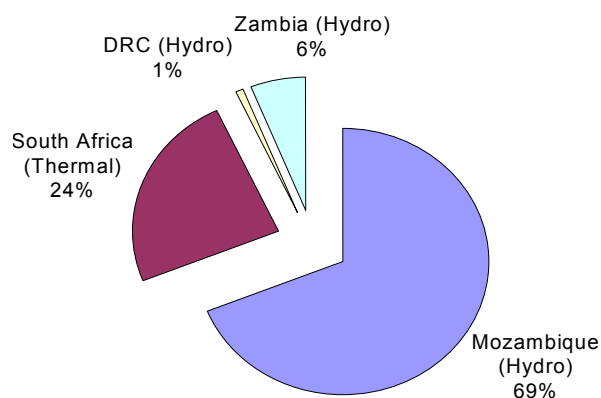


## Economic sustainability

### ►Indicator 5: Energy Resilience: Energy Trade

All liquid fuels used in Zimbabwe are imported. Although the country produces ethanol from molasse in the southeastern lowveld, it is all exported to generate the much-needed foreign currency. 41% of the electricity used is imported from other countries. Figure 3 below shows the distribution of the sources of electricity imports by Zimbabwe [DoE, Energy Bulletin 2001 – 1998 Energy Balance].



**Figure 3: Zimbabwe's electricity imports by source**

Of the country's total electricity imports of 4933 GWh, 24% was imported from South Africa, 69% from Mozambique, 6% from Zambia and 1% from the Democratic Republic of Congo (DRC) [DoE, 2001, Energy Bulletin, 1988 Energy Balance]. While the country cannot stop the importation of petroleum products since it does not have known resources in the country, there are plans of expanding locally available electricity resources. Projections by the national utility show that at current rates of demand growth and system development plans, the country will continue to have power deficit until 2011. It is envisaged that after 2012, the country will have developed adequate internal capacity to meet demand and even consider exporting power. Table 4, below, shows the utility's system development plans from 2005 to 2016. It is also important to note here that most of these plans are fossil-fuels based and the development of these plants depends on several factors so that 5 years down the line, the energy situation in the country may need a different plan.

**Table 5: ZESA's system development plans from 2005 to 2016**

Commissioning Year	Project (h- hydro, t-thermal)	Capacity	Demand (GWh)	Internal generation (GWh)	Surplus(+) or deficit (-) (GWh)
2005	Hwange 7&8 (t)	2*300 MW	14394	11482	-2912
2008-10	Gokwe North (t)	4*321 MW	15331	12892	-2509
2012-15	Batoka George (h)	4*200 MW	17184	17332	148
2017	Kariba South (h)	2*150 MW	18729	19052	323

**Source: ZESA Annual report 1999**

**Calculation of the vector:**

1. Total non-renewable energy imports in 1990 = 41853 TJ [DoE, 1998, Zimbabwe Energy Balance]  
in 1998 = 65392 TJ [DoE, 2001, Energy Bulletin-Zimbabwe Energy Balance1988]
2. Total non-renewable primary energy supply in 1990 = 133 416 TJ  
in 1998 = 198 227 TJ
3. The metric and vector is therefore equals: in 1990 = 0.314  
in 1998 = 0.33
4. Total renewable energy imports in 1990 = 3146 TJ  
in 1998 = 13495 TJ
5. Total energy consumption in 1990 = 139 945 TJ (commercial energy only)  
in 1998 = 290 447 TJ

**Discussion:**

A significant share of the country's current energy imports are non-renewable based. These are petroleum products and electricity from coal-fired thermal power plants in South Africa. The country's reliance on non-renewable energy will only be based on petroleum products only after 2015. This is because after this year, the country will be no longer importing electricity, as it would have developed adequate internal capacity to meet the projected demand then. While only 11% of the power from system development plans are renewable energy based, it is hoped that advances in technology especially clean coal technologies will help minimize potential greenhouse gases emissions from the power plants.

**►Indicator 6: Burden of Energy Investments**

The ever-increasing energy demand in the country has forced the government to invest substantially in the construction of coal-fired thermal power stations and the refurbishment of the hydro-based Kariba power plant. While these investments have not been on a year to year basis due to other social commitments, considerable amount of resources have been, to date, used up in these projects. The government through the local utility plans to build more of these plants to meet local demand utilizing locally available resources thereby mitigating the needs of foreign currency required to import cheaper electricity from the SAPP. The Gokwe North Power station, to be build in 4 phases, has an estimated cost of 1.4 billion US\$, the extension of the Hwange station will cost 630 million US\$ while the two hydro based plants the Batoka and Kariba south extension will cost 1.4billion US\$ and 280 million US\$ [ ZESA, 2000, Annual report 2001]. Although investment years for these plants have not yet been finalised, the magnitude of the figures reflects the kind of investment that will be made in non-renewable energy. The National Oil Company of Zimbabwe (NOCZIM) is now focussed on procurement, transportation and distribution, though to a very limited extent, of petroleum products in the country. Most of the distribution and transportation of oil to the country is now left to local and international oil companies like CALTEX, EXON, SHELL, BP, ENGEN, etc. Investment in ethanol production is no longer a national priority as the country is no longer blending since all the ethanol produced in the country is now exported to fetch the much needed foreign currency.

**Calculation of the vector:**

1. Government investment in non-renewable energy = 1998 = 800 million US\$  
[Estimated cost of Hwange upgrade – ZESA Research Unit].
2. Since the project will be spread over 3 years then we use 267 million US\$
3. Total gross domestic product (GDP) in 1990 = 8784 million US\$ [World Bank, 2001, Statistical Outlook]  
in 1998 = 6338 million US\$
4. Vector =  $267/6338 = 0.042 \times 10 = 0.42$

**Discussion:**

While the development of local power stations in Zimbabwe remain necessary, other factors come into play when they are implemented. Importation of cheap power from the SAPP will for a long time remain a medium-term measure for the country's power problems. With peace in the DRC in the making, the country may consider increasing cheap imports from that country, thereby further delaying capital investments in energy projects. The need for self-sufficiency in the power sector remains very critical to the country's development. This is very important given experiences of political problems in the region that have in the past caused rupture of supplies to the country.

The recent moves to restructure and commercialize ZESA have paid dividend to the country. ZESA has even become more profitable in Zimbabwean dollar terms than before and has enough resources to initiate various capital projects. Although that is the case, the overall shortage of foreign currency in the country has negatively affected the utility's credit position. The shortage of foreign currency has resulted in the parastatal failure to pay for power imported from countries like South Africa in the past. The government has however made a provision to use 40% of all foreign currency earnings to pay for energy imports i.e. electricity and petroleum products.