



PROPOSAL FOR A NATIONAL ENERGY POLICY FOR BELIZE



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THE GOVERNMENT OF BELIZE

**PROPOSAL FOR A NATIONAL ENERGY POLICY FOR
BELIZE**

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Proposal for a National energy Policy for Belize / DFAIT-OAS

List of Acronyms

BAL	Belize Aquaculture Limited
BEL	Belize Electricity Limited
BELCOGEN	Belize Co-Generation Energy Limited
GPD	Geology and Petroleum Department
GST	General Sales Taxes
ME	Ministry of Energy
MCTPU	Ministry of Communications, Transport and Public Utilities
MNRE	Ministry of Natural Resources and the Environment
NEP	National Energy Policy
OAS	Organization of American States
PUC	Public Utilities Commission
RETs	Renewable Energy Technologies
SED	Sustainable Energy Development

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1. Introduction

This document outlines a proposed National Energy Policy (NEP) for the Government of Belize. A secure and sustainable energy supply is critical to the nation's development. Energy services are needed for electricity generation, water supply, agriculture production, transportation and telecommunications. All these services are integral to the development of Belize. The priority areas, overarching goal and specific objectives for the development of the energy sector can be summarized as security of supplies, environmental protection and competitiveness. This policy document identifies seven key areas needed to attain them, including energy efficiency, reduction in reliance on imported fuels, stability in energy supply, administration and dissemination of national energy data, measures to curb carbon dioxide and other emissions, efficient and effective delivery of energy and policy support to the energy sector.

1.1 Why an Energy Policy

As the country embarks upon a development process and the modernization of the economy, it needs to address energy challenges. All modern economies are energy dependent. If economic prosperity is to be achieved and sustained, and living standards for Belizeans improved, a paradigm shift in policy and planning for energy supply and consumption is crucial.

Belize is abundant in energy resources, particularly biomass (forestry), hydroelectricity, solar and wind. Although these resources could play a central role in sustaining development, the nation remains highly dependent on imported energy sources. Furthermore, access to energy in rural areas is inadequate and public awareness regarding energy efficiency is low.

The institutional framework put in place in the mid-1980s has not changed significantly. Most of the institutional deficiencies posing major obstacles in improving the energy sector still exist, particularly the absence of one single authority responsible for formulating and coordinating energy sector policy. Energy needs of people living in rural areas remain unaddressed. As a result these populations rely largely on biomass. Improving energy access in rural areas would play a pivotal role in poverty reduction.

As the government embarks on a revision of the nation's energy policy, it is essential that it understands the importance of reliable, sustainable and indigenous sources of energy in achieving the country's potential for development. The vulnerability of the economy in the last decade, faced with insecure energy supplies, must be addressed. First of all, a short, medium and long term policy providing guidance on how to address energy needs must be adopted. Secondly, legal and institutional frameworks must be adapted to favor new investments in sustainable energy supplies that will yield affordable energy services. Critical changes in this direction are to improve governance, including enhanced sector management, to emphasize service affordability and to widen access, thus covering the rural production sector.

2. Outlook on Energy

2.1 Global

1. Oil is the principal source of energy in the world. About 87% of total primary energy consumption comes from fossil fuel and about 40% from oil. World oil prices have been increasing in the last decade. In 2007, they nearly doubled those of 2003 in real terms. During the 2008 oil crisis they reached US\$147 per barrel in mid-July and, although the crisis was short lived, current prices in international markets have toppled US\$100. Prior to 2000, the average spot price per barrel was about US\$20. In March 2011, the average spot price was US\$103 per barrel. According to the Energy Information Administration the forecast of the spot price of oil will reach about US\$150 per barrel in 2014 and US\$200 per barrel by 2025.
2. The 2009 edition of the World Energy Outlook projected that, by 2030, total primary energy demand will increase by over 50%. The demand for oil and natural gas is attributable to the increasing consumption levels of emerging developing countries and emerging economies like China and India. It is expected that global demand for oil to grow by 41% by 2030. Such increases in demand will drive up oil and gas prices in international markets.
3. Since 2005 the members of the Organization of the Petroleum Exporting Countries (OPEC) have not increased their oil production but have increased the oil prices. The cost of oil exploration and development, across-the-board increases in commodity prices and a weaker U.S. dollar have all served to drive up prices.
4. The global challenge is the identification of plausible ways to maintain reasonable energy prices, mitigate the adverse effects of high petroleum prices, minimize fossil fuel supply disruptions, lower the rate of increases in consumption of fossil fuels and minimize the deleterious effects of climate change and greenhouse gas emissions.

