45.10	<0.01	-	0.80	0.01	-	7.32	0.04	<1	<0.01
Manyame	CR 21		December	66.86	<0.01	-	0.31	0.01	-	7.42	0.04	3.00	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR 21	2012	January	71.17	<0.01	33.00	0.62	0.08	-	7.41	<0.01	<1	<0.01
Manyame	CR 21		February	51.93	<0.01	24.00	0.66	0.05	-	7.23	0.05	12.00	<0.01
Manyame	CR 21		July	58.28	0.01	<20	0.62	0.02	-	7.56	0.04	<1	<0.01
Manyame	CR 21		August	59.67	<0.01	<20	0.41	<0.01	-	8.32	0.00	<1	-
Manyame	CR 21		September	62.15	0.01	110.00	0.38	<0.01	-	7.34	0.02	3.00	-
Manyame	CR 21		October	49.75	0.02	36.00	0.58	0.01	-	7.30	-	<1	0.01
Manyame	CR 21		November	<2	<0.01	<20	0.76	<0.01	-	7.17	0.04	3.00	-
Manyame	CR 21		December	<2	<0.01	<20	0.33	<0.01	-	6.69	0.02	1.00	-
Manyame	CR 21	2013	January	<2	-	<20	0.89	<0.01	0.48	7.17	0.01	<1	-
Manyame	CR 21		February	<2	-	<20	1.04	0.01	0.56	7.82	0.05	<1	-
Manyame	CR 21		March	27.94	<0.01	<20	1.08	<0.01	0.35	7.99	0.05	<1	<0.01
Manyame	CR 21		April	40.73	<0.01	<20	0.25	<0.01	0.37	6.74	0.01	<1	<0.01
Manyame	CR 21		May	25.76	<0.01	22.00	0.38	<0.01	0.25	6.93	0.03	<1	<0.01
Manyame	CR 21		June	4.48	<0.01	42.00	1.65	<0.01	1.22	7.22	0.68	<1	<0.01
Manyame	CR 21		July	<2	<0.01	94.00	0.33	<0.01	0.27	6.97	0.06	8.28	<0.01
Manyame	CR 21		August	<2	<0.01	58.00	0.22	<0.01	0.22	7.31	0.10	10.26	<0.01
Manyame	CR 21		September	<2	<0.01	-	0.40	<0.01	0.22	7.35	0.02	11.12	<0.01
Manyame	CR 21		October	8.13	<0.01	25.00	0.38	<0.01	0.19	7.62	0.04	7.94	<0.01
Manyame	CR 21		November	8.24	<0.01	66.00	0.09	<0.01	0.23	7.73	0.03	4.46	<0.01
Manyame	CR 21		December	2.54	<0.01	<20	0.42	<0.01	0.25	7.30	0.04	4.97	<0.01
Manyame	CR 21	2014	January	7.94	<0.01	39.00	1.14	<0.01	0.91	7.78	0.03	6.47	<0.01
Manyame	CR 21		February	<2	<0.01	42.00	3.68	0.06	0.90	7.78	0.11	1.48	<0.01
Manyame	CR 21		March	18.77	<0.01	27.00	1.50	<0.01	0.75	7.12	<0.01	4.26	<0.01
Manyame	CR 21		April	10.05	<0.01	30.00	1.24	<0.01	0.49	7.72	0.07	3.23	<0.01
Manyame	CR 21		May	<2	<0.01	30.00	0.51	0.04	0.38	8.04	0.11	<1	0.05

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR 21		June	<2	<0.01	23.00	0.31	<0.01	0.30	6.89	0.11	<1	<0.01
Manyame	CR 21		July	5.48	<0.01	26.00	0.18	0.04	0.25	7.03	0.11	6.22	<0.01
Manyame	CR 21		August	<2	<0.01	28.00	0.35	0.02	0.29	7.45	0.01	5.42	<0.01
Manyame	CR 21		September	<2	<0.01	<20	0.56	<0.01	0.30	6.49	<0.01	4.61	<0.01
Manyame	CR 21		October	10.90	<0.01	-	0.93	<0.01	0.25	7.64	0.01	<1	<0.01
Manyame	CR 21		November	21.78	<0.01	862.00	0.89	<0.01	0.23	8.36	0.03	3.79	<0.01
Manyame	CR 21		December	5.71	<0.01	60.80	1.66	0.01	0.50	7.80	0.05	9.25	<0.01
Manyame	CR28	2007	March	9.30	-	28.00	-	-	1.15	6.99	0.23	75.00	-
Manyame	CR28		June	-	0.03	188.00	1.42	0.23	0.73	7.25	0.40	33.00	0.03
Manyame	CR28	2008	June	82.58	0.31		0.91	0.26	0.68	7.91	0.02	47.00	0.16
Manyame	CR28	2009	April	6.04	0.02	<20	0.33	0.18	0.73	7.39	0.10	14.00	0.04
Manyame	CR28		May	59.59	0.31	109.00	1.11	1.08	0.89	7.07	0.10	63.00	0.39
Manyame	CR28		June	47.09	0.24		0.96	0.54	0.17	6.94	0.12	53.00	0.13
Manyame	CR28		July	-	0.20	<20	1.71	0.63	0.61	6.78	<0.01	53.00	0.01
Manyame	CR28		August	41.13	0.60	22.00	1.99	0.44	0.96	7.31	<0.01	46.00	<0.01
Manyame	CR28		September	45.13	0.07	38.00	0.42	0.21	2.65	6.81	0.01	22.00	0.01
Manyame	CR28		October	74.30	0.10	242.00	0.81	<0.01	2.13	7.33	0.01	19.00	0.01
Manyame	CR28		December	<2	0.07	<20	0.42	0.21	2.84	7.23	1.07	40.00	<0.01
Manyame	CR28	2010	January	13.82	0.50	<20	0.12		0.50	6.35	<0.01	92.00	<0.01
Manyame	CR28		March	36.62	<0.01	105.00	2.59	0.35	0.50	6.71	0.47	81.00	0.06
Manyame	CR28		April	46.07	<0.01	21.00	0.41	<0.01	0.39	7.20	0.03	55.00	<0.01
Manyame	CR28		May	-	-	-	-	-	-	-	-	-	-
Manyame	CR28		June	41.94	0.03	54.00	0.45	0.07	1.57	7.20	0.04	106.00	<0.01
Manyame	CR28		July	39.12	<0.01	208.00	0.06	<0.01	1.47	6.83	1.17	84.00	<0.01
Manyame	CR28		August	48.36	0.06	59.00	0.18	0.01	1.68	6.94	2.62	33.00	<0.01
Manyame	CR28		September	-	<0.01	35.00	0.27	<0.01	1.46	7.24	0.07	76.00	<0.01
Manyame	CR28		October	-	-	-	-	-	-	-	-	-	-

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15.00	1.00	30.00	0.30	0.30	10.00	6.0-7.5	0.50	100.00	0.30
Blue limit (Normal)				30.00	1.00	60.00	1.00	0.30	10.00	6.0-9.0	0.50	250.00	0.50
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Manyame	CR28	2011	March	-	<0.01	149.00	<0.01	<0.01	1.16	8.51	2.59	81.00	<0.01
Manyame	CR28		April	80.22	<0.01	93.00	<0.01	0.24	0.50	7.45	0.09	57.00	0.07
Manyame	CR28		May	63.33	<0.01	68.00	0.08	<0.01	0.57	6.16	<0.01	106.00	<0.01
Manyame	CR28		July	54.78	<0.01	28.00	<0.01	<0.01	1.60	6.57	0.02	64.00	<0.01
Manyame	CR28		August	56.04	<0.01	60.00	0.04	<0.01	1.80	7.89	0.63	66.00	<0.01
Manyame	CR28		September	44.54	<0.01	49.00	0.53	0.02	-	7.33	0.03	47.00	<0.01
Manyame	CR28		October	52.23	<0.01	-	0.05	<0.01	-	6.47	0.05	51.00	<0.01
Manyame	CR28		November	51.25	<0.01	-	<0.01	<0.01	-	6.72	0.13	68.00	<0.01
Manyame	CR28		December	57.05	<0.01	-	0.02	0.08	-	7.25	0.05	67.00	<0.01
Manyame	CR28	2012	January	66.22	<0.01	40.00	0.06	<0.01	-	7.80	1.22	48.00	<0.01
Manyame	CR28		April	56.53	<0.01	32.00	0.02	<0.01	-	7.26	0.03	46.00	<0.01
Manyame	CR28		May	51.75	<0.01	<20	0.12	<0.01	-	6.69	0.05	51.00	<0.01
Manyame	CR28		July	69.83	0.01	54.00	0.12	0.03	-	6.92	1.82	68.00	<0.01
Manyame	CR28		August	60.54	<0.01	47.00	0.32	<0.01	-	7.03	0.05	60.00	<0.01
Manyame	CR28		September	52.02	<0.01	<20	0.02	<0.01	-	6.78	<0.01	64.00	0.01
Manyame	CR28		October	51.88	0.02	41.00	<0.01	<0.01	-	6.79	0.07	44.00	<0.01
Manyame	CR28		November	14.77	0.01	29.00	0.16	<0.01	-	6.47	0.04	6.00	<0.01
Manyame	CR28		December	-	<0.01	-	0.05	<0.01	-	8.44	1.55	15.00	<0.01
Manyame	CR28	2013	January	<2	<0.01	113.00	0.06	<0.01	1.08	7.08	0.78	66.00	<0.01
Manyame	CR28		February	3.41	<0.01	42.00	0.27	<0.01	0.45	7.53	1.43	53.96	<0.01
Manyame	CR28		March	39.32	<0.01	55.00	<0.01	<0.01	0.42	7.41	1.56	34.01	<0.01
Manyame	CR28		April	26.23	<0.01	30.00	<0.01	<0.01	0.55	7.68	1.09	33.82	<0.01
Manyame	CR28		May	20.21	<0.01	50.00	<0.01	<0.01	0.65	8.15	0.21	44.95	<0.01
Manyame	CR28		June	74.57	<0.01	115.00	0.33	<0.01	0.94	7.42	0.06	134.80	<0.01
Manyame	CR28		July	14.69	<0.01	140.00	0.03	<0.01	1.17	7.43	0.69	70.21	<0.01
Manyame	CR28		August	6.61	<0.01	181.00	0.02	<0.01	1.21	5.94	4.46	165.80	<0.01
Manyame	CR28		September	<2	<0.01	72.00	<0.01	0.01	1.11	6.10	-	108.55	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15.00	1.00	30.00	0.30	0.30	10.00	6.0-7.5	0.50	100.00	0.30
Blue limit (Normal)				30.00	1.00	60.00	1.00	0.30	10.00	6.0-9.0	0.50	250.00	0.50
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Manyame	CR28		October	12.87	<0.01	147.00	<0.01	<0.01	1.35	6.99	2.70	41.63	<0.01
Manyame	CR28		November	6.51	<0.01	148.00	0.04	<0.01	0.90	7.52	2.15	103.40	<0.01
Manyame	CR28		December	<2	<0.01	79.00	0.53	<0.01	1.19	7.58	0.86	132.49	<0.01
Manyame	CR28	2014	January	8.14	<0.01	28.00	0.22	<0.01	2.35	7.44	0.02	104.57	<0.01
Manyame	CR28		February	<2	<0.01	50.00	0.03	<0.01	0.97	8.07	0.92	45.22	<0.01
Manyame	CR28		March	<2	<0.01	47.00	0.04	<0.01	0.69	7.86	0.64	35.14	<0.01
Manyame	CR28		April	<2	<0.01	50.00	0.08	<0.01	0.45	7.77	0.25	47.50	<0.01
Manyame	CR28		May	16.14	<0.01	41.00	0.08	<0.01	0.84	7.87	0.17	23.74	<0.01
Manyame	CR28		June	<2	<0.01	41.00	<0.01	<0.01	1.28	6.65	4.19	49.84	<0.01
Manyame	CR28		July	5.09	<0.01	32.00	0.06	0.01	2.05	7.15	0.48	58.36	<0.01
Manyame	CR28		August	12.51	<0.01	37.00	<0.01	<0.01	2.82	6.76	0.94	45.33	<0.01
Manyame	CR28		September	17.01	<0.01	67.00	0.14	<0.01	2.32	6.97	0.69	76.56	<0.01
Manyame	CR28		October	18.05	<0.01	0.00	3.19	<0.01	2.09	7.42	0.11	73.83	<0.01
Manyame	CR28		November	16.88	<0.01	215.00	0.37	<0.01	0.99	7.72	5.37	76.01	<0.01
Manyame	CR28		December	13.15	<0.01	135.00	1.31	<0.01	1.27	7.65	4.02	70.98	<0.01
Manyame	CR31	2007	July	4.32	<0.01	<20	<0.01	<0.01	0.58	7.48	0.05	1.00	0.01
Manyame	CR31	2008	April	-	<0.01	-	0.16	0.16	0.47	7.83	0.01	21.00	<0.01
Manyame	CR31	2009	April	-	0.07	<20	0.95	<0.01	0.36	7.41	0.04	14.00	0.04
Manyame	CR31		June	100.07	0.39	-	2.16	1.61	0.63	7.98	0.04	23.00	0.01
Manyame	CR31		July	-	0.57	93.00	0.75	1.06	1.80	6.94	0.02	25.00	<0.01
Manyame	CR31		November	76.44	0.03	<20	0.26	<0.01	0.94	7.08	0.06	17.00	0.01
Manyame	CR31		December	25.81	2.58	<20	0.21	<0.01	0.33	7.48	<0.01	20.00	0.06
Manyame	CR31	2010	February	25.73	0.67	37.00	0.77	0.91	0.29	7.27	0.10	5.00	<0.01
Manyame	CR31		March	16.45	<0.01	<20	0.20	<0.01	<0.01	6.74	0.01		<0.01
Manyame	CR31		July	28.18	<0.01	54.00	<0.01	<0.01	0.55	6.65	0.11	4.00	<0.01
Manyame	CR31		August	25.98	0.04	<20	0.04	0.02	0.44	7.62	0.05	16.00	<0.01
Manyame	CR31	2011	June	70.64	<0.01	52.00	<0.01	<0.01	0.67	7.75	0.05	6.00	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR31		July	29.65	<0.01	<25	0.02	<0.01	1.15	7.64	0.08	<1	<0.01
Manyame	CR31		August	44.20	<0.01	71.00	0.01	<0.01	-	7.10	0.10	<1	0.14
Manyame	CR31		September	47.67	<0.01	<25	0.08	0.04	-	7.16	0.04	<1	<0.01
Manyame	CR31		October	69.37	<0.01	-	<0.01	<0.01	-	7.00	0.06	<1	<0.01
Manyame	CR31	2012	January	24.12	<0.01	59.00	<0.01	<0.01	1.08	7.49	0.22	9.00	<0.01
Manyame	CR31		February	13.90	<0.01	-	0.24	<0.01	1.03	7.47	0.16	5.00	<0.01
Manyame	CR31		March	48.62	<0.01	<20	0.11	0.03	0.56	7.73	0.06	11.00	-
Manyame	CR31		May	82.04	<0.01	85.00	0.09	<0.01	1.01	7.41	0.05	4.20	<0.01
Manyame	CR31		November	51.53	<0.01	-	<0.01	<0.01	-	7.19	0.16	<1	<0.01
Manyame	CR31		December	28.85	<0.01	-	0.03	<0.01	-	7.51	0.27	20.00	<0.01
Manyame	CR31	2013	February	43.50	<0.01	28.00	<0.01	<0.01	-	7.90	0.17	20.00	<0.01
Manyame	CR31		March	56.86	<0.01	25.00	0.25	0.01	-	8.03	0.04	23.00	<0.01
Manyame	CR31		August	55.21	<0.01	48.00	0.05	<0.01	-	7.51	0.09	<1	<0.01
Manyame	CR31		September	56.87	<0.01	91.00	0.08	0.02	-	7.77	0.05	16.00	0.01
Manyame	CR31		July	68.08	<0.01	119.00	0.01	0.03	-	8.24	0.14	18.00	<0.01
Manyame	CR31		January	77.32	<0.01	43.00	<0.01	0.09	-	7.63	0.23	9.00	<0.01
Manyame	CR31		April	59.79	<0.01	45.00	0.19	0.04	-	8.10	0.03	17.00	<0.01
Manyame	CR31		May	51.30	<0.01	31.00	0.04	<0.01	-	7.86	0.02	20.00	<0.01
Manyame	CR31		October	49.35	<0.01	69.00	0.02	<0.01	-	8.06	0.10	12.00	<0.01
Manyame	CR31		December	2.42	<0.01	24.00	<0.01	<0.01	-	7.34	0.38	1.00	<0.01
Manyame	CR31	2014	January	13.15	<0.01	<20	0.18	<0.01	1.09	7.29	0.10	23.00	<0.01
Manyame	CR31		February	<2	<0.01	<20	0.06	<0.01	0.94	7.64	0.27	20.01	<0.01
Manyame	CR31		March	13.39	<0.01	23.00	0.07	<0.01	0.64	7.97	0.11	15.58	<0.01
Manyame	CR31		April	34.81	<0.01	62.00	<0.01	<0.01	0.84	8.53	0.09	11.56	<0.01
Manyame	CR31		May	<2	<0.01	29.00	<0.01	<0.01	1.84	6.99	0.22	18.54	<0.01
Manyame	CR31		June	5.30	<0.01	36.00		<0.01	1.34	7.55	0.22	39.58	<0.01
Manyame	CR31		July	<2	<0.01	134.00	<0.01	<0.01	1.53	7.73	0.25	4.11	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR31		August	<2	<0.01	41.00	<0.01	<0.01	1.49	7.35	0.19	23.28	<0.01
Manyame	CR31		September	<2	<0.01		0.02	<0.01	0.19	6.91	0.05	14.11	<0.01
Manyame	CR31		October	20.41	<0.01	35.00	<0.01	<0.01	1.96	7.39	0.34	27.23	<0.01
Manyame	CR31		November	<2	<0.01	37.00	<0.01	<0.01	0.94	8.26	0.28	23.22	<0.01
Manyame	CR31		December	36.42	<0.01	40.00	0.03	0.03	1.50	7.41	0.34	33.07	<0.01
Manyame	CR31	2015	January	13.16	<0.01	31.00	0.43	<0.01	1.18	8.13	0.07	15.00	<0.01
Manyame	CR31		February	15.68	<0.01	34.00	0.04	0.02	1.10	7.89	0.22	<1	<0.01
Manyame	CR31		March	<2	<0.01	52.00	<0.01	<0.01	0.73	8.24	0.04	9.93	<0.01
Manyame	CR31		April	7.87	<0.01	-	0.03	0.02	1.03	8.00	0.12	22.48	<0.01
Manyame	CR31		May	12.83	<0.01	45.00	<0.01	<0.01	0.95	7.95	0.12	17.36	<0.01
Manyame	CR31		June	5.13	<0.01	51.00	<0.01	<0.01	1.24	7.15	0.16	28.11	<0.01
Manyame	CR31		July	20.59	<0.01	41.00	0.21	<0.01	1.53	6.72	0.42	28.12	<0.01
Manyame	CR31		August	<2	<0.01	40.00	0.02	<0.01	6.07	7.04	0.34	27.46	<0.01
Manyame	CR31		September	<2	<0.01	53.00	0.15	<0.01	3.62	7.20	0.28	19.88	<0.01
Manyame	CR31		October	25.56	<0.01	-	0.45	<0.01	0.26	7.78	0.04	<1	<0.01
Manyame	CR31		November	<2	<0.01	381.00	0.01	<0.01	0.86	7.89	0.60	20.50	<0.01
Manyame	CR31		December	6.43	<0.01	33.80	<0.01	0.01	1.49	7.02	0.51	23.32	<0.01
Manyame	CR32	2007	July	2.91	<0.01	86.00	0.08	<0.01	0.51	8.02	0.03	3.00	<0.01
Manyame	CR32	2008	April	-	<0.01	-	0.08	<0.01	0.51	7.96	0.01	25.00	<0.01
Manyame	CR32	2009	April	-	0.06	90.00	1.01	<0.01	0.44	7.45	0.05	16.00	0.02
Manyame	CR32		June	42.17	0.42	-	2.13	1.68	0.78	7.24	0.04	22.00	0.01
Manyame	CR32		July	-	0.64	<20	15.74	1.10	0.76	6.97	<0.01	19.00	<0.01
Manyame	CR32		November	74.69	0.03	<20	0.30	-	1.39	7.10	<0.01	19.00	<0.01
Manyame	CR32		December	100.36	4.89	<20	0.49	<0.01	0.32	7.90	<0.01	21.00	0.09
Manyame	CR32	2010	February	29.03	0.60	<20	0.89	0.93	0.32	7.40	0.11	5.00	<0.01
Manyame	CR32		March	13.16	<0.01	21.00	0.33	<0.01	0.49	6.84	0.03	<1	<0.01
Manyame	CR32		June	39.33	<0.01	42.00	0.04	<0.01	0.31	6.88	0.10	5.00	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15.00	1.00	30.00	0.30	0.30	10.00	6.0-7.5	0.50	100.00	0.30
Blue limit (Normal)				30.00	1.00	60.00	1.00	0.30	10.00	6.0-9.0	0.50	250.00	0.50
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Manyame	CR32		September	48.33	0.05	38.00	0.10	0.02	0.55	7.45	0.07	17.00	<0.01
Manyame	CR32	2011	January	49.40	<0.01	<20	0.37	0.19	0.59	7.36	0.15	7.00	<0.01
Manyame	CR32		February	15.55	<0.01	-	0.09	<0.01	1.10	7.51	0.17	9.00	<0.01
Manyame	CR32	2011	March	45.81	<0.01	67.00	0.04	0.02	0.56	7.73	0.05	16.00	-
Manyame	CR32		May	80.98	<0.01	89.00	<0.01	<0.01	0.59	7.38	0.05	4.70	<0.01
Manyame	CR32		June	51.53	<0.01	30.00	<0.01	<0.01	0.63	7.86	0.04	7.00	<0.01
Manyame	CR32		July	52.35	<0.01	66.00	0.06	<0.01	1.03	7.75	0.08	7.00	<0.01
Manyame	CR32		August	36.44	<0.01	55.00	0.04	<0.01	-	6.91	0.87	<1	0.02
Manyame	CR32		September	65.72	<0.01	372.00	<0.01	0.04	-	7.43	0.04	<1	<0.01
Manyame	CR32		October	55.40	<0.01	-	<0.01	-	-	7.00	0.09	<1	<0.01
Manyame	CR32		November	53.09	<0.01	-	<0.01	<0.01	-	7.21	0.15	4.00	<0.01
Manyame	CR32		December	38.26	<0.01	-	<0.01	0.03	-	7.52	0.24	5.00	<0.01
Manyame	CR32	2012	January	61.99	<0.01	57.00	<0.01	0.02	-	7.87	0.03	11.00	<0.01
Manyame	CR32		February	48.93	<0.01	30.00	<0.01	0.08	-	7.65	0.18	12.00	<0.01
Manyame	CR32		March	61.71	<0.01	22.00	0.04	0.01	-	8.28	0.04	24.00	<0.01
Manyame	CR32		April	64.94	<0.01	<20	0.12	<0.01	-	8.07	0.08	24.00	<0.01
Manyame	CR32		May	52.75	<0.01	44.00	0.04	<0.01	-	8.26	0.04	16.00	<0.01
Manyame	CR32		July	53.53	<0.01	42.00	0.01	<0.01	-	8.04	0.15	18.00	<0.01
Manyame	CR32		August	52.20	<0.01	42.00	0.04	<0.01	-	7.78	0.07	3.00	<0.01
Manyame	CR32		September	54.26	<0.01	127.00	0.03	<0.01	-	7.46	0.05	17.00	<0.01
Manyame	CR32		October	48.09	<0.01	52.00	<0.01	<0.01	-	8.10	0.50	16.00	<0.01
Manyame	CR32		November	7.06	<0.01	31.00	<0.01	<0.01	-	7.33	0.29	2.00	<0.01
Manyame	CR32	2013	January	8.02	22.00	22.00	0.08	-	0.88	7.09	0.08	25.00	<0.01
Manyame	CR32		February	9.59	<0.01	<20	0.07	-	1.07	7.34	0.18	18.40	0.03
Manyame	CR32		March	13.30	<0.01	28.00	0.06	<0.01	0.70	7.95	0.13	13.52	<0.01
Manyame	CR32		April	28.14	<0.01	28.00	0.04	<0.01	0.84	8.47	<0.01	11.10	<0.01
Manyame	CR32		May	18.12	<0.01	22.00	0.24	<0.01	1.35	7.25	0.22	9.63	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR32		June	<2	<0.01	37.00	<0.01	<0.01	1.24	7.77	0.15	40.39	<0.01
Manyame	CR32		July	2.49	<0.01	141.00	<0.01	<0.01	1.40	7.83	0.23	5.28	<0.01
Manyame	CR32		August	<2	<0.01	37.00	0.01	<0.01	1.62	6.56	0.22	40.80	<0.01
Manyame	CR32		September	<2	<0.01	-	<0.01	<0.01	1.48	7.25	0.21	14.43	<0.01
Manyame	CR32		October	26.50	<0.01	38.00	<0.01	<0.01	1.92	7.85	0.30	24.93	<0.01
Manyame	CR32		November	<2	<0.01	37.00	<0.01	<0.01	1.12	8.25	0.30	22.83	<0.01
Manyame	CR32		December	13.60	<0.01	49.00	0.39	0.02	1.16	7.32	0.33	33.44	<0.01
Manyame	CR32	2014	January	6.30	<0.01	30.00	0.49	<0.01	1.12	7.80	0.07	8.75	<0.01
Manyame	CR32		February	20.71	<0.01	40.00	0.08	0.09	1.19	7.79	0.22	6.61	<0.01
Manyame	CR32		March	<2	<0.01	34.00	<0.01	<0.01	0.83	8.21	0.06	9.84	<0.01
Manyame	CR32		April	2.27	<0.01		<0.01	0.29	1.06	8.06	0.12	26.90	<0.01
Manyame	CR32		May	36.70	<0.01	44.00	<0.01	0.01	0.97	7.86	0.12	16.76	<0.01
Manyame	CR32		June	13.83	<0.01	46.00	<0.01	0.06	1.27	7.24	0.17	28.91	<0.01
Manyame	CR32		July	11.50	<0.01	48.00	0.82	0.01	2.06	6.91	0.39	29.71	<0.01
Manyame	CR32		August	<2	<0.01	39.00	0.08	<0.01	0.31	7.14	0.09	5.42	<0.01
Manyame	CR32		September	<2	<0.01	58.00	10.00	<0.01	2.19	7.12	0.23	19.38	<0.01
Manyame	CR32		October	12.71	<0.01	-	0.11	0.38	2.00	7.91	0.27	16.77	<0.01
Manyame	CR32		November	3.06	<0.01	38.50	<0.01	<0.01	1.41	7.97	0.39	22.99	<0.01
Manyame	CR32		December	22.86	<0.01	33.10	0.37	0.06	1.79	7.64	0.52	22.58	<0.01
Manyame	CR33	2011	May	13.58	<0.01	107.00	0.06	<0.01	0.11	8.25	0.07	7.00	<0.01
Manyame	CR33		June	38.44	<0.01	28.00	<0.01	<0.01	0.34	7.96	0.07	<0.01	<0.01
Manyame	CR33		August	54.49	<0.01	86.00	0.02	<0.01	0.27	7.32	0.15	<0.01	<0.01
Manyame	CR33		September	35.65	-	<25	<0.01	<0.01	-	8.12	0.03	6.00	<0.01
Manyame	CR33		November	57.03	<0.01	-	<0.01	0.03	-	7.38	0.11	4.00	<0.01
Manyame	CR33		December	58.31	<0.01	-	<0.01	0.05	-	8.29	0.13	<0.01	<0.01
Manyame	CR33	2012	January	63.31	<0.01	60.00	2.20	0.17	-	7.78	0.57	37.00	0.32
Manyame	CR33		February	65.14	<0.01	29.00	0.57	0.18	-	7.46	0.17	29.00	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR33		March	48.45	<0.01	56.00	0.30	<0.01	-	8.10	0.11	29.00	<0.01
Manyame	CR33		April	64.83	<0.01	56.00	1.12	0.03	-	7.27	0.15	51.00	<0.01
Manyame	CR33		May	621.32	<0.01	93.00	0.65	<0.01	-	7.94	0.01	13.00	<0.01
Manyame	CR33		June	33.13	3.00	67.00	0.05	<0.01	-	7.95	0.05	17.00	<0.01
Manyame	CR33		July	45.95	<0.01	<20	<0.01	<0.01	-	7.94	0.03	16.00	<0.01
Manyame	CR33		August	61.59	<0.01	34.00	0.01	<0.01	-	7.36	0.05	9.00	<0.01
Manyame	CR33		September	56.60	<0.01	43.00	-	<0.01	-	8.03	0.05	8.00	<0.01
Manyame	CR33		October	50.72	<0.01	46.00	0.03	<0.01	-	8.15	0.11	1.00	<0.01
Manyame	CR33		November	31.03	<0.01	36.00	0.20	<0.01	-	7.91	0.12	5.00	<0.01
Manyame	CR33		December	20.69	<0.01	34.00	0.01	<0.01	-	8.74	1.94	1.00	<0.01
Manyame	CR33	2013	February	<2	0.41	100.00	1.70	-	0.81	7.75	0.25	<1	0.04
Manyame	CR33		March	<2	<0.01	41.00	0.52	<0.01	0.52	7.70	0.14	<1	<0.01
Manyame	CR33		May	4.94	<0.01	22.00	0.04	<0.01	0.48	7.46	0.06	<1	<0.01
Manyame	CR33		June	4.62	0.01	58.00	0.06	<0.01	0.42	7.26	0.09	<1	<0.01
Manyame	CR33		July	<2	<0.01	100.00	<0.01	0.01	0.42	8.01	0.09	<1	<0.01
Manyame	CR33		August	<2	<0.01	30.00	0.03	<0.01	0.32	7.99	0.10	11.49	<0.01
Manyame	CR33		September	<2	<0.01	-	<0.01	<0.01	0.31	8.12	0.10	11.23	<0.01
Manyame	CR33		December	46.37	<0.01	38.00	0.14	<0.01	0.40	8.33	0.11	8.75	<0.01
Manyame	CR33	2014	January	18.78	<0.01	138.00	4.50	<0.01	1.08	7.65	0.27	<1	<0.01
Manyame	CR33		February		1.78	-	31.75	1.05	-	5.71	-	-	2.23
Manyame	CR33		March	6.68	<0.01	48.00	1.16	<0.01	0.53	8.67	0.09	11.18	<0.01
Manyame	CR33		April	6.46	0.02	-	<0.01	0.09	0.33	8.25	0.10	4.49	<0.01
Manyame	CR33		May	24.04	<0.01	46.00	0.05	<0.01	0.33	8.22	0.06	<1	<0.01
Manyame	CR33		June	33.05	0.01	47.00	<0.01	<0.01	0.30	7.90	0.20	12.93	<0.01
Manyame	CR33		July	16.43	<0.01	45.00	0.14	0.13	0.32	7.37	0.12	18.32	<0.01
Manyame	CR33		August	6.68	<0.01	60.00	0.02	<0.01	0.31	7.74	0.06	14.85	<0.01
Manyame	CR33		September	<2	<0.01	59.00	0.06	<0.01	0.43	7.70	0.08	8.25	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15.00	1.00	30.00	0.30	0.30	10.00	6.0-7.5	0.50	100.00	0.30
Blue limit (Normal)				30.00	1.00	60.00	1.00	0.30	10.00	6.0-9.0	0.50	250.00	0.50
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Manyame	CR33		October	16.28	<0.01	-	<0.01	<0.01	0.37	8.22	0.12	<1	<0.01
Manyame	CR33		November	<2	<0.01	53.90	<0.01	<0.01	0.42	7.06	0.22	6.33	<0.01
Manyame	CR33		December	4.01	<0.01	35.10	<0.01	1.30	0.40	7.74	0.20	<1	<0.01
Manyame	CR71	2007	March	7.37	<0.01	42.00	0.32	<0.01	0.43	6.04	0.24	19.00	0.05
Manyame	CR71		June	-	-	32.00	0.71	<0.01	0.42	7.20	0.87	18.00	0.03
Manyame	CR71	2008	June	41.48	0.20		0.77	0.52	1.06	6.72	0.13	17.00	0.12
Manyame	CR71		April	-	<0.01	52.00	0.87	0.20	<0.01	6.68	0.04	8.00	0.07
Manyame	CR71		May	49.69	0.21	177.00	3.91	0.60	1.30	7.04	0.04	41.00	0.18
Manyame	CR71		June	4.71	0.10	-	0.72	1.12	1.30	-	0.05	21.00	0.09
Manyame	CR71		August	18.82	0.49	99.00	1.24	0.14	2.07	6.77	0.11	22.00	0.04
Manyame	CR71		September	72.88	<0.01	69.00	0.85	0.27	3.40	6.41	0.24	4.00	<0.01
Manyame	CR71		December	42.79	0.07	<20	1.54	<0.01	0.54	6.34	0.16	24.00	<0.01
Manyame	CR71	2010	January	15.95	0.33	-	0.56	0.73	1.48	6.15	0.88	<1	<0.01
Manyame	CR71		March	12.66	<0.01	53.00	1.36	0.60	0.65	6.09	0.08	35.00	0.15
Manyame	CR71		April	43.85	<0.01	35.00	0.43	<0.01	0.27	71.60	0.04	15.00	0.02
Manyame	CR71		May	37.50	<0.01	-	0.62	0.07	0.49	6.69	0.03	19.00	<0.01
Manyame	CR71		July	27.36	0.02	33.00	0.25	0.02	2.97	7.55	9.01	80.00	<0.01
Manyame	CR71		August	36.44	0.02	75.00	0.98	0.06	0.63	6.98	0.32	17.00	<0.01
Manyame	CR71		September	37.85	-	<20	0.55	0.14	3.21	6.90	2.34	43.00	<0.01
Manyame	CR71	2011	February	14.95	<0.01	40.00	0.06	<0.01	1.44	7.11	0.05	15.00	<0.01
Manyame	CR71		March	41.86	<0.01	114.00	0.31	<0.01	0.54	7.59	0.06	12.00	<0.01
Manyame	CR71		April	65.57	<0.01	1017.00	0.05	0.25	0.53	7.61	0.06	12.00	0.08
Manyame	CR71		May	15.03	<0.01	73.00	0.14	<0.01	0.46	7.68	0.04	10.00	<0.01
Manyame	CR71		June	71.67	<0.01	49.00	0.60	<0.01	0.38	6.95	0.74	9.00	0.03
Manyame	CR71		July	55.36	<0.01	126.00	0.09	<0.01	1.05	6.51	0.98	16.00	0.03
Manyame	CR71		August	46.53	<0.01	45.00	0.41	<0.01	1.01	6.83	0.81	23.00	0.09
Manyame	CR71		October	68.34	<0.01	-	3.83	<0.01	-	6.38	5.74	-	<0.01

Table 2.24 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15.00**	**1.00**	**30.00**	**0.30**	**0.30**	**10.00**	**6.0-7.5**	**0.50**	**100.00**	**0.30**
Blue limit (Normal)				**30.00**	**1.00**	**60.00**	**1.00**	**0.30**	**10.00**	**6.0-9.0**	**0.50**	**250.00**	**0.50**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Manyame	CR71	2012	July	50.23	<0.01	246.00	2.24	0.02	-	6.98	0.37	3.00	0.01
Manyame	CR71		August	59.48	<0.01	213.00	1.39	<0.01	-	6.87	1.98	7.00	0.01
Manyame	CR71		October	54.98	0.02	623.00	2.02	<0.01	-	6.98	4.10	35.00	<0.01
Manyame	CR71	2014	March	<2	<0.01	33.00	0.70	<0.01	0.78	8.39	0.08	4.65	<0.01
Manyame	CR71		April	14.69	<0.01	36.00	0.23	<0.01	0.60	7.84	0.16	3.58	<0.01
Manyame	CR71		May	5.31	<0.01	35.00	0.54	0.01	0.61	6.36	0.07	<1	<0.01
Manyame	CR71		June	<2	<0.01	39.00	0.11	<0.01	0.66	6.58	0.19	1.70	<0.01
Manyame	CR71		July	18.24	<0.01	36.00	0.15	<0.01	0.50	6.79	0.29	11.30	<0.01
Manyame	CR71		August	<2	<0.01	38.00	0.78	0.01	0.57	6.84	0.14	11.60	<0.01
Manyame	CR71		September	<2	<0.01	30.00	0.74	<0.01	0.48	6.14	0.09	9.36	<0.01
Manyame	CR71		October	24.14	<0.01	<20	1.45	<0.01	6.28	6.51	0.03	28.96	<0.01
Manyame	CR71		November	11.56	<0.01	28.40	0.05	<0.01	29.01	7.84	0.07	28.87	<0.01
Manyame	CR71		December	<2	<0.01	<20	1.32	0.71	<0.01	7.66	0.07	23.40	<0.01

NB: - Data not available

Source: Environmental Management Agency

Table 2.25: Mzingwane River Ambient Monitoring Points

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR1	2009	June	60.26669	0.01		0.78	0.23	0.03	7.13	0.076	45	0.02
Mzingwane	BR1	2010	December	61.28	0.11	23	0.32	0.09	0.53	7.49	0.154	4	0.04
Mzingwane	BR1		June	20.83	0.04	26	0.39	0.02	0.18	8.08	0.04	14	<0.01
Mzingwane	BR1		July	69.66	0.04	<20	0.04	0.05	0.268	7.95	0.046	13	<0.01
Mzingwane	BR1	2011	December	57.98	<0.01		1.05	0.04		7.72	0.07	16	0.03
Mzingwane	BR1		January	71.48	<0.01	<20	<0.01	<0.01		8.14	0.114	9	<0.01
Mzingwane	BR1	2012	February	58.77	<0.01	65	0.19	0.03		7.85	0.062	3	<0.01
Mzingwane	BR1		March	57.41	<0.01	27	<0.01	<0.01		7.76	0.047	46	<0.01
Mzingwane	BR1		April	58.99	<0.01	<20	2.33	<0.01		7.69	0.069	4	0.01
Mzingwane	BR1		May	59.89	<0.01	53	0.89	<0.01		7.36	0.02	2	<0.01
Mzingwane	BR1		June	46.19	<0.01	34	1.79	<0.01		7.41	0.048	22	<0.01
Mzingwane	BR1		July	62.55	0.01	94	0.6	0.04		7.41	0.521	18	0.04
Mzingwane	BR1		August	58.9	<0.01	<20	0.04	<0.01		7.99	<0.01	40	<0.01
Mzingwane	BR1		September	54.19	<0.01	24	0.01	<0.01		7.84	0.013	42	<0.01
Mzingwane	BR1		October	-	<0.01	70	0.07	<0.01		8.04	<0.01	-	<0.01
Mzingwane	BR1		November	-	<0.01	70	0.07	<0.01		8.04	<0.01	-	<0.01
Mzingwane	BR1		December		<0.01		1.13	<0.01		7.41	0.05	3	<0.01
Mzingwane	BR1	2013	January	<2	0.01	27	2.05	<0.01	0.61	7.19	0.15	12	0.01
Mzingwane	BR1		February	5.8266667	<0.01	25	4.86	<0.01	0.8	7.46	0.33	<1	0.01
Mzingwane	BR1		March	13.3	<0.01	<20	0.03	<0.01	0.03	7.22	<0.01	7.5558931	<0.01
Mzingwane	BR1		April	<2	<0.01	<20	0.11	<0.01	0.17869	8.13	0.03	11.362631	<0.01
Mzingwane	BR1		May	4.5466667	<0.01	36	0.03	<0.01	0.1300225	7.67	0.04	10.489537	<0.01
Mzingwane	BR1		June	13.966667	<0.01	95	0.13	<0.01	0.3679413	7.79	0.01	184.84371	<0.01
Mzingwane	BR1		July	16.803333	<0.01	141	0.01	<0.01	0.5597363	7.81	0.08	55.615549	<0.01
Mzingwane	BR1		August	<2	<0.01	77	0.07	<0.01	0.2879813	7.8	0.06	83.276035	<0.01
Mzingwane	BR1		September	<2	<0.01	Xxx	0.27	<0.01	0.2969125	8.36	<0.01	18.601175	<0.01
Mzingwane	BR1		October	26.496667	<0.01	<20	<0.01	<0.01	0.3313125	7.69	0.09	29.893164	<0.01
Mzingwane	BR1		November	7.1466667	<0.01	59	0.41	<0.01	0.5953163	7.81	0.05	23.654772	<0.01
Mzingwane	BR1		December	33.45	<0.01	36	0.62	<0.01	0.2694338	7.43	0.03	17.737152	<0.01
Mzingwane	BR1	2014	January	42.936667	<0.01	23	0.66	<0.01	0.2829263	7.8	0.05	26.181441	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR1	2014	February		<0.01	29	0.2	<0.01	0.3228513	7.59	0.03665	21.666554	<0.01
Mzingwane	BR1		March	<2	<0.01	45	0.21	<0.01	0.5933013	8.05	0.1033725	62.499385	<0.01
Mzingwane	BR1		April	3.6533333	<0.01	37	0.17	0.01	0.2217813	7.87	0.1187338	27.731353	<0.01
Mzingwane	BR1		May	19.136667	<0.01	22	0.12	<0.01	0.7487175	7.6	0.0238688	39.924815	<0.01
Mzingwane	BR1		June	12.473333	<0.01	27	0.08	<0.01	0.2460938	7.18	0.1413088	2.755711	<0.01
Mzingwane	BR1		July	2.29	<0.01	24	0.22	<0.01	0.2567888	7.63	0.1436825	42.756996	<0.01
Mzingwane	BR1		August	13	<0.01	42	0.05	<0.01	0.1569888	7.29	<0.01	45.216959	<0.01
Mzingwane	BR1		September	10.106667	<0.01	22	0.39	<0.01	0.283475	7.17	<0.01	31.35802	<0.01
Mzingwane	BR1		October	<2	<0.01	82	<0.01	0.02	0.1830725	7.67	<0.01	33.603019	<0.01
Mzingwane	BR1		November	<2	<0.01	680	<0.01	<0.01	0.3065475	8.25	0.0604313	19.335235	<0.01
Mzingwane	BR11	2009	June	11.86369	0.4		0.61	0.44	0.16	7.16	0.03	8	0.06
Mzingwane	BR11		April	41.65701	<0.01	4	1.03	0.11	0.4	6.52	0.06	34	<0.01
Mzingwane	BR11		May	6.4	0.01	29	0.25	<0.01	0.14	7.59	0.01	11	0.07
Mzingwane	BR11		June	26.76	<0.01	147	0.15	<0.01	<0.01	7.1	0.1	11	<0.01
Mzingwane	BR11		July	45.7	0.06	<20	0.24	0.11	0.136	7.65	0.059	17	<0.01
Mzingwane	BR11		September	40.63	0.07	<20	0.26	0.08	0.249	7.73	0.084	17	0.02
Mzingwane	BR11		December	50.22	0.06	129	0.26	0.04	0.48	7.64	0.156	59	<0.01
Mzingwane	BR11		March	48.12	<0.01	<25	<0.01	0.04	0.097	7.74	<0.01	1	<0.01
Mzingwane	BR11		April	37.54	<0.01	253	<0.01	<0.01	0.078	7.06	0.09	4	<0.01
Mzingwane	BR11		May	72.54	<0.01	71	<0.01	<0.01	0.179	7.04	0.039	6	<0.01
Mzingwane	BR11		August	36.69	0	<25	0.3	<0.01		7.74	0.027	9	<0.01
Mzingwane	BR11		September	39.37	<0.01		0.15	0.01		8.05	0.01	22	<0.01
Mzingwane	BR11		October	Insuff	<0.01		0.53	<0.01		6.95	0.1	Insuff	<0.01
Mzingwane	BR11		November	60.12	<0.01		<0.01	<0.01		7.95	0.127	1	<0.01
Mzingwane	BR11		December	55.86	<0.01		1.32	0.02		7.69	0.15	40	<0.01
Mzingwane	BR11	2012	January	69.54	<0.01	<20	0.72	0.13		7.78	0.062	13	<0.01
Mzingwane	BR11		February	61.68	<0.01	48	0.47	<0.01		7.68	0.061	17	<0.01
Mzingwane	BR11		March	57.02	<0.01	25	5.64	<0.01		7.98	0.281	57	<0.01
Mzingwane	BR11		April	56.73	0.08	24	8	<0.01		7.71	0.137	52	0.03
Mzingwane	BR11		May	47.47	<0.01	23	0.54	<0.01		7.58	0.044	8	<0.01
Mzingwane	BR11		June	53.76	<0.01	31	0.45	<0.01		8.06	0.032	3	<0.01
Mzingwane	BR11		August	59.87	0.02	35	0.12	<0.01		8.04	0.005	8	<0.01
Mzingwane	BR11		September	54.38	<0.01	24	0.01	<0.01		7.35	0.017	12	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR11		October	46.58	<0.01	35	0.18	<0.01		7.83	<0.01	19	<0.01
Mzingwane	BR11		December		<0.01		0.58	<0.01		7.13	0.03	3	<0.01
Mzingwane	BR11	2013	January	34.8	<0.01	39	5.94	<0.01	0.67	6.93	0.29	<1	<0.01
Mzingwane	BR11		February	6.5033333	<0.01	<20	0.38	0.01	0.32	7.09	0.01	14.40288	<0.01
Mzingwane	BR11		March	36.653333	<0.01	23	0.3	0.02	0.13	7.35	<0.01	9.6701094	<0.01
Mzingwane	BR11		April	9.65	<0.01	<20	0.11	<0.01	0.1901863	8.01	0.2	4.0669945	<0.01
Mzingwane	BR11		May	0.2933333	<0.01	33	0.23	<0.01	0.2295588	7.84	0.06	6.5516804	<0.01
Mzingwane	BR11		June	6.62	<0.01	93	1.98	<0.01	0.5024963	7.96	0.04	11.756809	<0.01
Mzingwane	BR11		July	13.033333	<0.01	108	0.64	<0.01	0.3816513	7.89	0.08	12.11613	<0.01
Mzingwane	BR11		August	<2	<0.01	43	0.2	<0.01	0.31576	7.58	0.06	15.220828	<0.01
Mzingwane	BR11		September	13.35	<0.01	xxx	0.22	<0.01	0.3404213	7.12	<0.01	11.200672	<0.01
Mzingwane	BR11		October	26.496667	<0.01	78	0.52	<0.01	0.5527875	7.29	0.13	13.2	<0.01
Mzingwane	BR11		November	<2	<0.01	43	1.06	<0.01	0.853795	7.85	0.1	1.4514302	<0.01
Mzingwane	BR11		December	10.733333	<0.01	33	2.19	<0.01	0.5284	7.28	0.06	3.0404382	<0.01
Mzingwane	BR11	2014	January	14.42	<0.01	28	1.26	<0.01	0.420425	8.03	0.03	4.9243996	<0.01
Mzingwane	BR11		February		<0.01	30	2.2	0.14	0.42587	7.67	0.0837838	<1	<0.01
Mzingwane	BR11		March	18.09	<0.01	24	1.37	<0.01	0.445005	8.5	0.0927863	1.484	<0.01
Mzingwane	BR11		April	14.77	<0.01	32	0.46	<0.01	0.2032875	7.8	0.0683838	2.180198	<0.01
Mzingwane	BR11		May	6.08	<0.01	33	0.33	0.01	0.3528038	7.48	0.0192613	4.6544444	<0.01
Mzingwane	BR11		June	7.1566667	<0.01	<20	0.1	<0.01	0.2325713	7.27	0.15498	15.478322	<0.01
Mzingwane	BR11		July	<2	<0.01	<20	0.44	<0.01	0.3188513	7.45	0.1382875	17.768418	<0.01
Mzingwane	BR11		August	2.3666667	<0.01	34	0.03	<0.01	0.4301963	7.53	0.0182663	19.115601	<0.01
Mzingwane	BR11		September	<2	<0.01	21	0.67	<0.01	0.23635	7.22	0.0113363	0.8450145	<0.01
Mzingwane	BR11		October	11.57	<0.01	61	<0.01	<0.01	0.1792375	7.32	0.142545	<1	<0.01
Mzingwane	BR11		November	2.3033333	<0.01	157	1.2	<0.01	0.492445	8.63	0.0521813	4.1954375	<0.01
Mzingwane	BR16	2010	April	31.79053	<0.01	32	0.29	<0.01	0.26	7.65	0.06	10	0.02
Mzingwane	BR16		June	5.2	0.08	6	0.41	0.03	0.21	8.05	0.05	7	<0.01
Mzingwane	BR16		July	22.72	<0.01	<20	0.56	0.09	0.397	7.21	0.064	7	<0.01
Mzingwane	BR16		September	41.29	<0.01	<20	0.37	0.16	0.371	7.25	0.114	81	0.12
Mzingwane	BR16		October	31.79	0.06	115	0.07	<0.01	0.44	7.97	0.07	21	<0.01
Mzingwane	BR16		December	55.2	0.11	<20	0.08	0.17	0.04	8.07	0.021	6	<0.01
Mzingwane	BR16	2011	March	42.9	<0.01	42	<0.01	<0.01	0.153	8.22	0.015	8	<0.01
Mzingwane	BR16		April	38.12	<0.01	77	0.11	<0.01	0.125	7.86	0.1	12	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR16		May	47.55	<0.01	64	<0.01	<0.01	0.173	6.9	0.02	<0.01	<0.01
Mzingwane	BR16		July	31.3	<0.01	<25	<0.01	0.23	0.1	7.34	0.04	<0.01	<0.01
Mzingwane	BR16		August	45.37	<0.01	<25	0.14	<0.01		8.46	0.016	18	<0.01
Mzingwane	BR16		September	40.3	<0.01		0.04	<0.01		8.27	<0.001	<0.01	<0.01
Mzingwane	BR16		October	55.65	<0.01		0.19	0.01		7.73	0.01	3	<0.01
Mzingwane	BR16		November	59.83	<0.01		<0.01	<0.01		8.05	<0.01	2	<0.01
Mzingwane	BR16		December	57.03	<0.01		<0.01	0.04		7.62	0.02	5	0.01
Mzingwane	BR16	2012	January	67.01	<0.01	<20	0.04	<0.01		8.33	<0.01	<0.01	<0.01
Mzingwane	BR16		February	58.18	<0.01	<20	<0.01	0.01		7.47	0.028	7	<0.01
Mzingwane	BR16		March	57.7	<0.01	27	<0.01	<0.01		8.27	<0.01	16	<0.01
Mzingwane	BR16		April	57.34	<0.01	152	0.2	<0.01		7.95	0.035	11	<0.01
Mzingwane	BR16		May	40.58	<0.01	218	0.15	<0.01		7.48	0.069	2	<0.01
Mzingwane	BR16		June	54.14	<0.01	34	<0.01	<0.01		8.21	0.037	3	0.02
Mzingwane	BR16		July	54.99	<0.01	42	0.02	<0.01		6.82	0.072	3	<0.01
Mzingwane	BR16		August	62.49	<0.01	63	0.14	<0.01		7.69	0.024	<0.01	<0.01
Mzingwane	BR16		September	54.77	<0.01	103	0.19	<0.01		8.08	0.037	9	<0.01
Mzingwane	BR16		October	44.15	<0.01	102	1.63	<0.01		7.78	0.07	11	<0.01
Mzingwane	BR16		November	19.38	0.01	53	0.59	<0.01		7.75	0.06	<0.1	<0.01
Mzingwane	BR16		December		<0.01		5.29	<0.01		7.4	1.93	15	<0.01
Mzingwane	BR16	2014	January	22.936667	<0.01	141	0.38	<0.01	0.7282938	8.08	0.11	<1	<0.01
Mzingwane	BR16		February		<0.01	49	3.6	<0.01	0.675015	7.69	0.2851538	<1	<0.01
Mzingwane	BR16		March	17.123333	<0.01	32	1.71	<0.01	0.5601275	8.52	<0.01	<1	<0.01
Mzingwane	BR16		April	<2	<0.01	<20	0.21	<0.01	0.0863575	8.32	0.1461538	4.8688663	<0.01
Mzingwane	BR16		May	8.6	<0.01	31	0.04	<0.01	0.22717	7.72	0.02139	<1	<0.01
Mzingwane	BR16		June	<2	0.6	25	0.44	<0.01	0.2237338	7.52	0.1287325	<1	<0.01
Mzingwane	BR16		July	4.03	<0.01	<20	0.24	<0.01	0.3104875	7.66	0.1545188	17.702741	<0.01
Mzingwane	BR16		August	5.8466667	<0.01	48	<0.01	<0.01	0.16164	7.81	0.00621	18.201391	<0.01
Mzingwane	BR16		September	<2	<0.01	41	0.13	<0.01	0.2116563	7.53	0.0085175	<1	<0.01
Mzingwane	BR16		October	<2	<0.01	39	0.64	0.05	0.26378	7.85	<0.01	<1	<0.01
Mzingwane	BR16		November	2.2066667	<0.01	851	0.18	<0.01	0.3038025	8.45	0.076525	3.5144705	<0.01
Mzingwane	BR17	2010	June	8.02	0.1	21	0.45	0.05	0.14	7.97	0.08	10	<0.01
Mzingwane	BR17		July	17.48	<0.01	<20	0.18	0.04	0.254	7.47	0.063	12	<0.01
Mzingwane	BR17		September	39.63	<0.01	174	0.09	0.09	0.286	7.19	0.076	18	0.03

