

## THE REPUBLIC OF ZIMBABWE

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### Section 1: The political environment

In 1980, the black majority took over and renamed the country Zimbabwe after a civil war. Under the leadership of Robert Mugabe, the Zanu-PF led government has been in government since independence. Before the elections of 2000, Zimbabwe has been one of Southern Africa's most prosperous countries: it was the world's third biggest source of tobacco and a breadbasket for surrounding countries that often depended on food imports. The situation in Zimbabwe has been deteriorating in particular since the run-up to the parliamentary elections early 2000 and has developed from what was originally a political conflict into a very serious economic downturn and a humanitarian emergency, with serious implications for the neighbouring countries in the region.



The land redistribution campaign, which began in 2000, caused an exodus of white farmers, crippled the economy, and ushered in widespread shortages of basic commodities. The country's current challenges include the need to address political stalemate, the economic crisis and one of the world's highest rates of HIV/Aids infection.

The political situation has further deteriorated in recent months: political violence has increased mainly linked to by-elections, to mass actions called by the opposition Movement for Democratic Change, MDC, to the distribution of humanitarian aid and to the implementation of the fast track land reform.

### Section 2: Country characteristics

#### 2.1 Basic economic outlook

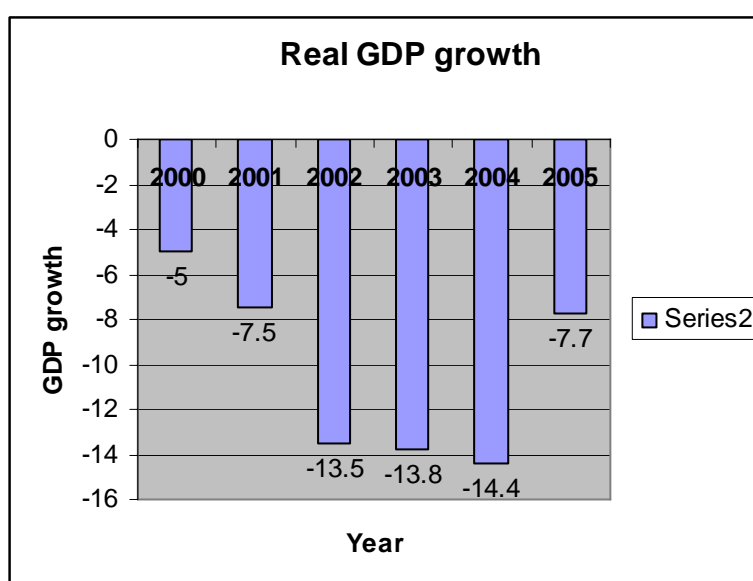
The economic picture is grim because of Government mismanagement, fast track land reform effects and drought. Unemployment affects 70% of the population. Growth decline of around 15% of GDP was experienced in 2004. The foreign exchange shortage is affecting heavily on fuel and electricity availability.

The health (extremely high HIV/AIDS infection levels affecting 30% of the adult population) and education systems can no longer provide basic services for the majority of the people. Erosion of professional skills is a major threat to the future resilience of the economy. Zimbabwe's traditionally good infrastructure (roads and energy and water supplies) is in decay and will require a large rehabilitation programme in the near future.

Badly needed support from the IMF has been suspended because of the government's arrears on past loans, which it began repaying in 2005. The official annual inflation rate rose from 32% in 1998, to 133% at the end of 2004, and 585% at the end of 2005 (1 285% in January 2007). Meanwhile, the official exchange rate fell from 24 Zimbabwean dollars per US dollar in 1998 to 96,000 in mid-January 2006. The government's land reform program has badly damaged the commercial farming sector, the traditional source of exports and foreign exchange and the provider of 400,000 jobs, turning Zimbabwe into a net importer of food products.

The following diagram represents the annual percentage growth rate of GDP in the country.

**Figure 2: Real GDP data for 2000-2005**



Source: OECD African Economic Outlook Report, 2006

**Table 1: Selected economic indicators of Zimbabwe**

BASIC ECONOMIC DATA	
GDP ((purchasing power parity)	\$25.69 billion (2005 est.)
GDP - real growth rate:	-7.7%
GDP per capita GDP - per capita (PPP)	\$2,100 (2005 est.)
Inflation Rate	266.8% official data; private sector estimates are much higher (2005 est.) 1285% in Jan 2007
GDP composition per sector	
agriculture	17.9%
industry	24.3%
services	Services: 57.9% (2005 est.)

Source: Compiled from CIA Fact Sheet and OECD Africa Economic Outlook Report

## 2.2 Demographic characteristics

The following table is a summary of the country's geopolitical characteristics of Zimbabwe.

**Table 2: Summary of geographic and demographic characteristics of Zimbabwe**

GEOGRAPHY	
Area	<i>total:</i> 390,580 sq km <i>land:</i> 386,670 sq km <i>water:</i> 3,910 sq km
Cities	Harare –capital, Bulawayo
Climate	tropical; moderated by altitude; rainy season (November to March)
PEOPLE	
Nationality	Zimbabwean(s)
Population	12,236,805
Religions	syncretic (part Christian, part indigenous beliefs) 50%, Christian 25%, indigenous beliefs 24%, Muslim and other 1
Language	English (official), Shona, siNdebele (the language of the Ndebele, sometimes called Ndebele), numerous but minor tribal dialects
Education (literacy)	90.7% (2003 est.)
Health (life expectancy)	<i>total population:</i> 39.29 years
Workforce	3.94 million (2005 est.)

Source: CIA Fact Sheet and Zimbabwe Government website

## Section 3: Science and technology system<sup>1</sup>

### 3.1 Governance of science and technology

#### 3.1.1 The National Science and Technology Policy of Zimbabwe

Zimbabwe formally launched its Science and Technology document in April 2002. The overall S&T policy objective is to promote national scientific and technological self-reliance. The policy suggests that this can be achieved by stimulating the generation of scientific and technological capabilities in all sectors of the economy. The institutional arrangements for effective monitoring, coordination and direction of R&D should be strengthened. The S&T policy document strongly recommends the promotion of R&D financing mechanisms that ensure adequate support for research of national importance. The Government of Zimbabwe has noted that while there were many institutions involved in science and technology, particularly in Research and Development in the country, most of them were pursuing R&D focused on personal or private institutional interests and not necessarily from the point of view of a collective national interest. There was, therefore, a need to harness all the scattered expertise and sectional interests, and coordinate them for the promotion and achievement of national interests.

