



Republic of Nauru

**“Reliable, affordable and sustainable energy,
enabling the socio-economic development of Nauru”**

Energy Policy Framework



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MINISTER'S FOREWORD

I am pleased to present Nauru's first National Energy Policy Framework. This blueprint sets out our national commitment to efficient use and effective application of energy resources across all sectors. It contributes immensely to realising our social and economic development aspirations that are stipulated in the Government's 20 year plan - National Strategy for Sustainable Development.

It is very timely that we adopt this framework because our energy consumption level continues to rise at an alarming rate and our dependence on fossil fuels has worked against our effort to lift standard of living on the island to acceptable levels.

Some of the realities of inefficient use of energy that confront us daily are: rising fuel prices globally and locally; regular power shedding; limited local technical capacity essential to supporting energy services; lack of institutional capacity to drive change at all levels in our community; and not to mention damages to our environment.

This policy framework is designed to assist us move towards a future where renewable energy resources provide a better alternative and consequently our dependence on fossil fuels is reduced; a future where costs of energy services are affordable thus allowing households equitable access to electricity and fuel supplies; a future where security and sustainability of energy supply are achieved; a future where our children and their children make a difference in global effort to achieving energy efficiency.

Raising energy efficient levels on Nauru cannot be championed by Government only. We, as a community, need to stand together and work collaboratively in good spirit to reduce the burden of energy costs on our daily lives, improve household access to energy services, and most importantly ameliorate living conditions on the island.

Our national effort will indeed be supported by the global community because we also contribute to global initiatives to reducing carbon emissions and essentially the impact of climate change on our vulnerable ecosystem.

Let's embrace this strategy before it's too late. Let's take it forward for our sake and for the wellbeing of our future generation.

Honorable Frederick Pitcher M.P.
Minister for Commerce, Industry and Environment



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ACRONYMS

ADB	: Asian Development Bank
ADO	: Automotive Diesel Oil
AUD	: Australian Dollar
CDM	: Clean Development Mechanism
DPK	: Dual Purpose Kerosene
EIA	: Environment Impact Assessment
FSED	: Forum Secretariat Energy Division
GDP	: Gross Domestic Product
GHG	: Greenhouse Gas Emissions
GoN	: Government of Nauru
HIES	: Household Income and Expenditure Survey
HFO	: Heavy Fuel Oil
kl	: kilo-litre
kW	: kilo-watt
kWh	: kilo-watt hour
LPG	: Liquefied Petroleum Gas
MW	: mega-watt
NEPF	: Nauru National Energy Policy Framework
NPC	: Nauru Phosphate Corporation
NSDS	: National Sustainable Development Strategy
NUA	: Nauru Utilities Authority
OTEC	: Ocean Thermal Energy Conversion
PICs	: Pacific Island Countries
PIEP	: Pacific Islands Energy Policy
PIREP	: Pacific Islands Renewable Energy Project
RE	: Renewable Energy
RETs	: Renewable Energy Technologies
ROC	: Republic of China
Ronphos	: Republic of Nauru Phosphate Corporation
SOPAC	: Pacific Islands Applied Geoscience Commission
ULP	: Unleaded Petrol

1.0 INTRODUCTION



The Nauru National Energy Policy Framework (NEPF) has been developed through a consultative process involving stakeholders from the public sector, private sector and civil society groups. The policy framework provides a guideline for the development of the energy sector in Nauru for the immediate future and mid and long term. It has been developed under an integrated planning approach, with the view that the energy policy is only one of the many policy instruments that is being put in place by the Government to ensure that the Nauru economy develops to its full capacity given the many challenges facing the country. The policy framework adheres to the principle of partnerships. It is therefore essential that the involvement of the private sector and civil society groups in the implementation of the policy framework be encouraged. The NEPF is driven by its vision statement: **“Reliable, affordable and sustainable energy, enabling the socio-economic development of Nauru.”**

2.0 BACKGROUND

Nauru is one of the smallest independent, democratic states in the world. It is a republic with a Westminster parliamentary system of government but with a slight variance as the President is both head of government and head of state.

Nauru is faced with serious economic challenges. Its once thriving phosphate industry has ceased operation thus depriving Nauru of its major lifeline revenue source. The local infrastructure, including power generation, drinking water and health services, has been adversely affected in recent years by the decline in income from phosphate mining. However, further explorations of the residual phosphate deposits have raised hopes that there may be potential to keep the phosphate mining for yet sometime. With fewer prospects in the phosphate industry, Nauru has to look at other alternative revenue sources to support its economic development. Unfortunately, for a country of the size of Nauru (21 km²) with its limited natural resources, the options are not many. Some measures taken by the Government of Nauru (GoN) to improve its revenue earning power have been considered unusual. For example following the decline in phosphate revenue in the early 1990s the GoN declared itself a tax haven and become susceptible to money laundering activities. And since 2001, it has played host to an Australian offshore detention centre that holds and processes asylum seekers trying to enter Australia. Nauru now is highly dependent on donor support especially from Australia, Japan, New Zealand and Taiwan (ROC). It is important that Nauru develops and strengthens its partnership arrangements with the above countries to be able to meet the goals of its NSDS which has identified key areas to be targeted in order to achieve some degree of economic stability. The NSDS comprises of short term, mid-term and long-term goals.

