

## General Discussion of Zimbabwe

### ►Zimbabwe's profile

Located in the southern part of Africa and with cosmopolitan population of just less than 12 million people on a total area of 390 thousand square kilometers, Zimbabwe has a population density of 31 people per square kilometer. The country's economy is based on agriculture, mining and a well established manufacturing sector. It produces minerals like gold, iron & steel, chrome, copper, asbestos, nickel and lately platinum that are predominantly exported. The agricultural sector produces sugar, maize, cotton, tobacco, flowers, paprika and beef. The country's major imports are machinery and transport equipment (27.6%) [CSO Stats-Flash January 2001], chemicals (16.7%) and liquid fuels (19.5%) while on the other hand its major exports are tobacco, gold, asbestos, and other minerals [CSO Stats-Flash January 2001].

At attainment of independence in 1980, the government embarked on massive social investment in form of construction of new schools and rehabilitation of old schools, clinics, hospitals, electricity grid expansion, roads, service centers, etc. The overall effect of such social investment was a general improvement of the living standards in the country. Social statistics improved rapidly. Adult literacy figure rose from less than 50% in 1980 to 87.2% in 1998 [World Bank website]. The population growth rate for the period 1980-1990 was 3.3% while that for the period 1990-1999 was only 2.2%. In the period from 1990 to 1998, life expectancy declined from 56 to 51 years predominantly due to the effects of the AIDS scourge. The country's industrial base increased with FDI changing from 12 million US\$ in 1990 to 76 million US\$ in 1998 [World Bank Statistical Reports]. During the same period, the urban population as a percentage of total population rose from 28% to 34%. More socio-economic data on Zimbabwe are in box below.

#### **Box 1 : Zimbabwe Socio-economic Data - IEA**

1. GNP/capita (US\$)	688
2. Electricity consumption/pop. (kWh/capita)	910
3. Rural pop. with access to sanitation (%)	48
4. Urban pop. with access to sanitation (%)	99
5. TPES/GDP (toe/000 90US\$)	0.96

**Source : International Energy Agency**

General living standards for people improved drastically until the early 1990s when the government decided to implement IMF and World Bank funded economic reforms to attain a free market economy. The only evidence of these reforms today are rampant and abject poverty in the majority of the population, astronomically high unemployment, figure currently reaching 70%, and collapse of social services due to limited state funding. Most local industries could not compete on the international markets, thus they folded up resulting in massive retrenchments. Both micro and macro economic conditions in the country deteriorated. Yearly inflation rose from 20.5% in 1996 to 55.7% in 2000. The recent political problems primarily caused by the need to redress land distribution imbalances caused by the country's colonial past have worsened the economic conditions. Zimbabwe's FDI has been reduced by over 60% and inflation has rose to 115% [Reserve Bank Quarterly Review, 2002]. Associated environmental degradation resulted as people turned to the exploitation of natural resources for survival. The country's total value of external debt in 1998 was more than 4 billion US\$ with total debt service requirements of just under 1 billion US\$.

The government has however been always conscious of the need to protect the environment that sustains life, that is as per its documented policies. Economic benefits have however in some cases resulted in total disregard of the need to protect the environment. Several policy positions have been taken to try and encourage environmental protection. The National Conservation Strategy of 1997 sets out the objectives and targets set for the protection and sustained utilisation and development of the country's natural resources. Guidelines for Environment Impacts Assessments for all sectors are in place for use by project developers. Zimbabwe has a fragmented environment protection legislation, which is characterized by different pieces of legislation that also fall under different ministries. Concerted efforts are currently underway to try and formulate an all-inclusive Environmental Management Bill that will be enforced by a single body under a single ministry. It is envisaged that this move will ease a lot of environmental problems in the country like massive localised land degradation, air pollution, deforestation, land pollution, water pollution etc.