<sup>1</sup> Sources: MSTD website, DPMN Bulletin: Volume X, Number 4, November 2003)

### 3.1.1.1 *The objectives of the S&T policy of Zimbabwe*

The overall objectives of the S&T Policy are:

- To promote national scientific and technological self-reliance by ensuring:
  - Rapid and sustainable industrialization through R&D that focuses on import substitution;
  - Adequate food production and shelter that utilizes appropriate and affordable technologies;
  - A good health delivery system that uses R&D to explore both modern and traditional medicines;
  - Environmentally sound development programs;
  - Provision of sufficient energy resources using Science and Technology to exploit renewable and non-renewable sources of energy;
  - Sustained employment creation.
  - Implementation of the S&T Policy Objectives

The implementation of the S&T Policy objectives is to be carried out within institutional arrangements past and present, and a resource base that initially has to rely on effective and efficient collaboration and strategic partnership and linkages.

### 3.1.2 *Institutional arrangements*

#### 3.1.2.1 *Ministry of Science and Technology Development (MSTD)*<sup>2</sup>

The launch of the Science and Technology Policy resulted in the creation of the portfolio of Minister of State for Science and Technology Development and the establishment of the Department of Science and Technology Development in the Office of the President and Cabinet in August 2002. The Minister of State for S&T Development administers the Research Act.

The first goal of the ministry is to be a facilitator for a science and technology driven economy. The second goal is to strategically coordinate and promote the systematic application of science and technology in support of national development through effective engagement of public and private sector partners.

The overall functions of the Department of Science and Technology Development are to:

- Coordinate the formulation of science and technology development policies;
- Coordinate science and technology issues across all sectors;
- Assist in the establishment and rationalization of centres of innovation and production of S&T in line with the Research Act;
- Assist in building capacity for the local production of specified import substitution goods;
- Promote public awareness of science and technology;

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<sup>2</sup>

- Promote Scientific and ICT literacy to enhance Zimbabwe's competitiveness in the global economy;
- Create databases on R&D done in Zimbabwe and for enhancing linkages and collaboration with regional and international counterparts;
- Develop a regulatory framework for science and technology.

The former Scientific Liaison Office and Secretariat to the Research Council of Zimbabwe (RCZ) are currently servicing the Department. The Department is working towards establishing a full staff complement and evolving into a fully-fledged Ministry.

### 3.1.2.2 *The Research Council of Zimbabwe*<sup>3</sup>

After independence (1980), the Government of Zimbabwe took a number of steps to strengthen science and technology-related institutions at both the policy- making/coordination level and at the level of human resource development. In 1984, the Government restructured and strengthened the Research Council of Zimbabwe, which was established long before independence as the Scientific Council of Rhodesia that had the following terms of reference:

- To undertake a review of the areas of research at present carried out in Rhodesia, to indicate other areas of research which, in the national interest, could be usefully investigated and suggest suitable lines of research within such areas together with responsibility of this research;
- To recommend ways and means whereby the above review can be carried out on a continuing basis;
- To keep under review those areas of science for which responsibility is not clear-cut and make recommendations there on;
- To provide, when required, advice on scientific priorities to the Treasury and the Ministry of Commerce and Industry;
- To advise Government on matters affecting overall national scientific policy.
- The 1984 restructuring of the Research Council of Zimbabwe expanded its role to include the following;
- To promote, direct, supervise and coordinate scientific and technological research in Zimbabwe;
- To provide for the establishment of research councils and institutes to conduct research;
- To advise Government on matters affecting overall national scientific policy and to vet foreign researchers.

The Research Council of Zimbabwe (RCZ) is therefore the central institution in respect of S&T policy formulation and coordination of S&T and R&D activities in Zimbabwe.

The operational arms of the RCZ are its standing committees and other committees in the following areas.

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<sup>3</sup> RCZ website

### *Standing committees*

- Agricultural Sciences: Promoting research and development, and the application of right technologies to boost the country's agricultural output.
- Natural and Environmental Sciences: Promoting research and development in natural sciences, environmental planning and conservation.
- Industrial Development: Promoting industrial support research in areas such as metrology and standardisation, biotechnology, microelectronics, and material sciences especially in relation to natural resources including conventional and renewable technologies in energy.
- Mineral Resources and Earth Sciences: Promoting research in improved techniques in mineral resources exploration, extraction and processing.
- Health Sciences: Promoting research in preventive health services, nutrition, sanitation, vaccines and pharmaceutical drugs development. Emphasis is on strengthening epidemic preparedness using epidemiology information systems, disease prevention and control strategies for top priority diseases such as HIV/AIDS.
- Science & Society: Promoting awareness and monitoring changes at the interface between science and society, educating public about the ethical aspects of the scientific practice, ensuring the principle of the University of Science and designing programmes of education and training in science, technology and society. The committee is also responsible for fostering science-society dialogue in government, industry, academia and civic society.
- Social Sciences and Humanities: Promoting compilation of base-line data for socio-economic, cultural and demographic indicators for appropriate planning and effective dissemination of new technologies.
- Informatics: Promoting use of information communication technologies, and advising on policies and procedures for selection, procurement, and application of common or compatible standards for data communication.
- Foreign Researchers: Assessing proposals and where appropriate, issuing of permits to foreign scholars and any person intending to carry out research in Zimbabwe on behalf of a foreign institution, foreign organisation or other foreign person.

### *Other committees*

1. Finances and Administration: The RCZ Finance and Administration Committee support research activities by way of promoting corporate governance. It also considers other financial issues as defined by the RCZ Board from time to time.
2. Grants and Awards: Promoting research and development through awarding of research grants for excellence in research and awards for recognition for contribution to research. The Committee also supports dissemination of research results through supporting publications of scientific journals.