The NSDS has set a goal of reducing Nauru's dependence on imported petroleum fuels through a number of strategies. One of these is meeting 50% of its energy needs through renewable energy by 2015. Achieving such a goal is essential to achieving socio-economic stability.

The reliability of the power supply in Nauru is highly essential to the achievement of other sector programme goals. For example the goal of supplying reliable water to all households cannot be achieved without a reliable power supply. Equally, an improved telecommunication and information system can only be facilitated by a reliable power supply system.

3.0 OVERVIEW OF ENERGY SECTOR



3.1 ENERGY SUPPLY

For Nauru the most important energy sources are petroleum fuels and electricity. Nauru is heavily dependent on imported petroleum fuels. The petroleum fuels are used for electricity generation, transportation (land, sea and air) and for cooking. Currently, petroleum fuels are supplied via Australia. In 2006 the total amount of petroleum fuels imported was 6,000 metric tonnes that is just over 5 million litres (Diesel). Of this amount 71.25% is used for power generation and the rest for transportation and commercial users.

Nauru is fully electrified, i.e. the electricity grid runs around the island and everybody has access to electricity. Electricity is supplied by the newly formed Nauru Utilities Authority (NUA). In addition, the NUA is also responsible for water and imported fuels. The NUA inherited 15 MW of installed generation capacity from the Nauru Phosphate Corporation (NPC) but all were out of service. To meet the current demand Nauru is dependent on five rented containerized generators from the Government of Australia that have a combined capacity of 5 MW. Electricity is heavily subsidized by Government.



3.2 ENERGY DEMAND

The demand for petroleum is on the increase and this is expected to continue growing given the efforts to revive the economy through the current National Sustainable Development Strategy (NSDS). The revival of the phosphate mining will increase the demand for petroleum fuels.

With the world market price for oil being so volatile, its impact on a weak and fragile economy such as Nauru will be profound. The rise in oil price affects the performance of all sectors of the economy whether it is the industry such as Ronphos, transport such as shipping, or social services.

Electricity demand in Nauru is in the range of 6 – 7 MW. With the current generation capacity of 4 MW, this is sufficient to meet the demand but load shedding is implemented on a daily basis due to fuel supply situation. Household electricity demand is the highest in any Pacific Island Country (PIC) stands at about 900 kWh¹ per household per month. In fact the electricity consumption in Nauru surpasses the average household consumption of some developed countries. However, the current consumption level for household per month stands at 370kWh (average).

The proliferation of inefficient electrical appliances and use of air conditioners in almost every household in Nauru has exerted considerable pressure on the generation capacity resulting in frequent power outages. This is exacerbated by un-disciplined usage of electricity in the households due mainly to the current tariff structure: a cash payment of \$5 per month with the rest paid for with Bank of Nauru cheques (effectively worth nothing since the Bank of Nauru is bankrupt) at a rate of AUD\$0.30 per kWh. Non payment of electricity bills is prevalent.



3.3 RENEWABLE ENERGY SOURCES

Nauru has a very good solar resource. Measurements taken show an average of about 5.8 kWh/m²/day. It can be seen that solar energy offers great potential for electricity generation to meet the future needs of the population.

The potential and feasibility of the local wind resource is not known; however, a wind mapping study was carried out in 2006. An on-site feasibility study on Top Side will be necessary to determine the appropriateness of developing wind as an energy source.

Biomass is restricted to the coastal areas and is comprised of shrubs. Woody biomass is scarce, therefore biomass as an energy source is limited.

Ocean-based energy resources such as wave, tides and OTEC (Ocean Thermal Energy Conversion) are highly dependent upon technology development from developed countries. The technologies for developing these resources have yet to be available on a commercial basis, although a 100 kW OTEC plant was trialed out in Nauru with some degree of success in the early 1980s.



3.4 REGULATIONS

There is a lack of proper regulations governing the energy sector in Nauru. The provision of services such as electricity and imported fuels are governed by Government policies rather than legislation. Ministerial discretion is required in almost all areas and as a result Ministers get caught up in the day-to-day operation of Departments and the process often causes extensive delays. The Corporations Act which amongst other things deals with business operations and how these are regulated contains regulations that are vague and are problematic to interpret and implement. Under the Price Control Act 2004 the Government has powers to control excessive prices and charges. However, due to severe capacity constraints, efforts to ensure the implementation of this legislation are ad-hoc.



