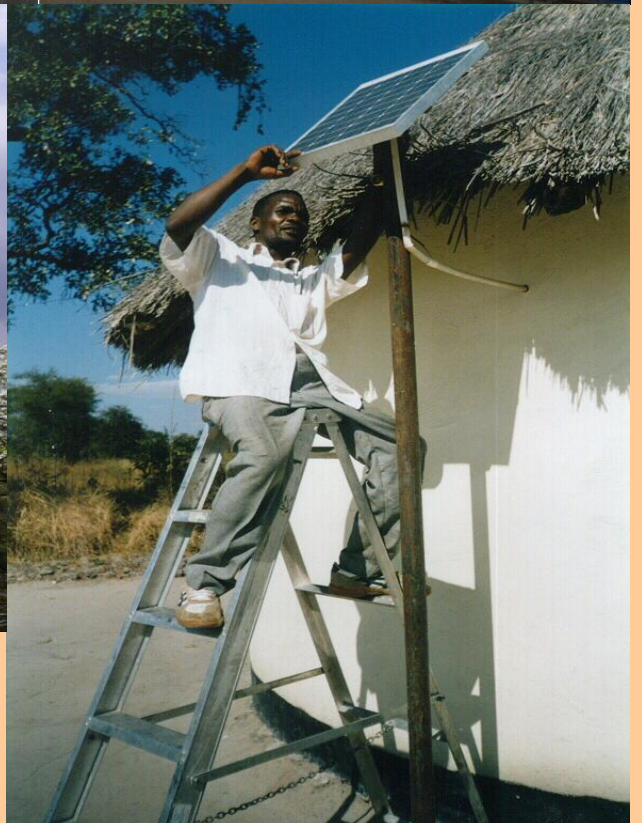


REPUBLIC OF ZAMBIA

# NATIONAL ENERGY POLICY



# May, 2008

# **NATIONAL ENERGY POLICY**

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2008

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## FOREWORD

The energy sector will continue to play an important part in the development process of Zambia. It is, therefore, important that the policy framework is always responsive to the ever increasing challenges not only in this sector but in the economy as a whole.

The 1994 National Energy Policy (NEP) sought to promote optimal supply and utilisation of energy, especially indigenous energy forms, for socio-economic development in a safe and healthy environment. It is clear that the essence of the 1994 policy objectives still remain valid though the social, political, environmental and economic situation has changed. The changes have prompted a review of the 1994 NEP and formulation of a new policy that takes into account the current situation in the economy and international environment.

The new policy sets out Government's intentions in the energy sector that are aimed at ensuring that the sector's potential to drive economic growth and reduce poverty is harnessed. The policy is, therefore, a guide to policy makers, decision-makers and development managers in the government, the private sector, Non-Governmental Organisations, civil society, on Government's intended actions in the energy sector.

The review of the 1994 NEP was undertaken through an extensive consultative process and this was key in ensuring that the views of all stakeholders in the country were taken into account.

In order to ensure that the policy is implemented as desired, an action plan will be developed which will be the implementation framework for this policy. It is my sincere hope that the policy document will be read widely and used as a guide to Government's intended actions in the energy sector.



Kenneth Konga, MP  
**Minister**

MINISTRY OF ENERGY & WATER DEVELOPMENT

2008

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## ACKNOWLEDGEMENTS

The review of the 1994 National Energy Policy and formulation of this new Energy Policy for Zambia was based on a consultative process involving all major stakeholders. Accordingly, appreciation is extended to all the stakeholders who took part in the policy formulation process. These included representatives from the following institutions:

- Traditional Leaders;
- Energy Consumers;
- Energy Utilities;
- Research Institutions;
- Cabinet Office;
- Provincial Administrations;
- All Government Ministries;
- Non-Governmental Organisations;
- Co-operating Partners; and
- Institutions dealing with different aspects of energy

Special thanks go to the Swedish Government for providing financial support and to the various consultants for their invaluable contributions regarding finalisation of the new policy document.

Furthermore, the participation of all media institutions and individuals who contributed to the development of this Policy is also acknowledged.

The successful implementation of this Policy will depend on the effective participation of those mentioned above and all the citizens of Zambia.



Peter Mumba

**Permanent Secretary**

**MINISTRY OF ENERGY AND WATER DEVELOPMENT**

2008

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## WORKING DEFINITIONS

### MEASUREMENTS

Gigawatt-hour (Gwh) = 1,000,000 Kilowatt-hour

Megawatt (MW) = 1,000 Kilowatts

\* Tonne Oil Equivalent (TOE) describes the energy content of one metric tonne of crude oil, which is equivalent to 41.87 Giga joules or 11,630 Kilowatt hours (kWh).

## CONVERSION FACTORS

Product	Specific Gravity	Heat Content GJ/Tonne
Arabian Light	0.858	42.62
Arabian Berri	0.86	42.62
Oman Blend	0.856	42.62
Iranian Heavy	0.87	42.62
Dubai Crude	0.856	42.62
Whole Naptha	0.697	43.96
Condensate (n.f.d.)	0.78	42.71
Crude (n.f.d)	0.78	42.71
L. P. G.	0.545	45.43
Regular Petrol	0.733	43.13
Premium Petrol	0.747	42.92
Kerosine	0.796	43.34
Jet A1	0.7965	43.34
L.S.G.	0.828	42.83
Diesel	0.8495	42.75
L.F.O.	0.9395	40.95
H.F.O.	0.949	40.82
Bitumen MC 30	0.93	42.71
Bitumen MC 80	1.022	42.71
Firewood		15.5
Charcoal		32.6
Coal (Zambian)		27.21

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## ACRONYMS

CDM	Clean Development Mechanism
CEEEZ	Centre for Energy Environment and Engineering Zambia
CSO	Central Statistical Office
DOE	Department of Energy
ECZ	Environmental Council of Zambia
EIA	Environmental Impact Assessment
EPPCA	Environmental Protection and Pollution Control Act
ERB	Energy Regulation Board
ESCO	Energy Service Companies
GDP	Gross Domestic Product
GWh	Gigawatt hour
HFO	Heavy Fuel Oil
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
KWh	Kilowatt hour
LFO	Light Fuel Oil
LPG	Liquefied Petroleum Gas
LSG	Low Sulphur Gasoil
LSFO	Low Sulphur Fuel Oil
MDG	Millennium Development Goals
MEWD	Ministry of Energy and Water Development
MFNP	Ministry of Finance and National Planning
MW	Megawatt
NDP	National Development Plan
NEAP	National Environmental Action Plan
NEP	National Energy Policy
NEPAD	New Economic Partnership for African Development
NGOs	Non-Governmental Organisations
OMCs	Oil Marketing Companies
OPPI	Office for Promotion of Private Power Investment
PRSP	Poverty Reduction Strategy Paper
PV	Photovoltaic
RE	Renewable Energy
REA	Rural Electrification Authority
REF	Rural Electrification Fund



RES	Renewable Energy Sources
RETs	Renewable Energy Technologies
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SPM	Single Point Mooring
STI	Sexually Transmitted Infections
TB	Tuberculosis
TNDP	Transitional National Development Plan
TOE	Tonne Oil Equivalent
VAT	Value Added Tax
VCT	Voluntary Counseling and Testing
ZCC	Zambia Competition Commission

## 1 INTRODUCTION

The first National Energy Policy (NEP) formulated in 1994 sought *to promote optimal supply and utilisation of energy, especially indigenous energy forms, for socio-economic development in a safe and healthy environment*. While the essence of the 1994 Energy Policy objectives remains valid, the social, political, environmental and economic situation has undergone significant changes. Moreover, through implementation of the 2002 Poverty Reduction Strategy Paper initiatives and other related programmes, there is a new awareness of the integrated nature of energy in economic development. This prompted a review of NEP (1994) in order to take into account recent changes not only in the energy sector and domestic economy but also the regional and international energy scenario. The review of the 1994 NEP was conducted through an extensive consultative process that encompassed a wide cross-section of individuals and institutions in the country.

The new policy sets out the Government's intentions aimed at ensuring that the energy sector's potential to drive economic growth and reduce poverty is harnessed. This policy document is, therefore, a guide to policy makers, decision-makers and development managers in the government, private sector, Non-Governmental Organisations, civil society, on Government's intended actions in the energy sector.

Some of the key issues that have emerged from the policy review include the need to recognise the cross cutting nature of energy. Critical social and economic services like health and education, transport and commerce cannot be efficiently and effectively provided in the absence of reliable and affordable energy services. The new energy policy further takes account of important issues such as the high incidence of poverty, the HIV/AIDS pandemic, gender, environment and household energy, rural electrification and the role of bio-fuels in Zambia's future energy mix.

This policy document is divided into six chapters. Chapter 1 is the introduction, while Chapter Two provides a critical review of the existing situation. The third Chapter outlines the rationale for reviewing the existing energy policy. Chapter 4 contains the vision and the guiding principles for the management of the energy sector. Chapter 5 indicates the policy measures required to achieve the set objectives, and the last Chapter outlines the mechanisms for effective policy implementation.