#### *3.1.2.3 The Scientific Industrial Research and Development Centre (SIRDC)*

A notable institutional development in Zimbabwe has been the creation of SIRDC in 1993 and its seven constituent institutes. The mission of SIRDC, through these various institutes, is to provide a centre of excellence in research for the provision of science and technology leadership to the industrial sectors.

SIRDC houses seven institutes, namely:

- Biotechnology Institute
- Building Technology Institute
- Energy Technology Institute
- Informatics and Electronics Institute
- The Production Engineering Institute
- National Metrology Institute (NMI).

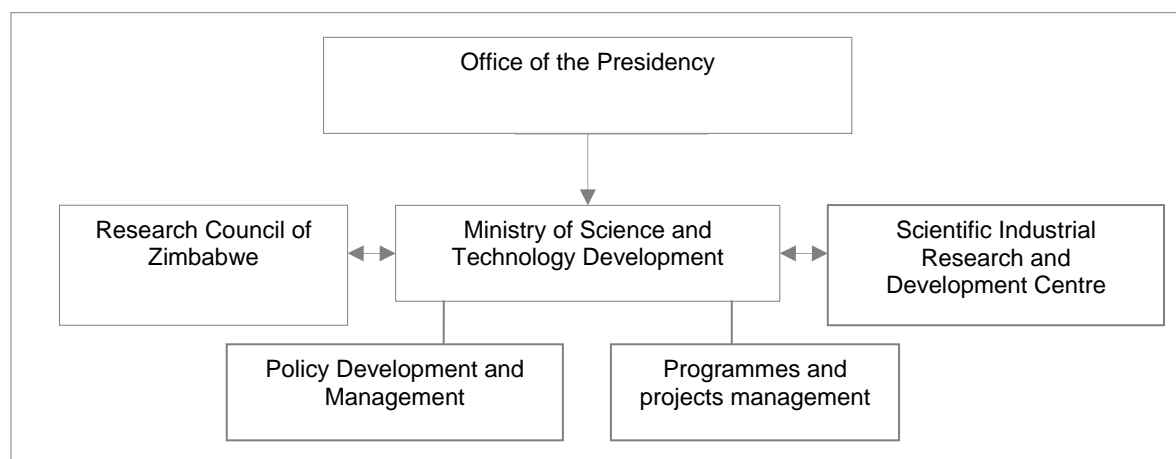
The institutes have developed various innovations, projects and equipment. The institutes have also made in-roads into availing their services to industry and the public sector, especially the Small and Medium and Scale Enterprises (SMES).

**Table 3: Stakeholders in the national S&T system of Zimbabwe**

INSTITUTION	KEY TASK /RESPONSIBILITIES
Ministry of Science and Technology	Creating an enabling environment for unlocking the scientific and technological resources in Zimbabwe
Research Council of Zimbabwe	It is mandated to promote, direct, supervise and co-ordinate research. One major function of RCZ is advising Government on issues of research for sustainable development
SIDRC	Centre of excellence in research for the provision of science and technology leadership to the industrial sectors.
Sectorial, ministries with research departments (agriculture, health),	responsible for sector specific research and development
The Zimbabwe Academic and Research Network	Government established, Internet Service Provider catering mainly for academic and research institutes, universities, colleges and schools in Zimbabwe
Zimbabwe Academy of Sciences	To promote national and international development by championing the acquisition and advancement of knowledge for application to sustainable development.

Source: Compiled by the Author from various sources

**Figure 3: Simplified illustration of the institutional arrangements in S&T**



#### 3.1.2.4 *Ministry of Agriculture*

The ministry of Agriculture is charged with promotion and sustaining a viable agricultural sector and to develop and manage land resources. This goal is achieved through the provision of appropriate technical, administrative and advisory services and to contribute to equitable and sustainable social and economic development in Zimbabwe. Within the ministry, the Department of Agricultural Research and Extension (AREX), was constituted in 2001 after the merger of the Department of Agricultural Research and Specialist Services (DR&SS) and a major portion of the former extension and technical department (Agritex). The department has 16 research and services stations and institutes, with various sub-stations under these to make 32 units.

#### 3.1.2.5 *Ministry of Health*

The overall purpose of the Ministry of Health and Child Welfare is to promote the health and quality of life of the people of Zimbabwe.

Under this department, the Public Health Laboratories collectively constituting the Ministry of Health & Child Welfare's major provider of Diagnostic Pathology Services to its hospitals, from district to central level, throughout Zimbabwe. In 1987, they were gazetted as the National Health Laboratory Services. The laboratories play a vital role in the clinical management of patients, as well as the epidemiological surveillance of infectious diseases such as TB, cholera and diarrhoeal diseases.

#### 3.2.1.6 *Other Institutional Players*

##### *Biosafety Board*

The Department of S&T Development also houses the Biosafety Board and staff. The Biosafety Board is a statutory board enacted through the amendment of the Research Act in 1998. Its role is to advise Government on all aspects of potentially harmful research and other undertakings such as the GMOs, to ensure that such research is done in a safe and responsible manner.

##### *The Zimbabwe Academic and Research Network*

In conjunction with the RCZ, the Department houses the Zimbabwe Academic Research Network (ZARNet), a Government established, Internet Service Provider catering mainly for

academic and research institutes, universities, colleges and schools in Zimbabwe as well as some Government departments and even private sector organizations and individuals.

The main objectives of ZARNet are to:

- Provide connectivity to Zimbabwean academic, education and research clientele;
- Facilitate access to information;
- Facilitate the sharing of databases and collaboration on research and education activities for the proper development of S&T and for the benefit of the nation, among other essential activities.

#### *Zimbabwe Academy of Sciences (ZAS)*

The Zimbabwe Academy of Sciences (ZAS), established in 2005, aims to promote national and international development by championing the acquisition and advancement of knowledge for application to sustainable development. The fellows of ZAS represent some of Zimbabwe's accomplished scientists elected from among leading scholars in life sciences, physical sciences and social sciences. ZAS is made up of three constituent colleges representing the main groups of scientific disciplines: College of Life Sciences, College of Physical Sciences and College of Social Sciences

#### *3.1.3 S&T priorities*

The Department of S&T has so far identified five priority areas for immediate attention through collaborative efforts with relevant and interested strategic partners, these are:

- Rapid industrialization;
- Import substitution focused R&D;
- Fast-tracking information and communication technology (ICT);
- Building human capital through science education,
- Popularizing S&T.
- Rapid Industrialization

The government of Zimbabwe recognizes that rapid industrialisation is possible if appropriate policy, implementation and incentive measures are put in place. Zimbabwe has set up the Scientific and Industrial Research and Development Centres (SIRDC) to achieve a faster pace of industrialization and the indigenization of the economy.