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				15	1	30	0	0	10	6.0-7.5	1	100	0
Blue limit (Normal)				30	1	60	1	0	10	6.0-9.0	1	250	1
Unit of measurement				mg/l	mg/l Cu	mg/l	mg/l Fe	mg/l Ni	mg/l N		mg/l P	mg/l SO_4	mg/l Zn
Mzingwane	BR17		October	28.01	0.01	148	0.09	<0.01	0.27	7.17	0.06	13	<0.01
Mzingwane	BR17		December	50.93	0.13	59	0.21	0.14	0.04	8.26	0.022	7	<0.01
Mzingwane	BR17	2011	March	46.2	<0.01	40	<0.01	<0.01	0.117	7.97	0.028	4	<0.01
Mzingwane	BR17		May	64.14	<0.01	52	0.03	<0.01	0.126	7.72	<0.01	<0.01	<0.01
Mzingwane	BR17		July	31.98	<0.01	<25	<0.01	<0.01	0.145	7.07	0.02	4	0.05
Mzingwane	BR17		August	43.62	<0.01	<25	0.06	<0.01		8.06	0.019	7	<0.01
Mzingwane	BR17		September	30.6	<0.01		0.01	0.02		8.28	<0.01	3	0.02
Mzingwane	BR17		October	58.37	<0.01		0.06	<0.01		8.14	<0.01	2	<0.01
Mzingwane	BR17		November	52.75	<0.01		<0.01	<0.01		7.85	<0.01	2	<0.01
Mzingwane	BR17		December	49.27	<0.01		<0.01	<0.01		8.1	0.05	7	<0.01
Mzingwane	BR17	2012	January	73.22	<0.01	<20	<0.01	<0.01		8.17	<0.01	6	<0.01
Mzingwane	BR17		February	64.87	<0.01	25	2.14	0.13		7.96	0.141	22	<0.01
Mzingwane	BR17		March	55.67	<0.01	40	<0.01	0.09		8.69	<0.01	12	<0.01
Mzingwane	BR17		April	59.47	<0.01	91	0.94	<0.01		7.77	0.026	6	<0.01
Mzingwane	BR17		May	59.5	<0.01	34	0.19	<0.01		7.65	0.036	<0.01	<0.01
Mzingwane	BR17		June	48.61	<0.01	52	0.34	0.26		7.12	0.07	7	0.01
Mzingwane	BR17		July	59.93	<0.01	101	0.11	<0.01		7.8	0.068	<0.01	<0.01
Mzingwane	BR17		August	58.71	<0.01	34	0.18	<0.01		7.76	0.043	2	<0.01
Mzingwane	BR17		September	54.19	<0.01	98	0.24	<0.01		8.2	0.027	4	<0.01
Mzingwane	BR17		October	47.06	<0.01	35	0.29	<0.01		7.98	<0.01	<0.1	<0.01
Mzingwane	BR17		November	18.61	0.01	62	0.19	<0.01		7.62	0.06	<0.1	<0.01
Mzingwane	BR17		December		<0.01		4.8	<0.01		7.4	0.05	30	<0.01
Mzingwane	BR18	2010	June	11.78	0.03	8	0.5	0.06	1.41	7.84	0.12	152	<0.01
Mzingwane	BR18		July	40.83	<0.01	<20	0.43	0.01	0.224	7.45	0.072	38	<0.01
Mzingwane	BR18		September	38.87	0.04	41	0.22	0.05	0.478	7.32	3.84	31	<0.01
Mzingwane	BR18		December	60.63	0.02	<20	0.08	0.1	<0.01	7.85	0.031	4	<0.01
Mzingwane	BR18	2011	March	29	<0.01	<25	<0.01	<0.01	0.802	8.24	0.021	6	<0.01
Mzingwane	BR18		May	77.04	<0.01	41	<0.01	<0.01	0.347	7.64	<0.01	<0.01	<0.01
Mzingwane	BR18		August	38.19	<0.01	<25	0.04	<0.01		8.49	<0.01	9	<0.01
Mzingwane	BR18		September	31.47	<0.01		0.03	<0.01		8.35	<0.01	8	0.01
Mzingwane	BR18		October	59.82	<0.01		0.12	0.04		8.61	0.027	2	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR18		November	57.7	<0.01		<0.01	<0.01		7.02	0.108	1	<0.01
Mzingwane	BR18		December	52.57	<0.01		0.24	0.03		7.19	0.07	7	<0.01
Mzingwane	BR18	2012	January	70.02	<0.01	22	<0.01	0.04		8.3	0.073	3	<0.01
Mzingwane	BR18		February	62.35	<0.01	<20	2.21	0.03		8.01	0.128	17	<0.01
Mzingwane	BR18		March	60.13	<0.01	68	0.18	0.1		8.18	0.063	22	<0.01
Mzingwane	BR18		April	53.94	<0.01	99	0.53	<0.01		8.02	0.026	7	<0.01
Mzingwane	BR18		May	56.39	<0.01	27	0.28	0.05		7.36	0.06	4	<0.01
Mzingwane	BR18		June	53.94	<0.01	51	<0.01	<0.01		7.86	0.02	5	0.03
Mzingwane	BR18		July	51.01	<0.01	<20	<0.01	<0.01		7.93	0.06	<0.01	<0.01
Mzingwane	BR18		August	58.32	<0.01	33	0.17	<0.01		7.49	0.012	<0.01	<0.01
Mzingwane	BR18		September	58.94	<0.01	22	0.11	<0.01		8.13	0.026	1	<0.01
Mzingwane	BR18		October	50.65	<0.01	36	0.4	<0.01		8.08	0.01	<0.1	<0.01
Mzingwane	BR18		November	26.63	0.01	62	0.08	<0.01		7.58	0.05	<0.1	<0.01
Mzingwane	BR18		December		<0.01		0.83	<0.01		7.36	0.09	2	<0.01
Mzingwane	BR18	2014	January	19.166667	<0.01	147	0.31	0.11	0.7353975	7.43	0.11	<1	<0.01
Mzingwane	BR18		February		<0.01	56	5.45	<0.01	0.6923425	7.61	0.29366	<1	<0.01
Mzingwane	BR18		March	15.866667	<0.01	25	1.69	<0.01	0.48704	8.33	<0.01	5.7916923	<0.01
Mzingwane	BR18		April	<2	<0.01	53	0.85	<0.01	2.217775	8.1	0.2224388	14.99295	<0.01
Mzingwane	BR18		May	10.34	<0.01	25	0.1	0.03	0.8597575	8.21	0.0308563	<1	<0.01
Mzingwane	BR18		June	<2	0.46	23	0.66	<0.01	0.2329788	7.64	0.15112	<1	<0.01
Mzingwane	BR18		July	<2	<0.01	32	0.25	<0.01	0.7525688	7.65	0.1353963	7.1659052	<0.01
Mzingwane	BR18		August	<2	<0.01	31	0.08	<0.01	0.2138963	7.47	0.0197313	4.011262	<0.01
Mzingwane	BR18		September	<2	<0.01	22	0.66	<0.01	0.2973363	7.83	0.0280725	<1	<0.01
Mzingwane	BR18		October	<2	<0.01	46	2.27	<0.01	0.3731563	7.85	0.1709163	<1	<0.01
Mzingwane	BR18		November	8.9733333	<0.01	<20	0.16	<0.01	0.29775	7.66	0.0531588	4.3316309	<0.01
Mzingwane	BR30	2012	October	53.53	<0.01	70	0.67	<0.01		7.12	0.03	8	<0.01
Mzingwane	BR30		December		<0.01		0.18	<0.01		7.77	0.06	2	<0.01
Mzingwane	BR30	2013	January	<2	<0.01	<20	0.06	<0.01	0.23	7.36	0.01	<1	0.01
Mzingwane	BR30		February	3.7966667	<0.01	<20	0.7	<0.01	0.39	7.18	<0.01	23.881988	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR30		March	38.973333	<0.01	<20	1.16	<0.01	0.15	7.86	0.04	11.261847	<0.01
Mzingwane	BR30		April	3.85	<0.01	<20	0.04	<0.01	0.27919	8.25	0.04	<1	<0.01
Mzingwane	BR30		May	11.603333	<0.01	70	2.16	<0.01	0.53513	7.88	0.22	<1	<0.01
Mzingwane	BR30		June	3.5266667	<0.01	88	0.32	<0.01	0.2780213	8.01	0.01	14.960441	<0.01
Mzingwane	BR30		July	8.6833333	<0.01	108	0.2	<0.01	0.27032	8.14	0.05	13.228965	<0.01
Mzingwane	BR30		August	<2	<0.01	25	0.61	<0.01	0.2999175	7.69	0.09	18.566708	<0.01
Mzingwane	BR30		September	<2	<0.01	xxx	0.13	<0.01	0.24602	7.76	<0.01	12.413098	<0.01
Mzingwane	BR30		October	21.856667	<0.01	<20	0.28	<0.01	0.2929925	8.1	0.19	12.723052	<0.01
Mzingwane	BR30		November	<2	<0.01	34	2.07	<0.01	0.758905	7.64	0.17	<1	<0.01
Mzingwane	BR30		December	21.656667	<0.01	48	4.4	<0.01	0.7888238	7.01	0.09	29.850806	<0.01
Mzingwane	BR30	2014	January	42.356667	<0.01	25	0.53	0.01	0.29318	7.84	0.02	22.564483	<0.01
Mzingwane	BR30		February		<0.01	32	<0.01	<0.01	0.5508588	8.34	0.6692113	<1	<0.01
Mzingwane	BR30		March	2.6233333	<0.01	23	0.65	<0.01	0.3809713	8.06	0.0719363	14.437846	<0.01
Mzingwane	BR30		April	2.6866667	<0.01	35	0.57	<0.01	0.2647463	7.95	0.0682775	6.3353074	<0.01
Mzingwane	BR30		June	9.2833333	<0.01	42	0.16	<0.01	0.2393838	7.17	0.1697125	21.42704	<0.01
Mzingwane	BR30		July	<2	<0.01	<20	0.35	<0.01	0.34319	7.45	0.1253488	18.459452	<0.01
Mzingwane	BR30		August	8.65	<0.01	40	0.01	<0.01	0.2001675	7.84	<0.01	21.225571	<0.01
Mzingwane	BR30		September	6.53	<0.01	29	4.01	<0.01	0.6007425	7.17	0.0154613	<1	<0.01
Mzingwane	BR30		October	<2	<0.01	29	0.15	<0.01	0.1917788	7.56	<0.01	13.410566	<0.01
Mzingwane	BR30		November	<2	<0.01	33.9	0.08	<0.01	0.2539288	8.58	0.0415325	15.654027	<0.01
Mzingwane	BR31	2012	September	53.04	0.04	41	0.04	<0.01		7	0.02	9	<0.01
Mzingwane	BR31		October	44.54	<0.01	105	2.76	<0.01		6.73	0.06	35	<0.01
Mzingwane	BR31		December		<0.01		0.25	<0.01		7.49	0.05	1	<0.01
Mzingwane	BR31	2013	January	<2		<20	3.89	<0.01	0.53	6.7	0.11	<1	<0.01
Mzingwane	BR31		February	<2		<20	0.73	<0.01	0.22	7.28	<0.01	23.070299	<0.01
Mzingwane	BR31		March	5.6233333		<20	0.47	<0.01	0.15	7.54	0.03	9.244836	<0.01
Mzingwane	BR31		April	1.4333333		<20	0.08	<0.01	0.2345438	8.18	0.02	4.9643516	<0.01
Mzingwane	BR31		May	<2		40	2.45	<0.01	1.4592075	7.94	0.36	<1	<0.01

Table 2.25 Continued

River	Point	Year	Month	BOD	Cu	COD	Fe	Ni	NO_3	pH	PO_4	SO_4	Zn
Blue limit (Sensitive)				**15**	**1**	**30**	**0**	**0**	**10**	**6.0-7.5**	**1**	**100**	**0**
Blue limit (Normal)				**30**	**1**	**60**	**1**	**0**	**10**	**6.0-9.0**	**1**	**250**	**1**
Unit of measurement				**mg/l**	**mg/l Cu**	**mg/l**	**mg/l Fe**	**mg/l Ni**	**mg/l N**		**mg/l P**	**mg/l SO_4**	**mg/l Zn**
Mzingwane	BR31		June	9.9066667		89	0.24	<0.01	0.2890225	7.8	0.02	11.880026	<0.01
Mzingwane	BR31		July	5.7833333		109	0.11	<0.01	0.2939225	7.53	0.25	13.153354	<0.01
Mzingwane	BR31		August	<2		38	0.3	<0.01	0.2498613	7.83	0.05	17.805521	<0.01
Mzingwane	BR31		September	<2		xxx	0.11	<0.01	0.2196313	7.24	<0.01	13.209908	<0.01
Mzingwane	BR31		October	23.113333		<20	0.63	<0.01	0.4364863	7.75	0.06	13.2	<0.01
Mzingwane	BR31		November	6.0833333		46	0.74	<0.01	0.501215	7.77	0.09	7.1438686	<0.01
Mzingwane	BR31		December	21.946667		35	2.7	<0.01	0.5145413	7.29	0.07	3.1295092	<0.01
Mzingwane	BR31	2014	January	4.7533333	<0.01	26	1.12	<0.01	0.3093238	xxx	0.04	xxx	<0.01
Mzingwane	BR31		February		<0.01	29	0.75	<0.01	0.66935	8.43	0.0599188	<1	<0.01
Mzingwane	BR31		April	<2	<0.01	32	0.53	<0.01	0.231385	8.02	0.072725	2.4442244	<0.01
Mzingwane	BR31		June	<2	<0.01	34	0.16	<0.01	0.251135	7.16	0.13883	22.503963	<0.01
Mzingwane	BR31		July	8.09	<0.01	21	0.34	<0.01	0.4079375	7.53	0.1223888	18.071102	<0.01
Mzingwane	BR31		August	2.9466667	<0.01	27	0.08	<0.01	0.2682738	7.67	0.0516	17.472673	<0.01
Mzingwane	BR31		September	7.8833333	<0.01	<20	1.08	<0.01	0.2591538	7.23	0.01258	<1	<0.01
Mzingwane	BR31		October	<2	<0.01	47	0.18	0.02	0.2216263	7.75	0.0258913	12.659623	<0.01
Mzingwane	BR31		November	<2	<0.01	427	0.08	<0.01	0.2377663	8.54	0.04811	16.02651	<0.01

Source: Environmental Management Agency

Chapter 3: Environmental Resources and their Use

3.1 Mineral Production and Trade

Figure 3.1: Mining in Zimbabwe

There are 13 major minerals which contribute significant income to the fiscus of Zimbabwe. From 2009 to 2014, gold contributed the highest income (US$3 213 820), followed by platinum (US$2 700 320), palladium (US$902 645), nickel (US$821 952), chrome (US$273 460), rhodium US$ (US$226 427), copper (US$218 271), iridium (US$34 307), graphite US$ (US$17 187), cobalt (US$16 317), phosphate (US$12 396), rhuthenium (US$10 650), asbestos (US$3 213) and other minerals (US$2 967). The export of asbestos is affected by the decline in the use of asbestos due to health reasons. Table 3.1 shows the output of minerals for the years 2009 to 2014.

Table 3.1: Mineral Output in Zimbabwe

Period		Asbestos		Chrome		Coal		Cobalt		Copper		Gold		Graphite		Iridium	
		mt	US$'000	mt	US$'000	000 mt	US$'000	mt	US$'000	mt	US$'000	kg	US$'000	mt	US$'000	kg	US$'000
2009		4 970.8	1 567.3	193 673.7	18 375.7	1 667.3	57 973.9	39.0	473.7	3 571.8	15 412.5	4 965.7	157 180.6	2 463.0	718.7	208.9	1 462.1
2010		2 031.0	1 308.8	516 776.1	56 877.4	2 500.2	91 165.1	57.6	685.0	4 629.0	28 512.2	9 619.8	380 437.9	741.0	271.9	254.0	2 643.0
2011		0.0	0.0	599 079.4	73 128.2	2 562.1	103 880.8	174.0	4 254.3	6 554.6	50 934.0	12 949.3	655 689.4	7 252.0	4 753.3	398.4	7 709.5
2012		29.5	23.6	408 475.8	48 968.0	1 593.6	75 768.7	194.5	2 827.6	6 665.3	39 192.9	14 743.0	782 751.8	7 022.0	4 048.2	412.0	8 989.7
2013		377.0	313.6	355 142.0	35 846.9	3 114.2	96 312.6	318.9	3 485.7	8 284.6	44 225.1	14 001.3	621 966.0	6 934.0	3 727.4	519.6	8 232.4
2014		-	-	408 422.0	40 264.1	5 782.6	88 289.3	357.8	4 590.5	8 261.4	39 993.8	15 385.7	615 794.4	6 853.0	3 667.5	544.4	5 270.6
2009	January	272.0	119.3	597.0	18.2	64.4	3 383.8	3.6	40.5	275.6	859.0	121.3	3 108.1	450.0	123.1	15.9	117.9
	February	526.0	215.2	736.2	37.7	52.6	2 824.2	3.2	29.3	268.5	738.1	166.0	4 728.3	507.0	137.8	15.5	109.8
	March	469.0	247.8	462.0	33.1	63.0	3 139.3	2.2	28.8	228.2	686.4	190.6	5 542.0	611.0	185.7	11.2	87.4
	April	32.0	5.4	101.5	37.8	84.0	3 471.9	2.7	26.8	268.5	843.7	241.1	6 825.5	424.0	128.9	15.8	109.3
	May	130.0	77.2	13 124.0	258.8	110.8	3 302.5	2.7	25.9	237.1	832.0	268.8	7 839.1	279.0	84.8	14.9	102.0
	June	658.0	123.5	12 669.0	688.9	110.8	3 302.5	2.1	37.9	269.0	1 138.6	378.8	11 317.3	68.0	20.7	10.9	89.6
	July	1 029.0	385.0	15 370.0	1 701.5	151.6	4 349.2	2.5	34.5	261.7	1 129.3	550.8	16 417.5	124.0	37.7	14.4	105.9
	August	32.0	5.4	25 755.0	2 608.4	216.7	5 963.5	3.1	35.9	276.7	1 252.2	538.7	16 092.2	0.0	0.0	18.5	125.7
	September	138.0	13.4	25 025.0	2 493.7	231.2	7 626.2	4.2	54.1	383.5	1 838.2	569.6	17 879.5	0.0	0.0	25.8	168.3
	October	710.0	10.7	25 863.0	2 656.7	197.0	6 616.6	4.2	56.0	378.8	2 024.7	679.9	22 425.4	0.0	0.0	23.7	159.7
	November	974.8	364.6	31 814.0	3 560.1	190.3	7 299.0	4.3	54.1	372.0	2 023.3	659.4	23 372.3	0.0	0.0	21.5	145.7
	December	0.0	0.0	42 157.0	4 280.9	194.9	6 695.4	4.1	49.9	352.3	2 046.9	600.8	21 633.4	0.0	0.0	20.8	140.8
2010	January	860.4	546.7	40 695.0	3 779.2	206.0	8 052.1	5.0	67.5	413.1	2 432.3	609.3	21 756.7	0.0	0.0	24.6	169.3
	February	629.7	400.1	39 289.0	4 093.9	198.3	7 410.6	3.7	58.1	361.9	2 187.5	559.8	19 561.8	0.0	0.0	19.5	139.8
	March	363.1	230.7	39 882.0	4 228.5	188.5	6 652.6	5.4	67.2	400.6	2 422.2	762.0	27 051.5	164.0	70.5	22.1	162.5
	April	98.7	57.3	41 548.0	4 271.2	203.1	6 975.9	4.0	51.1	364.4	2 190.1	634.4	23 104.6	173.0	60.4	20.4	156.5
	May	36.7	41.3	50 557.0	4 948.2	173.8	6 297.1	5.3	65.3	397.7	2 458.0	691.2	26 406.3	404.0	141.0	21.0	194.8
	June	42.4	32.7	48 289.4	4 974.0	0.0	0.0	4.7	59.9	377.0	2 241.7	767.1	30 130.1	0.0	0.0	21.0	249.1
	July	0.0	0.0	42 792.6	4 707.3	260.7	9 244.6	4.8	61.6	405.2	2 290.2	841.7	32 252.5	0.0	0.0	21.6	260.5
	August	0.0	0.0	38 003.1	4 756.8	230.9	8 192.8	4.3	17.6	377.1	2 176.1	902.6	35 083.9	0.0	0.0	19.3	250.6
	September	0.0	0.0	40 533.0	4 274.2	237.3	9 029.6	5.5	68.1	423.0	2 557.5	878.8	35 507.1	0.0	0.0	22.8	290.4
	October	0.0	0.0	43 764.0	4 804.1	276.8	10 090.9	5.3	56.6	376.6	2 403.2	963.4	41 142.7	0.0	0.0	22.0	263.0
	November	0.0	0.0	42 689.0	5 362.1	277.2	10 119.8	4.3	55.6	338.0	2 345.3	1 029.9	44 962.4	0.0	0.0	17.9	231.8
	December	0.0	0.0	48 734.0	6 677.9	247.6	9 099.2	5.4	56.4	394.3	2 808.2	979.6	43 478.4	0.0	0.0	21.8	274.8

Table 3.1 Continued

Period		Asbestos		Chrome		Coal		Cobalt		Copper		Gold		Graphite		Iridium	
		mt	US$'000	mt	US$'000	000 mt	US$'000	mt	US$'000	mt	US$'000	kg	US$'000	mt	US$'000	kg	US$'000
2011	January	0.0	0.0	40 158.0	5 311.1	191.0	7 367.1	6.8	98.2	487.8	3 565.3	827.6	36 706.5	296.0	177.6	24.7	186.7
	February	0.0	0.0	50 778.0	6 432.2	149.0	6 682.7	13.0	259.9	429.8	2 847.0	796.0	34 733.5	485.0	226.1	27.2	486.5
	March	0.0	0.0	44 018.0	5 403.5	233.4	8 525.3	14.4	291.9	541.3	3 775.6	963.2	43 893.9	432.0	220.8	34.3	624.4
	April	0.0	0.0	56 179.0	6 374.0	210.9	7 928.5	15.0	306.8	605.6	4 370.0	990.9	46 394.9	601.0	412.9	37.3	768.2
	May	0.0	0.0	50 238.0	5 935.5	235.1	8 699.3	15.1	287.9	554.5	3 863.1	1 047.6	50 285.9	654.0	449.3	36.0	755.9
	June	0.0	0.0	55 413.4	6 508.8	221.3	9 288.5	15.5	274.9	572.5	3 984.3	966.0	46 878.9	684.0	469.9	37.7	796.4
	July	0.0	0.0	51 040.0	6 066.7	240.1	9 978.5	14.5	293.1	528.0	3 642.5	1 123.3	56 248.1	711.0	469.9	35.1	602.2
	August	0.0	0.0	50 931.0	5 961.4	257.3	9 571.2	13.2	255.5	486.0	3 322.7	1 124.8	62 907.1	609.0	417.0	30.3	591.4
	September	0.0	0.0	49 656.0	5 613.4	195.7	8 166.0	17.3	1 302.6	609.0	11 026.8	1 219.7	69 131.9	642.0	441.1	32.5	660.8
	October	0.0	0.0	46 947.0	5 696.1	199.8	9 080.2	16.7	327.4	566.7	3 588.5	1 238.7	66 039.0	773.0	531.1	29.9	612.8
	November	0.0	0.0	55 816.0	6 577.4	217.9	9 204.7	17.2	294.4	618.7	3 746.9	1 209.0	66 418.1	675.0	463.7	38.5	844.6
	December	0.0	0.0	47 905.0	7 248.2	210.5	9 388.9	15.1	261.7	554.8	3 201.1	1 442.5	76 051.6	690.0	474.0	34.8	779.7
2012	January	0.0	0.0	37 092.0	4 808.8	191.7	8 494.3	16.3	261.1	602.2	3 511.9	1 150.8	60 531.6	724.0	360.0	36.9	819.4
	February	0.0	0.0	43 632.0	4 956.6	108.8	5 954.2	15.8	258.6	559.4	3 393.0	1 081.8	59 763.4	572.0	286.0	33.5	773.7
	March	0.0	0.0	37 092.0	4 808.8	148.2	7 712.9	15.9	243.9	568.7	3 486.0	1 262.3	67 669.6	656.0	328.0	34.5	784.9
	April	0.0	0.0	46 496.0	5 109.2	128.9	6 667.6	17.7	279.0	634.7	3 989.9	1 224.4	64 406.3	503.0	251.5	39.7	894.3
	May	0.0	0.0	45 233.0	5 303.2	131.5	7 122.0	17.0	272.5	592.6	3 632.8	1 190.8	60 193.6	487.0	243.5	36.4	825.8
	June	0.0	0.0	50 250.0	5 511.9	121.4	5 300.8	16.2	256.8	599.6	3 432.4	1 261.5	63 995.7	640.0	410.9	56.5	811.4
	July	0.0	0.0	35 660.0	4 515.9	130.1	6 441.7	14.1	223.1	519.8	2 967.7	1 421.8	72 287.8	721.0	462.9	29.5	701.0
	August	29.5	23.6	37 647.0	4 509.5	125.5	5 783.6	16.1	237.3	583.4	3 294.2	1 324.5	68 565.0	643.0	412.8	36.6	807.5
	September	0.0	0.0	25 164.0	3 692.6	160.0	6 340.0	16.9	213.9	519.6	2 954.7	1 221.8	67 594.8	685.0	439.8	28.4	683.2
	October	0.0	0.0	19 517.8	2 638.3	168.0	7 608.5	21.2	218.9	609.4	3 508.8	1 308.3	72 595.4	577.0	370.4	30.8	695.9
	November	0.0	0.0	16 873.0	1 503.4	179.4	8 343.1	15.6	194.0	523.6	2 911.1	1 203.0	66 155.3	358.0	229.8	30.6	685.3
	December	0.0	0.0	13 819.0	1 609.9	0.0	0.0	11.7	168.6	352.3	2 110.4	1 092.1	58 993.3	456.0	252.6	18.6	507.3
2013	January	160.0	122.9	9 223.0	1 217.5	161.7	7 002.7	15.8	185.5	599.4	3 520.5	1 088.4	57 825.0	584.0	323.5	38.3	778.8
	February	-	-	11 142.0	1 081.2	169.6	7 593.7	18.5	198.3	702.6	4 195.4	1 066.4	51 096.8	604.0	336.4	44.9	906.7
	March	217.0	190.7	11 609.0	1 398.0	-	-	16.9	205.9	652.0	3 785.5	1 111.4	56 098.9	632.0	352.0	39.8	816.3
	April	-	-	10 520.0	1 297.4	138.5	5 489.3	15.4	182.0	607.3	3 382.3	1 168.2	55 561.0	660.0	367.6	36.8	772.3
	May	-	-	21 654.0	2 203.0	148.0	5 773.5	16.2	213.1	685.2	3 707.4	1 238.3	55 736.6	690.0	384.3	41.3	822.2
	June	-	-	27 925.0	3 105.6	152.0	5 927.1	19.6	260.0	798.6	4 060.0	1 146.6	48 969.0	620.0	345.0	44.9	822.0

Period		Asbestos		Chrome		Coal		Cobalt		Copper		Gold		Graphite		Iridium	
		mt	US$'000	mt	US$'000	000 mt	US$'000	mt	US$'000	mt	US$'000	kg	US$'000	mt	US$'000	kg	US$'000
	July	-	-	27 336.0	3 222.0	0.0	0.0	18.2	226.2	688.3	3 551.2	1 293.0	52 790.1	631.0	297.0	38.9	708.0
	August	-	-	43 096.0	3 905.9	418.5	16 848.1	13.0	222.4	666.0	3 470.3	1 203.0	51 327.3	613.0	341.4	39.9	680.3
	September	-	-	55 850.0	5 259.6	403.0	15 223.4	18.1	222.3	689.0	3 615.7	1 154.0	49 480.4	552.0	307.5	41.1	622.4
	October	-	-	48 170.0	4 594.9	359.6	16 424.0	106.2	968.1	851.1	4 002.4	1 225.0	51 381.4	449.0	250.1	34.5	494.4
	November	-	-	45 760.0	4 309.3	638.1	8 441.8	33.0	322.8	724.0	3 692.1	1 156.0	46 936.3	503.0	236.4	73.8	433.4
	December	-	-	42 857.0	4 252.5	525.2	7 589.1	28.0	279.1	621.0	3 242.3	1 151.0	44 763.2	396.0	186.1	45.4	375.6
2014	January	-	-	28 207.0	3 163.4	525.1	7 697.1	24.5	289.6	698.1	3 627.8	1 108.7	43 961.3	442.0	244.9	64.3	327.5
	February	-	-	36 794.0	3 586.7	513.6	7 388.1	32.9	326.5	689.3	3 338.4	1 059.5	42 730.4	544.0	255.7	70.5	322.3
	March	-	-	39 839.0	3 915.0	526.8	8 087.8	29.8	378.0	641.0	3 039.6	1 168.8	48 943.1	550.0	306.4	37.9	346.4
	April	-	-	46 781.0	4 176.1	0.0	0.0	26.8	373.1	639.7	3 127.6	1 147.5	47 487.2	536.0	298.6	39.3	414.6
	May	-	-	31 181.0	3 143.3	607.8	9 537.3	32.4	412.2	731.2	3 773.9	1 170.6	47 869.7	604.0	336.4	45.3	490.0
	June	-	-	37 057.0	3 392.3	480.2	6 348.0	34.5	401.2	773.9	3 808.7	1 145.5	46 471.2	613.0	341.4	49.2	552.9
	July	-	-	30 085.0	2 994.7	491.4	7 259.0	30.1	378.5	635.1	3 188.3	1 357.3	56 222.1	668.0	372.1	38.3	462.4
	August	-	-	32 256.0	2 988.6	576.4	7 838.1	31.0	423.0	704.0	3 540.4	1 314.9	54 206.1	601.0	334.8	42.9	536.3
	September	-	-	25 774.0	2 708.2	557.7	8 447.1	31.9	438.1	672.5	2 379.4	1 532.7	60 734.8	537.0	299.1	39.6	505.0
	October	-	-	32 577.0	3 198.2	500.5	8 768.0	28.0	404.6	621.7	3 125.4	1 358.2	52 982.2	619.0	342.9	34.7	436.7
	November	-	-	32 480.0	3 368.8	524.5	8 706.1	28.6	383.4	716.8	3 522.9	1 317.6	49 236.8	578.0	271.7	42.3	456.5
	December	-	-	35 391.0	3 628.9	478.6	8 212.8	27.1	382.3	738.1	3 521.5	1 704.4	64 949.4	561.0	263.7	40.1	420.0
2015	January	-	-	18 123.0	2 001.0	570.0	9 579.3	28.2	395.1	706.6	3 147.1	1 231.5	48 614.8	360.0	173.5	39.0	408.4
	February	-	-	23 894.0	2 070.2	489.8	8 413.5	32.2	395.8	702.5	2 936.5	1 292.7	50 673.6	525.0	326.0	39.5	418.2
	March	-	-	15 273.0	1 557.4	320.8	6 142.0	37.0	455.1	697.1	2 883.8	1 656.2	62 380.6	657.0	408.0	37.4	445.8
	April	-	-	8 956.0	1 075.4	195.0	4 280.0	27.7	354.3	695.2	2 957.1	1 479.3	56 464.0	540.0	300.8	39.7	466.9
	May	-	-	13 795.0	1 325.5	186.8	5 056.1	30.3	382.6	624.5	2 753.5	1 465.2	55 972.0	547.0	304.7	33.7	411.8
	June	-	-	15 779.0	1 533.5	203.4	5 583.2	22.7	351.9	510.7	2 365.7	1 744.0	66 010.0	716.0	398.3	25.0	356.7
2014	Jan-June	-	-	219 859.0	21 376.8	3 224.8	47 559.1	181.0	2 180.6	4 173.2	20 715.9	6 800.6	277 463.0	3 289.0	1 783.3	306.6	2 453.7
2015	Jan-June	-	-	221 737.0	21 208.1	3 191.1	47 121.0	186.6	2 269.5	4 110.2	20 276.5	7 049.2	289 723.7	3 515.0	1 910.5	280.5	2 588.6

Note: - Data not available
Source: Chamber of Mines

Table 3.1 Continued

Period		Nickel		Paladium		Phosphate		Platinum		Rhodium		Ruthenium		Other minerals [1]	Total
		mt	US$'000	mt	US$'000	'000 mt	US$'000	mt	US$'000	mt	US$'000	kg	US$'000	US$'000	US$'000
2009		4 857.5	62 204.0	5 354.4	41 186.8	-	-	6 848.9	239 089.2	568.1	24 054.4	412.8	711.6	874.7	621 285.1
2010		6 133.5	111 216.4	6 916.1	100 654.5	56.7	5 934.8	8 638.7	409 065.7	726.9	50 269.8	555.0	1 929.7	0.6	1 240 972.9
2011		7 992.2	175 457.7	8 421.7	178 280.9	46.0	4 549.7	10 826.6	538 276.3	940.3	52 442.6	823.0	3 369.8	1 176.5	1 853 903.1
2012		7 898.7	112 359.6	8 136.2	148 623.6	16.8	1 911.1	10 524.3	464 518.7	890.7	31 220.9	787.2	1 751.6	915.1	1 723 871.1
2013		12 961.9	158 302.0	10 152.7	205 789.8	-	-	13 065.5	554 006.5	1 146.1	32 891.4	1 011.6	1 527.6	-	1 766 626.9
2014		16 632.7	202 412.1	10 137.5	212 480.5	-	-	12 482.7	495 363.7	1 139.9	35 547.5	982.6	2 222.1	-	1 745 896.0
2009	January	362.6	3 446.9	400.3	2 315.5	0.0	0.0	522.4	13 413.2	42.8	1 419.3	31.5	63.7	0.0	28 428.5
	February	520.6	5 378.5	393.2	2 186.6	0.0	0.0	513.1	13 897.1	41.6	1 280.3	29.7	38.9	0.0	31 602.5
	March	289.7	2 832.9	305.6	1 814.6	0.0	0.0	397.1	12 004.3	32.7	1 026.4	22.3	55.6	0.0	27 686.9
	April	340.6	3 142.2	393.1	2 449.8	0.0	0.0	502.7	16 116.7	41.3	1 325.2	30.1	28.8	0.0	34 554.3
	May	311.9	2 913.6	353.2	2 249.7	0.0	0.0	457.7	15 146.8	38.4	1 299.4	27.3	31.0	0.0	34 162.8
	June	350.7	4 105.5	360.6	2 585.0	0.0	0.0	467.1	16 645.8	36.4	1 394.0	23.9	38.1	0.0	41 487.3
	July	346.3	4 380.0	381.8	2 727.9	0.0	0.0	492.9	17 155.8	40.3	1 582.0	28.7	48.4	0.0	50 054.7
	August	369.2	5 220.7	438.3	3 250.8	0.0	0.0	557.6	19 937.3	46.4	1 922.6	34.1	54.7	0.0	56 469.3
	September	509.1	7 593.9	610.3	4 754.6	0.0	0.0	784.9	27 948.5	65.3	2 808.5	47.4	74.2	0.0	73 253.1
	October	500.2	8 287.6	587.7	5 128.2	0.0	0.0	750.9	28 867.2	63.6	3 028.4	47.0	76.6	0.0	79 337.9
	November	493.9	7 599.0	579.8	5 473.7	0.0	0.0	718.5	28 667.2	61.7	3 144.7	45.6	77.6	0.0	81 781.1
	December	462.7	7 303.1	550.5	6 250.4	0.0	0.0	684.1	29 289.4	57.6	3 823.8	45.1	124.0	0.0	81 638.0
2010	January	550.1	8 290.1	624.1	7 049.0	2.4	518.5	789.1	34 460.6	65.4	4 407.6	51.9	97.2	518.5	91 626.8
	February	482.2	7 600.2	539.0	6 668.3	2.4	237.4	676.1	30 769.3	56.3	4 013.7	42.6	142.2	237.4	83 282.8
	March	530.3	8 839.2	596.4	7 790.7	3.1	443.7	747.4	34 824.7	62.5	4 569.1	48.1	118.2	443.7	97 471.3
	April	475.6	8 697.2	556.0	7 638.4	4.5	648.3	691.3	32 835.3	56.6	4 192.4	44.6	162.5	648.3	91 041.1
	May	521.4	10 481.7	587.6	8 673.2	5.6	583.5	725.0	35 781.7	60.0	4 598.2	45.9	187.5	583.5	100 858.5
	June	510.5	9 708.3	570.2	8 043.2	6.6	428.2	704.6	33 630.3	59.1	4 366.9	46.1	214.8	428.2	94 079.2
	July	536.6	9 468.7	599.8	8 427.9	9.0	712.5	744.0	35 153.9	62.2	4 433.8	47.7	207.4	712.5	107 220.9
	August	492.4	8 587.4	533.0	7 462.8	4.6	528.7	672.5	31 314.8	56.9	3 765.5	42.5	175.4	528.7	102 312.6
	September	565.8	10 221.3	620.5	9 000.6	5.2	544.7	783.2	36 410.6	67.7	4 342.9	49.9	181.9	544.7	112 428.7
	October	502.4	9 665.0	580.0	9 171.3	5.3	457.8	719.0	34 264.8	63.2	3 973.3	47.7	155.9	457.8	116 448.5
	November	443.3	9 011.4	498.2	8 762.6	3.7	457.8	624.4	31 009.5	53.0	3 422.2	38.4	127.2	457.8	115 867.7

Table 3.1 Continued

		Nickel		Paladium		Phosphate		Platinum		Rhodium		Ruthenium		Other minerals [1]	Total
Period		mt	US$'000	mt	US$'000	'000 mt	US$'000	mt	US$'000	mt	US$'000	kg	US$'000	US$'000	US$'000
	December	522.7	10 645.8	611.2	11 966.4	4.2	373.6	762.0	38 610.3	63.8	4 184.3	49.6	159.7	373.6	128 335.0
2011	January	601.1	12 269.9	659.7	14 123.9	1.4	222.6	840.8	42 279.7	70.9	4 642.9	56.0	191.5	222.6	127 357.9
	February	519.6	10 753.8	545.4	12 113.5	3.6	363.6	702.6	35 726.1	61.0	3 960.9	54.6	215.6	363.6	114 921.1
	March	643.2	13 689.1	686.3	14 938.2	7.5	667.7	862.9	39 129.5	78.4	5 029.2	70.0	265.3	667.7	136 630.6
	April	736.6	16 063.4	770.3	17 452.6	4.8	404.7	984.4	51 202.5	86.1	5 647.2	76.7	301.7	404.7	157 702.5
	May	675.1	14 078.7	725.3	15 559.7	4.8	404.7	935.9	47 760.5	83.1	5 006.8	75.8	280.9	404.7	153 574.7
	June	700.8	14 017.5	759.4	16 701.5	4.9	473.2	978.7	49 066.3	87.1	4 872.7	78.9	304.7	473.2	153 857.3
	July	634.0	12 306.7	691.8	15 243.3	1.6	514.7	899.4	46 515.3	80.8	4 367.7	74.0	261.0	514.7	156 638.7
	August	576.0	10 250.6	619.1	13 910.6	3.4	353.1	800.8	42 435.7	67.5	3 078.0	63.3	514.6	353.1	153 569.1
	September	814.4	37 546.4	813.3	16 598.5	6.0	287.5	1 038.4	53 770.2	87.1	4 298.6	66.9	293.0	287.5	209 172.2
	October	686.5	11 799.0	704.6	13 773.1	4.7	104.8	906.4	43 902.6	76.8	3 714.2	60.3	312.7	104.8	159 481.4
	November	745.0	12 652.2	763.5	15 357.4	1.3	334.0	994.1	48 630.5	84.9	4 660.6	76.9	256.8	334.0	169 441.3
	December	660.0	10 030.5	683.0	12 508.6	2.1	419.1	882.3	37 857.4	76.6	3 163.6	69.5	172.0	419.1	161 556.4
2012	January	720.4	10 941.2	742.5	13 694.8	0.0	0.0	952.0	41 538.8	82.9	3 220.6	75.1	144.2	0.0	148 376.7
	February	655.6	10 432.3	670.6	12 836.2	0.0	0.0	866.2	38 437.8	75.3	2 973.5	68.5	150.4	0.0	140 342.4
	March	676.2	10 399.1	698.8	13 498.4	0.0	0.0	907.5	41 147.7	78.1	3 090.0	70.0	157.9	0.0	153 570.3
	April	772.3	11 807.8	794.9	15 276.8	0.0	0.0	1 019.5	47 525.8	90.2	3 481.5	81.4	196.0	0.0	160 066.6
	May	711.4	10 281.7	732.8	13 417.0	0.0	0.0	963.9	42 379.8	83.7	3 179.5	76.4	178.8	0.0	147 030.2
	June	717.6	9 927.1	741.5	13 264.9	6.0	876.4	962.0	40 982.2	82.1	2 861.2	54.1	168.0	876.4	147 867.6
	July	606.5	8 182.2	615.4	10 415.4	6.0	687.2	798.5	33 005.7	67.9	2 322.9	61.9	141.9	687.2	142 601.9
	August	701.2	9 224.0	746.5	12 853.1	4.8	347.5	964.3	40 026.0	84.2	2 667.2	77.4	168.7	347.5	148 920.0
	September	607.8	8 247.4	607.0	11 243.1	0.0	0.0	790.6	36 415.0	63.9	1 931.8	57.4	123.6	0.0	139 879.8
	October	717.5	9 510.3	771.7	13 534.1	0.0	0.0	986.1	43 257.8	74.5	2 192.1	66.4	139.7	0.0	156 270.2
	November	613.8	7 747.1	649.5	11 784.6	0.0	0.0	828.4	37 713.1	67.9	2 116.0	60.8	100.5	0.0	139 483.2
	December	398.5	5 659.4	365.0	6 805.2	0.0	0.0	485.4	22 089.0	40.0	1 184.6	37.7	81.9	0.0	99 462.2
2013	January	739.4	10 102.9	777.8	14 997.5	-	-	1 007.6	46 252.1	87.8	2 631.3	79.1	127.0	-	145 087.2
	February	882.9	23 363.1	922.6	19 015.2	-	-	1 219.6	57 491.3	103.4	3 192.1	92.6	139.2	-	168 609.4
	March	775.1	10 724.5	802.1	16 975.5	-	-	1 069.0	49 231.2	92.1	2 977.5	82.4	125.6	-	142 881.6
	April	732.1	9 850.3	737.0	15 215.1	-	-	976.5	43 155.3	81.7	2 664.3	76.1	124.0	-	138 060.9
	May	836.1	10 599.2	854.0	17 265.7	-	-	1 093.6	46 969.4	95.8	3 025.3	86.8	144.6	-	146 844.3
	June	921.8	10 675.1	975.2	18 731.5	-	-	1 233.3	48 814.1	108.4	3 052.1	95.7	160.2	-	144 921.7
						-	-							-	

Table 3.1 Continued

		Nickel		Paladium		Phosphate		Platinum		Rhodium		Ruthenium		Other minerals [1]	Total
Period		**mt**	**US$'000**	**mt**	**US$'000**	**'000 mt**	**US$'000**	**mt**	**US$'000**	**mt**	**US$'000**	**kg**	**US$'000**	**US$'000**	**US$'000**
	July	828.6	9 328.4	832.6	17 055.0	-	-	1 064.5	43 163.0	94.2	2 580.0	81.7	140.0	-	133 060.9
	August	1 127.3	11 966.6	823.7	16 750.1	-	-	1 062.0	43 181.5	94.1	2 514.2	83.1	134.0	-	151 342.1
	September	1 816.5	18 005.6	851.8	17 339.0	-	-	1 112.5	46 322.7	95.9	2 594.1	85.2	112.6	-	159 105.3
						-	-							-	
	October	1 572.5	15 603.1	775.9	15 799.4	-	-	994.7	40 164.3	88.1	2 345.8	80.1	96.7	-	152 124.6
	November	1 494.3	15 458.0	907.9	18 608.0	-	-	1 131.2	46 117.3	103.1	2 733.7	64.1	103.8	-	147 392.9
	December	1 235.4	12 625.2	892.1	18 037.8	-	-	1 101.0	43 144.3	101.5	2 581.0	104.7	119.9	-	137 196.1
						-	-							-	
2014	January	1 559.9	15 206.5	809.2	16 684.5	-	-	1 014.6	42 392.0	93.5	2 446.7	58.3	958.4	-	136 999.7
	February	1 557.1	15 448.7	832.4	17 120.6	-	-	1 044.1	41 371.8	95.7	2 608.0	56.8	102.0	-	134 599.2
	March	1 098.1	11 175.7	786.0	16 601.7	-	-	980.1	39 880.2	88.5	2 556.1	78.1	101.0	-	135 330.9
						-	-							-	
	April	1 195.6	14 748.1	803.6	1 736.5	-	-	979.9	39 842.4	89.8	2 666.2	83.8	117.4	-	114 987.8
	May	1 563.5	20 917.0	955.3	21 549.8	-	-	1 154.0	47 608.1	106.0	3 025.6	97.5	135.9	-	158 799.2
	June	1 616.9	22 471.3	1 054.8	24 694.6	-	-	1 262.4	52 365.0	117.1	4 310.0	105.3	147.2	-	165 303.9
						-	-							-	
	July	1 357.3	18 669.7	802.0	19 100.3	-	-	971.7	40 452.0	89.8	2 675.9	82.1	116.4	-	151 891.3
	August	1 449.7	19 807.4	883.6	21 492.4	-	-	1 076.2	44 578.1	99.0	3 228.7	91.3	130.1	-	159 103.8
	September	1 444.3	19 734.8	802.5	19 534.0	-	-	995.6	39 788.5	90.2	3 073.4	83.1	114.9	-	157 757.4
						-	-							-	
	October	1 225.7	13 470.2	719.6	16 146.6	-	-	888.7	33 106.7	80.1	2 700.2	73.3	94.9	-	134 776.6
	November	1 308.9	15 999.0	873.6	19 555.5	-	-	1 090.6	38 618.9	98.8	3 293.8	87.7	103.3	-	143 516.8
	December	1 255.8	14 763.6	814.9	18 264.0	-	-	1 024.9	35 360.0	91.5	2 962.9	85.3	100.6	-	152 829.5
						-	-							-	
2015	January	1 222.1	13 559.1	803.9	17 816.0	-	-	1 022.3	35 391.2	91.1	2 963.2	81.1	94.9	-	134 143.6
	February	1 502.3	16 042.0	823.7	18 301.5	-	-	1 042.4	35 772.8	94.3	3 038.8	82.3	93.0	-	138 481.8
	March	1 716.1	15 122.9	766.7	17 008.8	-	-	955.0	31 482.6	86.7	2 744.5	79.4	91.6	-	140 723.1
	April	1 281.9	13 245.0	819.2	17 903.5	-	-	1 030.9	33 779.1	90.9	2 820.1	82.6	87.3	-	133 734.5
	May	1 293.2	12 182.4	693.3	15 234.5	-	-	868.5	28 050.2	77.7	2 344.2	70.5	76.2	-	124 094.7
	June	902.0	8 822.6	510.0	10 674.5	-	-	642.0	20 495.0	57.2	1 598.7	52.1	60.0	-	118 250.0
2014	Jan-June	8 591.1	99 967.4	5 241.3	114 016.6	-	-	6 435.0	263 459.4	590.6	17 612.6	479.8	699.3	-	869 287.8
2015	Jan-June	8 388.5	103 430.6	5 234.1	116 432.4	-	-	6 392.2	261 519.4	586.9	17 841.7	503.7	719.8	-	885 041.9

Note: - Data not available

1 - Other minerals include Ferrosilicon, Iron Ore, Iron Pyrites and Magnesite

Source: Chamber of Mines

3.2 Annual Exports of Non- Energy Minerals

Table 3.2 shows the value of exports of non-energy minerals for the years 2010 to 2015. The major non-energy minerals that were exported during the period were nickel ores which earned (US$1 654 985 636) during the reporting period (2010 – 2015). These were followed by chromium ores and concentrates (US$54 862 322), niobium, tantalum and vanadium ores and concentrates (US$19 901 914), other ashes and residues (US$ 5 521 900), copper ores and concentrates (US$5 396 407) zinc ores and concentrates (US$3 260 937), ash containing mainly copper (US$2 853 812), antimony ores and concentrates (US$2 839 161), non-agglomerated iron ores and concentrates (US$1 496 735), tin ores and concentrates (US$455 986), ash containing mainly zinc (US$397 409), other ores and concentrates (US$235 589), manganese ores and concentrates (US$219 291), lead ores and concentrates (US$207 183), precious metal ores excluding silver (US$201 537).

Table 3.2: Annual Exports of Non-Energy Minerals 2010-2015

Year	2010		2011		2012	
HS \ Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Non-agglomerated iron ores and concentrates	477 024	11 959	769	26	534 294	159 052
Agglomerated iron ores and concentrates	-	-	-	-	3 347	250
Roasted iron pyrites	433	37	-	-	-	-
Manganese ores/concentrates(inc.ferruginous), with manganese cont.of=>20%	690 000	43 650	495 000	46 809	-	-
Copper ores and concentrates	881 060	496 955	-	-	-	-
Nickel ores and concentrates	80 304 669	269 792 526	88 921 758	345 825 779	107 047 444	358 193 842
Cobalt ores and concentrates	-	-	20 006	94 918	-	-
Lead ores and concentrates	55	3	-	-	-	-
Zinc ores and concentrates	-	-	-	-	992 674	3 260 936
Tin ores and concentrates	-	-	-	-	194 912	442 855
Chromium ores and concentrates	331 220 313	39 721 246	105 847 087	14 099 042	8 923 517	1 041 904
Tungsten ores and concentrates	-	-	-	-	-	-
Niobium, tantalum and vanadium ores and concentrates	11 851	403 380	954 059	2 731 167	55 619	4 707 847
Silver ores and concentrates	-	-	903	93 000	-	-
Precious metal ores and concentrates (excl. silver)	1 190	51	5 029	200 486	-	-
Antimony ores and concentrates	3	1	93 050	98 426	518 485	859 310
Other ores and concentrates, n.e.s	105 418	7 298	111 948	220 404	1 461	205
Granulated slag (slag sand) from the manufacture of iron or steel	560 000	4 500	440 000	3 960	1 150 000	10 350
Ash and residues containing mainly zinc (excl. hard zinc spelter)	-	-	-	-	-	-
Ash and residues containing mainly copper	2 169 907	1	349 857	2 853 811	-	-
Containing antimony, beryllium, cadmium, chromium or their mixtures	-	-	-	-	-	-
Other ashes and residues nes	992	2 604	1 224	520	95	53
Other slag and ash, including seaweed ash (Kelp)	603	3	-	-	-	-

Table 3.2 Continued

Year HS \ Indicators	2013 Net Weight (Kg)	 US$Value	2014 Net Weight (Kg)	 US$Value	2015 Net Weight (Kg)	 US$Value
Non-agglomerated iron ores and concentrates	2 988 000	605 530	3 272 532	720 168	1 800 000	530 250
Agglomerated iron ores and concentrates	-	-	-	-	3 905	3 905
Roasted iron pyrites	-	-	-	-	-	-
Manganese ores/concentrates(inc.ferruginous), with manganese cont.of=>20%	666 000	72 852	672 000	55 980	-	-
Copper ores and concentrates	330 061	318 883	559 000	4 580 569	256 000	6 454 400
Nickel ores and concentrates	155 887 469	326 737 945	183 173 669	354 435 544	166 587 115	218 399 335
Cobalt ores and concentrates	-	-	-	-	-	-
Lead ores and concentrates	-	-	225 540	207 180	57 250	48 688
Zinc ores and concentrates	-	-	0	1	-	-
Tin ores and concentrates	-	-	1 027	13 131	-	-
Chromium ores and concentrates	-	-	800	130	9 926 003	860 704
Tungsten ores and concentrates	0	53	2 904	47 991	-	-
Niobium, tantalum and vanadium ores and concentrate	-	-	-	-	-	-
Silver ores and concentrates	-	-	-	-	-	-
Precious metal ores and concentrates (excl. silver)	63 043	7 601 102	75 584	4 458 418	24 231	1 285 929
Antimony ores and concentrates	1 685	771	703	229	137	613
Other ores and concentrates, nes	675 241	1 320 436	449 657	560 988	163 372	133 632
Granulated slag (slag sand) from the manufacture of iron or steel	2 230	800	1 723	6 882	109 011	19 226
Ash and residues containing mainly zinc (excl. hard zinc spelter)	2 399 580	30 226	1 609 600	16 096	-	-
Ash and residues containing mainly copper	-	-	-	-	5	120
Containing antimony, beryllium, cadmium, chromium or their mixtures	9	358 960	32 000	38 449	68 000	83 944
Other ashes and residues nes	-	-	-	-	-	-
Other slag and ash, including seaweed ash (Kelp)	-	-	42 000	42 000	-	-

Source: ZIMSTAT, Internationala Trade Statistics Branch

3.3 Annual Exports of Energy Minerals

Table 3.3 shows the value of exports of energy minerals for the years 2010 to 2014. The major energy minerals exported were coke, and semi-coke of coal, lignite or of peat (retort carbon) with a total value of (US$113 434 770) followed by bituminous coal (US$16 941 304) and diesel (US$180 984).

Table 3.3: Value of Exports of Energy Minerals by Year, 2010-2015

Year	2010		2011		2012	
HS \ Indicators	**Net Weight (Kg)**	**US$Value**	**Net Weight (Kg)**	**US$Value**	**Net Weight (Kg)**	**US$Value**
Bituminous coal, not agglomerated	113 331 613	6 302 237	54 686 370	2 024 089	52 074 450	2 043 493
Other coal, not agglomerated, nes	513	106	10 389	1 867	91 043	38 818
Briquettes, ovoids and similar solid fuels manufactured from coal	-	-	1 882 850	60 251	64 000	2 830
Coke and semi-coke of coal, of lignite or of peat; retort carbon	192 980 428	36 208 036	112 941 255	24 629 378	169 234 069	34 406 625
Coal gas, water gas, producer gas and similar gases, not petroleum gases	241 917	50 156	2 218	150	30 000	11 400
Power kerosene, other	6	5	-	-	-	-
Diesel	250 320	180 984	-	-	-	-
Other fuel oils	12	147	30	161	-	-
Natural gas, liquefied	-	-	400	408	-	-
Petroleum gases and other gaseous hydrocarbons, liquefied, nes	-	-	-	-	-	-
Natural gas in gaseous state	-	-	15 110	14 076	-	-
Petroleum gases and other gaseous hydrocarbons in gaseous state, nes	-	-	290	2 267	-	-

Table 3.3 Continued

Year	2013		2014		2015	
HS \ Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Bituminous coal, not agglomerated	99 348 720	6 571 485	-	-	-	-
Briquettes, ovoids and similar solid fuels manufactured from coal	35 000	875	-	-	-	-
Coke and semi-coke of coal, of lignite or of peat; retort carbon	72 516 747	17 914 331	5 529 000	276 400	-	-
Petroleum gases and other gaseous hydrocarbons, liquefied, nes	61 000	117 270	-	-	-	-

Source: ZIMSTAT, International Trade Statistics Branch

3.4 Annual Imports of Non-Energy Minerals

Table 3.4 shows the annual imports of non-energy minerals from 2010-2015. The major non-energy minerals imported into Zimbabwe during the period were aluminium ores and concentrates (US$ 2 651 827), ash containing mainly copper (US$ 1 470 478) and cobalt ores and concentrates (US$ 759 906).

Table 3.4: Annual Imports of Non-Energy Minerals by Year,-2010-2015

Year	2010		2011		2012	
HS \ Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Non-agglomerated iron ores and concentrates	10	10	0	127	-	-
Agglomerated iron ores and concentrates			22	431	-	-
Roasted iron pyrites	-	-	1	6	31 500	1 191
Manganese ores/concentrates(inc.ferruginous), with manganese cont.of=>20%	-	-	150	811	2	54
Copper ores and concentrates	-	-	2	154	404	3 538
Nickel ores and concentrates	354	2 371	1	115	9	1 910
Cobalt ores and concentrates	33 999	58 055	97 796	149 355	62 555	78 647
Aluminium ores and concentrates	3 042 330	354 366	7 524 550	877 628	4 373 683	536 880
Lead ores and concentrates	-	-	3 030	5 159	5 252	2 373
Zinc ores and concentrates	6 158	28 438	2 271	5 611	1 727	5 441
Tin ores and concentrates	5	155	24 000	15 853	1	77
Chromium ores and concentrates	20 001	32 061	781	2 581	15	1 642
Titanium ores and concentrates	10	5	22 000	44 773	240	1 379
Zirconium ores and concentrates	2 500	5 697	22	44	1 500	8 834
Silver ores and concentrates	-	-	-	-	4	51
Precious metal ores and concentrates (excl. silver)	6 901	41 777	749	29 366	-	
Antimony ores and concentrates	-	-	5	377	-	-
Other ores and concentrates, nes	53	8 422	1 383	3 534	341	3 670
Granulated slag (slag sand) from the manufacture of iron or steel	-	-	323	3 051	-	-
Slag, dross, etc, from the manufacture of iron or steel	1	12	-	-	-	-
Ash and residues containing mainly zinc (excl. hard zinc spelter)	3	58	-	-	-	-
Ash and residues containing mainly copper	438 965	1 282 253	10	234	-	
Ash and residues containing mainly aluminium	-	-	2 423	8 865	-	
Containing arsenic, mercury, thallium or their mixtures, of a kind used for extraction o	120	1 139	-	-	-	-
Other ashes and residues nes	13 080	937	-	-	19 505	9 307
Ash and residues from incineration of municipal waste	-	-	29 000	1 141	-	-
Other slag and ash, including seaweed ash (Kelp)	-	-	32 000	1 224	-	-

Table 3.4 Continued

Year	2013		2014		2015	
HS \ Indicators	**Net Weight (Kg)**	**US$Value**	**Net Weight (Kg)**	**US$Value**	**Net Weight (Kg)**	**US$Value**
Non-agglomerated iron ores and concentrates	223 600	13 527	2	60	-	-
Agglomerated iron ores and concentrates	-	-	55 840	1 436	-	-
Roasted iron pyrites	253 240	9 138	113 601	35 253	-	-
Manganese ores/concentrates(inc.ferruginous), with manganese	700	437	65 360	31 297	4 810	1 799
Copper ores and concentrates	125 060	574 040	240	530	-	-
Nickel ores and concentrates	183	1 696			-	-
Cobalt ores and concentrates	298 750	423 396	31 000	50 453	-	-
Aluminium ores and concentrates	5 005 700	637 130	1 932 311	245 823	3 727 250	473 943
Lead ores and concentrates	1	59	50 000	12 244	-	-
Zinc ores and concentrates	105	724	1 399	4 453	1 211	5 872
Tin ores and concentrates	-	-	1	29	5	31
Chromium ores and concentrates	78	1 226	57	12 965	-	-
Tungsten ores and concentrates	20	2 297			-	-
Titanium ores and concentrates	-	-	5	49	3 000	6 504
Zirconium ores and concentrates	1 000	4 592	200	845	-	-
Precious metal ores and concentrates (excl. silver)	65	374	131	2 460	-	-
Other ores and concentrates, nes	823	3 058	7 285	7 226	19 914	8 553
Granulated slag (slag sand) from the manufacture of iron or steel	-	-	2 400	2 613	4 810	1 799
Ash and residues containing mainly zinc (excl. hard zinc spelter)	-	-	230	51	-	-
Ash and residues containing mainly copper	-	-	27 942	187 991	-	-
Ash and residues containing mainly aluminium	-	-	2 600	1 596	3 727 250	473 943
Other ashes and residues nes	29	12	67 108	5 113	1 211	5 872
Other slag and ash, including seaweed ash (Kelp)	-	-	136 000	8 499	-	-

Source: ZIMSTAT, International Trade Statistics Branch

3.5 Production, Trade and Consumption of Energy

The major sources of electrical energy in Zimbabwe include hydro and thermal, with manufacturing, transport, construction, domestic, mining and quarrying sectors being the major consumers of this energy. Use of electrical energy for the years 2000 to 2014 is shown in Table 3.5. Of the five sectors manufacturing, transport and construction used most the energy (37 633 million kilowatts) followed by domestic customers (37 518 million kilowatt), other users (24 757 million kilowatts), mining and quarrying (18 839 million kilowatts) and agriculture and forestry (14 371 million kilowatts). There was a decline in use of electrical energy in the agriculture sector from 2006. There was also a decline in use of electricity in mining and quarrying; manufacturing; transport and construction from 2008 to 2010 due the economic crisis in the country.