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## **2 SITUATION ANALYSIS**

### **2.1 Energy Situation in Zambia**

Zambia is endowed with a wide range of energy resources, particularly woodlands and forests, hydropower, coal and renewable sources of energy. Petroleum is the only energy source that is currently wholly imported.

#### **2.1.1 Biomass**

Biomass energy is the form of energy from organic matter such as wood fuel (firewood and charcoal), agricultural wastes, forestry waste, industrial/municipal organic wastes, energy crops & products and animal waste. Biomass energy, wood fuel in particular, currently significantly contributes to Zambia's total energy consumption. Other biomass energy sources such as biofuels are being promoted to take up a larger part in the nation's energy mix.

##### **2.1.1.1 Woodfuel**

Woodlands and forests are estimated to cover about 50 million hectares or 66 percent of Zambia's total land area. The main sources of woodfuel are natural woodlands and forests. Given the low income levels of energy consumers and the abundance of wood resources, it is foreseen that woodfuel (firewood and charcoal) will continue to dominate Zambia's energy consumption. In 2007, woodfuel accounted for over 70% of total national energy consumption. Households accounted for about 88% of woodfuel consumption. Cooking and heating are the major household uses of woodfuel. According to the Ministry of Energy and Water Development (MEWD) records, 60.9% of households use firewood for cooking and 24.3% use charcoal while only 13.8% use electricity. In rural areas, 87.7% of total households use wood for cooking, and 9.5% use charcoal while only 1.5% uses electricity.

Although there is no immediate woodfuel crisis in most parts of Zambia, woodfuel can no longer be considered as a renewable resource because consumption rates are exceeding yield rates mainly as a result of inefficient production and use and the increasing population. This is particular so in areas supplying woodfuel to urban centres. Woodlands meet both energy and non-energy needs. If current trends of woodland depletion continue an "*energy crisis*" that will affect the majority of the people is likely to occur in the near future. This is in addition to desertification, which is already threatening some parts of the country.

##### **2.1.1.2 Bio fuels**

Biofuels are from energy crops like sugar cane, sweet sorghum, cassava which are used to produce ethanol and jatropha and other vegetable oil bearing plants used to produce biodiesel. The utilisation of biofuels has now been recognised as a viable option of meeting some of the country's energy requirements considering the disruptions in petroleum supply which are often experienced on the international market. It is for this reason that world attention is now directed towards bio-fuels as an alternative to petroleum to ensure security of supply and stabilisation of fuel prices.

### 2.1.1.3 Gel Fuel

Gel fuel is an energy source obtained from sugar molasses. The plan is to promote gel fuel as an alternative to woodfuel use which has a negative impact on the environment.

### 2.1.1.4 Briquettes

Briquettes are small fuel bricks made from compressed material, often from agriculture residues, saw dust, waste paper, etc. The briquettes made from cow dung, coal and other agricultural residuals have the potential to meet domestic energy needs.

### 2.1.1.5 Biogas

Biogas is an inflammable gas which is 50-70% methane. It is obtained when organic matter is digested or fermented anaerobically (in the absence of oxygen) by micro-organisms. Biogas can be produced from human wastecattle, goat, sheep, poultry and pig manure, night soil, grass leaves, water weed and certain industrial wastes

## 2.1.2 Electricity

Electricity is the second most important energy source after woodfuel contributing 10% to the national energy supply. The country's hydropower resource potential stands at an estimated 6,000 Megawatts (MW), while the installed capacity is only 1,760 MW as indicated in the table below.

Table 1: Current installed Electricity Generation Capacity

No.	Description	Capacity (MW)	Type
1	Kafue Gorge	900	Hydro
2	Kariba North Bank	600	Hydro
3	Victoria Falls	108	Hydro
4	Lunsemfwa & Mulungushi	38	Hydro
5	Small Hydros	24	Hydro
6	Isolated Generation	10	Diesel
7	Gas Turbine (stand by)	80	Gas
	<b>Total installed capacity</b>	<b>1,760</b>	

Hydro power plants represent 99 percent of electricity production in the country with the major sources being Kafue Gorge, Kariba North Bank and Victoria Falls Power Stations. With a projected electricity demand growth estimated at 100 MW per annum, the country will experience a power deficit in 2008 and beyond. The country's electricity is predominately consumed by the mines (Figure 1) whilst only 22% of the population have access to electricity leaving the majority to depend on woodfuel and other traditional energy sources for their household energy needs.

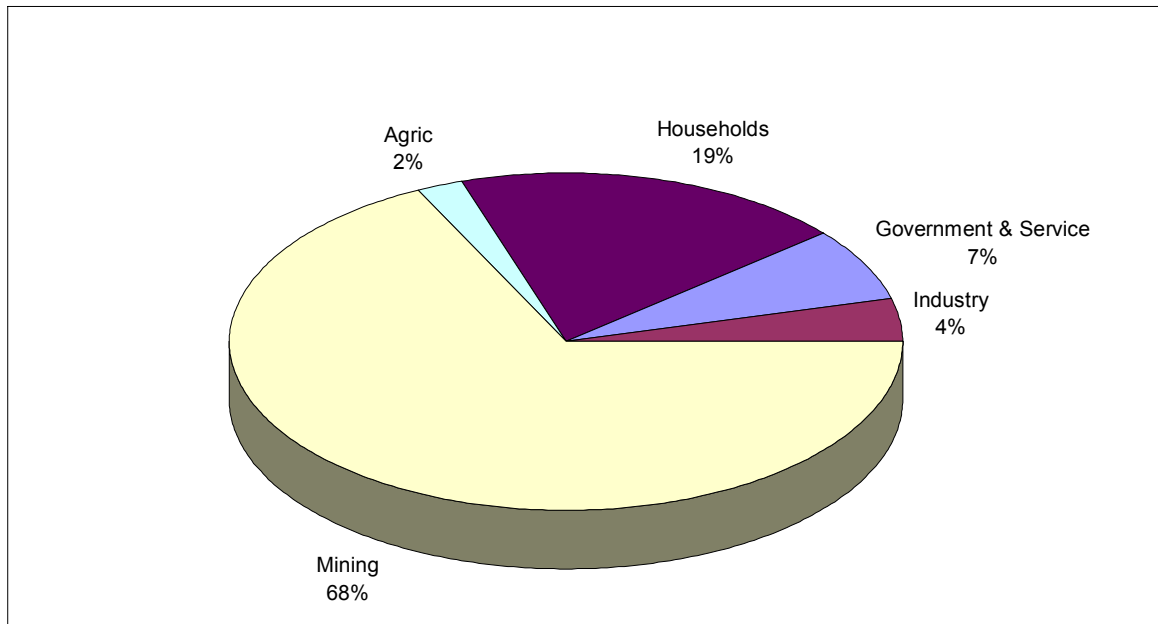


Figure 1: Electricity consumption by sector

Zambia's national power system, grid layout and interconnections with other countries are shown in Figure 2. The Zambian power system is a vital part of the Southern Africa Power Pool (SAPP) through interconnections at high voltage to several countries in the region. This factor and the potential to increase available hydropower places Zambia in a good position to export power and provide transmission services to other countries. However, an appropriate industry structure is required to facilitate private sector investment in electricity sector.