#### *3.1.3.1 Information Communication Technology (ICT)*

The government of Zimbabwe has demonstrated its commitment to ICT through the establishment of ZARNet. The Department has lined up projects to ensure that together with the Rural Electrification Program to get schools, hospitals, Growth Points connected and become part of the global E-World. In partnership with the National Economic Consultative Forum (NECF) and UNDP, will soon be having the e-week to begin the ICT sensitisation process.

#### *3.1.3.2 Building Human Capital*

Zimbabwe has immense potential human resource capital for S&T because of the high level of literacy, estimated to be 87.5% in 1995. The Department is looking at exploring innovative short and medium term mechanisms of improving various S&T knowledge and skills,

especially in the IT sector. The ministry is in the process of identifying Zimbabwe's niche in the global S&T market given this enormous intellectual creative potential.

### 3.1.3.3 *Popularizing S&T*

The Ministry has outlined various mechanisms and already started implementing some to make the Zimbabwean population aware of the importance and contribution of S&T to the Government and the economic recovery program. A few of these activities are:

1. Awards and grants to Zimbabwean inventors and researchers at all levels of society;
2. Establishment of S&T task forces at the provincial level to promote S&T and identify talent at local level;
3. Facilitating the establishment of at least 10 internet cafes at provincial level before the end of 2003;
4. Facilitating the establishment of Technology Parks;
5. Various media events.

## 3.2. *Science and technology landscape*

### 3.2.1 *R& D performing institutes and centres of excellence*

Much of Zimbabwe's research effort is conducted at the public universities and government sponsored research institutions. The two main universities are the University of Zimbabwe and the National University of Technology. The University of Zimbabwe, founded in 1955 at Harare, has faculties of agriculture, engineering, medicine, science, and veterinary science. The National University of Science and Technology, founded in 1990 at Bulawayo, has faculties of industrial technology and applied sciences.

The agricultural sector has a number of research institutions and the Agricultural Research Council that is headquartered in Harare and operates seven research institutes, eight research and experiment stations, and the National Herbarium and Botanic Garden administers the budget for agricultural research. In Harare, at the Blair Research Laboratory, simple, innovative technologies are being developed to improve Zimbabwe's water supply and sewage disposal. Other research organizations, all in Harare, include the Geological Survey of Zimbabwe, the Institute of Mining and Metallurgy, and the Public Health Laboratory.

### 3.2.2 *Centre of Excellence*

Through its various institutes, SIRDC is a centre of excellence in research for the provision of science and technology leadership to the industrial sectors.

The major science and technology performers in Zimbabwe are summarized in Table 4. This list is not exhaustive but lists the main research performers.

**Table 4: Present Science and Technology infrastructure –selected institutions**

NAME OF INSTITUTION	NAME OF INSTITUTION
<p>Educational Institutions:</p> <ul style="list-style-type: none"> <li>• University of Zimbabwe</li> <li>• National University of Science and Technology</li> </ul>	<p>Some of these Centres of R&amp;D and S&amp;T service Institutions are:</p> <ul style="list-style-type: none"> <li>• The Blair Research Laboratory</li> <li>• Institute of Mining and Metallurgy</li> <li>• Public Health Laboratory:</li> <li>• Geological Survey of Zimbabwe</li> <li>• Zimbabwe Resource Centre for Indigenous Knowledge</li> <li>• Institutions under SIRDC</li> <li>• Biotechnology Institute</li> <li>• Building Technology Institute</li> <li>• Energy Technology Institute</li> <li>• Informatics and Electronics Institute</li> <li>• The Production Engineering Institute</li> <li>• National Metrology Institute (NMI).</li> </ul>

Source: Compiled from various websites in Appendix A

### 3.2.1.1 Higher Education Sector<sup>4</sup>

The University of Zimbabwe, which started in 1957 as the then Federal University of Rhodesia and Nyasaland, has expanded greatly since independence (Maunde, R.). The University of Zimbabwe (UZ), comprising 10 faculties, presently offers degree programmes from BSc to PhD to more than 10 000 students. The UZ has several international links with leading universities, Associations, of Eastern and Southern African Universities and several other relevant organizations. Student population has increased from 2 240 in 1980 to 9 300 in 1990 and to 10 139 in 2001.

Besides the faculties, UZ is home to a number of institutions including the following:

- The Institute of Food, Nutrition and Family Sciences (IFNFS)
- African Languages Research Institute (ALRI)
- Computer Centre
- Centre for Defence Studies
- Centre for Population Studies
- International Association of Agricultural Students (IAAS)
- Institute of Environmental Studies (IES)
- Institute of Food, Nutrition and Family Science
- Institute of Developmental Studies

<sup>4</sup>

This section was taken from the International Network for Higher Education in Africa

- Institute of Mining Research
- Mineral Resources Centre
- Student Enrolment and Faculty

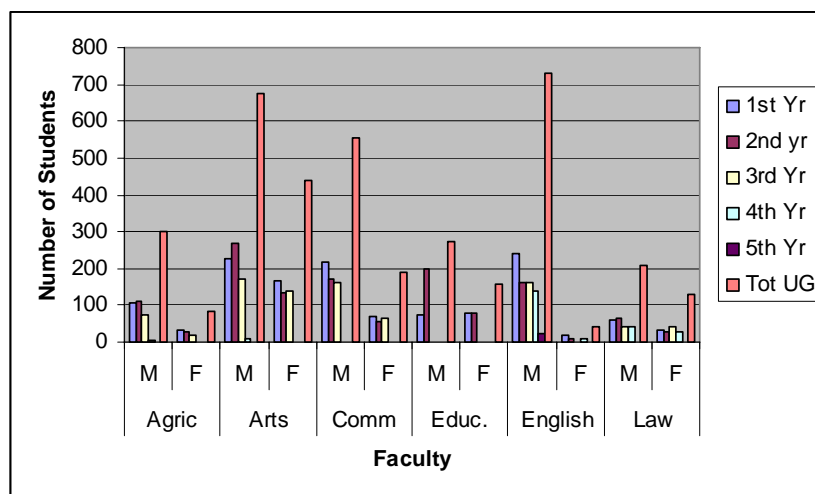
The overall student and faculty numbers increased year after year as indicated in the tables below. It is interesting to note that in the year 2000, male student enrolment dropped remarkably, while at the same time female student enrolment increased appreciably compared to previous years. The following table and charts show the enrolment in the University of Zimbabwe in 2000 (table 5a and 5b). The data is presented graphically in figures 4a and 4b.