2.2 Regional

5. The Caribbean Community (CARICOM) is an organization that comprises of 15 full members, 5 associate members and 7 observer members. CARICOM is comprised mainly of small island developing states. Most of its member states have limited natural resources, small populations, small economies, but widely different energy realities, including Belize.
6. The fifteen CARICOM states are almost entirely dependent on imported oil and gas. It is estimated that up to 95% of commercial energy consumed in the CARICOM region is derived from fossil fuels, primarily oil. That figure represents about 90 million barrels of oil equivalent in a year.
7. CARICOM countries are essentially net importers of crude oil and refined products with the exception of Trinidad and Tobago and, to a lesser degree, Belize —largely because of extra-regional sources. Specifically, CARICOM member states source petroleum products from Trinidad and Tobago (PETROTRIN), Curaçao (PDVSA), Puerto Rico (Shell), St. Croix (Hovensa) and through the Energy Cooperation Agreement PETROCARIBE with Venezuela.
8. CARICOM member states experience the strong negative economic effects stemming from increasing international demand for petroleum and rising petroleum prices. In order to counteract said effects, CARICOM established the Petroleum Stabilization Fund in 2004, and in 2005 certain member states signed the Energy Cooperation Agreement PETROCARIBE.
9. Within the PETROCARIBE energy cooperation agreement, provisions have been made to allow member countries to purchase oil on preferential financing terms. The price of the world markets has grown, and so has the value of PETROCARIBE loans to importing countries. PETROCARIBE has become the single largest source of concessionary finance to the Caribbean Region. PETROCARIBE credits to importing countries from June 2005 to December 2007 amounted to \$1.17 billion, and are expected to reach \$4.5 billion by 2015.
10. In 2010, in accordance with the provisions of the Lima Agreement, Belize was accepted as a member of the Latin American Energy Organization (OLADE). OLADE provides technical support to help improve energy security and, advises and promotes cooperation and coordination among its member countries.
11. The Central American Integration System (SICA) has the potential to support some of the energy challenges of Belize and to be the ramp for the implementation of regional agreements.

3. Objectives and Priorities of the Energy Policy

A secure, competitively priced, and environmentally sound energy supply is a basic requirement for a competitive economy. Without an energy supply with these characteristics, sustained economic growth, employment and prosperity are at risk. These components are all essential, though their relative importance differs. In certain instances, they are clearly complementary, while in others they appear to be mutually competitive.

Policy decisions sometimes involve tradeoffs between one objective and another. For example, improvement in energy efficiency will address all objectives of the energy policy. Similarly, investment in renewable energy sources will address environmental protection and security of supply (though not necessarily competitive pricing).

The importance of security of supply can be realized by considering the cost of energy not being available when required by an end-user. Interruption of the energy supply, or threats of interruption, could lead to widespread disruption. Better security can be achieved by ensuring that energy sources are reliable, that markets are designed and regulated appropriately, and that energy systems are resilient to shocks through a combination of diversity and flexibility.

4. Part 1- Main Policy Goal, Vision and Broad Objectives

The main goal of the energy sector is: *To meet the energy needs of the people through energy efficiency, production, procurement, transportation, distribution and end-user systems in order to contribute to social and economic development in an environmentally sustainable manner.*

A Vision for Belize's future energy independence: *We define energy independence as the ability to meet its vital energy needs with reliable, affordable and renewable energy resources. This requires the pursuit of a balanced and advantageous transition toward control of our energy future, built upon a solid and ever growing foundation of our own free, abundant, clean, and renewable energy resources —the wind, the sun and the water.*

4.1. Broad Objectives

The following broad objectives should be addressed in the energy policy:

Objective 1 – *To ascertain the availability, potential and demand of the various energy resources in the country*

To meet this objective, Government shall:

- A. Create an Energy Unit with appropriate technical staff offering energy audits and capacity building.
- B. Build a database on all the available energy resources and energy consumption patterns. This will enable the government to match supply to demand over the long term and also provide information on potential projects for investment.
- C. Build the necessary local capacity to acquire the required data and assess and evaluate the resources.

Objective 2 – *To increase access to modern, affordable and reliable energy services in order to contribute to poverty eradication*

To achieve this objective the Government shall:

- A. Encourage private sector investment and management in the energy sector.
- B. Promote competition between energy service providers.

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- C. Promote the development of markets in energy technologies and services.
- D. Create an enabling environment to markedly improve rural energy supply and access by:
 - (a) applying subsidies for certain types of capital investments;
 - (b) applying differential tariffs to different areas and projects; and
 - (c) organizing rural communities for better provision of services.
- E. Provide education and technical advice and information on energy conservation.
- F. Encourage local financial institutions to establish sustainable financing mechanisms for energy programs.
- G. Intervene through transparent, regulatory and other carefully defined and timed mechanisms, to ensure effective delivery of energy services to consumers where market failures are identified.

Objective 3 – *To improve governance of the energy sector by defining the relative roles and functions of the various governance institutions, thus making the operation of these institutions more accountable and transparent, and their membership more representatives, and to strengthen government capacity to better formulate and implement energy policies.*

To achieve the above objective Government shall:

- A. Create a Ministry of Energy and define the roles and functions of the various institutions involved in the energy sector, increasing the role of the private sector, NGO's and communities.
- B. Create a transparent legal and regulatory framework for the sector.
- C. Build capacity at the national and local levels for better formulation and implementation of energy policies and programs.
- D. Build the capacity of regulatory agencies to provide even-handed and predictable regulation.
- E. Improve the coordination between government departments for effective implementation of government policies.
- F. Consult stakeholders in the formulation and implementation of new energy policies in order to ensure that policies take into consideration the views of a wider range of stakeholders.

