

ining

National Energy Conservation and Efficiency Policy

Ministry of Energy and Mining

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The development of an energy efficient economy is a crucial, difficult and motivating challenge for all countries. The high oil prices and the limited public resources for investment in energy supply and, in the long-term, the prospective depletion of fossil energy resources and the risk of climate change provide strong incentives for the exchange of experience on energy efficiency policies: it is a win-win strategy as it addresses at the same time many strategic issues.

World Energy Council, 2008

Acknowledgements

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The National Energy Policy 2009 – 2030 provided the overarching framework for the development of this Energy Conservation and Efficiency Policy. Of note, we also wish to thank the members of the Energy and Minerals Development Thematic Working Group of the Vision 2030 Jamaica – National Development Plan Monitoring and Evaluation Process as well as the various Ministries and Agencies that assisted the process by providing pertinent data and engaging in the consultative process that is so important in national policy development.

We also wish to thank our International Development Partners who are currently providing extensive support in the development of Jamaica's energy sector and in particular our efforts at achieving energy security, diversification of the country's energy mix and reducing the cost of energy to Jamaicans. We especially thank the United Nations Development Programme (UNDP) for the support they have provided the Ministry to facilitate the development of five sub-policies under the National Energy Policy 2009 – 2030.

Message from the Minister of Energy and Mining



Following the promulgation of Jamaica's first long-term National Energy Policy 2009 – 2030 in December 2009, I am happy to present to the nation, Jamaica's National Policy on Energy Conservation and Efficiency.

I see this policy as another step in helping to secure Jamaica's energy future and take this country onto the path of sustainable prosperity.

The imperative to significantly improve efforts in energy conservation and energy efficiency remain a priority. Improvements in energy conservation and efficiency will provide Jamaica with the greatest scope, in the short term for reducing our energy requirements and their negative impacts on the environment.

I see the thrust towards energy conservation and efficiency as "a low hanging fruit" on the "energy tree" and effective implementation of a range of measures that would be enabled by this policy will help address a number of objectives at the same time and at a low or negative cost.

It is well known that energy conservation and efficiency (ECE) remains Jamaica's main short term response to significantly reduce the use of energy by Jamaicans in all sectors. In moving this policy forward I ask all sectors of our society to come onboard and be fully engaged, recognizing that the successful implementation of this policy along with the many proposed changes in Jamaica's economy will also have the positive effect of decoupling primary energy use from economic growth and in so doing reduce the country's overall energy intensity – bringing us closer to a sustainable state.

James Robertson, M.P.

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Section 1

Background, Overview and Context

Background

Globally, the imperative to significantly improve efforts in energy conservation and energy efficiency remain a priority. Issues such as the financial crisis, energy security, emerging constraints in energy supply and climate change concerns all contribute to the pace in which countries continue to promote energy conservation and efficiency programmes and develop associated policy. Also, the objectives of the Kyoto Protocol have raised the level of importance given to the development of energy conservation and efficiency policies.

Improvements in energy conservation and efficiency are considered to provide the greatest scope for reducing the requirements for energy and its negative impacts on the environment. Energy conservation can be defined as the saving of energy by any means including energy efficiency – it could also entail being more frugal – for example, turning lights off when not in use or providing information on ways to reduce energy. Energy conservation therefore refers to efforts to reduce energy consumption. Energy efficiency on the other hand refers to the efficient conversion and use of energy and is a measure of the productivity provided per unit of energy consumed. It employs devices and practices, which result in less energy being used for the same task and function. An example would be a fluorescent bulb as opposed to an incandescent bulb. Other ways in which energy efficiency can be enhanced are through retrofits and capital improvements.

These definitions would imply that energy conservation and efficiency is “a low hanging fruit” on the “energy tree” and effective implementation of a range of measures can help address a number of objectives at the same time and at a low or negative cost. These objectives include:



Energy conservation is any behavior that results in the use of less energy. Energy efficiency is the use of technology that requires less energy to perform the same function. A compact fluorescent light bulb that uses less energy than an incandescent bulb to produce the same amount of light is an example of energy efficiency. The decision to replace an incandescent light bulb with a compact fluorescent is an example of energy conservation.

It is well known that energy conservation and efficiency (ECE) remains Jamaica's main short term response to significantly reduce the use of energy by Jamaicans as well as in industry. Despite the rapid increase in world oil prices over the past five years and the record levels attained, Jamaica's energy consumption continues to increase at a much faster pace than the expansion of the economy. As such, the National Energy Policy 2009 – 2030 recognizes that ECE must be given priority attention and articulates this in three of the seven goals of the national policy as follows:

Goal 1: Jamaicans use energy wisely and aggressively pursue opportunities for conservation and efficiency

Goal 6: Government ministries and agencies are a model/leader in energy conservation and environmental stewardship in Jamaica

Goal 7: Jamaica's industry structures embrace eco-efficiency for advancing international competitiveness and move towards building a green economy

Additionally, two other goals will be addressed through this policy, even though their full achievement also will be dependent on the successful implementation of other sub-policies of the national energy policy. These goals are:

Goal 2: Jamaica has a modernized and expanded energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities and the productive sectors on a sustainable basis

Goal 5: Jamaica has a well-defined and established governance, institutional, legal and regulatory framework for the energy sector that facilitates stakeholder involvement and engagement

In essence, The National Energy Policy 2009 – 2030 calls for the development of an Energy Conservation and Efficiency Policy that will facilitate the engagement of all sectors of the economy and all persons in the society in a coordinated and aggressive drive towards significantly reducing national energy consumption. The successful implementation of this policy along with the many proposed changes in Jamaica's economy will also have the positive effect of decoupling primary energy use from economic growth and in so doing reduce the country's overall energy intensity.

Introduction

This document presents Jamaica's National Energy Conservation and Efficiency (ECE) Policy 2010 - 2030. This policy is one of six (6) sub-sector policies under the National Energy Policy 2009 – 2030 that are intended to support the achievement of the goals of the National Energy Policy which seeks to provide **"affordable and accessible energy supplies with long-term energy security."** The National Energy Policy calls for improving efficiency in the key energy-consuming areas of the power generation, bauxite/alumina production, transportation and building design and construction; and for Jamaicans generally to become more aware of energy conservation practices towards reducing energy consumption. This Policy also will support the achievement of National Outcome #10 – 'Energy Efficiency and Conservation" articulated in Vision 2030 Jamaica: National Development Plan.

Sub- Policies under Jamaica's National Energy Policy 2009 – 2030

- Renewable Energy Policy
- Energy-from-Waste Policy
- Biofuels Policy
- Carbon Emissions and Trading Policy
- Energy Conservation and Efficiency Policy
- Electricity Policy

Whist energy conservation is considered to have two main components - energy efficiency and renewable energy – this policy will not focus on renewable energy as Jamaica has recently developed a national renewable energy policy. The role of energy conservation and efficiency cannot be underscored and will play a critical role in addressing energy security, environmental and economic challenges that the country faces at this time.

The National Energy Conservation and Efficiency Policy will create the enabling environment for **"All Jamaicans to use energy wisely and continuously pursue opportunities for conservation and efficiency".** This Policy will set out the necessary strategies, to guide conservation and efficiency, and present targets and ways to monitor performance. The strategies presented in this policy lay out various legislative and statutory guidelines, preferred technologies and energy conservation measures, as well as energy pricing systems all which are necessary to stimulate energy conservation, as well as to create the favorable conditions for investment in energy conservation and efficiency by the private sector, public sector and citizens at large.

Energy conservation and efficiency will play a critical role in addressing energy security, environmental and economic challenges that Jamaica faces

This Policy also will create the conditions to increase the efficiency of the energy sector in the generation, transmission and distribution of electricity, in the use of energy in the transport sector, and in the consumption of electricity by industrial, commercial and residential consumers. The Policy calls for renewed national efforts to conserve energy and use it as efficiently and wisely as possible.

Additionally, it is envisaged that this policy will be closely tied to the National Renewable Energy Policy 2010 – 2030 as renewable energy and ECE go hand in hand. Renewable energy and ECE are considered to be the "twin pillars" of sustainable energy. To make the most of achieving a sustainable energy state in Jamaica there will be simultaneous application of strategies regarding renewable energy and efficient use of energy.