Table 3.5: Use of Electrical Energy (millions of Kilowatt Hours) by Industry and Year

Period	Agriculture and Forestry	Mining and Quarrying	Manufacturing, Transport and Construction	Domestic Customers	Others	Total
2000	1 480.0	1 535.4	3 883.4	2 296.6	1 540.3	10 735.7
2001	1 987.1	1 398.9	1 871.9	1 209.1	1 627.1	5 217.0
2002	1 308.6	1 442.9	3 550.3	2 488.5	1 530.5	10 320.7
2003	1 248.3	1 426.1	3 453.3	2 821.2	1 612.5	10 561.5
2004	1 196.7	1 420.1	3 120.8	2 884.1	1 495.0	10 116.5
2005	1 302.7	1 410.5	3 232.9	2 796.3	1 665.9	10 408.2
2006	846.0	1 379.0	2 959.0	3 262.0	1 846.0	10 293.0
2007	738.0	1 152.0	2 579.0	2 755.0	1 801.0	9 025.0
2008	593.0	796.0	1 612.0	2 282.0	2 195.0	7 476.0
2009	599.0	802.0	1 404.0	2 609.0	1 638.0	7 051.0
2010	464.0	915.0	2 197.0	2 283.0	1 508.0	7 367.0
2011	511.0	1 088.0	2 255.0	2 635.0	1 554.0	7 940.0
2012	524.0	1 101.0	1 983.0	2 654.0	1 569.0	7 831.0
2013	888.0	1 360.0	1 755.0	2 047.0	1 506.0	8 285.0
2014	686.8	1 612.8	1 775.0	2 496.0	1 666.8	8 237.4
2015	972.2	1 694.6	829.3	2 248.0	1 131.5	5 032.5

Table 3.5 Continued

Period		Agriculture and Forestry	Mining and Quarrying	Manufacturing, Transport and Construction	Domestic Customers	Others	Total
2006	Jan-Jun	401.0	681.0	1 474.0	1 571.0	859.0	4 986.0
	July-Dec	445.0	698.0	1 485.0	1 691.0	987.0	5 307.0
2007	Jan-Jun	351.0	615.0	1 369.0	1 325.0	855.0	4 516.0
	July-Dec	387.0	537.0	1 210.0	1 430.0	946.0	4 509.0
2008	Jan-Jun	361.0	565.0	1 101.0	1 346.0	882.0	4 254.0
	July-Dec	232.0	231.0	511.0	936.0	1 313.0	3 222.0
2009	Jan-Jun	319.0	366.0	598.0	1 352.0	870.0	3 505.0
	July-Dec	280.0	436.0	806.0	1 257.0	768.0	3 546.0
2010	Jan-Jun	193.0	445.0	999.0	1 152.0	701.0	3 490.0
	July-Dec	271.0	470.0	1 198.0	1 131.0	807.0	3 877.0
2011	Jan-Jun	246.0	498.0	1 122.0	1 305.0	729.0	3 899.0
	Jul-Dec	265.0	590.0	1 133.0	1 330.0	825.0	4 041.0
2012	Jan-Jun	246.0	516.0	959.0	1 283.0	779.0	3 783.0
	July-Dec	278.0	585.0	1 024.0	1 371.0	790.0	4 048.0
2013	Jan-Jun	627.0	701.0	601.0	654.0	663.0	3 246.0
	Jul-Dec	261.0	659.0	1 154.0	1 393.0	843.0	4 310.0
2014	Jan-Jun	204.0	727.0	1 070.0	1 286.0	808.0	4 095.0
	Jul-Dec	481.0	885.0	706.0	1 209.0	861.0	4 142.0
2015	Jan-Jun	549.7	908.5	218.6	1 172.2	829.0	3 677.9
	Jul-Dec	422.5	786.1	610.8	1 075.8	852.5	3 747.6

Table 3.5 Continued

Period		Agriculture and Forestry	Mining and Quarrying	Manufacturing, Transport and Construction	Domestic Customers	Others	Total
2014	January	33.4	110.2	175.9	221.2	135.6	676.2
	February	44.0	122.6	164.1	217.3	143.5	691.6
	March	33.7	114.3	176.5	266.1	132.1	722.8
	April	38.0	136.1	145.8	187.9	147.6	655.4
	May	18.7	105.8	224.4	183.1	107.6	639.6
	June	36.4	137.9	183.4	211.3	139.9	708.9
	July	42.6	109.8	205.0	204.5	137.9	699.7
	August	40.6	121.3	181.6	219.4	152.6	715.5
	September	42.1	130.1	179.9	193.7	139.9	685.7
	October	115.7	199.4	38.0	200.6	140.3	694.0
	November	119.4	182.3	49.7	182.5	150.8	684.7
	December	122.3	143.0	50.6	208.4	138.9	663.2
2015	January	73.0	170.6	23.9	202.8	143.7	614.0
	February	84.0	157.8	29.4	179.1	140.3	590.7
	March	86.0	139.0	37.5	199.2	132.1	593.9
	April	94.1	124.2	49.5	192.8	138.4	599.0
	May	98.8	160.2	41.4	190.4	141.9	632.6
	June	113.9	156.6	36.8	207.7	132.6	647.7
	July	128.7	155.1	28.4	218.7	147.5	678.3
	August	131.8	149.0	38.4	202.1	155.0	676.3
	September	42.0	109.0	156.0	156.0	139.0	602.0
	October	43.0	126.0	138.0	162.0	138.0	607.0
	November	40.0	124.0	134.0	160.0	137.0	595.0
	December	37.0	123.0	116.0	177.0	136.0	589.0
2014	Jan-Dec	686.8	1 612.8	1 775.0	2 496.0	1 666.8	8 237.4
2015	Jan-Dec	972.2	1 694.6	829.3	2 248.0	1 681.5	7 425.5

Source: ZIMSTAT, International Trade Statistics Branch

3.6 Aquatic Resources

Table 3.6 shows the net weight and value (US$) of imports of fish and fish products for the period 2010 to 2015. The major imports by value during this period were mackerel, (scombrids), fresh or chilled (excl. livers and roes) followed by herrings and sardines. Table 3.7 shows the corresponding exports.

Table 3.6: Imports of Fish and Fish Products by year 2010 - 2015

Year SITCR3 \ Indicators	2010 Net Weight in Kgs	US$Value	2011 Net Weight in Kgs	US$Value	2012 Net Weight in Kgs	US$Value
Fish, live	789	33 753	546	20 886	600	12 905
Salmonidae, fresh or chilled (excluding livers and roes)	1 158	15 635	4 304	11 293	90 057	106 802
Flat-fish, fresh or chilled (excluding livers and roes)	184	878	212	2 473	0	0
Tunas, skipjack or stripe-bellied bonito, fresh or chilled (excluding livers and roes)	84	160	0	0	213	889
Herrings, sardines, sardinella, brislings or sprats, fresh or chilled (excluding livers and roes)	1 983	11 973	487	4 042	278	1 424
Cod, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), fresh or chilled (excluding livers and roes)	26 440	24 138	27 020	36 883	28 060	35 751
Other fish, fresh or chilled (excluding livers and roes)	2 413	38 432	1 237	5 976	145	901
Fish livers and roes, fresh or chilled	30	419	10	83	0	0
Salmonidae, frozen (excluding livers and roes)	17 411	250 483	6 615	114 125	4 434	68 031
Flat-fish, frozen (excluding livers and roes)	736	2 101	6 637	35 600	3 147	17 589
Tunas, skipjack or stripe-bellied bonito, frozen (excluding livers and roes)	100	1 239	316	6 439	104	9 263
Herrings, sardines, sardinella, brislings or sprats, frozen (excluding livers and roes)	156 965	145 003	891 993	734 423	243 198	201 918

Table 3.6 Continued

Year SITCR3 \ Indicators	2010 Net Weight in Kgs	US$Value	2011 Net Weight in Kgs	US$Value	2012 Net Weight in Kgs	US$Value
Cod, frozen (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), frozen (excluding livers and roes)	4 550 816	5 119 637	5 370 708	6 314 207	9 255 834	9 274 578
Hake, frozen (excluding livers and roes)	25 496	120 210	47 740	256 632	14 796	71 626
Other fish, frozen (excluding livers and roes)	270 585	317 394	1 336 363	1 603 041	399 819	518 646
Fish livers and roes, frozen	17 000	41 993	0	0	0	0
Fish fillets and other fish meat, fresh or chilled	45 153	238 377	115 146	358 529	181 218	743 991
Fish meat (other than fillets), frozen	87 982	271 863	36 232	237 231	50 161	157 246
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus), not in fillets, dried, whether or not salted	1 150	3 501	10	33	723	1 487
Fish fillets, dried, salted or in brine	6 430	12 423	3 350	6 091	5 859	33 741
Fish, dried, whether or not salted, n.e.s.	2 480 403	5 188 278	4 383 026	9 446 845	3 738 965	7 406 527
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)	5	55	0	0	0	0
Anchovies	525	945	35	713	42	1 665
Other fish	18 390	68 410	491	5 048	36	161
Shrimps and prawns, frozen	9 265	92 523	23 575	194 409	18 265	121 955
Other crustaceans, frozen, including flours, meals and pellets of crustaceans, fit for human consumption.	1 561	5 473	3 886	12 880	2 873	44 470
Oysters	1 654	13 117	528	3 738	2 628	15 138
Cuttlefish, octopus and squid, fresh or chilled	605	14 718	9 518	90 831	5 294	30 640
Other molluscs and aquatic invertebrates, fresh or chilled	5 071	28 142	4 589	23 110	2 021	4 161
Cuttlefish, octopus and squid, frozen, dried, salted or in brine; flours, meals and pellets thereof, fit for human consumption	893	6 927	355	5 796	1 963	14 335
Other molluscs and aquatic invertebrates, frozen, dried, salted or in brine, including flours, meals and pellets of aquatic invertebrates other than crustaceans, fit for human consumption	225 983	495 511	47 936	112 604	1 908	8 780
Salmon, whole or in pieces, but not minced	11 649	25 447	38 735	91 517	84 131	223 258
Herrings, sardines, sardinella and brislings or sprats, whole or in pieces, but not minced	576 565	1 036 197	724 935	1 588 085	583 179	1 262 832
Tunas, skipjack and Atlantic bonito (Sarda spp.), whole or in pieces, but not minced	52 799	164 239	47 759	221 895	78 347	368 823
Mackerel, whole or in pieces, but not minced	63 643	129 086	3 284	15 211	1 242	4 488
Other fish, whole or in pieces, but not minced	107 688	290 431	224 638	538 929	210 965	571 604
Other fish, prepared or preserved, n.e.s.	75 270	224 121	22 792	66 926	69 550	257 965
Caviar and caviar substitutes prepared from fish eggs	13	677	0	0	10	103
Crustaceans, prepared or preserved, n.e.s.	4 934	27 904	698	4 348	5 259	10 766
Molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.	41	375	0	0	710	4 563

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.6: Imports of Fish and Fish Products by year 2013 - 2015

Year	2013		2014		2015	
SITCR3 \ Indicators	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value
Fish, live	3 143	10 729	759	10 453	118	981
Salmonidae, fresh or chilled (excluding livers and roes)	49 198	112 427	60 557	159 713	88 375	146 320
Flat-fish, fresh or chilled (excluding livers and roes)	118	1 349	45	246	634	1 709
Tunas, skipjack or stripe-bellied bonito, fresh or chilled (excluding livers and roes)	115	2 718	0	0	3 357	24 879
Herrings, sardines, sardinella, brislings or sprats, fresh or chilled (excluding livers and roes)	0	0	0	0	95	416
Cod, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), fresh or chilled (excluding livers and roes)	1 207	11 595	1 011	17 490	0	0
Other fish, fresh or chilled (excluding livers and roes)	55 257	104 844	466	6 311	699	1 676
Fish livers and roes, fresh or chilled	0	0	0	0	0	0
Salmonidae, frozen (excluding livers and roes)	6 131	51 951	14 499	67 989	7 099	47 227
Flat-fish, frozen (excluding livers and roes)	7 070	33 517	36 496	44 287	4 821	13 755
Tunas, skipjack or stripe-bellied bonito, frozen (excluding livers and roes)	40	4 367	953	5 357	340	145
Herrings, sardines, sardinella, brislings or sprats, frozen (excluding livers and roes)	36 661	29 047	69 582	61 289	35 327	56 528
Cod, frozen (excluding livers and roes)	0	0	25	1 530	0	0
Mackerel (scombrids), frozen (excluding livers and roes)	4 824 656	5 101 631	560 634	503 602	44 300	27 698
Hake, frozen (excluding livers and roes)	153 962	218 238	435 792	529 878	291 015	423 570
Other fish, frozen (excluding livers and roes)	6 029 445	6 081 896	11 819 541	11 443 572	14 500 916	11 973 786
Fish livers and roes, frozen	26	226	0	0	100	26
Fish fillets and other fish meat, fresh or chilled	25 784	154 214	18 043	127 205	30 094	192 089
Fish meat (other than fillets), frozen	32 832	182 272	30 421	99 681	27 458	118 822
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus), not in fillets, dried, whether or not salted	0	0	0	0	0	0
Fish fillets, dried, salted or in brine	774	4 202	2 356	9 680	92	160

Table 3.6 Continued

Year SITCR3 \ Indicators	2013 Net Weight in Kgs	 US$Value	2014 Net Weight in Kgs	 US$Value	2015 Net Weight in Kgs	 US$Value
Fish, dried, whether or not salted, n.e.s.	4 186 215	10 587 711	3 521 371	8 192 435	4 097 313	8 893 514
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)	0	0	80	1 076	0	0
Anchovies	1 702	1 990	5	20	0	0
Other fish	2 021	1 506	946	2 354	2 529	3 139
Shrimps and prawns, frozen	56 669	569 997	46 739	393 931	71 374	499 868
Other crustaceans, frozen, including flours, meals and pellets of crustaceans, fit for human consumption.	3 429	19 902	453	905	1 772	4 369
Oysters	238	3 995	614	3 130	200	2 051
Cuttlefish, octopus and squid, fresh or chilled	13 758	75 716	3 335	15 428	13 970	60 966
Other molluscs and aquatic invertebrates, fresh or chilled	2 436	12 324	3 759	16 726	4 319	14 216
Cuttlefish, octopus and squid, frozen, dried, salted or in brine; flours, meals and pellets thereof, fit for human consumption	3 844	28 979	10 210	42 449	19 558	92 305
Other molluscs and aquatic invertebrates, frozen, dried, salted or in brine, including flours, meals and pellets of aquatic invertebrates other than crustaceans, fit for human consumption	2 719	12 218	2 555	9 707	2 438	9 449
Salmon, whole or in pieces, but not minced	25 068	80 294	4 857	29 378	5 200	33 993
Herrings, sardines, sardinella and brislings or sprats, whole or in pieces, but not minced	1 098 614	2 094 022	771 678	894 159	1 446 076	1 765 710
Tunas, skipjack and Atlantic bonito (Sarda spp.), whole or in pieces, but not minced	44 225	227 198	226 738	580 057	87 747	473 987
Mackerel, whole or in pieces, but not minced	0	0	63 640	89 646	49 867	73 752
Other fish, whole or in pieces, but not minced	157 382	501 092	44 661	124 504	71 007	151 497
Other fish, prepared or preserved, n.e.s.	70 003	150 390	27 911	78 306	87 986	303 766
Caviar and caviar substitutes prepared from fish eggs	13	334	3	32	5	37
Crustaceans, prepared or preserved, n.e.s.	4 453	34 790	5 431	72 848	10 196	74 437
Molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.	9 432	37 052	14 359	45 865	7 785	34 545

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.7: Exports of Fish and Fish Products by year 2010 - 2015

Year	2010 Net Weight in Kgs	2010 US$Value	2011 Net Weight in Kgs	2011 US$Value	2012 Net Weight in Kgs	2012 US$Value
Fish, live	0	0	0	0	0	0
Salmonidae, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Flat-fish, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Tunas, skipjack or stripe-bellied bonito, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Herrings, sardines, sardinella, brislings or sprats, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Cod, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Other fish, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Fish livers and roes, fresh or chilled	0	0	0	0	0	0
Salmonidae, frozen (excluding livers and roes)	9 000	9 000	0	0	30 525	101 196
Flat-fish, frozen (excluding livers and roes)	600	1 800	0	0	0	0
Tunas, skipjack or stripe-bellied bonito, frozen (excluding livers and roes)	0	0	0	0	0	0
Herrings, sardines, sardinella, brislings or sprats, frozen (excluding livers and roes)	0	0	0	0	0	0
Cod, frozen (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), frozen (excluding livers and roes)	0	0	0	0	0	0
Hake, frozen (excluding livers and roes)	0	0	0	0	0	0
Other fish, frozen (excluding livers and roes)	1 077 585	3 037 253	1 892 104	4 097 805	2 427 012	6 077 413
Fish livers and roes, frozen	0	0	0	0	0	0
Fish fillets and other fish meat, fresh or chilled	0	0	0	0	1	1
Fish meat (other than fillets), frozen	19 684	84 283	105 540	545 092	19 660	61 692
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus), not in fillets, dried, whether or not salted	0	0	0	0	0	0
Fish fillets, dried, salted or in brine	0	0	0	0	0	0

Table 3.7 Continued

Year	2010		2011		2012	
	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value
Fish, dried, whether or not salted, n.e.s.	1 400	4 900	0	0	902	3 241
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)	0	0	0	0	0	0
Anchovies	0	0	0	0	0	0
Other fish	0	0	0	0	0	0
Shrimps and prawns, frozen	0	0	0	0	2 500	2 500
Other crustaceans, frozen, including flours, meals and pellets of crustaceans, fit for human consumption.	0	0	0	0	0	0
Oysters	0	0	0	0	0	0
Cuttlefish, octopus and squid, fresh or chilled	0	0	0	0	0	0
Other molluscs and aquatic invertebrates, fresh or chilled	0	0	0	0	0	0
Cuttlefish, octopus and squid, frozen, dried, salted or in brine; flours, meals and pellets thereof, fit for human consumption	0	0	0	0	0	0
Other molluscs and aquatic invertebrates, frozen, dried, salted or in brine, including flours, meals and pellets of aquatic invertebrates other than crustaceans, fit for human consumption	0	0	0	0	0	0
Salmon, whole or in pieces, but not minced	0	0	0	0	0	0
Herrings, sardines, sardinella and brislings or sprats, whole or in pieces, but not minced	0	0	48 272	124 922	7 175	16 636
Tunas, skipjack and Atlantic bonito (Sarda spp.), whole or in pieces, but not minced	0	0	0	0	0	0
Mackerel, whole or in pieces, but not minced	0	0	0	0	0	0
Other fish, whole or in pieces, but not minced	0	0	0	0	0	0
Other fish, prepared or preserved, n.e.s.	0	0	0	0	1 776	10 134
Caviar and caviar substitutes prepared from fish eggs	0	0	0	0	0	0
Crustaceans, prepared or preserved, n.e.s.	0	0	0	0	0	0
Molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.	0	0	0	0	0	0

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.7: Exports of Fish and Fish Products by year 2013 - 2015

Year	2013		2014		2015	
	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value	Net Weight in Kgs	US$Value
Fish, live	2 160	71 280	6 600	217 800	8 000	255 800
Salmonidae, fresh or chilled (excluding livers and roes)	0	0	7	3	0	0
Flat-fish, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Tunas, skipjack or stripe-bellied bonito, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Herrings, sardines, sardinella, brislings or sprats, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Cod, fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), fresh or chilled (excluding livers and roes)	0	0	0	0	0	0
Other fish, fresh or chilled (excluding livers and roes)	0	0	8 820	26 901	19 365	53 344
Fish livers and roes, fresh or chilled	0	0	0	0	0	0
Salmonidae, frozen (excluding livers and roes)	0	0	0	0	9	5
Flat-fish, frozen (excluding livers and roes)	0	0	0	0	0	0
Tunas, skipjack or stripe-bellied bonito, frozen (excluding livers and roes)	0	0	0	0	0	0
Herrings, sardines, sardinella, brislings or sprats, frozen (excluding livers and roes)	0	0	0	0	0	0
Cod, frozen (excluding livers and roes)	0	0	0	0	0	0
Mackerel (scombrids), frozen (excluding livers and roes)	0	0	0	0	0	0
Hake, frozen (excluding livers and roes)	0	0	0	0	0	0
Other fish, frozen (excluding livers and roes)	3 166 440	8 322 102	5 770 938	14 661 920	4 919 668	11 960 839
Fish livers and roes, frozen	5 010	9 419	0	0	0	0
Fish fillets and other fish meat, fresh or chilled	3 592	35 757	57 613	337 036	18 004	178 976
Fish meat (other than fillets), frozen	49 197	157 977	9 039	26 747	0	0
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus), not in fillets, dried, whether or not salted	0	0	0	0	0	0
Fish fillets, dried, salted or in brine	20	400	0	0	1 000	6 679

Table 3.7 Continued

Year	2013 Net Weight in Kgs	2013 US$Value	2014 Net Weight in Kgs	2014 US$Value	2015 Net Weight in Kgs	2015 US$Value
Fish, dried, whether or not salted, n.e.s.	920	1 368	930	2 793	2 089	9 128
Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)	0	0	0	0	0	0
Anchovies	0	0	0	0	0	0
Other fish	0	0	0	0	0	0
Shrimps and prawns, frozen	0	0	0	0	0	0
Other crustaceans, frozen, including flours, meals and pellets of crustaceans, fit for human consumption.	0	0	0	0	0	0
Oysters	0	0	0	0	0	0
Cuttlefish, octopus and squid, fresh or chilled	0	0	0	0	0	0
Other molluscs and aquatic invertebrates, fresh or chilled	0	0	0	0	0	0
Cuttlefish, octopus and squid, frozen, dried, salted or in brine; flours, meals and pellets thereof, fit for human consumption	0	0	0	0	0	0
Other molluscs and aquatic invertebrates, frozen, dried, salted or in brine, including flours, meals and pellets of aquatic invertebrates other than crustaceans, fit for human consumption	0	0	0	0	0	0
Salmon, whole or in pieces, but not minced	0	0	0	0	0	0
Herrings, sardines, sardinella and brislings or sprats, whole or in pieces, but not minced	0	0	16 065	20 773	0	0
Tunas, skipjack and Atlantic bonito (Sarda spp.), whole or in pieces, but not minced	3 291	14 444	0	0	0	0
Mackerel, whole or in pieces, but not minced	0	0	0	0	0	0
Other fish, whole or in pieces, but not minced	0	0	0	0	0	0
Other fish, prepared or preserved, n.e.s.	10 020	4 599	0	0	0	0
Caviar and caviar substitutes prepared from fish eggs	0	0	0	0	0	0
Crustaceans, prepared or preserved, n.e.s.	0	0	0	0	0	0
Molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.	0	0	0	0	0	0

Source: ZIMSTAT, International Trade Statistics Branch

3.7 Agriculture Production

Agriculture in Zimbabwe is distinguished by the existence of six major subsectors namely Communal Lands; Old Resettlement Schemes; Small and Large Scale Commercial Farms; A1 and A2 Farms. These subsectors are determined by agro-ecological factors; tenure system; farm sizes; crop and livestock production systems; levels of technology use; management and income levels.

The five agro-ecological regions, known as natural regions are classified on the basis of the rainfall regime, soil quality and vegetation among other physical factors. The quality of the land resource declines from Natural Region (NR) I through to NR V (Moyo, 2000; Vincent and Thomas, 1961).

In all the 6 sectors, agriculture production is for both own consumption and commerce. The main agricultural products produced include maize (the staple food crop), groundnuts, beans, vegetables, meat, milk and fuel wood, as well as cash crops such as tobacco and horticultural products, particularly cut flowers.

Agriculture is the mainstay of the Zimbabwean economy and provides many raw materials required by the manufacturing sector.

Table 3.8: Area Planted, Crops Reaped and Yield per Hectare by Kind of Crop and Year

Year	Maize			Sorghum			Mhunga			Finger Millet (Rapoko)		
	Area (h)	Prod. (t)	Yield (kg/h)	Area (h)	Prod. (t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)
1994	1 738 450	2 109 283	1 213	160 632	52 621	328	0	0	0	0	0	0
1995	1 487 606	884 962	595	113 806	38 336	337	0	0	0	0	0	0
1996	1 459 611	2 065 347	1 415	205 909	90 215	438	244 259	51 814	212	37 951	17 999	474
1997	1 406 074	1 552 703	1 104	179 727	64 427	358	183 042	31 383	171	39 273	16 233	413
1998	1 181 207	1 195 929	1 012	126 039	39 154	311	142 761	15 368	108	26 543	5 661	213
1999	1 477 990	1 606 588	1 087	143 912	57 535	400	146 849	25 161	171	36 595	16 735	457
2000	1 373 117	1 619 651	1 180	116 248	46 307	398	122 717	19 359	158	29 673	11 634	392
2001	1 239 988	1 526 328	1 231	110 138	56 358	512	98 883	20 166	204	57 306	23 028	402
2002	1 327 854	604 758	455	81 513	21 614	265	65 253	4 006	61	67 103	10 157	151
2003	1 352 368	1 058 786	783	128 530	71 257	554	134 557	23 128	172	35 610	18 434	518
2004	1 818 038	2 357 152	1 297	255 827	158 444	619	172 603	48 194	279	55 832	23 546	422
2005	2 027 268	1 255 822	619	178 421	48 639	273	142 491	20 352	143	39 168	10 362	265
2006	2 043 941	1 997 403	977	288 973	118 229	409	188 042	47 347	252	61 416	24 965	406
2007	1 744 615	1 509 210	865	289 859	96 571	333	165 406	33 473	202	39 478	16 463	417
2008	-	-	-	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-	-	-	-
2010	1 362 563	1 192 399	875	272 679	73 675	270	189 471	38 888	205	48 811	12 234	251
2011	1 538 577	1 010 473	657	222 988	50 549	227	183 536	28 544	156	29 509	6 999	237
2012	1 385 161	1 095 954	791	216 796	44 346	205	184 222	28 596	155	24 237	7 882	325
2013	1 259 593	938 282	745	226 843	69 510	306	177 638	30 298	171	22 081	6 784	307
2014	1 118 376	1 051 444	940	226 126	103 768	459	152 359	45 172	296	19 288	9 006	467
2015	1 107 688	642 793	580	146 363	35 303	241	126 855	14 544	115	15 199	3 128	206

Table 3.8 Continued

Year	Groundnuts			Edible Dry Beans			Paprika			Cotton		
	Area (h)	Prod. (t)	Yield (kg/h)	Area (h)	Prod. (t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)
1994	130 015	91 050	700	0	0	0	0	0	0	224 462	194 269	865
1995	150 446	45 675	304	0	0	0	0	0	0	208 147	98 411	473
1996	128 341	67 562	526	15 602	4 834	310	2 454	5 433	2 214	232 518	233 979	1 006
1997	167 591	123 633	738	16 390	7 878	481	6 118	14 026	2 293	300 542	195 212	650
1998	178 555	46 148	258	20 025	5 712	285	9 610	14 655	1 525	236 287	179 347	759
1999	132 117	80 240	607	14 483	9 489	655	5 998	10 718	1 787	310 534	197 259	635
2000	175 773	124 117	706	15 088	7 443	493	3 922	7 342	1 872	282 469	241 964	857
2001	275 036	168 749	614	15 229	7 262	477	7 893	8 797	1 115	384 574	280 254	729
2002	258 610	56 378	218	15 207	7 059	464	16 473	9 825	596	401 897	194 189	483
2003	105 052	86 494	823	15 573	10 760	691	12 104	14 192	1 173	195 077	159 497	818
2004	133 339	64 157	481	68 583	56 776	828	13 258	10 877	820	331 716	364 266	1 098
2005	200 592	57 754	288	47 450	21 482	453	5 568	3 204	575	294 000	196 300	668
2006	176 196	83 170	472	66 007	30 332	460	5 762	3 821	663	266 084	207 912	781
2007	260 518	126 768	487	74 115	46 067	622	2 965	1 527	515	348 696	223 996	642
2008	-	-	-	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-	-	-	-
2010	319 608	136 719	428	79 189	31 248	395	1 140	685	600	198 824	149 907	754
2011	329 803	97 504	296	53 786	16 028	298	1 742	771	443	246 559	140 267	569
2012	214 266	72 194	337	52 123	20 935	402	1 181	814	689	358 410	247 752	691
2013	164 311	85 504	520	66 155	29 083	440	1 156	542	468	195 072	141 478	725
2014	137 350	58 222	424	30 768	14 087	458	315	161	511	112 066	42 823	382
2015	152 290	52 096	342	35 461	14 700	415	315	161	511	112 066	42 823	382

Table 3.8 Continued

Year	Tobacco			Soyabeans			Sunflower		
	Area (h)	Prod.(t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)	Area (h)	Prod.(t)	Yield (kg/h)
1994	69 389	177 039	2 551	52 203	110 758	2 122	109 517	39 775	363
1995	72 460	178 652	2 466	57 504	96 555	1 679	62 120	17 421	280
1996	74 834	177 884	2 377	51 258	96 948	1 891	57 787	28 180	488
1997	80 607	171 191	2 124	53 454	97 063	1 816	50 132	18 863	376
1998	83 225	197 222	2 370	60 290	116 329	1 929	32 845	14 227	433
1999	79 108	175 282	2 216	52 931	120 685	2 280	22 130	12 308	556
2000	76 486	190 242	2 487	60 650	135 417	2 233	17 473	9 224	528
2001	67 108	159 853	2 382	64 009	140 793	2 200	43 830	30 393	693
2002	55 588	113 635	2 044	51 282	84 441	1 647	24 118	4 631	192
2003	47 293	93 514	1 977	25 390	41 197	1 623	21 355	16 923	792
2004	55 584	78 312	1 409	49 572	85 827	1 731	37 800	20 239	535
2005	51 167	83 230	1 627	41 871	56 730	1 355	18 129	7 419	409
2006	38 865	44 451	1 144	47 137	70 273	1 491	46 725	16 742	358
2007	75 202	104 303	1 387	102 699	180 404	1 757	75 245	31 174	414
2008	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-
2010	94 175	109 737	1 165	42 288	57 328	1 356	28 945	11 836	409
2011	117 287	125 056	1 066	44 672	53 849	1 205	26 164	8 237	315
2012	92 705	139 179	1 501	50 408	77 124	1 530	19 628	7 349	374
2013	125 717	147 068	1 170	50 785	66 740	1 314	18 216	7 047	387
2014	132 126	171 083	1 295	44 155	41 768	946	16 635	6 398	385
2015	132 126	171 083	1 295	44 155	41 768	946	16 635	6 398	385

NB: - *Data not available*

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.9: Number of Holdings, Area Planted in Hectares by Kind of Crop and Region, 2015

Kind of crop		Region I	Region II	Region III	Region IV	Region V	Total
White Maize	Farm count	33 460	339 691	228 307	409 737	180 340	**1 191 535**
	Area planted (ha)	21 703	308 149	221 098	390 961	154 952	**1 096 863**
	Crop reaped (t)	22 814	360 800	122 402	114 929	17 460	**638 406**
	Yield (kg/ha)	1 051	1 171	554	294	113	**582**
Yellow Maize	Farm count	77	3 168	871	12 113	4 445	**20 674**
	Area planted (ha)	22	2 228	1 201	5 401	2 533	**11 386**
	Crop reaped (t)	3	5 378	486	1 131	448	**7 447**
	Yield (kg/ha)	124	2 414	405	209	177	**654**
Total Maize	Farm count	33 516	340 586	228 682	414 630	182 978	**1 200 392**
	Area planted (ha)	21 725	309 900	222 251	396 361	157 485	**1 107 722**
	Crop reaped (t)	22 817	363 195	122 832	116 058	17 908	**642 810**
	Yield (kg/ha)	1 050	1 172	553	293	114	**580**
Red Sorghum	Farm count	358	5 992	7 664	21 896	25 587	**61 497**
	Area planted (ha)	25	1 064	4 635	13 219	21 730	**40 672**
	Crop reaped (t)	9	445	2 002	5 494	2 450	**10 401**
	Yield (kg/ha)	381	419	432	416	113	**256**
White Sorghum	Farm count	586	10 361	19 092	127 503	86 304	**243 846**
	Area planted (ha)	160	2 216	6 578	55 713	41 024	**105 691**
	Crop reaped (t)	2	840	1 984	14 445	7 632	**24 902**
	Yield (kg/ha)	14	379	302	259	186	**236**

Table 3.9 Continued

Kind of crop		Region I	Region II	Region III	Region IV	Region V	Total
Total Sorghum	Farm count	945	15 796	25 225	143 550	104 441	**289 957**
	Area planted (ha)	185	3 280	11 213	68 932	62 753	**146 363**
	Crop reaped (t)	12	1 285	3 986	19 939	10 081	**35 302**
	Yield (kg/ha)	63	392	355	289	161	**241**
Mhunga	Farm count	0	1 238	7 106	88 092	68 361	**164 797**
	Area planted (ha)	0	116	2 759	70 790	53 191	**126 855**
	Crop reaped (t)	0	25	255	8 631	5 633	**14 544**
	Yield (kg/ha)	0	213	93	122	106	**115**
Rapoko	Farm count	2 980	25 386	17 431	45 442	8 007	**99 246**
	Area planted (ha)	211	1 767	2 498	9 524	1 411	**15 412**
	Crop reaped (t)	63	619	459	1 521	109	**2 772**
	Yield (kg/ha)	298	351	184	160	77	**180**
Flue Cured Tobacco	Farm count	400	91 017	18 216	4 377	1 114	**115 124**
	Area planted (ha)	1 451	109 886	16 956	3 137	695	**132 126**
	Crop reaped (t)	738	150 022	17 289	2 213	821	**171 083**
	Yield (kg/ha)	508	1 365	1 020	705	1 180	**1 295**
Total Tobacco	Farm count	400	91 017	18 216	4 377	1 114	**115 124**
	Area planted (ha)	1 451	116 604	22 144	3 137	695	**144 032**
	Crop reaped (t)	738	150 022	17 289	2 213	821	**171 083**
	Yield (kg/ha)	508	1 287	781	705	1 180	**1 188**

Table 3.9 Continued

Kind of crop		Region I	Region II	Region III	Region IV	Region V	Total
Albar Cotton	Farm count	7	4 977	19 419	52 823	25 075	**102 301**
	Area planted (ha)	7	3 799	20 369	58 895	28 996	**112 066**
	Crop reaped (t)	2	2 179	9 017	26 395	5 230	**42 823**
	Yield (kg/ha)	300	574	443	448	180	**382**
Total Cotton	Farm count	7	4 977	19 419	52 823	25 075	**102 301**
	Area planted (ha)	7	3 893	24 894	58 896	28 996	**116 686**
	Crop reaped (t)	2	2 179	9 017	26 394	5 230	**42 822**
	Yield (kg/ha)	300	560	362	448	180	**367**
Groundnuts (Unshelled)	Farm count	2 672	177 158	142 311	273 422	115 741	**711 304**
	Area planted (ha)	208	28 803	31 376	67 576	24 327	**152 290**
	Crop reaped (t)	98	18 478	11 676	19 311	2 532	**52 096**
	Yield (kg/ha)	473	642	372	286	104	**342**
Sunflowers	Farm count	111	33 720	21 170	31 374	6 897	**93 272**
	Area planted (ha)	9	5 809	4 002	6 041	774	**16 635**
	Crop reaped (t)	3	2 891	1 737	1 591	176	**6 398**
	Yield (kg/ha)	304	498	434	263	227	**385**
Soyabeans	Farm count	0	36 377	7 019	2 051	1 703	**47 150**
	Area planted (ha)	0	40 813	2 236	791	316	**44 155**
	Crop reaped (t)	0	40 414	1 126	175	53	**41 768**
	Yield (kg/ha)	0	990	504	221	169	**946**

Table 3.9 Continued

Kind of crop		Region I	Region II	Region III	Region IV	Region V	Total
Edible Dry Beans for Consumption	Farm count	3 045	55 976	30 397	42 457	14 571	**146 446**
	Area planted (ha)	1 431	10 857	6 752	6 494	1 534	**27 068**
	Crop reaped (t)	782	4 737	2 497	1 498	197	**9 711**
	Yield (kg/ha)	547	436	370	231	129	**359**
Paprika	Farm count	0	1 801	88	27	0	**1 916**
	Area planted (ha)	0	248	60	6	0	**315**
	Crop reaped (t)	0	120	33	8	0	**161**
	Yield (kg/ha)	0	482	547	1 267	0	**511**

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Tables 3.10 and 3.11 show the type and amounts of fertiliser used; also value of manure, herbicides and pesticides used by type, annually.

Table 3.10: Amount and Value of Fertilisers Used by Type and Year, 2010 -2015

Type of Fertiliser		2 010	2 011	2 012	2 013	2 014	2 015
All Compounds	Quantity (t)	113 664	136 558	140 571	94 527	188 443	69 844
	Value (US$)	56 937 395	75 189 307	93 359 203	68 689 956	133 656 066	50 954 680
All Nitrates	Quantity (t)	95 805	103 232	100 910	75 521	143 963	77 884
	Value (US$)	41 151 349	60 974 128	67 453 037	55 373 999	106 057 346	58 992 929
All Phosphates	Quantity (t)	1 811	3 753	5 720	4 283	4 753	8 700
	Value (US$)	779 155	994 536	2 612 539	2 204 443	2 223 644	5 516 671
Potash	Farm count	1 189	2 135	3 426	495 178	6 282	12 242
	Value (US$)	232 696	262 747	575 135	537 109	1 640 386	2 584 715
Gypsum	Quantity (t)	5 098	10 522	14 778	17 744	19 855	27 976
	Value (US$)	694 908	1 183 974	2 385 877	2 558 452	3 202 101	4 394 842
Lime	Quantity (t)	764	4 913	3 168	3 413	3 790	10 840
	Value (US$)	294 465	977 799	2 386 408	2 951 924	2 852 712	7 425 736

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.11: Value of Manure, Herbicides and Pesticides Used by Type and Year, 2010 - 2015

Type of Inputs		2 010	2 011	2 012	2 013	2 014	2 015
Manure Purchased	Value (US$)	18 550 066	22 564 121	89 071 999	2 414 614	547 280	512 421
Manure Own Produce	Value (US$)	27 385 116	5 040 520	31 117 671	32 019 767	45 114 206	22 433 010
Liquid Fertiliser	Value (US$)	285 650	257 866	2 744 190	659 683	519 785	129 040
Herbicides	Value (US$)	1 387 652	618 170	2 469 699	8 541 640	10 560 577	27 464 787
Pesticides	Value (US$)	5 006 114	2 625 876	3 090 833	12 536 303	18 859 952	10 515 800
others n.e.s	Value (US$)	13 301	5 471	4 091 180	571 322	228 300	337 642

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.12 and 3.13 show imports and exports of crop and crop products respectively by year for 2010 to 2015

Table 3.12: Imports of Crop and Crop Products by year 2010 - 2015

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Rice, semi-milled or wholly milled, whether or not polished, glazed, parboiled or converted (excluding broken rice)	7 528 167	6 309 473	7 711 484	6 831 344	12 770 127	9 276 736
Broken rice	89 368 037	47 591 620	114 491 598	72 951 482	135 737 575	90 424 456
Millet, unmilled	4 146	4 606	2 527	10 240	4 869	16 427
Buckwheat, unmilled	10	40	285	1 579	78	72
Canary seed, unmilled	0	0	0	0	0	0
Cereals, unmilled, n.e.s.	11 873	67 704	143 548	181 421	29 035	36 979
Maize (corn) flour	336 461	568 035	1 121 628	427 902	8 457	11 191
Other flours	29 675	76 660	27 657	78 166	11 197	23 669
Groats and meal of maize (corn)	85 074 931	29 736 161	52 786 570	19 685 311	13 610 209	4 773 151
Groats and meal of other cereals	6 985	24 990	147 944	160 321	194 275	250 951
Pellets	449	1 311	0	0	62	935
Prepared foods obtained by the swelling or roasting of cereals or cereal products and from unroasted cereal flakes or from mixtures of unroasted and roasted cereal flakes or swelled cereals	5 723 380	11 156 339	6 925 988	14 374 501	4 606 219	9 784 909
Cereals other than maize (corn), in grain form, precooked or otherwise prepared	4 472 347	2 813 997	19 705 921	11 781 829	2 266 276	1 324 206
Other rolled or flaked cereal grains, except rice of subgroup 042.3	199 566	242 014	141 793	297 888	52 624	80 364
Other worked cereal grains (e.g., hulled, pearled, clipped, sliced or kibbled), except rice of subgroup 042.3	391 992	495 646	423 755	692 574	42 276	55 776
Germ of cereals, whole, rolled, flaked or ground	368	1 616	228	100	193	390
Crispbread, rusks, toasted bread and similar products	30 093	86 982	37 585	137 373	50 004	228 994
Sweet biscuits, waffles and wafers, gingerbread and the like	8 177 573	11 629 803	10 600 092	13 345 323	8 638 164	12 172 049
Other	678 162	1 274 601	318 140	780 776	287 667	791 246
Peas	7 480 565	9 120 724	8 855 313	4 763 141	10 212 817	6 615 931
Chick-peas	6 442 500	4 671 684	905 914	624 037	2 119	2 040
Beans, other than broad beans and horse beans	3 065 385	2 953 898	8 723 253	8 749 536	3 853 713	4 299 047
:Lentils	22 952	54 064	18 461	23 356	17 901	18 766
Broad beans and horse beans	3 384 625	2 422 134	86 034	124 673	210	369
Other	130 472	160 228	21 551	127 609	407 575	401 395
Onions and shallots, fresh or chilled	5 612 910	2 728 436	4 786 069	1 720 056	4 122 000	925 891
Garlic, leeks and other alliaceous vegetables, fresh or chilled	55 866	207 265	121 773	285 072	74 880	215 431
Cabbage and similar edible brassicas, fresh or chilled	53 663	35 287	209 027	110 940	123 463	75 328
Lettuce and chicory (including endive), fresh or chilled	10 872	7 384	13 381	6 871	31 652	17 937
Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, fresh or chilled	463 177	369 505	917 943	756 805	1 180 334	566 226

Table 3.12 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Cucumbers and gherkins, fresh or chilled	90 994	65 727	138 354	90 442	179 300	182 702
Leguminous vegetables, fresh or chilled	33 373	58 290	73 968	85 198	141 710	85 412
Mushrooms and truffles, fresh or chilled	44 298	123 094	71 490	161 281	51 922	140 568
Other vegetables, fresh or chilled	294 830	260 909	244 712	260 736	678 306	557 267
Sweet Corn	14 769	31 041	44 675	40 401	32 984	47 723
Other vegetables and mixtures of vegetables	129 741	154 012	200 351	384 054	340 749	553 557
Manioc (cassava)	0	0	0	0	3 600	1 576
Arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers (other than manioc) with high starch or inulin content whether or not sliced or in the form of pellets; sago pith	42 617	25 354	28 518	22 366	52 979	46 419
Hope cones and lupulin	80 121	1 000 857	66 990	605 854	119 636	1 205 364
Sugar beet, fresh or dried, whether or not ground	400	4 171	0	0	0	0
Vegetable products of a kind used chiefly for human foods, n.e.s.	12 171	40 491	81 380	194 555	62 142	148 453
Onions	27 455	48 807	31 848	67 459	8 950	19 361
Mushrooms, wood ears, jelly fungi and truffles	6 687	37 132	11 910	22 462	11 945	26 003
Other vegetables; mixtures of vegetables	365	4 685	3 704	28 450	126 393	376 760
Flour and meal of potatoes	24 116	25 887	13	78	3 683	4 548
Flakes, granules and pellets of potatoes	139 389	95 877	192 032	295 689	10 749	25 167
Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, pearls, siftings or in similar forms	146 341	162 387	205 360	221 661	359 699	342 700
Flour and meal of the dried leguminous vegetables of subgroup 054.2	23 731	35 551	44	54	250	731
Flour and meal of sago, roots or tubers of headings 054.81 and 054.83	74	166	129	272	342	885
Flour, meal and powder of the products of any heading of group 057	469	5 294	175	629	28 396	18 146
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, frozen	102 470	315 557	58 758	184 198	60 006	152 651
Other vegetables and mixtures of vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen	40 152	96 321	134 554	424 284	57 308	167 121
Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	20 741	58 186	33 348	81 282	44 969	116 916
Tomatoes prepared or preserved otherwise than by vinegar or acetic acid, whole or in pieces.	48 971	69 672	77 891	154 185	302 835	475 054
Tomatoes, prepared or preserved otherwise than by vinegar or acetic acid, n.e.s.	123 457	206 908	115 028	213 062	166 686	234 090
Mushrooms and truffles prepared or preserved otherwise than by vinegar or acetic acid	11 488	40 779	13 600	66 939	25 530	84 399
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, not frozen	1 342 590	4 581 973	1 698 177	6 689 050	1 388 698	4 852 735
Sweet corn prepared or preserved otherwise than by vinegar or acetic acid	11 033	19 103	36 386	67 322	47 442	98 755
Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen	2 724 859	3 710 833	4 578 429	5 635 665	3 169 937	3 691 092
Oranges, fresh or dried	1 308 351	335 096	856 565	487 415	626 358	236 524
Mandarins (including tangerines and satsumas); clementines, wilkings and similar citrus hybrids, fresh or	33 957	41 294	70 663	112 785	296 170	425 779

Table 3.12 Continued

Year Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
dried						
Lemons and limes fresh or dried	61 163	59 682	114 320	80 006	157 061	139 759
Grapefruit, fresh or dried	40 518	43 931	52 253	184 233	74 903	82 305
Citrus fruit, n.e.s., fresh or dried	79 047	115 919	81 263	88 333	294 996	504 673
..fresh	435 631	913 641	573 352	1 307 268	1 290 645	2 134 611
..dried (e.g., raisins)	4 432	13 653	7 027	19 160	30 657	59 156
Coconuts	9 015	17 375	17 301	44 284	15 803	35 111
Brazil nuts	92	291	398	3 001	4 857	5 853
Cashew nuts	3 284	27 768	8 693	44 361	13 875	79 774
Almonds	971	12 695	6 556	25 614	9 066	44 475
Hazelnuts or filberts	193	1 427	400	2 139	120	1 971
Walnuts	3	328	1 853	2 834	3 071	15 289
Chestnuts	1	28	2	12	116	898
Pistachios	233	2 922	2 670	8 401	3 307	15 431
Edible nuts (excluding mixtures), fresh or dried, n.e.s.	10 338	61 318	7 376	52 642	17 889	92 200
Melons (including water melons) and papaws (papayas), fresh	275 879	275 630	374 082	379 742	590 748	478 942
Pears and quinces, fresh	443 688	401 875	494 680	501 371	1 500 440	1 216 265
Apricots, cherries, peaches (including nectarines), plums and sloes, fresh.	268 467	440 684	376 908	605 502	824 451	1 275 287
Strawberries, raspberries, blackberries, mulberries, loganberries, cranberries, bilberries, and other fruits of the genus Vaccinium, fresh	27 146	35 631	29 245	33 337	8 653	28 619
Pineapples, fresh or dried	173 587	128 305	233 978	185 195	459 904	398 547
Dates, fresh or dried	5 022	20 579	10 675	20 067	8 624	25 911
Avocados, guavas, mangoes and mangosteens, fresh or dried	45 279	46 965	43 986	80 278	85 858	153 071
Other fresh fruit	32 957	71 363	20 647	66 835	55 842	122 796
Fruit, dried, n.e.s., and mixtures, n.e.s., of nuts or dried fruits of group 057	37 763	143 518	91 361	320 071	111 100	534 750
Fruit and nuts, provisionally preserved (e.g., by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption	113	1 216	1 794	13 096	115 679	111 752
Peel of citrus fruit or melons, fresh, frozen, dried or provisionally preserved in brine, in sulphur water or in other preservative solutions	1 275	4 279	68	1 416	115	1 105
Strawberries	195	238	667	1 816	75	239
Raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries	36	472	294	1 443	140	938
Other	23 589	56 343	162	2 334	239	2 027
Nuts, groundnuts and other seeds, n.e.s.	87 744	219 652	70 836	225 341	66 299	275 242
Pineapples	60 572	65 193	92 720	109 219	152 588	221 533
Citrus fruit	1 991	4 155	872	4 482	24 981	39 397
Apricots, cherries and peaches	19 733	66 595	20 124	98 980	42 916	138 469

Table 3.12 Continued

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Fruits or edible parts of plants, n.e.s.	81 648	240 858	138 599	348 959	292 886	645 955
Mixtures of fruits or other edible parts of plants, n.e.s.	35 163	156 414	38 966	87 208	23 034	50 698
Pineapple juice	39 352	42 433	45 361	39 237	44 527	28 296
Tomato juice	1 538	3 524	1 515	4 972	16 520	17 936
Grape juice (including grape must)	122 772	130 067	312 594	398 989	662 468	762 121
Apple juice	147 950	150 915	296 677	345 117	561 206	647 591
Juice of any other single fruit or vegetable	1 436 120	1 462 234	697 069	818 194	731 222	850 241
Mixtures of fruit or vegetable juices	2 005 200	1 991 932	5 723 603	6 313 238	8 846 440	9 673 441
Cane sugar, raw	49 007 471	34 021 226	14 494 904	11 067 463	21 554 365	16 304 135
Beet sugar, raw	36 299	34 040	6 815	1 967	177 760	140 486
..containing added flavouring or colouring matter	1 806 674	1 231 641	248 031	238 955	2 989 223	2 503 063
..other	36 373 381	22 542 536	37 047 340	32 566 162	53 474 524	44 364 503
Cane molasses	3 421 010	540 328	90 133	10 545	962 358	53 414
Beet sugar molasses and other molasses (e.g., corn molasses)	3 496	20 824	69 114	37 487	510	3 165
Lactose and lactose syrup	8 605	41 831	11 250	41 216	32 768	70 775
Maple sugar and maple syrup	5 164	19 722	20 747	5 605	6 172	12 167
Glucose (dextrose) and glucose syrup, not containing fructose or containing, in the dry state, less than 20% by weight of fructose.	1 173 662	725 993	2 035 516	1 479 827	3 566 738	2 767 575
Glucose and glucose syrup, containing in the dry state at least 20% but not more than 50% by weight of fructose	27 849	38 237	9 761	16 978	27 608	27 621
Pure fructose	80	1 260	1	38	0	0
Other fructose and fructose syrup, containing in the dry state more than 50% by weight of fructose	774	4 271	9 728	33 538	7 580	13 443
Other (including invert sugar)	28 100	64 299	57 948	141 788	40 766	142 735
Chewing-gum, whether or not sugar-coated	182 768	342 611	297 924	616 073	261 010	665 854
Other	4 506 497	6 694 598	5 231 619	10 568 851	4 866 480	11 864 986
Coffee, not roasted, not decaffeinated	20 056	141 078	18 064	56 382	8 774	43 325
Coffee, not roasted, decaffeinated	3 041	50 627	1 025	6 014	1 429	20 506
Extracts, essences and concentrates of coffee, and preparations with a basis of these extracts, essences or concentrates or with a basis of coffee	16 213	109 255	38 714	180 469	64 435	315 662
Coffee husks and skins; coffee substitutes containing coffee in any proportion	24 720	99 444	45 761	213 606	9 815	69 550
Roasted chicory and other roasted coffee substitutes (not containing coffee) and extracts, essences and concentrates thereof	35 898	184 396	230 298	1 005 641	95 922	505 914
..not defatted (liquor)	1 500	10 734	5 671	8 521	1 611	15 752
..wholly or partly defatted (cocoa cake)	6 171	6 043	3 539	26 008	445	3 694
Green tea (not fermented), in immediate packings of a content not exceeding 3 kg, whether or not flavoured	26 458	21 008	3 405	37 028	7 896	18 145

Table 3.12 Continued

Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Other green tea (not fermented), whether or not flavoured	65 533	15 255	2 147	21 096	19 878	25 809
Black tea (fermented) and partly fermented tea, in immediate packings of a content not exceeding 3 kg, whether or not flavoured	82 437	356 313	82 077	538 655	134 869	692 577
Other black tea (fermented) and other partly fermented tea, whether or not flavoured	16 482	112 295	42 195	146 790	75 051	244 028
Maté	36	288	0	0	0	0
Extracts, essences and concentrates of tea or maté, and preparations with a basis of tea, maté, or their extracts, essences or concentrates.	8 155	48 481	7 250	69 504	12 235	41 431
Pepper of the genus Piper, neither crushed nor ground	7 775	22 813	12 806	70 950	18 007	95 764
Pepper of the genus Piper, crushed or ground	42 741	139 725	11 230	135 655	522 415	436 827
Fruits of the genus Capsicum or of the genus Pimenta, dried or crushed or ground	958	9 345	2 127	14 240	352	4 102
Vanilla	4 630	4 060	1 780	10 815	1 657	12 613
Cinnamon and cinnamon-tree flowers, neither crushed nor ground	3 146	5 907	8 319	16 979	5 215	8 354
Cinnamon and cinnamon-tree flowers, crushed or ground	417	1 176	1 447	4 841	4 027	11 610
Cloves (whole fruit, cloves and stems)	1 430	7 152	2 569	46 121	4 356	46 318
Nutmeg, mace and cardamoms	3 199	10 969	777	10 088	506	8 924
Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries	21 325	66 461	56 770	207 970	60 113	150 753
Ginger (excluding ginger preserved in sugar or conserved in syrup)	15 154	37 922	11 959	28 467	27 755	91 950
Saffron	435	1 259	51	3 456	258	1 382
Other spices; mixtures of two or more of the products of different headings of group 075	545 102	2 128 973	803 830	2 856 929	245 128	843 097
Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets	0	0	25	3 373	0	2
Lucerne (alfalfa) meal and pellets	709	1 633	0	0	69 768	26 738
Swedes, mangolds, fodder roots, hay, clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	0	0	0	0	2	41
Vegetable residues and by-products, vegetable materials and vegetable waste, whether or not in the form of pellets, of a kind used for animal food, n.e.s.	0	0	306	583	16 236	5 412
..of leguminous plants	0	0	0	0	2 654	14 009
..of maize (corn)	1 457 270	145 274	4 958 615	606 824	2 947 983	341 072
..of wheat	14 229 215	1 276 668	15 513 025	2 092 101	4 300 701	626 520
..of other cereals	35	45	499 898	44 305	4 944 518	460 233
..of soya beans	11 497 902	5 670 681	70 407 169	40 528 400	36 647 250	20 512 270
..of groundnuts	0	0	0	0	227	1 529
..of cotton seeds	41 597	56 029	229 250	40 644	7 508 760	1 001 371
..of linseed	0	0	5	8	30 000	15 735
..of sunflower seeds	68 415	25 219	684 450	205 313	2 699 400	1 047 531
..of rape or colza seeds	1	11	0	0	0	0
..of coconut or copra	105	1 449	10	204	785	1 839

Table 3.12 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
..of palm nuts or kernels	0	0	0	0	0	0
..of other oil-seeds, oleaginous fruits and germs of cereals	1 134 500	545 588	2 818 010	1 430 423	660 009	338 779
Flours, meals and pellets, of meat or meat offal, unfit for human consumption; greaves	3 335 653	1 933 101	2 853 845	2 272 975	4 521 867	3 343 848
Flours, meals and pellets, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption	2 953 020	2 693 866	2 952 202	3 813 550	2 939 700	3 406 800
Residues of starch manufacture and similar residues	25 017	1 379	27	22	1	802
Beet pulp, bagasse and other waste of sugar manufacture	422	176	0	0	0	0
Brewing or distilling dregs and waste	0	0	58 060	7 264	0	0
Wine lees; argol	0	0	0	0	83	92
Dog or cat food, put up for retail sale	307 848	475 819	536 853	814 177	995 671	1 065 525
Preparations of a kind used for animal food, n.e.s.	6 288 070	9 350 712	15 181 175	17 859 369	26 658 691	25 869 525
Margarine (excluding liquid margarine)	7 824 293	10 116 859	6 756 105	9 075 219	8 809 922	11 024 792
Other	451 652	579 818	895 013	1 177 611	590 437	761 203
Homogenized preparations from meat and edible meat offal	47 108	97 953	76 463	346 162	3 086	38 720
Homogenized vegetables	27 831	85 135	14 414	29 036	14 654	39 769
Cooked fruit preparations, homogenized	30 657	83 689	186 144	334 757	116 646	235 544
Homogenized composite food preparations	82 462	154 143	13 457	56 052	13 758	59 003
Soya sauce	78 212	199 439	38 824	76 819	30 842	105 698
Tomato ketchup and other tomato sauces	977 188	974 259	922 561	1 125 736	753 243	761 318
Mustard flour and meal and prepared mustard	6 327	26 801	70 911	216 297	37 265	87 509
Vinegar and substitutes for vinegar obtained from acetic acid	80 955	100 201	260 727	262 740	260 896	237 796
Other sauces and preparations therefor; mixed condiments and mixed seasonings	1 904 262	5 157 699	3 048 335	8 049 007	4 904 745	12 613 004
Pasta, cooked or stuffed; couscous, whether or not prepared	2 996 310	3 648 129	3 714 300	4 543 354	6 080 070	6 599 189
Edible products of animal origin, n.e.s.	24	81	0	0	12 413	17 286
Food preparations for infant use, put up for retail sale of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of heading	47 079	178 922	69 129	166 908	67 033	242 986
Malt extract; food preparations of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of headings 022.11 – 022.32 and sub	12 209 295	9 563 564	8 762 119	5 485 773	684 610	708 421
Other food preparations	6 221 795	23 830 835	10 861 737	29 083 931	15 640 374	35 300 238
Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow.	642 966	309 071	734 021	419 970	1 822 977	765 031
Waters (including mineral waters and aerated waters) containing added sugar or other sweetening matter or flavoured, and other non-alcoholic beverages, n.e.s.	15 117 014	14 546 368	18 363 782	17 343 290	24 884 842	18 499 080
Grape must in fermentation or with fermentation arrested otherwise than by the addition of alcohol.	1	13	308	2 664	361	6 589