Objective 4 – *To stimulate economic development, Government will ensure that energy plays a central role in the economic development of Belize and the sub-region.*

To achieve this, the Government shall:

- A. Promote energy trade within the region to encourage competition within the energy markets to achieve efficiency.
- B. Attract investments in energy services by providing appropriate incentives.
- C. Ensure energy supply security and reliability.

Objective 5 – *To manage energy related environmental impacts. Government will ensure that environmental considerations are given priority by energy suppliers and users to protect the environment and put in place a monitoring mechanism to evaluate compliance with established environmental protection guidelines.*

To meet the above objective, Government shall:

- A. Promote the use of alternative sources of energy and technologies which are environmentally friendly.
- B. Sensitize energy suppliers and users about the environmental issues associated with energy.
- C. Work toward the establishment and acceptance of broad targets for the reduction of energy-related emissions that are harmful to the environment and energy users.
- D. Promote efficient utilization of indigenous energy resources.
- E. Strengthen the environment-monitoring unit in the Ministry dealing with the environment.

5. Part 2 - Energy Policy Statements

5.1 Regulation Principles for the Energy Sector

Due to the liberalization of Belize's economy it is essential that decisions pertaining to the energy sector ensure appropriate energy supply and use. An efficient and sustainable energy sector needs open and competitive markets that will result in efficient resources allocation. Currently, energy prices may not accurately reflect the full social cost and energy suppliers may not choose the most efficient options. Government intervention may be warranted in such instances. With a current monopoly in the energy sectors, especially the power sub-sector, legislative and regulatory gaps resulting in unfair practices by the players. This calls for government intervention to ensure fair play, protect consumers, ensure the financial viability of private investments, promote competition and collect information.

5.2 Energy Demand Side Objectives and Strategies

5.2.1 Household Sector

Unemployment in Belize is high (14%) and a large percentage of households are poor. In these poorer households, the main source of energy is fuel wood and charcoal. Kerosene lamps and candles are used mainly for lighting. These sources of energy militate against the efficient and rational use of energy. Furthermore, low-income households tend to purchase cheap, inefficient, unsafe appliances, thus increasing the risk to their health and other hazards. The numerous problems associated with inefficient appliances would require a combination of policies that would tackle efficiency of energy use, energy conservation and a change to more energy efficient appliances. In rural areas, there is a need to have access to electricity especially for communal facilities where RETs are the most reliable option.

1. Objective: To provide affordable energy services for households and community-based services including water supply and sanitation, health, education, public lighting and communication in order to improve the social welfare of the rural population.

Policy Statements

- A. *The government shall encourage the use of efficient end-use technologies and good household practices.*
- B. *Alternative sources of energy for cooking, heating, cooling, lighting and other applications will be encouraged.*
- C. *The safety of household energy appliances will be ensured through regulation of safety standards.*
- D. *The government shall lend support to schemes that support the provision of electricity services to communal facilities in rural areas.*

2. Strategies

- A. A comprehensive Household Energy Plan, which adequately addresses issues related to shortages and inefficient use of biomass and affordability of modern energy services, will be developed.
- B. The adoption of energy demand side management in middle and high-income households and the implementation of energy conservation measures in institutional buildings and in government departments will be emphasized.
- C. Incentives will be created to make electricity and other modern fuels more easily accessible in rural areas.

5.2.2 Industrial Sector

Lack of expertise in industry has been identified as one of the key barriers to increased energy efficiency. Most industries in Belize consume large quantities of electricity inefficiently. Implementing energy efficiency programs will reduce consumption and operating expenses.

Objective: To address the power needs of the industrial sector and to introduce energy efficiency measures in industry which will result in an overall financial and environmental benefit that will make the industry more competitive.

Policy Statements

- A. *Government will ensure that energy supply is adequate in order to meet energy demand of the industry.*
- B. *Energy audits will be made mandatory and energy efficiency and conservation measures will be regulated.*
- C. *Government will promote the performance of audits, demonstrations, information dissemination, sectoral analyses and training programs.*

Strategies

- A. Training and other incentives will be provided to industries in order for them to adopt more efficient energy end-use technologies.
- B. Environmental performance auditing will be enforced
- C. Coordination between institutions concerned with energy, industry and environmental issues will be improved.
- D. Financial incentives will be provided for energy efficiency (e.g., the introduction of “time-use” electricity tariffs).
- E. Government will promote energy efficiency awareness amongst industrial energy consumers, and will encourage the use of energy-efficient practices by this sector.

5.2.3 Commercial Sector

The commercial sector includes, among others, wholesale and retail shops, hospitals, hotels, restaurants and recreation centers. Overall, the demand for energy in the sector is mainly met by commercial electricity and petroleum.