This Policy will also facilitate Jamaica's participation in the Clean Development Mechanism (CDM) - one of the three flexibility mechanisms under the Kyoto Protocol. This mechanism allows industrialized countries to more easily meet their emission reduction commitments by purchasing forms of reduction permits or units at far lower prices than they would have done were they to implement such reductions in their own countries. By developing energy conservation and efficiency initiatives, Jamaica stands to benefit from the CDM by being able to access carbon credits to sell to industrialized countries. The sale of these credits will provide the country with much needed additional revenue.

Structure of the National Energy Conservation and Efficiency Policy

The Energy Conservation and Efficiency Policy is structured as follows:

Section 1 – Background, Overview and Context provides the introduction to, and rationale for the policy, identifies the linkages between this policy and the National Energy Policy 2009

This policy will call for Jamaica to achieve significant increases in efficiency in producing and using energy, which will involve development and implementation of a range of measures including among others:

Upgrading of the petroleum refinery to increase capacity utilization and output of lighter and higher-value refined petroleum products in order to replace imports and compensate for the potential switch from oil-fired to natural gas power plants

Encouragement of more fuel-efficient vehicles in the transport sector including the use of diesel and bio-fuels

Implementation of demand side management programmes including the use of energy-efficient appliances, equipment, and building designs, setting and enforcing standards for public sector organizations, and public awareness and educational programmes

Use of the Energy Efficiency financial instruments and incentives to support energy conservation

– 2030, as well as other sub-policies under the National Energy Policy. This section also presents the current framework for energy conservation and efficiency in Jamaica and global issues and trends in energy conservation and efficiency.

Section 2 – Defining the Policy Framework presents the vision for energy conservation and efficiency in Jamaica and the policy/strategic framework (goals and strategies) for this policy. Section 2 also includes the institutional framework for energy conservation and efficiency in Jamaica.

Section 3 – Implementation, Monitoring and Evaluation Framework describes the implementation, monitoring and evaluation framework for this policy.

The Energy Sector in Jamaica

The development of Jamaica's energy sector shows much promise in reducing dependence on imported petroleum, lowering the cost of energy to consumers and creating a framework for better use of energy through energy conservation and efficiency by all Jamaicans, because of the promulgation of the country's first long-term National Energy Policy 2009-2030. The national policy was promulgated in 2009 to address the situation facing the energy sector of being "characterized by an almost complete dependence on imported petroleum; high rates of energy use; … and an inadequate policy and regulatory framework." The extreme dependence on imported petroleum has significant economic impacts, with 87% of the nation's foreign exchange earned being used to buying imported oil.

Energy Use in Jamaica

Jamaica currently consumes about 60,000 barrels of oil per day to meet its diverse needs. Over the past decade, the level of annual oil imports moved from 23.6 million barrels in 1999 to about 22.1 million barrels in 2009[1], representing an overall average annual decline of one percent (1%) per annum. Jamaica's energy mix remains dependent on the use of imported fossil/petroleum fuels which account for 91% of the energy mix, while renewable resources account for 9%. Most of the renewable sources come from wind, hydro, fuelwood, bagasse, solar and ethanol (used in the transportation sector).

Transport is the largest consumer of petroleum in Jamaica's economy, accounting for 37 percent of total petroleum consumption in 2008 and the demand for automotive fuels (gasoline and diesel oil) is growing at a rate of 4.3% per annum. The bauxite and alumina industry accounts for 34 per cent, while electricity generation accounts for 23 per cent.

[1] Ministry of Energy and Mining, Oil Import Statistics, 2009

The table below shows the petroleum import levels over the past five years, and the utilization by sector.

National Petroleum Consumption by Activity

	History				Base
INPUTS	**2005**	**2006**	**2007**	**2008**	**2009**
Total Fuel Imports (M BOE)	**27.33**	**29.16**	**29.09**	**27.80**	22.10
For Electricity	6.55	6.39	6.65	6.27	**6.66**
For Bauxite Industry	9.80	9.55	8.81	9.39	**3.39**
For Road and Rail Transportation	6.25	6.37	6.08	5.84	**5.90**
Other (shipping, aviation and other manufacturing)	4.73	6.85	7.55	6.30	**6.15**
Growth	--	6.7%	-0.2%	-4.4%	**-20.5%**
Cost of Fuel Imports (M US$)	$1,397	$1,837	$2,007	$2,706	**$1,350**
Composite overall cost per barrel of crude	$55.51	$59.77	$61.64	$97.34	**$61.09**

Source: Ministry of Energy and Mining Oil Import Statistics 2009

The following table provides a synopsis of the energy sector, identifying some key strengths and weaknesses.

Strengths:

- Jamaica has a well developed power supply and distribution system with more than 90% of the population having access to electricity
- Jamaica is endowed with a very high potential for the use of renewables in the form of solar, wind and biomass production
- There are diverse opportunities for co-generation

Weaknesses:

- High dependence on imported petroleum
- Lack of known indigenous fossil fuel sources
- High energy import bill
- High cost of electricity
- Old/aging electricity generation plant - Over 40% of the power generation system is old and in need of replacement/retirement
- Aged technology of the local petroleum refinery
- Lack of detailed and up-to-date data for determining renewable energy projects
- Slow development of renewable energy resources
- Low levels of public action on energy conservation
- Weak enforcement powers of regulatory agencies

The National Energy Policy is expected to build on the strengths and reduce many of these weaknesses.

Management of the Energy Sector

The Ministry of Energy and Mining has overarching responsibility for the development of the energy sector in Jamaica. The Ministry's Energy Division facilitates the development of strategies, programmes and projects to ensure the successful implementation of the National Energy Policy with a focus on the identification of new, renewable and alternative energy sources and the promotion of energy conservation and efficiency.

The Petroleum Corporation of Jamaica (PCJ) is the main implementing agency of the Ministry and focuses on implementing the energy security and fuel diversification strategies and the cost-effective availability of petroleum products.

The Jamaica Public Service Company Limited (JPSCo) is the National Electric Grid Operator and, along with several Independent Power Producers (IPPs), satisfies the electricity generation needs of the country.

The Rural Electrification Programme (REP) has responsibility for providing electricity to non-urban areas. Under the REP, 7,000 km of low voltage distribution lines were constructed and approximately 70,000 rural homes electrified. In excess of 90% of households island-wide now have access to electricity.

Currently, the Government of Jamaica owns 20% of the Jamaica Public Service Company (JPSCo) Limited. The Government has taken the decision to privatize and liberalize the electricity sector, and as a first step, all new generating capacity is being undertaken by the private sector through independent power producers (IPPs) which generate electricity for their own use (self producers) and/or for sale to the national grid. While JPSCo retains a monopoly on the transmission and distribution of electricity, independent power providers now account for over 25% of electricity generation capacity. In 2008, total generating capacity in Jamaica was approximately 818 megawatts (MW), which included 217 MW capacity provided by IPPs.

Jamaica's National Energy Policy 2009 – 2030

Jamaica's National Energy Policy 2009 – 2030 is designed to ensure that by 2030 Jamaica achieves:

"A modern, efficient, diversified and environmentally sustainable energy sector providing affordable and accessible energy supplies with long-term energy security and supported by informed public behaviour on energy issues and an appropriate policy, regulatory and institutional framework"

The Strategic Framework – the goals and strategies underpinning this National Energy Policy – addresses both supply and demand energy issues the country faces and places priority attention on seven key areas:

1. Security of energy supply through diversification of fuels as well as development of renewables
2. Modernizing the country's energy infrastructure
3. Development of renewable energy sources such as solar and hydro
4. Energy conservation and efficiency
5. Development of a comprehensive governance/regulatory framework
6. Enabling government ministries, departments and agencies to be model/leader for the rest of society in terms of energy management
7. Eco-efficiency in industries

The National Energy Policy will support the implementation of Vision 2030 Jamaica – National Development Plan, particularly National Outcome #10 – Energy Security and Efficiency and is therefore consistent with, and part of the overarching vision for achieving developed country status by 2030. The National Energy Policy and its relationship to Vision 2030 Jamaica as well as Government's policy-making framework are presented in the matrix below:

"A modern, efficient, diversified and environmentally sustainable energy sector providing affordable and accessible energy supplies with long-term energy security and supported by informed public behaviour on energy issues and ar appropriate policy, regulatory and institutional framework"

(Vision of Jamaica's Energy Sector)

Goal 1:	Goal 2:	Goal 3:	Goal 4:	Goal 5:	Goal 6:	Goal 7:
Jamaicans use energy wisely and aggressively pursue opportunities for conservation and efficiency	Jamaica has a modernized and expanded energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities and the productive sectors on a sustainable basis	Jamaica realizes its energy resource potential through the development of renewable energy sources and enhances its international competitiveness, energy security whilst reducing its carbon footprint	Jamaica's energy supply is secure and sufficient to support long-term economic and social development and environmental sustainability	Jamaica has a well-defined and established governance, institutional, legal and regulatory framework for the energy sector, that facilitates stakeholder involvement and engagement	Government ministries and agencies are a model/leader in energy conservation and environmental stewardship in Jamaica	Jamaica's industry structures embrace eco-efficiency for advancing international competitivene and moves towards buildi a green econor

Jamaica's National Energy Policy 2009 – 2030 supports the thrust towards energy conservation and efficiency and establishes a set of indicators and targets for conservation. The outcome level indicator and target is presented in the table below (additional sector level targets are presented in Section 3 of this policy document).