**Table 5a: Enrolment at the University of Zimbabwe; 2000**

Faculty	Agric		Arts		Comm		Educ.		English		Law	
	M	F	M	F	M	F	M	F	M	F	M	F
1st Yr	107	33	227	167	216	71	74	78	241	20	62	32
2nd yr	113	28	269	136	173	54	200	80	161	11	63	29
3rd Yr	74	20	169	137	164	63			161		43	42
4th Yr	6		11						141	9	42	28
5th Yr									25			
Tot UG	300	81	676	440	553	188	274	158	729	40	210	131

Source: [http://www.Bc.Edu/Bc\\_Org/Avp/Soe/Cihe/Inhea/Profiles/Zimbabwe.Htm](http://www.Bc.Edu/Bc_Org/Avp/Soe/Cihe/Inhea/Profiles/Zimbabwe.Htm)

**Figure 4a: Number of students in Faculties**

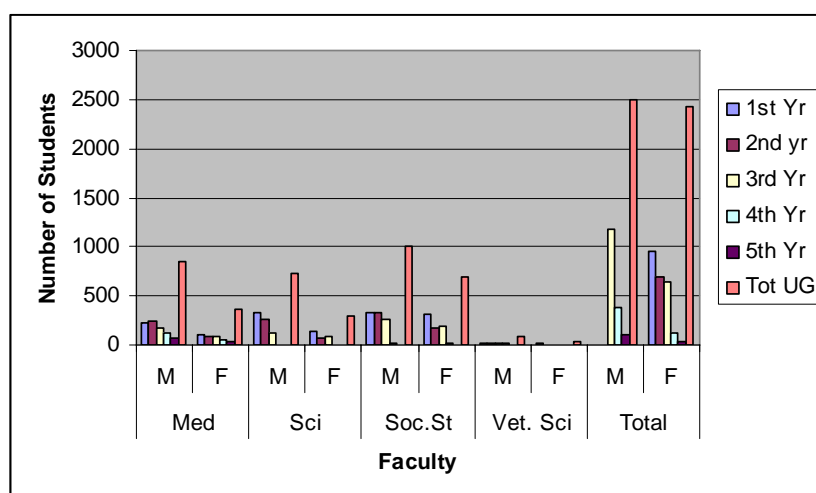


**Table 5b: Enrolment at the University of Zimbabwe; 2000**

Faculty	Med		Sci		Soc.St		Vet. Sci		Total	
	M	F	M	F	M	F	M	F	M	F
1st Yr	228	101	336	131	337	306	20	11	1 888	950
2nd yr	245	90	256	78	334	182	21	5	1 835	693
3rd Yr	171	94	127	83	256	197	21	6	1186	642
4th Yr	128	55	5	2	21	14	20	6	374	114
5th Yr	75	27					6	6	106	33
Tot UG	847	367	724	294	998	699	88	34	2489	2423

Source: International Network for Higher Education in Africa (INHEA)  
[http://www.bc.edu/bc\\_org/avp/soe/cihe/inhea/profiles/Zimbabwe.htm](http://www.bc.edu/bc_org/avp/soe/cihe/inhea/profiles/Zimbabwe.htm)

**Figure 4b: Student enrolment in faculties**



National University of Science and Technology (NUST) is a young university established by an Act of the Zimbabwe Parliament in 1991. Located in the city of Bulawayo in South West of Zimbabwe, NUST's mission is to provide an intellectual climate for knowledge in science and technology. As such, NUST is a centre of research, and has ties with universities on the African continent as well as the world.

At NUST, a Science/Technology Park was established within the university to facilitate technology transfer and commercialization of university research. The NUST Technopark is a multi-sector facility and the focus sectors are:

- Biotechnology
- Chemistry
- Electronics
- ICT

Table 6 shows the student enrolment at NUST between 1991 and 1999.

**Table 6: Student enrolment at NUST**

Faculty	1991	1992	1993	1994	1995	1996	1997	1998	1999
Applied Science	70	188	288	395	421	435	497	551	595
Architecture & Quantity Surveying	-	-	-	-	-	-	-	14	46
Commerce	92	210	318	446	508	570	680	793	888
Industrial Technology	101	151	221	277	339	354	387	459	518
TOTAL	263	549	827	1118	1268	1359	1564	1817	2047

[http://www.bc.edu/bc\\_org/avp/soe/cihe/inhea/profiles/Zimbabwe.htm](http://www.bc.edu/bc_org/avp/soe/cihe/inhea/profiles/Zimbabwe.htm)

### 3.2.2.2 Agricultural research institutes

Much of Zimbabwe's research effort is directed at improvements in agriculture. The government's budget for agricultural research is administered by the Agricultural Research Council and operates seven research institutes, eight research and experiment stations and the National Herbarium and Botanic Garden. Zimbabwe has earned a well-deserved reputation of agricultural research through its long established national agriculture research system. (Murwisi, Emmanuel W.)

The budget cuts introduced by the government since the 1990s have stalled progress in agricultural research. Most public institutions are in urgent need of financial resources to employ more personnel, and for improving laboratory facilities. Table 7 provides a list of the major research institutions in this sector.