Policy Statements

- A. Government will ensure sufficient and cost-effective energy supply to meet the increasing demand in the commercial sector.*
- B. Energy management practices will be promoted and regulated as necessary.*
- C. The efficient use of alternative energy sources will be encouraged.*

5.2.4 Mining Sector

Demand is met through self-generation and, in fewer cases, through the grid. Mining companies will be encouraged to generate their own electricity and cooperate in the development of power infrastructure. Mining companies will be encouraged to develop surplus power from self-generation, which will be sold to neighboring communities.

Policy Statements

- A. Mining companies will be encouraged to generate their own electricity and to diversify their generation and distribution energy mix.*
- B. Mining companies will be encouraged to provide and, when possible, sell power to communities in the environs of their mining areas.*

5.2.5 Transport

The transport sector is a major user of petroleum products. Although road transportation is dominant, various forms of transportation play vital roles in the lives of rural populace. Some regulations are in place, albeit inefficient practices abound the sector.

Objective: To promote optimum, efficient and environmentally conscious utilization of petroleum fuels and substitution.

Policy Statements

- A. *Government will promote energy efficiency and conservation in the transport sector.*
- B. *Use of more efficient transportation modes shall be encouraged.*

Strategies:

- A. Government will formulate fiscal and transport policies to promote energy conservation and efficiency.
- B. The feasibility of introducing measures for pollution control will be explored, including using environmentally friendly fossil fuels such as unleaded gasoline, low sulfur diesel and importation of more efficient vehicles.
- C. Incentives will be provided to promote mass transport systems so that the proliferation of individual vehicles is reduced.
- D. The development of sub-sectors concerned with other forms of transportation will be encouraged.

5.2.6 Agriculture Sector

The current agricultural policy calls for increased output and efficiency in agricultural production, timely delivery and efficient use of energy inputs into agriculture and increased use of tractors. The main energy challenge within the agriculture sector is ensuring the supply of sufficient and cost-effective energy that meets the requirements for improved agricultural activities, including agro-processing and irrigation. There is a need to create a commercial environment and encourage entrepreneurs to develop and distribute energy products and technologies in order to improve efficiency in agricultural production and add value to agricultural products. Furthermore, methods and approaches on how to maximize the use of alternative sources of energy such as micro-scale hydro, solar, wind, biomass, and other renewable energies must be developed and commercialized.

Objective: To increase the use of modern energy in agriculture, thus increasing in agricultural production, leading to the achievement of the country's food security objectives.

Policy Statements

- A. *Government shall ensure sufficient energy supply to meet the increasing demand in the agriculture sector.*
- B. *Energy efficiency measures will be encouraged in irrigation, agro-processing and other agricultural activities.*
- C. *Agro-processing centers will be facilitated with appropriate energy alternatives, with emphasis on electrification in order to promote small-scale industry, employment creation and economic growth.*
- D. *Governmental institutions and private sector related directly and indirectly with the energy sector will encourage research and development to introduce appropriate energy efficiency technologies for agriculture activities.*

Strategies

- A. Farmers will be encouraged to implement modest mechanization that focuses on providing access to energy services, which helps to raise the productivity of labor-intensive agriculture.
- B. Capacity building, information and awareness campaigns will be undertaken and facilities to finance energy services for rural agro-processing will be provided.
- C. Measures should be taken to ensure that petroleum products are readily available in rural areas.

6. Energy Supply Side Objectives and Strategies

6.1 Electricity

Access to electricity is reduced in rural areas. The power sector reform is aimed at improving the performance of the sector and increasing access to electricity nationwide at a reasonable cost by using RETs. Policy measures should aim at creating conditions that could attract private sector capital into the sector.

Objective

To increase access to safe, reliable and efficient power supply for Belizeans and to meet national, economic and social development needs.

Policy Statements

- A. *The entry of multiple players into the generation market will be encouraged. Generation of electric power shall be fully open to private and public investors as Independent Power Producers.*
- B. *Regional cooperation and integration shall be given strong consideration in investment matters in order to exploit low cost energy sources for regional trade. In the mid-term the Public Utilities Commission will be open to strategic partnerships with technically suitable, and financially strong, investors in the region, as a step in the development of a strategy to improve relationships and create partnerships with foreign countries to import cheap electricity.*
- C. *Government is committed to extending transmission lines where feasible and will promote the use of RETs where it is not.*
 - a. *Introduce a new national grid to other parts of the country. Extensions from this grid will be made on a rational and economic basis.*
 - b. *Government is committed to setting up a rural electricity fund.*
- D. *Government will take legislative steps to criminalize electricity theft to serve as a deterrent to the significant amount of people abstracting electricity illegally.*

Strategies

- A. Increase competition in the sector through open participation of IPPs, operate and expand the existing distribution system at minimum cost and negotiate the price of electricity to reflect the marginal cost of supply in order to achieve efficiency.
- B. Create incentives to attract private sector investment and regional interconnection; including, appropriate access to loans on concessionary terms, financial instruments, government guarantees and “smart subsidies” (or grants) for infrastructure investment.
- C. Establish a regulatory governmental body for regulation and implement a rural electrification strategy and plan along the following lines:
 - a. Progressive development of rural electrification schemes on a demand driven basis whereby capable sponsors can initiate and develop electrification projects.
 - b. Creation and capacity building of a Rural Electrification Agency.
 - c. Establishment of a Rural Electrification Committee to attract grants and loans for rural electrification schemes.