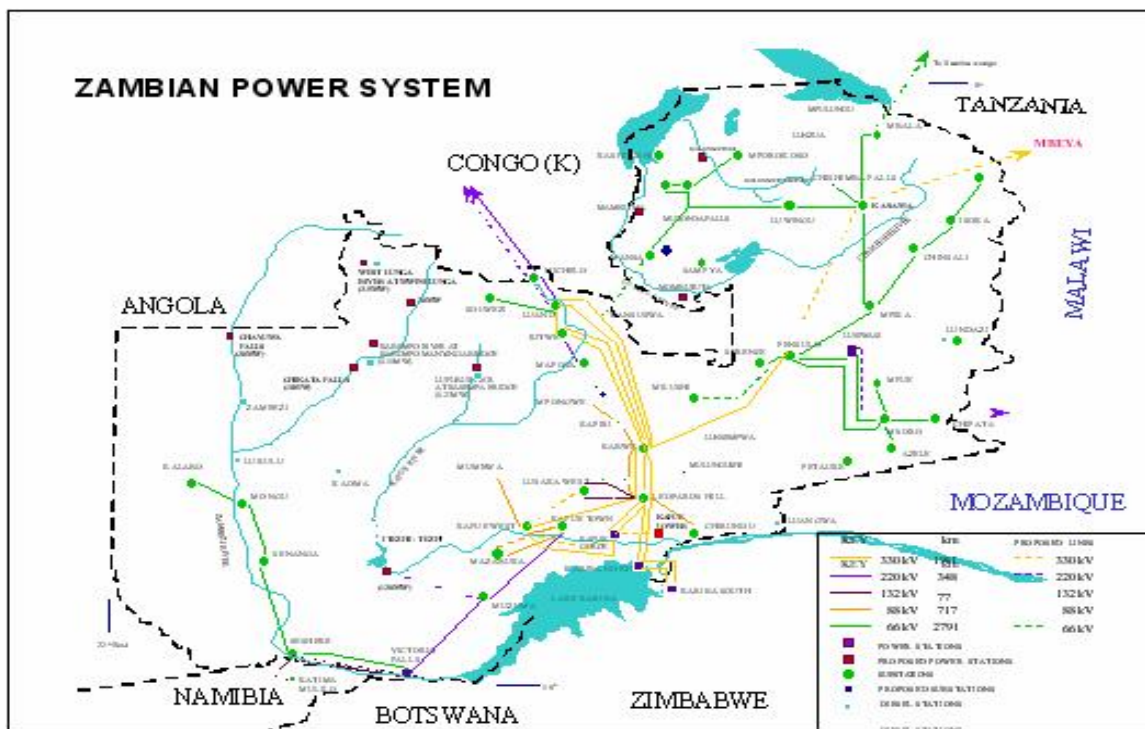


Figure 2: Zambian Power System, National Grid, and Interconnections

Source: ZESCO Limited, 2004

### 2.1.3 Petroleum

Zambia imports all its petroleum requirements which contribute 9% to total national energy demand. Petroleum is a key input in the mining and transport sectors on which trade and commerce depend. Established infrastructure for petroleum import and processing include the 1,706-kilometre pipeline which runs from Dar-Es -Salaam in Tanzania to Ndola, a Petroleum Refinery with a design capacity of 1.1 million tonnes per annum and the Ndola Fuel Storage Terminal.

The procurement of petroleum feedstock for processing at the refinery is done through international competitive bidding. The feedstock is transported through the pipeline to the refinery. The finished products are marketed and distributed by privately owned Oil Marketing Companies (OMCs).

In terms of petroleum consumption, the transport sector (53%) is the biggest consumer of the petroleum products followed by the mining industry (27%) as shown in Figure 3 below.

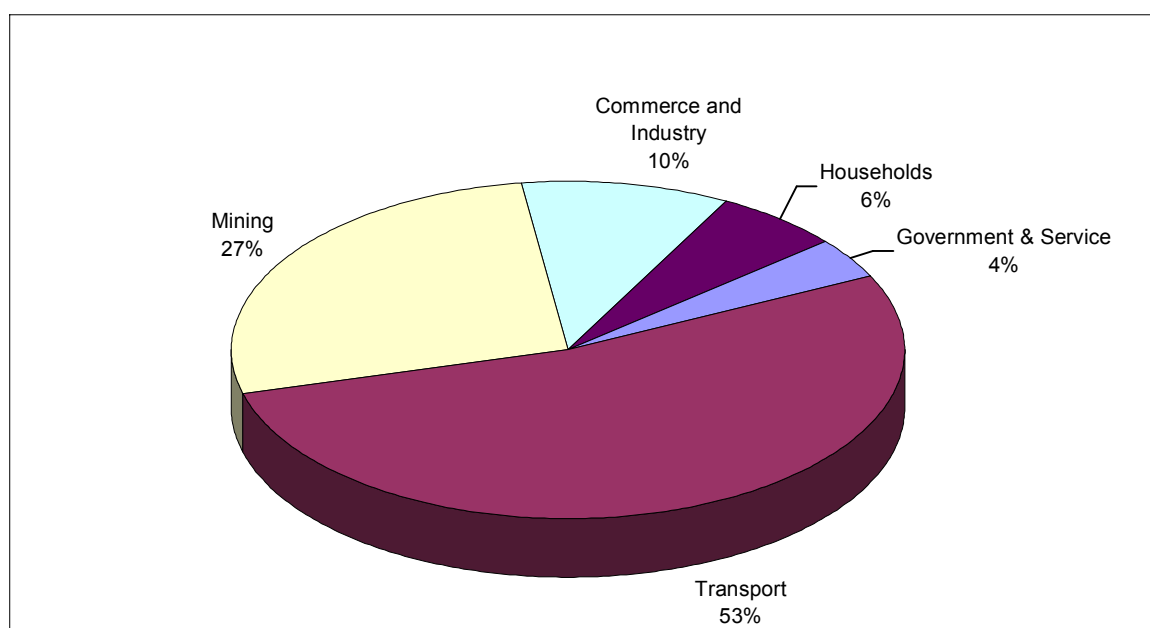


Figure 3: Petroleum consumption by sector

### 2.1.4 Coal

Proven coal deposits are estimated to be over 30 million tonnes. Probable coal reserves at Luangwa North, Luano, Lukusashi in the Luangwa Valley and Kahare, Chunga, Lubaba in the Western trough system are believed to be in the region of several hundred million tonnes though more exploration work is required to ascertain the exact nature and extent of the deposits.

Currently Zambia has two collieries namely Maamba and Collum. Maamba Collieries has a capacity of 1 million tonnes per year. However, despite the large reserves, the contribution of coal to total energy has been declining over the years due to lack of capitalisation in the industry which resulted in production constraints and also the shift in demand away from coal in the mining industry.

According to the MEWD 2005 statistics, the consumption of coal in Zambia is mainly by the mining industry (37%), commerce and industry (48%), and the government and service sectors (15%).

### **2.1.5 Renewable Sources of Energy**

Renewable energy sources are increasingly being used but still remain insignificant in terms of contribution to the total national energy supply. For the purpose of this policy, renewable energy sources include the following: solar (thermal and photovoltaic); minil/micro-hydro; biomass (agricultural wastes, forestry waste, industrial/municipal organic wastes, energy crops & products and animal waste); geothermal, and wind.

These sources have great potential for electricity production and use in many sectors. Despite this potential, in relative terms, Renewable Energy Technologies (RETs) and small-scale energy systems have high investment capital costs, which need guarantees of long-term stable income streams to ensure financial viability. Fiscal incentives and some form of smart subsidies would enable the development of renewable energy projects and make them financially attractive to private sector participation.

Data on renewable energy resources data is not readily available. While wood, petroleum and hydropower will continue to be the major energy sources, for a long time, Zambia's rich potential in these sources of energy needs to be exploited. Table 2 summarises the availability and potential for the utilisation of renewable energy sources and technologies.

The potential energy output for solar is 4.5 kWh/m<sup>2</sup>/day, which is a modest potential especially for limited irrigation. The potential off other Renewable energy sources require further elaboration and quantification.

Information on available renewable energy resources and technologies is elaborated in the following sections.

Table 2: Availability and utilisation of renewable sources in Zambia

<b>Renewable Energy Source</b>	<b>Opportunities/Use</b>	<b>Resource Availability</b>	<b>Potential Energy Output</b>
<b>Solar</b>	Thermal (water heating), Electricity (water pumping, lighting, refrigeration)	6-8 sunshine hours per day	5.5 kWh/m <sup>2</sup> /day (modest potential especially for limited irrigation)
<b>Wind</b>	Electricity, Mechanical (water pumping)	Average 2.5m/s	Good potential, especially for irrigation
<b>Micro-hydro</b>	Small grids for electricity supply	Reasonably extensive	Requires elaboration and quantification
<b>Biomass</b> (combustion and Gasification)	Electricity generation	Agro wastes Forest wastes Sawmill wastes	Requires elaboration and quantification
<b>Biomass</b> (biomethanation)	Electricity generation Heating and cooking	Animal waste Municipal and Industrial waste Waste water	Potential requires elaboration
<b>Biomass</b> (extraction, processing for transport)	Ethanol for blending with gasoline to replace lead as octane enhancer  Biodiesel as a blend or in stationary engines	Sugarcane Sweet sorghum Jatropha	Requires elaboration and quantification
<b>Biomass</b> (for household energy)	Improved charcoal production  Improved biomass stove	Sawmill wastes and indigenous trees from sustainable forest management	Reasonably extensive
<b>Geothermal</b>	Electricity generation	Hot springs	Requires elaboration and quantification

**Source:** Centre for Energy, Environment and Engineering (Z) Limited, 2004

### 2.1.5.1 Mini/Micro Hydro

Zambia has a number of potential sites on small rivers suitable for local small-scale power generation. The most promising sites for such development are in the North-Western and Northern parts of the country, because of the topography of the terrain, the geology of the ground, and high annual rainfall.

Suitable sites have been identified through studies on rivers with sufficient perennial flows. Based on these studies, the hydropower potential has been determined for some of the sites as indicated in Table 3 below.