**Table 7: Major agricultural research institutions**

CATEGORY	SUPERVISING AGENCY	NAME OF INSTITUTE	RESEARCH FOCUS
Government	Ministry of Lands, Agriculture and Water Development	Department of Research and Specialist Services (DRSS)	Crops, livestock
		Veterinary Research Laboratory (VRL)	Animal health
		Tsetse and Trypanosomiasis Control Branch (TTCB)	Animal health
		Institute of Agricultural Engineering (IAE)	Agricultural engineering
	Ministry of Natural Resources and Tourism	Aquatic Ecology and Fisheries Branch (AEFB)	Fisheries
		Forestry Commission: Forest Research Centre (FRC)	Forestry
		The Scientific and Industrial Research and Development Centre (SIRDC)	has a maize improvement project in its Biotechnology Research Institute
Non-profit	Pig Industry Board (PIB)	Experimental Farm	Pigs
	Tobacco Research Board (TRB)	Tobacco Research Station	Tobacco
	Agricultural Research Trust (ART)	Research Farm	Maize, sorghum, wheat, barely, soybeans, horticulture, groundnuts
	Seed Co-op Company of Zimbabwe Ltd	Rattray Arnold Research Station (RARS)	Maize
	Zimbabwe Sugar Association (ZSA)	Experiment Stations	Sugar
Higher Education	University of Zimbabwe	Faculty of Agriculture	Crops, livestock, soils, agricultural engineering, agricultural economics
		Faculty of Veterinary Science	Animal health
		Faculty of Science: Department of Biological Sciences	Plant protection, soil fertility, agro-forestry, livestock
	Forest Industries Training Centre	College of Forestry	Forestry
	Zimbabwe College of Forestry		Forestry

Source: ISNAR statistics Briefs, March 1995

### 3.2.2.3 *Medical and health research institutes*

The Medical Research Council of Zimbabwe (MRCZ) was established in 1974 in order to promote and regulate health research. The Government of Zimbabwe through the Ministry of Health and Child Welfare supports the MRCZ. The MRCZ is composed of scientists, medical experts, ethicists, patient representatives, and community representatives and depends on an annual grant from the Ministry of Health and Child Welfare as well as donations especially from international organizations such as WHO.

The MRCZ was established in order to, among other functions, provide independent guidance, advice, and decision on biomedical research conducted within Zimbabwe by all researchers and institutions, as well as ethical advice on issues presented to it by the Institutional Ethical Committees that exist within the various health institutions in Zimbabwe. The Medical Research Council of Zimbabwe undertakes the following specific tasks:

- To promote and coordinate the conduct of health research in Zimbabwe.
- To provide an ethical review and monitoring body to ensure the protection of the rights of the individuals involved in research as subjects.
- To provide guidance, advice, and decisions on specific research protocols intended to be conducted in Zimbabwe by all researchers and health institutions.
- To provide ethical guidance and advice on research programs undertaken by researchers within Zimbabwe.
- To provide training in research ethics to ethics committees, community members and research teams.
- To monitor and facilitate the functioning of Institutional Review Boards in the protection of human subjects of research.
- To promote all aspects of Medical Research hence ensuring maximum co-operation and co-ordination between individuals and groups undertaking research.
- To especially support with guidance and funding research devoted to the critical areas of health in Zimbabwe.

There are two medical schools in Zimbabwe. The first is the School of Medicine in the University of Zimbabwe in Harare and the second is Bulawayo Medical University that was introduced in 2001. Other health research organizations are shown in table 8.

Main institutions involved in medical and health research are listed in Table 8.

**Table 8: Major health research institutions**

CATEGORY	SUPERVISING AGENCY	NAME OF INSTITUTION	RESEARCH FOCUS
Government	Research Council of Zimbabwe	The Medical Research Council of Zimbabwe is a specialized council	Coordinating Health Research
	Ministry of Health	The Blair Research Institute comprises the Blair Research Laboratories in Harare and the De Beers Research Laboratory in Chiredzi	It is a centre to promote health development in Zimbabwe through scientific research
	Ministry of Higher Education	Universities of Zimbabwe	Medical Research and training
Bulawayo Medical University		Medical Research and Training	
Private	The Medical and Actuarial Research Foundation (MARF)		Promote medical and actuarial research
	WHO in Zimbabwe has operated the Joint Health Systems Research Programme for Eastern and Southern Africa.		It focused on improving primary health care by empowering all involved to make decisions on the basis of health systems research
NGO	The Biomedical Research and Training based in Harare		It oversees research projects which embrace biomedical and public health
	Research centres undertaking research The Training and Research Support Centre (TARSC)		Provides training, research and capacity support on public health issues
	Equinet, the Network on Equity in Health in Southern		Africa, is a network of research, civil society and health sector organizations

### 3.3 Human capital for S&T

#### 3.3.1 Higher education enrolment

Since gaining independence in 1980, the education system underwent major reforms to make it suitable for Zimbabwe in line with the principle of education for all adopted at independence in 1980. The first major reform was the unification of the separate education systems to remove anomalies and inequalities. In the first decade of independence, the reforms were quantitative in nature. The main institutions in Zimbabwe are summarized in table 9 below.

**Table 9: Number of institutions**

Type of institutions	2004	2005	2006
State Primary Teachers' Colleges	7	8	8
Private Primary Teachers' Colleges	3	3	3
State Secondary Teachers' Colleges	3	3	3
State Polytechnics	8	8	8
State Industrial Training Centres	2	2	2
Private Industrial Training Centres	2	2	2
Private Technical Colleges	277	277	277
State Universities	7	8	9
Private Universities	4	4	4
Total	313	314	315

Source: <http://www.zimembassy.se/health.htm>

Table 10 shows the number of University graduates from the institutions in 2003 and 2004.