7 Oil and Gas Exploration and Production

7.1 Petroleum Exploration and Production

The sector is in its formative years and there is room for further exploratory work and investment. There is great need to improve resources and enhance technical capacity for sustainable oil production.

Objective: To tap the real petroleum potential and to promote its exploitation adequately and sustainably.

Policy Statements

- A. *Petroleum exploration will be promoted in accordance with best international industry practices.*
- B. *Regional and international cooperation will be encouraged in exploration, development of infrastructure, trade, and database and capacity building.*
- C. *Major oil companies will be encouraged to invest in exploration.*

General Strategies:

- A. Create conducive conditions for attracting more investors into the sector.
- B. Develop a mitigation plan to reduce environmental hazards in all oil operations.
- C. Facilitate the acquisition of geological and geophysical data for assessing the petroleum potential.
- D. Build technical capacity and improve the efficiency of the GPD to monitor and regulate petroleum exploration and development.

7.1.1 Petroleum Marketing and Sales

Difficulties with supply, storage, importation and availability of foreign exchange need to be addressed as they have a major impact on the economy. Also of concern is the distribution network, which makes petroleum products considerably more expensive in distant rural areas.

Objective

To ensure an adequate, reliable and affordable supply of quality petroleum products for all sectors of the economy at internationally competitive and fair prices and with appropriate health, safety and environmental standards.

Policy Statements

- A. *International standards and codes of practice will be adopted and adapted within the industry.*
- B. *Government will keep appropriate levels of strategic stocks based on an*
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assessment of the risk of supply disruption.

- C. Petroleum companies will be encouraged to extend their marketing networks to smaller towns in various parts of the country. It is envisaged that all towns with populations of more than 5,000 will be supplied with fuel directly from the marketing companies, irrespective of location.*
- D. Government will lend its support to schemes to pool resources for the procurement of large stocks of petroleum products to result in cost reductions.*
- E. Government will commission a study to assess the economic viability of building and operating a refinery.*

8. Other Renewable Energy Resources

Despite abundant renewable energy resources, rural areas are still lacking access to electricity. Proactive measures should be taken by government to address problems that prevent the effective utilization of the indigenous energy sources.

Objective: To develop the use of renewable energy sources for both small and large-scale applications.

Policies

- A. *Appropriate financial and administrative institutions will be set up to manage RETs. Appropriate norms, codes of practice, guidelines and standards for RETs will be instituted, thus creating an enabling environment for its sustainable development.*
- B. *Biomass conversion and end-use technologies will be promoted in order to save resources, reduce deforestation rates and land degradation, and minimize the threat of climate change.*
- C. *Environmental considerations will be included in all renewable energy planning and implementation.*
- D. *Cooperation with relevant stakeholders will be enhanced.*
- E. *Research and development in RETs will be supported.*
- F. *A central body will be set up to regulate the RETs industry.*
- G. *Government will legislate the registering of associations and organizations involved with fuel wood, charcoal and improved stoves.*
- H. *Government will consider the reduction of taxes by giving waivers for the importation of RETs equipment.*
- I. *Agro-based industries will be encouraged to produce electricity from waste.*
- J. *Manufacturing of RETs equipment will be actively pursued by encouraging its promotion and providing the necessary investments.*

Strategies:

- A. Support the dissemination of biomass and other RETs to increase their positive impact on the energy balance and the environment
- B. Facilitate adequate financing schemes for RETs by establishing sustainable financing

mechanisms to make them more accessible

- C. Ensure that RETs producers and importers ascribe to certified performance and technical standards
- D. Include renewable energy and energy efficiency in the curricula of schools, Universities, vocational training centers and other institutions of education
- E. Support efforts to develop biomass resources in agreement with the national Forestry policy
Promote Agro-forestry enterprises – including fruit trees and mechanization
- F. Encourage solar water heating in Hospitals, clinics, boarding homes, etc. for sterilization and hygiene purposes
- G. Take measures to allay fears of using solar cookers in rural areas because of cultural and traditional practices
- H. Co-operatives should be encouraged to facilitate the financing mechanism for RETs (e.g. reduce RETs importations of taxation).

9. LPG

LPG is a mid-term solution as a source of energy in rural areas.

Objective: To develop the use of LPG for small scale applications.

Policies

Government will actively encourage the use of LPG in urban areas. To this end Government will put in strategies and provide the necessary incentives to make the use of LPG more persistent.