Table 3: Some small-scale hydro potential

No.	River Basin	Site	River	Capacity, kW
1	Zambezi	Zambezi falls	Zambezi	to be determined
2	Zambezi	Chavuma falls	Zambezi	10-20,000
3	Zambezi	Sachibondo	Luakela	600
4	Zambezi	Mwinilunga	West Lunga	2,500
5	Zambezi	Kapembe	Kabompo	To be determined
6	Zambezi	Chikata falls	Kabompo	3,000
7	Kafue	Kasempa	Lufupa	230
8	Kafue	Mutanda	Lunga	400
9	Kafue	Kelongwa	Lunga	To be determined
10	Chambeshi	Chandaweyaya	Chambeshi	To be determined
11	Chambeshi	Mbesuma ferry	Chambeshi	To be determined
12	Chambeshi	Shiwang'andu	Manshya	1,000kW

### 2.1.5.2 Solar Energy

Various institutions such as Non-Governmental Organisations, Churches, the private sector and Government ministries such as Health and Education have been involved in the dissemination of solar energy technologies. The Government through the Ministry of Energy and Water Development (MEWD) has also incorporated the use of solar energy in the rural electrification programme. So far, 400 households have been installed with solar photovoltaic (PV) systems under the Energy Service Companies (ESCOs) pilot project in Nyimba, Chipata and Lundazi Districts of Eastern Province. In addition, at least 250 schools and Chief's Palaces in various parts of the country have been electrified using solar energy.

### 2.1.5.3 Wind Energy

At an average speed of 2.5 metres per second, the wind regime in Zambia can be used for water pumping for household use and irrigation. However, in areas where the wind speed is above 5 meters per second, the wind regime can be used for electricity generation.

Government has initiated pilot projects meant to promote the use of wind energy in water pumping for irrigation purposes.

### 2.1.5.4 Geothermal

Zambia has more than eighty (80) hot springs spread out in different parts of the country. Whilst the potential of most of the springs has not been examined in great detail, analysis of available data points to good prospects for exploiting geothermal reserves in most parts of the country.

At present there is no geothermal generation. However, following an initiative with the Italian Government in the mid 1980's, Kapisya Hot Springs in Northern Province was developed and 2 x 120kW turbines installed in 1987. Though the Kapisya installation is not operational, there are plans to revive the plant.

## 2.1.6 Energy Management

Energy Management refers to the control and use of energy efficiently in industry and domestic applications aimed at reducing energy consumption without sacrificing productivity or increasing costs. Presently there is very little being done in terms of energy management and this calls for more attention to be directed to this important issue during policy implementation.

## 2.1.7 Energy Pricing

Energy pricing is a fundamental tool for ensuring fair and equitable supply of energy. The prices of firewood, charcoal, coal and renewable energy technologies are currently market driven. The pricing mechanisms for electricity and petroleum are as stated below:

- a) **Electricity:** Bulk trade of electricity is determined by bilateral contracts. The parties to the contracts negotiate prices that are subject to the approval of the Energy Regulation Board (ERB). Retail supply to households, commercial entities and industry is governed by the Electricity Act. Currently retail prices include costs for generation, transmission, distribution and supply and are uniformly applied across the country. The prices are regulated in accordance with the Electricity Act and Energy Regulation Act.
- b) **Petroleum:** Currently the pricing formula includes the Refinery Gate cost, government taxes, ERB fees, fuel levy, transport, Oil Marketing Companies (OMC) and dealer margins. The retail pricing of petroleum products is largely liberalised with the role of the ERB being that of setting the wholesale price and monitoring compliance.
- c) **Other:** Liquefied Petroleum Gas (LPG) Heavy Fuel Oil (HFO), Light Fuel Oil (LFO), bitumen and Low Sulphur Fuel Oil (LSFO) are all petroleum products, whose pricing is currently set by the feedstock importer. The significant price variances between bulk supply and retail LPG are of major concern.

## 2.1.8 Institutional and Legal Framework

Government's liberalisation of various sectors of the economy at the beginning of the 1990s was the main driving force of the reforms and current institutional and legal framework in the energy sector that started with the NEP 1994. New laws were enacted to facilitate liberalisation and ensure consistency of practices in the energy sector with other sectors. In addition new institutions were also created through various laws and statutory instruments.

This policy seeks to review and rationalise the mandates, roles, functions and relationships of energy sector institutions in order to address their shortcomings. This will result in a clear separation of the functions of policy making and coordination of energy activities and operations; efficient regulation of the activities of energy sector players; energy project and programme implementation and financing energy projects and programmes.

The current legal and institutional framework in the various energy sub-sectors is as indicated in Table 4 below:

Table 4: Legal instruments governing the various energy sub-sectors

<b>Sub-Sector</b>	<b>Legal Instrument</b>
Biomass	<ul style="list-style-type: none"> <li>• Forestry Act</li> <li>• Environmental Protection and Pollution Control Act</li> <li>• Energy Regulation Act</li> </ul>
Electricity	<ul style="list-style-type: none"> <li>• Electricity Act</li> <li>• Rural Electrification Act</li> <li>• Water Act</li> <li>• Environmental Protection and Pollution Control Act</li> <li>• Energy Regulation Act</li> </ul>
Petroleum	<ul style="list-style-type: none"> <li>• Petroleum Act</li> <li>• Petroleum Production and Exploration Act</li> <li>• Energy Regulation Act</li> <li>• Environmental Protection and Pollution Control Act</li> </ul>
Coal	<ul style="list-style-type: none"> <li>• Mines and Minerals Act</li> <li>• Energy Regulation Act</li> <li>• Environmental Protection and Pollution Control Act</li> </ul>
Renewable Energy	<ul style="list-style-type: none"> <li>• Rural Electrification Act</li> <li>• Electricity Act</li> <li>• Energy Regulation Act</li> </ul>

### **2.1.9 Household Energy**

The Household sector is the largest consumer of energy, especially woodfuel. This energy policy seeks to reduce high consumption of woodfuel and dependence through sustainable provision of affordable, reliable modern energy to rural and urban households as a means of raising productivity and standards of living.

## **3 RATIONALE**

### **3.1 Revision of the National Energy Policy 1994**

The 1994 NEP played an important role in guiding developments in the energy sector and achieving several successes. One of its aims was ensuring that it was in line with the overall macro-economic policy objectives and providing for increased private sector participation. For example Government completely withdrew from marketing and distribution of petroleum products. However, the 1994 NEP policy did not address emerging cross-cutting issues such as the HIV/AIDS pandemic and its impact on the sector. Even more significantly there have been changes at sector level, domestic and international level which require addressing. Other factors that have necessitated the revision of the 1994 NEP include:

- The Government's recognition that men and women have different energy needs and requirements and respond differently to development initiatives. Therefore, mainstreaming gender into the energy policy becomes a critical tool for promoting efficient allocation of resources and also promoting equity.
- HIV/AIDS devastating impact in all sectors including the energy sector, making it necessary for this policy to address the issue of HIV/AIDS.
- The need to promote sustainable development through adequate measures that will ensure that environmental issues are taken into account.
- The government's desire to promote alternative energy sources such as biofuels and LPG. The diversification of the energy mix will facilitate increased provision of modern energy services. In addition the introduction of biofuels is expected to mitigate the high dependence on petroleum and its importation cost especially for the transport sector. The promotion of these energy sources requires a comprehensive legal framework.
- The new policy aims to encourage more players to be involved in the development of the electricity industry through an institutional and legal framework that will promote easier entry into the electricity supply industry both at producer, supplier and customer levels.

### **3.2 Macro-economic Policy Issues**

Energy is an important input in any production process. . This policy, therefore, will ensure that energy plays a critical role in poverty reduction and national development through its linkages to the other sectors of the economy. In order to improve the country's economic performance, Government has reverted to five-year national development planning. Currently the Fifth National Development Plan (2006 to 2010) is focusing on economic stabilization and support for programmes aimed at wealth creation.

### **3.3 Millennium Development Goals (MDG)**

Eight (8) United Nations Millennium Development Goals define the main areas of global concern that affect development objectives and related activities. The Revised National Energy Policy covers the socio-economic issues that impact on energy as provided under the Millennium Development Goals.

### **3.4 Vision 2030**

The Vision 2030 which articulates national sector goals and targets calls for sustainable implementation of social and economic development policies and actions. It is based on policy research of key national strategic issues and consultations with the private sector, civil society and general citizenry on the long term goals and the future of Zambia.

The vision provides the basis for interface by all sectors and direction for short and medium term plans. The vision will be made operational through the implementation of five national development plans beginning with the Fifth National Development Plan (2006-2010). In this respect this National Energy Policy has taken account of the objectives of the Vision 2030.

The formulation and implementation of this policy is expected to yield the following:

- Increased access to modern energy, particularly in rural areas through various energy options forms;
- Integrated development that will promote the cross-sectoral linkages between the energy sector and other key social and economic sectors such as agriculture, trade and industry, transport, information and communications technology, health and education, etc ;
- Security of supply of energy;
- Efficient production and utilisation of energy;
- Minimisation of the negative environmental and health effects of energy production, transportation and use;
- Reduced dependence on imported petroleum and switch to locally available energy supplies;
- Development of mutually beneficial co-operation in the energy sector with other countries and international organisations;
- Cost reflective pricing mechanisms; and,
- Increased utilisation of renewable energy.