Indicator	2009	2012	2015	2030
Energy intensity index (EII) BTU/US$1 Unit of output (Constant Year 2000 $US)	21152	14000	12700	6000

This target therefore calls for Jamaica to find innovative ways in all sectors of the economy to reduce its energy intensity. Energy efficiency improvements are measured through changes in energy intensity in each sector, which is total energy consumption per dollar of gross domestic product (GDP). In this method, lower energy intensity is equated to improved energy efficiency.

Energy Conservation and Efficiency in Jamaica

As a country Jamaica is very inefficient in its use of energy. This is due to a range of factors, including: the high energy use of the bauxite and alumina industry; an inefficient public electricity system; inefficient energy technologies in manufacturing and other productive sectors; inefficient energy use in the public sector; low public awareness of the importance of energy conservation; and an inadequate policy framework to promote energy conservation and efficiency.

Jamaica's energy intensity index has increased steadily in recent years, and now indicates that the economy requires up to 20,000 British thermal units (BTU) to produce US$1.00 of output, compared to a global average of 4,600 BTU. Increasing the efficiency of energy production and consumption in Jamaica will contribute to reducing the energy intensity of the economy.

Additionally, past efforts at energy conservation and improved efficiency of use have not been sustained. This Policy therefore will identify strategies to overcome the barriers to the implementation of ECE initiatives and proposes a targeted approach be taken with emphasis on public awareness, provision of financing and the establishment of an appropriate institutional framework. The Government intends to lead by example, ensuring that the public sector implements ECE initiatives as a matter of urgency. The private sector will be engaged and encouraged to participate in this national drive.

Global Trends in Energy Conservation and Efficiency

Up to about 30 years ago, the global energy system was about 34% efficient, meaning that only a third of the world's energy input was being converted into useful energy (Nakicenovic et al. 1998). Since then, improvements to the efficiency of the global energy chain have led to this figure increasing to about 39%. Energy efficiency currently enjoys strong global commitment.

Worldwide, energy efficiency has improved considerably since the 1970s in response to energy price increases, supply uncertainties, government policies and independent technological improvements. Technological advances have allowed for increases in energy efficiency, reducing energy demand while increasing economic activity. Studies have indicated that energy savings of 20 – 30% could be obtained globally over the next three decades through improvements in energy-using technologies and energy supply systems.

Economic, energy security and environmental challenges all serve as catalysts for the development and implementation of energy conservation and efficiency policies and programmes. The G8 countries for example have been very active in developing and implementing energy efficiency policies for several decades, but particularly since the early 2000s. Their efforts have taken the form primarily in focus on energy performance in buildings as well as energy efficiency and labelling requirements for energy-using products and electrical appliances.

Countries such as Canada and the United States have focused on implementing the ecoENERGY Efficiency Initiative that promotes smarter energy use across buildings, industry and transport sectors. The United States government has begun updating energy efficiency standards for vehicles, lighting, domestic appliances and federal buildings as well as supporting utility demand response programmes.

In Japan, energy conservation is at the heart of its national energy policy and has put in place an Act "Rational Use of Energy" to support its conservation efforts. Key elements of this Act include the requirement for annual reports from as much as 14, 000 designated energy management factories on their medium and long-term plans for capital expenditures for energy-efficient equipment. These factories also are required to appoint energy managers. Japan also has adopted the "Front Runner Plan" for energy conservation. This plan sets forth specific measures for achieving its goal of improving energy consumption efficiency by at least 30% by 2030 compared with 2003.

Across sectors there are many innovations worldwide in energy conservation and efficiency – many of which can be adopted and/or adapted to the Jamaican context. Some of these include:

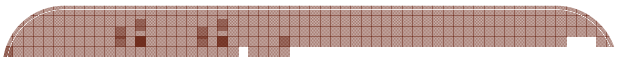
- energy performance standards and associated labelling for appliances
- fuel efficiency standards for heavy-duty vehicles
- low rolling resistance and appropriate inflation levels for tyres
- promotion of energy management in industry
- creation of incentives for utilities to promote energy efficiency, including setting energy efficiency targets for utilities
- use of cleaner technologies in the manufacturing sector

Globally, advancements in energy conservation and efficiency have yielded some valuable lessons. Some of these include:

- Political will and commitment are important to successful implementation of energy efficiency measures, with the participation and commitment of state and local governments being as important as that of national governments in many instances.
- Regulatory interventions are required for norms and certification programs.
- A range of policy measures have been used and have been typically sector focused.
- Energy efficiency policies and measures should be accompanied by legal and institutional frameworks that remove market distortions.
- Policy should be long term in nature, with proper pricing signals for investors, as well as consider demand and supply aspects.
- Many energy efficiency projects have associated technical assistance program support.

Rationale for the Development of an Energy Conservation and Efficiency Policy

The rationale for the implementation of a National Energy Consrvation and Efficency Policy centres around the economic, social and environmental benefits that Jamaica stands to achieve. In addition to alleviating the economic burden of imported oil, conservation and efficiency also can contribute to reduced energy investment requirements, and make the best use of existing supply capacities to improve the access to energy. There are many possibilities for Jamaica, where the largest energy savings, in absolute terms, can be made in the industrial and transport sectors. Interventions aimed at improving energy efficiency in the residential sector can contribute significantly to improving the quality of life of households while reducing costs.



Energy Conservation and Efficiency (ECE) remains Jamaica's main short term response to significantly impact the adverse energy situation, rising consumption patterns in the country. The rationale for the development of this policy is presented in terms of:

- Drivers for Energy Conservation and Efficiency
- Benefits of Promoting ECE

Drivers for Energy Conservation and Efficiency in Jamaica

There are many different reasons why the Government of Jamaica has a strong desire to enhance the country's efforts in energy conservation and efficiency. Some of these are listed below.

- High energy intensity
- Growing global demand for energy and rising energy costs
- The increasing energy consumption in the country is at a much faster pace than the expansion of the economy.
- Energy conservation and efficiency offers a no regrets solution to the country's energy problems – it represents the fastest, cheapest and cleaners way to stretch energy supplies and consequently limited financial resources
- The electricity and road transportation sectors combined accounts for 65% of total petroleum consumption for Jamaica. These two sectors offer tremendous potential for improved levels of efficiency in energy use.



of electricity, in the use of energy in the transport sector, and in the consumption of electricity by industrial, commercial and residential consumers. This calls for renewed national efforts to conserve energy and use it as efficiently as possible.

Some key benefits of promoting energy conservation and efficiency programmes in Jamaica are expected to include:

- Reduction in oil dependence and the demand for foreign currency to make payments for oil purchases – this It generates savings which can be utilized for other economic and social programmes and developmental activities.
- Improvements in energy use in the transportation, manufacturing, building, and other economic sectors.
- Improved air quality
- Reduced greenhouse gas emissions
- Increased energy security
- Deferred need to invest in new infrastructure
- Waste reduction
- Freeing up of capital and hedging of fuel risks
- Enhanced competitiveness

Exploring the Scope for Promoting Energy Conservation and Efficiency

Improvements in energy conservation and efficiency can play a significant role in addressing energy security, environmental and economic objectives. Many studies over the years have identified major barriers to the implementation of ECE initiatives on a sustained basis in developing countries. The generic barriers include: technical, informational, financial/economic, managerial/entrepreneurial and organizational, risk and/or uncertainties, and policy and legal/regulatory. All of these barriers are relevant to Jamaica. In addition, traditional attitudes and inertia influenced by cultural norms are among other factors that can thwart the meaningful adoption of ECE measures. Notwithstanding, the policy and the strategic framework will seek to address many of these issues to ensure successful outcomes in the country's energy conservation and efficiency efforts.