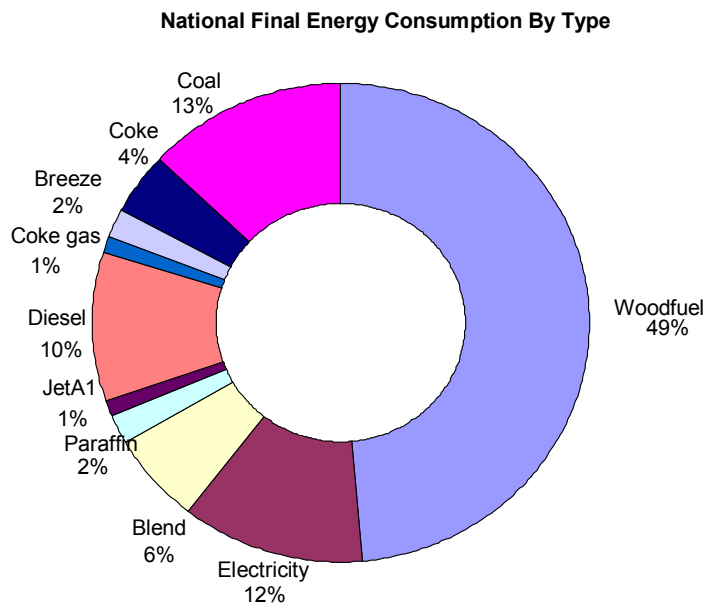
## ►Zimbabwe's Energy sector

The country's energy sector has several players whose roles and functions are given in the table below:

<b>Organisation</b>	<b>Role</b>
Ministry of Mines and Energy – Department of Energy (DoE)	Energy Policy Administration of the Electricity Act Petroleum product regulation Downstream coal activities Renewable energy development
Zimbabwe Electricity Supply Authority (ZESA)	Generation, importation, transmission and distribution of electricity.
National Oil Company of Zimbabwe (NOCZIM)	Fuel procurement and primary distribution Maintaining primary importation infrastructure
Petroleum companies (Shell, BP, ENGEN, Total-Fina-Elf, Caltex, EXXON, etc)	Importation and distribution of petroleum products Establish and maintain contracts and services to retail stations
Some agro-based industries	Private generation of electricity for their own needs
Independent Power Producers	Generation of electricity and selling to ZESA

The energy sector in Zimbabwe accounts for about 12% of public revenue mainly from exercise duties on liquid fuels. This sector, however, has a more significant share in national aggregate investment, foreign borrowing and debt. The country's major energy resources are coal, hydropower, biomass and solar energy. Coal bed methane exploitation is still in the planning stages. 48% biomass, 15% coal, 3% coke, 22% liquid fuels and 12% electricity account for the country's final energy supply of 290334 TJ. A total of about 280 PJ is consumed per year in Zimbabwe. The national energy consumption by fuel is as illustrated in figure 1 below. Biomass accounts for 50% of the energy used in while coal and electricity account for 13 and 12% respectively.

Energy consumption has grown at an average rate of about 3.5% per annum since 1990, which has exceeded GDP growth rate of 2.7% [Reserve Bank Quarterly review, 2002].



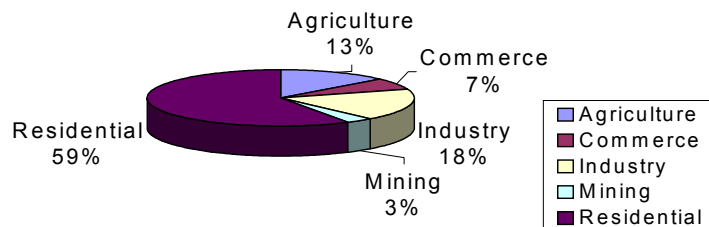
**Figure 1. Zimbabwe's Energy Use by Type.**

Woodfuel is the most important domestic fuel in the country. It is the major source of energy for cooking, lighting and heating for over 70% of the population. Apart from woodfuel, coal is the most abundant source of primary energy found in the country. Zimbabwe has 30 billion tonnes of probable bituminous coal reserves in 21 deposits of which *in situ* reserves are estimated at between 10 and 20 billion tonnes. Proven reserves can last for 107 years and total reserves for over 200 years at the present extraction rate of about 5,3 million tonnes per annum [Annual Report, Wankie Colliery, 2001].