10. Rural Energy

Economic activities in rural areas are greatly influenced by energy. All aspects of rural economics, including agriculture, business, social services, poverty, and gender equality are influenced by energy services. Fuelwood is the main source of energy for most households, and access to sustainable and secure fuelwood supplies and RETs is important for rural communities' survival. Inadequate access to modern, reliable energy services is hampering economic growth and impeding agricultural mechanization and industrialization. A sustainable institutional framework that can cope with energy diversity is a key factor for successful development of rural energy. There is a need to establish an institutional framework that can mobilize, coordinate and facilitate private and public initiatives for rural energy.

Many of the measures to be taken have been addressed in specific energy sub-sectors. Those that have a significant bearing on rural energy supply are mentioned below.

Objective:

To improve the traditional methods to supply energy in rural areas and to improve the supply of commercial energy services to contribute meaningfully to the social and economic development of rural areas.

Policy Statements

- A. *A rural electrification strategy and plan shall be instituted along the following lines:*
 - a. *Progressive development of rural electrification schemes on a demand basis whereby capable sponsors can initiate and develop electrification projects.*
- B. *Government will set up a Rural Electrification Fund to support rural electrification. The fund, to be set up and administered within the future Ministry*

of Energy, will consist of the following contributions:

- a. A levy of part of the electricity bills paid to the national utility-this requirement to include a rural electrification levy as part of the utility bills will be legislated.*
 - b. Funds provided by the government specifically for rural electrification.*
 - c. Funds provided by donors and other agencies specifically for rural electrification.*
- C. Government will support research and development for rural energy.*
- D. The application of alternative energy sources other than fuelwood and charcoal will be promoted in order to reduce indoor health hazards.*
- E. Entrepreneurship and private initiative in the production and marketing of products and services for rural and renewable energy will be promoted.*
- F. Government will ensure continued electrification of rural economic centers and make electricity accessible and affordable to low income customers.*
- G. There will be a conscious effort to facilitate increased availability of energy services, including grid and non-grid electrification, to rural areas.*
- H. Norms, codes of practice, standards and guidelines for cost-effective rural energy supplies will be established.*

11. Cross-Cutting Issues, Objectives and Strategies

11.1 Energy Planning

There is no central planning unit that oversees the energy sector, which results in poor sub sector coordination. To satisfy future energy needs it is necessary analyze the energy sector in terms of how it is fulfillment will contribute toward attaining national economic and social goals.

Policy statements

- A. *Government will establish appropriate structures and systems such as an energy unit to carry out energy planning functions within the Ministry of Energy.*
- B. *The Energy Unit will consist of planners knowledgeable in all the energy sub-sectors, who will liaise with ministries and agencies.*
- C. *The future Ministry of Energy will support the strengthening of sub-sectoral planning and information gathering units.*

Strategies:

- A. The Government is committed to setting up an Energy Desk within the office of the Prime Minister and tasks it with developing and fulfilling all the details of the National Energy Policy prior to setting up the Energy Unit.

11.2 Energy Information Systems and Dissemination

Energy information systems are policy implementation tools. Energy information collection, storage, analysis and exchange are vital for planning, policy formulation and decision-making.

In Belize information systems are lacking, which results in poor information exchange amongst energy stakeholders. Capacity to manage and analyze energy information is inadequate. There is a need to establish an adequate energy information system that will serve to mobilize human resources, raise awareness and disseminate information to stakeholders for effective policy implementation.

The Energy Desk within the Office of the Prime Minister will have the lead responsibility to delineate the responsibilities of the future “Energy Unit”. The Prime Minister’s office will take the lead in the implementation of this policy. Opportunities exist to integrate energy information into current communication and education programs run by other organizations. Ministries, NGOs, the private sector and academia, can all play a role in communication and education. The prospective Ministry of Energy should monitor the development of energy awareness programs and regularly assess communication strategies.

Policy Statement

A proper information and communication system will be established and strengthened in the energy sector, and human resources mobilized to undertake sensitization, advocacy and dissemination of information to stakeholders.

11.3 Energy Efficiency and Conservation

There is a need for Government to play a role in facilitating increased efficiency in the use of energy. Barriers to the adoption of efficiency measures include:

- Lack of awareness, information and skills;
- Lack of access to efficient technologies;
- High cost of capital.

Policy Statements

- A. Government commits itself to the promotion of energy efficiency and the development of holistic programs for households, industry and commerce.*
- B. Energy audits in industries will be ensured by means of a new national energy information system.*

11.4 Energy and Environment

The effects of energy consumption on the environment need to be considered in all sectors. All stages of energy resources —fossil or non-fossil— exploitation, production, conversion, transport, storage and end-use can have negative impacts on the environment. Health, safety and environmental consequences of energy production and utilization must be addressed.