**Table 10: University graduates 2003 and 2004**

Universities	2003	2004
Africa University	180	208
Bindura University of Science Education	104	28
Catholic University	37	37
Chinhoyi University of Technology	392	229
Masvingo State University	166	198
Midlands State University	450	1628
National University of Science and Technology	563	673
Women's University in Africa	0	74
Solusi University	332	332

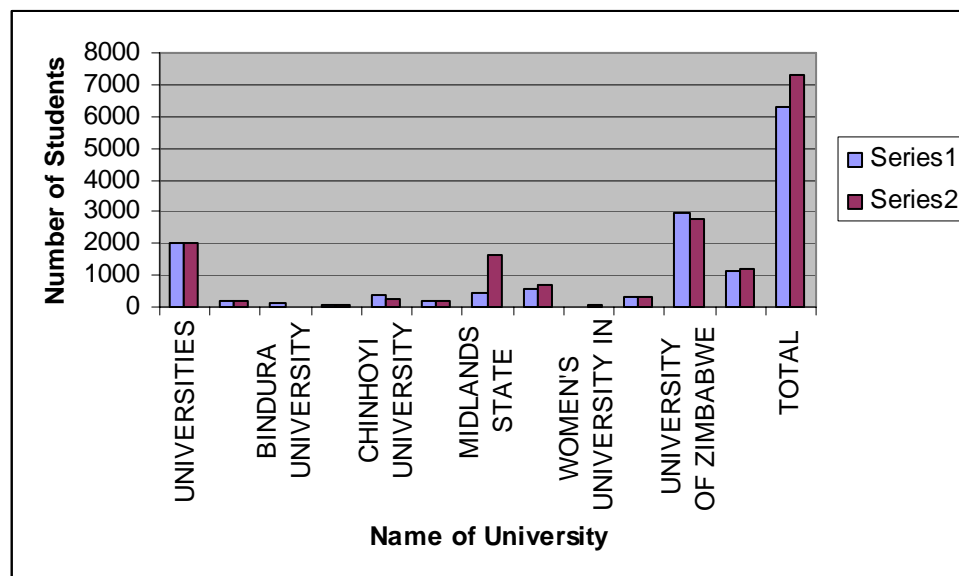
Table 10 Continued

Universities	2003	2004
University of Zimbabwe	2945	2746
Zimbabwe Open University	1144	1180
Harare Institute of Technology	Enrolled first intake in 2005	
Lupane State University	Enrolled first intake in 2005	
Total	6313	7333

Private universities are Africa University, Solusi University and Women's University in Africa and Catholic University. The rest are state universities

Source: Source: <http://www.zimbabwese/health.htm>

Figure 5: Number of graduates in 2003 and 2004



### 3.3.2 Masters and doctoral enrolments

Information not available

### 3.3.3 Size of the science workforce

The report by Gaillard et al that was published in the UNESCO science report of 2005, estimated that Zimbabwe has 1 100 staff in higher education and 600 full time researchers in 1999. Most of the researchers are in the public sector and the number of researchers in the private sector is negligible (0=negligible). At 30 researchers per million inhabitants, Zimbabwe has the lowest figure compared to the countries in the table.

**Table 11: Comparison of the science workforce of Zimbabwe with selected countries**

Country	Staff in Higher Education	Researchers fulltime in the Public sector	Researchers fulltime in the private sector	FTE researchers	Researchers per million inhabitants
Kenya	1 800	600	0	1 000	35
South Africa	17 000	8 500	5 000	13 000	350
Tanzania	1 400	0	0	600	70
Tunisia	9 000	800	400	3 000	350
<b>Zimbabwe</b>	<b>1 100</b>	<b>300</b>	<b>0</b>	<b>600</b>	<b>30</b>

Source; UNESCO Science Report, 2005

### 3.3.4 Human and institutional capacity development strategies

When Zimbabwe gained its independence in 1980, the majority of its people did not have access to quality schooling. Most only finished seven years of primary schooling (Mumbengegwi, Samuel Creighton). During the first 25 years of independence, the government in partnership with local communities, made great strides in the building of schools, teacher training and resource improvement. As a result, Zimbabwe boasts of one of the highest literacy rates in sub-Saharan Africa.

The drive for relevant and quality education is further manifest in the recent Presidential Commission on Education and Training of 1999 that recommended a wide range of education reforms with primary focus on the teacher education, the sciences, technology and skills. The programs that have been integrated into the education system mainly at teacher education level are intended to promote the global theme of "learning to live together". These are Population Education, HIV/AIDS Education; Reproductive Health; and Guidance and Counselling.

Other programs like the Informal Sector Training and Resource Network (ISTARN) and Youth Skills Training Program (YSTP) are designed to empower and produce skilled work force. Thus, education, knowledge and technology are harnessed to improve the lives of all and for poverty eradication. There is a sustained drive for the computerization and networking of tertiary institutions through the Educational Management Information System (EMIS). The country is moving towards a computer-based higher education system.

#### 3.3.4.1 Brain Drain

'Brain drain' is the main cause of "skills crisis" in Zimbabwe. The brain drain has accelerated in the last five years in Zimbabwe with most professionals going to countries such as Britain, Australia, New Zealand Canada, South Africa and Botswana. It is estimated that more than 1, 5 million Zimbabweans are outside the country with 500 000 being professionals. Universities have a challenge of retaining highly qualified lecturers by improving their salaries and conditions of service.

### 3.4 *Research and development funding*

#### 3.4.1 *Gross expenditure on R&D*<sup>5</sup>

Government and private-sector expenditure on research and development is only about 0,2 percent of the gross national product. A study conducted by SIRDC was undertaken to ascertain the extent of the brain drain from Zimbabwe. Universities' lack of transparency and accountability in money matters has been an intractable problem countrywide. A common complaint at several college and university institutions was that some authorities did not adhere to appropriate forms of division of labour, responsibility, accountability, and transparency in their administrative practice.

##### 3.4.1.1 *Funding and Resource Mobilization*

As a way of promoting R&D in the country, the government has approved the following incentives to industry and individuals promoting research:

- A Government budgetary allocation;
- A double deduction on expenses incurred on promoting research;
- Tax deduction on donations to R&D institutions of up to Z\$20 million (for 2003).

#### 3.4.2 *International donor funding*

International donor funding to Zimbabwe was \$186 m in 2004 and most of the funding was allocated to the Emergency, Health and Population and other social sectors. The UK, USA and EC were the top three donors between 2003 and 4. From the data that is provided, it is not possible to determine the amount that supported research and development.

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<sup>5</sup>

Source: Zimbabwe Herald. Published: 28/09/2005.