Table 3.12 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Vermouth and other wines of fresh grapes flavoured with plants or aromatic substances.	85	425	10 649	36 808	4 050	12 861
Sparkling wine	199 275	440 621	111 377	444 108	146 765	359 480
Wine of fresh grapes (other than sparkling wine); grape must with fermentation prevented or arrested by the addition of alcohol	846 437	2 144 668	1 266 269	3 431 610	1 222 032	3 120 746
Whiskies	85 020	421 413	220 631	1 674 044	204 066	2 040 449
Spirits obtained by distilling grape wine or grape marc	107 293	222 504	59 397	202 983	100 127	300 704
Rum and other spirits obtained by distilling fermented sugar cane products	9 150	22 418	23 279	76 356	14 344	56 163
Gin and geneva	19 976	39 839	17 515	99 240	24 224	52 263
Spirits and distilled alcoholic beverages, n.e.s.	236 194	521 376	338 527	1 144 094	358 029	1 295 387
Cigars, cheroots, cigarillos and cigarettes, of tobacco substitutes	0	0	116	20 655	116	20 655
Smoking tobacco, whether or not containing tobacco substitutes in any proportion.	354	395	1	88	2 391	44 200
Manufactured tobacco, extracts and essences, n.e.s.	7 659	13 165	151 659	203 755	151 742	265 683
Rape or colza seeds, whether or not broken	54 071	85 407	25 296	67 794	25 116	65 805
Mustard seeds	1 381	4 796	888	1 167	555	941
Smoked sheets of natural rubber	105	1 541	0	0	0	0
Technically specified natural rubber (TSNR)	172 312	535 985	22 190	53 561	438 939	1 705 354
Other natural rubber	244 051	853 942	28 589	136 828	249 597	907 114
Styrene-butadiene rubber (SBR); carboxylated styrene-butadiene rubber (XSBR)	219 768	605 069	169 199	541 968	359 204	1 304 275
Butadiene rubber (BR)	23 623	61 912	2 400	6 248	114 436	486 143
Isobutene-isoprene (butyl) rubber (IIR); halo-isobutene-isoprene rubber (CIIR or BIIR).	403	1 148	60	144	0	0
Chloroprene (chlorobutadiene) rubber (CR)	7 595	63 678	16 533	146 779	22 490	179 032
Acrylonitrile-butadiene rubber (NBR)	2 530	10 133	0	0	2 707	14 809
Isoprene rubber (IR)	100	823	4 840	50 408	250	4 896
Ethylene-propylene-non-conjugated diene rubber (EPDM)	2 100	17 871	170	1 183	1 034	6 311
Mixtures of any product of group 231 with any product of subgroup 232.1	786	12 434	0	0	0	0
Other synthetic rubbers and factice derived from oils	9 297	55 185	9 450	23 956	9 930	27 406
Reclaimed rubber in primary forms or in plates, sheets or strip	17 246	74 385	11 647	17 276	39 920	55 853
Waste, parings and scrap of unhardened rubber and powders and granules obtained therefrom	9 741	39 170	96 013	69 208	81 648	89 341
Cork, natural, debacked or roughly squared, or in rectangular (including square) blocks, plates, sheets or strip (including sharp-edged blanks for corks and stoppers)	1	14	0	0	0	0
Cork, natural, raw or simply prepared	10	151	0	0	73	2 422
Waste cork; crushed, granulated or ground cork	192	3 425	27	1 087	151	2 011
Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms (excluding wood waste).	66 043	18 369	45 871	11 781	48 300	7 530
Wood charcoal (including shell or nut charcoal), whether or not agglomerated	41 735	22 771	33 294	20 429	252 280	107 759
..coniferous	0	0	0	0	0	0
..non-coniferous	76 697	85 832	22 185	24 931	30 794	13 467

Table 3.12 Continued

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
..not impregnated	32 579	14 510	7 850	3 369	0	0
..impregnated	841 940	540 055	1 126 430	779 127	1 280 647	1 131 908
Unbleached kraft paper or paperboard or of corrugated paper or paperboard.	109 989	16 190	1	1 430	29 951	20 174
Other paper or paperboard made mainly of bleached chemical pulp, not coloured in the mass	0	0	1	40	0	0
Paper or paperboard made mainly of mechanical pulp (e.g., newspapers, journals and similar printed matter)	20	826	0	0	0	0
Other (including unsorted waste and scrap)	676 332	127 529	1 629 756	480 952	1 435 792	378 777
..coniferous	24 802	30 887	233 478	343 959	0	0
..non-coniferous	0	0	0	0	0	0
..coniferous	151 178	203 783	245 435	333 927	246 517	279 454
..non-coniferous	56 554	62 172	163 552	142 832	125 945	107 913
..unbleached	0	0	0	0	0	0
..semi-bleached or bleached	49 896	61 154	70 904	73 523	25 452	22 893
Semi-chemical wood pulp	2 965	5 204	0	0	0	0
Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material	1	2 280	0	0	4 616	6 936
Silkworm cocoons suitable for reeling	0	0	0	0	0	0
Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock)	5	350	0	0	0	0
..yarn waste (including thread waste)	36	4 700	0	0	31 527	17 641
..garnetted stock, not carded or combed	30	5 586	0	0	7	62
..other (including pulled or garnetted rags), not carded or combed	91 759	47 826	39 384	44 011	68 312	47 551

Table 3.12: Imports of Crop and Crop Products by year 2013 - 2015

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Rice, semi-milled or wholly milled, whether or not polished, glazed, parboiled or converted (excluding broken rice)	19 280 709	11 666 764	26 797 290	16 882 198	22 022 154	12 622 549
Broken rice	137 377 244	92 617 210	146 722 864	96 302 075	173 263 962	105 743 781
Millet, unmilled	14 468	17 627	4 535	12 882	2 210	754
Buckwheat, unmilled	0	0	0	0	0	0
Canary seed, unmilled	298	1 051	0	0	0	0
Cereals, unmilled, n.e.s.	33 356	14 866	70	192	669	2 881
Maize (corn) flour	42 117	21 567	38 112	16 983	1 779	2 299
Other flours	1 190	2 820	2 169	2 972	3 010	3 395
Groats and meal of maize (corn)	44 863 569	17 192 418	40 189 972	16 462 986	25 569 046	8 319 365
Groats and meal of other cereals	84 934	86 498	95 739	134 322	46 867	60 900
Pellets	0	0	0	0	10	101
Prepared foods obtained by the swelling or roasting of cereals or cereal products and from unroasted cereal flakes or from mixtures of unroasted and roasted cereal flakes or swelled cereals	4 541 346	8 513 547	6 586 887	9 973 956	3 790 500	6 725 918
Cereals other than maize (corn), in grain form, precooked or otherwise prepared	94 373	111 899	144 116	145 072	55 162	176 351
Other rolled or flaked cereal grains, except rice of subgroup 042.3	18 045	30 326	50 236	39 047	356 350	389 594
Other worked cereal grains (e.g., hulled, pearled, clipped, sliced or kibbled), except rice of subgroup 042.3	612 591	387 196	70 456	57 387	140 986	187 213
Germ of cereals, whole, rolled, flaked or ground	3 733	3 094	10 342	4 386	10	94
Crispbread, rusks, toasted bread and similar products	70 565	196 412	41 741	113 079	90 274	181 024
Sweet biscuits, waffles and wafers, gingerbread and the like	10 286 604	14 385 903	9 674 990	11 650 326	1 884 314	3 999 748
Other	236 089	745 761	509 613	1 257 724	329 974	848 504
Peas	9 071 051	5 007 523	678 770	290 186	764 792	492 408
Chick-peas	6 171	7 841	4 393	3 008	1 647 770	1 547 722
Beans, other than broad beans and horse beans	3 429 900	3 590 152	3 230 588	2 161 844	3 274 969	3 025 479
:Lentils	20 144	16 864	26 852	18 257	784 532	1 090 084
Broad beans and horse beans	170 085	298 371	1 488	1 339	0	0
Other	1 474 048	594 771	5 716 850	3 514 096	25 596	140 627
Onions and shallots, fresh or chilled	4 009 639	704 626	2 741 516	487 153	0	0
Garlic, leeks and other alliaceous vegetables, fresh or chilled	37 762	93 564	19 913	37 032	31 250	72 182
Cabbage and similar edible brassicas, fresh or chilled	110 224	133 248	82 127	96 963	24 213	24 923
Lettuce and chicory (including endive), fresh or chilled	26 683	16 101	17 098	10 605	5 950	1 668
Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, fresh or chilled	1 305 917	444 183	748 275	296 779	784 004	256 542

Table 3.12 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Cucumbers and gherkins, fresh or chilled	134 342	153 899	63 168	108 527	34 221	17 831
Leguminous vegetables, fresh or chilled	27 242	18 403	16 319	30 019	23 766	17 764
Mushrooms and truffles, fresh or chilled	65 501	192 183	53 489	173 079	29 376	97 219
Other vegetables, fresh or chilled	634 656	423 824	392 690	341 306	220 131	180 312
Sweet Corn	34 126	53 855	47 645	76 410	28 040	39 679
Other vegetables and mixtures of vegetables	758 604	951 097	521 515	844 352	392 137	537 713
Manioc (cassava)	140	110	0	0	0	0
Arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers (other than manioc) with high starch or inulin content whether or not sliced or in the form of pellets; sago pith	93 954	50 741	44 329	27 952	44 582	23 807
Hope cones and lupulin	35 215	281 248	29 110	292 969	41 030	431 344
Sugar beet, fresh or dried, whether or not ground	0	0	0	0	1	78
Vegetable products of a kind used chiefly for human foods, n.e.s.	75 007	163 086	57 670	129 992	39 025	143 075
Onions	16 286	45 704	19 270	57 387	8 558	26 474
Mushrooms, wood ears, jelly fungi and truffles	15 880	39 717	2 592	4 556	8 109	16 057
Other vegetables; mixtures of vegetables	19 227	27 932	5 608	18 596	4 774	8 180
Flour and meal of potatoes	200	1 815	562	26 642	1 923	2 812
Flakes, granules and pellets of potatoes	4 089	31 585	49 984	140 079	80 408	226 082
Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, pearls, siftings or in similar forms	13 295	10 590	13 122	24 537	63 197	80 522
Flour and meal of the dried leguminous vegetables of subgroup 054.2	37	159	46	140	8 280	12 873
Flour and meal of sago, roots or tubers of headings 054.81 and 054.83	5	63	28 025	14 913	28 000	12 100
Flour, meal and powder of the products of any heading of group 057	130	4 428	210	947	62	527
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, frozen	6 762	16 565	4 027	11 773	41 863	46 450
Other vegetables and mixtures of vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen	11 442	30 156	42 599	52 239	3 416	7 787
Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	56 135	100 239	50 569	98 927	55 781	96 770
Tomatoes prepared or preserved otherwise than by vinegar or acetic acid, whole or in pieces.	203 238	274 997	114 990	144 146	127 573	168 210
Tomatoes, prepared or preserved otherwise than by vinegar or acetic acid, n.e.s.	735 338	901 613	749 413	1 118 237	662 278	815 977
Mushrooms and truffles prepared or preserved otherwise than by vinegar or acetic acid	30 404	94 034	18 842	76 997	15 956	44 025
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, not frozen	1 114 390	2 569 229	1 387 158	4 057 692	1 491 591	6 028 421
Sweet corn prepared or preserved otherwise than by vinegar or acetic acid	58 315	98 539	62 596	113 102	47 701	70 991
Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen	3 177 149	3 162 192	3 091 343	3 098 811	3 682 777	2 984 442
Oranges, fresh or dried	672 489	255 643	284 226	139 292	180 298	87 175
Mandarins (including tangerines and satsumas); clementines, wilkings and similar citrus hybrids, fresh or dried	185 763	215 759	154 790	253 156	37 824	37 216
Lemons and limes fresh or dried	115 342	131 091	180 815	149 066	135 826	126 774

Table 3.12 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Grapefruit, fresh or dried	149 975	126 725	70 150	53 551	112 952	89 288
Citrus fruit, n.e.s., fresh or dried	37 895	104 518	204 422	101 377	88 707	47 968
..fresh	1 796 987	2 053 820	1 840 982	1 839 379	2 586 374	3 324 977
..dried (e.g., raisins)	32 894	66 243	38 149	111 205	11 264	23 096
Coconuts	35 419	87 619	17 900	46 732	61 036	151 874
Brazil nuts	2 483	17 817	639	6 478	479	4 680
Cashew nuts	11 866	89 946	5 974	59 186	5 369	50 565
Almonds	6 248	60 541	4 744	35 181	4 326	47 863
Hazelnuts or filberts	130	1 055	475	7 926	281	3 079
Walnuts	1 182	15 576	802	10 239	3 648	34 433
Chestnuts	64	298	0	0	20	57
Pistachios	2 100	15 573	503	10 286	1 179	11 512
Edible nuts (excluding mixtures), fresh or dried, n.e.s.	41 358	123 971	52 346	172 999	39 501	166 076
Melons (including water melons) and papaws (papayas), fresh	507 905	334 077	532 110	348 431	488 747	335 273
Pears and quinces, fresh	636 181	366 736	474 544	315 786	327 284	233 303
Apricots, cherries, peaches (including nectarines), plums and sloes, fresh.	837 836	896 112	1 102 368	936 375	1 704 865	1 587 077
Strawberries, raspberries, blackberries, mulberries, loganberries, cranberries, bilberries, and other fruits of the genus Vaccinium, fresh	15 741	18 655	3 156	9 066	1 636	2 110
Pineapples, fresh or dried	401 314	260 048	263 662	145 105	229 026	94 077
Dates, fresh or dried	6 363	26 189	7 811	23 418	7 296	34 073
Avocados, guavas, mangoes and mangosteens, fresh or dried	56 710	114 662	76 474	61 155	5 140	15 725
Other fresh fruit	97 319	205 996	62 227	128 217	44 400	68 910
Fruit, dried, n.e.s., and mixtures, n.e.s., of nuts or dried fruits of group 057	72 835	349 497	54 466	306 189	75 391	278 675
Fruit and nuts, provisionally preserved (e.g., by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption	44 312	44 458	142 014	120 364	37 631	32 267
Peel of citrus fruit or melons, fresh, frozen, dried or provisionally preserved in brine, in sulphur water or in other preservative solutions	38	418	10	158	55	92
Strawberries	235	202	0	0	100	123
Raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries	276	720	2 681	12 679	4 575	9 285
Other	1 355	2 082	1 351	7 269	2 961	16 739
Nuts, groundnuts and other seeds, n.e.s.	67 506	239 149	131 220	338 274	388 629	387 565
Pineapples	208 130	288 864	74 548	152 056	157 464	254 798
Citrus fruit	67 108	94 619	54 188	137 030	0	0
Apricots, cherries and peaches	47 478	143 668	79 853	170 927	86 634	182 768
Fruits or edible parts of plants, n.e.s.	312 108	694 062	317 988	685 001	223 624	551 630
Mixtures of fruits or other edible parts of plants, n.e.s.	10 892	18 865	34 517	205 056	56 332	285 944

Table 3.12 Continued

Year Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Pineapple juice	6 183	2 808	24 036	17 204	39 018	30 571
Tomato juice	14 379	16 449	21 239	23 387	23 102	24 329
Grape juice (including grape must)	731 258	739 770	1 100 102	1 102 410	1 257 956	1 126 727
Apple juice	593 913	638 654	695 126	694 894	886 270	815 536
Juice of any other single fruit or vegetable	660 347	717 609	432 578	346 804	974 819	657 398
Mixtures of fruit or vegetable juices	7 088 551	6 653 892	7 900 558	7 091 675	9 195 982	7 543 344
Cane sugar, raw	59 138 969	41 176 607	12 972 693	7 787 204	12 072 330	5 720 179
Beet sugar, raw	465 203	329 358	0	0	0	0
..containing added flavouring or colouring matter	4 803 212	3 783 887	796 098	631 364	133 247	100 047
..other	67 560 213	51 565 583	26 535 439	19 233 205	30 351 802	21 140 572
Cane molasses	1 680	449	849 130	50 143	1 302 095	114 177
Beet sugar molasses and other molasses (e.g., corn molasses)	68 146	31 632	658	750	69 037	27 883
Lactose and lactose syrup	31 562	87 093	24 531	82 211	37 921	83 199
Maple sugar and maple syrup	7 918	18 212	3 179	5 172	1 476	4 552
Glucose (dextrose) and glucose syrup, not containing fructose or containing, in the dry state, less than 20% by weight of fructose.	5 553 427	3 962 016	5 233 266	3 658 248	4 652 690	2 753 819
Glucose and glucose syrup, containing in the dry state at least 20% but not more than 50% by weight of fructose	4 550	9 983	68 835	60 280	4 737	7 451
Pure fructose	137	675	795	2 540	735	1 317
Other fructose and fructose syrup, containing in the dry state more than 50% by weight of fructose	11 318	11 617	1 502	1 764	2 146	3 686
Other (including invert sugar)	59 110	149 190	18 108	56 520	10 535	39 635
Chewing-gum, whether or not sugar-coated	561 704	1 087 575	677 345	1 353 358	893 964	1 766 036
Other	4 501 466	10 168 170	5 160 295	8 800 579	2 460 302	5 039 701
Coffee, not roasted, not decaffeinated	6 111	31 643	7 974	64 694	646	7 816
Coffee, not roasted, decaffeinated	3 449	16 992	6 688	23 151	1 075	12 885
Extracts, essences and concentrates of coffee, and preparations with a basis of these extracts, essences or concentrates or with a basis of coffee	104 076	581 693	68 368	392 578	140 016	848 423
Coffee husks and skins; coffee substitutes containing coffee in any proportion	5 650	65 328	16 224	72 796	14 903	83 997
Roasted chicory and other roasted coffee substitutes (not containing coffee) and extracts, essences and concentrates thereof	105 649	337 636	399 759	1 778 279	435 145	1 691 781
..not defatted (liquor)	5	665	700	4 366	7 811	9 725
..wholly or partly defatted (cocoa cake)	0	0	0	0	2 821	6 067
Green tea (not fermented), in immediate packings of a content not exceeding 3 kg, whether or not flavoured	2 321	18 126	2 457	5 864	3 307	8 624
Other green tea (not fermented), whether or not flavoured	30 523	21 789	53 049	26 961	17 507	11 415
Black tea (fermented) and partly fermented tea, in immediate packings of a content not exceeding 3 kg,	424 565	2 158 403	488 393	2 613 238	110 910	401 547

Table 3.12 Continued

Year Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
whether or not flavoured						
Other black tea (fermented) and other partly fermented tea, whether or not flavoured	90 181	231 644	60 575	258 375	560 019	2 495 581
Maté	0	0	0	0	0	0
Extracts, essences and concentrates of tea or maté, and preparations with a basis of tea, maté, or their extracts, essences or concentrates.	2 033	15 607	2 684	13 197	1 314	10 351
Pepper of the genus Piper, neither crushed nor ground	11 700	109 427	6 851	103 030	3 296	42 089
Pepper of the genus Piper, crushed or ground	319 569	227 311	57 745	265 860	89 464	199 724
Fruits of the genus Capsicum or of the genus Pimenta, dried or crushed or ground	641	19 210	26	588	120	2 889
Vanilla	161	1 839	41	403	98	313
Cinnamon and cinnamon-tree flowers, neither crushed nor ground	2 128	3 476	3 885	20 306	2 001	4 310
Cinnamon and cinnamon-tree flowers, crushed or ground	5 647	11 673	7 965	23 620	6 647	17 259
Cloves (whole fruit, cloves and stems)	2 696	17 198	6 920	41 777	4 396	26 322
Nutmeg, mace and cardamoms	275	3 079	422	5 632	300	5 381
Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries	39 923	111 567	62 108	138 265	46 528	106 569
Ginger (excluding ginger preserved in sugar or conserved in syrup)	43 298	88 071	33 983	129 359	24 141	69 980
Saffron	449	1 423	4	18	108	610
Other spices; mixtures of two or more of the products of different headings of group 075	349 275	850 171	231 534	706 552	408 653	1 287 684
Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets	148	220	0	0	400	391
Lucerne (alfalfa) meal and pellets	127 100	57 601	30	150	54 019	16 969
Swedes, mangolds, fodder roots, hay, clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	10	336	0	0	25 992	2 350
Vegetable residues and by-products, vegetable materials and vegetable waste, whether or not in the form of pellets, of a kind used for animal food, n.e.s.	0	0	0	0	34 000	26 079
..of leguminous plants	0	0	0	0	50	65
..of maize (corn)	5 041 370	695 810	14 434 102	2 263 827	18 031 650	1 881 418
..of wheat	11 273 430	1 575 835	18 626 848	3 066 902	18 192 542	2 368 261
..of other cereals	8 467 604	1 001 703	5 463 629	609 904	6 683 408	613 951
..of soya beans	35 930 330	26 921 218	19 021 927	12 219 089	34 746 928	20 184 033
..of groundnuts	0	0	0	0	0	0
..of cotton seeds	6 873 000	911 346	1 706 000	291 434	2 392 060	303 702
..of linseed	0	0	0	0	0	0
..of sunflower seeds	7 341 901	3 588 302	6 166 009	2 711 615	3 042 000	1 205 656
..of rape or colza seeds	0	0	0	0	0	0
..of coconut or copra	0	0	0	0	0	0
..of palm nuts or kernels	0	0	0	0	0	0
..of other oil-seeds, oleaginous fruits and germs of cereals	4 770 000	2 842 111	60 000	28 474	294 996	163 717

Table 3.12 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Flours, meals and pellets, of meat or meat offal, unfit for human consumption; greaves	9 473 373	7 639 312	11 162 764	7 849 775	8 368 458	5 387 344
Flours, meals and pellets, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption	1 160 852	1 745 815	1 449 310	1 878 617	1 407 602	1 674 400
Residues of starch manufacture and similar residues	166 000	191 941	100 500	117 460	34 010	31 069
Beet pulp, bagasse and other waste of sugar manufacture	0	0	0	0	68 000	15 094
Brewing or distilling dregs and waste	28 000	3 562	0	0	0	0
Wine lees; argol	0	0	0	0	0	0
Dog or cat food, put up for retail sale	1 374 494	1 455 604	1 521 551	1 622 100	1 376 840	1 312 363
Preparations of a kind used for animal food, n.e.s.	40 704 051	84 371 281	33 603 757	29 248 539	16 806 766	19 839 547
Margarine (excluding liquid margarine)	6 740 320	7 744 860	6 090 334	6 522 582	6 630 867	6 403 162
Other	916 491	1 096 783	1 700 010	1 876 696	1 761 589	1 719 004
Homogenized preparations from meat and edible meat offal	1 689	2 308	395	2 407	156	695
Homogenized vegetables	4 619	5 190	4 683	9 300	13 174	15 041
Cooked fruit preparations, homogenized	52 999	75 677	40 346	83 652	6 256	15 774
Homogenized composite food preparations	9 112	19 168	9 901	25 132	8 019	21 434
Soya sauce	88 620	98 759	55 886	47 464	27 919	31 980
Tomato ketchup and other tomato sauces	846 843	738 410	773 876	657 901	733 601	802 094
Mustard flour and meal and prepared mustard	33 440	64 525	42 791	95 150	26 436	38 477
Vinegar and substitutes for vinegar obtained from acetic acid	293 230	223 136	283 979	217 932	336 775	211 359
Other sauces and preparations therefor; mixed condiments and mixed seasonings	5 952 438	14 539 671	7 970 822	15 831 656	10 543 060	18 607 792
Pasta, cooked or stuffed; couscous, whether or not prepared	9 471 726	9 523 502	13 974 912	12 658 570	19 727 600	16 877 703
Edible products of animal origin, n.e.s.	13 226	24 152	19 069	18 134	134 053	123 464
Food preparations for infant use, put up for retail sale of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of heading	320 755	852 038	144 200	385 955	332 902	1 890 925
Malt extract; food preparations of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of headings 022.11 – 022.32 and sub	2 486 084	1 961 934	1 871 095	1 722 509	4 599 782	3 745 231
Other food preparations	10 309 310	17 502 056	14 779 601	24 914 013	13 871 286	25 071 208
Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow.	1 043 318	413 799	1 573 297	602 875	1 769 359	671 751
Waters (including mineral waters and aerated waters) containing added sugar or other sweetening matter or flavoured, and other non-alcoholic beverages, n.e.s.	32 179 440	21 819 022	64 907 713	33 128 155	79 425 223	36 103 367
Grape must in fermentation or with fermentation arrested otherwise than by the addition of alcohol.	0	0	30	4 299	80	7 167
Vermouth and other wines of fresh grapes flavoured with plants or aromatic substances.	2 314	7 211	1 434	5 925	7 582	16 269
Sparkling wine	176 293	561 717	211 072	551 716	308 459	598 282

Table 3.12 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Wine of fresh grapes (other than sparkling wine); grape must with fermentation prevented or arrested by the addition of alcohol	1 335 779	3 324 021	1 270 304	2 876 838	1 702 616	3 597 477
Whiskies	232 231	1 270 821	276 580	1 571 902	723 298	4 625 606
Spirits obtained by distilling grape wine or grape marc	103 778	497 618	207 554	759 941	94 492	317 324
Rum and other spirits obtained by distilling fermented sugar cane products	3 425	52 117	7 835	64 425	55 637	150 232
Gin and geneva	5 431	35 216	5 684	22 969	50 045	119 782
Spirits and distilled alcoholic beverages, n.e.s.	284 595	861 552	379 875	1 176 336	1 279 120	2 159 748
Cigars, cheroots, cigarillos and cigarettes, of tobacco substitutes	178	5 558	0	0	3	191
Smoking tobacco, whether or not containing tobacco substitutes in any proportion.	233	341	36 868	308 079	12 224	103 951
Manufactured tobacco, extracts and essences, n.e.s.	20 464	43 366	32 020	66 564	12 039	28 921
Rape or colza seeds, whether or not broken	41 000	105 429	41 610	118 149	57 750	155 204
Mustard seeds	2 033	2 789	1 127	2 190	1 509	2 605
Smoked sheets of natural rubber	1 060	425	250	1 573	0	0
Technically specified natural rubber (TSNR)	678 860	2 318 373	307 733	920 397	278 675	565 176
Other natural rubber	211 403	727 975	255 485	605 998	184 845	372 039
Styrene-butadiene rubber (SBR); carboxylated styrene-butadiene rubber (XSBR)	501 238	1 226 731	169 486	357 051	190 743	358 037
Butadiene rubber (BR)	156 622	461 635	38 667	90 665	70 443	149 020
Isobutene-isoprene (butyl) rubber (IIR); halo-isobutene-isoprene rubber (CIIR or BIIR).	0	0	0	0	17	1 184
Chloroprene (chlorobutadiene) rubber (CR)	31 767	197 283	33 444	189 728	35 157	162 608
Acrylonitrile-butadiene rubber (NBR)	4 885	30 619	1 152	4 938	11 590	31 980
Isoprene rubber (IR)	14	316	7 076	17 999	3 003	9 395
Ethylene-propylene-non-conjugated diene rubber (EPDM)	486	3 299	37 198	169 200	2 700	14 196
Mixtures of any product of group 231 with any product of subgroup 232.1	32	65	50	48	0	0
Other synthetic rubbers and factice derived from oils	24 710	116 700	17 079	45 650	1 637	8 294
Reclaimed rubber in primary forms or in plates, sheets or strip	61 033	58 359	20 500	34 974	16 981	44 243
Waste, parings and scrap of unhardened rubber and powders and granules obtained therefrom	26 315	38 180	36 884	41 050	15 024	9 162
Cork, natural, debacked or roughly squared, or in rectangular (including square) blocks, plates, sheets or strip (including sharp-edged blanks for corks and stoppers)	0	0	0	0	0	0
Cork, natural, raw or simply prepared	100	1 094	0	0	0	0
Waste cork; crushed, granulated or ground cork	99	2 287	162	1 277	337	2 901
Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms (excluding wood waste).	163	1 578	7 536	1 681	20 370	7 354
Wood charcoal (including shell or nut charcoal), whether or not agglomerated	458 618	84 813	502 484	84 865	460 744	145 888
..coniferous	26 108	8 140	6 500	16 822	75	154
..non-coniferous	8 594	8 982	5 857	13 141	12 232	18 227
..not impregnated	0	0	5 050	1 600	980	3 754
..impregnated	240 606	110 117	41 087	20 452	85 136	21 535

Table 3.12 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Unbleached kraft paper or paperboard or of corrugated paper or paperboard.	94 671	57 494	178 216	89 172	34 335	10 295
Other paper or paperboard made mainly of bleached chemical pulp, not coloured in the mass	0	0	689 098	238 414	59 757	31 947
Paper or paperboard made mainly of mechanical pulp (e.g., newspapers, journals and similar printed matter)	0	0	0	0	0	0
Other (including unsorted waste and scrap)	624 263	212 191	225 220	60 810	982 732	291 889
..coniferous	0	0	30 000	28 303	0	0
..non-coniferous	0	0	0	0	0	0
..coniferous	294 920	323 368	147 070	161 213	302 851	340 842
..non-coniferous	348 495	291 768	0	0	100	800
..unbleached	0	0	0	0	0	0
..semi-bleached or bleached	25 503	23 539	0	0	90 237	41 097
Semi-chemical wood pulp	32 000	40 574	0	0	150 375	71 049
Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material	4	44	362 254	120 668	235 992	52 084
Silkworm cocoons suitable for reeling	0	0	0	0	0	0
Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock)	0	0	0	0	0	0
..yarn waste (including thread waste)	8 276	8 512	10 705	3 066	19 020	30 264
..garnetted stock, not carded or combed	99	419	0	0	0	0
..other (including pulled or garnetted rags), not carded or combed	42 431	33 609	119 050	61 804	33 303	10 114

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.13: Exports of Crop and Crop Products by year 2010 - 2015

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Rice, semi-milled or wholly milled, whether or not polished, glazed, parboiled or converted (excluding broken rice)	0	0	0	0	0	0
Broken rice	60 000	51 160	64 000	40 548	910 000	239 012
Millet, unmilled	11	13	0	0	0	0
Buckwheat, unmilled	0	0	0	0	0	0
Canary seed, unmilled	0	0	0	0	350	805
Cereals, unmilled, n.e.s.	1 000	5 700	4	46	63	38
Maize (corn) flour	0	0	0	0	31 000	15 336
Other flours	1	1	0	0	25 000	11 655
Groats and meal of maize (corn)	49 050	13 443	24 663	13 381	22 688	11 792
Groats and meal of other cereals	0	0	0	0	0	0
Pellets	0	0	0	0	0	0
Prepared foods obtained by the swelling or roasting of cereals or cereal products and from unroasted cereal flakes or from mixtures of unroasted and roasted cereal flakes or swelled cereals	57 283	159 933	17 024	50 109	18 165	90 793
Cereals other than maize (corn), in grain form, precooked or otherwise prepared	5 384	17 220	3 538	14 498	950	4 226
Other rolled or flaked cereal grains, except rice of subgroup 042.3	0	0	0	0	0	0
Other worked cereal grains (e.g., hulled, pearled, clipped, sliced or kibbled), except rice of subgroup 042.3	5 941	6 387	42 000	23 480	0	0
Germ of cereals, whole, rolled, flaked or ground	0	0	12	56	15	20
Crispbread, rusks, toasted bread and similar products	0	0	0	0	0	0
Sweet biscuits, waffles and wafers, gingerbread and the like	592 784	454 274	950 265	1 665 361	871 909	1 324 079
Other	0	0	0	0	11	50
Peas	110 341	429 826	110 343	412 708	52 047	231 150
Chick-peas	21 150	8 445	825	4 935	5	4
Beans, other than broad beans and horse beans	209 362	192 193	94 861	340 594	17 265	100 719
Lentils	0	0	0	0	23 000	11 500
Broad beans and horse beans	0	0	0	0	1 000	1 624
Other	6 150	40 430	22 575	173 550	7 550	50 950
Onions and shallots, fresh or chilled	0	0	0	0	0	0
Garlic, leeks and other alliaceous vegetables, fresh or chilled	0	0	100	1 690	3 000	2 700
Cabbage and similar edible brassicas, fresh or chilled	73 840	45 711	950	1 270	0	0
Lettuce and chicory (including endive), fresh or chilled	0	0	300	318	0	0
Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, fresh or chilled	0	0	195	278	0	0

Table 3.13 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Cucumbers and gherkins, fresh or chilled	0	0	100	340	0	0
Leguminous vegetables, fresh or chilled	417 812	211 924	110	168	66 343	663 416
Mushrooms and truffles, fresh or chilled	0	0	247	1 000	0	0
Other vegetables, fresh or chilled	181 909	39 483	91 594	127 307	73 534	72 680
Sweet corn	12	61	0	0	0	0
Other vegetables and mixtures of vegetables	212 165	177 858	0	0	0	0
Manioc (cassava)	0	0	0	0	0	0
Arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers (other than manioc) with high starch or inulin content whether or not sliced or in the form of pellets; sago pith	3 790	612	4 180	723	400	53
Hope cones and lupulin	0	0	0	0	0	0
Sugar beet, fresh or dried, whether or not ground	0	0	0	0	0	0
Vegetable products of a kind used chiefly for human foods, n.e.s.	0	0	0	0	0	0
Onions	0	0	0	0	0	0
Mushrooms, wood ears, jelly fungi and truffles	10 211	21 292	2 250	4 990	13 500	28 226
Other vegetables; mixtures of vegetables	0	0	193	2 933	495	1 543
Flour and meal of potatoes	0	0	0	0	0	0
Flakes, granules and pellets of potatoes	0	0	0	0	2	88
Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, pearls, siftings or in similar forms	0	0	0	0	0	0
Flour and meal of the dried leguminous vegetables of subgroup 054.2	0	0	0	0	0	0
Flour and meal of sago, roots or tubers of headings 054.81 and 054.83	0	0	0	0	0	0
Flour, meal and powder of the products of any heading of group 057	0	0	0	0	2 871	15 952
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, frozen	0	0	0	0	0	0
Other vegetables and mixtures of vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen	0	0	0	0	0	0
Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	164 494	461 948	909 378	1 308 018	528 920	1 784 934
Tomatoes prepared or preserved otherwise than by vinegar or acetic acid, whole or in pieces.	0	0	0	0	0	0
Tomatoes, prepared or preserved otherwise than by vinegar or acetic acid, n.e.s.	1 170	1 690	5 412	6 314	0	0
Mushrooms and truffles prepared or preserved otherwise than by vinegar or acetic acid	450	2 750	0	0	0	0
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, not frozen	5 369	17 963	1 137	5 880	1 866	12 499
Sweet corn prepared or preserved otherwise than by vinegar or acetic acid	0	0	0	0	0	0

Table 3.13 Continued

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen	60	40	0	0	21	1
Oranges, fresh or dried	41 392 237	3 123 224	24 947 739	2 323 192	31 124 487	2 565 054
Mandarins (including tangerines and satsumas); clementines, wilkings and similar citrus hybrids, fresh or dried	323 376	77 422	80 989	30 406	109 973	36 487
Lemons and limes fresh or dried	264 800	20 568	501 660	38 169	614 460	152 879
Grapefruit, fresh or dried	2 895 391	140 375	3 502 000	153 968	2 351 315	127 046
Citrus fruit, n.e.s., fresh or dried	218 780	13 486	833 181	185 029	29 400	61 070
..fresh	0	0	0	0	0	0
..dried (e.g., raisins)	0	0	0	0	28 020	14 010
Coconuts	0	0	0	0	0	0
Brazil nuts	0	0	0	0	0	0
Cashew nuts	0	0	0	0	1	1
Almonds	0	0	1	1	0	0
Hazelnuts or filberts	0	0	0	0	0	0
Walnuts	0	0	0	0	0	0
Chestnuts	0	0	0	0	0	0
Pistachios	0	0	0	0	0	0
Edible nuts (excluding mixtures), fresh or dried, n.e.s.	2 128 235	2 226 549	2 854 244	4 899 095	2 775 433	3 724 850
Melons (including water melons) and papaws (papayas), fresh	0	0	399	2 909	0	0
Pears and quinces, fresh	0	0	712	2 151	0	0
Apricots, cherries, peaches (including nectarines), plums and sloes, fresh.	600	600	1 998	4 196	31	1
Strawberries, raspberries, blackberries, mulberries, loganberries, cranberries, bilberries, and other fruits of the genus Vaccinium, fresh	0	0	0	0	0	0
Pineapples, fresh or dried	0	0	110	203	0	0
Dates, fresh or dried	0	0	0	0	0	0
Avocados, guavas, mangoes and mangosteens, fresh or dried	193 738	39 117	274 180	100 023	594 260	178 463
Other fresh fruit	556 071	327 032	77 515	201 455	95 707	144 188
Fruit, dried, n.e.s., and mixtures, n.e.s., of nuts or dried fruits of group 057	50	949	0	0	0	0
Fruit and nuts, provisionally preserved (e.g., by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption	730	1 789	0	0	0	0
Peel of citrus fruit or melons, fresh, frozen, dried or provisionally preserved in brine, in sulphur water or in other preservative solutions	0	0	720	1 695	0	0
Strawberries	0	0	0	0	0	0

Table 3.13 Continued

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries	0	0	0	0	0	0
Other	0	0	24 000	50 724	0	0
Nuts, groundnuts and other seeds, n.e.s.	203 162	267 918	94 192	156 695	182 836	448 265
Pineapples	0	0	0	0	0	0
Citrus fruit	0	0	0	0	0	0
Apricots, cherries and peaches	0	0	0	0	0	0
Fruits or edible parts of plants, n.e.s.	34 876	29 511	12 618	23 753	16 065	26 494
Mixtures of fruits or other edible parts of plants, n.e.s.	0	0	0	0	0	0
Pineapple juice	0	0	0	0	0	0
Tomato juice	0	0	0	0	0	0
Grape juice (including grape must)	0	0	0	0	0	0
Apple juice	0	0	0	0	107	129
Juice of any other single fruit or vegetable	109 100	167 370	134 890	110 457	101 858	150 338
Mixtures of fruit or vegetable juices	21 229	19 351	69 588	155 694	1 195	802
Cane sugar, raw	112 000 005	48 515 008	88 000 000	37 935 000	158 000 010	102 700 010
Beet sugar, raw	0	0	0	0	0	0
..containing added flavouring or colouring matter	0	0	4	6	0	0
..other	0	0	14 000 005	12 020 003	136	876
Cane molasses	28 520 000	1 854 844	6 450 000	509 550	12 640 540	1 543 290
Beet sugar molasses and other molasses (e.g., corn molasses)	420 000	13 824	0	0	0	0
Lactose and lactose syrup	2	1	0	0	0	0
Maple sugar and maple syrup	0	0	0	0	0	0
Glucose (dextrose) and glucose syrup, not containing fructose or containing, in the dry state, less than 20% by weight of fructose.	27 900	20 311	27 900	22 330	27 900	23 146
Glucose and glucose syrup, containing in the dry state at least 20% but not more than 50% by weight of fructose	0	0	90 000	68 122	278 700	214 125
Pure fructose	0	0	0	0	0	0
Other fructose and fructose syrup, containing in the dry state more than 50% by weight of fructose	0	0	0	0	0	0
Other (including invert sugar)	0	0	0	0	0	0
Chewing-gum, whether or not sugar-coated	248 323	712 833	64 111	634 487	60 347	383 645
Other	1 148 142	1 418 254	1 199 208	1 952 254	1 094 912	1 831 666
Coffee, not roasted, not decaffeinated	284 413	736 762	191 347	1 028 304	154 571	742 020

Table 3.13 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Coffee, not roasted, decaffeinated	0	0	0	0	5	40
Extracts, essences and concentrates of coffee, and preparations with a basis of these extracts, essences or concentrates or with a basis of coffee	0	0	1 616	1 845	0	0
Coffee husks and skins; coffee substitutes containing coffee in any proportion	30 871	159 652	58 506	232 446	39 161	167 658
Roasted chicory and other roasted coffee substitutes (not containing coffee) and extracts, essences and concentrates thereof	0	0	8 400	48 629	81 980	530 015
...not defatted (liquor)	0	0	0	0	0	0
..wholly or partly defatted (cocoa cake)	0	0	0	0	0	0
Green tea (not fermented), in immediate packings of a content not exceeding 3 kg, whether or not flavoured	19	18	63 170	205 418	153 074	602 364
Other green tea (not fermented), whether or not flavoured	239 304	68 652	19 000	100 970	7 200	61 310
Black tea (fermented) and partly fermented tea, in immediate packings of a content not exceeding 3 kg, whether or not flavoured	444 268	1 166 629	320 471	910 773	335 487	1 058 972
Other black tea (fermented) and other partly fermented tea, whether or not flavoured	9 339 157	11 667 105	10 818 668	14 624 368	11 044 345	15 964 642
Maté	0	0	0	0	0	0
Extracts, essences and concentrates of tea or maté, and preparations with a basis of tea, maté, or their extracts, essences or concentrates.	0	0	168	861	0	0
Pepper of the genus Piper, neither crushed nor ground	104 062	54 860	3 000	15 000	50 770	257 567
Pepper of the genus Piper, crushed or ground	196 293	164 093	150 687	193 488	218 270	327 684
Fruits of the genus Capsicum or of the genus Pimenta, dried or crushed or ground	754 024	905 921	771 730	1 388 980	807 384	1 396 813
Vanilla	0	0	0	0	0	0
Cinnamon and cinnamon-tree flowers, neither crushed nor ground	0	0	0	0	0	0
Cinnamon and cinnamon-tree flowers, crushed or ground	0	0	0	0	0	0
Cloves (whole fruit, cloves and stems)	0	0	0	0	0	0
Nutmeg, mace and cardamoms	0	0	0	0	0	0
Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries	16	5 477	0	0	2 022	23 576
Ginger (excluding ginger preserved in sugar or conserved in syrup)	0	0	45	173	0	0
Saffron	0	0	0	0	0	0
Other spices; mixtures of two or more of the products of different headings of group 075	64 307	106 532	265 682	528 135	327 956	816 064
Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets	0	0	0	0	0	0
Lucerne (alfalfa) meal and pellets	0	0	0	0	0	0
Swedes, mangolds, fodder roots, hay, clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	11	3 531	47	125	0	0
Vegetable residues and by-products, vegetable materials and vegetable waste, whether or not in the form of	0	0	500 000	20 000	0	0

Table 3.13 Continued

Year Indicators	2010 Net Weight (Kg)	US$Value	2011 Net Weight (Kg)	US$Value	2012 Net Weight (Kg)	US$Value
pellets, of a kind used for animal food, n.e.s.						
..of leguminous plants	0	0	0	0	0	0
..of maize (corn)	0	0	4 906 200	577 447	7 434 500	1 488 003
..of wheat	0	0	0	0	2 772 481	425 773
..of other cereals	0	0	0	0	0	0
..of soya beans	610 000	285 500	20 050	9 373	151 000	51 748
..of groundnuts	0	0	0	0	0	0
..of cotton seeds	30 296 000	8 209 744	29 286 000	7 982 604	56 320 825	16 065 620
..of linseed	0	0	0	0	0	0
..of sunflower seeds	0	0	0	0	0	0
..of rape or colza seeds	0	0	0	0	0	0
..of coconut or copra	0	0	0	0	0	0
..of palm nuts or kernels	0	0	0	0	0	0
..of other oil-seeds, oleaginous fruits and germs of cereals	150 000	7 500	0	0	0	0
Flours, meals and pellets, of meat or meat offal, unfit for human consumption; greaves	0	0	0	0	30 000	12 557
Flours, meals and pellets, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption	0	0	25 000	15 425	0	0
Residues of starch manufacture and similar residues	0	0	0	0	0	0
Beet pulp, bagasse and other waste of sugar manufacture	0	0	0	0	0	0
Brewing or distilling dregs and waste	0	0	0	0	0	0
Wine lees; argol	0	0	0	0	0	0
Dog or cat food, put up for retail sale	0	0	0	0	0	0
Preparations of a kind used for animal food, n.e.s.	27	51	675	959	240 000	72 000
Margarine (excluding liquid margarine)	319 741	663 674	316 474	982 928	551 593	2 776 445
Other	0	0	2 520	4 100	0	0
Homogenized preparations from meat and edible meat offal	0	0	0	0	0	0
Homogenized vegetables	0	0	0	0	0	0
Cooked fruit preparations, homogenized	17 900	25 621	6 636	6 555	5 330	6 795
Homogenized composite food preparations	0	0	0	0	381	1 854
Soya sauce	0	0	0	0	0	0
Tomato ketchup and other tomato sauces	460 791	454 082	203 205	256 206	31 688	50 694
Mustard flour and meal and prepared mustard	2 025	8 925	270	1 820	0	0

Table 3.13 Continued

Year Indicators	2010 Net Weight (Kg)	 US$Value	2011 Net Weight (Kg)	 US$Value	2012 Net Weight (Kg)	 US$Value
Vinegar and substitutes for vinegar obtained from acetic acid	100	237	268	140	0	0
Other sauces and preparations therefor; mixed condiments and mixed seasonings	163 216	309 461	85 277	196 136	125 611	248 253
Pasta, cooked or stuffed; couscous, whether or not prepared	19 680	27 570	0	0	0	0
Edible products of animal origin, n.e.s.	0	0	4 550	3 030	6 454	25 967
Food preparations for infant use, put up for retail sale of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of heading	262 986	1 431 710	111 028	629 877	123 100	745 843
Malt extract; food preparations of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of headings 022.11 – 022.32 and sub	25 312	97 217	942 288	661 980	100 000	56 200
Other food preparations	490 545	307 514	772 297	1 186 655	1 305 332	1 574 995
Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow.	1 534	1 715	918	1 710	5 715	5 798
Waters (including mineral waters and aerated waters) containing added sugar or other sweetening matter or flavoured, and other non-alcoholic beverages, n.e.s.	43 922	35 495	26 416	57 220	23 801	27 847
Grape must in fermentation or with fermentation arrested otherwise than by the addition of alcohol.	0	0	0	0	360	6 501
Vermouth and other wines of fresh grapes flavoured with plants or aromatic substances.	0	0	0	0	0	0
Sparkling wine	9 960	15 370	52 972	65 059	2 919	7 338
Wine of fresh grapes (other than sparkling wine); grape must with fermentation prevented or arrested by the addition of alcohol	43 482	51 816	19 052	57 669	7 236	21 420
Whiskies	75 871	261 520	122 427	869 736	372 020	786 952
Spirits obtained by distilling grape wine or grape marc	114 719	75 688	135 320	178 351	245 777	386 400
Rum and other spirits obtained by distilling fermented sugar cane products	15 474	15 675	23 481	50 478	21 695	88 751
Gin and geneva	37 769	44 553	37 010	81 865	45 933	83 726
Spirits and distilled alcoholic beverages, n.e.s.	143 697	160 061	213 771	339 740	376 755	580 252
Cigars, cheroots, cigarillos and cigarettes, of tobacco substitutes	0	0	0	0	0	0
Smoking tobacco, whether or not containing tobacco substitutes in any proportion.	4 876 414	16 509 811	1 853 218	5 584 465	2 567 048	8 409 415
Manufactured tobacco, extracts and essences, n.e.s.	4	312	396 022	2 492 081	493 680	2 246 244
Whole hides and skins, of a weight per skin not exceeding 8 kg when simply dried, 10 kg when dry-salted, or 16 kg when fresh, wet-salted or otherwise preserved	2 766 856	1 385 926	3 642 539	3 372 617	4 279 834	5 413 309
Other hides and skins, including butts, bends and bellies	1 200	39 302	675 000	491 722	1 159 648	830 231
Parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour	0	0	0	0	0	0
Hides and skins, n.e.s., raw (fresh, or salted, dried, limed, pickled or otherwise preserved, but not tanned,	317 508	16 187 207	337 299	21 768 987	221 230	22 711 540

Table 3.13 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
parchment-dressed or further prepared), whether or not dehaired or split						
..of lamb, the following: Astrakhan, Broadtail, Caracul, Persian and similar lamb, Indian, Chinese, Mongolian or Tibetan lamb	0	0	0	0	0	0
...of fox	0	0	0	0	0	0
Other furskins, whole, with or without head, tail or paws	0	0	0	0	0	0
..in shell	0	0	78	161	0	0
..shelled	0	0	989 801	950 883	7 510	32 691
Rape or colza seeds, whether or not broken	45	2 718	0	0	0	0
Mustard seeds	0	0	0	0	0	0
Smoked sheets of natural rubber	0	0	0	0	0	0
Technically specified natural rubber (TSNR)	0	0	0	0	0	0
Other natural rubber	0	0	0	0	40	100
Styrene-butadiene rubber (SBR); carboxylated styrene-butadiene rubber (XSBR)	0	0	0	0	0	0
Butadiene rubber (BR)	0	0	0	0	0	0
Isobutene-isoprene (butyl) rubber (IIR); halo-isobutene-isoprene rubber (CIIR or BIIR).	0	0	0	0	0	0
Chloroprene (chlorobutadiene) rubber (CR)	0	0	0	0	1 750	539
Acrylonitrile-butadiene rubber (NBR)	0	0	0	0	0	0
Isoprene rubber (IR)	0	0	0	0	0	0
Ethylene-propylene-non-conjugated diene rubber (EPDM)	0	0	0	0	0	0
Mixtures of any product of group 231 with any product of subgroup 232.1	0	0	0	0	0	0
Other synthetic rubbers and factice derived from oils	0	0	0	0	0	0
Reclaimed rubber in primary forms or in plates, sheets or strip	0	0	0	0	0	0
Waste, parings and scrap of unhardened rubber and powders and granules obtained therefrom	0	0	1 150	1 584	0	0
Cork, natural, debacked or roughly squared, or in rectangular (including square) blocks, plates, sheets or strip (including sharp-edged blanks for corks and stoppers)	0	0	0	0	0	0
Cork, natural, raw or simply prepared	0	0	0	0	0	0
Waste cork; crushed, granulated or ground cork	0	0	0	0	0	0
Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms (excluding wood waste).	30 000	400	0	0	0	0
Wood charcoal (including shell or nut charcoal), whether or not agglomerated	4 735 511	760 086	10 132 447	1 776 808	5 780 000	772 600
..coniferous	0	0	0	0	0	0
..non-coniferous	0	0	0	0	0	0
...not impregnated	0	0	0	0	0	0
..impregnated	420 237	53 401	256 173	28 225	0	0

Table 3.13 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Unbleached kraft paper or paperboard or of corrugated paper or paperboard.	0	0	0	0	0	0
Other paper or paperboard made mainly of bleached chemical pulp, not coloured in the mass	0	0	0	0	0	0
Paper or paperboard made mainly of mechanical pulp (e.g., newspapers, journals and similar printed matter)	0	0	0	0	0	0
Other (including unsorted waste and scrap)	3 491 018	268 676	5 896 600	550 272	6 332 953	554 816
..coniferous	6	18	0	0	0	0
..non-coniferous	1	6	0	0	0	0
..coniferous	0	0	0	0	0	0
..non-coniferous	0	0	0	0	0	0
..unbleached	0	0	0	0	0	0
..semi-bleached or bleached	0	0	0	0	0	0
Semi-chemical wood pulp	0	0	0	0	0	0
Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material	54	191	0	0	0	0
Silkworm cocoons suitable for reeling	0	0	0	0	0	0
Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock)	0	0	0	0	0	0
..yarn waste (including thread waste)	0	0	0	0	415 051	1 312 838
..garnetted stock, not carded or combed	0	0	0	0	0	0
..other (including pulled or garnetted rags), not carded or combed	395 452	91 562	520 796	785 819	2 012 220	489 883

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.13: Exports of Crop and Crop Products by year 2013 – 2015

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Rice, semi-milled or wholly milled, whether or not polished, glazed, parboiled or converted (excluding broken rice)	180 000	113 220	0	0	0	0
Broken rice	638 000	163 379	769 900	361 384	510 100	337 346
Millet, unmilled	0	0	180 050	135 247	31 253	19 864
Buckwheat, unmilled	0	0	0	0	0	0
Canary seed, unmilled	0	0	0	0	0	0
Cereals, unmilled, n.e.s.	0	0	0	0	0	0
Maize (corn) flour	7 300	8 456	13 700	9 303	5 520	3 099
Other flours	0	0	0	0	1 294	10 536
Groats and meal of maize (corn)	60 000	22 211	5	5	16 310	13 351
Groats and meal of other cereals	0	0	0	0	0	0
Pellets	0	0	0	0	0	0
Prepared foods obtained by the swelling or roasting of cereals or cereal products and from unroasted cereal flakes or from mixtures of unroasted and roasted cereal flakes or swelled cereals	16 506	83 754	75 270	282 738	25 195	81 744
Cereals other than maize (corn), in grain form, precooked or otherwise prepared	1 451	2 510	682	3 476	1 722	5 819
Other rolled or flaked cereal grains, except rice of subgroup 042.3	0	0	0	0	7 189	7 189
Other worked cereal grains (e.g., hulled, pearled, clipped, sliced or kibbled), except rice of subgroup 042.3	301	340	0	0	6 771	18 283
Germ of cereals, whole, rolled, flaked or ground	0	0	0	0	0	0
Crispbread, rusks, toasted bread and similar products	0	0	0	0	0	0
Sweet biscuits, waffles and wafers, gingerbread and the like	686 904	991 975	725 786	1 072 476	841 154	1 185 859
Other	6 091	3 714	1	2	4 332	17 545
Peas	39 530	184 755	85 990	330 450	81 643	314 916
Chick-peas	0	0	0	0	0	0
Beans, other than broad beans and horse beans	661 795	240 135	1 417 073	2 741 452	676 442	874 601
Lentils	0	0	0	0	0	0
Broad beans and horse beans	0	0	200	140	600	299
Other	14 176	98 671	25 738	269 584	25 266	220 419
Onions and shallots, fresh or chilled	20	10	0	0	500	445
Garlic, leeks and other alliaceous vegetables, fresh or chilled	0	0	0	0	0	0
Cabbage and similar edible brassicas, fresh or chilled	250	88	0	0	280	151
Lettuce and chicory (including endive), fresh or chilled	50	19	0	0	480	383
Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, fresh or chilled	50	17	0	0	350	278

Table 3.13 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Cucumbers and gherkins, fresh or chilled	90	27	0	0	410	306
Leguminous vegetables, fresh or chilled	298 177	743 951	250 933	513 832	905 657	2 338 855
Mushrooms and truffles, fresh or chilled	0	0	0	0	0	0
Other vegetables, fresh or chilled	52 394	215 681	117 337	470 596	13 850	26 339
Sweet corn	726	150	0	0	0	0
Other vegetables and mixtures of vegetables	10 050	6 785	0	0	57	51
Manioc (cassava)	0	0	0	0	0	0
Arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers (other than manioc) with high starch or inulin content whether or not sliced or in the form of pellets; sago pith	0	0	800	13 382	0	0
Hope cones and lupulin	0	0	0	0	0	0
Sugar beet, fresh or dried, whether or not ground	0	0	0	0	0	0
Vegetable products of a kind used chiefly for human foods, n.e.s.	500	4 800	11 242	43 229	60 201	5 870
Onions	0	0	0	0	0	0
Mushrooms, wood ears, jelly fungi and truffles	0	0	0	0	0	0
Other vegetables; mixtures of vegetables	681	4 052	121	277	428	2 720
Flour and meal of potatoes	0	0	0	0	360	200
Flakes, granules and pellets of potatoes	13	8	0	0	44	2
Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, pearls, siftings or in similar forms	0	0	0	0	0	0
Flour and meal of the dried leguminous vegetables of subgroup 054.2	749	1 607	0	0	0	0
Flour and meal of sago, roots or tubers of headings 054.81 and 054.83	0	0	0	0	0	0
Flour, meal and powder of the products of any heading of group 057	10 000	85 000	30 000	225 000	5 000	42 410
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, frozen	0	0	241	1 051	0	0
Other vegetables and mixtures of vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen	0	0	1 001	5 525	0	0
Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	743 906	2 885 839	712 380	1 390 648	530 075	980 084
Tomatoes prepared or preserved otherwise than by vinegar or acetic acid, whole or in pieces.	0	0	0	0	0	0
Tomatoes, prepared or preserved otherwise than by vinegar or acetic acid, n.e.s.	0	0	0	0	0	1
Mushrooms and truffles prepared or preserved otherwise than by vinegar or acetic acid	0	0	0	0	0	0
Potatoes prepared or preserved otherwise than by vinegar or acetic acid, not frozen	591	6 374	1 107	10 584	8 914	60 827
Sweet corn prepared or preserved otherwise than by vinegar or acetic acid	3 291	1 920	0	0	0	0
Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen	2 426	28 414	630	954	66 000	80 194
Oranges, fresh or dried	43 695 976	3 386 666	46 703 310	3 835 503	39 985	3 555 121

Table 3.13 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
					820	
Mandarins (including tangerines and satsumas); clementines, wilkings and similar citrus hybrids, fresh or dried	188 355	32 430	544 075	91 035	676 100	109 055
Lemons and limes fresh or dried	416 810	21 726	498 100	100 928	403 300	78 246
Grapefruit, fresh or dried	3 096 770	157 762	3 150 340	237 422	2 619 395	219 165
Citrus fruit, n.e.s., fresh or dried	27 220	59 470	0	0	25 600	1 400
..fresh	3 000	5 911	0	0	10	40
..dried (e.g., raisins)	0	0	0	0	0	0
Coconuts	0	0	0	0	0	0
Brazil nuts	0	0	0	0	0	0
Cashew nuts	0	0	0	0	0	0
Almonds	0	0	0	0	240	120
Hazelnuts or filberts	60 000	72 512	0	0	0	0
Walnuts	0	0	0	0	0	0
Chestnuts	0	0	0	0	0	0
Pistachios	0	0	0	0	0	0
Edible nuts (excluding mixtures), fresh or dried, n.e.s.	3 931 290	6 916 495	3 261 179	8 014 677	3 732 782	11 222 245
Melons (including water melons) and papaws (papayas), fresh	0	0	0	0	400	160
Pears and quinces, fresh	0	0	0	0	0	0
Apricots, cherries, peaches (including nectarines), plums and sloes, fresh.	35 679	63 934	41 302	66 777	2 000	3 200
Strawberries, raspberries, blackberries, mulberries, loganberries, cranberries, bilberries, and other fruits of the genus Vaccinium, fresh	95	48	30	7	0	0
Pineapples, fresh or dried	0	0	0	0	0	0
Dates, fresh or dried	0	0	0	0	0	0
Avocados, guavas, mangoes and mangosteens, fresh or dried	721 880	431 617	1 185 720	709 947	1 404 295	835 764
Other fresh fruit	48 866	97 630	133 903	200 942	87 147	123 740
Fruit, dried, n.e.s., and mixtures, n.e.s., of nuts or dried fruits of group 057	440	407	0	0	1 435	7 617
Fruit and nuts, provisionally preserved (e.g., by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption	0	0	0	0	0	0
Peel of citrus fruit or melons, fresh, frozen, dried or provisionally preserved in brine, in sulphur water or in other preservative solutions	0	0	0	0	0	0
Strawberries	0	0	0	0	0	0
Raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries	0	0	13 300	35 026	0	0