## **4 VISION AND GUIDING PRINCIPLES**

### **4.1 Vision**

*The National Vision 2030 for the energy sector is as follows:*

*“To provide well developed, managed, reliable and sustainable energy services for the improvement of the quality of life of all Zambians”*

### **4.2 Guiding Principles**

The energy sector guiding principles are as follows:

- a) Development of appropriate energy technologies and resources to enhance socio-economic development;
- b) Reflect current and future energy supply needs of the country and account for differing energy needs of various users;
- c) Develop the human resource for effective implementation of energy programmes;
- d) Optimise energy efficiency at the production, transformation and end-use levels;
- e) Provide incentives to enhance the performance of the energy sector;
- f) Integrate energy development into national development interventions and strategies;
- g) Sector regulatory autonomy while ensuring efficiency and accountability in regulatory operations;
- h) Resource mobilization for development of the energy sector;
- i) Partnerships with the private sector, civil society and community groups;
- j) Participation of Zambian citizens in all aspects of the energy industry, including ownership structures.

## **5 POLICY MEASURES AND IMPLEMENTATION**

### **5.1 Overall Energy Policy Objectives and Measures**

The aim of this policy is to create conditions that will ensure the availability of adequate supply of energy from various sources, which are dependable, at the lowest economic, financial, social and environmental cost consistent with national development goals.

The policies in the various energy sub-sectors are highlighted in the sections that follow.

### **5.2 Biomass**

Biomass energy, in particular firewood and charcoal, agricultural wastes, forestry waste form the largest part of Zambia's energy mix and is the dominant household energy source. To improve the standard of living there is need to switch from these low quality energy sources to better quality energy resources such as electricity, petroleum products, biofuels and biogas which can be used as household fuels.

#### **5.2.1 Objective**

This policy seeks to ensure environmentally sustainable exploitation of the biomass resource by ensuring efficiency through better management and introduction of new sources such as bio fuels. The following are the policy measures for specific types of Biomass:

#### **5.2.2 Policy Measures and Strategies**

**a) Providing appropriate financial and fiscal instruments for stimulating the production and use of biomass through:**

- (i) Formulation of comprehensive and innovative financing mechanisms that will include smart subsidies, low interest loans, loan guarantees; and
- (ii) Provision of tax incentives and waivers on biomass energy capital equipment;

**b) Raising public awareness on the benefits and opportunities of other modern biomass energy sources and develop capacity for their implementation through:**

- (i) Provision of information to stakeholders (financiers, planners, politicians and general public) on the benefits and opportunities of biomass energy;
- (ii) Education and creation of awareness about the potential of biomass energy through dissemination of information regarding the economic, environmental and social benefits of biomass energy technologies and

applications;

- (iii) Supporting training institutions in the area of systems design, installation and maintenance;
- (iv) Development of biomass energy technologies, and providing agriculture support to farmers wishing to grow energy crops (such as *Jatropha*, sugar cane and sweet sorghum);
- (v) Building capacity in new biomass technologies, e.g. gasification.

**c) Develop the regulatory framework of Biomass through:**

- (i) Building the capacity of stakeholders and government authorities to regulate biomass sub sector;
- (ii) Establishing a coordinating mechanism between institutions responsible for energy, agriculture and forestry;
- (iii) Reviewing and amending appropriate legislation to cater for new biomass energy sources like biofuels

#### **5.2.2.1 Woodfuel (Firewood and charcoal)**

**a) Ensure better management of woodlands and forests as sustainable sources of woodfuel through:**

- (i) Working out management programmes for indigenous forest resources with stakeholders such as those in forestry agriculture;
- (ii) Training of technical staff and extension workers from wildlife, agriculture and forestry sectors; among others.
- (iii) Encouraging the establishment of forest plantations/wood lots in current or future wood deficit areas;
- (iv) Tree planting programmes to be organised by relevant institutions in the forestry and energy sectors;
- (v) Continuous monitoring of activities of the woodfuel industry such as price trends, volumes of production and consumption;
- (vi) Encouraging the supply of modern energy to small rural farmers and thereby increase the productivity of existing cropland and reducing the need to engage in slash and burn agriculture, one of the sources of deforestation; and
- (vii) Effective regulation of the woodfuel sector.

**b) Improve the technology of charcoal production and utilization through:**

- (i) Training of charcoal producers in better organisation and management of charcoal production using the traditional kiln method;



- (ii) Encouraging the adoption of other production techniques which are more efficient and cost effective;
  - (iii) Development of stoves that are efficient and convenient to users and which produce minimal emissions;
  - (iv) Ensuring that stove testing and certification is undertaken on all new designs coming on the market;
  - (v) Ensuring that information on emission levels and efficiency of stoves is disseminated to promote public awareness;
  - (vi) Facilitating participation of various stakeholders such as gender based organisations, non-governmental organisations, industry, researchers and other Government Departments in stove development and dissemination.
- c) Promote appropriate alternatives to woodfuel and reduce its consumption through:**
- (i) Encouraging the use of alternative renewable sources of energy; and
  - (ii) Encouraging the use of kerosene, LPG and millennium gel as household fuels and agricultural fuel for activities such as flue-cured tobacco as a means of reducing that industry's consumption of woodfuel.
- d) Encourage utilisation of agro, forest and sawmill residues for combustion and gasification through:**
- (i) The growing of woodlots; and
  - (ii) Promoting biomass combustion and gasification technologies.
- e) Improve revenue collection from the woodfuel industry through:**
- (i) The involvement of stakeholders such as traditional leaders, and Government Departments in revenue collection and appropriation.
- f) Establish community based woodfuel resource management systems through:**
- (i) Establishment of appropriate mechanisms for utilising money collected by the government through reforestation projects and establishment of woodlots; and
  - (ii) Harmonisation of woodfuel resource management with other existing community based natural resource management schemes.

### 5.2.2.2 Biofuels

The following are the policy measures for biofuels:

**a) Expand the role of biofuels in the national fuel mix through:**

- (i) The use of ethanol as a blend with petrol; and
- (ii) The use of bio-diesel as a motor fuel or blend with diesel and other productive uses like electricity generation.

**b) Ensure security of supply and stabilisation of prices of fuels by promoting the utilisation of bio-fuels for transport as an alternative to petroleum by:**

- (i) Supporting the growing of energy crops;
- (ii) Supporting investment in biofuels through appropriate incentives;
- (iii) Supporting the participation of Zambians in the biofuels industry as shareholders; and
- (iv) Ensuring that use of biofuels for the market is given priority without compromising food security and environmental sustainability.

**c) Ensure availability of data and information on market demand, resource assessment and applicability of biofuels by:**

- (i) undertaking studies on the economic feasibility of using biofuels;
- (ii) undertaking studies on needs/demand, resource and technology assessments of biofuels; and
- (iii) building capacity to monitor and regulate biofuel production and use;
- (iv) Building capacity in all institutions involved in the biofuels programme.

**d) Provide a legal and institutional framework for the biofuels sub-sector that:**

- (i) Providing a regulatory framework for the sub-sector;
- (ii) Defining the rules and guidelines for entry and exit into the sub-sector;
- (iii) Protecting local people involved in the sub-sector against exploitation;
- (iv) Ensuring security of investments in the sub-sector;
- (v) Making provision for other necessary actions intended to create a conducive environment for business in the sub-sector;

- (vi) Promoting participation of Zambians in the biofuel industry in accordance with national priorities;
- (vii) Providing a cost line in the price of petroleum products, i.e. 0.5% to be channelled towards the Biofuel Development Fund;
- (viii) Facilitating funding to local investors and farmers to promote equity participation in the biofuels programme;
- (ix) Protecting the environment against invasive species;
- (x) Providing for waste disposal;
- (xi) Ensuring that Environmental Impact Assessments(EIAs) for all major biofuels projects;
- (xii) Ensuring that existing biofuels ventures undergo EIAs;
- (xiii) Ensuring that allocation of land for biofuels is done with regards to possible negative impacts of energy crops and alien species on the environment; and
- (xiv) Ensuring production of Biofuels is done under correct environmental management frameworks.

**e) Support investment in the Biofuels industry through appropriate incentives, standards and research through:**

- i. Provision of Biofuels incentives in line with existing national frameworks;
- ii. Introducing tailor-made incentives for the biofuel industry;
- iii. Provision of standards for energy crops, biofuels quality and blending ratios;
- iv. Ensuring biofuel standards are developed in line with the provisions of existing legal frameworks;
- v. Registering plant material for biofuels with responsible regulatory agencies;
- vi. Supporting research and development into all new/ alien species of energy crops and their cultivation cycles/process before being widely promoted;
- vii. Promoting research to determine which type/species of energy crops would give the best quality and yield of biofuels;
- viii. Provision of funds and support to research and development of breeding, testing and agronomy of plants suitable for biofuels; and
- ix.** Stimulating research and development into the innovation and appropriate

local technology for the extraction and processing of biofuels.