The areas of focus in the proposed ECE policy include: public sector, private sector (households, industrial, commercial, and tourism), electricity, transport, codes and standards, energy conservation and efficiency market, renewable energy technologies, environment, institutional framework and technical capacity development.

Section 2
Defining the Policy Framework

Vision for Energy Conservation and Efficiency in Jamaica

Jamaicans in all sectors conserve and use energy efficiently and continuously seek opportunities to use renewable energies… towards a sustainable energy future

The Vision sets out the general policy directive which is expected to contribute to Jamaica meeting its energy, economic development, climate change, and sustainability goals. Energy efficiency and conservation represent the least expensive, lowest risk, and most effective means of immediately reducing energy consumption and our dependence on fossil fuels. This policy will establish the necessary strategies to enable this with an emphasis on the demand and supply side as well as the transportation sector and commercial and residential buildings.

The vision also recognizes that the consumers of energy are largely subject to the provisions of energy suppliers and thereby prescribes strategic policies that address the supply side as well as stimulate the demand side to expedite implementation. Given the comprehensive nature, emphasis is also placed on the expanded capacity that is required in the Ministry of Energy and Mining to coordinate, facilitate and monitor implementation. In addition, the policy recognizes that efficiency and conservation if fully implemented as described herein could reduce if not eliminate the need to expand overall capacity.

The vision of this policy is directly related to the following goals of the National Energy Policy 2009 – 2030:

Goal 1: **Jamaicans use energy wisely and aggressively pursue opportunities for conservation and efficiency**

Goal 6: **Government ministries and agencies are a model/leader in energy conservation and environmental stewardship in Jamaica**

Goal 7: **Jamaica's industry structures embrace eco-efficiency for advancing international competitiveness and move towards building a green economy**

Additionally, two other goals will be addressed through this policy, even though their achievement also will be dependent on the successful implementation of other sub-policies of the national energy policy. These goals are:

Goal 2: **Jamaica has a modernized and expanded energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities and the productive sectors on a sustainable basis**

Goal 5: **Jamaica has a well-defined and established governance, institutional, legal and regulatory framework for the energy sector that facilitates stakeholder involvement and engagement**

The National Energy Conservation and Efficiency Policy sets out strategies and actions that would result in an increase in the efficiency of the energy sector in the generation, transmission and distribution of electricity, in the use of energy in the transport sector, and in the consumption of electricity by industrial, commercial and residential consumers.

This calls for renewed national efforts by all Jamaicans in all sectors to conserve energy and use it as efficiently as possible.

The Strategic Framework Underlying Jamaica's ECE Policy 2010 - 2030

The Strategic Framework of this Policy sets out areas for action under four goals. It is designed to substantially improve energy conservation and efficiency in all sectors of the economy and accelerate the introduction of new technologies through improving regulatory processes and addressing the barriers to uptake of new energy-efficient products and technologies. The Policy also aims to encourage and support innovation in energy efficiency technologies and approaches.

In determining the goals underpinning this policy, the following considerations were taken into account:

- Demand-side energy conservation, taking into account the priority sectors such as mining, manufacturing and tourism
- Optimization of energy supply
- Capacity for uptake of energy conservation plans and progammes as well as short- and medium-term financing needs

The policy provides the framework within which the energy conservation and efficiency programmes and projects will be promoted. The policy is designed to be long-term in nature and encourage proper market and pricing signals. It includes strategies and actions that support

- both demand and supply aspects of energy conservation and efficiency
- legal and institutional frameworks that remove market distortions that favor conventional sources
- regulatory interventions which are required to implement norms and certification programs

Goals of National Energy Conservation and Efficiency Policy

Goal 1: Households and businesses aggressively and continuously adopt energy conservation and efficiency practices towards reducing Jamaica's carbon footprint

Goal 2: An enabling environment buttressed by dynamic legislation and regulations that facilitates the promotion of energy conservation and efficiency

Goal 3: The Government of Jamaica is the leader in energy conservation and efficiency and sets the standard for all other sectors

Goal 4: Jamaica has modern and efficient energy plants

The four goals underpinning the National Energy Conservation and Efficiency Policy address the following areas:

- **Assisting households and businesses to aggressively adopt energy conservation and efficiency practices towards a reduced carbon footprint**
- **Reducing and/or eliminating barriers to the uptake of energy conservation and efficiency projects, technologies etc**
- **Government leading the way in energy conservation and efficiency efforts and working in partnership with the private sector and civil society**
- **The efficiency of the energy plants that supply energy to all sectors of the economy**

Energy conservation requires multi-stakeholder involvement and participation in progammes and initiatives

Goal 1: Households and businesses aggressively and continuously adopt energy conservation and efficiency practices towards reducing Jamaica's carbon footprint

Under this goal, strategic focus will be to encourage innovation and the development, enhancement, deployment and operation of more energy efficient technologies in the Jamaica. Areas of focus under this goal will include measures to improve consumer awareness of the need for and benefits of energy conservation and the adoption of energy efficiency measures by informed choice. In this regard, efforts will be made to assist households and industry to transition to a low-carbon future by providing material assistance as well as the information and skills necessary to improve the efficiency of energy use. With respect to industry (e.g. mining, manufacturing and tourism), emphasis will be placed on those initiatives that will enhance the knowledge, skills and capacity of businesses to operate in an energy efficient environment towards a move to a green economy. Some of these would include targeted outreach information, support to identify and implement projects with high energy savings potential, and information that could assist with prioritising energy efficiency opportunities in industry. One outcome of this would be to more informed choices in the sector to improve energy efficiency (e.g the use of clean technologies in manufacturing). Issues related to the transport sector and improving its efficiency also will be covered under this goal; as well as This measures to help raise the energy efficiency of the existing building stock and in the construction of new buildings.

Under this goal, priority also will be given to capacity building, awareness raising, skills development and training. Energy efficiency and renewable energy skills development are essential components of national energy conservation programmes.

Fundamental to the achievement of this goal would the availability of data on energy use in all sectors. Under this goal, strategies will be put in place to improve data collection on energy with particular emphasis on conservation and efficiency.

Key Strategies and Actions

Strategies related to Information, Education and Training, Demonstration

- Develop and implement programmes to influence market behaviour toward and promote efficient use of energy including the use of energy-efficient appliances,

equipment, and building designs; setting and enforcing standards for public sector organizations

- Provide opportunities for access to clear and consistent information on energy efficient products and services.
- Development of awareness and training initiatives that will ensure that all persons, including householders, business persons, professionals, informal traders, farmers, drivers, public transport operators and students are sensitized so that better choices and more efficient behavioral changes can be made.
- Develop and Implement awareness and communication campaigns will also be carried out to ensure stakeholder endorsement of the intervention programme and consumer shift towards more rational energy use.
- Incorporate international best practices and findings of market surveys and consumer focus groups in design and implementation of demand side management programmes
- Review, evaluate and improve previous and existing demand-side energy management programmes for performance, strengths, weaknesses and lessons learned
- Development of programmes to facilitate the infusion of ECE across the curricula in all levels of the educational system.
- Create forums to showcase and promote energy efficiency technologies and energy conservation measures for society at large – possibly though the use of community and government buildings and educational facilities to showcase new technologies.
- Identify energy efficiency skills requirements across the economy and associated training, accreditation and higher education needs.
- Establish networks and partnerships with government, private sector and academia as well as other key research institutions to promote the development of energy efficient technologies.
- Develop the capacity to collect and manage energy data while being cognizant of the need to preserve the data and respect confidentiality.
- Development of an energy information clearing-house, using information and communication technologies that will enable information to be easily accessible and available in a user-friendly format to relevant stakeholders.
- Develop institutional capacity to implement demand-side energy management programmes
- Ensure an adequate supply of energy efficient products, goods and services- energy management cadre, promotion of ESCOs, Standards and Labeling
- Launch a National Demand-Side Management (DSM) Initiative Designed to Reduce Residential Energy Consumption