**Table 12 International donor funding**

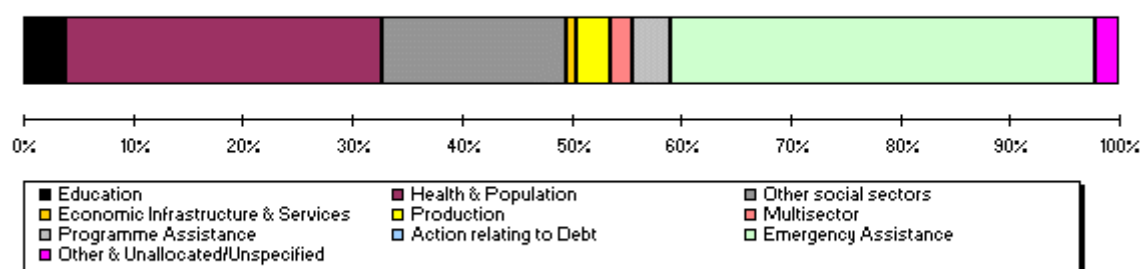
**Zimbabwe**

Receipts	2002	2003	2004
<b>Net ODA (USD million)</b>	201	186	186
<b>Bilateral share (gross ODA)</b>	83%	80%	78%
<b>Net ODA / GHI</b>	..	..	..
<b>Net Private flows (USD million)</b>	38	110	0

For reference	2002	2003	2004
<b>Population (million)</b>	13.0	13.1	13.2
<b>GHI per capita (Atlas USD)</b>	..	..	..

Top Ten Donors of gross ODA (2003-04 average) (USD m)	(USD m)
1 United Kingdom	54
2 United States	33
3 EC	31
4 Germany	14
5 Sweden	12
6 Netherlands	10
7 Canada	9
8 Norway	7
9 Ireland	5
10 Japan	4

**Bilateral ODA by Sector (2003-04)**



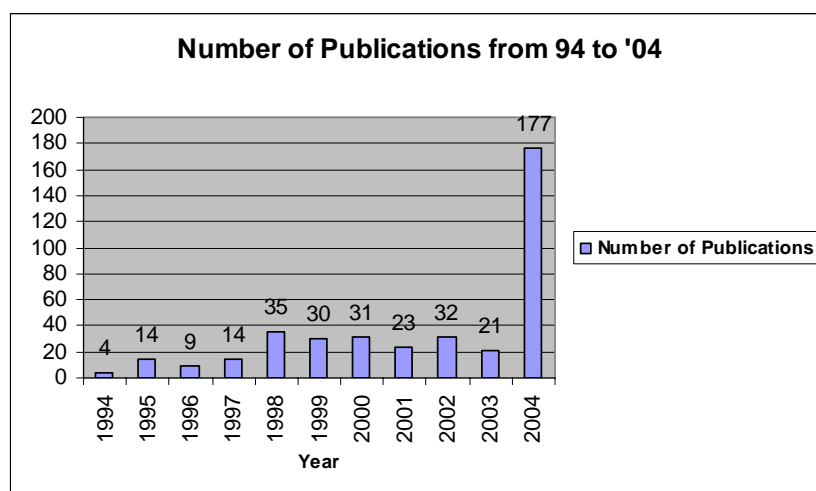
Sources: OECD, World Bank.

**3.5 Research outputs**

**3.5.1 Publications**

The scientific productivity of Zimbabwe was determined by analyzing the number of scientific publications in Zimbabwe indexed in the International Scientific Information (ISI) database from 1994 to 2004. From figure 6, the scientific publication output of Zimbabwe is quite low and very erratic. For reasons that are not clear, the number of publications in 2004 was 177 a considerable increase from the figure of 21 in 2003. It can be assumed that in previous years the publications might have been underreported.

**Figure 6** Number of science publications from Zimbabwe



The University of Zimbabwe accounted for most of the scientific literature output followed by the National University of Science and Technology .

### 3.5.2 Patents

Between 2000 and 2005, the USPTO registered three patents from Zimbabwe, which is not surprising given the country's investment in S&T. Zimbabwe is a member of WIPO and participates in the agencies efforts to build capacity in African countries.

**Table 13:** Patents granted to Zimbabwe

First-Named Assignee	2000	2001	2002	2003	2004	2005	Total
Individually Owned Patent	0	1	0	1	0	1	3

Source: USPTO

### 3.6 Concluding remarks

To compile this document, the author relied entirely on the internet as a primary source of information. Attempts to obtain the S&T policy from Zimbabwe through the RCZ were unsuccessful. Because of these factors, the S&T indicators of Zimbabwe are limited in this report making an in depth analysis of the country difficult. However, the report does provide a general overview of the S&T system of this country. Even with this limited information it is clear that the current political instability in the country and increase in loss of highly-trained scientists are impacting very negatively on the science system in Zimbabwe. Unless these conditions change, it is likely that we will witness a further deterioration in the S&T infrastructure.

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- Samuel Creighton Mumbengegwi Minister of Higher Education and Technology Source: Minister of Higher Education And Technology Zimbabwe UNESCO Learning Without Frontiers (LWF)

#### *Useful websites*

Ministry of Science and Technology Development	<a href="http://www.mstd.gov.zw/">http://www.mstd.gov.zw/</a>
Ministry of Agriculture	<a href="http://www.moa.gov.zw/">http://www.moa.gov.zw/</a>
Ministry of Health and Child Welfare	<a href="http://www.mohcw.gov.zw/">http://www.mohcw.gov.zw/</a>
Ministry of Higher Education	<a href="http://www.mhet.ac.zw/">www.mhet.ac.zw/</a>
Research Council of Zimbabwe	<a href="http://www.rcz.ac.zw/">http://www.rcz.ac.zw/</a>
	<a href="http://www.sirdc.ac.zw/">http://www.sirdc.ac.zw/</a>
Agricultural Research Council of Zimbabwe	<a href="http://www.arc.org.zw/">http://www.arc.org.zw/</a>
Medical Research council	<a href="http://www.mrcz.org.zw/">http://www.mrcz.org.zw/</a>
University of Zimbabwe	<a href="http://www.uz.ac.zw/">http://www.uz.ac.zw/</a>
national university of science and technology	<a href="http://www.nust.ac.zw/">http://www.nust.ac.zw/</a>
Zimbabwe Academic and Research Network (ZARNet).	<a href="http://www.zarnet.ac.zw/html/aboutus.html">http://www.zarnet.ac.zw/html/aboutus.html</a>

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