Most liquid fuels are imported from the Middle East (30%) and Libya (70%) in refined form. The liquid fuels are predominantly diesel, gasoline, Jet A1, kerosene, aviation gas, LPG and ethanol. Gasoline and diesel are imported as finished products while some ethanol is produced locally. Electricity is generated locally at coal-fired Hwange Thermal Power Station [920MW], Kariba Hydro Electric power station [666MW] and three other coal fired thermal power stations at Harare [135MW], Bulawayo [120MW] and Munyati [120MW] [ZESA Annual Report 2001]. Electricity supply is augmented by imports from neighboring countries, which constitute 41% of the total. Renewable energy, excluding biomass, is also used albeit to a limited extent. To date Solar PV systems with a capacity of more than 1 MWe have been installed countrywide. About 200 biogas digesters have also been constructed in various communities in the country. Two sugarcane-crushing mills to the southern part of the country use more than 1.3 million tonnes of bagasse to generate electricity which is used in the sugar mills. Animal power is another very useful form of energy, which remains unaccounted for in the Zimbabwean energy mix because there is not a conventional energy measure. Informed estimates put the equivalent national animal power use in the agricultural sector at about 7 million litres of diesel annually [Southern Centre, 2000, Renewable Energy In Zimbabwe, barriers and potential].

## ►Sectorial Energy Use

Energy consumption in the various sectors in Zimbabwe is as shown in Figure 2 below.



**Figure 2 : Zimbabwe's energy use by sectors.**

The demand for energy comes primarily from residential (59%), followed by industry (18%), agriculture(13%), commerce (7%), and mining ( 3%). The high energy consumed in residential areas comes from woodfuel used with value of 127PJ annually.(*Zimbabwe Energy Bulletin 2001, 1998 Energy Balance*)

## ►Other Energy Related Developments

Zimbabwe's energy policy has five main objectives:

1. Ensuring accelerated economic development
2. Facilitating rural development
3. Promoting small-medium scale enterprises
4. Ensuring environmentally friendly energy development
5. Ensuring efficient utilisation of energy resources.

It is quite evident that the policy is sensitive to the developmental needs of rural areas and with only 18% of the rural population having access to electricity, the government has enacted a new piece of legislation that is targeted at accelerating rural electrification. Under the Expanded Rural Electrification Programme (EREP), it now becomes mandatory for the government, through the local utility Zimbabwe Electricity Supply Authority (ZESA), to allocate resources towards the widespread rural electrification drive without considering the economic merit of the grid extension. The vision of this programme is the total electrification of the country in order to expand the country's economic base. This policy position will see the provision of power to most rural areas thereby enabling them to initiate activities that create wealth. The long-term objectives of this programme are to:

- ◆ Improve accessibility of electricity by all rural communities
- ◆ Improve the quality of life through the delivery of modern social services like health, education etc.
- ◆ Stimulate investment in rural areas so as to create employment and increase incomes.
- ◆ Improve the general economic and social status of people in rural areas.
- ◆ Help reverse urban migration and energy-related environmental degradation.

The programme with a total budget allocation of US\$ 500 million will be implemented in several stages. The first stage will see the electrification of areas within 5km distance

from the network and then increase in 5km distances per stage up to stage 4. The last stage of the project will see the extension of the grid to areas more than 20 kms from the current network. Several financial packages have been put in place to aid rural projects access low interest capital to pay for grid extension. The results of this program have been impressive so far, within three months of the inception, more than 50 rural schools and homesteads have been electrified.