### **5.2.2.3 Other Forms of Biomass Energy Resources**

The following are the policy measures for other biomass energy resources

- a) Promote other forms of biomass energy as alternatives to woodfuel use by:**
- (i) Investigating the production and utilisation of briquettes to satisfy energy needs;
  - (ii) Promoting the use of gel fuels as a household energy;
  - (iii) Promoting the use biogas as a source of energy for cooking, lighting and other uses; and
  - (iv) Building capacity of project implementers in biomass gasifiers and other technologies.

## **5.3 Electricity**

Electricity peak demand has outstripped existing supply. Future mining developments will put further pressure on existing generation capacity. The hydropower resource potential stands at 6,000 megawatts while installed capacity which is 99% hydro based is only 1,760 while the national access rate to electricity is a mere 22%.

### **5.3.1 Objective**

The policy seeks to expand generation and transmission capacity and also increase access to electricity.

### **5.3.2 Policy measures and strategies**

Consequently the policy measures and strategies to achieve the above objective are highlighted below:

- a) Increase generation and transmission capacity for local and regional markets by:**
- (i) Encouraging the development of identified potential hydro sites through transparent mechanisms, taking cognisance of the public interest;
  - (ii) Promoting new sources of power generation including coal powered plants, co-generation and gasification.
  - (iii) Promoting local and foreign investment;
  - (iv) Promoting private sector involvement in generation and transmission;

- (v) Encouraging the need for developing diversity in generation and transmission;
- (vi) Promoting the need for increased interconnection with neighbouring states in accordance with NEPAD and SADC objectives to achieve regional optimisation;
- (vii) Adopting an open-access transmission regime;
- (viii) Developing a policy framework for transmission pricing keeping in mind the objectives of open access and increased export and trade;
- (ix) Adopting cost reflective tariffs; and
- (x) Developing and implementing a licensing regime that is compatible with an open access regime.

**b) Improve accessibility and service delivery to households, Small & Medium Scale Entrepreneurs (SMEs) through:**

- (i) Enacting appropriate legislation for public and private sector investment and participation in the power sector;
- (ii) Application of smart subsidy mechanisms (transparent, targeted, practical and benefit-based subsidies); and
- (iii) Developing isolated grid systems with cost reflective tariffs

**c) Improve accessibility and service delivery to agriculture, tourism, manufacturing, mining and other commercial activities by:**

- (i) Reinforcing and rehabilitating the distribution system in order to enhance quality of supply, increase efficiency and reduce cost;
- (ii) Providing electricity to farm blocks, new mines and other industrial consumers;
- (iii) Promoting the use of electricity for irrigation where it is economically feasible and in agro processing; and
- (iv) Providing electricity access to social services like schools and health centres.

**d) Improve Legislation and institutional framework through:**

- (i) Reviewing/enacting appropriate legislation for investment in the power sector; and
- (ii) Strengthening the capacity of institutions in the energy sector and

**e) Enhance collaboration between industry, learning and training institutions through:**

- (i) Upgrading the testing, training and research infrastructure in line with technological developments in the electricity sub-sector;
- (ii) Building capacity of people involved in the energy sector; and
- (iii) Promoting knowledge transfer of new technology and practices.

## **5.4 Petroleum**

Petroleum is wholly imported and subject to ever increasing international prices and uncertain supply. The high cost of petroleum imports affects the costs of production and development programmes.

### **5.4.1 Objective**

The policy seeks to ensure an adequate, reliable and affordable supply of petroleum products at competitive and fair prices and also the reduction in importation costs.

### **5.4.2 Policy Measure and Strategies**

**a) Enhance security and cost effectiveness of supply of petroleum by:**

- (i) Attracting investment in the exploration and development of hydrocarbon resources;
- (ii) Facilitating the acquisition of geological and geophysical data for assessing the petroleum potential of the country;
- (iii) Building capacity in the relevant institutions to monitor and regulate petroleum exploration and development;
- (iv) Diversifying the shareholding structure in the petroleum refinery to include other investors;
- (v) Establishing and maintaining strategic stocks of feedstock and refined products ;
- (vi) Enhancing regional cooperation in the importation of petroleum to improve security of supply;
- (vii) Accessing alternative international sources of petroleum supply as well as alternative procurement and pricing mechanisms to reduce cost and supply vulnerability;
- (viii) Facilitating the blending of petroleum products with biofuels like biodiesel and ethanol;
- (ix) Effective management of the Single Point Mooring (SPM) through Government-to-government cooperation between Zambia and Tanzania;

- (x) Increasing petroleum, infrastructure capacity including storage facilities;
  - (xi) Rehabilitating the existing petroleum infrastructure and running them on commercial basis; and,
  - (xii) Ensuring that the pipeline continues to be governed, and operated as agreed between the Zambian and Tanzania Governments.
- b) To promote the participation of Zambians in the Petroleum Industry through:**
- (i) Ensuring that Zambians hold shares in OMCs and given priority to participate in all stages of supply, transportation, storage and distribution.
- c) Improve efficiency in the petroleum industry by:**
- (i) Ensuring full capacity utilisation of existing petroleum infrastructure; and
  - (ii) Encouraging investment in the modernisation of the petroleum infrastructure through appropriate incentives.
- d) Promote health and environmental safety in the petroleum sector through:**
- (i) Transitioning from leaded to unleaded petrol in line with regional and international commitments;
  - (ii) Promoting the use of bio-fuels as a fuel additives;
  - (iii) Ensuring the operations of the Refinery and Pipeline are environmentally friendly;
  - (iv) Formulating policy and standards on the quality of fuels including reducing sulphur content in diesel; and
  - (v) Ensuring retail outlets adhere to environmental, safety and service standards.
- e) Improve petroleum pricing by:**
- (i) Constantly reviewing petroleum pricing to reflect existing arrangements in the market;
  - (ii) Engaging in long-term supply contracts;
  - (iii) Ensuring full price deregulation and competition at the pump;
  - (iv) Setting up an incentive mechanism to mitigate high petroleum prices in rural areas; and
  - (v) Encouraging low cost petroleum retailing in rural areas.

**f) Ensure prompt response to and minimisation of possible emergencies and disasters by:**

- (i) Putting in place early warning systems and mitigation measures; and
- (ii) Regular reviewing of emergency systems.

## **5.5 Coal**

Despite the vast proven reserves, coal continues to play a minor role in the energy mix. Its use as an industrial energy source has declined over the years and there is currently no consumption of coal as a household fuel or for electricity generation.

### **5.5.1 Objective**

To increase the contribution of coal as an energy resource to enhance social and economic development, the following are the policy measures:

### **5.5.2 Policy Measures and Strategies**

**a) Stimulate the production and utilisation of coal by:**

- (i) Attracting local and foreign investment;
- (ii) Promoting the use of as a household energy;
- (iii) Commercialise the production of coal briquettes;
- (iv) Promoting the exploitation and use of coal bed methane;
- (v) Supporting the use of coal for electricity generation; and
- (vi) Developing separate legislation on production and exploitation of coal.

**b) Encourage further exploration of other coal deposits by:**

- (i) Strengthening the capacity of appropriate institutions in hydrocarbon exploration; and
- (ii) Developing appropriate incentives for coal exploration activities.

## **5.6 Uranium**

### **5.6.1 Objective**

The objective is to promote the exploitation of Uranium as an energy resource for social and economic development.



## **5.6.2 Policy Measures and Strategies**

### **a) Stimulate the exploration and utilisation of Uranium by:**

- (i) Supporting investigations into the use of Uranium as an electricity generating source;
- (ii) Promoting the exploitation and use of Uranium for social and developmental activities;
- (iii) Developing separate legislation on the exploration and utilisation of Uranium; and
- (iv) Attracting local and foreign investment.

## **5.7 Renewable Energy Sources (RES)**

### **5.7.1 Objective**

The objective of this policy is to address barriers to wider dissemination of RES and also to increase their deployment.

### **5.7.2 Policy Measures and Strategies**

#### **a) Ensure availability of data and information on market demand, resource assessment and applicability of Renewable Energy Technologies (RETS) by:**

- (i) Undertaking studies on needs/demand, resource and technology assessments of RETs; and
- (ii) Undertaking studies on the feasibility of producing and using biofuels (e.g., ethanol and bio-diesel)

#### **b) Strengthen the Institutional Framework for Research and Development, and promotion of RETs by:**

- (i) Establishing a co-ordinating agency for RETs;
- (ii) Developing a mechanism for integration of RETs with institutions involved in developmental activities;
- (iii) Integrating RETs policy in poverty reduction programs; and
- (iv) Strengthening the capacity of institutions working on RETs.