Table 3.13 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Other	0	0	0	0	0	0
Nuts, groundnuts and other seeds, n.e.s.	246 019	597 617	189 722	481 408	316 076	606 142
Pineapples	0	0	0	0	0	0
Citrus fruit	0	0	0	0	0	0
Apricots, cherries and peaches	12 086	9 931	0	0	0	0
Fruits or edible parts of plants, n.e.s.	3 291	21 937	343	780	9 005	77 051
Mixtures of fruits or other edible parts of plants, n.e.s.	0	0	0	0	0	0
Pineapple juice	0	0	0	0	0	0
Tomato juice	0	0	2 359	4 855	1 270	2 166
Grape juice (including grape must)	22 400	21 000	9 388	23 580	1 516	1 225
Apple juice	5 060	15 764	6 943	22 275	6 331	16 346
Juice of any other single fruit or vegetable	800	276	87 416	50 911	392 138	277 884
Mixtures of fruit or vegetable juices	89 741	84 222	180 509	231 878	488 200	375 030
Cane sugar, raw	93 350 013	54 505 513	261 400 052	150 314 507	189 900 069	95 959 798
Beet sugar, raw	28 250 000	17 527 500	0	0	0	0
..containing added flavouring or colouring matter	15 000 000	9 300 000	0	0	0	0
..other	15 000 084	9 300 080	34 227	24 661	7 219 016	3 886 837
Cane molasses	11 850 000	769 790	10 028 000	784 855	3 310 000	277 939
Beet sugar molasses and other molasses (e.g., corn molasses)	0	0	1 410 000	67 807	0	0
Lactose and lactose syrup	0	0	0	0	0	0
Maple sugar and maple syrup	0	0	0	0	0	0
Glucose (dextrose) and glucose syrup, not containing fructose or containing, in the dry state, less than 20% by weight of fructose.	55 800	46 292	75 600	63 837	27 950	22 067
Glucose and glucose syrup, containing in the dry state at least 20% but not more than 50% by weight of fructose	235 200	186 194	109 200	85 714	55 502	44 392
Pure fructose	0	0	0	0	0	0
Other fructose and fructose syrup, containing in the dry state more than 50% by weight of fructose	0	0	0	0	0	0
Other (including invert sugar)	198	104	516	867	290	35
Chewing-gum, whether or not sugar-coated	90 714	697 253	103 553	734 359	114 994	659 985
Other	761 441	1 294 605	641 473	1 079 651	620 250	968 860
Coffee, not roasted, not decaffeinated	109 064	411 662	804 505	1 954 846	412 417	1 338 707
Coffee, not roasted, decaffeinated	223	503	242	1 198	19 420	80 245

Table 3.13 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Extracts, essences and concentrates of coffee, and preparations with a basis of these extracts, essences or concentrates or with a basis of coffee	234	1 970	108	2 355	141	936
Coffee husks and skins; coffee substitutes containing coffee in any proportion	0	0	1 500	7 500	1	8
Roasted chicory and other roasted coffee substitutes (not containing coffee) and extracts, essences and concentrates thereof	8 970	144 511	27 944	160 076	0	0
...not defatted (liquor)	0	0	0	0	0	0
..wholly or partly defatted (cocoa cake)	0	0	0	0	0	0
Green tea (not fermented), in immediate packings of a content not exceeding 3 kg, whether or not flavoured	156 172	665 015	123 120	542 407	12	290
Other green tea (not fermented), whether or not flavoured	652	17 750	0	0	0	0
Black tea (fermented) and partly fermented tea, in immediate packings of a content not exceeding 3 kg, whether or not flavoured	294 300	804 960	265 391	751 600	664 012	1 602 359
Other black tea (fermented) and other partly fermented tea, whether or not flavoured	11 411 888	19 934 424	12 401 388	17 454 804	13 319 927	17 847 649
Maté	0	0	0	0	0	0
Extracts, essences and concentrates of tea or maté, and preparations with a basis of tea, maté, or their extracts, essences or concentrates.	0	0	0	0	399	1 887
Pepper of the genus Piper, neither crushed nor ground	120 036	255 662	22 500	54 000	2 050	7 990
Pepper of the genus Piper, crushed or ground	308 190	382 085	358 351	574 399	608 554	1 039 041
Fruits of the genus Capsicum or of the genus Pimenta, dried or crushed or ground	386 297	607 526	279 248	497 302	68 576	164 837
Vanilla	0	0	0	0	0	0
Cinnamon and cinnamon-tree flowers, neither crushed nor ground	0	0	0	0	0	0
Cinnamon and cinnamon-tree flowers, crushed or ground	0	0	0	0	0	0
Cloves (whole fruit, cloves and stems)	44	235	0	0	0	0
Nutmeg, mace and cardamoms	0	0	0	0	0	0
Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries	29	156	0	0	0	0
Ginger (excluding ginger preserved in sugar or conserved in syrup)	61	326	0	0	2	1
Saffron	0	0	0	0	0	0
Other spices; mixtures of two or more of the products of different headings of group 075	227 998	568 408	104 441	352 389	479 806	1 156 147
Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets	15	100	0	0	0	0
Lucerne (alfalfa) meal and pellets	0	0	0	0	0	0
Swedes, mangolds, fodder roots, hay, clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	0	0	0	0	30 000	33 600

Table 3.13 Continued

Year Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Vegetable residues and by-products, vegetable materials and vegetable waste, whether or not in the form of pellets, of a kind used for animal food, n.e.s.	0	0	0	0	0	0
..of leguminous plants	0	0	0	0	0	0
..of maize (corn)	1 484 000	236 570	3 339 000	541 000	680	1 948
..of wheat	2 504 000	403 750	2 921 000	395 113	2 000 000	202 330
..of other cereals	0	0	0	0	3	17
..of soya beans	43 000	17 923	90 000	80 280	0	0
..of groundnuts	5 050	1 562	0	0	0	0
..of cotton seeds	43 576 000	10 078 159	16 654 000	4 880 753	11 244 000	3 244 685
..of linseed	0	0	0	0	0	0
..of sunflower seeds	0	0	0	0	0	0
..of rape or colza seeds	0	0	0	0	0	0
..of coconut or copra	0	0	0	0	0	0
..of palm nuts or kernels	0	0	0	0	0	0
..of other oil-seeds, oleaginous fruits and germs of cereals	546 000	94 458	0	0	0	0
Flours, meals and pellets, of meat or meat offal, unfit for human consumption; greaves	0	0	0	0	0	0
Flours, meals and pellets, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption	0	0	0	0	0	0
Residues of starch manufacture and similar residues	10 000	6 200	0	0	2 000	568
Beet pulp, bagasse and other waste of sugar manufacture	0	0	0	0	0	0
Brewing or distilling dregs and waste	0	0	0	0	0	0
Wine lees; argol	0	0	0	0	0	0
Dog or cat food, put up for retail sale	0	0	0	0	2 100	2 050
Preparations of a kind used for animal food, n.e.s.	4 015 551	1 067 953	8 021 255	2 150 526	6 008 408	1 344 371
Margarine (excluding liquid margarine)	464 843	1 601 819	517 336	2 682 328	313 917	1 212 074
Other	13 750	8 497	11	32	4	13
Homogenized preparations from meat and edible meat offal	0	0	0	0	65	192
Homogenized vegetables	11 145	14 839	0	0	0	0
Cooked fruit preparations, homogenized	8 410	22 048	49 661	149 580	7 010	19 445
Homogenized composite food preparations	700	269	60	235	0	0
Soya sauce	0	0	0	0	198	1 465
Tomato ketchup and other tomato sauces	62 189	102 279	96 896	132 615	53 525	46 795

Table 3.13 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Mustard flour and meal and prepared mustard	0	0	0	0	0	0
Vinegar and substitutes for vinegar obtained from acetic acid	127	154	510	1 009	0	0
Other sauces and preparations therefor; mixed condiments and mixed seasonings	165 994	368 437	306 123	671 782	306 731	710 459
Pasta, cooked or stuffed; couscous, whether or not prepared	0	0	5 000	6 498	151	411
Edible products of animal origin, n.e.s.	2 745	900	40 545	17 970	0	0
Food preparations for infant use, put up for retail sale of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of heading	283 764	1 636 351	386 195	1 914 158	215 269	1 166 889
Malt extract; food preparations of flour, meal, starch or malt extract (not containing cocoa or containing cocoa in a proportion by weight of less than 40% calculated on totally defatted basis, n.e.s., or of goods of headings 022.11 – 022.32 and sub	9 540	60 455	15 566	30 575	90 461	313 963
Other food preparations	3 909 050	2 778 390	226 013	950 933	180 137	671 122
Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow.	4 051	4 661	32 719	18 300	253 703	95 435
Waters (including mineral waters and aerated waters) containing added sugar or other sweetening matter or flavoured, and other non-alcoholic beverages, n.e.s.	1 558 796	1 375 858	1 095 788	757 828	1 573 610	1 293 823
Grape must in fermentation or with fermentation arrested otherwise than by the addition of alcohol.	0	0	0	0	0	0
Vermouth and other wines of fresh grapes flavoured with plants or aromatic substances.	360	1 157	489	7 035	463	1 282
Sparkling wine	33 260	45 811	4 531	3 080	13 322	23 602
Wine of fresh grapes (other than sparkling wine); grape must with fermentation prevented or arrested by the addition of alcohol	44 281	85 986	41 549	66 567	14 949	21 894
Whiskies	388 810	831 282	323 582	624 430	84 324	198 706
Spirits obtained by distilling grape wine or grape marc	249 082	255 269	72 351	84 755	24 926	21 187
Rum and other spirits obtained by distilling fermented sugar cane products	7 528	9 821	9 702	23 061	175	2 391
Gin and geneva	18 623	16 717	10 649	18 257	1 591	5 005
Spirits and distilled alcoholic beverages, n.e.s.	393 950	385 177	136 294	188 680	35 115	36 165
Cigars, cheroots, cigarillos and cigarettes, of tobacco substitutes	116	20 655	0	0	0	0
Smoking tobacco, whether or not containing tobacco substitutes in any proportion.	2 843 787	9 437 642	2 603 852	10 256 271	2 609 955	10 616 900
Manufactured tobacco, extracts and essences, n.e.s.	0	0	16	10	18 700	167 996
Whole hides and skins, of a weight per skin not exceeding 8 kg when simply dried, 10 kg when dry-salted, or 16 kg when fresh, wet-salted or otherwise preserved	4 565 888	6 605 093	3 081 219	4 385 739	90 626	128 975
Other hides and skins, including butts, bends and bellies	1 330 477	1 744 345	516 674	793 478	1 177	30 435
Parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour	0	0	0	0	0	0

Table 3.13 Continued

Year	2013		2014		2015	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Hides and skins, n.e.s., raw (fresh, or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split	187 603	23 618 436	226 604	25 093 111	12 741	1 634 525
..of lamb, the following: Astrakhan, Broadtail, Caracul, Persian and similar lamb, Indian, Chinese, Mongolian or Tibetan lamb	0	0	0	0	0	0
...of fox	0	0	0	0	0	0
Other furskins, whole, with or without head, tail or paws	0	0	0	0	0	0
..in shell	0	0	0	0	0	0
..shelled	0	0	30 496	5 372	950	419
Rape or colza seeds, whether or not broken	0	0	0	0	0	0
Mustard seeds	0	0	0	0	0	0
Smoked sheets of natural rubber	0	0	0	0	0	0
Technically specified natural rubber (TSNR)	0	0	0	0	0	0
Other natural rubber	0	0	0	0	0	0
Styrene-butadiene rubber (SBR); carboxylated styrene-butadiene rubber (XSBR)	8 691	13 523	6 712	7 012	0	0
Butadiene rubber (BR)	0	0	0	0	0	0
Isobutene-isoprene (butyl) rubber (IIR); halo-isobutene-isoprene rubber (CIIR or BIIR).	0	0	0	0	0	0
Chloroprene (chlorobutadiene) rubber (CR)	0	0	0	0	0	0
Acrylonitrile-butadiene rubber (NBR)	0	0	0	0	0	0
Isoprene rubber (IR)	0	0	0	0	0	0
Ethylene-propylene-non-conjugated diene rubber (EPDM)	0	0	0	0	0	0
Mixtures of any product of group 231 with any product of subgroup 232.1	0	0	0	0	0	0
Other synthetic rubbers and factice derived from oils	0	0	226	1 989	0	0
Reclaimed rubber in primary forms or in plates, sheets or strip	0	0	0	0	0	0
Waste, parings and scrap of unhardened rubber and powders and granules obtained therefrom	0	0	0	0	0	0
Cork, natural, debacked or roughly squared, or in rectangular (including square) blocks, plates, sheets or strip (including sharp-edged blanks for corks and stoppers)	0	0	0	0	0	0
Cork, natural, raw or simply prepared	0	0	0	0	0	0
Waste cork; crushed, granulated or ground cork	0	0	0	0	0	0
Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms (excluding wood waste).	66 000	861	0	0	20 134	10 071
Wood charcoal (including shell or nut charcoal), whether or not agglomerated	5 640 000	825 605	4 424 000	662 688	1 932 000	253 265
..coniferous	0	0	0	0	0	0
..non-coniferous	0	0	0	0	0	0
...not impregnated	0	0	0	0	0	0

Table 3.13 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
..impregnated	200	1 710	0	0	0	0
Unbleached kraft paper or paperboard or of corrugated paper or paperboard.	0	0	78 700	7 083	714 700	77 696
Other paper or paperboard made mainly of bleached chemical pulp, not coloured in the mass	0	0	0	0	0	0
Paper or paperboard made mainly of mechanical pulp (e.g., newspapers, journals and similar printed matter)	20 000	700	0	0	0	0
Other (including unsorted waste and scrap)	7 865 702	702 374	10 337 711	922 853	9 001 471	920 938
..coniferous	0	0	0	0	0	0
..non-coniferous	0	0	0	0	0	0
..coniferous	0	0	0	0	0	0
..non-coniferous	0	0	0	0	0	0
..unbleached	0	0	0	0	0	0
..semi-bleached or bleached	0	0	0	0	0	0
Semi-chemical wood pulp	0	0	0	0	0	0
Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material	0	0	0	0	2 000 003	710 002
Silkworm cocoons suitable for reeling	0	0	0	0	0	0
Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock)	0	0	0	0	0	0
..yarn waste (including thread waste)	358 000	1 090 660	162 000	469 800	0	0
..garnetted stock, not carded or combed	0	0	0	0	0	0
..other (including pulled or garnetted rags), not carded or combed	352 176	156 718	89 508	54 882	0	0

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.14: Number of Farms, and Herds of Cattle Owned by Composition of Herd and Natural Region, 2013

Composition of cattle		**Region I**		**Region II**		**Region III**		**Region IV**		**Region V**		**Total**	
		Farm count	**number**	**Farm count**	**number**	**Farm count**	**number**	**Farm count**	**number**	**Farm count**	**number**	**Farm count**	**number**
Cattle under 12 months	Male	1 693	2 404	53 084	86 465	43 910	70 575	74 719	115 142	43 907	71 170	217 313	345 756
	Female	1 854	2 751	52 922	89 315	38 822	68 138	72 428	113 389	43 557	72 398	209 583	345 991
Mature cattle	Steers/Oxen	3 336	8 144	134 161	352 762	93 818	254 590	164 887	411 065	84 554	212 513	480 756	1 239 074
	Bulls	2 136	4 245	47 662	106 628	31 700	72 414	73 063	129 762	40 942	82 590	195 503	395 639
	Heifers	3 292	6 989	103 514	234 242	72 599	171 505	153 775	328 988	87 051	206 251	420 231	947 975
	Cows	5 053	11 837	149 395	389 276	107 083	290 228	209 655	554 617	117 899	337 227	589 085	1 583 185
Total		**5 963**	**36 370**	**183 993**	**1 258 733**	**124 627**	**927 459**	**249 997**	**1 653 069**	**136 006**	**982 071**	**700 586**	**4 857 702**
Draught cattle		4 320	11 207	153 447	383 988	109 509	338 816	209 850	630 493	106 333	368 671	583 459	1 733 175
Cows in milk		2 369	4 745	81 495	169 631	61 052	130 309	106 960	215 353	63 709	134 661	315 585	654 699

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.15: Number of Farms, and Herds of Cattle Owned by Composition of Herd and Natural Region, 2014

Composition of cattle		Region I		Region II		Region III		Region IV		Region V		Total	
		Farm count	number	Farm count	number	Farm count	number	Farm count	number	Farm count	number	Farm count	number
Cattle under 12 months	Male	2 542	4 296	45 268	79 902	35 648	63 786	81 440	127 215	45 013	85 118	209 911	360 317
	Female	2 260	2 844	46 035	85 775	35 630	67 410	78 921	123 373	36 839	76 866	199 685	356 268
Mature cattle	Steers/Oxen	4 841	11 696	119 596	294 272	96 278	280 384	174 750	438 521	63 857	157 457	459 322	1 182 330
	Bulls	3 924	5 973	38 036	61 118	32 115	47 924	82 407	123 348	36 387	56 202	192 869	294 565
	Heifers	4 052	7 880	100 473	220 662	78 866	192 036	168 860	366 776	73 588	185 093	425 839	972 447
	Cows	6 073	14 661	138 662	381 070	104 700	317 667	232 986	653 660	101 754	335 396	584 175	1 702 454
Total		**7 893**	**47 351**	**171 231**	**1 122 798**	**124 999**	**969 207**	**273 543**	**1 832 873**	**116 243**	**896 129**	**693 909**	**4 868 358**
Draught cattle		5 888	16 774	136 937	379 310	109 082	319 956	234 706	699 119	85 210	266 925	571 823	1 682 084
Cows in milk		3 025	6 039	71 394	166 438	52 037	129 508	120 673	249 172	60 973	159 795	308 102	710 952

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.16: Number of Cattle Owned by Composition of Herd, Sector and Sex of Owner, 2013

Males

Composition of cattle		A1Farms Farm count	A1Farms number	A2 Farms Farm count	A2 Farms number	Communal Farm count	Communal number	LSCF Farm count	LSCF number	SSCF Farm count	SSCF number	Old Resettlement Plotholder Count	Old Resettlement number	National Farm count	National number
Cattle under 12 months	Male	30 940	54 968	5 405	23 381	98 019	134 255	632	6 313	4 962	9 658	16 572	27 015	156 530	255 590
	Female	29 675	53 778	5 472	25 365	95 766	137 884	639	6 142	4 871	9 648	15 851	26 510	152 274	259 327
Mature cattle	Steers/ Oxen	55 618	159 205	7 086	63 280	231 802	538 304	596	8 846	8 402	31 817	32 523	94 221	336 027	895 673
	Bulls	26 214	40 643	8 302	98 111	88 557	134 485	649	2 009	4 362	6 527	12 302	18 500	140 386	300 275
	Heifers	50 257	135 783	6 865	48 835	199 145	392 497	753	11 138	7 628	25 358	26 416	66 092	291 064	679 703
	Cows	65 644	236 685	5 359	13 827	285 533	696 692	775	23 200	9 979	43 809	37 138	121 690	404 428	1 135 903
Total		**74 608**	**681 063**	**8 710**	**272 799**	**343 106**	**2 034 117**	**787**	**57 649**	**10 770**	**126 845**	**42 138**	**354 027**	**480 119**	**3 526 500**
Draught cattle		64 982	229 656	6 378	48 398	289 049	854 960	253	1 294	9 279	32 951	38 284	127 296	408 225	1 294 555
Cows in milk		42 484	107 084	5 891	25 294	147 337	269 152	637	12 271	6 747	19 293	22 778	53 427	225 874	486 521

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.16 Continued

Females

Composition of cattle		A1Farms		A2 Farms		Communal		LSCF		SSCF		Old Resettlement		National	
		Farm count	number	Farm count	number	Farm count	number	Farm count	number	Farm count	number	Plotholder Count	number	Farm count	number
Cattle under 12 months	Male	6 072	10 423	536	1 914	47 883	63 297	55	250	800	1 699	4 457	7 026	59 803	84 609
	Female	5 707	9 768	488	1 506	44 464	60 287	48	392	875	2 023	4 791	7 257	56 373	81 233
Mature cattle	Steers/ Oxen	10 384	28 336	688	4 349	121 320	270 748	49	613	1 371	5 702	9 948	26 359	143 760	336 107
	Bulls	4 270	7 344	921	5 923	44 981	65 600	35	164	793	1 393	3 012	4 195	54 012	84 619
	Heifers	9 985	24 410	759	4 137	107 501	204 578	43	840	1 308	4 992	8 461	18 751	128 057	257 708
	Cows	12 404	42 432	413	884	157 002	353 004	56	1 593	1 528	8 410	12 384	33 237	183 787	439 560
Total		**14 441**	**122 714**	**989**	**18 713**	**188 283**	**1 017 515**	**56**	**3 852**	**1 692**	**24 273**	**13 869**	**96 826**	**219 330**	**1 283 893**
Draught cattle		12 033	41 154	620	3 476	148 212	402 742	32	101	1 412	4 949	12 015	36 003	174 324	488 425
Cows in milk		8 085	19 986	638	2 231	72 450	120 429	56	904	1 062	3 863	6 895	14 215	89 186	161 628

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.17: Number of Cattle Owned by Composition of Herd, Sector and Sex of Owner, 2014

Males

Composition of cattle		A1Farms		A2 Farms		Communal		LSCF		SSCF		Old Resettlement		National	
		Farm count	number	Farm count	number	Farm count	number	Farm count	number	Farm count	number	Plotholder Count	number	Farm count	number
Cattle under 12 months	Male	26 925	54 596	6 590	35 686	89 578	139 942	251	5 354	4 135	8 169	15 765	24 975	143 244	268 722
	Female	27 699	54 926	6 731	44 871	87 219	131 859	256	7 659	4 077	8 465	14 206	22 723	140 188	270 503
Mature cattle	Steers/ Oxen	47 347	140 295	7 799	56 948	219 987	505 950	437	17 698	7 538	27 207	35 649	100 259	318 757	848 357
	Bulls	21 513	34 338	6 330	14 867	89 157	135 323	442	3 483	3 800	5 998	13 081	19 732	134 323	213 741
	Heifers	43 133	118 900	8 001	71 163	194 940	388 137	453	12 316	7 162	23 901	29 946	76 096	283 635	690 513
	Cows	56 379	223 636	9 267	127 772	272 289	689 202	477	23 414	8 710	38 969	38 993	118 302	386 115	1 221 295
Total		**62 991**	**626 668**	**9 708**	**351 307**	**331 358**	**1 990 413**	**507**	**69 924**	**9 794**	**112 710**	**45 287**	**362 087**	**459 645**	**3 513 109**
Draught cattle		56 391	205 202	6 378	30 111	279 333	784 270	78	985	8 483	29 188	41 241	133 938	391 904	1 183 694
Cows in milk		35 965	104 132	7 726	81 901	137 801	272 374	260	13 267	5 520	16 653	22 201	47 557	209 473	535 884

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.17 Continued

Females

Composition of cattle		A1Farms		A2 Farms		Communal		LSCF		SSCF		Old Resettlement		National	
		Farm count	number	Farm count	number	Farm count	number	Farm count	number	Farm count	number	Plotholder Count	number	Farm count	number
Cattle under 12 months	Male	6 740	10 059	460	1 079	51 682	68 552	108	690	979	2 154	6 659	8 248	66 628	90 782
	Female	6 022	8 801	444	1 249	46 958	64 663	108	1 074	770	1 755	5 160	6 975	59 462	84 517
Mature cattle	Steers/ Oxen	9 992	30 473	583	1 574	113 580	256 021	102	2 332	1 411	5 860	14 858	36 603	140 526	332 863
	Bulls	4 606	6 059	549	1 016	48 186	64 800	110	366	681	1 360	4 375	6 658	58 507	80 259
	Heifers	10 010	22 977	824	3 020	116 703	220 333	113	1 852	1 336	4 766	13 180	25 715	142 166	278 663
	Cows	13 484	43 872	928	4 923	164 260	372 968	113	5 016	1 681	8 099	17 557	41 617	198 023	476 495
Total		**15 436**	**122 241**	**988**	**12 861**	**195 745**	**1 047 337**	**113**	**11 331**	**1 898**	**23 994**	**20 042**	**125 816**	**234 222**	**1 343 580**
Draught cattle		12 955	42 944	559	1 903	147 736	396 833	69	302	1 473	5 044	17 122	51 306	179 914	498 332
Cows in milk		9 031	18 596	671	2 400	78 630	130 400	110	1 951	1 216	3 969	8 933	15 203	98 591	172 9

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.18: Number of Farms, Other Livestock Owned by Type of Livestock and Natural Region, 2013

Natural Region	Donkeys		Sheep		Goats		Pigs		Hybrid Broilers	
	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number
I	357	966	232	1 939	18 605	85 198	1 550	4 905	339	9 836
II	5 968	18 193	5 991	44 797	154 581	775 396	13 023	187 198	1 458	262 285
III	9 518	30 603	3 327	26 041	112 802	599 608	9 885	40 520	1 004	88 686
IV	54 479	196 865	18 704	89 936	255 507	1 452 442	18 775	73 227	1 410	70 509
V	58 017	208 890	14 733	99 227	159 593	1 230 609	8 056	43 239	525	36 135
Total	**128 340**	**455 515**	**42 986**	**261 939**	**701 087**	**4 143 254**	**51 288**	**349 090**	**4 733**	**467 451**

Natural Region	Layers		Indigeneous Chicken		Rabbits		Turkeys	
	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number
I	93	10 697	27 346	248 628	835	4 573	1 217	6 425
II	1 323	128 809	233 986	2 450 611	6 593	42 159	14 343	77 083
III	284	43 513	165 842	1 647 263	3 308	24 589	11 224	70 810
IV	534	91 839	339 022	2 835 558	6 434	34 164	28 300	149 280
V	85	5 119	190 421	1 710 288	1 219	6 716	7 033	35 068
Total	**2 318**	**279 979**	**956 615**	**8 892 351**	**18 388**	**112 201**	**62 120**	**338 665**

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.19: Number of Farms, Other Livestock Owned by Type of Livestock and Natural Region, 2014

Natural Region	Donkeys		Sheep		Goats		Pigs		Hybrid Broilers	
	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number
I	260	771	858	8 988	20 157	104 285	3 632	25 639	546	65 262
II	5 750	20 082	6 140	41 242	170 853	846 619	15 374	389 855	4 040	604 278
III	9 650	35 760	6 041	58 354	127 781	726 395	6 008	120 541	3 924	1 127 096
IV	68 452	252 808	25 143	129 428	279 455	1 652 161	14 906	101 225	5 031	635 784
V	50 512	212 912	15 868	132 039	135 252	1 251 563	7 413	34 668	1 617	156 867
Total	**134 626**	**522 332**	**54 051**	**370 050**	**733 498**	**4 581 023**	**47 332**	**671 928**	**15 164**	**2 589 286**

Natural Region	Layers		Indigeneous Chicken		Rabbits		Turkeys	
	Farm Count	number	Farm Count	number	Farm Count	number	Farm Count	number
I	57	915	33 155	392 915	394	2 348	986	5 734
II	1 612	1 441 422	257 222	2 959 210	6 985	53 254	16 669	120 781
III	644	58 696	165 102	1 960 260	3 208	17 264	14 899	88 213
IV	1 388	53 789	367 951	3 721 099	9 551	52 567	44 806	271 983
V	214	6 487	156 954	1 698 012	1 851	7 059	7 467	38 717
Total	**3 915**	**1 561 310**	**980 385**	**10 731 495**	**21 989**	**132 491**	**84 829**	**525 429**

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.20: Livestock Slaughterings and Value of Slaughterings by Type of Livestock and Year, 2009-2016

Period		Cattle slaughterings			Goats slaughterings			Sheep slaughterings			Pig slaughterings		
		C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	Colcom ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD
2009	January	0.47	8.47	-	0	0.93		0	0.15		6.94	3.97	
	February	0.68	10.11	-	0	-		0	-		5.20	4.13	
	March	-	-	-	0	-		0	-		5.40	-	
	April	1.19	14.59	-	0	0.32		0	0.15		4.31	3.33	
	May	0	0	-	0	0.21		0	0		4.31	0	
	June	1.03	17.40	-	0	0		0	0.23		5.19	3.44	
	July	1.00	19.10	-	0	0.23		0	0.14		5.16	2.85	
	August	0.42	18.08	-	0	0.39		0	0.20		5.15	2.71	
	September	-	-	-	0	-		0	-		4.97	-	
	October	0.86	17.65	-	0	0.36		0	0.16		5.24	3.00	
	November	0.78	16.14	-	0	0.38		0	0.18		5.57	3.44	
	December	1.28	16.10	-	0	0.43		0	0.28		5.35	4.07	
2010	January	1.0	14.9	8 730	0	0.65	8	0	0.22	36	4.95	3.06	1 329
	February	0.9	13.6	7 985	0	0.29	4	0	0.12	16	4.56	2.55	1 217
	March	0.2	10.8	6 042	0	0		0	0		6.19	4.00	1 782
	April	0.2	16.6	9 247	0	0.24	8	0	0.22	13	4.97	3.96	1 572
	May	0.8	18.8	10 809	0	0.11	7	0	0.19	6	5.49	3.76	1 647
	June	1.0	19.8	11 446	0	0.06	3	0	0.10	3	5.72	5.07	1 911

Table 3.20 Continued

		Cattle slaughterings			Goats slaughterings			Sheep slaughterings			Pig slaughterings		
		C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	C.S.C. ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD	Colcom ' 000 head	Butchers and grading centres ' 000 head	Value of Slaughterings ' 000 USD
2010	July	1.1	21.3	12 310	0	0.16	9	0	0.27	9	5.01	4.76	1 679
	August	1.1	21.8	12 588	0	0	10	0	0.28		5.94	4.12	1 770
	September	0.7	19.6	11 188	0	1.48	17	0	0.49	81	5.81	3.99	1 754
	October	0.7	19.2	10 946	0	0.97	14	0	0.40	53	5.52	4.03	1 710
	November	0.8	20.0	11 403	0	0.95	18	0	0.52	52	6.36	4.51	1 890
	December	1.0	20.9	12 050	0	0.76	14	0	0.41	42	5.40	5.78	1 923
2011	January	0.5	17.5	8 095	0	0.65	22	0.00	0.54	29	6.12	3.25	1 640
	February	0.6	18.6	8 623	0	0.73	27	0.00	0.68	33	6.06	4.19	1 773
	March	0.8	21.3	9 962	0	1.73	25	0.00	0.63	78	6.93	4.37	1 955
	April	0.6	19.7	9 139	0	1.09	17	0.00	0.43	49	5.60	4.16	1 678
	May	0.8	20.7	9 664	0	0.34	26	0.00	0.65	15	6.60	5.12	2 005
	June	0.9	21.4	10 047	0	0.68	24	0.00	0.60	31	6.70	5.19	2 093
	July	4.6	19.4	10 791	0	0.73	19	0.00	0.48	33	5.00	5.17	1 840
	August	7.1	18.3	11 413	0	0.92	20	0.00	0.51	41	6.60	5.77	2 264
	September	3.5	17.0	13 716	0	0.70	17	0.00	0.42	32	7.00	5.35	2 247
	October	3.1	15.9	8 537	0	0.81	13	0.00	0.33	37	5.70	4.74	1 828
	November	2.0	18.4	9 163	0	0.63	12	0.00	0.29	28	6.20	5.89	2 067
	December	2.1	16.8	8 522	0	0.94	23	0.00	0.57	42	5.70	5.89	2 016

Table 3.20 Continued

		Cattle slaughterings			Goats slaughterings			Sheep slaughterings			Pig slaughterings		
		C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	Colcom	Butchers and grading centres	Value of Slaughterings
		' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD
2012	January	1.5	17.3	8 458	0.00	1.20	42	0.00	0.50	20	6.18	4.85	2 229
	February	2.5	17.1	8 797	0.00	1.71	60	0.00	0.61	24	7.40	3.05	2 112
	March	1.9	19.5	9 639	0.00	1.62	57	0.00	0.64	26	6.99	3.88	2 194
	April	1.4	19.8	9 540	0.00	0.44	16	0.00	0.41	16	7.15	3.32	2 115
	May	1.0	22.2	10 425	0.00	0.50	17	0.00	0.56	22	9.14	3.36	2 524
	June	1.1	21.2	10 034	0.00	0.49	17	0.00	0.41	16	8.29	3.19	2 319
	July	1.1	22.7	10 742	0.00	1.00	35	0.00	0.63	25	8.63	3.95	2 539
	August	1.0	23.4	10 960	0.00	1.01	35	0.00	0.43	17	7.82	3.92	2 372
	September	0.9	19.4	9 149	0.00	0.99	35	0.00	0.57	23	6.41	3.68	2 038
	October	0.8	20.5	9 607	0.00	0.86	30	0.00	0.49	20	8.10	3.35	2 313
	November	0.8	19.0	8 916	0.00	-	0	0.00	0.00	0	6.40	3.47	1 993
	December	0.9	20.0	-	0.00	-	-	0.00	-	0	0.00	0.00	-
2013	January	0.8	19.7	9 236	0.00	1.06	37	0.00	0.39	15	8.47	3.43	2 403
	February	0.8	18.9	8 852	0.00	1.93	68	0.00	0.39	15	6.89	3.34	2 067
	March	1.5	20.0	9 047	0.00	0.90	0	0.00	0.42	17	7.07	3.65	2 165
	April	1.7	20.8	10 835	0.00	0.63	14	0.00	0.34	13	9.07	3.77	2 517
	May	1.2	23.4	11 803	0.00	0.79	28	0.00	0.45	18	8.54	4.04	2 466
	June	1.5	20.0	10 341	0.00	0.66	23	0.00	0.44	17	9.81	3.60	2 628

Table 3.20 Continued

		Cattle slaughterings			Goats slaughterings			Sheep slaughterings			Pig slaughterings		
		C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	Colcom	Butchers and grading centres	Value of Slaughterings
		' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD
2013	July	1.4	22.7	11 561	0.00	0.63	22	0.00	0.37	15	8.53	3.72	2 401
	August	1.5	21.6	11 081	0.00	0.71	25	0.00	0.57	23	7.63	4.06	2 291
	September	1.3	19.0	9 723	0.00	0.82	21	0.00	0.41	17	9.86	3.92	2 701
	October	2.1	19.7	10 449	0.00	1.18	29	0.00	0.41	16	8.60	4.12	2 493
	November	1.5	18.3	9 471	0.00	0.96	24	0.00	0.52	21	7.60	3.86	2 246
	December	1.1	20.7	10 427	0.00	1.22	30	0.00	0.50	20	7.18	5.07	2 401
2014	January	1.0	19.0	9 619	0.00	0.87	22	0.02	0.37	15	9.15	3.87	2 551
	February	1.1	17.2	8 790	0.16	0.89	26	0.01	0.39	16	6.45	3.88	2 025
	March	1.0	18.8	9 491	0.00	1.09	27	0.00	0.40	16	7.36	4.34	2 293
	April	0.9	20.1	10 101	0.00	0.75	19	0.00	0.49	20	7.77	4.85	2 472
	May	1.1	20.6	10 404	0.00	0.82	21	0.00	0.55	22	5.69	4.77	2 049
	June	1.0	20.2	10 167	0.01	0.91	23	0.01	0.52	21	5.99	4.54	2 064
	July	1.0	21.4	10 751	0.00	1.20	30	0.01	0.58	23	6.25	4.40	2 087
	August	1.4	19.3	9 949	0.00	1.05	26	0.00	0.45	18	5.37	4.24	1 884
	September	1.3	19.3	9 886	0.00	1.35	34	0.00	0.38	15	-	4.10	803
	October	1.2	19.8	7 363	0.00	1.50	45	0.00	0.57	28	5.85	4.17	1 462
	November	1.3	16.8	6 365	0.00	1.10	33	0.00	0.41	20	5.16	5.38	1 538
	December	1.4	20.9	7 789	0.00	1.38	41	0.00	2.21	111	6.14	4.08	1 492

Table 3.20 Continued

		Cattle slaughterings			Goats slaughterings			Sheep slaughterings			Pig slaughterings		
		C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	C.S.C.	Butchers and grading centres	Value of Slaughterings	Colcom	Butchers and grading centres	Value of Slaughterings
		' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD	' 000 head	' 000 head	' 000 USD
2015	January	9 415	0.64	18.97	12	0.00	1.29	22	0.00	0.34	2 449	6.38	4.36
	February	9 518	1.62	18.21	12	0.00	1.95	16	0.00	0.76	2 250	5.26	4.09
	March	10 211	0.96	20.31	55	0.00	2.20	16	0.01	0.47	2 105	6.80	3.94
	April	10 077	0.90	20.09	25	0.00	1.58	17	0.01	0.57	2 302	5.97	4.36
	May	10 099	1.53	19.51	25	0.00	1.16	23	0.00	0.52	1 977	5.69	4.89
	June	11 011	1.61	21.33	41	0.00	1.63	25	0.00	0.62	2 333	6.70	5.21
	July	11 556	1.91	22.17	39	0.00	1.56	25	0.00	0.63	2 478	7.15	5.50
	August	10 862	1.85	20.78	49	0.00	1.96	23	0.00	0.57	2 170	5.36	5.71
	September	9 823	2.21	18.26	40	0.00	1.62	18	0.00	0.45	2 318	6.70	5.13
	October	10 065	1.70	19.27	35	0.00	1.40	23	0.00	0.58	2 683	7.99	5.70
	November	9 648	1.80	18.30	40	0.00	1.58	16	0.00	0.40	2 450	6.54	5.96
	December	11 328	1.75	21.85	37	0.03	1.50	21	0.00	0.53	2 878	7.75	6.94
2016	January	9 906	1.44	19.20	47	0.00	1.87	10	0.00	0.26	2 466	6.71	5.87
	February	10 741	1.51	20.86	52	0.01	2.07	14	0.00	0.36	2 814	7.76	6.60
	March	11 672	1.76	22.56	37	0.00	1.44	20	0.00	0.51	2 926	8.34	6.59
	April	11 319	1.65	21.93	41	0.00	1.65	17	0.00	0.41	2 784	7.57	6.64
	May	11 054	1.64	21.39	33	0.00	1.29	19	0.00	0.49	2 512	6.80	6.02
	June	11 900	1.76	23.03	49	0.00	1.96	27	0.01	0.67	2 615	6.86	6.48

Source: ZIMSTAT, Agriculture and Environment Statistics Branch

Table 3.21 shows the net weight and value (US$) of imports of livestock and livestock products for the period 2010 to 2015, while table 3.22 shows exports.

Table 3.21: Imports of Livestock and Livestock Products by year 2010 - 2015

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Pure-bred breeding animals	0	0	0	0	0	0
Other than pure-bred breeding animals	550	3 867	7 307 014	10 615 606	2 931 651	4 484 029
Sheep, live	50	452	300	1 148	13 379	64 918
Goats, live	450	2 306	0	0	100	6 360
Pure-bred breeding animals	2 200	157 456	4 500	38 816	0	0
Other than pure-bred breeding animals	0	0	6 102	184 705	32 317	279 880
Poultry, live (i.e., fowls of the species Gallus domesticus, ducks, geese, turkeys and guinea-fowls, weighing not more than 185 g	18 092	1 150 792	6 128	903 157	14 452	1 702 552
Other	608	41 987	165	14 149	0	0
Meat of bovine animals, fresh or chilled, with bone in	23 130	22 635	0	0	0	0
Meat of bovine animals, fresh or chilled, boneless	1 554	1 241	4 342	12 336	2 310	5 221
Meat of bovine animals, frozen, with bone in	88 267	317 879	277 470	84 765	74 208	24 720
Meat of bovine animals, frozen, boneless	54 080	194 761	54 996	18 376	25 410	14 664
Meat of sheep, fresh or chilled	2 897	16 505	0	0	1 119	10 931
Meat of sheep, frozen	13	175	7 550	69 164	20 601	125 460
Meat of goats, fresh, chilled or frozen	0	0	0	0	0	0
fresh or chilled	22 528	109 156	178 785	49 389	20	150
frozen	278 096	576 632	250 020	73 333	740 810	1 117 684
Poultry not cut in pieces, fresh or chilled	24 410	22 299	2 036	8 413	2 725	6 649
Poultry not cut in pieces, frozen	5 616 873	10 746 418	1 150 099	2 147 531	239 783	257 199
Fatty livers of geese or ducks, fresh or chilled	0	0	0	0	0	0

Table 3.21 Continued

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Poultry cuts and other offal, fresh or chilled	1 507 381	2 555 562	122 892	166 314	544 564	224 584
Poultry cuts and offal, frozen	10 024 524	8 801 002	24 631 818	11 533 262	27 231 186	13 245 313
of bovine animals, fresh or chilled	23 877	31 029	0	0	0	0
..of bovine animals, frozen	94 140	169 293	176 878	43 052	187 415	277 038
..of swine, fresh or chilled	0	0	0	0	0	0
..of swine, frozen	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, fresh or chilled	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, frozen	0	0	0	0	0	0
Meat and edible meat offal of rabbits or hares	0	0	0	0	0	0
Snails (other than sea snails)	254	1 198	139	853	154	2 531
Other meat and edible meat offal, fresh, chilled or frozen	753	1 431	0	0	189	497
Hams, shoulders and cuts thereof, with bone in	0	0	342	2 218	6	38
Bellies (streaky) and cuts thereof	0	0	0	0	0	0
Other	5 159	18 934	1 022	4 776	1 652	13 090
Meat of bovine animals	4 279	27 790	19	677	6 933	90 049
Other, including edible flours and meals of meat or meat offal	7 186	25 970	12 091	78 184	121 339	61 146
Milk of a fat content, by weight, not exceeding 1%	4 046 419	4 336 526	3 411 067	3 199 739	2 919 837	2 371 684
Milk and cream, of a fat content, by weight, exceeding 1% but not exceeding 6%	3 791 012	4 321 898	9 380 230	9 127 437	10 386 437	9 849 943
Cream of a fat content, by weight, exceeding 6%	794 029	1 020 153	438 119	510 139	4 534 169	4 773 826
Milk, in solid form, of a fat content, by weight, not exceeding 1.5%	2 393 867	5 738 882	2 531 852	6 909 491	1 540 418	6 061 628
Milk and cream, in solid form, of a fat content, by weight, exceeding 1.5%	2 665 277	8 285 611	4 294 967	15 743 974	2 241 526	7 658 915
Milk and cream, not in solid form, not containing added sugar or other sweetening matter	267 440	315 736	88 589	248 774	22 061	56 261
Milk and cream, not in solid form, containing added sugar or other sweetening matter	374 414	678 675	1 662 532	1 954 563	646 906	1 216 672
Yoghurt, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	327 192	708 540	527 943	1 157 211	743 420	1 286 428

Table 3.21 Continued

Year Indicators	2010 Net Weight (Kg)	 US$Value	2011 Net Weight (Kg)	 US$Value	2012 Net Weight (Kg)	 US$Value
Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk or cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	139 935	255 400	730 921	1 261 241	1 072 311	1 236 863
Ice-cream and other edible ice, whether or not containing cocoa	68 327	262 340	46 932	153 566	94 769	437 307
Whey and modified whey, whether or not concentrated or containing added sugar or other sweetening matter	68 376	147 082	104 137	205 986	124 765	195 089
Products consisting of natural milk constituents, n.e.s.	7 121	24 259	24 581	47 024	50 335	211 510
Fresh (unripened or uncured) cheese, including whey cheese, and curd	4 500	28 811	3 677	15 902	64	1 283
Other cheese	308 934	1 731 259	404 852	2 642 312	336 340	2 142 250
..dried	21	20	0	0	552	707
..other than dried	219	794	2	7	3 371	18 137
Whole hides and skins, of a weight per skin not exceeding 8 kg when simply dried, 10 kg when dry-salted, or 16 kg when fresh, wet-salted or otherwise preserved	8	159	0	0	0	0
Other hides and skins, including butts, bends and bellies	4	17	0	0	220	6 903
Parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour	0	0	0	0	0	0
Hides and skins, n.e.s., raw (fresh, or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split	350	400	22 230	27 351	2 927	3 357
..of lamb, the following: Astrakhan, Broadtail, Caracul, Persian and similar lamb, Indian, Chinese, Mongolian or Tibetan lamb	0	0	0	0	0	0
..of fox	0	0	0	0	0	0
Other furskins, whole, with or without head, tail or paws	0	0	6	12	0	0
..in shell	85 365	89 655	30 052	12 053	0	0
..shelled	901 583	553 711	241 000	96 876	2 317 035	1 349 205

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.21: Imports of Livestock and Livestock Products by year 2013 - 2015

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Pure-bred breeding animals	80 240	211 087	291 390	409 503	786 691	2 368 827
Other than pure-bred breeding animals	2 914 976	3 962 172	2 693 229	3 688 695	760 768	2 639 364
Sheep, live	1 475	4 341	700	10 587	14 400	53 023
Goats, live	11 285	38 482	3 820	19 228	17 380	52 254
Pure-bred breeding animals	3 640	75 810	7 495	229 016	13 450	270 998
Other than pure-bred breeding animals	0	0	300	36 501	0	0
Poultry, live (i.e., fowls of the species Gallus domesticus, ducks, geese, turkeys and guinea-fowls, weighing not more than 185 g	9 475	1 580 104	17 322	2 263 678	32 761	2 791 635
Other	415	8 289	0	0	0	0
Meat of bovine animals, fresh or chilled, with bone in	20 020	53 484	609	1 532	68	156
Meat of bovine animals, fresh or chilled, boneless	518	4 846	597	3 623	122 316	381 007
Meat of bovine animals, frozen, with bone in	76 860	67 856	13 999	51 105	0	0
Meat of bovine animals, frozen, boneless	116 597	398 804	214 466	772 768	315 106	890 437
Meat of sheep, fresh or chilled	122	1 282	5 306	7 906	3 341	22 189
Meat of sheep, frozen	2 986	28 072	8 903	61 586	15 175	86 386
Meat of goats, fresh, chilled or frozen	0	0	59	432	0	0
fresh or chilled	9 996	53 968	73 755	180 054	24 074	77 868
frozen	311 260	403 687	250 319	728 603	238 031	807 177
Poultry not cut in pieces, fresh or chilled	2	186	5 000	19 223	0	0
Poultry not cut in pieces, frozen	26 408	37 543	7 161	24 713	4 323	17 213
Fatty livers of geese or ducks, fresh or chilled	0	0	0	0	0	0

Table 3.21 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Poultry cuts and other offal, fresh or chilled	53 534	53 850	23 526	35 779	3	10
Poultry cuts and offal, frozen	6 094 648	5 712 764	7 268 649	5 891 608	8 011 663	4 573 071
of bovine animals, fresh or chilled	0	0	0	0	0	0
..of bovine animals, frozen	309 559	412 413	688 027	916 932	345 415	456 759
..of swine, fresh or chilled	0	0	0	0	0	0
..of swine, frozen	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, fresh or chilled	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, frozen	0	0	105	310	0	0
Meat and edible meat offal of rabbits or hares	0	0	0	0	530	2 234
Snails (other than sea snails)	432	941	0	0	0	0
Other meat and edible meat offal, fresh, chilled or frozen	2 627	4 366	96 407	121 711	2 367	11 023
Hams, shoulders and cuts thereof, with bone in	0	0	0	0	0	0
Bellies (streaky) and cuts thereof	0	0	0	0	0	0
Other	1 062	1 663	0	0	0	0
Meat of bovine animals	9 225	26 617	4	22	9 905	9 296
Other, including edible flours and meals of meat or meat offal	129 044	310 428	3 374	80 481	1 540	1 376
Milk of a fat content, by weight, not exceeding 1%	1 206 657	995 232	670 286	615 925	967 990	820 463
Milk and cream, of a fat content, by weight, exceeding 1% but not exceeding 6%	11 776 983	10 207 783	11 630 113	9 529 320	8 152 916	7 446 827
Cream of a fat content, by weight, exceeding 6%	3 853 505	3 157 792	3 393 086	3 556 593	2 291 674	1 841 041
Milk, in solid form, of a fat content, by weight, not exceeding 1.5%	1 940 068	8 528 361	134 814	844 295	310 569	1 800 772
Milk and cream, in solid form, of a fat content, by weight, exceeding 1.5%	3 777 710	16 217 812	376 158	1 763 821	556 195	1 622 032
Milk and cream, not in solid form, not containing added sugar or other sweetening matter	4 030	26 110	100	1 149	978	3 178
Milk and cream, not in solid form, containing added sugar or other sweetening matter	108 242	245 831	61 177	174 826	114 534	235 699
Yoghurt, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	696 103	1 188 731	526 957	756 336	160 535	184 625

Table 3.21 Continued

Year / Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk or cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	974 062	1 059 248	272 712	265 429	114 468	205 281
Ice-cream and other edible ice, whether or not containing cocoa	131 596	563 201	63 879	131 400	74 121	162 640
Whey and modified whey, whether or not concentrated or containing added sugar or other sweetening matter	271 181	518 828	397 897	680 294	526 394	718 565
Products consisting of natural milk constituents, n.e.s.	2 794	7 629	116 137	63 443	22 074	46 148
Fresh (unripened or uncured) cheese, including whey cheese, and curd	0	0	0	0	189	1 333
Other cheese	437 829	2 597 015	487 159	2 967 071	679 712	2 648 024
..dried	0	0	0	0	0	0
..other than dried	0	0	0	0	0	0
Whole hides and skins, of a weight per skin not exceeding 8 kg when simply dried, 10 kg when dry-salted, or 16 kg when fresh, wet-salted or otherwise preserved	0	0	192	2 122	0	0
Other hides and skins, including butts, bends and bellies	50	910	390	6 686	6 828	11 905
Parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour	30	271	7 619	9 090	215	4 529
Hides and skins, n.e.s., raw (fresh, or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split	9 947	11 871	5 369	25 610	13 704	519 448
..of lamb, the following: Astrakhan, Broadtail, Caracul, Persian and similar lamb, Indian, Chinese, Mongolian or Tibetan lamb	0	0	0	0	0	0
..of fox	0	0	0	0	0	0
Other furskins, whole, with or without head, tail or paws	0	0	0	0	2	17
..in shell	2 618	7 969	85 827	65 773	583 849	352 148
..shelled	3 810 262	3 169 377	5 987 920	6 095 925	7 107 756	4 877 955

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.22: Exports of Livestock and Livestock Products by year 2010 - 2015

Year	2010		2011		2012	
Indicators	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value	Net Weight (Kg)	US$Value
Meat of bovine animals, fresh or chilled, with bone in	0	0	28 000	89 880	0	0
Meat of bovine animals, fresh or chilled, boneless	0	0	0	0	0	0
Meat of bovine animals, frozen, with bone in	0	0	0	0	0	0
Meat of bovine animals, frozen, boneless	0	0	0	0	0	0
Meat of sheep, fresh or chilled	0	0	0	0	0	0
Meat of sheep, frozen	0	0	0	0	0	0
Meat of goats, fresh, chilled or frozen	0	0	0	0	0	0
..fresh or chilled	0	0	0	0	10 475	63 041
..frozen	0	0	0	0	10 447	64 691
Poultry not cut in pieces, fresh or chilled	4	40	0	0	0	0
Poultry not cut in pieces, frozen	0	0	0	0	0	0
Fatty livers of geese or ducks, fresh or chilled	0	0	0	0	0	0
Poultry cuts and other offal, fresh or chilled	0	0	0	0	0	0
Poultry cuts and offal, frozen	50 000	15 000	0	0	22	4
..of bovine animals, fresh or chilled	0	0	0	0	0	0
..of bovine animals, frozen	0	0	0	0	0	0
..of swine, fresh or chilled	0	0	0	0	0	0
..of swine, frozen	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, fresh or chilled	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, frozen	0	0	0	0	0	0
Meat and edible meat offal of rabbits or hares	0	0	0	0	0	0
Snails (other than sea snails)	0	0	0	0	0	0
Other meat and edible meat offal, fresh, chilled or frozen	105 385	478 700	193 283	714 415	12 060	124 780

Table 3.22 Continued

Year / Indicators	2010 Net Weight (Kg)	2010 US$Value	2011 Net Weight (Kg)	2011 US$Value	2012 Net Weight (Kg)	2012 US$Value
Hams, shoulders and cuts thereof, with bone in	0	0	0	0	0	0
Bellies (streaky) and cuts thereof	0	0	0	0	0	0
Other	0	0	0	0	0	0
Meat of bovine animals	0	0	0	0	0	0
Other, including edible flours and meals of meat or meat offal	0	0	7 130	76 250	124 735	904 860
Milk of a fat content, by weight, not exceeding 1%	32 400	35 100	0	0	93 318	120 960
Milk and cream, of a fat content, by weight, exceeding 1% but not exceeding 6%	0	0	0	0	0	0
Cream of a fat content, by weight, exceeding 6%	0	0	0	0	110 000	531 000
Milk, in solid form, of a fat content, by weight, not exceeding 1.5%	74 486	736 384	1 912	12 085	37 680	400 690
Milk and cream, in solid form, of a fat content, by weight, exceeding 1.5%	0	0	5	5 000	0	0
Milk and cream, not in solid form, not containing added sugar or other sweetening matter	0	0	0	0	0	0
Milk and cream, not in solid form, containing added sugar or other sweetening matter	0	0	0	0	0	0
Yoghurt, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	0	0	0	0	0	0
Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk or cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	0	0	0	0	0	0
Ice-cream and other edible ice, whether or not containing cocoa	3 871	13 869	13 217	48 747	7 702	20 719
Whey and modified whey, whether or not concentrated or containing added sugar or other sweetening matter	11 380	16 500	0	0	0	0
Products consisting of natural milk constituents, n.e.s.	0	0	0	0	0	0
Fresh (unripened or uncured) cheese, including whey cheese, and curd	0	0	0	0	9 210	34 658
Other cheese	0	0	0	0	60 575	339 501
..dried	0	0	0	0	0	0
..other than dried	0	0	0	0	0	0

Source: ZIMSTAT, International Trade Statistics Branch

Table 3.22: Exports of Livestock and Livestock Products by year 2013 - 2015

Year Indicators	2013 Net Weight (Kg)	US$Value	2014 Net Weight (Kg)	US$Value	2015 Net Weight (Kg)	US$Value
Meat of bovine animals, fresh or chilled, with bone in	0	0	500	6 400	0	0
Meat of bovine animals, fresh or chilled, boneless	0	0	0	0	0	0
Meat of bovine animals, frozen, with bone in	0	0	0	0	624	4 620
Meat of bovine animals, frozen, boneless	0	0	0	0	0	0
Meat of sheep, fresh or chilled	0	0	0	0	0	0
Meat of sheep, frozen	0	0	0	0	0	0
Meat of goats, fresh, chilled or frozen	0	0	0	0	0	0
..fresh or chilled	0	0	2 612	10 827	0	0
..frozen	0	0	0	0	0	0
Poultry not cut in pieces, fresh or chilled	0	0	0	0	0	0
Poultry not cut in pieces, frozen	0	0	0	0	0	0
Fatty livers of geese or ducks, fresh or chilled	0	0	0	0	0	0
Poultry cuts and other offal, fresh or chilled	0	0	0	0	0	0
Poultry cuts and offal, frozen	0	0	0	0	0	0
..of bovine animals, fresh or chilled	0	0	0	0	0	0
..of bovine animals, frozen	0	0	0	0	0	0
..of swine, fresh or chilled	0	0	0	0	0	0
..of swine, frozen	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, fresh or chilled	0	0	0	0	0	0
..of sheep, goats, horses, asses, mules or hinnies, frozen	0	0	0	0	0	0
Meat and edible meat offal of rabbits or hares	0	0	0	0	0	0
Snails (other than sea snails)	0	0	0	0	0	0
Other meat and edible meat offal, fresh, chilled or frozen	6 730	61 987	106 658	500 452	43 616	244 320

Table 3.22 Continued

Year Indicators	2013 Net Weight (Kg)	2013 US$Value	2014 Net Weight (Kg)	2014 US$Value	2015 Net Weight (Kg)	2015 US$Value
Hams, shoulders and cuts thereof, with bone in	0	0	0	0	0	0
Bellies (streaky) and cuts thereof	0	0	0	0	0	0
Other	12 382	83 872	0	0	0	0
Meat of bovine animals	0	0	0	0	0	0
Other, including edible flours and meals of meat or meat offal	77 790	328 543	34 926	134 479	180	1 800
Milk of a fat content, by weight, not exceeding 1%	1 400	1 512	822	12 122	6 994	11 777
Milk and cream, of a fat content, by weight, exceeding 1% but not exceeding 6%	24 000	3 024	0	0	0	0
Cream of a fat content, by weight, exceeding 6%	34 082	37 562	5	5	265 725	268 847
Milk, in solid form, of a fat content, by weight, not exceeding 1.5%	28 175	141 018	1 370	13 965	51 010	249 925
Milk and cream, in solid form, of a fat content, by weight, exceeding 1.5%	97 947	450 450	8 180	6 121	36 400	99 787
Milk and cream, not in solid form, not containing added sugar or other sweetening matter	0	0	0	0	0	0
Milk and cream, not in solid form, containing added sugar or other sweetening matter	24 672	15 120	24 672	15 120	10	5
Yoghurt, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	3 832	10 965	8 042	12 238	9 047	15 289
Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk or cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	0	0	0	0	5 527	5 095
Ice-cream and other edible ice, whether or not containing cocoa	9 768	26 042	12 061	14 858	1 802	2 162
Whey and modified whey, whether or not concentrated or containing added sugar or other sweetening matter	0	0	0	0	2	3
Products consisting of natural milk constituents, n.e.s.	0	0	0	0	0	0
Fresh (unripened or uncured) cheese, including whey cheese, and curd	19 833	45 144	4 550	8 776	0	0
Other cheese	33 960	235 376	0	0	15 095	108 249
..dried	0	0	0	0	0	0
..other than dried	0	0	0	0	0	0

Source: ZIMSTAT, International Trade Statistics Branch

3.8 Other Non-cultivated Biological Resources

Zimbabwe is home to the 'big five' which are the lion, leopard, elephant, buffalo and the rhino found in several national parks and conservancies. Hwange National Park which is part of the Kavango- Zambezi Transfrontier Conservation Area is the largest park, hosts over 100 species of mammals, about 400 species of birds and nearly 100 species of trees and shrubs.