Policy Statements

- A. Environmental Impact Assessments will be required for all energy projects.*
- B. Energy efficiency and conservation measures will serve as a means to curb emissions.*
- C. The development of alternative energy sources, including renewable energy and wood fuel end-use, and efficient technologies to protect woodlands will be promoted.*
- D. Programs for disaster prevention and standards for exploration, production, conversion, transport, distribution, storage, and consumption will be promoted.*
- E. Government will monitor international developments and will participate in*

global climate change negotiations, and will strive to balance its environmental responsibilities and economic interests.

11.5 Research and Development

Research and Development (R&D) efforts that give rise to technological innovations in the energy sector are important as they can lead to development and economic growth. R&D issues relating to biomass, rural energy, energy end-use, affordability, and pricing mechanisms must be the focus of attention. The challenge is to overcome the inadequate financial resources and lack of skilled manpower for R&D. There is also a lack of understanding of critical energy R&D issues. Institutional coordination with respect to various ongoing research activities in the sector are lacking. Cooperation between public and private sectors in R&D of energy issues such as demand and supply management, pricing, conservation and rural energy need to be encouraged and coordinated. There is also a need to support regional and international cooperation in R&D on technological and non-technological advancement.

Policy Statement

- A. Regional and international cooperation on Research and Development in the field of innovative, environmentally sound energy technologies will be fostered.*

11.6 Capacity Building and Capacity Development

Education is vital to improve the development in any country. Most Belizeans are unaware of energy use practices and options. Renewable energy and energy efficiency must be showcased in schools, vocational training centers, colleges and other learning institutions. There is also a need for mass educational and promotional efforts on energy issues targeting the public. There is a lack of trained and skilled energy experts in the sector, particularly women. In addition, there are inadequate incentives to attract and retain qualified energy experts in the sector. The present situation is also constrained by cultural and traditional influences, which inhibit gender-balanced training.

Policy Statements

- A. Energy education will be encouraged in school curricula, vocational training centers, colleges and other relevant learning institutions; emphasis will be put on practical aspects including physical demonstration, installations and operation.*
- B. Local and foreign investors will be encouraged to provide training on basic skills pertaining to energy.*
- C. Government will allocate funding and staffing to undertake and support capacity building, education and information dissemination programs.*

11.7 International and Regional Energy Trade and Cooperation

Cooperation between neighboring countries in the Caribbean and Central America is vital for development and economic growth. Belize is a member of various regional and international organizations, including CARICOM, DR-CAFTA, PETROCARIBE, OLADE, OAS, UN, etc. In addition the European Union has many funded several activities in Belize.

Potential benefits derived from regional and international energy trade and cooperation must be maximized. Belize must deepen its ties with other countries in the region. Joint development of shared energy resources must be encouraged as a means to enhance cooperation and energy security.

Policy Statements

- A. *Government will encourage collaboration within the Central American countries in the area of energy emphasizing future interconnections.*
- B. *Government will facilitate international collaboration in research and exchange of information. Government will facilitate regional cooperation, including energy trade, information exchange, capacity building and the training of energy specialists.*

11.8 Fiscal and Pricing Issues

Fiscal policies have a direct effect on energy prices, thus affecting structural demand for energy products. The selective use of fiscal mechanisms can be very effective for achieving energy policy objectives, such as encouraging fuel switching, rising dedicated sources of finance for particular needs and encouraging more efficient environmental and resource management. On the other hand, unfettered use of fiscal mechanisms can lead to unintended consequences. It is therefore essential that fiscal policies be in line with energy policies, particularly as competition increases between energy service providers.

Policy statements

- A. *Government may use selective fiscal mechanisms in promoting the use of certain types of fuels with the intention of satisfying future energy needs. This will however be done within a limited timeframe to avoid introducing structural distortions into the market.*
- B. *Government may consider the use of selective fiscal mechanisms in order to increase access to energy services, especially to the poor, and also to enable the effective dissemination of some RETs into the market.*

11.9 Energy Investment

Domestic and international investors must be made aware of the potential for investment within the energy sector. Public and private sector should be encouraged to invest in the provision of energy services. Furthermore, there is a need to facilitate and encourage investment in the development of alternative sources of energy, putting emphasis on the utilization of indigenous resources.

Policy Statements

- A. *Private initiatives will be promoted, and local and foreign investors made aware of the potential within the energy sector.*
- B. *Government will ensure that a transparent and predictable institutional framework that includes incentives is in place to provide for an enabling environment for investment in the energy sector.*

11.10 Gender Issues

Gender issues in the energy sector need to focus on energy needs and resource ownership from both the demand and supply of energy. On the demand side, men and women have different energy needs given their different socio-cultural and traditional roles. On the supply side, women are underrepresented at all levels of energy generation, transmission and distribution. There is a gender imbalance at various levels of planning and decision-making. On the demand side, especially in rural areas, there is a need to alleviate women's task of searching for energy, especially wood-fuel. Women should be encouraged to participate in energy related education, training, programs and projects, planning and decision-making.