Strategies related to Private Sector and Industry

- Support and Assist in the Establishment of Energy Service Companies (ESCOs) that derive their income by generating energy savings for their clients.
- Facilitate the development of a national approach to encourage companies to develop internal systems to assess and prioritize energy efficiency opportunities.
- Support companies to identify and implement high energy saving energy efficiency opportunities including through whole of supply chain assessments and systems optimization of priority industrial technologies.
- Promote best practice and innovation within energy-using corporations and the energy services sector (through case studies).
- Develop programmes that would support industry to identify and implement high energy saving energy efficiency opportunities including through whole of supply chain assessments and systems optimization of priority industrial technologies.
- Encourage greater energy efficiency and lower energy costs in the bauxite and alumina industry and the manufacturing sector
- Facilitate sourcing of low cost development funds for productive enterprises for energy technology projects
- Promote best practices in design of new production facilities and retro-fitting of existing facilities to maximize energy efficiency
- Adopt Cleaner Production Mechanism (CPM) through promotion of incentives (Carbon Credits) and capital financing available
- Promote the development and implementation of environmental management systems in the productive sectors (ISO 14001)

Strategies related to Energy Generation

- Maximize the potential for the application of co-generation and other distributed generation technologies that increase energy efficiency.
- Encourage broader use of cogeneration output of energy by manufacturers
- Encourage integrated energy industrial parks with cogeneration facilities
- Implement demand-side management programmes relating to load control
- Facilitate the introduction of energy-saving devices
- Employ energy-saving approaches in building design and construction
- Facilitate the introduction of energy-saving devices
- Employ energy-saving approaches in building design and construction

Strategies related to the Transport Sector and Buildings

- Promote and implement greater energy conservation and efficiency and lower energy costs in the transport sector, including:
    - Promote greater vehicle fuel efficiency
    - Establish tax on petrol at levels to encourage conservation and higher utilization of and development of public transport
    - Encourage the import and facilitate the use of more fuel-efficient vehicles in the transport sector as well as the use of diesel, bio-fuels and CNG when it becomes available
    - Promote use of alternative fuels in transport sector
    - Provide adequate infrastructure for transition to alternative energy vehicles
    - Promote carpooling opportunities (preferential tolls, HOV lanes)
    - Carry out study of urban transport needs and mass transit options
- Develop and implement appropriate tax and pricing structure for road users that reflect environmental costs and other externalities
- Develop minimum energy standards for buildings
- Provide incentives for developers to undertake energy efficiency improvements in commercial and residential buildings
- Provide and promote information on energy efficient housing options
- Facilitate the retrofit of existing structures by providing tax credits for efficient purchases and incremental cost incentives for overhauls
- Improve the energy performance of existing and new homes through design improvements and ensuring the availability of energywise household products and increasing the uptake of renewable products.

Goal 2: An enabling environment buttressed by dynamic legislation and regulations that facilitates the promotion of energy conservation and efficiency

Under this goal, emphasis will be placed on creating the requisite regulatory environment to deliver continuing improvements to energy conservation and efficiency initiatives both on the demand and supply sides). This goal also embraces a range of measures aimed at increasing the energy efficiency of products used in the residential, commercial and industrial sectors. Regulations governing performance codes and standards and energy efficiency labelling will be pursued.

Some Benefits of Implementing Financing Mechanisms for Energy Conservation and Efficiency Initiatives

- Enable demand to facilitate scaling-up of activities
- Expand domestic supply and create new niches in the market
- Improve control of the quality and performance of adopted technologies;
- Ability to constantly monitor energy conservation activity by relevant GOJ entity

This goal will ensure that ECE strategies are effectively integrated into several policy areas including the motor vehicle policy, provisions for accelerated depreciation, land development approvals as well as, inter alia, building design for new construction as well as expansions/improvements. Critical to the achievement of this goal will be the integration of the energy conservation and efficiency systems with those being established for biofuels, trading of carbon credits, renewable energy and the broader national energy structure.

Financing is a major stumbling block for energy conservation, and quite often, a hindrance to achieving stated goals for enhancing activities. Under this goal, the system of incentives and financing arrangements will be defined.

To this end, strategies to be adopted will include measures to review and develop programmes to address barriers to harnessing electricity markets thereby enabling better enable the uptake of economic and cost-effective distributed generation and demand side initiatives, while maintaining reliability of supply for consumers and industry. Through this goal, the regulatory environment would also facilitate the development of renewable energy sources.

Key Strategies and Actions

- Create relevant legislation to support required investments in energy efficiency
- Provide incentives for the use of innovative/clean technologies in power generation, mining and manufacturing to improve energy efficiencies

- Design and introduce appropriate financing mechanisms to facilitate the
- spread of energy efficiency and renewable energy technologies
- Development of a framework to capitalize on the opportunities offered by the carbon market, under the Clean Development Mechanism (CDM) for efficiency and conservation projects.
- Accelerate and expand the current energy labelling program.
- Establish a system to identify and replace old and inefficient units/plants with more fuel efficient and cost efficient technologies and plants
- Retire the old generation plants and replace them with modern plants through a competitive basis to improve the conversion efficiency
- Conduct periodic review and update of building code
- Strengthen capacity of local authorities to enforce building code on an ongoing basis
- Update, apply and enforce the Energy Efficiency Building Code to support efficient use of energy in buildings
- Develop and implement demand side initiatives including general demand reductions from energy efficiency, peak load shifting, cost-reflective pricing, and measures to address asymmetry of information.
- Develop and implement appropriate tax and pricing structure for road users that reflect environmental costs and other externalities
- Review related policies for other sectors including transport, mining, agriculture, tourism and industrial policy, and make recommendations to harmonize with the national energy policy and sub-policies under the national energy policy
- Provide incentives for the usage of renewable energy in productive sectors
- Provide incentives where applicable to encourage employment of high levels of capital to increase use of cleaner technologies
- Provide incentives/disincentives for the use of innovative/clean technologies in key energy-intensive sectors including mining and manufacturing to improve energy efficiencies

Goal 3: The Government of Jamaica is the leader in energy conservation and efficiency and sets the standard for all other sectors

Under this goal, Government ministries, departments and agencies will be able to be demonstrated models of efficient energy usage and environmental stewardship, resulting in a reduction in the high public sector consumption of energy and other resources and providing a stimulus for private sector and community action. Government is the largest single consumer of energy in the economy. Thus, by GOJ Improving its energy efficiency it will contribute to reducing Jamaica's total energy consumption as well as demonstrate leadership and thus providing the need stimulus to encourage the rest of the society to accept and adopt measures to increase the efficiency of energy use. Through this goal, Government also will aim to reduce energy inefficiencies in transport by adopting strategies that would better enable the management of fleet. Measures to make street lighting more efficient also will be addressed. Under this goal, focus will be placed on the National Water Commission as the single largest consumer in the public sector, with intensification of loss reduction, improvement in pumping efficiency and introduction of a distributed storage programme which will facilitate better management of pumping operations;

Key Strategies and Actions

- Ensure that Ministries and Agencies develop and implement environmental stewardship action plans, with special emphasis on energy and fleet management
- Develop and implement a specific programme of energy management for the National Water Commission, the single largest consumer of energy in the public sector, focusing on intensification of loss reduction, improvement in pumping efficiency and the introduction of a distributed storage programme which will facilitate better management of pumping operations
- Fast track the implementation of energy efficiency programmes (the recommendations of the energy audits undertaken) in hospitals and other areas of the public sector, based on the findings of various earlier studies and energy audits
- Establish energy conservation and efficiency (ECE) protocols for the operation of public sector facilities and entities including the appointment of an energy coordinator for each facility
- Expand the role of the Energy Efficiency Unit (EEU) within the Petroleum Corporation of Jamaica (PCJ) to provide technical assistance for ECE initiatives in the public and private sectors
- Align energy conservation and efficiency initiatives with the procurement guidelines and practices of government.

- Promote and accelerate the use of energy efficient equipment (including information-communications technology, refrigerators, etc) in government operations, and investigate the adoption of mandatory energy efficiency requirements, taking into account life cycle costing.
- Increase the energy efficiency of street lighting.
- Collect and make available to street lighting service providers and local governments nation-wide information on energy efficient street lighting.
- Provide information to street lighting service providers and local government authorities information on energy efficient street lighting.
- Develop specific energy conservation and efficiency programme for the National Water Commission to address issues such as pumping efficiency and distributed storage programmes to facilitate better management of pumping operations

Goal 4: Jamaica has modern and efficient energy plants

Under this goal, emphasis will be placed on improving the efficiency of generation facilities and curb electric power transmission and distribution losses. There also will be focus on optimizing the energy mix to facilitate the diversification of electricity generation sources and integration of renewable energies.