Table 3.23: Number of Elephants and Other Mammals in Zimbabwe 2001 & 2014

Year 2001	North West Matabeleland	Sebungwe	Zambezi Valley	Gonarezhou
Elephant	-	13 988	19 297	4 992
Buffalo	-	13 786	14 909	1 740
Impala	-	8 210	10 117	4 123
Giraffe	-	-	-	195
Zebra	-	2 494	1 672	726
Sable	-	783	656	7
Roan	-	103	115	-
Kudu	-	2 548	1 823	1 435
Year 2014	**North West Matabeleland**	**Sebungwe**	**Zambezi Valley**	**Gonarezhou**
Elephant	53 991	3 407	11 657	11 120
Buffalo	5 146	3 765	6 330	6 691
Impala	4 533	-	4 099	8 416
Giraffe	1 568	-	-	1 248
Zebra	4 154	504	675	1 368
Sable	2 589	160	161	69
Roan	214	-	-	-
Kudu	1 182	188	358	1 733

Source: Department of National Parks and Wildlife Management

Table 3.24: Mammals in Hwange Matetsi Forests and Communal Lands, 2014

Species	Hwange		Matetsi		Forests		Communal Lands	
	Number Observed	Number Estimated	Number Observed	Number Estimated	Number Observed	Number Estimated	Number Observed	Number Estimated
Elephant	4 579	45 846	201	4 843	66	1 101	80	2 201
Buffalo	195	2 186	100	1 733	45	1 228	-	-
Impala	299	3 186	64	1 347	-	-	-	-
Giraffe	102	1 158	17	350	3	61	-	-
Zebra	187	2 065	108	2 089	-	-	-	-
Sable	83	920	40	712	35	955	-	-
Roan	12	145	3	69	-	-	-	-
Kudu	57	617	26	486	3	82	-	-

Source: Department of National Parks and Wildlife Management

Table 3.25: White Rhino Population Size as at 2014

Area	Number of Rhinos
Matopos	29
Main camp	3
Kyle	18
Chivero	13
Malilangwe	125
Save	41
Bubye	76
Thelford	8
Eldorado	3
Imire	2

Source: Department of National Parks and Wildlife Management

Table 3.26: Fish Capture Production in Kgs by Type of Species and Year

Year	Species								
	Breams	Nchilla	Chessa	Tiger	Bottlenose	Barbel	Squeaker	Vundu	Cornish Jack
2009	50 278	53	65	2 579	1 226	94	51	-	-
2010	130 161	-	25	30 758	50	25	2	-	-
2011	39 565	128	48	21 343	3 745	1 114	243	-	-
2012	114 430	-	225	5 570	627	203	93	-	-
2013	-	226	114	4 570	707	538	213	-	-
2014	-	-	631	1 381	1 189	1 214	5 458	707	920

Source: Department of National Parks and Wildlife Management

3.9 Water Resources

3.9.1 Water Sheds Description and Areas

The drainage system in Zimbabwe was subdivided in 2000 into the following 7 river systems with each system being managed by a Catchment Council; Gwayi, Sanyati, Manyame, Mazowe, Save, Runde, and Mzingwane, Figure 3.2. The Gwayi Catchment comprises rivers located on the western part of Zimbabwe, and draining mainly into the Zambezi River. Major rivers occurring within this catchment are Shangani, Bembezi, Mguza, and Upper Gwayi. Nata River which drains into the Mkgadikgadi Pans occurring in Botswana is part of the Gwayi Catchment.

The Sanyati Catchment consists mainly of land drained by the Zivagwe, Munyati, Muzvezve and Mupfure River. Munyati and Mupfure Rivers join to form the Sanyati River which drains into Lake Kariba.

The Manyame Catchment drains into the Zambezi River downstream of Lake Kariba, and is made up by of areas drained by the Angwa, Manyame, and Musengezi Rivers. The Mazowe Catchment drains the north-eastern part of the country, and the major sub-basins are Nyadiri, Ruya, Rwenya, and Mazowe.

This catchment includes the northern part of the Eastern Highlands drained by the Nyangombe and Gairezi Rivers.

Save Catchment drains the south-eastern part of the country with Devure, Nyazvidzi, Upper Save, Macheke, Rusape, and Odzi Rivers being the major rivers. This catchment includes the Pungwe and Budzi Rivers in the Eastern Highlands that drain into Mozambique.

The Runde Catchment comprises areas drained by the Runde, Tokwe, Mutirikwi, and Chiredzi Rivers. The Runde River joins the Save River just before the latter river exits from Zimbabwe.

The Mzingwane Catchment is made up of rivers that drain into the Limpopo River with the Shashe, Mzingwane, Bubi, and Mwenezi being the major rivers.

All the river systems of Zimbabwe drain into another country, and therefore water resources planning, development and management has to take into account this shared nature of water resources.

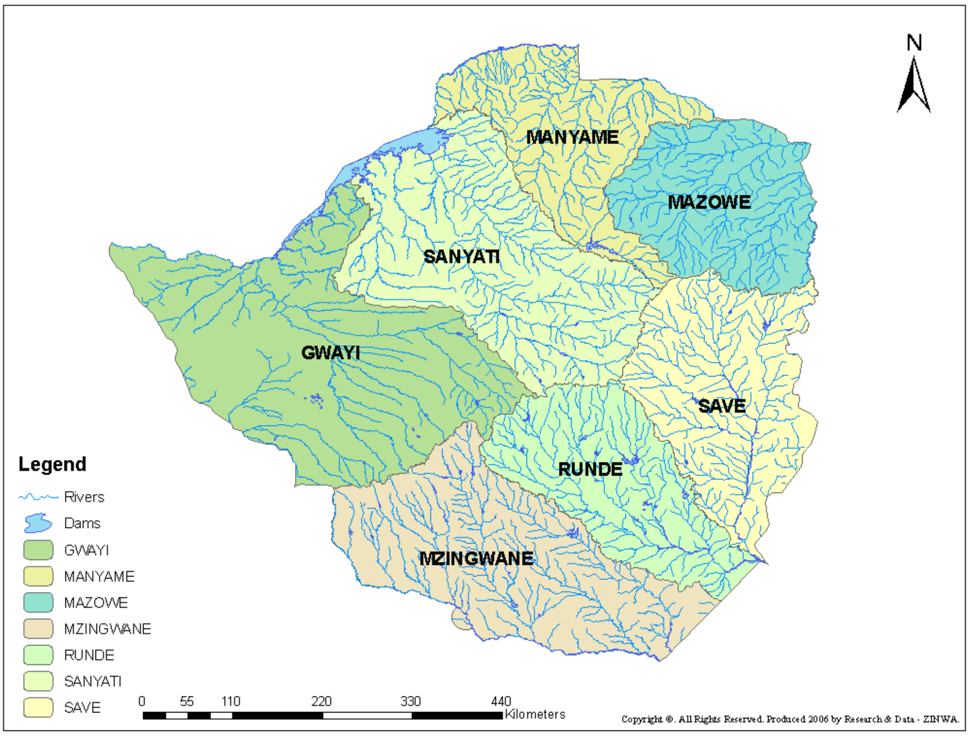
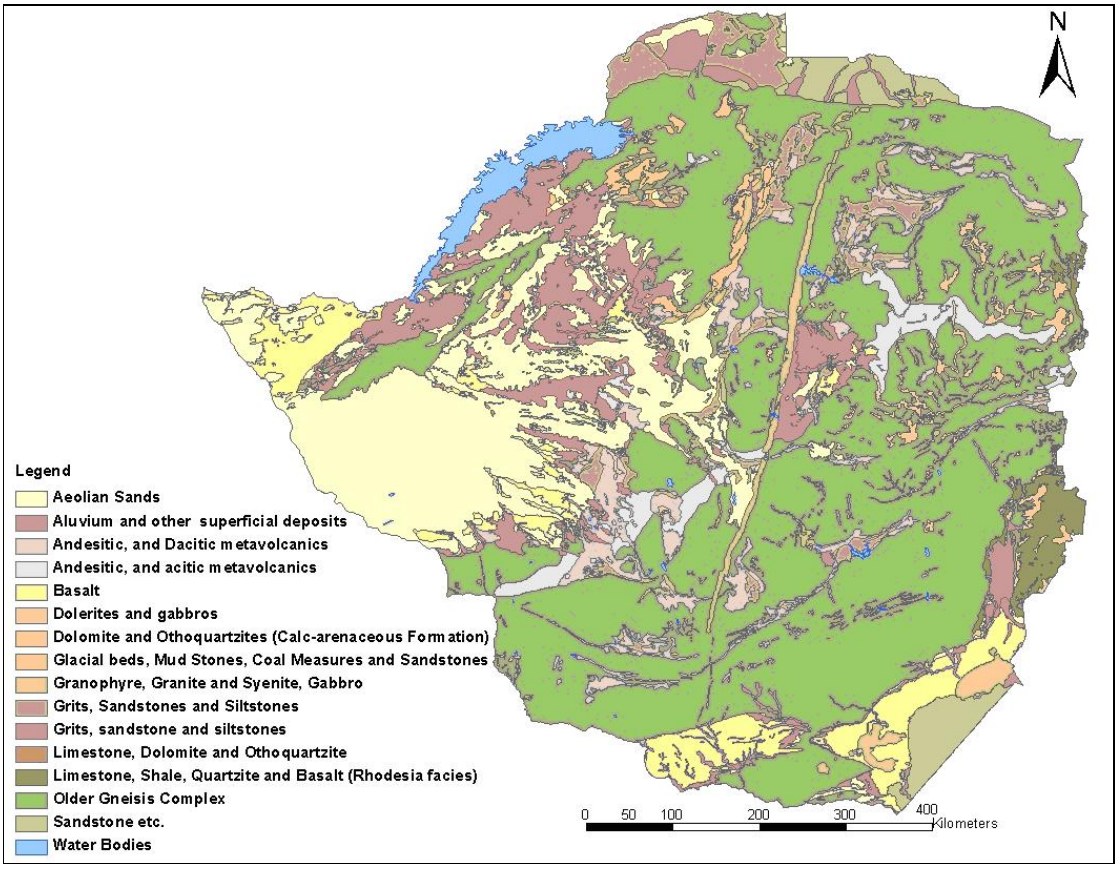


Figure 3.2: River systems of Zimbabwe

3.10 Groundwater Development Potential of Formations Occurring in Zimbabwe

3.10.1 Granites and Gneisses of Various Ages

Zimbabwe is largely underlain by crystalline rocks of the Basement Complex, which have very low-to-low primary permeability and porosity, and therefore a low potential for groundwater occurrence. The central part of the county, about 53% of Zimbabwe's land surface, is occupied by vast areas of gneissose rocks that have been intruded by younger granites, Figure 3.3. The potential for groundwater occurrence in these formations is variable depending on the depth and spatial extent of both fracturing and secondary weathering. Water tables are generally shallow, less than 10 m. Borehole yields usually vary from 10 to 100 m^3/day and are capable of supporting village water supply for domestic purposes. Dry parts of the country such as Gwanda and Rushinga have granites and gneisses with shallow regoliths and therefore low borehole yields.



Source: Interconsult A/S. 1985. ***National master plan for rural water supply and sanitation, Volume 2.2 Hydrogeology.*** **Ministry of Energy and Water Resources and Development, Republic of Zimbabwe.**
Figure 3.3:Geology of Zimbabwe

Greenstone Belt

Greenstone belts comprise mafic and acid metavolcanics that occur as irregularly shaped bodies. The potential for groundwater occurrence is variable with mafic metavolcanics tending to have considerable depth of weathering, and high potential of groundwater occurrence. Borehole yields are in the 10 – 250 m^3/day range, and capable of supporting small-scale irrigation. Acid metavolcanics generally have rather limited potential for groundwater occurrence due to variable depth of weathering, with borehole yields in the 10 – 25 m^3/day range (Table 3.27).

Table 3.27: Groundwater Development Potential of Formations Occurring in Zimbabwe

Lithology	Groundwater Development Potential	Water Table Depth(m)	Borehole Yield(m^3 day^{-1})
Gneiss and young intrusive granite on the African surface	Low	< 10	50 –100
Gneiss and young intrusive granite on post African and Pliocene surface	Low	< 10	10 - 50
Mafic metavolcanics (Greenstone)	Moderate	10 – 20	10 – 250
Acid metavolcanics (Greenstone)	Low	< 10	10 – 25
Argillites comprising shales, slates and phyllites	Low	5 - 20	10 - 50
Calcareous rocks; dolomites and limestone	High		500 – 2 000
Dolerite dykes and sills	Moderate	< 10	25 - 100
Kalahari aeolian sands	High	> 20	100 – 1 000
Alluvial deposits	High	variable	100 -5 000
Umkondo assemblage	Low	5 – 20	20- 200
Upper Karoo basalt	Moderate	5 – 15	20 – 100
Upper Karoo sandstone	High	> 20	100 – 300
Madumabisa mudstone	Low	> 20	10 - 25
Escarpment grit	High	5 - 20	100- 300
Cretaceous formation (mudstone, siltstone, sandstone)	Low	5 - 20	10 - 50
Great Dyke	unknown	unknown	unknown

Source: Interconsult Australian Standard 1984

Mashonaland Dolerites

Dolerite dykes and sills occur on the eastern part of the country where they have intruded into granites and gneisses. The degree of weathering of the dykes and sills is variable, ranging from fresh to decomposed. Groundwater occurrence is favourable where the dolerite has been weathered, or along the lower contact zone between the sill and granite or gneiss. Aquifers in these formations tend to have water table depths less than 10 m, and borehole yields of 25 -100 m^3/day.

Argillites of the Piriwiri and Sijarira Formation

Argillites occur on the northern part of the Gwayi and Sanyati Catchments. They weather into fine grained material resulting in low potential for groundwater occurrence. Water table depths are generally shallow, 5-20 m, and borehole yields are in the 10 – 50 m^3/day.

Lomagundi and Tengwe River Dolomites and Limestone

Dolomite occurs on the Manyame Catchment and has considerable exploitable groundwater resources. It is estimated that about 30 x 10^6 m^3 is being tapped from the dolomite aquifer for large scale commercial farming purposes. Karst features also occur in this formation.

Umkondo Group

The Umkondo assemblage which comprises quartzite, shale, limestone and dolerite intrusions occur on the Eastern Highlands within the Save Catchment. These formations lack primary porosity, and groundwater tends to occur along the shale/dolerite, quartzite/dolerite contacts, and fractures within quartzites. Water table depths are in the 5 – 20 m range, but with some boreholes having lower water table depths. Borehole yields are in the 20 – 200 m^3/day range.

Karoo Sequence

Rocks belonging to the Karoo sequence cover 21% of the land surface and occur within the Zambezi Valley, Nyamandhlovu, Hwange, Chiredzi, Beitbridge, Binga and Gokwe. Water table depths are variable depending on the geological setting. Water table depths of the Nyamadhlovu aquifer vary from 30 to 90 m range, while this can be as deep as 100 m in parts of Gokwe. Borehole yields vary from 10 to 1200 m^3/day.

Kalahari Sands

Kalahari sands with a high potential for groundwater occurrence cover vast parts of the western part of Zimbabwe in Matebeleland North Province. Groundwater tends to occur where pipe sandstone occurs at the bottom of the Kalahari sands. Water table depths are generally about 80 m, and yields being in the 100 - 1000 m^3/day range.

Alluvial Deposits

Alluvial deposits occur along the Zambezi, Limpopo and Save Rivers, and cover about 0.7% of the country. The alluvial aquifer occurring within the Save Valley is estimated to have a capacity of 125 000 m^3/day, and borehole yields are in the 100 – 5 000 m^3/day range. Groundwater resources in this area support large-scale irrigation.

3.10.2 Aquifers

There are three broad types of aquifers in Zimbabwe characterised as follows:

- Crystalline rocks comprising granites, gneisses, paragneisses, phyllites, quartzites, and others,
- Consolidated sediments comprising sandstone, dolomite and limestone, and
- Unconsolidated sediments comprising alluvial sands and associated deposits.

The three major aquifers found in Zimbabwe are:

- **Lomagundi Dolomite Aquifer**

  Depth of existing boreholes in the aquifer ranges from 30 m to 110 m.

- **Nyamandlovu Sandstone Aquifer**

  Depth of existing boreholes ranges from 70 m to 110 m. However, there is a possibility to drill boreholes as deep as

  .

  300 m in the North West of the Aquifer because the sandstone increases in thickness towards that direction.

- **Middle Sabi Alluvial Aquifer**

  Depth of existing boreholes ranges from 30 m to 120 m.

3.10.3 Abstraction, Use and Returns of Water

Tables 3.28 to 3.32 show water resource inflow to and from neighbouring countries; water resources outflow by catchment area; groundwater use by catchment area; surface water use by catchment area; and total surface and groundwater abstractions.

Table 3.28: Water Resources Inflow 1966 to 2014

Year	Zambezi m^3	Limpopo m^3 (estimated from the Zambezi)	Total Inflow (m^3) from Neighbouring	Total in Million cubic meters
1966	8 543 836 000	468 116 774	9 011 952 774	**9 012.0**
1967	8 126 585 000	445 255 592	8 571 840 592	**8 571.8**
1968	63 565 992 000	3 482 780 702	67 048 772 702	**67 048.8**
1969	70 028 608 000	3 836 867 432	73 865 475 432	**73 865.5**
1970	52 838 908 000	2 895 043 769	55 733 951 769	**55 734.0**
1971	38 501 100 000	2 109 475 269	40 610 575 269	**40 610.6**
1972	29 607 252 000	1 622 181 337	31 229 433 337	**31 229.4**
1973	24 268 384 000	1 329 664 759	25 598 048 759	**25 598.0**
1974	40 060 320 000	2 194 904 933	42 255 224 933	**42 255.2**
1975	51 894 200 000	2 843 283 218	54 737 483 218	**54 737.5**
1976	53 603 724 000	2 936 948 038	56 540 672 038	**56 540.7**
1977	41 227 212 000	2 258 838 945	43 486 050 945	**43 486.1**
1978	63 679 132 000	3 488 979 642	67 168 111 642	**67 168.1**
1979	52 033 280 000	2 850 903 411	54 884 183 411	**54 884.2**
1980	46 975 532 000	2 573 789 398	49 549 321 398	**49 549.3**
1981	41 523 112 000	2 275 051 306	43 798 163 306	**43 798.2**
1982	24 805 262 000	1 359 080 305	26 164 342 305	**26 164.3**
1983	25 797 952 000	1 413 469 790	27 211 421 790	**27 211.4**
1984	26 781 396 000	1 467 352 687	28 248 748 687	**28 248.7**
1985	29 036 758 000	1 590 923 971	30 627 681 971	**30 627.7**
1986	24 338 548 000	1 333 509 045	25 672 057 045	**25 672.1**
1987	27 575 572 000	1 510 865 590	29 086 437 590	**29 086.4**
1988	30 234 792 000	1 656 564 254	31 891 356 254	**31 891.4**
1989	47 904 760 000	2 624 701 800	50 529 461 800	**50 529.5**
1990	22 975 956 000	1 258 852 629	24 234 808 629	**24 234.8**

Table 3.28 Continued

Year	Zambezi m^3	Limpopo m^3 (estimated from the Zambezi)	Total Inflow (m^3) from Neighbouring	Total in Million cubic meters
1991	29 954 426 000	1 641 203 001	31 595 629 001	**31 595.6**
1992	20 585 916 000	1 127 902 338	21 713 818 338	**21 713.8**
1993	32 487 870 000	1 780 010 397	34 267 880 397	**34 267.9**
1994	23 128 292 000	1 267 199 119	24 395 491 119	**24 395.5**
1995	16 944 592 000	928 394 196	17 872 986 196	**17 873.0**
1996	13 972 324 000	765 543 632	14 737 867 632	**14 737.9**
1997	22 356 514 000	1 224 913 402	23 581 427 402	**23 581.4**
1998	36 545 296 000	2 002 316 768	38 547 612 768	**38 547.6**
1999	34 810 740 000	1 907 280 445	36 718 020 445	**36 718.0**
2000	28 908 226 000	1 583 881 703	30 492 107 703	**30 492.1**
2001	40 005 288 000	2 191 889 730	42 197 177 730	**42 197.2**
2002	27 283 606 000	1 494 868 773	28 778 474 773	**28 778.5**
2003	38 483 608 000	2 108 516 882	40 592 124 882	**40 592.1**
2004	48 510 680 000	2 657 900 157	51 168 580 157	**51 168.6**
2005	23 060 960 000	1 263 509 998	24 324 469 998	**24 324.5**
2006	32 168 434 000	1 762 508 499	33 930 942 499	**33 930.9**
2007	47 942 400 000	2 626 764 096	50 569 164 096	**50 569.2**
2008	42 780 160 000	2 343 924 966	45 124 084 966	**45 124.1**
2009	49 228 132 000	2 697 209 352	51 925 341 352	**51 925.3**
2010	55 360 556 000	3 033 204 863	58 393 760 863	**58 393.8**
2011	55 073 680 000	3 017 486 927	58 091 166 927	**58 091.2**
2012	40 267 884 000	2 206 277 364	42 474 161 364	**42 474.2**
2013	43 982 008 000	2 409 774 218	46 391 782 218	**46 391.8**
2014	43 889 764 000	2 404 720 170	46 294 484 170	**46 294.5**
2015	23 319 744 000	1 277 688 774	24 597 432 774	**24 597.4**

Source: Zimbabwe National Water Authority

3.10.4 Water Resources Outflow

Rainfall (mm) and flow generated directly from each catchment in million of cubic metres

Table 3.29: Water Resources Outflow

Season	Rainfall	Catchment Flow (million cubic metres)								Outflow to neighbouring countries	Subject to Treaties
		Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	Total		
1979	616.3	1 843.1	2 595.7	3 536.8	1 924.4	1 998.9	3 353.3	4 419.1	20 287.6	**15 418.6**	**15 418.6**
1980	662.2	1 980.4	2 789.0	3 800.2	2 067.8	2 147.8	3 603.0	4 748.2	21 798.5	**16 566.9**	**16 566.9**
1981	859.8	2 571.4	3 621.2	4 934.2	2 684.8	2 788.7	4 678.2	6 165.0	28 303.2	**21 510.4**	**21 510.4**
1982	532.7	1 593.1	2 243.6	3 057.0	1 663.4	1 727.8	2 898.4	3 819.6	17 535.6	**13 327.1**	**13 327.1**
1983	491.5	1 469.9	2 070.0	2 820.6	1 534.7	1 594.1	2 674.2	3 524.2	16 179.4	**12 296.3**	**12 296.3**
1984	642.5	1 921.5	2 706.0	3 687.2	2 006.2	2 083.9	3 495.8	4 606.9	21 150.0	**16 074.0**	**16 074.0**
1985	872.6	2 609.6	3 675.1	5 007.6	2 724.7	2 830.2	4 747.8	6 256.8	28 724.6	**21 830.7**	**21 830.7**
1986	821.4	2 456.5	3 459.5	4 713.8	2 564.9	2 664.1	4 469.2	5 889.7	27 039.1	**20 549.7**	**20 549.7**
1987	577.2	1 726.2	2 431.0	3 312.4	1 802.3	1 872.1	3 140.5	4 138.7	19 000.5	**14 440.4**	**14 440.4**
1988	815.1	2 437.7	3 432.9	4 677.7	2 545.2	2 643.7	4 434.9	5 844.5	26 831.7	**20 392.1**	**20 392.1**
1989	771.9	2 308.5	3 251.0	4 429.7	2 410.3	2 503.6	4 199.9	5 534.8	25 409.7	**19 311.3**	**19 311.3**
1990	679.2	2 031.2	2 860.6	3 897.8	2 120.8	2 202.9	3 695.5	4 870.1	22 358.1	**16 992.2**	**16 992.2**
1991	557.9	1 668.5	2 349.7	3 201.7	1 742.1	1 809.5	3 035.5	4 000.3	18 365.1	**13 957.5**	**13 957.5**

Table 3.29 Continued

Season	Rainfall	Catchment Flow (million cubic metres)								Outflow to neighbouring countries	Subject to Treaties
		Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	Total		
1992	497.3	1 487.2	2 094.5	2 853.9	1 552.8	1 613.0	2 705.8	3 565.8	16 370.3	**12 441.4**	**12 441.4**
1993	729.4	2 181.4	3 072.0	4 185.8	2 277.6	2 365.8	3 968.7	5 230.0	24 010.6	**18 248.1**	**18 248.1**
1994	529.9	1 584.7	2 231.8	3 041.0	1 654.6	1 718.7	2 883.2	3 799.5	17 443.4	**13 257.0**	**13 257.0**
1995	508.5	1 520.7	2 141.6	2 918.2	1 587.8	1 649.3	2 766.7	3 646.1	16 739.0	**12 721.6**	**12 721.6**
1996	869.3	2 599.8	3 661.2	4 988.7	2 714.4	2 819.5	4 729.8	6 233.1	28 615.9	**21 748.1**	**21 748.1**
1997	938.2	2 805.8	3 951.4	5 384.1	2 929.6	3 043.0	5 104.7	6 727.2	30 884.0	**23 471.8**	**23 471.8**
1998	797.5	2 385.0	3 358.8	4 576.7	2 490.2	2 586.6	4 339.2	5 718.3	26 252.4	**19 951.8**	**19 951.8**
1999	832.2	2 488.8	3 505.0	4 775.8	2 598.6	2 699.2	4 528.0	5 967.1	27 394.7	**20 819.9**	**20 819.9**
2000	1 089.4	3 258.0	4 588.2	6 251.8	3 401.7	3 533.4	5 927.4	7 811.3	35 861.2	**27 254.5**	**27 254.5**
2001	986.5	2 950.3	4 154.8	5 661.3	3 080.4	3 199.6	5 367.5	7 073.5	32 474.0	**24 680.2**	**24 680.2**
2002	554	1 656.8	2 333.3	3 179.3	1 729.9	1 796.9	3 014.3	3 972.3	18 236.8	**13 859.9**	**13 859.9**
2003	789.6	2 361.4	3 325.5	4 531.3	2 465.6	2 561.0	4 296.2	5 661.7	25 992.3	**19 754.2**	**19 754.2**
2004	846.1	2 530.4	3 563.5	4 855.6	2 642.0	2 744.3	4 603.6	6 066.8	27 852.2	**21 167.7**	**21 167.7**
2005	626	1 872.1	2 636.5	3 592.5	1 954.7	2 030.4	3 406.1	4 488.6	20 606.9	**15 661.2**	**15 661.2**

NB: *All our river systems are shared and are subject to treaties while at the moment some of the treaties might not yet be finalised at this moment*

Source: Zimbabwe National Water Authority

Table 3.30: Ground Water Recharge and Use

Ground water recharge as estimated from rainfall in each catchment in million of cubic metres

Season	Rainfall	Catchment Ground Water Recharge (million cubic metres)								G/W Use
		Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	Total	
1979	616.3	1 626.3	1 497.5	1 405.3	769.8	1 265.1	2 296.8	1 791.5	11 268.6	3 718.6
1980	662.2	1 747.4	1 609.0	1 510.0	827.1	1 359.4	2 467.8	1 924.9	12 107.9	3 995.6
1981	859.8	2 268.8	2 089.2	1 960.6	1 073.9	1 765.0	3 204.2	2 499.3	15 720.9	5 187.9
1982	532.7	1 405.7	1 294.4	1 214.7	665.4	1 093.5	1 985.2	1 548.5	9 740.1	3 214.2
1983	491.5	1 297.0	1 194.3	1 120.8	613.9	1 009.0	1 831.7	1 428.7	8 986.7	2 965.6
1984	642.5	1 695.4	1 561.2	1 465.1	802.5	1 318.9	2 394.4	1 867.7	11 747.7	3 876.7
1985	872.6	2 302.6	2 120.3	1 989.8	1 089.9	1 791.3	3 251.9	2 536.5	15 954.9	5 265.1
1986	821.4	2 167.5	1 995.9	1 873.0	1 025.9	1 686.2	3 061.1	2 387.7	15 018.7	4 956.2
1987	577.2	1 523.1	1 402.5	1 316.2	720.9	1 184.9	2 151.1	1 677.9	10 553.7	3 482.7
1988	815.1	2 150.9	1 980.5	1 858.7	1 018.1	1 673.2	3 037.6	2 369.4	14 903.6	4 918.2
1989	771.9	2 036.9	1 875.6	1 760.2	964.1	1 584.6	2 876.6	2 243.8	14 113.7	4 657.5
1990	679.2	1 792.3	1 650.3	1 548.8	848.3	1 394.3	2 531.2	1 974.4	12 418.7	4 098.2
1991	557.9	1 472.2	1 355.6	1 272.2	696.8	1 145.3	2 079.1	1 621.7	10 200.8	3 366.3
1992	497.3	1 312.3	1 208.3	1 134.0	621.1	1 020.9	1 853.3	1 445.6	9 092.8	3 000.6
1993	729.4	1 924.7	1 772.3	1 663.3	911.0	1 497.3	2 718.3	2 120.3	13 336.6	4 401.1
1994	529.9	1 398.3	1 287.6	1 208.3	661.9	1 087.8	1 974.8	1 540.4	9 688.9	3 197.3
1995	508.5	1 341.8	1 235.6	1 159.5	635.1	1 043.8	1 895.0	1 478.1	9 297.6	3 068.2
1996	869.3	2 293.9	2 112.2	1 982.3	1 085.8	1 784.5	3 239.6	2 527.0	15 894.6	5 245.2

Table 3.30 Continued

Season	Rainfall	Catchment Ground Water Recharge (million cubic metres)								G/W Use
		Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	Total	
1997	938.2	2 475.7	2 279.7	2 139.4	1 171.8	1 925.9	3 496.4	2 727.2	17 154.4	5 660.9
1998	797.5	2 104.4	1 937.8	1 818.5	996.1	1 637.1	2 972.0	2 318.2	14 581.8	4 812.0
1999	832.2	2 196.0	2 022.1	1 897.7	1 039.4	1 708.3	3 101.4	2 419.1	15 216.2	5 021.4
2000	1 089.4	2 874.7	2 647.0	2 484.2	1 360.7	2 236.3	4 059.9	3 166.8	19 918.9	6 573.3
2001	986.5	2 603.2	2 397.0	2 249.5	1 232.2	2 025.1	3 676.4	2 867.6	18 037.5	5 952.4
2002	554.0	1 461.9	1 346.1	1 263.3	692.0	1 137.3	2 064.6	1 610.4	10 129.5	3 342.7
2003	789.6	2 083.6	1 918.6	1 800.5	986.2	1 620.9	2 942.6	2 295.3	14 437.3	4 764.3
2004	846.1	2 232.7	2 055.9	1 929.4	1 056.8	1 736.9	3 153.2	2 459.5	15 470.4	5 105.2
2005	626.0	1 651.9	1 521.1	1 427.5	781.9	1 285.1	2 332.9	1 819.7	11 446.0	3 777.2
2006	809.8	2 136.9	1 967.7	1 846.6	1 011.5	1 662.4	3 017.9	2 354.0	14 806.6	4 886.2
2007	888.2	2 343.8	2 158.2	2 025.4	1 109.4	1 823.3	3 310.1	2 581.9	16 240.1	5 359.2
2008	726.4	1 916.8	1 765.0	1 656.4	907.3	1 491.2	2 707.1	2 111.6	13 281.7	4 383.0
2009	809.5	2 136.1	1 966.9	1 845.9	1 011.1	1 661.7	3 016.8	2 353.1	14 801.2	4 884.4
2010	709.1	1 871.2	1 723.0	1 617.0	885.7	1 455.6	2 642.6	2 061.3	12 965.4	4 278.6
2011	745.4	1 967.0	1 811.2	1 699.7	931.0	1 530.2	2 777.9	2 166.8	13 629.1	4 497.6
2012	665.0	1 754.8	1 615.8	1 516.4	830.6	1 365.1	2 478.3	1 933.1	12 159.1	4 012.5

NB: *All our river systems are shared and are subject to treaties while at the moment some of the treaties might not yet be finalised at this moment*

Source: Zimbabwe National Water Authority

Table 3.31: Surface Water Recharge and Use

Season	Surface Water Use per Catchment in million cubic metres							
	Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	**Total Use**
1979	206.4	1 209.6	622.5	521.5	819.6	687.4	808.7	**4 875.7**
1980	221.8	1 299.7	668.8	560.4	880.6	738.6	868.9	**5 238.8**
1981	288.0	1 687.5	868.4	727.6	1 143.4	959.0	1 128.2	**6 802.1**
1982	178.4	1 045.5	538.0	450.8	708.4	594.2	699.0	**4 214.3**
1983	164.6	964.6	496.4	415.9	653.6	548.2	644.9	**3 888.4**
1984	215.2	1 261.0	648.9	543.7	854.4	716.6	843.1	**5 082.9**
1985	292.3	1 712.6	881.3	738.4	1 160.4	973.3	1 145.0	**6 903.3**
1986	275.1	1 612.1	829.6	695.1	1 092.3	916.2	1 077.8	**6 498.3**
1987	193.3	1 132.8	583.0	488.4	767.6	643.8	757.4	**4 566.3**
1988	273.0	1 599.8	823.3	689.7	1 083.9	909.2	1 069.5	**6 448.4**
1989	258.5	1 515.0	779.6	653.2	1 026.5	861.0	1 012.9	**6 106.7**
1990	227.5	1 333.0	686.0	574.7	903.2	757.6	891.2	**5 373.3**
1991	186.9	1 095.0	563.5	472.1	741.9	622.3	732.1	**4 413.7**
1992	166.6	976.0	502.3	420.8	661.3	554.7	652.5	**3 934.2**
1993	244.3	1 431.6	736.7	617.2	970.0	813.6	957.1	**5 770.4**
1994	177.5	1 040.0	535.2	448.4	704.7	591.1	695.3	**4 192.1**
1995	170.3	998.0	513.6	430.3	676.2	567.2	667.2	**4 022.8**
1996	291.2	1 706.1	878.0	735.6	1 156.0	969.6	1 140.7	**6 877.2**

Table 3.31 Continued

Season	Surface Water Use per Catchment in million cubic metres							
	Gwayi	Manyame	Mazowe	Mzingwane	Runde	Sanyati	Save	Total Use
1997	314.3	1 841.4	947.6	793.9	1 247.6	1 046.5	1 231.1	**7 422.3**
1998	267.1	1 565.2	805.5	674.9	1 060.5	889.5	1 046.5	**6 309.2**
1999	278.7	1 633.3	840.5	704.2	1 106.7	928.2	1 092.0	**6 583.7**
2000	364.9	2 138.1	1 100.3	921.9	1 448.7	1 215.1	1 429.5	**8 618.5**
2001	330.4	1 936.2	996.4	834.8	1 311.9	1 100.3	1 294.5	**7 804.4**
2002	185.6	1 087.3	559.6	468.8	736.7	617.9	726.9	**4 382.8**
2003	264.5	1 549.7	797.5	668.2	1 050.0	880.7	1 036.1	**6 246.7**
2004	283.4	1 660.6	854.6	716.0	1 125.1	943.7	1 110.2	**6 693.7**
2005	209.7	1 228.6	632.3	529.7	832.5	698.2	821.4	4 952.4
2006	271.2	1 589.4	817.9	685.3	1 076.9	903.3	1 062.6	**6 406.5**
2007	297.5	1 743.2	897.1	751.6	1 181.1	990.7	1 165.5	**7 026.7**
2008	243.3	1 425.7	733.7	614.7	966.0	810.2	953.2	**5 746.7**
2009	271.1	1 588.8	817.6	685.0	1 076.5	902.9	1 062.2	**6 404.1**
2010	237.5	1 391.7	716.2	600.0	943.0	790.9	930.5	**5 609.8**
2011	249.7	1 463.0	752.9	630.8	991.2	831.4	978.1	**5 897.0**
2012	222.7	1 305.2	671.7	562.7	884.3	741.7	872.6	**5 260.9**

NB: All our river systems are shared and are subject to treaties

Source: Zimbabwe National Water Authority

Table 3.32: Total Water Use (million cubic metres)

Season	Surface Water Abstraction/Use	Ground Water Abstraction/Use	Total Abstraction/Use
1979	4 875.67	3 718.65	**8 594.30**
1980	5 238.80	3 995.60	**9 234.40**
1981	6 802.05	5 187.88	**11 989.90**
1982	4 214.30	3 214.22	**7 428.50**
1983	3 888.36	2 965.63	**6 854.00**
1984	5 082.95	3 876.73	**8 959.70**
1985	6 903.31	5 265.12	**12 168.40**
1986	6 498.26	4 956.18	**11 454.40**
1987	4 566.35	3 482.72	**8 049.10**
1988	6 448.42	4 918.17	**11 366.60**
1989	6 106.66	4 657.51	**10 764.20**
1990	5 373.29	4 098.17	**9 471.50**
1991	4 413.66	3 366.27	**7 779.90**
1992	3 934.24	3 000.62	**6 934.90**
1993	5 770.43	4 401.07	**10 171.50**
1994	4 192.15	3 197.32	**7 389.50**
1995	4 022.85	3 068.20	**7 091.00**
1996	6 877.21	5 245.20	**12 122.40**
1997	7 422.29	5 660.94	**13 083.20**
1998	6 309.18	4 811.98	**11 121.20**
1999	6 583.70	5 021.35	**11 605.10**
2000	8 618.46	6 573.25	**15 191.70**
2001	7 804.40	5 952.37	**13 756.80**
2002	4 382.81	3 342.74	**7 725.50**
2003	6 246.68	4 764.31	**11 011.00**

Source: Zimbabwe National Water Authority

Chapter 4: Residuals

Residuals are flows of solid, liquid and gaseous materials and energy that are discarded, discharged or emitted by establishments and households through processes of production, consumption or accumulation. They can be released to air, water (as part of wastewater) and soil.

4.1 Generation and Management of Wastewater

The major cities of Zimbabwe (Harare, Bulawayo, Mutare, and Gweru) have a combined water supply estimated at 810 000m³/day and generate an estimated 532 000 m³/day of wastewater or 66% of gross water supply. Other smaller towns have a combined water supply totaling an estimated 70 000 m³/day. This brings the national total water supply to an estimated 880 000 m³/day. This generates an additional 56 000 m³/day of wastewater. Conventional sewerage systems are used to collect and convey the sewage to wastewater treatment. There are 137 wastewater treatment plants in Zimbabwe and of these, 101 are waste stabilization ponds (Madyiwa, 2006). Urban Councils or Municipalities are responsible for wastewater treatment in Zimbabwe (Thebe and Mangore).

Waste and Waste Water Treatment Capacities and Treatment Waste Water Utilisation

Town	Capacity of W & WW T L ML/Day		Method of Treatment WW	Purpose TWW
	WS	WW		
Harare, Chitungwiza, Norton	710	240	Biological Nutrient Removal (BNR) / Waste Stabilisation Ponds (WSP), Conventional Waste Water Treatment (Conv)	Irrigation for Livestock pastures on Harare municipal farms - herd of 12 000 cattle Chitungwiza – Tobacco Irrigation Livestock pastures at Norton
Bulawayo	294.3	100	BNR,Conv &WSP	Umguza Irrigation Scheme Irrigation of recreational parks and at public institutions
Mutare	75	30	BNR,Conv,WSP	Released into Sakubva River
Gweru	73.2	30	BNR & WSP	Irrigation on Municipal farms
Kwekwe	70	35	BNR & WSP	Irrigation of Municipal farms
Kadoma	40	11	BNR	Irrigation on Municipal farms
Masvingo	30	20	BNR ,WSP	Discharges into Shagashe river.

Table 4.1 Continued

Town	Capacity of W & WW T L ML/Day		Method of Treatment WW	Purpose TWW
	WS	WW		
Chegutu	12	9	WSP	Irrigation & return to storage
Chinhoyi	21	7	BNR & Conv	Irrigation but not working
Marondera	20		WSP	Scope for Irrigation Discharge back into reservoir
Victoria Falls	-		WSP	Discharge into Zambezi River
Kariba	-		WSP	Discharge back into Zambezi River
Gwanda	15	7	WSP	
Bindura	15	7	WSP	Irrigation but not working
Redcliff	15	7	WSP	Irrigation but not working
Shurugwi	10	7	WSP	Discharges into river.
Rusape	10	7	WSP	Discharges into reservoir.
Chipinge	10	6	WSP	Discharges back into river.
Norton	-	30	BNR,Conv	Irrigation of pastures, now into reservoir.
Zvishavane	12	7	BNR,Conv,WSP	Irrigation but now discharge back into river
Karoi	15	7	WSP	Discharge back into river
Gokwe	10	7	WSP	Discharge into vlei
Beitbridge	15	7	WSP	Discharges back into river.
Chivhu	10	7	WSP	Discharges back into river.
Ruwa	-	7	WSP	Irrigation but now discharge back into river
Hwange	10	7	WSP	?
Epworth	-	7	WSP	Discharge into Manyame River
Chirundu	10		WSP	Discharge back into Zambezi River
Total Volumes per day	1502.5	-	-	-

BNR - Biological Nutrient Removal
WSP - Waste Stabilisation Ponds
Conv - Conventional WWT
Source: Environmental Management Agency

Table 4.2: Bulawayo Sewage Treatment Effluent Grab

Customer Ref	Thorngrove Water from recirculation	Aisleby 1 STP Ingwebu Holding dam	Water fad reclaimed water	Aisleby by 3 STP	
Type of Sample	**Effluent**	**Effluent**	**Effluent**	**Effluent**	**Effluent**
Sampling method	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Lab ref number	142517	142518	142519	142521	140941
Date sample taken	16/05/2014	16/05/2014	16/05/2014	16/05/2014	20/2/2014
Date sample received	19/05/2014	19/05/2014	19/05/2014	19/05/2014	21/2/2014
Parameters					
Chemical oxygen demand	210	440	49	207	57.47
Chloride	113	88.8	62.3	83.1	45
Copper	<0.01	0.01	0.01	<0.01	48.9
Chromium	0.13	0.22	0.11	0.64	72.4
Dissolved oxygen	30.1	2.4	113.1	25.9	642
E. Conductivity	826	965	510	1067	0.07
Iron	0.22	0.48	0.06	0.53	0.06
Lead	<0.01	<0.01	<0.01	<0.01	29.92
Nitrates	1.89	1.87	12.78	2.28	7.79
pH	7.67	7.85	7.6	8.5	18.48
Oxygen absorbed(PV)	24.77	27.06	5.12	23.83	8.36
Phosphates	7.81	11.05	6.99	5.90	16.36
Potassium	24.7	34.1	21.8	28.4	56.94
Sodium	122.4	168.3	84.8	41	49
Sulphate	86	53	58	80	312
Total Dissolved solids	456	354	394	526	14
Total Suspended Solids	56	54	<1	80	126
Turbidity	42.9	28.1	4.63	85.8	0.44
Zinc	<0.01	0.01	<0.01	<0.01	<0.01
Band Class	Red	Red	Red	Red	Red

Table 4.2 Continued

Client ref	Aiselby Sewage	BCCA USBY 1 and 2	Alselby T/Plant	Alsleby Plant 2	Alseby	Aislby STP1	BCC Cowdry Park Ponds	Cowdry Park Plant	Cowdry park
Type of Sample	**Effluent**	**Sewage**	**Effluent**	**Effluent**	**Pond**	**Sewage**	**Sewage**	**Efflluent**	**Pond**
Sampling method	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Lab ref number	121145	133256	134010	144082	145273	150547	133257	144080	145274
Date sample taken	07/04/1905	07/05/1905	10/28/2013	20/08/2014	10/27/2014	27/01/2015	03/09/2013	20/08/2014	10/27/2014
Date sample received	28/03/2012	04/09/2013	10/29/2013	21//8/2014	10/29/2014	28/01/2015	04/09/2013	21//8/2014	10/29/2014
	2012	**2013**	**2013**	**2014**	**2014**	**2015**	**2013**	**2014**	**2014**
Biological oxygen Demand	49.49	<2	2.91	31.32	11.35	35.07	<2	10.73	25.27
Chemical oxygen demand	141	586	99	295	-	229	153	150	-
Chloride	74	95	66	84.8	96	4	151	116.9	140
Dissolved oxygen	46.6	42.5	44.4	24.1	0	0	39.9	18.1	15
E. Conductivity	800	1227	946	937	1025	968	1316	1179	1287
Iron	0.22	0.56	<0.01	0.37	1.55	0.25	0.04	0.09	0.19
Manganese	0.2	0.12	0.01	0.12	0.18	0.19	0.03	0.3	0.09
Nitrates	-	1.29	18.24	2.14	0.96	1.95	2.58	8.53	2.17
pH	7.81	7.23	7.76	7.25	7.23	8.12	8.03	7.52	7.81
Oxygen absorbed(PV)	13.3	31.9	11.6	22.35	17.54	17.77	18.8	16	39.79
Phosphates	3.54	11.05	12.58	4.65	0.35	10.36	9.05	4.61	8.23
Potassium	16.1	35.49	27.52	28.2	62.82	25.25	48.28	37	16.63
Sodium	101.6	173.6	77.42	79.94	42.57	101	240	154	52.53
Sulphate	20	14	50.25	63	80	26	33	77	84
Total Dissolved Solids	408	648	512	864	424	410	780	636	696
Total Suspended Solids	46	106	156	60	22	32	20	38	84
Total Hardness	140	123	20	132	141	138	229	190	161
Turbidity	-	150	7.19	45.6	14.6	25.80	6.2	18.7	42.9
Zinc	<0.01	0.40	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Band Class	Red	Red	Red	Red	Red	Red	Red	Red	Band Class

Table 4.2 Continued

Client ref	**Magwegwe Sewage Pond**	**Magwegwe Sewage**	**Magwegwe North**	**Magwegwe Ponds**	**Magwegwe ponds**	**SAST**	**SAST T/Plant**	**Sast sewage works**	**SAST**
Type of Sample	**Effluent**	**Effluent**	**Effluent**	**Efflluent**	**Pond**	**Sewage**	**Effluent**	**Effluent**	**Pond**
Sampling method	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Lab ref number	121146	134009	140937	144081	145270	133255	134011	140940	145271
Date sample taken	27/03/2012	10/28/2013	19/2/2014	20/08/2014	10/27/2014	03/09/2013	10/28/2013	20/2/2014	10/27/2014
Date sample received	28/03/2012	10/29/2013	20/2/2014	21//8/2014	10/29/2014	04/09/2013	10/29/2013	21/2/2014	10/29/2014
Biological oxygen Demand	42.32	2.53	<1	49.68	25.75	<2	<2	61.82	15.02
Chemical oxygen demand	88	210	58	520	-	81	81	119	-
Chloride	93	111	129	1203	136	120	111	106.4	117
Dissolved oxygen	65.6	30.6	124	11.6	0	66.4	42.3	27.1	0
E. Conductivity	940	1446	940	1237	1359	962	985	608	1113
Iron	<0.01	<0.01	<0.01	0.45	0.13	0.25	<0.01	0.10	0.03
Manganese	0.04	0.06	0.03	0.18	0.15	0.01	<0.01	<0.01	0.16
Nitrates	-	18.60	7.18	3.01	2.41	0.96	1.34	0.81	1.55
pH	8.02	8.2	7.6	7.44	7.54	10.7	12.2	14.29	7.36
Oxygen absorbed(PV)	18.4	19.7	11.52	36.1	41.34	7.64	7.41	7.74	23.74
Phosphates	6.32	20.18	2.03	15.44	5.70	1.09	0.23	7.26	8.89
Potassium	22.9	59.02	17.85	40	1.68	35.16	37.11	21.6	22.99
Sodium	124.5	213.09	93.49	123.6	40.91	188.74	186.53	44.18	34.36
Sulphate	50	64.15	87	46	33	35	97.08	69	61
Total Dissolved Solids	446	792	592	530	720	562	554	594	630
Total Suspended Solids	33	176	16	200	80	2	175	56	18
Total Hardness	123	8	188	149	162	174	24	163	163
Turbidity	-	36.7	7.45	102	48.6	1.97	6.65	29.1	14.6
Zinc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Band Class	Yellow	Red	Band Class	Red	Yellow	Red	Red	Red	Red

Table 4.2 Continued

Client ref	Luveve Treatment works	Luveve sewage works	Luveve STP	Luveve STP	BCC AISLBY 3 -5	Alsleby Plant 3
Type of Sample	**Effluent**	**Effluent**	**Pond**	**Sewage**	**Sewage**	**Efflluent**
Sampling method	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Lab ref number	121147	140939	145272	150552	133258	144083
Date sample taken	27/03/2012	19/2/2014	10/27/2014	27/01/2015	03/09/2013	20/08/2014
Date sample received	28/03/2012	20/2/2014	10/29/2014	28/01/2015	04/09/2013	21//8/2014
Biological oxygen Demand	49.79	6.75	13.67	37.01	<2	38.76
Chemical oxygen demand	60	51	-	218	141	252
Chloride	71	106.5	70	79	77	101
Dissolved oxygen	77	74.1	0.5	0	43.8	38.4
E. Conductivity	650	769	641	873	883	991
Iron	<0.01	0.52	0.07	0.16	0.18	0.80
Manganese	0.03	0.02	0.1	0.2	0.05	0.23
Nitrates	-	31.24	2.74	1.91	1.35	1.92
pH	7.84	7.75	7.05	8.12	7.44	7.26
Oxygen absorbed(PV)	11.7	2.93	21.60	19.12	16.8	20.4
Phosphates	2.96	2.14	9.49	6.27	5.29	2.76
Potassium	17.6	13.79	98.56	17.04	28.3	19.9
Sodium	110.6	68.33	27.61	107.1	134.05	34.3
Sulphate	54	83	56	52	21	90
Total Dissolved Solids	395	462	378	478	394	520
Total Suspended Solids	12	10	20	40	14	60
Total Hardness	116	204	103	178	133	231
Turbidity	-	0.2	20.3	47.00	9.22	57.1
Zinc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Band Class	Red	Red	Band Class	Red	Green	Yellow

Table 4.2 Continued

Customer Ref	Waterford Reclaimed	Water ford Sewage	Waterford sewage works	Thorngrove sewage	Thorngrove	Thorngrove	Thorngrove STP
Type of Sample	**Effluent**	**Sewage**	**Pond**	**Effluent**	**Effluent**	**Sewage**	**Sewage**
Sampling method	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Lab ref number	121148	144104	145279	121149	140938	144105	150551
Date sample taken	27/03/2012	21/08/2014	28/10/2014	27/03/2012	19/2/2014	21/08/2014	27/01/2015
Date sample received	28/03/2012	22/08/2014	29/10/2014	28/03/2012	20/2/2014	22/08/2014	28/01/2015
Biological oxygen Demand	50.17	13.45	<2	54.25	<1	37.52	36.91
Chemical oxygen demand	23	30	-	206	149	306	318
Chloride	64	65	63	68	132.4	94	62
Dissolved oxygen	77.9	78.4	56.2	52.8	87.5	21.4	0
E. Conductivity	580	687	695	760	927	856	803
Iron	<0.01	0.01	0.07	0.14	<0.01	0.41	0.24
Manganese	0.05	0.06	0.07	0.04	0.12	0.14	0.14
Nitrates	-	39.98	17.99	-	1.10	2.67	1.79
pH	7.19	6.14	6.82	7.37	7.82	7.11	7.96
Oxygen absorbed(PV)	4.6	2.92	2.18	17	7.37	28.58	27.14
Phosphates	2.93	9.88	3.24	2.23	1.92	4.83	5.75
Potassium	16.6	24.4	28.07	18.6	16.26	25.6	18.66
Sodium	84.4	138.9	124.35	41.7	55.25	665.6	99
Sulphate	34	67	42	62	83	28	<1
Total Dissolved solids	443	510	438	419	502	570	450
Total Suspended Solids	2	8	<1	89	8	100	78
Turbidity	100	0.18	212	109	233	55.50	173
Zinc	0.03	0.02	4.69	-	10.2	0.22	278.00
Band Class	Red	Red	<0.01	0.01	<0.01	Red	<0.01

Source: Environmental Management Agency

Table 4.3: Harare Sewage Treatment Effluent Grab

2011 — **Harare Urban Firle 1&2**

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	-	123	2 163	48	7.1	7.2	386
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	137	1 134	95	7.4	7.4	470
2nd Quarter							
Volume Collected	90	157	1 280	46	7.3	10.2	362
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	40	152	473	22	7.1	2.7	160
3rd Quarter							
Volume Collected	104	114	875	40	6.9	6.3	180
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	86	120	1 281	72	7.3	6	571
4th Quarter							
Volume Collected	551	116	592	59	7.2	2.7	528
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	491	125	1 704	51	7.2	4.3	194

2012

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	240	167	1 138	21	7.2	4.2	331
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	298	155	1 145	23	7.5	14.7	235
2nd Quarter							
Volume Collected	230	122	761	37	7.5	18.5	377
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	437	139	8 034	67	7	22.8	3985
3rd Quarter							
Volume Collected	270	115	1 112	58	7.6	17.2	564
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	361	107	5 670	60	7.5	16.3	1 614
4th Quarter							
Volume Collected	400	196	437	54	7.3	8	185
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	138	-	24	7.8	4	290

Source: Environmental Management Agency

Table 4.3 Continued

2013 — **Harare Urban Firle 1&2**

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	318	104	255	22	7.7	1.8	182
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	561	128	302	51	8.4	8.5	196
2nd Quarter							
Volume Collected	181	122	548	53	7.8	4.4	163
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	130	136	-	48	6.9	2.1	113
3rd Quarter							
Volume Collected	-	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-	-
4th Quarter							
Volume Collected	538	124	976	54	6.8	10.8	216
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	800	143	3 689	42	6.8	11	826

2014

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	191	134	554	24	7.1	1.6	174
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	335	143	1 019	65	6.9	3.3	700
2nd Quarter							
Volume Collected	-	112	-	56	-	-	-
Volume Treated	-		-	-	-	-	-
Volume Discharged	-	97	-	32	-	-	-
3rd Quarter							
Volume Collected	262	127	800	50	7.4	13.7	255
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	116	127	370	30	7.2	8	203
4th Quarter							
Volume Collected	294	153	674	171	6.5	2.2	200
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	587	143	811	67	7.1	1.3	479

Source: Environmental Management Agency

Table 4.3: Harare Sewage Treatment Affluent Grab Continued

2011 — **Harare Urban Donnybrook 1-4**

	BOD	Chloride	DO	NO_4	PV4hr	PH	PO_4
1st Quarter							
Volume Collected	-	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-	-
2nd Quarter							
Volume Collected	-	279	-	-	146	7.5	-
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	177	7.8	-	35.2	7.7	7
3rd Quarter							
Volume Collected	-	545	-	-	346	8.2	11.3
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	209	0.9	0.01	40.93	7.7	12.6
4th Quarter							
Volume Collected	-	233	-	-	188	6.2	12
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	214	8.5	8	34.7	8	21.7

2012

	BOD	Chloride	PV4hr	PH	PO_4
1st Quarter					
Volume Collected	-	307	92	12	23
Volume Treated	-	-	-	-	-
Volume Discharged	-	448.5	49	11	15.4
2nd Quarter					
Volume Collected	-	472	464	7.3	62
Volume Treated	-	-	-	-	-
Volume Discharged	-	157	8.6	7.7	10
3rd Quarter					
Volume Collected	2 720	517	356	8.4	27.2
Volume Treated	-	-	-	-	-
Volume Discharged	60	345.5	21.2	8.6	14
4th Quarter					
Volume Collected	-	342	91.2	8.3	8
Volume Treated	-	-	-	-	-
Volume Discharged	-	346	16.2	7.7	4.8

Source: Environmental Management Agency

Table 4.3 Continued

2013 — **Harare Urban Donnybrook 1-4**

	Chloride	DO	PV4hr	PH	PO_4
1st Quarter					
Volume Collected	376	-	612	9.6	14.8
Volume Treated	-	-	-	-	-
Volume Discharged	209	3.1	73.07	11	9.21
2nd Quarter					
Volume Collected	494	-	324	7.6	-
Volume Treated	-	-	-	-	-
Volume Discharged	254	1.2	32	7.9	-
3rd Quarter					
Volume Collected	307	-	124	8.2	34.6
Volume Treated	-	-	-	-	-
Volume Discharged	274	-	61	8.8	16.4
4th Quarter					
Volume Collected	-	-	-	-	-
Volume Treated	-	-	-	-	-
Volume Discharged	-	-	-	-	-

2014

	BOD	Chloride	DO	PV4hr	PH	PO_4
1st Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-
2nd Quarter						
Volume Collected	601.3	389	-	188	9.7	1.5
Volume Treated			-	-	-	-
Volume Discharged	340.5	239.62	1.2	16.12	11	9.97
3rd Quarter						
Volume Collected	-	567	-	362	7.1	25.3
Volume Treated	-	-	-	-	-	-
Volume Discharged	462.5	552	3.3	29	9.2	7.05
4th Quarter						
Volume Collected	1 320.9	253.7	-	183.7	7.7	0.7
Volume Treated	-	-	-	-	-	-
Volume Discharged	340.7	474.92	2.6	50.5	9.2	6.47

Source: Environmental Management Agency

Table 4.3: Harare Sewage Treatment Affluent Grab Continued

2011 — **Harare Urban Crowborough 1&2**

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	200.3	104	84	11.2	7.4	3.6	868
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	140.3	104	-	5.6	6.9	1	760
2nd Quarter							
Volume Collected	20.9	84	759	13	6.8	4.4	214
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	40.9	97.5	1 107.7	21.45	7.2	7.8	318
3rd Quarter							
Volume Collected	120	125	1 493.7	78.8	7.1	70.8	868
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	280.1	139	1 886.8	68	7	25.8	760
4th Quarter							
Volume Collected	36	157	2 932.3	40	6.8	7	266
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	492	163	526	21.6	7.1	3.4	320

2012

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	120.1	197	647	30	7.1	5.2	854
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	280.1	185	566	38	7.1	6.8	550
2nd Quarter							
Volume Collected	160.9	153	155	32.8	7.2	3	120
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	60.9	153	233	56	7.3	4	180
3rd Quarter							
Volume Collected	240.8	137	127	76.8	7.2	9.9	186
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	80.8	155	327	61.1	7.1	48	534
4th Quarter							
Volume Collected	-	138	503	39.2	6.8	10	124
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	146	372	48.8	6.9	9	160

Source: Environmental Management Agency

Table 4.3 Continued

2013 — **Harare Urban Crowborough 1&2**

	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter						
Volume Collected	137	377	39.2	8.5	10	30
Volume Treated	-	-	-	-	-	-
Volume Discharged	117	246	53.6	8.4	0.6	285
2nd Quarter						
Volume Collected	118	-	46.4	7.1	7	105
Volume Treated	-	-	-	-	-	-
Volume Discharged	130	-	52	7	3.5	40
3rd Quarter						
Volume Collected	134	-	23.2	7.3	5.6	10
Volume Treated	-	-	-	-	-	-
Volume Discharged	106	-	42.4	7.2	24	115
4th Quarter						
Volume Collected	110	-	68.8	6.9	4.3	6
Volume Treated	-	-	-	-	-	-
Volume Discharged	114	-	37.6	6.9	6	1

2014

	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter						
Volume Collected	-	796	37.6	7.4	4.6	34
Volume Treated	-	-	-	-	-	-
Volume Discharged	73	-	-	-	-	-
2nd Quarter						
Volume Collected	-	869	35.2	7.2	6	142
Volume Treated	-	-	-	-	-	-
Volume Discharged	93	-	-	-	-	-
3rd Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-
4th Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-

Source: Environmental Management Agency

Table 4.3: Harare Sewage Treatment Affluent Grab Continued

2011 — **Harare Urban Firle 3,4 & 5**

	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter						
Volume Collected	-	-	-	7.1	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	168.5	2 286	84.5	7	6.7	682
2nd Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	145.5	2 309	65.5	7.1	7.2	844
3rd Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	126.5	1 542	39.5	7.1	15.5	154
4th Quarter						
Volume Collected	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-
Volume Discharged	15.5	269	56	7.2	20	760

2012

	PO_4	TSS
1st Quarter		
Volume Collected	-	-
Volume Treated	-	-
Volume Discharged	0.6	78
2nd Quarter		
Volume Collected	-	-
Volume Treated	-	-
Volume Discharged	0.3	22
3rd Quarter		
Volume Collected	-	-
Volume Treated	-	-
Volume Discharged	0.5	336
4th Quarter		
Volume Collected	-	-
Volume Treated	-	-
Volume Discharged	1.5	116

Source: Environmental Management Agency

Table 4.3 Continued

2013 **Harare Urban Firle 3,4 & 5**

	BOD	Chloride	COD	NO_4	PV4hr	PH	PO_4	TSS
1st Quarter								
Volume Collected	318	104	255	-	22	7.7	1.8	182
Volume Treated	-	-	-	-	-	-	-	-
Volume Discharged	-	-	-	6.1	-	-	0.6	65.3
2nd Quarter								
Volume Collected	181	122	548	-	53	7.8	4.4	163
Volume Treated	-	-	-	-	-	-	-	-
Volume Discharged	-	-	-	6.6	-	-	0.1	55.2
3rd Quarter								
Volume Collected	-	-	-	-	-	-	-	-
Volume Treated	-	-	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-	-	-
4th Quarter								
Volume Collected	538	124	976	-	54	6.8	10.8	216
Volume Treated	-	-	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	-	1.1	68.3

2014

	BOD	Chloride	COD	PV4hr	PH	PO_4	TSS
1st Quarter							
Volume Collected	191	134	554	24	7.1	1.6	174
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	-	-	-	-	1.1	55.9
2nd Quarter							
Volume Collected	-	112	-	56	-	-	-
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	113	103	7.8	7.5	3.4	31.6
3rd Quarter							
Volume Collected	262	127	800	50	7.4	13.7	255
Volume Treated	-	-	-	-	-	-	-
Volume Discharged		129	160	10.2	7.7	2.3	13.4
4th Quarter							
Volume Collected	294	153	674	171	6.5	2.2	200
Volume Treated	-	-	-	-	-	-	-
Volume Discharged	-	137	163	7.7	7.3	0.9	7

Source: Environmental Management Agency

4.2 Zimbabwe National Inventory on Greenhouse Gas Emissions

National Greenhouse Gases (GHGs) of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol and their Precursors for the year 2000 are shown in Table 4.2. The inventory was compiled based on the guidelines developed by the Intergovenmental Panel on Climate Change (IPCC), under the auspices of the UNFCCC. The GHG emissions were estimated based on activity data and process specific emission factors. from the IPCC Second Assessment Report (IPPC SAR, 1995).