Policy Statements

- A. *Gender equality within the energy sub-sectors both on the demand and supply side will be promoted.*
- B. *Education and training for women in all aspects of energy will be facilitated.*
- C. *Government will promote awareness on gender issues concerning social roles with respect to energy, including training on technologies.*
- D. *Government will promote gender awareness and advocacy in the energy sector.*

12. Governance and Institutional Capacity

Governance is the complex set of processes and control relationships that occurs between various players. In the energy sector of Belize, these players include parliament, cabinet, ministries dealing with energy and power issues, the Minister of Public Utilities, the Minister of Natural Resources and the Environment, the PUC, various government departments at the national, provincial and local levels, energy suppliers, energy consumers, the regulator, other stakeholders (including organized labor, civic organizations, NGOs, researchers, consultants, financiers, contractors, equipment manufacturers and marketers), and foreign donor agencies and organizations. The range of players and the complexity of their relationships make energy sector governance difficult to understand in Belize.

Further, Belize's energy portfolio falls under various ministries. The centralization of the administration of energy is vital to ensure responsible management of the sector and improve governance.

Objective

- A. To institute a new governance structure for the energy sector that will meet the challenge of developing a consistent energy governance framework which addresses in an integrated manner the key issues that will guide policy formulation and implementation. In this respect the energy governance objectives seek to:
 - a. Increase the understanding and role of all Governmental institutions related with the Energy sector with the implementation of the National Energy Policy.
 - b. Implement energy policy and, in so doing, achieve the economic, social, political goals.

Policy Statements

- A. *As a first step, the creation of an Energy Desk under the Prime Minister's Office will help support the implementation of the NEP.*
- B. *Government commits to appoint a Minister of Energy who will be responsible for the governance of the energy sector, including the integration of long term energy policies, communication with relevant stakeholders, management of regional and international cooperation and ensuring that appropriate institutions are established to achieve energy policy objectives. The Minister will also be responsible for overall coordination and energy planning.*
- C. *Government is committed to set up an independent National Energy Unit in the medium term that will be responsible of technical support for all energy planning, coordination and regulation. The Energy Unit will function as an observer, data gatherer and analysis body of the energy sector at the national level in order to*

assist the Ministry of Energy and other national authorities in the reasonable implementation and monitoring of energy related policies and laws. The Energy Unit will provide advice on energy issues and activities inter alia, creating a discussion forum among governmental institutions, the private sector and public stakeholders. It will have the primary responsibility of updating and improving the National Energy Policy and the Sustainable Energy Action Plan, so that the overall objectives of the energy sector are achieved in the shortest possible time.

D. Cabinet will assist with the coordination and implementation of energy policy and ensure its integration with other sectoral policies. Parliament will be responsible for the approval or amendment of energy legislation. Parliamentary Committees are responsible for considering proposals for new or amended legislation and supervising the actions of the ministries especially as they relate to the budget. PUC will continue as an autonomous authority body, with responsibility for regulating the electricity, water and telecommunication sectors. It will be responsible for ensuring that all customers have safe, reliable and high-quality services at affordable rates, while allowing a reasonable return on investment, so as to foster an environment that will stimulate national growth. In addition, it will promote the introduction of certain minimum percentage of RETs in electricity generation.

E. Government supports the present sub sectoral split of the energy sector which is as follows:

- a. Ministry of Energy including power-electricity, hydro and other renewable energy resources.*
- b. Ministry of Natural Resources and the Environment -the traditional energy sector which includes mainly biomass.*
- c. Ministry of Economic Development, Commerce and Industry, and Consumer Protection -petroleum marketing and sales.*
- d. Geology and Petroleum Department - responsible for petroleum exploration and production.*
- e. Ministry of Natural Resources and the Environment - exploration and exploitation of minerals*

F. Government commits itself to the gradual consolidation of the energy sector over the medium term.

Conclusions

The National Energy Policy of Belize will allow the entire country to meet its basic energy needs in a sustainable manner and to support and improve the national economy.

The draft policy will focus on:

- Developing linkages between the energy sector, poverty alleviation and economic growth.
- Integrating environmental sustainability into all energy initiatives.
- Demand-side management and energy efficiency.
- Developing an energy data bank and disseminate it.
- Promoting private participation and the development of competitive markets in RETs and services.
- Developing, where necessary, appropriate regulatory frameworks and capacity.

The policy will be the basis for progressively expanding investment in modern energy production, petroleum exploration and development, rural electrification, the supply of well priced petroleum products, and for increasing the efficiency of energy use in all sectors from the household to the large productive sectors.

The technicalities of the energy policy are important, but more so is its social dimension. The building of human resources is vital to the effective utilization of energy and its benefits. The implementation of a Ministry of Energy is vital to improve and develop the economy, reduce social injustice and protect the environment. In pursuit of this goal, the Ministry will prioritize the policies contained in this paper and translate those priorities into action.

The next step is to implement the policies based on an action plan for Belize. Most of the resources needed to move this NEP forward will come from the Government and from various development partners (e.g., multilateral and bilateral cooperation Agencies, Global Environment Facility, and Clean Development Mechanism, among many other potential donors).