- c) Provide appropriate financial and fiscal instruments for stimulating the implementation of RETs through:**
  - (i) Formulation of comprehensive and innovative financing mechanisms;
  - (ii) Provision of tax incentives and waivers on renewable energy capital equipment; and
  - (iii) Ensuring that an equitable level of national resources is invested in renewable energy technologies.
  
- d) Continue promotion, enhancement, development and deployment of RETs through:**
  - (i) Encouragement and support of local systems design, assembly and manufacture of components of renewable energy technologies; and,
  - (ii) Promotion of the development and implementation of standards and codes for appropriate use of renewable energy technologies.
  
- e) Raise public awareness of the benefits and opportunities of RETs and develop capacity for their implementation through:**
  - (i) Creation of awareness and education about the potential of renewable energy through dissemination of information regarding the economic, environmental and social benefits of renewable energy technologies and applications;
  - (ii) Supporting training institutions in the area of system design, installation and maintenance;
  - (iii) Actively involve women in decision making and planning in renewable energy programmes and activities; and
  - (iv) Inclusion of basic principles of RETs in school curriculum.
  
- f) Promote renewable energy technologies for electricity generation through:**
  - (i) Encouraging research in utilization of available technologies; and
  - (ii) Encouraging pilot projects.

## **5.8 Rural Energy Provision**

### **5.8.1 Objective**

The policy seeks to increase access to affordable energy in rural areas to reduce poverty and promote economic growth.

## 5.8.2 Policy Measures and Strategies

### a) **Increase supply of cost effective energy for rural income generation activities through:**

- (i) Implementing measures outlined in the Rural Electrification Master Plan;
- (ii) Providing relevant subsidies for energy in rural areas;

### b) **Promoting the development of energy enterprises in rural areas by:**

- a. Providing appropriate incentives to rural energy enterprises;
- b. Providing technical information and support to rural energy entrepreneurs;
- c. Creating awareness among investors of Government programs to promote rural energy supply;
- d. Creating innovative micro-credit financial instruments; and
- e. Supporting applied research and development of modern energy services.

### c) **Integrate energy in development programmes by:**

- (i) Linking provision of energy services to income generating projects and programmes;
- (ii) Supporting training institutions to create awareness of the role of modern energy services in socio-economic development;
- (iii) Holding routine meetings to ensure that all government agencies coordinate their energy activities more effectively; and
- (iv) Mainstreaming gender in rural energy provision programmes.

### d) **Promote the dissemination and utilisation of modern energy services to rural households through:**

- (i) Specific provision of energy to home based economic activities in order to directly raise household incomes; and,
- (ii) Providing training and technical assistance to households to enable them to use modern energy for income generating activities.

## **5.9 Energy Management**

### **5.9.1 Objective**

The policy seeks to promote efficient use of energy resources, and substitution.

### **5.9.2 Policy Measures and Strategies**

#### **a) Promote efficient energy use practices in all sectors of the economy by:**

- (i) Mounting publicity campaigns on energy conservation;
- (ii) Encouraging energy suppliers to provide information to clients on the efficient use of energy technologies that they market;
- (iii) Encouraging institutions to develop energy conservation policies and programmes;
- (iv) Influencing policy on building designs code and construction approval in favour of those that require less energy for heating, cooling and lighting;
- (v) Encouraging the use of energy efficient equipment and other domestic appliances through physical demonstrations; and
- (vi) Encouraging research and development in energy efficient equipment.

#### **b) Substitute, wherever possible, local energy resources for imported ones by:**

- (i) Increasing the contribution of renewable energy in the country's energy mix;
- (ii) Promoting the blending of petroleum products with locally produced biofuels; and
- (iii) Encouraging the use of renewable sources of energy to meet some industrial, commercial and household energy needs.

#### **c) Popularise energy management through:**

- (i) Liaising with training providers to incorporate energy conservation concepts and practical activities in education curricula;
- (ii) Influencing policy on the development of appropriate infrastructure for less energy consuming transportation systems; and
- (iii) Encouraging the use of bicycles, public transport and other less energy consuming transport systems.

#### **d) Encourage the use of energy efficient equipment through:**

- (i) Promulgation of equipment and appliance standards;
- (ii) Provision of appropriate fiscal and other incentives; and

- (iii) Provision of technical information on energy savings and other benefits.

**e) Promote energy efficiency labelling and benchmarking by:**

- (i) Encouraging establishment of guidelines on performance standards of energy intensive equipment;
- (ii) Encouraging regular energy audits in industry, commercial and
- (iii) Strengthening consultancy services in the field of energy efficiency;
- (iv) Formulating and facilitating implementation of pilot projects and demonstration projects for promotion of efficient use of energy; and
- (v) Preparing educational curriculum on efficient use of energy and its conservation for educational institutions, boards, universities or autonomous bodies.

## **5.10 Household Energy**

### **5.10.1 Objective**

This energy policy seeks to reduce dependence on woodfuel and ensure sustainable provision of affordable, reliable modern energy services to rural and urban households as a means of reducing poverty and raising standards of living.

### **5.10.2 Policy Measures and Strategies**

**a) Promote substitution of woodfuel as a household fuel with alternative sources of energy by:**

- (i) Encouraging alternative fuels such as LPG and Gel fuel; and
- (ii) Wherever possible encourage people to grow and use energy crops.

**b) Promote energy conservation and substitution at the household level through:**

- (i) Provision of incentives to encourage energy conservation and substitution;
- (ii) Encouraging efficient end-use technologies and household energy practices; and
- (iii) Encouraging the use of renewable energy to meet some household energy needs.

**c) Promote the use of efficient cook stoves by:**

- (i) Providing innovative financing schemes designed to reduce the initial cost problem for low income households.

**d) Promote Coal and biomass briquetting as a household energy sources by:**

- (i) Setting up small and medium scale enterprises to develop briquetting technology;
- (ii) Encouraging Research and Development in briquetting of biomass, for example, bagasse, maize and cotton stalks, and by-products of milling and brewing processes; and
- (iii) Encouraging the use of briquetting products through practical demonstrations and pilot schemes.

## **5.11 Energy Pricing**

### **5.11.1 Objective**

To ensure that energy prices reflect costs of providing energy and also to take into account principles of fairness and equity.

### **5.11.2 Policy Measures and Strategies**

- (i) Promote the use of market prices where appropriate;
- (ii) where market pricing is not feasible or desirable, to ensure that mandated or regulated prices include allocation of costs among consumers according to the burden they impose on the delivery system;
- (iii) Promoting a reasonable degree of stability and avoiding large price fluctuations from period to period;
- (iv) Providing a minimum level of service to consumers who are unable to afford the full cost; ; and
- (v) where prices are administered (regulation or promulgation), provide a reasonable return on investment. .

## **5.12 Crosscutting Issues**

To mainstream cross cutting issues such as HIV/AIDS, gender and environment into the planning and implementation of energy programmes, projects and activities.

### **5.12.1 Gender**

**Objective** - The overall objective is to promote gender balance in energy planning, management and utilization to ease the burden of poverty on all vulnerable groups especially women and children, at household, community and national level.

Specific policy measures are:

**a) Enhance access and control of productive resources through:**

- (i) Ensuring balanced representation of men and women at all levels and in all spheres of energy development and management;
- (ii) Undertaking gender analysis in order to develop gender sensitive programmes;
- (iii) Promoting affirmative action where feasible to enhance the participation of women in the energy sector;
- (iv) Introducing energy in school curriculum and encouraging the girl child to participate;
- (v) Facilitating accessibility to the most appropriate sources of energy at minimum cost for the benefit of both men and women; and
- (vi) Promotion of research in gender and energy.

**b) Enhance women's participation in decision-making processes by:**

- (i) Meeting the target of 30% women representation according to the SADC protocol;
- (ii) Ensuring gender perspectives are taken into consideration in the design and implementation of energy projects and programmes;
- (iii) Increasing access of women to information, control, utilisation of resources, education, communication; and
- (iv) Conservation of safer and affordable forms of energy among vulnerable groups especially women.

**c) Promote links between energy activities and income generating ventures through:**

- (i) The reduction of capital contribution charged to vulnerable groups; and
- (ii) Provision of favourable payment terms for start up capital to vulnerable groups.

**d) Harmonize legislation on energy with regional and international instruments on energy and gender by:**

- (i) Ensuring that the existing local related policies and legislation are in conformity with regional and international instruments on gender and Energy; and
- (ii) Sensitising women on local, regional and international protocols on energy and gender.

### 5.12.2 HIV/AIDS

**Objective** – To maintain and strengthen existing programmes to minimise the negative impact of HIV/AIDS and reduce new infections in the energy sector.