Key Strategies and Actions

- Retire the old generation plants and replace them with modern plants through a competitive basis to improve the conversion efficiency
- Establish a system to identify and replace old and inefficient units/plants with more fuel efficient and cost efficient technologies and plants
- Establish a combined cycle capacity to replace old and inefficient units/plants with more fuel efficient and cost efficient technologies and plants
- Review industry standards:
    - Systems losses
    - Heat rates
    - Customer minutes lost
    - Voltage stability
- Review and complete Rural Electrification Programme (REP) including use of alternative energy sources such as photovoltaic systems, wind/solar hybrid systems, propane/diesel powered appliances and biogas
- Align retail distribution system for transport fuel with development of land transport network
- Encourage greater energy efficiency in the transport sector
- Encourage broader use of cogeneration output of energy by manufacturers
- Facilitate cogeneration opportunities which meet established guidelines
- Reduce system losses
- Implement demand-side management programmes relating to load control
- Enhance the transformation of the existing electricity generation model through the establishment of energy efficiency obligations for all generators connected to the national grid

Section 3

Implementation, Monitoring and Evaluation Framework

Policy Implementation

A continuous programme of monitoring and evaluation, involving relevant stakeholders from public and private sectors, will be implemented and this will be aligned to the Monitoring and Evaluation Framework that is part of Vision 2030 Jamaica as well as the Whole of Government Business Planning Process. The Ministry responsible will use several indicators to assess the effectiveness of the National Energy Conservation and Efficiency Policy in achieving the goals, which will form the basis for reviewing the policy and recommending any changes to the policy framework.

The policy will be evaluated mid-term, after three years, to see if the targets, objectives and deliverables are being achieved. It will be updated in the light of progress to assess whether any amendments in policy are required. Sustainable development criteria – economy, environment and social priorities - will be used to guide strategy in a balanced way for the longer-term. At the same time, Government will monitor worldwide technical developments in energy conservation and efficiency with a view to identifying technologies that may be particularly appropriate to Jamaica's situation in the long-term, making the best use of partnerships where possible, both locally and internationally.

Institutional Framework

The key players in the implementation of the Renewable Energy Policy and their roles and responsibilities are described below.

The **Ministry of Energy and Mining (MEM)** will lead and facilitate the implementation of the National Energy Conservation and Efficiency Policy, in collaboration with other Government Departments and Agencies, the private sector, academia and NGOs. The Petroleum Corporation of Jamaica, which is an agency of the Ministry, and its Centre of Excellence for Renewable Energy (CERE) will be involved in facilitating the implementation of various energy conservation and efficiency projects. MEM also will be responsible for building the requisite human resource capacities across the various implementing partners to strengthen information access, skills and capacity.

The successful implementation of this policy will require that linkages be made between the energy sector as well as other aspects of the economy and society including, but not limited to, mining, agriculture, transport, environment, finance and education.

The **Office of Utilities Regulation** (OUR) will play a key role in ensuring the development of key pieces of legislation to facilitate the effective implementation of both demand and supply side

initiatives and will have oversight responsibility for the regulatory framework guiding conservation and efficiency energy initiatives.

The implementation of this policy also will require the Ministry to work very closely with a range of other Ministries and Agencies including:

- Ministry of Transport and Works
- Ministry of Finance and the Public Service
- Office of the Prime Minister – Environmental Management Division
- Scientific Research Council
- Ministry of Tourism

Implementation Framework/Action Plan for Energy Conservation and Efficiency 2010 - 2012

For each of the four goals outlined in the National Energy Conservation and Efficiency Policy 2010 - 2030, key or flagship projects/initiatives will be developed and implemented towards contributing to the achievement of the goals. The priority projects for the first three years 2010 to 2012 are already included in the National Energy Policy Action Plan 2009 - 2012. These were selected based on significance of impact in terms of advancing the achievement of a goal or the level of investment (for example high investment that are also expected to have high impact).

This means that strategies identified in the Strategic Framework of this Renewable Energy Policy will be operationalized by the associated implementing agencies and partners through the incorporation of specific actions in the Strategic and Operational Plans of these entities. These plans will provide detailed information on specific actions to be undertaken, the implementing agencies and partners, timelines and costs.

Most if not all of these priorities and flagship projects presented here are already reflected in at least one of the following:

- The priority strategies and actions identified in the National Energy Policy
- The key strategies and actions for the energy sector for 2010-2012 as enunciated in Vision 2030 Jamaica, National Development Plan and the Medium Term Socio-Economic Policy Framework (MTF) 2009-2012
- Priorities as expressed in the corporate plans of Ministry of Energy and Mining and its departments and agencies

The table below presents the action plan for the period 2010 – 2012 for the Energy Conservation and Efficiency Policy by summarizing the descriptions a number of flagship projects. The projects identified are aligned to the National Energy Policy and are listed along with the strategies identified in the National Energy Policy that are addressed by the project, and the expected outcome(s), responsible agencies, timeline and cost. Also, for each flagship project the other goals in the energy policy that will be supported are specified.

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
Goal 1: Jamaicans use energy wisely and aggressively pursue opportunities for conservation and efficiency							
Flagship Project 1: Developing Energy Efficiency (EE) Potential This flagship project is aimed at creating conditions that will support increased energy efficiency in Jamaica. It consists of five (5) sub-projects as follows: • Sub-Project 1 – Expansion of the Appliances Labelling and Testing Programme • Sub-Project 2 – Enforcement of Jamaica Building Code • Sub-Project 3 – Implementation of Energy Efficiency Programmes for Street Lighting • Sub-Project 4 – Establishment of a revolving facility for EE and RE financing in the private sector • Sub-Project 5 – Energy Saving Compact Fluorescent Lamps (CFL) Project							
Sub-Projects							
1 - Expansion of the Appliances Labelling and Testing Programme	BSJ Support: UTech, UWI		Facilitate the introduction of energy-saving devices e.g. LED, solar panels, solar street lighting Develop and implement programmes to influence market behaviour toward … use of energy-efficient appliances		US$ 1.03 million	Increased capacity of BSJ, UTech, UWI to test appliances Increased use of energy efficient appliances by consumers	Testing facilities sufficient to test appliances Data show increase in sales and import of energy-efficient appliances
2 - Enforcement of Jamaica Building Code	MEM, BSJ, Cabinet Office, OPM (DLG), Local Authorities, TCPA Support:		Employ energy-saving approaches in building design and construction Update, apply and enforce the Energy Efficiency Building Codes to support efficient use			Building Act promulgated Increased capacity among LGAs for enforcement of Building Code	Building Act is legally in effect Building inspections show at least >75% of lights are energy-efficient

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
	UTech, JIA, JIE		of energy in buildings Create relevant legislation to support required investments in efficiency			Energy efficient lighting and cooling equipment used in new and retrofitted buildings[2]	Improve overall energy use index to include air conditioning, water heating, lighting, cooking and misc.
3 – Implementation of Energy Efficiency Programmes for Street Lighting	MEM Support: REP, PCJ, JPSCo, DLG, UTech, UWI		Facilitate the expansion of use of energy-saving devices e.g. LED, solar panels, solar street lighting		US$ 2 million	Installation of energy-efficient street lights Labs at universities, building and testing components	Number of street lights and energy-saving devices installed Net saving in J$ as a result of intervention Reports from labs on relative efficiencies of various components
4 - Establishment of a revolving facility for EE and RE financing in the private sector	DBJ, MEM Support: PCJ, PC Banks	Goals 3, 7	Provide incentives/disincentives for the use of innovative technologies to improve energy efficiencies		US$2.5 million	Establishment of EE/RE Revolving Fund Encouragement of private sector uptake	Evidence of aggressive promotion of facility Number of active participants listed

[2] The Code mandates 50% lamps must use energy-efficient lighting

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
							as a percentage of target group
5 - Energy Saving Compact Fluorescent Lamps (CFL) Project	MEM Support: UTech, UWI, BSJ		Facilitate the introduction of energy-saving devices e.g. LED, solar panels, solar street lighting		J$11.7 / million[3] / J$ 6 million[4]	Installation of CFLs in households of 5 remaining constituencies Introduction of R&D in the selection of devices	Households in 5 target constituencies using CFLs
Flagship Project 2							
Online Energy Information Clearing House	MEM Support: CIPORE, SRC, UTech, UWI, CITO, FSD	Goals 3, 4, 6	Develop and implement a relevant and sustained public energy information programme and information database Develop an energy information clearing house eg. CIPORE website.	2009 - 2011		Online clearing house established and widely used	Statistics recorded on the website show increasing use of the resource
Flagship Project 3							
Energy Conservation Training Programme	MEM Support: MOE, MOI, Public	Goal 6	Implement demand side management programmes that promote public awareness of the	2009 - 2011		Training programme institutionalized Increased	Agreement with training institution in place.