The estimated GHG emissions include the direct gases carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), and the indirect ones sulphur dioxide (SO_2), nitrogen oxides (NO_x) and non methane volatile organic compounds (NMVOCs).

The GHG were calculated using the Revised 1996 IPCC Guidelines for national greenhouse gas invetories and the 100 year-time horizon Global Warming Potentials (GWPs) obtained

Table 4.4: Greenhouse Gas Emissions /2000 (Gg)

GHG source/sink	CO_2 Emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOCs	SO_x
Total Emissions/Removals	**25 805.7**	**88 034.6**	**335**	**60.22**	**148.64**	**798.86**	**82.23**	**1.38**
Energy	23 .832	0	47	4	148	770	76	0
Industrial Processes	1.973.7	-	-	-	-	0.37	6.23	1.38
Agriculture	-		219.9	56.22	0.64	28.49	-	-
Land Use and Forestry	-	88.034.6	-	-	-	-	-	-
Waste	-	-	68.1	-	-	-	-	-
CO_2 from biomass	**14.605**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

The GWPs are:

Carbon dioxide = 1 Methane = 21 Nitrous Dioxide = 310
Carbon Monoxide = 3 Nitrous Oxides = 290 NMVOC = 10 000

Source: Ministry of Environment, Water and Climate

Key Source Category

The key source category is one that is prioritised within the national inventory system because its estimate has a significant influence on a country's total inventory of GHGs in terms of the absolute level, the trend, or the uncertainty in emissions and removals Table 4.3.

Table 4.5: Key Source Categories, 2000

IPCC	Sector	Category Analysis	GHGs	Emissions	% Contribution
1.A.2	Energy	Industries &Construction	CO_2	13 011.6	35.76%
1.A.1	Energy	Stationary combustion	CO_2	7 488.0	20.59%
4.A	Agriculture	Enteric Fermentation	CH_4	4 617.9	12.70%
4.D	Agriculture	Soils	N_2O	3 490.6	9.60%
1.A.4	Energy	Other Sectors	CO2		
6.A	Waste	Solid waste disposal	CH_4	1 192.8	3.28%
2.A	Industrial Processes	Cement Production	CO_2	541.0	2.39%

Note: These are based on specific sector parameters.
Source: Ministry of Environment, Water and Climate

Emissions of Other Substances

Air emissions arise from different economic processes and activities. Table 4.4 shows the point source emission measurements from fossil fuel burning in boilers and generators for the years 2011 to 2014. The four major pollutants measured include sulphur dioxide (SO_2), nitrous oxides (NO_x), carbon monoxide (CO) and particulate matter (PM). Limited air emission measurements from different economic sectors were done for the years 2011 and 2012 compared to the years 2013 and 2014 where compliance requirements became stricter and an increased number of other sectors started measuring air emissions

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Table 4.6: Emissions of Other Substances

Activity		2011	2012	2013	2014
Mining of other non ferrous metal ores	SO_2 (t)	113.57	-	999.07	999.07
	NO_x (t)	1.009	4.604	5.55	5.55
	CO (t)	8.975	20.323	15.282	15.282
	PM (t)	47.86	8.532	42.42	42.42
Processing and preserving of meat	SO_2 (t)	0.016	-	-	1.494
	NO_x (t)	0.128	-	-	5.339
	CO (t)	-	-	-	0.001
	PM (t)	0.025	-	-	5.486
Manufacture of vegetable and animal oils and fats	SO_2 (t)	1.717	-	-	0.336
	NO_x (t)	3.195	-	-	0.844
	CO (t)	1.476	-	-	0.761
	PM (t)	3.195	-	-	0.161
Manufacture of dairy products	SO_2 (t)	4.105	1.737	2.106	3.604
	NO_x (t)	1.282	7.942	3.428	6.988
	CO (t)	1.014		0.023	13.078
	PM (t)	5.837	2.169	1.057	1.849
Manufacture of grain mill products	SO_2 (t)	-	-	-	0
	NO_x (t)	-	-	-	0.017
	CO (t)	-	-	-	0.022
	PM (t)	-	-	-	0
Manufacture of malt liquors and malt	SO_2 (t)	1.767	-	1.047	2.458
	NO_x (t)	1.381	-	0.716	5.315
	CO (t)	8.127	-	2.29	8.196
	PM (t)	7.928	-	1.076	4.891
anufacture of soft drinks; production of mineral waters and other bottled	SO_2 (t)	-	-	26.212	10.108
	NO_x (t)	-	-	10.911	39.569
	CO (t)	-	-	42.841	17.205
	PM (t)	-	-	19.921	27.483

Table 4.6 Continued

Activity		2011	2012	2013	2014
Manufacture of other food products n.e.c	SO_2 (t)	-	-	0.919	0.919
	NO_x (t)	-	-	1.678	1.678
	CO (t)	-	-	0	0
	PM (t)	-	-	1.359	1.359
Manufacture of tobacco products	SO_2 (t)	1.1	2.51	2.325	2.042
	NO_x (t)	7.519	1.254	4.366	4.447
	CO (t)	-	-	0.061	0.059
	PM (t)	5.591	2.859	3.99	1.558
Manufacture of wearing apparel, except fur apparel	SO_2 (t)	1.51	-	0.457	1.328
	NO_x (t)	4.893	-	1.25	4.357
	CO (t)	1.812	-	0	1.719
	PM (t)	4.054	-	0.953	3.456
Manufacture of made-up textile articles, except apparel	SO_2 (t)	1.751	-	1.102	1.102
	NO_x (t)	5.293	-	3.592	3.592
	CO (t)	-	-	1.673	1.673
	PM (t)	4.179	-	2.873	2.873
Manufacture of made-up textile articles, except apparel	SO_2 (t)	-	-	-	0.641
	NO_x (t)	-	-	-	1.879
	CO (t)	-	-	-	1.416
	PM (t)	-	-	-	0.769
Manufacture of corrugated paper and paperboard and of containers of paper	SO_2 (t)	7.582	-	-	-
	NO_x (t)	2.724	-	-	-
	CO (t)	2.027	-	-	-
	PM (t)	2.087	-	-	-
Manufacture of pharmaceuticals, medicinal chemical and botanical products	SO_2 (t)	4.439	2.168	0.177	0.177
	NO_x (t)	8.693	4.515	0	0
	CO (t)		2.296	0.722	0.722
	PM (t)	4.699	4.668	0.161	0.161

Table 4.6 Continued

Activity		2011	2012	2013	2014
Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber	SO_2 (t)	5.542	-	-	-
	NO_x (t)	2.896	-	-	-
	CO (t)	1.217	-	-	-
	PM (t)	1.027	-	-	-
Casting of iron and steel	SO_2 (t)	1.574	2.141	-	1.369
	NO_x (t)	3.109	2.872	-	4.526
	CO (t)	3.59	1.007	-	3.313
	PM (t)	2.043	4.199	-	4.12
Manufacture of batteries and accumulators	SO_2 (t)	3.149	-	2.353	2.353
	NO_x (t)	9.988	-	3.242	3.242
	CO (t)	5.582	-	4.213	4.213
	PM (t)	4.68	-	2.889	2.889
Manufacture of soap & detergents, cleaning & polishing preparations,	SO_2 (t)	2.64	-	-	-
	NO_x (t)	1.566	-	-	-
	CO (t)	6.355	-	-	-
	PM (t)	2.028	-	-	-
Technical testing and analysis	SO_2 (t)	0	-	-	-
	NO_x (t)	0	-	-	-
	CO (t)	0.077	-	-	-
	PM (t)	0.022	-	-	-
Washing and (dry-) cleaning of textile and fur products	SO_2 (t)	2.772	1.32	-	0.927
	NO_x (t)	5.483	5.08	-	3.168
	CO (t)		1.828	-	1.386
	PM (t)	8.131	2.005	-	2.776
Manufacture of pesticides and other agrochemical products	SO_2 (t)	0	0	-	-
	NO_x (t)	0.4	0.4	-	-
	CO (t)	0.4	0.4	-	-
	PM (t)	0.2	0.2	-	-

Table 4.6 Continued

Activity		2011	2012	2013	2014
Manufacture of bakery products	SO_2 (t)	2.773	2.773	0.584	0.584
	NO_x (t)	3.676	3.676	2.649	2.649
	CO (t)	1.233	1.233	1.657	1.657
	PM (t)	1.882	1.882	0.33	0.33
Manufacture of cocoa, chocolate and sugar confectionery	SO_2 (t)	1.504	-	-	-
	NO_x (t)	1.462	-	-	-
	CO (t)	-	-	-	-
	PM (t)	8.323	-	-	-
Manufacture of starches and starch products	SO_2 (t)	1.081	-	-	-
	NO_x (t)	1.054	-	-	-
	CO (t)	-	-	-	-
	PM (t)	7.468	-	-	-
Manufacture of prepared meals and dishes	SO_2 (t)	7.588	-	-	-
	NO_x (t)	5.99	-	-	-
	CO (t)	4.253	-	-	-
	PM (t)	0.799	-	-	-
Distilling, rectifying and blending of spirits	SO_2 (t)	-	5.811	-	-
	NO_x (t)	-	1.208	-	-
	CO (t)	-	-	-	-
	PM (t)	-	2.196	-	-
Manufacture of cement, lime and plaster	SO_2 (t)	-	1.952	0.076	-
	NO_x (t)	-	3.727	0.076	-
	CO (t)	-	-	0.126	-
	PM (t)	-	1.596	0.579	-
Manufacture of other electronic and electric wires and cables	SO_2 (t)	-	1.229	-	-
	NO_x (t)	-	6.167	-	-
	CO (t)	-	1.695	-	-
	PM (t)	-	3.154	-	-

Table 4.6 Continued

Activity		2011	2012	2013	2014
Casting of metals (Both casting of iron & steel, casting of non ferrous	SO_2 (t)	-	9.546	-	-
	NO_x (t)	-	3.388	-	-
	CO (t)	-	4.316	-	-
	PM (t)	-	1.945	-	-
Growing of sugar cane	SO_2 (t)	-	2.56	-	0
	NO_x (t)	-	16.554	-	16.126
	CO (t)	-	19.747	-	100.804
	PM (t)	-	9.458	-	12.742
Manufacture of articles of concrete, cement and plaster	SO_2 (t)	-	20.679	17.654	0.08423
	NO_x (t)	-	17.592	57.49	0.08799
	CO (t)	-	94.486	85.627	0.11516
	PM (t)	-	11.619	53.925	0.00862
Finishing of textiles	SO_2 (t)	-	1.401	-	-
	NO_x (t)	-	3.72	-	-
	CO (t)	-	1.97	-	-
	PM (t)	-	3.082	-	-
Manufacture of sugar	SO_2 (t)	-	-	0.245	-
	NO_x (t)	-	-	17.307	-
	CO (t)	-	-	103.398	-
	PM (t)	-	-	12.886	-
Growing of fibre crops	SO_2 (t)	-	1.672	-	-
	NO_x (t)	-	5.429	-	-
	CO (t)	-	2.558	-	-
	PM (t)	-	4.524	-	-
Manufacture of prepared animal feeds	SO_2 (t)	-	2.081	0	0
	NO_x (t)	-	6.271	3.833	3.833
	CO (t)	-	3.05	0	0
	PM (t)	-	3.986	1.399	1.399
Manufacture of agricultural and forestry machinery	SO_2 (t)	-	-	1.384	1.384
	NO_x (t)	-	-	4.562	4.562
	CO (t)	-	-	0.104	0.104
	PM (t)	-	-	4.03	4.03

Table 4.6 Continued

Activity		2011	2012	2013	2014
Other mining and quarrying n.e.c.	SO_2 (t)	-	-	0.066	0.066
	NO_x (t)	-	-	0.169	0.169
	CO (t)	-	-	0.674	0.674
	PM (t)	-	-	0.263	0.263
Restaurants and mobile food service activities	SO_2 (t)	-	-	0.688	0.688
	NO_x (t)	-	-	1.747	1.747
	CO (t)	-	-	0.953	0.953
	PM (t)	-	-	1.429	1.429
Other manufacturing n.e.c.	SO_2 (t)	-	-	-	0.478
	NO_x (t)	-	-	-	16.029
	CO (t)	-	-	-	12.52
	PM (t)	-	-	-	0
Manufacture of articles of concrete, cement and plaster	SO_2 (t)	-	-	-	0.076
	NO_x (t)	-	-	-	0.076
	CO (t)	-	-	-	0.126
	PM (t)	-	-	-	0.579
Manufacture of plastics products	SO_2 (t)	-	-	-	1.388
	NO_x (t)	-	-	-	3.604
	CO (t)	-	-	-	5.438
	PM (t)	-	-	-	1.467
Retail sale in non-specialized stores with food, beverages or tobacco predominating	SO_2 (t)	-	-	0.313	0.313
	NO_x (t)	-	-	0.691	0.691
	CO (t)	-	-	0.684	0.684
	PM (t)	-	-	0.251	0.251
Freight transport by road	SO_2 (t)	-	-	-	0.038
	NO_x (t)	-	-	-	0.063
	CO (t)	-	-	-	0
	PM (t)	-	-	-	0.056

Table 4.6 Continued

Activity		2011	2012	2013	2014
Other monetary intermediation	SO_2 (t)	-	-	0.011	0.026
	NO_x (t)	-	-	0.467	2.282
	CO (t)	-	-	0.472	3.79
	PM (t)	-	-	0.125	0.347
Pension funding	SO_2 (t)	-	-	-	0
	NO_x (t)	-	-	-	0.066
	CO (t)	-	-	-	0.058
	PM (t)	-	-	-	0
Hospital activities	SO_2 (t)	-	-	-	0.016
	NO_x (t)	-	-	-	0.527
	CO (t)	-	-	-	1.89
	PM (t)	-	-	-	0.031
Manufacture of footwear	SO_2 (t)	-	-	0.024	0.024
	NO_x (t)	-	-	0.058	0.058
	CO (t)	-	-	0.037	0.037
	PM (t)	-	-	0.053	0.053
Raising of poultry	SO_2 (t)	-	-	1.364	-
	NO_x (t)	-	-	4.982	-
	CO (t)	-	-	0	-
	PM (t)	-	-	5.278	-
Seed processing for propagation	SO_2 (t)	-	-	0.107	-
	NO_x (t)	-	-	0.19	-
	CO (t)	-	-	0.057	-
	PM (t)	-	-	0.048	-
Manufacture of basic iron and steel	SO_2 (t)	-	-	1.222	-
	NO_x (t)	-	-	4.153	-
	CO (t)	-	-	1.96	-
	PM (t)	-	-	4.024	-
Manufacture of machinery for mining, quarrying & construction	SO_2 (t)	-	-	0.037	0.037
	NO_x (t)	-	-	0.118	0.118
	CO (t)	-	-	1.267	1.267
	PM (t)	-	-	0.022	0.022

Source: Environmental Management Agency

4.3 Generation and Management of Waste

The Constitution of Zimbabwe and the Environmental Management Act (Chapter 20:27) gives every person the right to a clean and safe environment that is not harmful to health. Zimbabwe's urban centres were estimated to overally generate 1.65 million tonnes of solid waste in 2011. The solid waste comprised of 32 per cent biodegradable, 25 per cent paper; 18 per cent plastic; seven per cent metal, six per cent textile and two per cent glass. Generally the results show that over 90 per cent of the residential solid waste stream can either be recycled, reused, recovered or composted. The baseline study showed that the national mean collection of residential solid waste in 2011 was 52 per cent, while 28 per cent of the solid waste was buried, 11 per cent burnt, six per cent illegally dumped and three per cent separated for recycling. The country is working towards adoption of an Integrated Solid Waste Management Plan.

Figure 4.1: Municipal Dumpsite

Table 4.7: Total Volume of Waste Collected and Disposed by Local Authorities in Tonnes by Year

Mashonaland Central

Bindura Dumpsite	Bindura Disrtict	2010	2011	2012	2013	2014
Economic Category						
Domestic	Solid	-	-	-	1 700	1 821
Industrial	Liquid	-	-	-	-	-
	Solid	-	-	-	237	237
Commerce	Solid	-	-	-	488	528
Total solid Waste	**Total**	**-**	**-**	**-**	**1 700**	**1 821**
Centenary: Gatu Dumpsite	**Muzarabani District**	**2010**	**2011**	**2012**	**2013**	**2014**
Economic Category						
Domestic	Solid	1 991	2 017	2 153	2 180	2 208
Industrial	Liquid	-	-	-	-	-
Commerce	Solid	736	744	790	799	808
Total Solid Waste	**Total**	**2 127**	**2 761**	**2 943**	**2 979**	**3 016**

Table 4.7 Continued

2013

Mvurwi Dumpsite	Mvurwi Town	Mvurwi Community Fellowship (14 Dawson Road, Mvurwi)	Madzuramhende (140 Suwoguru, Mvurwi)	Oscar (95 Suwoguru, Mvurwi)	Better Tsoka (119 Suwoguru, Mvurwi)	Total
Economic Category						
	Paper	-	-	-	-	-
	Plastic	-	-	0.07	-	**0.07**
	Scrap Metal	-	2	-	-	**2**
	Pet	0.07	-	-	0.05	**0.12**
	Can	-	-	-	-	-
Total	**Total**	**0.07**	**2**	**0.07**	**0.05**	**2.19**

Masvingo

Chivi Dumpsite	**Chivi**	**2010**	**2011**	**2012**	**2013**	**2014**
Economic Category						
Domestic	Solid	3	12	9	13	-
	Liquid	-	-	-	-	-
Commerce	Solid	4	6	18	26	-
	Liquid	-	-	-	-	-
Mashava Dumpsite	**Mashava**	**2010**	**2011**	**2012**	**2013**	**2014**
Economic Category	Solid	72	72	72	77.2	-
Domestic	Liquid	-	-	-	-	-
	Solid	0.6	0.6	0.6	0.6	-
Commercial + Industrial	Liquid	4.7	4.7	4.7	4.7	-

Chitungwiza

Chitungwiza Dumpsite	**C**	**2010**	**2011**	**2012**	**2013**	**2014**
Economic Category						
	Medical Waste	345	410	300	693	240
	Total	**345**	**410**	**300**	**693**	**240**

Table 4.7 Continued

Harare						
Disposal Facility	**Pomona**					
Capacity	**12million tonnes**					
Economic Category	**Year**	**2010**	**2011**	**2012**	**2013**	**2014**
Domestic	solid (tons)	304 400	297 820	279 520	-	214 008
	liquid (litres)	3 070 400	2 468 600	4 453 200	4 149 500	1 856 112
	solid (tons)	-	-	-	-	117 684
Medical Waste (Tonnes)	**Harare**	**2010**	**2011**	**2012**	**2013**	**2014**
Total Waste		**45 536**	**47 023**	**37 346**	**-**	**-**

Source: Environmental Management Agency

Table 4.8: Total Recycled Waste

Recycled Waste by registered Enterprises					
Waste Category (Tonnes)	**Paper**	**Plastic**	**Scrap Metal**	**Pet**	**Can**
Clean and Green	-	1 580	-	-	-
National Waste	746	-	-	-	-
Poly Waste	149	149	-	-	-
Delta	64	1 210	-	937	795
The Can Man	-	-	-	-	112
Salat Trading	-	-	9.8	-	-

Marondera Disposal Facility by Economic Category	**Marondera Year**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Domestic	solid (tons)	-	-	-	-	-	3 110
	Liquid (litres)	-	-	-	-	-	-
Industrial	solid (tons)	-	-	-	-	-	3 096

Recycled waste for Marondera is pegged at an average of 30 tonnes per year.

In Midlands Province, Kwekwe has got 4 months data recorded on waste disposal for the year 2015.

Disposal Facility by Economic Category	**Kwekwe Year**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Domestic	solid (tons)	-	-	-	-	-	1 234
	Liquid (litres)	-	-	-	-	-	3 702
Industrial	solid (tons)	-	-	-	-	-	-

Table 4.8 Continued

Victoria Falls Disposal Facility Capacity by Economic Category	Victoria Falls Municipality 100 000m3 Year	2010	2011	2012	2013	2014
Domestic	solid (tons)	1 332.269	1 554.124	1 802.64	2 060.16	2 887.32
	liquid (litres)	-	-	-	-	-
Industrial	solid (tons)	383.616	447.52	411.84	520.8	390.12
Commerce	solid (tons)	1 480.945	1 727.774	1 516.176	1 681.2	2 344.32

Date of inception of the Victoria Falls dumpsite, formerly an open veld is 1994. Medical waste is collected at institutional level by incineration especially at clinics and hospitals.

Victoria Falls Recycled Waste by Registered Enterprises, 2013

	Waste Category in tonnes				
Name of Waste Enterprise	**Paper**	**Plastic**	**Scrap**	**Pet**	**Can**
Go Green	-	19	-	-	1.6
African Recycle Company	-	21	-	-	18.02
National Waste Collectors	-	24	-	-	-
Estimated Bio degradable waste composted (33,478tonnes/month)					

Source: Environmental Management Agency

Table 4.9: Distribution of Waste by Percentage and Weight in Tonnes, 2013

Victoria Falls Distribution of Waste	Percentage	Weight Distribution
Paper and cardboard	34	1 911.398
Organic waste	26	1 461.658
Plastics	15	843.264
Glass and ceramic	6	337.305
Metals	5	281.088
Leather and rubber	2	112.435
Cloths and textiles	4	224.868
Miscellaneous/Inert mat	8	449.741

Source: Environmental Management Agency

Chapter 5: Extreme Events and Disasters

Figure 5.1: Bus Involved in an Accident in Zimbabwe

5.1 Natural Extreme Events and Disasters

Zimbabwe is generally stable regarding earthquakes. Of late it has started to experience recurrent extreme weather events such as floods and droughts.

Table 5.1: Geophysical Disasters

Geophysical Disaster	Location	Magnitude	Date of occurrence	Year
Earthquake	Save Valley	7.5	23 February	2006

Table 5.2: Meteorological Disasters

Meteorological Disaster	Year	Province	Magnitude	Date of occurrence	Hazard prone areas
Hailstorm	2006	Matabeleland North	55 homesteads	16-Dec 2006	Tsholotsho
		Mashonaland Central	361 households affected	Mid November to early December 2006	Mount Darwin
		Masvingo	38 households		Zaka
Hailstorm	2010	Matabeleland South	20 homesteads destroyed	1 and 5th Nov 2010	Matobo
	2010			29-Nov 2010	Beitbridge
	2010	Manicaland	5 drowned	7-Dec 2010	Chipinge
Hailstorm	2012	Mashonaland Central	146 Homesteads destroyed 626 people affected	17-18 Nov 2012	Mt Darwin (Bandimba, Kamutsenzere and Zambara)
	2012	Matabeleland South	40 homesteads damaged	11-Dec 2012	Esigodini
	2012	Masvingo	12 homesteads	13-20 December 2012	Bikita (Ward 26)
	2012		8 homesteads	20-Dec 2012	Ward 31
	2012		35 Homesteads	27-Dec 2012	Chivi
	2012	Mashonaland West	8 homesteads		Hurungwe (ward 7)
Lightning	2012	Midlands	4 people	16-Dec 2012	Gokwe South
Hailstorm	2013	Masvingo	21 Homesteads	1-Jan 2013	Chiredzi
	2013 2013		18 households 12 homesteads	January 13-Jan 2013	Chiredzi Bikita

Source: Civil Protectrion Unit

Table 5.3: Hydrological Disaster

Hydrological Disaster	Year	Province	Magnitude	Date of Occurrence	Hazard Prone Areas
Floods	2000	Manicaland		16-22 February	Chipinge and Chimanimani
		Masvingo			Chiredzi, Mwenezi and Zaka
		Matabeleland South			Beitbridge, Gwanda, Filabusi, Esgodini, Plumetree and Kezi.
		Midlands			Mberengwa and Mvuma
	2001	Mashonaland Central		Feb to March 2001	Centenary and Guruve
		Matabeleland North			Tsholotsho
		Mashonaland West			Kadoma, Chegutu, Hurungwe and Makonde
		Midlands			Gokwe South
		Matabeleland South			Umzingwane and Insiza
		Manicaland			Chimanimani and Chipinge
		Masvingo			Mwenezi, Gutu, Chivi and Chiredzi
Cyclone Japhet	2003	Masvingo			
		Manicaland			
		Midlands			
		Mashonaland East			
Floods	2007	Mashonaland Central	8163 people affected	13-14 December	Centenary (Dambakurima and Chadereka) Guruve (Chidodo)
	2007	Muzarabani	8760 people affected	Mid Dec 2007	Muzarabani
	2007	Manicaland	5825 people affected	29-Dec	Middle Sabi/Chipinge (Chibuwe, Tongogara and Gumira)

Table 5.3: Hydrological Disaster

Hydrological Disaster	Year	Province	Magnitude	Date of Occurrence	Hazard Prone Areas
	2007	Matabeleland North	180 people affected	Dec-07	Tsholotsho (Sipepa) Hwange (Masikili)
	2007	Midlands	1000		Mvuma (Holy cross)
Floods	2013	Masvingo	4 people drowned	6-Jan	Chiredzi (Chilonga)
	2013	Manicaland	1 drowned	14-Jan	Chipinge
		Manicaland	88 Marooned	14-Jan	Makoni
	2013		600 households cut off from essential services	14-Jan	Nyanga (Ward 16)
	2013	Masvingo	223 homesteads	16-Jan	Chiredzi (Ward 23, Zororo and Mufakose)
		Masvingo	1 death	16-Jan	Chiredzi (Ward 23
	2013	Midlands	25 people marooned	17-Jan	Gokwe
	2013	Masvingo	13 households affected	18-Jan	Chivi
	2013	Matabeleland South	16 homesteads destroyed		Beitbridge (Chitshipasi)
			24 families displaced		Tshikwakwala
			8 families		Chasvingo
			8 deaths		
	2013	Matabeleland North	2 died (drowned)	18-Jan	Hwange
			266 homesteads damaged 3 completely destroyed	18-Jan	Tsholotsho (Mafia, Mbamba, Mahlaba, Matonsi, Hluhonjana, Ward 16, 22, Mbute and Masekesa)

Source: Civil Protectrion Unit

5.2 People affected by Technological Disasters

Major technological diasters which are claiming mankind are road traffic accidents. However, fire incidences are also on the rise with 6 male and 5 female deaths in 2009, compared to 2012 with 4 and 12, respectively. Every year human life is lost due to fires.

Table 5.4: Impact of Technological Disasters

Type of technological disaster	Number of people killed	Number of people injured	Year
Industrial			
Transportation	36	36	2000
Transportation	10	8	2001
	10	-	2001
	9	-	2001
	37	32	2002
	11		2002
	17	-	2002
	9	52	2002
Train	38	97	2003
Bus	12	-	
Bus	21	-	2003
Bus	17	54	2003
Commuter Omnibus	10	7	2006
Commuter Omnibus	11	-	2006
Bus	10	-	2006
Bus	12	13	2006
Bus	14	2	2006
Lorry	20	-	2006
Bus	33	56	2006
Train	6	158	2006
Rail accident	36	23	2007
Bus	12	38	2007
Bus	13	62	2007
Bus	29	39	2009
Bus	42	28	2009
Bus	17	6	2009
Kombi	9	9	2009
Haulage truck	10	7	2010
Bus	11	38	2010
Commuter Omnibus	10	9	2010
Commuter Omnibus	10	24	2010

Source: Civil Protectrion Unit

Table 5.5: Impact of Fires by Year

Province	Total Area Burnt (Ha)	% Province Burnt	Deaths	Sex: Male	Sex: Female
2009					
Harare	10 000	1	0	0	0
Bulawayo	8 000	0	0	0	0
Matabeleland North	145 000	15	1	0	1
Matabeleland South	200 000	21	0	0	0
Masvingo	60 000	6	0	0	0
Manicaland	151 000	12	2	2	0
Midlands	105 000	11	1	1	0
Mashonaland East	80 000	9	3	1	2
Mashonaland Central	60 000	7	1	2	0
Mashonaland West	160 000	18	2	0	2
2010					
Harare	28 000	2.9	0	0	0
Bulawayo	2500	15	0	0	0
Matabeleland North	70 000	0.9	0	0	0
Matabeleland South	90 000	1.6	0	0	0
Masvingo	110 000	1.9	0	2	0
Manicaland	110 000	3	2	0	0
Midlands	140 000	2.8	0	0	0
Mashonaland East	149 000	4.3	0	3	4
Mashonaland Central	150 000	5	7	2	0
Mashonaland West	252 000	4.3	2	0	0
2011					
Harare	1000	1.5	0	0	0
Bulawayo	500	3.1	0	0	0
Matabeleland North	80 000	1.6	1	0	1
Matabeleland South	75 000	1.3	0	0	0
Masvingo	50 000	0.9	0	0	0
Manicaland	50 000	1.3	0	0	0
Midlands	90 000	1.8	2	1	1
Mashonaland East	60 000	1.8	0	0	0
Mashonaland Central	50 000	1.7	0	0	0
Mashonaland West	92 000	1.5	2	2	0

Source: Civil Protectrion Unit

Table 5.5 Continued

Province	Total Area Burnt (Ha)	% Province Burnt	Deaths	Sex	
				Male	Female
2012					
Harare	0	0	0	0	0
Bulawayo	0	0	0	0	0
Matabeleland North	282 434	3	1	1	0
Matabeleland South	49 566	1.1	0	0	0
Masvingo	60 980	1.1	1	1	0
Manicaland	37 767	1.1	0	0	0
Midlands	107 232	1.9	1	0	1
Mashonaland East	114 907	4.2	0	0	0
Mashonaland Central	85 508	3.1	1	1	0
Mashonaland West	304 925	5	2	1	11
2013					
Harare	0	0	0	0	0
Bulawayo	0	0	0	0	0
Matabeleland North	125 952.03	1.68	0	0	0
Matabeleland South	38 465.89	0.71	0	0	0
Masvingo	18 911.97	0.33	0	0	0
Manicaland	37 136.57	1.03	1	1	0
Midlands	90 192.37	1.82	0	0	0
Mashonaland East	176 507.10	5.46	3	2	1
Mashonaland Central	206 318.62	7.29	0	0	0
Mashonaland West	475 244.91	8.23	0	0	0
2014					
Harare	5 712.78	6.05	0	0	0
Bulawayo	4 831.76	30.82	0	0	0
Matabeleland North	125 952.03	1.68	0	0	0
Matabeleland South	38 465.89	0.71	0	0	0
Masvingo	18 911.97	0.33	0	0	0
Manicaland	37 136.57	1.03	1	1	0
Midlands	90 192.37	1.82	3	1	2
Mashonaland East	176 507.10	5.46	0	0	0
Mashonaland Central	206 318.62	7.29	1	0	1
Mashonaland West	475 244.91	8.23	4	4	0

Source: Civil Protectrion Unit

Chapter 6: Human Settlements and Environmental Health

6.1 Human Settlements - Urban and Rural Population

Table 6.1 shows the distribution of total population by province according to the Zimbabwe Population Census 2012 The total population of the country as enumerated in 2012 was 13 061 239. There were 6 280 539 males and 6 780 700 females. Of the total population, 8 777 094, were found to be living in rural areas with the remainder being in urban areas.

Table 6.1: Distribution of Total Population by Province

Sector	Males	Females	Total
Rural	4 241 315	4 535 779	8 777 094
Urban	2 039 224	2 244 921	4 284 145
Total	**6 280 539**	**6 780 700**	**13 061 239**

Source: ZIMSTAT, Human Population Census, 2012

6.1.1 Population Using an Improved Drinking Water Source

Information from Census 2002 regarding the source of water for drinking and cooking revealed that 75% of households had access to safe water. Safe water meant either piped water or water from boreholes/protected wells. About 25% relied on relatively unsafe water from unprotected wells, rivers, streams and dams. Census information also revealed that 38% of the households had water on their premises and 18% in dwelling units with 26% having water within a distance of less than 500 metres. Twelve percent had to cover a distance of more than one kilometer to the water source. The Census also revealed that households in the urban areas were better off than those in the rural areas both in terms of the safeness of the water and the distance to the source, Table 6.2 to 6.4.

Table 6.2: Distribution of Households by Main Source of Water (Drinking and Cooking) and District

	Type of Water Source							
District	**Piped Water Inside**	**Piped Water Outside**	**Communal Tap**	**Well/Borehole- Protected**	**Well-Unprotected**	**River/Stream/Dam**	**Other**	**Total**
Bulawayo	110 546	49 233	4 631	922	176	10	742	166 260
Buhera	772	1 910	375	40 806	8 605	4 124	45	56 637
Chimanimani	1 452	8 312	2 987	12 512	5 556	1 667	239	32 725
Chipinge Rural	1 251	4 087	4 316	35 456	14 126	3 880	2 330	65 446
Makoni	1 644	1 890	1 981	41 562	14 244	2 321	64	63 706
Mutare Rural	1 118	2 969	2 265	37 086	11 774	2 804	214	58 230
Mutasa	2 177	7 238	4 109	14 777	11 225	2 655	78	42 259
Nyanga	1 555	5 371	1 586	15 496	4 686	3 186	432	32 312
Mutare Urban	23 915	16 246	6 186	434	402	1	74	47 258
Rusape	3 999	3 178	103	709	39	-	9	8 037

Table 6.2 Continued

District	Type of Water Source							
	Piped Water Inside	Piped Water Outside	Communal Tap	Well/Borehole- Protected	Well-Unprotected	River/Stream/Dam	Other	Total
Chipinge Urban	1 027	1 566	506	2 609	251	132	636	6 727
Bindura	772	2 692	1 501	14 954	7 571	1 217	153	28 860
Centenary	595	944	1 336	10 726	8 091	5 412	22	27 126
Guruve	526	991	1 295	16 770	5 492	2 441	103	27 618
Mazowe	3 627	6 841	6 926	25 246	11 736	1 537	226	56 139
Mount Darwin	849	1 357	312	29 808	7 297	7 727	14	47 364
Rushinga	313	708	86	13 191	970	1 908	2	17 178
Shamva	1 725	2 490	1 312	16 109	4 662	1 604	207	28 109
Mbire	108	218	39	12 092	1 454	4 252	2	18 165
Bindura Urban	5 219	3 833	480	1 368	57	-	24	10 981
Mvurwi	885	1 223	10	495	84	1	-	2 698
Chikomba	1 395	1 952	358	18 085	7 017	1 443	258	30 508
Goromonzi	2 052	4 668	5 981	31 202	11 515	566	147	56 131
Hwedza	480	956	406	10 513	3 879	689	329	17 252
Marondera	833	2 425	2 918	16 438	6 508	531	49	29 702
Mudzi	650	725	241	18 999	6 159	5 612	6	32 392
Murehwa	1 453	1 998	496	28 354	13 263	807	196	46 567
Mutoko	891	1 531	248	21 164	9 407	1 998	23	35 262
Seke	1 029	2 440	1 476	14 902	4 594	213	171	24 825
UMP	209	463	89	15 774	6 381	2 956	118	25 990
Marondera Urban	8 309	6 750	26	1 344	80	-	11	16 520
Ruwa Local Board	5 160	1 408	21	6 556	185	2	52	13 384
Chegutu	1 116	2 832	2 011	19 225	9 094	1 544	59	35 881
Hurungwe	1 405	2 191	2 110	29 843	24 373	10 317	90	70 329

Table 6.2 Continued

District	Type of Water Source							
	Piped Water Inside	Piped Water Outside	Communal Tap	Well/Borehole- Protected	Well-Unprotected	River/Stream/Dam	Other	Total
Mhondoro Ngezi	2 128	1 672	1 975	11 514	3 563	2 709	35	23 596
Kariba	289	461	863	3 087	2 398	2 371	59	9 528
Makonde	884	1 720	2 423	13 996	7 265	6 265	67	32 620
Zvimba	4 966	8 198	7 775	24 763	13 599	3 493	140	62 934
Sanyati	1 090	3 189	2 058	15 064	1 852	1 896	60	25 209
Chinhoyi	9 323	6 536	904	1 733	87	8	49	18 640
Kadoma	9 017	6 980	1 712	5 308	153	-	180	23 350
Chegutu Urban	4 413	5 306	341	2 549	131	-	69	12 809
Kariba Urban	4 352	2 003	515	3	-	5	1	6 879
Norton	5 092	3 200	81	7 990	298	1	1	16 663
Karoi	4 132	2 712	88	400	155	12	3	7 502
Binga	617	734	424	12 061	9 112	8 235	187	31 370
Bubi	475	1 365	1 606	8 061	805	1 176	200	13 688
Hwange	1 217	1 430	674	9 182	789	1 349	80	14 721
Lupane	591	628	182	11 911	3 309	2 778	107	19 506
Nkayi	451	392	68	12 833	3 312	4 364	6	21 426
Tsholotsho	507	600	72	20 084	539	2 128	20	23 950
Umguza	2 857	2 118	1 737	10 307	798	990	219	19 026
Hwange Urban	4 337	1 284	3 945	101	7	3	15	9 692
Victoria Falls	5 608	3 229	147	19	3	-	45	9 051
Beitbridge Rural	209	885	952	12 275	2 667	1 658	124	18 770
Bulilima	321	275	283	11 237	1 024	6 697	35	19 872
Mangwe	205	318	154	7 472	473	4 775	367	13 764
Gwanda	1 818	1 137	1 106	14 596	2 100	6 004	61	26 822

Table 6.2 Continued

District	Type of Water Source							
	Piped Water Inside	Piped Water Outside	Communal Tap	Well/Borehole- Protected	Well-Unprotected	River/Stream/Dam	Other	Total
Insiza	1 133	1 420	577	9 284	3 248	5 471	294	21 427
Matobo	918	951	700	10 518	2 696	4 858	211	20 852
Umzingwane	1 606	1 423	800	6 960	1 750	1 680	146	14 365
Gwanda Urban	3 440	1 800	272	5	-	16	78	5 611
Beitbridge Urban	4 473	4 745	90	2 574	6	-	15	11 903
Plumtree	1 810	1 036	249	5	1	4	152	3 257
Chirumhanzu	1 375	1 436	547	8 731	5 431	1 976	46	19 542
Gokwe North	132	663	335	18 256	16 768	13 099	612	49 865
Gokwe South	170	302	436	30 432	19 216	12 593	300	63 449
Gweru	1 118	1 296	1 016	11 042	3 210	3 002	49	20 733
Kwekwe	998	2 830	1 545	25 427	3 504	3 629	66	37 999
Mberengwa	652	959	1 133	21 759	5 381	8 410	73	38 367
Shurugwi	229	689	493	11 625	2 439	1 705	22	17 202
Zvishavane	272	520	530	10 731	1 415	2 235	4	15 707
Gweru Urban	30 157	8 729	369	1 207	58	1	30	40 551
Kwekwe Urban	14 067	9 815	933	56	7	1	64	24 943
Redcliff	6 664	2 171	543	29	13	1	10	9 431
Zvishavane Urban	6 024	2 401	3 589	25	6	-	1	12 046
Gokwe Town	785	4 336	320	316	393	129	59	6 338
Shurugwi Urban	1 905	1 085	1 735	153	283	494	12	5 667
Bikita	853	1 017	426	24 905	7 173	3 194	196	37 764
Chiredzi	4 853	7 578	9 152	19 515	8 633	12 984	1 936	64 651
Chivi	676	1 649	464	20 995	4 737	7 708	69	36 298
Gutu	1 562	1 635	289	26 596	14 739	2 963	136	47 920

Table 6.2 Continued

District	Type of Water Source							
	Piped Water Inside	Piped Water Outside	Communal Tap	Well/Borehole- Protected	Well-Unprotected	River/Stream/Dam	Other	Total
Masvingo	3 294	2 348	1 982	21 218	11 849	6 258	452	47 401
Mwenezi	1 137	2 829	757	14 313	2 880	11 668	176	33 760
Zaka	802	1 554	187	21 189	10 784	5 898	50	40 464
Masvingo Urban	16 750	6 235	556	65	8	3	39	23 656
Chiredzi Urban	3 260	4 718	234	245	4	1	18	8 480
Harare Rural	1 447	1 188	1 630	20 344	3 847	55	36	28 547
Harare Urban	156 969	153 576	10 317	50 174	1 669	32	1 696	374 433
Chitungwiza	48 954	23 111	415	13 922	459	3	89	86 953
Epworth	203	679	81	37 775	6 849	172	342	46 101
Total	**572 644**	**466 732**	**131 510**	**1 232 464**	**414 848**	**240 717**	**16 734**	**3 075 649**

Source: ZIMSTAT, Human Population Census 2012

Table 6.3: Percent Distribution of Households by Main Source cf Water for Drinking and Cooking by Distance (Metres) to the Source

Source of Water	On premises	Less than 500m	500m to 1km	More than 1km	Missing	Total
Piped water inside house	47.9	-	-	-	*	18.0
Piped water outside house	32.6	8.4	1.2	0.5	1.8	14.8
Communal tap	1.5	10.6	3.1	1.6	0.6	4.2
Well/borehole protected	14.6	55.0	59.5	51.3	5.9	38.2
Well - unprotected	2.9	19.2	22.2	18.4	2.8	12.8
River/stream/dam	0.1	5.8	12.8	26.6	2.0	7.4
Other specify	0.1	0.7	0.8	1.1	0.4	0.5
Missing	0.3	0.3	0.5	0.4	86.5	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	**1 147 151**	**808 290**	**603 401**	**367 880**	**132 294**	**3 059 016**

Source: ZIMSTAT, Human Population Census, 2012

Table 6.4: Percent Distribution of Households by Main Source of Water (Drinking and Cooking) and Distance (metres) to the Source

Water Source	On premises	Less than 500m	500m to 1km	More than 1km	Missing	Total	Number
Piped water inside house	100.0	-	-	-	*	100.0	550 006
Piped water outside house	82.5	15.0	1.6	0.4	0.5	100.0	453 173
Communal tap	13.9	66.5	14.4	4.5	0.7	100.0	128 283
Well/borehole protected	14.3	38.1	30.8	16.2	0.7	100.0	1 167 744
Well - unprotected	8.3	39.5	34.0	17.2	0.9	100.0	392 820
River/stream/dam	0.4	20.9	34.2	43.3	1.2	100.0	226 123
Other specify	6.7	35.6	29.0	25.1	3.6	100.0	15 996
Missing	2.5	2.1	2.3	1.3	91.7	100.0	124 871
Total	**37.5**	**26.4**	**19.7**	**12.0**	**4.3**	**100.0**	**3 059 016**

Source: ZIMSTAT, Human Population Census, 2012

6.1.2 Population Using Improved Sanitation Facilities

According to the Population Census results, 24% of the households had no toilet facility at all, Table 6.5 and 6.6. The proportion of households without any toilet facility was highest in Matabeleland North (56%) and lowest in Harare (less than 1 percent). About 33% of the households mainly used flush toilets, 22% had blair toilets and 13% pit latrines.

Table 6.5: Distribution of Households by Province and Type of Toilet Facility Mostly Used by the Household

	Households						Total
	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Not known	
Bulawayo	159 176	2 629	443	1 962	2 265	-	166 475
Manicaland	65 016	114 578	124 470	24 688	85 477	1	414 230
Mashonaland Central	28 792	100 010	68 923	10 096	57 786	-	265 607
Mashonaland East	47 097	119 518	72 544	10 742	79 175	-	329 076
Mashonaland West	90 893	86 806	53 924	14 809	100 161	-	346 593
Matabeleland North	23 513	30 174	3 508	8 529	97 836	-	163 560
Matabeleland South	25 205	60 372	6 139	4 697	60 509	-	156 922
Midlands	89 663	62 903	56 386	14 681	139 447	1	363 081
Masvingo	54 321	97 994	21 507	14 027	153 449	-	341 298
Harare	470 637	29 320	25 163	9 828	2 086	-	537 034
Total	**1 054 313**	**704 304**	**433 007**	**114 059**	**778 191**	**2**	**3 083 876**

Source: ZIMSTAT, Human Population Census 2012

Table 6.6: Distribution of Households by Type of Toilet Facility and District

District	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Total
Bulawayo	159 176	2 629	443	1 962	2 265	166 475
Buhera	1 050	16 095	8 614	2 050	28 868	56 677
Chimanimani	1 531	10 449	15 582	2 195	3 025	32 782
Chipinge Rural	1 493	17 228	29 138	5 881	12 015	65 755
Makoni	2 265	22 809	17 283	2 846	18 605	63 808
Mutare Rural	2 063	19 722	22 221	2 670	11 634	58 310
Mutasa	2 950	15 496	18 920	2 589	2 344	42 299
Nyanga	2 463	11 606	7 699	1 832	8 746	32 346
Mutare Urban	40 564	607	1 879	4 163	142	47 355
Rusape	7 019	362	410	212	39	8 042
Chipinge Urban	3 590	133	2 708	248	59	6 738
Bindura	2 359	11 286	7 585	1 488	6 166	28 884
Centenary	1 176	8 688	8 858	1 068	7 335	27 125
Guruve	811	10 238	5 579	2 730	8 267	27 625
Mazowe	7 446	24 990	16 194	2 152	5 445	56 227
Mount Darwin	1 598	19 824	12 204	852	12 941	47 419
Rushinga	445	7 508	2 136	291	6 812	17 192

Table 6.6 Continued

District	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Total
Shamva	2 873	10 782	9 017	906	4 537	28 115
Mbire	161	5 420	6 542	208	5 852	18 183
Bindura Urban	9 537	693	325	287	148	10 990
Mvurwi	2 339	165	147	25	28	2 704
Chikomba	3 098	14 081	2 643	620	10 097	30 539
Goromonzi	6 587	18 600	17 743	4 596	8 645	56 171
Hwedza	824	5 407	4 737	629	5 655	17 252
Marondera	1 433	13 374	6 766	1 441	6 729	29 743
Mudzi	809	12 023	6 470	596	12 537	32 435
Murehwa	2 672	17 871	13 261	1 492	11 287	46 583
Mutoko	2 249	15 576	7 394	475	9 592	35 286
Seke	2 188	10 255	7 280	534	4 572	24 829
UMP	345	11 016	4 461	308	9 896	26 026
Marondera Urban	14 720	505	1 252	42	23	16 542
Ruwa Local Board	11 934	783	536	8	130	13 391
Chegutu	1 529	13 351	5 568	1 694	13 813	35 955
Hurungwe	1 720	23 371	15 977	1 477	27 808	70 353
Mhondoro Ngezi	2 565	6 447	1 837	1 414	11 358	23 621
Kariba	463	1 935	430	550	6 169	9 547

Table 6.6 Continued

District	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Total
Makonde	1 722	8 524	5 370	1 860	15 161	32 637
Zvimba	9 190	20 169	16 746	3 927	12 962	62 994
Sanyati	3 335	7 702	2 112	1 132	10 977	25 258
Chinhoyi	14 556	1 261	1 892	543	414	18 666
Kadoma	19 932	1 193	332	1 231	678	23 366
Chegutu Urban	10 973	680	636	341	201	12 831
Kariba Urban	6 162	46	29	549	99	6 885
Norton	12 136	1 762	2 570	12	185	16 665
Karoi	6 606	315	376	35	178	7 510
Binga	947	4 333	604	721	24 848	31 453
Bubi	754	3 588	373	875	8 141	13 731
Hwange	1 880	3 867	349	954	7 720	14 770
Lupane	717	3 389	266	345	14 821	19 538
Nkayi	648	2 833	641	382	17 009	21 513
Tsholotsho	652	6 673	500	220	16 022	24 067
Umguza	3 901	5 289	686	981	8 189	19 046
Hwange Urban	5 652	27	28	3 886	128	9 721
Victoria Falls	8 180	26	57	150	643	9 056
Beitbridge Rural	474	5 358	867	757	11 337	18 793
Bulilima	428	8 402	860	489	9 758	19 937

Table 6.6 Continued

District	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Total
Mangwe	336	8 085	289	215	4 847	13 772
Gwanda	2 326	12 063	1 292	1 416	9 734	26 831
Insiza	1 708	9 751	732	544	8 715	21 450
Matobo	1 402	9 460	1 100	184	8 712	20 858
Umzingwane	2 040	6 683	897	441	4 304	14 365
Gwanda Urban	4 689	103	69	337	422	5 620
Beitbridge Urban	9 131	258	23	144	2 369	11 925
Plumtree	2 630	151	2	170	306	3 259
Chirumhanzu	2 102	7 355	1 663	639	7 806	19 565
Gokwe North	206	8 405	10 527	892	29 884	49 914
Gokwe South	213	4 780	17 480	2 012	39 098	63 583
Gweru	1 561	4 421	5 439	747	8 588	20 756
Kwekwe	1 556	11 701	4 097	1 038	19 653	38 045
Mberengwa	962	10 357	6 859	998	19 197	38 373
Shurugwi	325	7 020	3 252	329	6 301	17 227
Zvishavane	473	6 308	2 771	406	5 757	15 715
Gweru Urban	39 062	714	178	373	304	40 631
Kwekwe Urban	22 481	296	141	1 096	953	24 967
Redcliff	8 510	105	76	436	315	9 442
Zvishavane Urban	8 066	129	56	3 731	85	12 067

Table 6.6 Continued

District	Flush Toilet	Blair Toilet	Pit Toilet	Communal	None	Total
Gokwe Town	1 141	986	3 577	167	469	6 340
Shurugwi Urban	2 535	235	242	1 815	841	5 668
Bikita	1 064	14 617	2 851	730	18 591	37 853
Chiredzi	11 493	9 613	3 689	8 477	31 492	64 764
Chivi	647	15 183	2 952	542	17 039	36 363
Gutu	2 426	22 719	3 848	912	18 138	48 043
Masvingo	4 428	13 937	4 481	1 543	23 131	47 520
Mwenezi	2 871	7 958	1 377	785	20 920	33 911
Zaka	906	13 379	2 134	567	23 545	40 531
Masvingo Urban	22 470	462	169	215	399	23 715
Chiredzi Urban	7 941	93	6	256	192	8 488
Harare Rural	8 901	9 711	8 476	752	745	28 585
Harare Urban	349 062	8 893	7 167	9 027	798	374 947
Chitungwiza	81 618	3 211	1 875	26	324	87 054
Epworth	30 786	7 497	7 645	22	219	46 169
Total	**1 052 958**	**703 401**	**432 565**	**113 905**	**777 248**	**3 080 077**

Source: ZIMSTAT, Human Population Census, 2012

6.1.3 Population with Access to Electricity

The proportion of households not using electricity in the country was 56%. The proportion of households occupying dwelling units with electricity ranged from 19% in Masvingo to 91% in Bulawayo, Table 6.7.

Table 6.7: Distribution of Households in Dwelling Units With/Without Electricity by Province

	Households		Total
	With Electricity	Without Electricity	
Bulawayo	156 222	10 338	166 560
Manicaland	160 034	254 478	414 512
Mashonaland Central	55 096	210 797	265 893
Mashonaland East	84 929	244 413	329 342
Mashonaland West	155 202	191 909	347 111
Matabeleland North	38 640	125 155	163 795
Matabeleland South	41 788	115 397	157 185
Midlands	119 495	244 173	363 668
Masvingo	65 441	276 172	341 613
Harare	421 138	115 028	536 166
Total	**1 297 985**	**1 787 860**	**3 085 845**

Source: ZIMSTAT, Human Population Census, 2012

6.1.4 Distribution of Households in Dwelling Units by Source of Energy and Province

With regards to the type of energy mainly used for cooking, 63% of the households in the provinces used wood, while about 33% of them used either paraffin or electricity.

Less than 1 percent of the households used gas, coal and other forms of energy. Disparities were observed among the provinces, Table 6.8.