Specific policy measures are:

**a) Reduce new HIV/AIDS infections through:**

Encouraging the introduction of preventive and support programmes of HIV/AIDS among members of staff at place of work and communities in which energy projects are implemented;

- (i) Intensifying and continuing HIV/AIDS awareness among staff of various energy institutions; and
- (ii) Increase access to modern energy services and reduce the vulnerability of women to infection.

**b) Promote healthy and positive living by:**

- (i) Extending support to people living with HIV/AIDS in the energy sector and in communities where energy projects are implemented; and
- (ii) Ensuring information on STIs / HIV/AIDS is disseminated to men and women on transmission and prevention and availability of remedial measures.

**c) Put in place an efficient and effective monitoring, evaluation and surveillance system by:**

- (i) Strengthening capacity of HIV/AIDS focal persons at the work place and in communities where energy projects are implemented; and
- (ii) Establishing reporting and feedback systems at places of work.

### 5.12.3 Environment

**Objective** - To ensure that all energy sources are produced, transported, stored and utilised in an environmentally friendly manner, the policy measures are aimed to address issues that include: the reduced consumption of wood fuel, increasing utilisation of renewable energy sources, reduction of Green House Gas (GHG) emissions from the energy sector and promotion of energy management as outlined above.



## **5.13 Institutional and Legal Issues**

### **5.13.1 Objective**

This policy seeks to review and strengthen existing institutions and legal framework.

### **5.13.2 Policy Measures and Strategies**

**a) Enhance corporate governance and accountability in Energy institutions through:**

- (i) Ensuring that boards of public energy institutions are composed of professionally qualified and competent individuals;
- (ii) Ensuring stakeholder representation and protection;
- (iii) Ensuring autonomy of board and management and
- (iv) Ensuring transparency in the conduct of public business.

**b) Create consumer and investor confidence by:**

- (i) Regularly reviewing the performance of the energy sector and introducing appropriate legal and institutional reforms to improve performance;
- (ii) Making the operations of regulatory bodies more transparent; and
- (iii) Publicising the regulations and operations of the regulatory bodies.

**c) Enhance economic competitiveness and efficiency in energy production, supply and delivery by:**

- (i) Ensuring autonomy of regulatory agencies in determining and interpretation of the provisions of regulatory obligations;
- (ii) Discouraging uncompetitive practices; and
- (iii) Ensuring compliance with provisions of the energy legislation and supporting laws.

**d) Facilitate the building of capacity in energy institutions through:**

- (i) Appropriate capacity building programmes; and
- (ii) Performance review of staff and institutions in the energy sector ; and
- (iii) Continuously improve the energy institutional and legal framework.

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## 6 INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION

### 6.1 Institutional framework

The effective implementation of the National Energy Policy will be greatly enhanced through the participation of all key stakeholders. This Policy provides a way forward for the creation of the legal and institutional framework under which the Government intends to fulfil its objective of creating wealth and improving the quality of life of the Zambian people.

The key stakeholders in the energy sector are:

- Ministry of Energy and Water Development and all Government Ministries;
- Rural Electrification Authority;
- Energy utilities;
- Energy Regulation Board;
- Private institutions involved in development of energy resources;
- Environmental Council of Zambia;
- The Chambers of Mines;
- The Zambia Chamber of Commerce and Industry;
- Research institutions;
- The Decentralization Secretariat;
- Farmer's Associations and Unions;
- Professional Bodies

The stakeholders should ensure that energy resources management and development policies stipulated under the specific sub-sectors in this policy are internalised and integrated in their sector plans.

The Ministries and statutory bodies shall ensure that they execute policy provisions within the context and confines of their legal mandates. The Ministry responsible for energy has the following responsibilities under this policy:

- (a) Formulating national energy policies , in consultation with other stakeholders and coordinating the activities and operations of energy sector agencies and ensuring the proper management and development of the energy resources in accordance with the guiding principles under this Policy;
- (b) Implementation of the National Energy Policy;
- (c) Coordination of all policy implementation functions;
- (d) Develop, in collaboration with other stakeholders, a National Energy Strategy and Plan;
- (e) Monitor and evaluate the implementation of the strategies specified by the various Ministries relating to energy;
- (f) Take the lead role in developing new energy related programmes, projects and activities; and

- (g) Ensure that all cross-sector issues are addressed by respective institutions;

## **6.2 Legal and regulatory framework**

The current legal framework for energy resource management and development is governed by various Acts of Parliament such as the following:

- The Constitution;
- The Electricity Act;
- The Energy Regulation Act;
- Petroleum Act;
- The Rural Electrification Act;
- The Environmental Protection and Pollution Control Act;
- The Zambezi River Authority Act;
- The Local Government Act;
- The Forestry Act;
- The Land Act;
- The Mines and Mineral Act.

The provisions of the above laws support the policy objectives for energy resources management and development which will enhance collaboration and cooperation between the key stakeholders.

The above referred to Laws generally deal with effective and sustainable energy exploitation and utilisation. The effective management of energy resources requires an adequate legal and regulatory framework which promotes efficient, effective, sustainable and participatory management of the national energy resources.

For the effective implementation of objectives and strategies outlined in this Policy the following measures shall be undertaken:

- Develop and ensure an effective regulatory framework that provides guidance to all actors;
- Ensure harmonisation of all energy related legislation;
- Develop and establish a clear mechanism for the enforcement of the legal framework; and
- Build capacity for the enforcement of the legal and regulatory provisions.

## **6.3 Data information and reporting**

The efficient management and development of energy resources will depend on accurate and reliable information systems that facilitate optimal decision making. In order to achieve this, the following measures shall be undertaken:

- (i) Establish and maintain an adequate data capturing system for all energy resources;
- (ii) Regularly undertake an assessment of energy resources; and
- (iii) Establish and regularly update information systems and disseminate information on

energy resources to enable exchange of information with players in other relevant sectors.

#### **6.4 Financing and Private Sector Participation**

There is need to attract more investment for the development and improvement of energy infrastructure and management of the resource in order to enhance economic growth. In order to achieve this, the following measures shall be implemented:

- (i) Development of economically viable and self financing infrastructure shall be prioritised to ensure sustainability; and
- (ii) Create an enabling environment that attracts funding and full private sector participation shall be created.

#### **6.5 Community participation**

It is inevitable that communities should be involved at all stages of energy resource development and management. The views of stakeholders are valuable in reaching decisions and providing the basis for support in the management of energy resources. In order to achieve this, the following measures shall be implemented:

- (i) Train communities in community energy project identification, formulation and implementation so as to equip them with appropriate knowledge and skills;
- (ii) Introduce participatory techniques in energy resource management programs, including the enhancement of the role of members of the disadvantaged groups, youth and other members of local communities; and
- (iii) Create awareness and support from the general public and key decision makers on the best practices for management and development of the energy resources;

#### **6.6 Gender**

The management and development of energy resources at the grass-root level requires the effective participation of both gender in the decision- making process. Further, women play a vital role in the provision and management energy resources in the rural areas need to take proactive decisions on how energy resources are managed and developed. In order to achieve this, the following measures shall be implemented:

- (i) Accelerate the representation of women at all levels and in all spheres of energy development and management activities;
- (ii) Ensure gender balance by defining the key roles played by women, men and children so that there is no gender discrimination in the ownership and management of the various energy projects;
- (iii) Based on the National Gender Policy principles, goals and objectives, gender mainstreaming in energy sector programmes will be articulated with the full involvement of women in the development and implementation of the energy policy and the related energy sector project activities; and
- (iv) Gender consideration in the use and management of energy resources shall be incorporated.

## **6.7 HIV/AIDS**

The HIV/AIDS pandemic has impacted negatively on the energy sector and has contributed to the low human resource capacity and productivity in the energy sector. There is need to maintain and strengthen existing programmes to minimise the negative impact of HIV/AIDS in the energy sector. In order to achieve this objective, the Government shall implement its HIV/AIDS policy.

## **6.8 Research and Development**

The sustainable management of energy resources is largely dependant on maintaining and developing recognised capabilities in the field of energy research. The Government will therefore maintain and develop research capabilities in the energy sector and shall implement the following measures:

- (i) Encourage interdisciplinary and participatory research approaches that provide linkages between technology and communities; and,
- (ii) Support the standardisation of methods of data collection and processing both at national and regional levels for use by the SADC countries.

## **6.9 Capacity building**

There is need to build capacity in the energy sector in order to support the legal and institutional frame work as provided in this policy. To achieve this objective the following measures shall be implemented:

- (i) Recruit and train personnel in the relevant fields at all levels;
- (ii) Create incentives aimed at retaining skilled manpower; and,
- (iii) Develop a system for evaluating personnel performance and productivity.

## **6.10 Monitoring and evaluation**

In order to ensure that the policy measures and strategies stipulated in this document are implemented, an effective monitoring and evaluating system will be established. In addition, the Ministry responsible for energy shall develop verifiable indicators for the purpose of ensuring achievement of the objectives of this Policy.