[3] Door-to-door delivery model
[4] Central distribution model

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
	Sector, UTech, UWI		importance of responsible energy use Develop and implement effective education and training programmes on energy conservation at all levels of the education system			knowledge and skills for energy conservation among Public sector officers	Training reports show increased numbers of public sector officials trained Water conservation
Flagship Project 4							
Consumer-oriented Energy Efficiency and Conservation Campaign	PCJ Support: BSJ, Private Sector, UTech, UWI	Goal 6, 7	Implement demand side management programmes that promote public awareness of the importance of responsible energy use Develop and implement effective education and training programmes on energy conservation at all levels of the education system	2009 - 2012		Increased awareness about energy conservation and energy efficient equipment Increased use of energy-efficient equipment	
Flagship Project 5							
Energy Conservation in the Transport Sector	MEM, MTW Support: MFPS, UTech, UWI	Goal 6	Promote energy conservation and efficiency in the transport sector (e.g. imports of more fuel efficient vehicles;	2009 - 2011		Alignment of transport policy with National Energy Policy Petrol taxed at a	

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
			transition to alternative energy vehicles; levying taxes on petrol to road maintenance Implement appropriate tax and pricing structure for road users that reflect environmental costs and other externalities			level to allow for road maintenance Promotion of conservation measures e.g. walking (healthy lifestyle) car pooling Increase in % of fuel-efficient cars imported Enforcement of maximum axel weight standards Training Institutions teach conservation methods	
Goal 2: Jamaica has a modernized and expanded energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities and the productive sectors on a sustainable basis							
Flagship Project 6							
Flagship Project 7							
Improvement of Electricity Distribution and	JPSCo Suppport: OUR, MEM,		Ensure continuity and consistency of energy supply and distribution	2009 - 2012	US$65.1 Million	Reduced theft of electricity Reduced technical	Reduction in technical losses from 10% at present to 8.5%

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
Transmission Efficiency	UTech, UWI		Strengthen the capacity of the government's electrical inspectorate and the petroleum safety inspectorate to adequately monitor and control incidences of illegal operations			losses Reduction in non-technical losses Upgraded billing system	of net generation by 2014 Reduction in non-technical loss by 2.6% over the next five (5) years Customer bills accurate
Flagship Project 8							
Power Sector Development and Capacity Replacement	OUR, JPSCo, IPPs, MEM		Ensure continuity and consistency of energy supply and distribution Through a competitive basis, retire the old generation plants and replace them with modern plants to improve the conversion efficiency Establish a system to identify and replace old and inefficient units/plants with more fuel efficient and cost efficient technologies and plants				
Flagship Project 9							

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
Goal 3: Jamaica realizes its energy resource potential through the development of renewable energy sources and enhances its international competitiveness, energy security whilst reducing its carbon footprint							
Flagship Project 10: Jamaica's Renewable Energy Programme Over the next three years Jamaica will implement renewable energy projects that are expected to bring the country to meet the energy target by allowing the country to meet its 2015 targets of 12.5% renewables in the energy mix by 2015. These projects will be mainly focused on wind, solar and hydropower. This flagship project includes three sub-projects as follows: • Sub-Project 1 – Expansion of Hydro Power Capacity • Sub-project 2 - Increase in Wind Energy Generation Capacity • Sub-project 3 - Promotion of Solar (Photovoltaic and Thermal) Technologies							
Sub-projects							
1 - Expansion of Hydro Power Capacity	PCJ, CERE, OUR, JPS, NWC Support: WRA, NLA, UTech, UWI	Goal 4	Prioritize renewable energy sources by economic feasibility criteria, environmental considerations including carbon abatement Promote the development of efficient and low cost renewable plants with a size of 15 MW or less through applications to the OUR. Comply with international conventions on climate change and global warming	2009 - 2014	US$28.5 million	Increased hydroelectric capacity	Development of hydroelectric power resources Defined CO2 reduction
2 - Increase in	PCJ, CERE,	Goal 4	Prioritize renewable	2009 -	US $ 58	Increased wind	Wigton Wind

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
Wind Energy Generation Capacity	JPSCo Support: UTech, UWI		energy sources by economic feasibility criteria, environmental considerations including carbon abatement Promote the development of efficient and low cost renewable plants with a size of 15 MW or more on a competitive basis through a level playing field Comply with international conventions on climate change and global warming Strengthen R&D base	2014	million	energy generation capacity[5] Studies into wind energy generation potential conducted	Farm expanded Munro Wind Farm constructed
3 - Promotion of Solar (Photovoltaic, Solar Cooling and Thermal) Technologies	PCJ, CERE Support: UTech, UWI	Goal 4	Prioritize renewable energy sources by economic feasibility criteria, environmental considerations including carbon abatement	2009 - 2014	US$1.5 million	Increase in solar's portion of Jamaica's energy mix Increase in solar power and water	Development of solar power resources Defined reduction in CO2

[5] Target: 87 MW of installed wind energy will be developed by 2014

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
			Promote the development of efficient and low cost renewable plants with a size of 5 MW or less through applications to the OUR. Comply with international conventions on climate change and global warming Develop the local capacity to implement and maintain the solar technology systems			heating equipment used in housing schemes Increased local capacity in implementation of solar systems	Predetermined amount of electrical energy in (GWh) produced by the use of solar technologies 15 students a year trained in the design, installation and maintenance of PV, solar thermal and solar cooling systems
Flagship Project 11							
Renewable Energy Study	PCJ, UWI Support: IDB, WWFL, UTech	Goal 4	Develop an inventory of all potential sources of wind, solar and renewable technologies and ranked according to their economics with full economic impact analysis Implement incentives to encourage tertiary institutions to develop research programmes for	2009 - 2012	US$1 million	Recommendations regarding solar and wind energy projects in Jamaica Establishment of 20 wind measurement sites	Market research and recommendations for roll-out Research data available for the 20 potential projects sites

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
			the application and implementation of renewable energy technologies				
Flagship Project 12							
Solar Energy Study in Schools	MEM, MOE Support: UTech, UWI	Goals 1, 4	Encourage research, development and implementation of qualified renewable energy projects		97,350 Euro	Solar energy used in 34 schools Recommendations for national replication	
Goal 4: Jamaica's energy supply is secure and sufficient to support long-term economic and social development and environmental sustainability							
Flagship Project 13 - Diversification of Jamaica's Energy Supply This flagship project aims to develop the infrastructure and capacity to use alternative fuels such as Liquefied Natural Gas (LNG), petcoke and biofuels as part of the national efforts to reduce its dependence on oil. The strategies within the National Energy Policy addressed by this project are: • Determine the fuel diversification programme for the short, medium and longer term • Develop diversification priorities based on cost, efficiency, environmental considerations and appropriate technologies • Diversify energy sources by type and geographic location • Engage in multilateral, regional and bilateral partnerships and cooperative arrangements that best advance Jamaica's energy interests This flagship project consists of five sub-projects as follows: • Sub-project 1 - Biomass and Biofuels (Ethanol and Biodiesel) • Sub-project 2 - Petcoke Cogeneration • Sub-project 3 - Waste-to-energy project • Sub-project 4 - LNG Project • Sub-project 5 - Oil and Gas Exploration Programme							
Sub-projects							
1 - Biomass and Biofuels	MEM, PCJ, CERE, MOA,	Goal 3	Introduce ethanol blends to replace methyl	2009 - 2014	US$516,000	Development and implementation of	Biofuels policy in place