Table 6.8: Distribution of Households by Source of Energy and Province

Province	Households							Total
	Wood	Paraffin	Electricity	Gas	Coal	Other	Not known	
Bulawayo	10 421	1 526	154 264	708	11	30	-	166 960
Manicaland	348 762	1 035	64 219	315	209	112	1	414 653
Mashonaland Central	234 686	1 112	29 595	120	18	100	-	265 631
Mashonaland East	270 961	6 629	49 715	1 576	197	131	-	329 209
Mashonaland West	251 899	3 716	89 173	753	965	619	-	347 125
Matabeleland North	136 805	212	25 950	143	398	128	-	163 636
Matabeleland South	131 826	758	24 297	171	11	36	-	157 099
Midlands	271 264	1 466	90 407	278	41	50	1	363 507
Masvingo	293 948	622	46 573	113	38	143	-	341 437
Harare	74 170	48 560	406 715	5 489	647	2 287	-	537 868
Total	**2 024 742**	**65 636**	**980 908**	**9 666**	**2 535**	**3 636**	**2**	**3 087 125**

Source: ZIMSTAT, Human Population Census, 2012

6.1.5 Housing Conditions

Population Living in Hazard-Prone Areas

Homeless population include refugees, people living in squatter camps and other collective groups such as nomadic populations, in transit, orphanages and old people's home.

Table 6.9 shows the homeless population in Zimbabwe according to census 2012.

Table 6.9: Homeless Population

	Bulawayo			Manicaland			Mashonaland Central			Mashonaland East			Mashonaland West		
Age group	Male	Female	**Total**	Male	Female	**Total**	Male	Female	**Total**	**Males**	**Female**	**Total**	**Males**	**Female**	**Total**
0 - 4	34	39	**73**	353	437	**790**	486	405	**891**	447	541	**988**	654	626	**1 280**
5--9	55	45	**100**	352	425	**777**	402	470	**872**	357	469	**826**	587	600	**1 187**
10--14	85	64	**149**	442	550	**992**	471	581	**1 052**	474	596	**1 070**	628	822	**1 450**
15 - 19	91	52	**143**	378	551	**929**	384	604	**988**	373	560	**933**	637	799	**1 436**
20 - 24	137	65	**202**	635	472	**1 107**	354	407	**761**	318	426	**744**	693	608	**1 301**
25 - 29	113	69	**182**	897	435	**1 332**	313	372	**685**	363	547	**910**	825	610	**1 435**
30 - 34	102	93	**195**	695	505	**1 200**	214	323	**537**	235	534	**769**	701	624	**1 325**
35 - 39	66	73	**139**	618	467	**1 085**	167	301	**468**	239	542	**781**	562	515	**1 077**
40 - 44	60	82	**142**	506	465	**971**	109	243	**352**	205	578	**783**	439	443	**882**
45 - 49	32	46	**78**	291	380	**671**	69	159	**228**	104	539	**643**	211	254	**465**
50 - 54	32	52	**84**	233	368	**601**	57	162	**219**	88	685	**773**	157	285	**442**
55 - 59	28	39	**67**	167	319	**486**	41	126	**167**	66	694	**760**	112	191	**303**
60 - 64	19	27	**46**	94	253	**347**	30	122	**152**	61	526	**587**	54	139	**193**
65 - 69	22	26	**48**	53	186	**239**	30	58	**88**	56	345	**401**	47	102	**149**
70 - 74	14	13	**27**	41	125	**166**	20	53	**73**	41	381	**422**	48	56	**104**
75 - 79	17	13	**30**	23	50	**73**	8	12	**20**	35	181	**216**	43	31	**74**
80 +	52	43	**95**	33	63	**96**	9	23	**32**	38	116	**154**	48	30	**78**
NS	3	2	**5**	10	7	**17**	-	4	**4**	-	17	**17**	6	7	**13**
Total	**962**	**843**	**1 805**	**5 821**	**6 058**	**11 879**	**3 164**	**4 425**	**7 589**	**3 500**	**8 277**	**11 777**	**6 452**	**6 742**	**13 194**

Source: ZIMSTAT, Human Population Census, 2012

Table 6.9 Continued

Age group	Matabeleland North			Midlands			Matabeleland South			Masvingo			Harare		
	Male	Female	**Total**	Male	Female	**Total**	Male	Female	Total	**Males**	**Female**	**Total**	**Males**	**Females**	**Total**
0 - 4	361	412	**773**	99	105	**204**	41	49	**90**	192	182	**374**	201	223	**424**
5--9	460	546	**1 006**	112	105	**217**	26	38	**64**	176	177	**353**	224	261	**485**
10--14	554	771	**1 325**	188	193	**381**	22	39	**61**	221	289	**510**	266	251	**517**
15 - 19	620	707	**1 327**	155	366	**521**	50	72	**122**	199	270	**469**	260	195	**455**
20 - 24	426	487	**913**	312	279	**591**	192	200	**392**	157	196	**353**	277	181	**458**
25 - 29	315	430	**745**	309	164	**473**	348	413	**761**	179	206	**385**	298	190	**488**
30 - 34	261	364	**625**	204	132	**336**	316	376	**692**	141	181	**322**	205	184	**389**
35 - 39	231	299	**530**	159	122	**281**	188	285	**473**	136	191	**327**	179	154	**333**
40 - 44	202	261	**463**	120	104	**224**	129	195	**324**	106	126	**232**	140	155	**295**
45 - 49	114	203	**317**	87	81	**168**	51	76	**127**	55	113	**168**	72	142	**214**
50 - 54	99	256	**355**	55	86	**141**	35	43	**78**	55	104	**159**	84	113	**197**
55 - 59	90	221	**311**	34	76	**110**	22	32	**54**	57	88	**145**	70	106	**176**
60 - 64	69	136	**205**	45	40	**85**	4	19	**23**	31	76	**107**	61	78	**139**
65 - 69	47	111	**158**	17	39	**56**	4	9	**13**	22	48	**70**	66	76	**142**
70 - 74	29	70	**99**	21	24	**45**	1	5	**6**	23	29	**52**	64	90	**154**
75 - 79	20	36	**56**	10	17	**27**	3	2	**5**	17	21	**38**	57	85	**142**
80 +	41	32	**73**	26	22	**48**	3	2	**5**	23	28	**51**	107	241	**348**
NS	11	18	**29**	1	1	**2**	2	1	**3**	-	9	**9**	92	57	**149**
Total	**3 950**	**5 360**	**9 310**	**1 954**	**1 956**	**3 910**	**1 437**	**1 856**	**3 293**	**1 790**	**2 334**	**4 124**	**2 723**	**2 782**	**5 505**

Source: ZIMSTAT, Human Population Census, 2012

6.2 Environmental Health

Environmental health is defined as those aspects of human health and disease that are determined by factors in the environment, (WHO, 2012). Environmental Health seeks to address all physical, biological, chemical, social and psychosocial factors in the environment through assessing and controlling those factors that can potentially affect health.

The scope for the Framework for the Development of Environment Statistics focuses on the following components of Environmental Health: Airborne diseases and conditions, water- related diseases and conditions, vector borne disease, health problems associated with excessive UV radiation exposure as well as toxic substance- and nuclear radiation- related diseases and conditions.

This section therefore contains trends analysis of morbidity/mortality of the afore-mentioned environmentally induced diseases/conditions in the country. Whilst Zimbabwe is already collecting statistics on the afore mentioned components it is imperative to demonstrate the links between the trends of environmentally induced diseases or conditions to changes or variations that have occurred to the local environment in terms of air pollution for example, enabling research based planning on response strategies of these diseases/conditions.

Zimbabwe′s health care system is modelled on the primary health care approach and the country has made strides in establishing health facilities throughout the country that are responsible for the management of the diseases including those induced by the environment. The distribution of these health care facilities is as shown in Figure 6.1.

The data for all the disease categories including prevalence rates were accessed from the Ministry of Health and Child Care health information system, the Demographic Health Information System (DHIS II), a system that is used for the collection, analysis and dissemination of data from all the established health care facilities. These statistics are disaggregated by province or city, category of infection, year, age and sex. Projected population figures from the National Census Report of 2012 were used to calculate the incidences for all the conditions. However data on measures of the associated impact on the labour force and on the economic costs in monetary terms was not readily available for most of the diseases/ conditions as this is not captured by the DHIS 2 system.

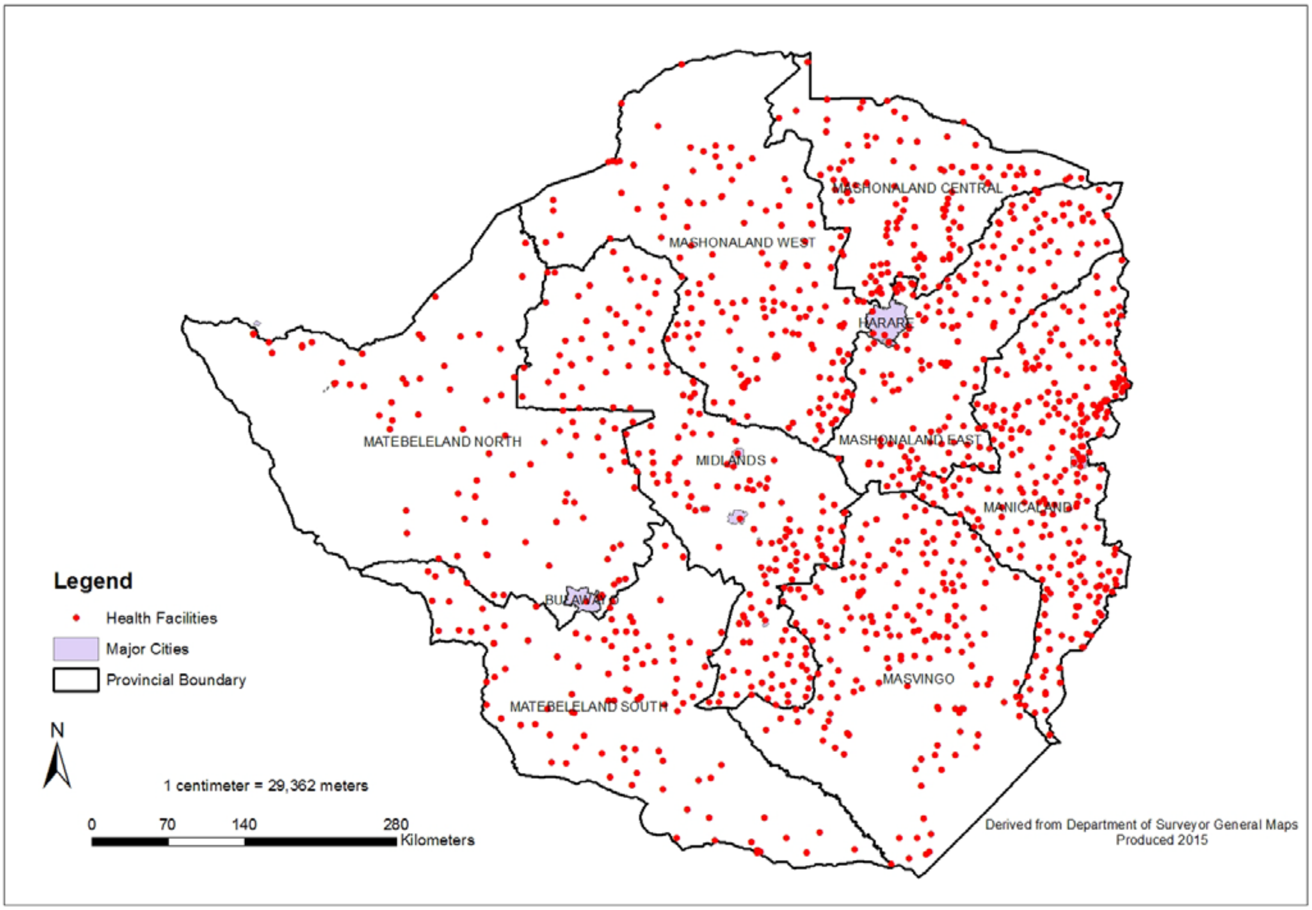

Figure 6.1:Distribution of Health Care Facilities in Zimbabwe

6.2.1 Airborne Diseases and Conditions

The diseases and conditions covered in this category included upper and lower respiratory disease, obstructive pulmonary disease, asthma, tuberculosis and allergic rhinitis. For this category the Ministry of Health surveillance system collates data only on Acute Respiratory Infections (ARI) and Asthma. ARI is divided further into categories namely the ear, nose and throat infections then the mild, moderate and severe ARIs. Generally there has been an increase in the incidence rates/1000 population over the years for both the ARI and asthma, Tables 6.10 to 6.16.

Acute Respiratory Infections

Table 6.10: Outpatients Department New ARI Breakdown by Province/City and Category of Infection, 2014

Province/City		Ear. Nose, Throat	Mild	Moderate	Severe	Total	Incidence Rate /1000 population
Manicaland	Number	44 766	165 337	283 268	8 921	502 292	280
	Percent	9	33	56	2	100	
Mashonaland Central	Number	43 723	129 258	195 291	5 667	373 939	321
	Percent	12	35	52	2	101	
Mashonaland East	Number	22 560	154 025	173 204	7 530	357 319	261
	Percent	6	43	48	2	99	
Mashonaland West	Number	21 511	131 487	180 789	7 536	341 323	230
	Percent	6	39	53	2	100	
Matabeleland North	Number	18 826	82 331	123 424	1 719	226 300	298
	Percent	8	36	55	1	100	
Matabeleland South	Number	18 999	78 383	100 099	3 046	200 527	286
	Percent	9	39	50	2	100	
Midlands	Number	33 328	133 535	197 768	9 023	373 654	225
	Percent	9	36	53	2	100	
Masvingo	Number	35 195	199 127	304 861	6 053	545 236	359
	Percent	6	37	56	1	100	
Harare	Number	133 810	216 627	624 364	19 451	994 252	559
	Percent	13	22	63	2	100	
Chitungwiza	Number	578	11 545	6 217	3 134	21 474	59
	Percent	3	54	29	15	101	
Bulawayo	Number	28 410	61 990	62 972	5 368	158 740	237
	Percent	18	39	40	3	100	
National	**Number**	**401 706**	**1 363 645**	**2 252 257**	**77 448**	**4 095 056**	**309**
	Percent	**10**	**33**	**55**	**2**	**100**	

Source: ZIMSTAT and Ministry of Health and Child Care

Asthma

Table 6.11: Outpatients Department New Cases; Asthma Breakdown by Province/City, 2014

Province/City		
Manicaland	Number	783
	Incidence rate/1000	0.44
Mashonaland Central	Number	503
	Incidence rate/1000	0.43
Mashonaland East	Number	611
	Incidence rate/1000	0.45
Mashonaland West	Number	518
	Incidence rate/1000	0.35
Matabeleland North	Number	370
	Incidence rate/1000	0.49
Matabeland South	Number	351
	Incidence rate/1000	0.50
Midlands	Number	836
	Incidence rate/1000	0.50
Masvingo	Number	745
	Incidence rate/1000	0.49
Harare	Number	1 146
	Incidence rate/1000	0.64
Chitungwiza	Number	431
	Incidence rate/1000	1.18
Bulawayo	Number	783
	Incidence rate/1000	1.17
National	**Number**	**7 077**
	Incidence rate/1000	**0.53**

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.12: Outpatients Department New Cases Asthma by Age Group, Sex and Year

YEAR	Outpatients Department New Cases Asthma						Population					
	<5		5+		All AGES		<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
2004	2 370	2 475	4 688	7 278	7 058	9 753	854 907	854 851	4 892 517	5 263 179	5 747 424	6 118 030
2005	3 286	3 296	6 258	9 230	9 544	12 526	863 456	863 399	4 941 439	5 315 813	5 804 895	6 179 212
2006	2 868	2 714	5 284	8 169	8 152	10 883	872 091	872 033	4 990 860	5 368 965	5 862 950	6 240 999
2007	2 270	2 202	4 735	6 980	7 005	9 182	880 812	880 754	5 040 767	5 422 656	5 921 579	6 303 410
2008	1 589	1 461	3 479	5 557	5 068	7 018	889 620	889 561	5 091 176	5 476 881	5 980 796	6 366 443
2009	1 408	1 359	3 224	4 889	4 632	6 248	898 516	898 457	5 142 088	5 531 650	6 040 604	6 430 107
2010	1 263	1 106	2 818	3 141	4 081	4 247	907 501	907 441	5 193 509	5 586 967	6 101 010	6 494 408
2011	365	372	627	877	992	1 249	917 484	917 423	5 250 637	5 648 423	6 168 121	6 565 847
2012	838	821	2 049	3 347	2 887	4 168	4 079 840	4 228 121	2 204 378	2 461 470	6 284 218	6 689 590
2013	908	848	2 023	3 434	2 931	4 282	4 124 718	4 274 630	2 228 626	2 488 546	6 353 344	6 763 176
2014	991	879	3 359	1 848	4 350	2 727	4 170 090	4 321 651	2 253 141	2 515 920	6 423 231	6 837 571

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.13: Asthma Incidence Rate by Age Group, Sex and Year

YEAR	ASTHMA Incidence Rate/1000					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	2.8	2.9	1.0	1.4	1.2	1.6
2005	3.8	3.8	1.3	1.7	1.6	2.0
2006	3.3	3.1	1.1	1.5	1.4	1.7
2007	2.6	2.5	0.9	1.3	1.2	1.5
2008	1.8	1.6	0.7	1.0	0.8	1.1
2009	1.6	1.5	0.6	0.9	0.8	1.0
2010	1.4	1.2	0.5	0.6	0.7	0.7
2011	0.4	0.4	0.1	0.2	0.2	0.2
2012	0.2	0.2	0.9	1.4	0.5	0.6
2013	0.2	0.2	0.9	1.4	0.5	0.6
2014	0.2	0.2	1.5	0.7	0.7	0.4

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.14: Outpatients Department New Cases Acute Respiratory Infections by Age Group, Sex and Year

Year	OPD New ARI Cases						Population					
	<5		5+		All Ages		<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
2004	441 985	414 835	779 615	972 673	1 221 600	1 387 508	854 907	854 851	4 892 517	5 263 179	5 747 424	6 118 030
2005	544 726	529 432	887 441	1 115 048	1 432 167	1 644 480	863 456	863 399	4 941 439	5 315 813	5 804 895	6 179 212
2006	509 580	493 610	843 039	1 069 511	1 352 619	1 563 121	872 091	872 033	4 990 860	5 368 965	5 862 950	6 240 999
2007	456 768	446 976	746 186	1 002 097	1 202 954	1 449 073	880 812	880 754	5 040 767	5 422 656	5 921 579	6 303 410
2008	344 578	339 543	590 739	779 709	935 317	1 119 252	889 620	889 561	5 091 176	5 476 881	5 980 796	6 366 443
2009	472 108	471 601	726 311	970 665	1 198 419	1 442 266	898 516	898 457	5 142 088	5 531 650	6 040 604	6 430 107
2010	425 191	419 342	568 656	740 595	993 847	1 159 937	907 501	907 441	5 193 509	5 586 967	6 101 010	6 494 408
2011	416 929	409 869	428 055	532 730	844 984	942 599	917 484	917 423	5 250 637	5 648 423	6 168 121	6 565 847
2012	840 336	837 133	837 813	1 116 261	1 678 149	1 953 394	934 753	934 714	5 349 465	5 754 877	6 284 218	6 689 590
2013	873 441	870 770	875 303	1 159 224	1 748 744	2 029 994	945 035	944 995	5 408 309	5 818 180	6 353 344	6 763 176
2014	874 201	1 167 601	873 249	1 180 005	1 747 450	2 347 606	955 430	955 390	5 467 801	5 882 180	6 423 231	6 837 571

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.15: Incidence Rate of Acute Respiratory Infections by Age Group, Sex and Year

Year	ARI Incidence Rate/1000					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	517	485	159	185	213	227
2005	631	613	180	210	247	266
2006	584	566	169	199	231	250
2007	519	507	148	185	203	230
2008	387	382	116	142	156	176
2009	525	525	141	175	198	224
2010	469	462	109	133	163	179
2011	454	447	82	94	137	144
2012	899	896	157	194	267	292
2013	924	921	162	199	275	300
2014	915	1 222	160	201	272	343

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.16: Tuberculosis Cases by Sex, Age Group, Province and Year

Year	Province	Tuberculosis Male, 0 – 9 Years	Tuberculosis Female, 0 - 9 Years	Tuberculosis Male, 10 - 24 Years	Tuberculosis Female, 10 - 24 Years	Tuberculosis Male, 25 - 49 Years	Tuberculosis Female, 25 - 49 Years	Tuberculosis Male, 50 Years +	Tuberculosis Female, 50 Years +
2014	Bulawayo	168	159	230	262	1 345	1 157	481	395
	Harare	838	1 394	3 102	2 797	11 420	8 339	2 502	2 784
	Manicaland	347	198	519	806	3 114	2 963	719	494
	Mashonaland Central	137	162	402	475	2 517	2 276	738	588
	Mashonaland East	89	98	304	350	2 139	1 756	564	392
	Midlands	156	148	484	558	3 362	2 501	1 101	797
	Matabeleland North	52	51	143	151	1 072	739	384	248
	Matabeleland South	46	73	254	306	1 420	1 280	494	288
	Masvingo	252	225	456	553	2 169	2 095	843	818
	Mashonaland West	88	101	386	588	2 887	2 279	755	540
2013	Bulawayo	270	188	244	290	1 218	1 027	421	286
	Harare	1 738	2 181	4 687	2 951	16 514	11 570	3 590	2 916
	Manicaland	175	209	463	534	2 673	2 458	752	396
	Mashonaland Central	144	142	312	434	2 195	1 682	609	439
	Mashonaland East	146	138	517	605	2 557	3 043	724	540
	Midlands	250	250	727	750	4 349	3 527	1 544	995
	Matabeleland North	42	44	137	193	1 047	825	354	208
	Matabeleland South	72	84	285	337	1 599	1 288	527	392
	Masvingo	285	269	669	729	2 922	2 821	819	901
	Mashonaland West	169	187	921	1 136	4 793	3 965	1 269	974

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.16 Continued

Year	Province	Tuberculosis Male, 0 – 9 Years	Tuberculosis Female, 0 - 9 Years	Tuberculosis Male, 10 - 24 Years	Tuberculosis Female, 10 - 24 Years	Tuberculosis Male, 25 - 49 Years	Tuberculosis Female, 25 - 49 Years	Tuberculosis Male, 50 Years +	Tuberculosis Female, 50 Years +
2012	Bulawayo	175	106	142	213	1 067	1 031	324	242
	Harare	1 106	828	1 875	2 650	7 877	6 819	2 238	1 634
	Manicaland	191	207	651	704	3 469	2 660	869	629
	Mashonaland Central	321	306	416	533	2 468	2 123	684	472
	Mashonaland East	131	141	355	428	2 780	2 669	788	666
	Midlands	213	182	575	759	4 012	3 371	1 163	942
	Matabeleland North	64	86	135	218	1 127	895	367	183
	Matabeleland South	110	88	216	327	1 565	1 314	532	375
	Masvingo	300	276	458	702	2 844	2 902	820	883
	Mashonaland West	131	128	504	711	3 093	2 640	1 050	937
2011	Bulawayo	268	203	274	331	1 537	1 332	412	274
	Harare	842	688	2 107	2 025	9 748	8 882	2 165	2 169
	Manicaland	277	313	655	686	3 132	2 882	1 112	878
	Mashonaland Central	331	291	311	487	2 102	2 027	665	459
	Mashonaland East	159	121	313	484	2 552	2 720	852	644
	Midlands	228	229	600	681	4 060	3 702	1 368	1 135
	Matabeleland North	149	106	235	375	1 512	1 322	472	373
	Matabeleland South	110	163	295	412	1 934	1 495	560	468
	Masvingo	263	261	434	659	2 532	2 809	911	835
	Mashonaland West	203	172	617	807	3 480	3 227	1 178	1 045

Table 6.16 Continued

Year	Province	Tuberculosis Male, 0 – 9 Years	Tuberculosis Female, 0 - 9 Years	Tuberculosis Male, 10 - 24 Years	Tuberculosis Female, 10 - 24 Years	Tuberculosis Male, 25 - 49 Years	Tuberculosis Female, 25 - 49 Years	Tuberculosis Male, 50 Years +	Tuberculosis Female, 50 Years +
2010	Bulawayo	-	-	4	4	23	34	43	23
	Harare	577	622	1 715	1 713	5 026	4 631	1 611	1 442
	Manicaland	95	110	334	338	1 245	1 236	557	434
	Mashonaland Central	202	191	236	280	1 455	1 507	515	496
	Mashonaland East	76	82	258	323	1 596	1 734	523	523
	Midlands	1	-	-	-	8	4	2	4
	Matabeleland North	85	52	110	171	628	583	213	176
	Matabeleland South	30	64	129	176	756	695	246	182
	Masvingo	63	51	112	142	613	630	249	283
	Mashonaland West	88	77	230	306	1 323	1 396	449	498

Source: ZIMSTAT and Ministry of Health and Child Care

6.2.2 Vector Borne Disease

According to the World Health Organisation Vector Borne Diseases Factsheet, vector-borne diseases are illnesses caused by pathogens and parasites in human populations. These diseases are caused by vectors which are living organisms that can transmit infectious diseases between humans or from animals to humans. Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later inject it into a new host during their subsequent blood meal, with the mosquito being the best known disease vector. Others include ticks, flies, sand flies, fleas, triatomine bugs and some freshwater aquatic snails.

Vector borne diseases include malaria, dengue, schistosomiasis (bilharzia), human African trypanosomiasis (sleping sickness), yellow fever, onchocerciasis (river blindness) and others. Schistosomiasis is also classified under water related diseases and conditions, Tables 6.24 and 6.25. The distribution of these diseases is determined by complex dynamics of environmental and social factors, hence only malaria and schistosomiasis are the common diseases reported for Zimbabwe under this category.

The other diseases/conditions such as yellow fever and others are not common in Zimbabwe and are therefore not captured by the DHIS 2 System. Malaria is commonly found mainly in the low and mid-altitude zones and rarely at higher altitude. However, over the years malaria data has shown mixed effects on its transmission characterized by considerable inter-seasonal and inter-year variations. Tables 6.17 to 6.19 show the distribution of malaria in Zimbabwe. Data captured for malaria included ***suspected cases***, ***tested cases*** and ***positive cases.***

A **suspected case** is a case that meets clinical case definition; thus the signs and symptoms a person has or presents with are consistent or compatible with a particular disease.

A ***tested case*** is a case that undergoes laboratory confirmation, includes cases with positive or negative results.

A **positive case** is a case confirmed by the laboratory; the patient's clinical specimen meets the diagnostic criteria of a specified laboratory method.

Table 6.17: Confirmed New Malaria Cases by Province, 2014

PROVINCE/CITY	Suspected/ Clinical Cases	Tested Cases	Positive Cases	Positivity Rates
Manicaland	484 652	477 786	224 903	47
Mashonaland Central	313 134	312 363	130 211	42
Mashonaland East	249 211	234 281	88 704	38
Mashonaland West	119 972	119 673	34 155	29
Matabeleland North	44 656	44 655	3 836	9
Matabeleland South	26 242	26 153	2 503	10
Midlands	31 919	30 970	2 477	8
Masvingo	148 065	148 042	43 171	29
Harare	21 574	20 318	4 955	24
Chitungwiza	2395	1994	707	35
Bulawayo	1941	1065	309	29
National	**1 443 761**	**1 417 300**	**535 931**	**38**

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.18: Malaria Clinical Cases and Incidence Rate by Age Group, 2014

Province/City	<5 Years		5+ Years		ALL AGES	
	Clinical Cases	Incidence/1000 population	Clinical Cases	Incidence/1000 population	Clinical Cases	Incidence/1000 population
Manicaland	100 009	387	384 643	251	484 652	270
Mashonaland Central	72 628	433	240 506	241	313 134	269
Mashonaland East	54 058	275	195 153	167	249 211	182
Mashonaland West	25 285	118	94 687	75	119 972	81
Matabeleland North	15 799	144	28 857	44	44 656	59
Matabeleland South	8 908	88	17 245	29	26 153	37
Midlands	8 656	36	22 314	16	30 970	19
Masvingo	30 824	141	117 218	90	148 042	97
Harare	5 343	21	14 975	10	20 318	11
Chitungwiza	527	10	1 467	5	1 994	5
Bulawayo	233	2	832	1	1 065	2
National	**322 270**	**169**	**1 117 897**	**98**	**1 440 167**	**109**

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.19: Malaria Cases by Age Group, Sex and Year

Year	Malaria Cases					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	129 741	119 683	419 284	491 437	549 025	611 120
2005	178 109	170 440	513 378	622 992	691 487	793 432
2006	186 202	180 094	543 063	649 290	729 265	829 384
2007	145 442	141 743	417 430	501 903	562 872	643 646
2008	127 946	124 120	411 160	498 368	539 106	622 488
2009	44 720	43 654	182 682	206 565	227 402	250 219
2010	7 055	7 157	49 764	49 443	56 819	56 600
2011	22 644	22 022	113 021	118 689	135 665	140 711
2012	34 053	34 882	170 454	183 091	204 507	217 973
2013	40 640	41 152	222 116	232 023	262 756	273 175
2014	40 640	41 152	222 116	232 023	262 756	273 175

Source: ZIMSTAT and Ministry of Health and Child Care

6.2.3 Water- Related Diseases and Conditions

Water related diseases and conditions are caused by micro-organisms commonly found in water that is meant for human consumption. Diseases under this category include diarrhoeal diseases, gastroenteritis as well as water borne parasite infections. Under the diarrhoeal diseases category, the DHIS II system captures data on common diarrhoea, dysentery, typhoid and cholera, whilst for water borne parasitic infections there is data on schistosomiasis, Tables 6.20 to 6.23.

Table 6.20: Diarrhoeal Diseases by Province, 2014

Province/City	Diarrhoea			Dysentery			Typhoid		Cholera	
	Cases	Incidence/1000	Deaths	Cases	Incidence/1000	Deaths	Cases	Deaths	Cases	Deaths
Manicaland	116 935	65	117	9 026	5	28	599	5	0	0
Mashonaland Central	100 355	86	61	8 617	7	40	4	0	0	0
Mashonaland East	106 129	78	175	4 880	4	48	17	8	0	0
Mashonaland West	104 778	71	71	6 741	5	10	183	3	0	0
Matabeleland North	48 543	64	26	4 422	6	6	1	0	0	0
Matabeleland South	28 192	40	90	1 143	2	3	0	0	0	0
Midlands	86 347	52	67	6 043	4	16	8	8	0	0
Masvingo	91 129	60	88	5 532	4	13	3	0	0	0
Harare	45 315	25	268	1 995	1	5	1 214	12	3	0
Bulawayo	16 338	24	50	519	1	1	17	0	0	0
National	**763 136**	**58**	**1 013**	**49 373**	**4**	**170**	**2 046**	**36**	**0**	**0**

NB: For Typhoid and Cholera there are no calculated incidences as these occur as outbreaks in some years

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.21: Diarrhoeal Cases by Sex, Age Group and Year

Year	Diarrhoea Cases					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	82 008	71 494	112 959	124 747	194 967	196 241
2005	122 174	111 114	157 811	172 960	279 985	284 074
2006	111 233	101 206	144 643	160 615	255 876	261 821
2007	118 159	108 543	147 845	168 134	266 004	276 677
2008	99 046	92 558	156 668	177 488	255 714	270 046
2009	106 384	98 946	137 560	165 249	243 944	264 195
2010	94 405	86 874	93 425	111 234	187 830	198 108
2011	89 909	83 989	69 388	81 395	159 297	165 384
2012	213 136	199 392	162 466	201 949	375 602	401 341
2013	226 981	213 707	168 579	213 049	395 560	426 756
2014	217 322	203 271	151 956	190 587	369 278	393 858

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.22: Cholera and Typhoid Cases by Year

Year	Cholera	Typhoid
2004	125	0
2005	206	0
2006	1043	0
2007	63	0
2008	30 938	0
2009	0	0
2010	692	0
2011	0	0
2012	253	294
2013	116	220
2014	3	2046

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.23: Dysentery Cases by Year, Sex and Age Group

Year	Dysentery Cases					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	6 579	5 727	17 114	21 633	23 693	27 360
2005	9 856	8 899	24 740	32 373	34 596	41 272
2006	8 657	7 775	21 416	28 600	30 073	36 375
2007	8 508	7 688	19 300	25 983	27 808	33 671
2008	5 168	4 709	14 034	19 000	19 202	23 709
2009	4 477	4 168	10 472	14 742	14 949	18 910
2010	3 784	3 544	8 059	11 097	11 843	14 641
2011	3 255	3 086	7 336	10 451	10 591	13 537
2012	8 171	7 916	18 014	26 878	26 185	34 794
2013	8 687	8 078	17 210	25 776	25 897	33 854
2014	7 074	6 694	14 380	21 225	21 454	27 919

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.24: Confirmed Schistosomiasis New Cases by Age Group, Sex and Year

Year	Schistosomiasis					
	<5		5+		All Ages	
	Males	Females	Males	Females	Males	Females
2004	2 456	1 685	76 263	33 064	78 719	34 749
2005	3 599	2 360	99 538	45 646	103 137	48 006
2006	2 483	1 652	73 896	32 538	76 379	34 190
2007	3 835	2 482	98 112	43 278	101 947	45 760
2008	2 481	1 723	65 382	30 389	67 863	32 112
2009	2 392	1 604	67 769	29 109	70 161	30 713
2010	2 423	1 617	59 229	23 618	61 652	25 235
2011	2 189	1 373	41 930	18 025	44 119	19 398
2012	4 835	3 485	88 124	36 705	92 959	40 190
2013	4 037	2 696	73 311	33 042	77 348	35 738
2014	2 672	1 524	50 134	20 586	52 806	22 110

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.25: Confirmed Schistosomiasis New Cases and Incidences by Province and Age Group, 2014

Province/City	<5 Years		5+ Years		All Ages	
	Clinical Cases	Incidence/1000 popn	Cases	Incidence Rate	Cases	Incidence Rate
Manicaland	678	3	13 460	9	14 138	8
Mashonaland Central	937	6	12 691	13	13 628	12
Mashonaland East	519	3	8 555	7	9 074	7
Mashonaland West	702	3	8 617	7	9 319	6
Matabeleland North	139	1	2 082	3	2 221	3
Matabeleland South	69	1	1 385	2	1 454	2
Midlands	371	2	8 017	6	8 388	5
Masvingo	650	3	14 643	11	15 293	10
Harare	107	0	1 059	1	1 166	1
Chitungwiza	12	0	57	0	69	0
Bulawayo	12	0	154	0	166	0
National	**4 196**	**2**	**70 720**	**6**	**74 916**	**6**

Source: ZIMSTAT and Ministry of Health and Child Care

6.2.4 Cancers

These include statistics on the incidences and prevalences of skin cancers including cataracts associated with excessive UV radiation exposure. Under this category the DHIS 2 system classifies cancers into four main categories; breast cancers, cervical, prostate and for skin cancers the main category are captured under Kaposi's sarcoma. Eye cataracts are broadly classified under one category and hence these cannot be segregated whether they were due to causes such as exposure to UV radiation or to other causes. Hence in this category statistics provided will be as per the classifications in the DHIS 2 System, Tables 6.26 to 6.30.

Table 6.26: Number of Cancer Patients by Type of Cancer, Age Group and Year

Year	Breast Cancer				Cervix Cancer		Prostate Cancer		Other Cancers		All New Cancers	
	Female		Male		Female		Male		Male	Female	Male	Female
	<26 yrs	26yrs +	<26 yrs	26 yrs +	<26 yrs	26 yrs+ over	<26 yrs	26 yrs +	<26yrs	26yrs +	26 yrs +	
2004	26	206	0	15	64	409	14	205	57	69	411	411
2005	86	487	35	32	130	1 025	53	458	427	479	924	927
2006	84	498	9	26	221	1 176	107	546	584	471	1 131	1 151
2007	129	301	2	36	35	586	21	338	139	131	403	454
2008	29	134	5	15	10	376	18	222	21	33	212	211
2009	46	240	22	16	67	527	48	336	47	50	322	270
2010	15	177	1	12	27	470	9	244	35	40	263	360

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.27: Number of New Cancer Cases by Type of Cancer, Age Group and Province, 2013

Province/ City/Facility	Breast				Cervix		Prostate		Other			
	Female		Male		Female		Male		Female		Male	
	0-24 yrs	25 yrs +	0-24 yrs	25 yrs +	0-24 yrs	0-24 yrs	0-24 yrs	25 yrs +	0-24 yrs	25 yrs +	0-24 yrs	25 yrs +
Manicaland	2	30	0	4	2	156	0	129	5	62	1	51
Mashonaland Central	1	99	0	44	0	501	25	598	15	220	11	236
Mashonaland East	1	22	0	1	0	106	3	108	0	28	102	38
Mashonaland West	5	26	0	3	8	124	2	45	4	45	1	45
Matabeleland North	10	13	0	0	4	59	0	12	4	31	2	20
Matabeleland South	1	7	0	2	2	20	0	23	0	13	1	13
Midlands	1	40	0	6	11	165	1	152	14	75	7	59
Masvingo	4	20	0	2	11	106	1	90	12	32	0	48
Harare	0	1	0	0	0	5	0	1	0	0	0	1
Bulawayo	8	85	2	6	15	675	6	182	27	130	21	145
Chitungwiza	0	2	0	0	0	1	0	2	0	3	0	13
Harare Central Hospitals	6	353	15	31	97	1 299	22	641	144	832	122	809

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.28: Number of Cancer Patients by Type of Cancer, Age Group and Year

Year	New Breast Cancer				New Cervix Cancer		New Prostate Cancer		Other New Cancers			
	Female		Male		Female		Male		Female		Male	
	0-24 years	25 years +	0-24 years	25 years +	0-24 years	25 years +	0-24 years	25 years +	0-24 years	25 years +	0-24 years	25 years +
2010	21	282	1	19	26	813	1	502	28	459	32	327
2011	23	587	2	67	30	1 999	18	1 336	89	1 248	99	1 066
2012	73	1 288	2	90	150	3 984	26	2 340	183	2 604	171	2 365
2013	54	784	22	64	177	2 532	72	2 703	242	1 947	184	1 964

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.29: Kaposis Sarcoma Cases by Age Group, Sex and year

Year	Age Group											
	0-4		5-14		15-19		20-29		30-49		50 yrs and over	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
2004	38	20	-	51	69	56	402	445	1318	848	430	205
2005	17	20	-	62	114	120	801	821	1982	1457	764	531
2006	107	113	-	187	345	339	973	878	2276	1881	1096	814
2007	50	38	-	92	166	159	506	645	1583	1303	558	434
2008	33	16	-	43	63	52	239	294	866	718	396	316
2009	17	12	-	47	43	25	455	491	1336	1209	334	251
2010	248	36	-	84	66	690	488	1205	1311	1205	481	247

Source: ZIMSTAT and Ministry of Health and Child Care

Table 6.30: Kaposis Sarcoma by Age Group, Sex and Year

	0-9yrs		10-24 yrs		25-49 yrs		50 yrs	
	Female	Male	Female	Male	Female	Male	Female	Male
2009	21	16	113	104	775	904	164	324
2010	27	20	166	170	1701	2076	460	774
2011	36	35	150	137	1296	1756	307	664
2012	40	39	167	152	1723	2248	370	785
2013	318	185	254	308	1358	2115	480	907
2014	529	955	96	307	1211	1535	268	502

Source: ZIMSTAT and Ministry of Health and Child Care

Chapter 7: Environment Protection, Management and Engagement

7.1 Environment Protection and Resources Management Expenditure

The Ministry of Environment, Water and Climate is the overall Ministry responsible for environmental protection and management in Zimbabwe.

7.2 Environmental Governance and Regulation

The Environmental Management Agency (EMA) under the Ministry of Environment, Water and Climate (MEWC) is the principal agency for the management of the environment. Environmental Management Agency has the express mandate to coordinate, monitor, and supervise all activities in the field of the environment. It is horizontally linked to the lead agencies in the environment sector, and vertically to the local government structure, the private sector, and civil society. The Environmental Management Act provides a set of institutional and legal foundations for the sustainable management of natural resources and the protection of the environment, the prevention of pollution and environmental degradation, and the preparation of a National Environmental Action Plan (NEAP). It also provides for the establishment of an Environmental Management Agency, Environmental Council and of the Environmental Management Board. The Environmental Management Act is administered by the Ministry of Environment, Water and Climate whose overall mandate is to ensure sustainable management of natural resources and the protection of the environment to ensure a clean, safe and healthy environment.

Within the Environmental Management Agency are four departments namely, Environmental Protection Services (EPS), Environmental Planning and Monitoring (EMP), Human Resources, Finance and Administration. EMA has 10 provincial offices and 58 district offices that are responsible for environmental issues throughout the country. The specific roles of EMA include, developing guidelines for national plans and environmental management plans; reviewing and approving

Environmental Impact Assessment (EIA)s and monitoring air, land, water and noise pollution among others. However, monitoring of the environment has been significantly affected by the flight of skilled personnel in various technical fields and limited resources. The implementation of an effective system of environmental monitoring is not only challenged by the lack of specialised human resources and equipment, but also by the weakness of the statistics system in the collection, collation and analysis of data in the sector.

Other key institutions with environmental responsibilities in the Ministry of Environment, Water and Climate include Forestry Commission, Parks and Wildlife Management Authority and Zimbabwe National Water Authority. The Forestry Commission is responsible for promoting the sustainable management of the nation's forest resources through research, extension, conservation and training. The Parks and Wildlife Management Authority is responsible for conserving Zimbabwe's wildlife heritage through effective and efficient sustainable utilisation of natural resources.

The Rural and District Councils Act [Chapter 29:13] provides for the devolution of governance from the central government to the districts and lower levels. The District Council is the highest level of governance at sub-national level. One of its roles is to ensure the integration of environmental issues in the development planning process. Environment committees are also established at sub-national level, Ward Development Committee and Village Development Committee levels, although the lowest level of government is the Rural District Councils.

Other key stakeholders involved in environment are: mother of RDCs (Ministry of Local Government and Housing), Ministry of Agriculture, Irrigation Development and Mechanization, Office of the President and Cabinet, Non Governmental Organisations which include the Wildlife and Environment Zimbabwe, Mukuvisi Woodlands, CAMPFIRE Association, Zimbabwe Environmental Regional Organisation, Forum for Environmental Education, Zambezi Society and Environment Africa.

7.2.1 Institutional Strength

The Zimbabwe's environmental institutions and authorities are also established at sub-regional levels. The average resources channelled in the environment programmes differ annually depending on the activities.

Name	Budget	Staff Establishment
Environmental Management Agency	$25 million	300
Forestry Commission	$12million	110
Parks and Wildlife Management Authority	$20million	240
Zimbabwe National Water Authority	$30million	210
Climate Change Management Department	-	10
Ministry of Local Government	-	-

7.2.2 Environmental Regulation

A good environmental policy and legislative framework is in place although there are aspects that lead to implementation weakness including; institutional rivalry, inadequate policy implementation, lack of clear guidelines and budgets for inter-sectoral activities, political interference, corruption, weak enforcement and law enforcement capacity. **Direct Regulation,** includes the Environmental Management Act [chapter 20:27] and Statutory Instruments; **and Economic Instruments such as l**icenses for hazardous substances.

Specific policies/legislation includes the following:

- National Environmental Policy and Strategies (2009)
- Water Policy
- Forestry Based Land Reform Policy
- Wildlife Based Land Reform Policy
- Environmental Education Policy and Strategies
- Environmental Management Act [Chapter 20:27]
- Parks and Wildlife Management Act [Chapter 20:14]
- Forestry Act [Chapter 19:05]
- Communal Lands Forest Produce Act [Chapter 19:07]
- The Water Act

Environmental Impact Assessment (EIA) regulations and the associated schedule of activities, together with the Guideline Document for the Implementation of the Environmental Impact Assessment regulations, which were adopted in 1997 and is enshrined in the Environmental Management Act [Chapter 20:27]..

7.2.3 Participation in Multilateral Environmental Agreements and Environmental Conventions

Zimbabwe has demonstrated its commitment to support environmental management and sustainable development through signing and ratifying several regional and international environmental conventions and protocols. A summary of the conventions and what the country has achieved with reference to each convention includes:

I. United Nations Convention to Combat Desertification (UNCCD)

Zimbabwe ratified UNCCD on the 21st of March 1994. The country commemorates the United Nations World Desertification Day on June the 17th every year particularly in the dry lands of the country to minimize, reverse and prevent further degradation. The objective of the United Nations Convention to Combat Desertification (UNCCD) is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach, with the view of contributing to the achievement of sustainable development in affected areas.

II. United Nations Convention on Biological Diversity (UNCBD)

The United Nations Convention on Biological Diversity (UNCBD) was signed at the Earth Summit, which took place in 1992, at the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil. The Convention on Biological diversity is the first global agreement on the conservation and sustainable use of biological diversity. The treaty recognizes that the conservation of biological diversity is a common concern of humankind and is an inaugural part of the development process. Zimbabwe ratified the convention on the 11th of November 1994 .A fourth National Report was developed in 2010. The fifth National Report to the UNCBD and the Zimbabwe's National Biodiversity Strategies and Action Plan for 2011-2020 were developed and they await being launched..

III. Unnited Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) sets an overall framework for intergovernmental efforts to tackle the challenges posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. Zimbabwe ratified the convention on the 3rd of November 1992. To date, the country has submitted both the initial and Second National Communication Reports to the UNFCCC Secretariat and they are currently working on the Third National Communication Report. A Climate Change Needs Assessment was conducted in 2009 and a National Climate Change Response Strategy (NCCRS) was adopted with the incorporation of comments from the validation workshop held on the 15th of July 2014 in Kariba. The strategy was concluded and will be launched soon. Other Conventions and Protocols that Zimbabwe is a Party include

Convention/Protocol	**Objective**	**Date Ratified/Signed**
1. United Nations Convention On Protection Of The Ozone Layer	Reduced depletion of the stratospheric ozone layer resulting in reduced vulnerability to heat, skin cancer, etc. The country commemorates World Ozone Day annually on the 16th of September. Public Awareness workshops are conducted annually to raise awareness on the impact of ozone depleting substances.	3 November 1992
2. Basel Convention On Transboundary Movement Of Hazardous Wastes And Their Disposal	The country is revising the Hazardous substances Statutory Instrument to ensure the holistic control and movement of hazardous substances.	10 July 1992
3. Stockholm Convention On Persistent Organic Pollutants (POPs**)**	An action Plan was developed and Zimbabwe has carried out an inventory on different POPs with the possibility of handling their disposal and trade.	21 March 2012
4. Rotterdam Convention On Prior Informed Consent (PIC)	The dramatic growth in chemicals production and trade has made Zimbabwe vulnerable to potential risks posed by hazardous substances on chemical imports. Rotterdam Convention National Action Plan Draft is being circulated for stakeholders' comments. The National Chrysotile Taskforce is chaired by Ministry of Industry and Commerce and the country has a position paper on Chrysotile.	21 March 2012
5. Ramsar Convention on Wetlands	The Ramsar Information Sheets (RIS) have been updated for Chivero/Manyame, Cleveland Dam and work is being carried out on Chinhoyi Caves and Victoria Falls.	21 March 2012

Convention/Protocol	**Objective**	**Date Ratified/Signed**
	A massive awareness campaign was conducted at Driefontein grasslands which is the most vulnerable Ramsar site that occurs in a communal area where there is the tragedy of the commons.	
6. The Agreement On The Conservation Of African-Eurasian Migratory Waterbirds	The convention is aimed at protecting the migratory birds. Birdlife Zimbabwe and Parks and Wildlife Management Authority assist the Government to ensure that we meet the country's obligations.	March 2012
7. Convention on The International Trade on Endangered Species Cites	Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Controlled trade of endangered species under the convention has contributed to the country's conservation of flora and fauna. The country has continued to participate in CITES meetings and will continue to collaborate with other countries especially in seeking for support and technologies to prevent cyanide poisoning of animals	19 May 1981
8. Minamata Convention on Mercury	Seeks to protect human health and the environment from the adverse effects of mercury. The Convention has not yet been brought before Parliament for ratification. The country is already implementing the issues under the convention, especially reduced use of mercury in the mining sector.	Signed on 11 October 2013
9. Montreal Protocol	Zimbabwe is currently developing regulations to control the trade of these substances and a lot of work has been done in educating the ZIMRA officers, industries that use these aerosols. To date the country has 100% phased out Hydro chlorofluorocarbons (HCFs). Trainings on the use of ozone friendly alternatives are ongoing.	3 November 1992
10. Kyoto Protocol	Sets binding targets for developed countries for reducing greenhouse gas (GHG) emissions. There is need for the Government to ratify the Amendments of the Kyoto Protocol from COP 19 which was held in Doha, Qatar.	28 September 2009

7.3 Extreme Event Preparedness and Disaster Management

The Civil Protection Unit is mandated to deal with disasters in the country. The Unit works closely with the Meteorological Services Department and the Climate Change Management Department to provide forecasts and early warning systems.

7.4 Environmental Information and Awareness.

The country has prepared several national communication reports under the UNFCCC. These include the Initial National Communication, the Second National Communication and the just completed Third National Communication. Under each of these, Article 6 of the UNFCCC has been used to guide issues to do with environmental information and education. Further the country has produced a Climate Change Response Strategy with action plans and budgets to guide issues to do with environmental information and education. Under this document, several strategies have been identified to assist in raising awareness on issues to do with environmental information. Section 6.2 covers the mandate of EMA which is the regulatory authority in all things concerning the environment. Hwever, EMA works ahnd in hand with other government agencies such as the Foresty Commission, the Zimbabwe Water Authority, Zimbabwe Parks and Wildlife Management Agency, among others. The private sector has also chipped in into this are. The Business Council for Sustainable Development, Zimbabwe Chapter are also trying to promote and disseminate information on environmental issues in the private sector.

7.4.1 Environmental Information Systems and Environment Statistics

Zimbabwe has under the auspices of the Zimbabwe Statistics Agency produced several reports oenvironmental statistics. These statistics are included in several of the Agency's publications such as the bi-ennial Compendium of Statistics, the Quarterly Digest of Statistics and the Environmental Statistics Report. Further, local authorities, especially in large urban areas like Harare and Bulawayo produce environmental statistics to do with the monitoring of pollution (land, air and water). These statistics are produced and reported through their respective city health departments. The also include reports on infectious diseases that result from polluted environments such as cholera.Besides these, there are a number of other environmental organizations with environmental information sysems in place.

These include the Ministry of Agriculture, ZINWA, Forestry Commission, Department of Meteorological Services, Agritex, and Research Specialist Services and so on. All these have to be tapped into as part of a one-stop environmental data base for future reports.

7.4.2 Environmental Education

Environmental education is a component of the school curriculum in such subjects as Geography, Environmental Science and Civic Education. It is being taught as part and parcel of natural resources management. It is also taught as part of environmental hazards related to agriculture. Production of modules which cover the following topics related to climate change and the environment by the Curriculum Development Unit of the Ministry of Primary and Secondary Education has been done:

- Water management
- Soil management
- Wildlife management
- Integrated pest management
- Biodiversity
- Agro-forestry

Environmental education is also found in the tertiary educational tertiary system. However, at this level there is not a single integrated curriculum. Each tertiary institution has its own subject matter and approach to the subject. This is a weakness that will need to be addressed by future reports.There is an on-going curriculum review which seeks to address the issue of intergrting environmental education into the school curriculum. This is to make it less fragmented and more centralized. The aim is to streamline environmental education into national projects and programmes. Currently this is being done through schools competitions, awareness raising programmes, establishment of public information centres and of course review of the primary and secondary school education curriculum. This activity should also be extended to the tertiary levels because it does not have a unified curriculum.

7.4.3 Environmental Engagement

EMA has set aside several days in each calendar year meant to engage the public in environmental issues. These days may fit into the international, national or local events. Some of the days observed are shown in the table below:

Environmental Event	Environmental Days
World Wetlands Day	2nd February
Africa Environment Day	3rd March
World Wildlife Day	3rd March
World Water Day	22nd March
World Meteorological Day	23rd March
World Earth Day	22nd April
National Fire Week	2nd week of May
International Day for Biological Diversity	22nd May
World Environment Day	5th June
World Desertification Day	17th June
International Day for the Preservation of the Ozone Layer	16th September
Clean up Zimbabwe	17th September
National Tree Planting Day	1st week of December

Besides these scheduled events, there are various other fora which ensure environmental engagement at various levels and fora. These include the Zimbabwe International Trade Fair, World Tourism Day run by the Zimbabwe Tourism Authority, the Harare Agricultural Show and various other such events that take place throughout the country. The NGO sector is also active in environmental engagement with local communities and NANGO take the lead in overseeing this. Worth of mention is the Zimbabwe Environmental Lawyers Association which takes a lead in promoting human rights of communities affected by such issues as environmental pollution from activities of industrial and mining concerns. The Business Council for Sustainable Development, Zimbabwe Chapter takes a leading role in dealing with environmental engagement in the private sector. This Council has held several breakfast meetings were issues dealing with environment were debated. Further, private sector organizations like Build Zimbabwe have also edvocated for environmental friendly buildings in all urban authorities' areas.

7.4.4 Environmental Perception and Awareness

Zimbabwe is a signatory to the United Nations Framework Conventions on Climate Change (UNFCCC). By virtue of being signatories to this Convention, it is also automatically bound by the provision of Article 6. Article 6 encourages all members to the Convention to highlight issues of education, awareness and training for climate change mitigation and adaptation. Activities on climate change by member states are communicated to the Convention through a document known as the National Communications. So far, Zimbabwe has produced two national circumstances reports and is in the process of producing a third one.

The Initial National Communications (INC, 1998) document did not dwell extensively on issues to do with education, awareness and training (EAT). These issues were picked up in the Second National Communications (SNC) report and were continued in the Third one which is currently under way.

The findings of the SNC, interestingly enough show that awareness of climate change and its possible impacts among the Zimbabwean populace was very high. More than two-thirds of the population was aware of climate change, could state its signs and symptoms. This awareness occurred across all age groups and genders (children, youth, women, men, adults and the elderly). The National Climate Change Response Strategy also confirmed this high level of awareness on issues of climate change in the population. So, what is the problem then?

The problem we observe is that despite these high levels of awareness on climate change and its possible impacts, the population does not seem to be changing its behaviour to meet this challenge. The Environmental Management Agency (EMA) has at least 13 days in the calendar year dedicated to observing both international and national environmental days. The second week of May is devoted to a 'National Fire Week' just before the onset of the dry season when fires are common. Yet, the fires continue to rage and to destroy huge tracts of veldt and claim both human and animal lives (domestic and wildlife).

Steg and Vlek (2009) illuminated that the quality of the environment strongly depends on human behaviour. This view observes the importance of environmental psychology in promoting pro-climate change adaptive and mitigating behaviour. In the same vein, what is critical to the design and success of pro-environment behaviour change intervention programs is the thorough understanding of the individual and environmental (especially the socio-cultural) factors that impact adoption and motivation to perform these behaviours. A careful investigation of these factors will provide crucial information that should be taken into account in the implementation of these intervention programs.

Using a strong behaviour modification theory as a framework for determining such factors affecting acceptability, motivation, adoption and barriers of implementing evidence based comprehensive pro-environment behaviour change programs could be the answer. Such a national study will provide information linking climate change and our socio-cultural environment, as well as key individuals (e.g. stakeholders, traditional leaders, teachers, policy-makers, and targeted group members') attitudes, intentions, and behaviors related to climate change adaptive and mitigating behaviours. Information regarding these key factors and their linkages will fill critical gaps required for implementation of these programs, and will maximize the likelihood of success in their roll-out. We strongly feel that the information will help to identify the norms, salient beliefs, perceptions, attitudes and behavioral intentions the intervention programs should target for sustained behaviour change.

Chapter 8: Conclusions and Recommendations

Conclusions

This environment statistics report is a commendable start to the work of creating a one-stop environmental data base in Zimbabwe. Many areas of environment statistics have been identified and a significant amount of data has been collected as seen in the various chapters of this report. However, some issues still remain to be addressed, for instance, there are still some gaps in the statistics presented in this report which are a result of various factors such as:

- unavailability of the information due to non collection and/or unusable formats.
- lack of skilled manpower to collect the information.
- lack of financial resources.
- gross aggregation of the data that compromise its meaningfulness.
- lack of co-ordination where the information might exist in several institutions.
- lack of knowledge on existence of information.
- minimum involvement of the private sector and difficulties in accessing their information.

The gaps need to be addressed in future publications.

Recommendations

The following recommendations are made emanating from the FDES 2013 implementation:

- consistent funding for continual updating of the environment statistics database.
- strengthening the production of environment statistics by other institutions.
- availing funding for collection of environmental statistics in areas were gaps have been identified e.g. technological disasters, budgeting, etc.
- improving collaboration among the various institutions, including the private sector, collecting and using environment statistics.
- regular updating of the environment self-assessment tool.

Appendices

Appendix 1: List of Members

The following is a list of institutions and their respective members who participated in the production of this report.

***Zimbabwe National Statistics Agency* (ZIMSTAT)**

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Manasa Viriri (Chief Statistician)

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Mary R. J.Chari (Manager)

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Ministry of Environment, Water and Climate);

K. Mupandaguta (Principal Officer)

Veronica Gundu Jakarasa (Deputy Director)

E .Moyo (Principal Climate Change Officer)

Environmental Management Agency (EMA)

Maxwell Maturure (Principal Officer)

Alpha T Chikurira (Principal Officer)

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Isaiah Gwitira (Department of Geography and Environmental Science - Lecturer)

Tinashe Muromo (Lecturer)

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