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
(Ethanol and Biodiesel)	SRC Support: UTech, UWI, BSJ		tertiary-butyl ether (MTBE) as fuel additive and increase energy security. Introduce biodiesel blends to increase environmental protection and reduce carbon emissions. Identify and develop indigenous non-renewable sources of energy and necessary enabling environment to encourage private sector participation			bio-fuel policy and programs Establishment of a strong legal and regulatory framework for liquid bio-fuels industry Island-wide E10 distribution infrastructure Development of testing labs	Volume of local blendstock increased Measurable increase in productivity in the agricultural sector Presentation of R&D findings
2 - Petcoke Cogeneration	PCJ, JPSCo Support: Private Investors, UTech, UWI		Identify and develop indigenous non-renewable sources of energy and necessary enabling environment to encourage private sector participation	2010 - 2016	US$ 300 million	Capacity for co-generation increased	Construction of 120 MW cogeneration power plant Project developed and incubation completed
3 - Waste-to-energy project	PCJ, CPDI, NSWMA, OPM Support: JPSCo, OUR, MFPS,	Goal 3	Identify and develop indigenous renewable sources of energy and necessary enabling environment to encourage private sector participation	2009 - 2013	US$ 350-400 million	Generation of energy from waste Avoided carbon emissions Waste	Construction of two waste-to-energy plants

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
	NEPA, UTech, UWI					minimization	
4 - LNG Project	MEM, OUR Support: PCJ, MFPS, NEPA, JPSCo, UTech, UWI	Goals 2, 5, 7 [N.B. Also will contribute to mining sector goals related to resuscitation of and efficiency improvements in the bauxite & alumina industry, and facilitation of new mineral industries]	Develop a framework for the introduction of natural gas Research and develop alternate fuels for the transportation sector Facilitate the use of more fuel-efficient vehicles in the transport sector as well as the use of diesel, CNG when it becomes available and bio-fuels	2009 - 2012	US$450 million [N.B.Project to be owned and financed by private sector. GOJ inputs for project facilitation budgeted at US$8.1 million]	Establishment of regulatory framework for the LNG sector Construction of Floating Storage Regasification Unit and Gas Transmission System	Supply of natural gas to the power generation and bauxite/alumina sectors
Goal 5: Jamaica has a well-defined and established governance, institutional, legal and regulatory framework for the energy sector, that facilitates stakeholder involvement and engagement							
Flagship Project 15							
Expansion of the regulatory mandate of OUR	OUR Support: Cabinet Office, Solicitor General's Office, MEM		Review on an ongoing basis the existing legal framework for performance, strengths, weakness, and lessons learnt, to formulate and implement programmes of legal reforms			Extension of the mandate of the OUR for the regulation of new sub-sectors	
Flagship Project 16							

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
Net Metering and Wheeling System	MEM, OUR, JPSCo Support: PCJ, CERE	Goals 3,4	Conduct studies to include net metering and wheeling in the tariff rates and introduce appropriate mechanisms for net metering and wheeling procedures and standards to encourage the development of renewable energy and cogeneration opportunities	2009 - 2012		Establishment of net metering and wheeling framework	Number of customers on system
Goal 6: Government ministries and agencies are a model/leader in energy conservation and environmental stewardship in Jamaica							
Flagship Project 18 - Increasing energy conservation and efficiency in the public sector This flagship project is comprised of three sub-projects as follows: • Sub-project 1 – Energy Efficiency and Conservation Technical Assistance • Sub-project 2 - Environmental Stewardship Policy • Sub-project 3 - Use of Green Technology in Local Government							
Sub-projects							
1 - Energy Efficiency and Conservation Technical Assistance	MEM	Goal 1	Fast track the implementation of energy efficiency programmes (the recommendations of the energy audits undertaken) in hospitals and other areas of the public sector, based on the findings of various earlier studies and energy audits		US$437,500	Analysis of energy in the public sector Recommendations for EE in the public sector	

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
			Establish ECE protocols for the operation of public sector facilities and entities including the appointment of an energy coordinator for each facility				
2 - Environmental Stewardship Policy	OPM, NEPA, all ministries and agencies		Implement Government of Jamaica Policy on Environmental Stewardship (2008) MDAs develop and implement environmental stewardship action plans, with special emphasis on energy and fleet management			Environmental stewardship action plans developed and implemented by public sector agencies	Reduction in energy and materials used and pollution/waste generated by public sector agencies
3 - Use of Green Technology in Local Government	OPM - DLG, LGAs Support: UTech, UWI	Goals 1, 3				Use of solar powered-street lights in areas not on the main grid	
Goal 7: Jamaica's industry structures embrace eco-efficiency for advancing international competitiveness and moves towards building a green economy							
Flagship Project 19							
Facilitating private investment in industry	PCJ, JTI		Provide incentives for the development and use of innovative technologies to improve			Checklist for project development	Technical support given on request Potential projects

Flagship Project	Responsible Agencies	Contribution to Other Goals	Strategies Addressed	Timeline	Cost	Expected Outcomes	Performance Measurement
			energy efficiencies			Template for Prefeasibility	identified and incubated

Monitoring and Evaluation Framework

The Ministry of Energy and Mining will be accountable for monitoring and evaluating the implementation of this Policy based on the Guidelines of the Cabinet Office. The proposed indicators outlined in this policy represent the foundation of a results-based monitoring and evaluation system to ensure that the five goals of this policy are achieved which will, in turn, contribute to the achievement of the related goals as set out in the National Energy Policy 2009-2030 and Vision 2030 Jamaica - National Development Plan.

A continuous programme for monitoring and evaluation, conducted by relevant stakeholders from public and private sectors, will be implemented. The Ministry of Energy and Mining will conduct broad stakeholder consultations periodically to review and assess the effectiveness of the Policy using the indicators identified below as a guide. The results of the assessment including recommendations will be published in an annual report for submission to the Cabinet.

Proposed Indicators

The proposed indicators for the National Energy Conservation and Efficiency Policy over the period 2010-2030 are presented in the table below. These indicators are the building blocks of the Monitoring and Evaluation programme. Targets will be set in collaboration with the key implementation partners.

Indicators and Targets – Renewable Energy Policy 2009 – 2030

Proposed Indicator	Baseline	Targets		
	2010	2012	2015	2030
Primary energy intensity				
Final energy intensity (at ppp)				
CO_2 emissions per capita				
Energy intensity of mining				
Energy intensity of manufacturing sector				
CO_2 emissions of industry				
Energy intensity of transport to GDP (ppp)				
Share of biofuels in road transport energy consumption				
CO_2 intensity of transport to GDP (ppp)				
Per capita installed capacity of solar water heaters				
Average electricity consumption of households per capita				
Households consumption for electrical appliances and lighting				

Proposed Indicator	Baseline	Targets		
	2010	2012	2015	2030
Efficiency of total electricity generation				
Rate of electricity transmission-distribution losses				
Share of renewables in electricity generating capacity				
Share of renewables in gross electricity consumption				

Appendix

Appendix 1 - Members of the Renewable Energy Policy Working Group

Mr. Fitzroy Vidal	Ministry of Energy and Mining
Ms Shernette Sampson	Ministry of Transport & Works
Ms Monifa Blake	Ministry of Transport & Works
Mr. Vivian Blake	National Environment & Planning Agency
Ms Kerine Senior	National Environment & Planning Agency
Mr. Horace Reid	National Irrigation Commission
Ms. Nicole O'Reggio	Office of the Prime Minister (Environmental Management Division)
Mr. Hopeton Heron	Office of Utilities Regulation
Mr. Peter Johnson	Office of Utilities Regulation
Mr. Peter Johnson	Office of Utilities Regulation
Mr. Clifford Mahlung	Meteorological Service
Dr. Earl Green	Petroleum Corporation of Jamaica
Mrs. Denise Tulloch	Petroleum Corporation of Jamaica – Centre of Excellence for Renewable Energy
Mr. Mark Dennis	Petroleum Corporation of Jamaica – Centre of Excellence for Renewable Energy
Mr. Niconor Reece	Petroleum Corporation of Jamaica – Centre of Excellence for Renewable Energy
Mr. Richard Kelly	Planning Institute of Jamaica
Mrs. Seveline Clarke-King	Planning Institute of Jamaica
Mrs. Mona White	Scientific Research Council
Dr. Earle Wilson	University of Technology, Jamaica
Mrs. Charmaine Delisser	University of Technology, Jamaica
Dr. Claude McNamarrah	University of the West Indies