3.5 PROBLEM ANALYSIS

The limited capacity in the energy sector and high dependence on imported petroleum fuels combined with escalating fuel prices and high per capita electricity use in Nauru are some of the challenges facing the GoN in developing a plan for the provision of reliable and affordable energy services.

In addition, Nauru's remoteness, poor financial management capacity, and absence of a practical renewable energy policy contribute to Nauru's vulnerability to energy supply disruptions.

Energy sector planning in Nauru is being affected by the absence of a proper national energy sector framework. Although the GoN was assisted by the then Forum Secretariat Energy Division (FSED) in the early 1990s, the lack of Government support to facilitate its implementation has been a major drawback for energy sector planning. It is clear that without a national energy policy framework and an overall strategic plan, interventions can easily become arbitrary, inconsistent, haphazard, counter productive and focused on the short term.



Furthermore, the following general problems contribute to the lack of energy sector development:

- Nauru has over the years suffered from poor economic management and low quality governance;
- Electricity is heavily subsidized down to a level that is clearly not sustainable. Customers historically have been getting free electricity so imposing a user-pays policy requires not only strong political will but also a general change in public attitude towards paying for services provided;
- Energy programmes and policies have been organized on an ad hoc basis without any centralized administration and governance. This has resulted in an inefficient implementation and operation;
- As there is a lack of appropriate regulations and legislation, implementation of energy efficiency and renewable energy programmes is not adequately supported; and
- There is a lack of capacity to perform tasks such as providing the documentation needed for accessing international funding for project development.

The above problems are often interlinked and in Nauru these problems can be grouped into three categories: a) poor management and governance; b) the inadequate allocation of resources (human and material) to energy sector development and c) the lack of an institutional and regulatory framework that ensures an efficient management of the energy sector.

4.0 POLICY ISSUES



The Nauru Energy Policy Framework has been developed taking into consideration the following three fundamental issues:

- i. Supply issues: The provision of adequate, reliable, and cost-effective energy supplies through the promotion of indigenous energy resources and bulk purchasing of fuel is critical to ensuring security of supply;
- ii. Demand issues: The efficient utilization of energy and the discouraging of wasteful energy consumption is vital for a country that is so dependent on imported energy sources; and
- iii. Environmental issues: Due to the fragility of the environment in the region environmental issues are always high on Governments' agenda. Therefore it is important that the energy policy is targeted at minimising the negative environmental impacts of energy production, transportation, conversion, utilisation and consumption.

Bearing the above issues in mind, the following strategic policy areas have been identified as critical to achieving the overall vision of the NEPF – “**Reliable, affordable and sustainable energy, enabling the socio-economic development of Nauru**”

- i. Power
- ii. Petroleum
- iii. Renewable Energy
- iv. Consumers
- v. Finance
- vi. Institutional capacity and
- vii. Energy conservation and efficiency



4.1 POWER

Policy Statement: A reliable, affordable and safe power supply and services.

The provision of reliable and affordable power is essential for driving the Nauru economy. Currently, power is available on an intermittent basis because there is insufficient financial resources to provide for fuel for power generation. Due to a lack on ongoing maintenance of its permanent generators, Nauru has been reliant on rental generators since 2001². Similarly, the transmission and distribution networks are in dire need of repair and upgrading but again, a lack of funds prevents this necessary investment. It is reported by the NUA that accounts receivable are very high and the NUA cash receipts represent only a small fraction of the cost of production. It is estimated that the losses in the operation of the power utility in 2005-2006 totaled AUD \$6.36 million.

Uncontrolled and undisciplined usage of electricity especially in households together with non-payment of electricity bills is a huge dilemma faced by the management in the daily operation of the power utility. Household electricity usage is the highest in all PICs, averaging about 900 kWh per month. The institutional arrangement together with the legal and financial framework needed for the effective and efficient operation of a power utility is lacking, which has led to poor performance of the utility over the years.

Strategies:

1. *Ensure a financially strong and robust "Utilities".*
2. *Fair and equitable access to any subsidized basic supply of power to households with pre-payment meters.*
3. *Ensure an appropriate regulatory framework exists to govern the operation and management of Utilities.*

² There were originally 8 generators in Nauru capable of generating 15 MW of power. Since 2001, all but one of these generators was non-operational because of mechanical problems. Power is currently supplied by containerized rental diesel generators with a total generating capacity of 4 MW. Since mid-2007, Nauru has invested in its own Ruston generators and looks forward to a reliable total potential power output of 9.9 MW.



4.2 PETROLEUM

Policy Statement: A reliable and safe supply of fossil fuels.

The primary energy source for Nauru is imported petroleum fuels, which are needed for power generation, transportation, and commercial and industrial uses. The power sector alone utilizes more than 80% of the total petroleum fuel imported; the rest is shared between transportation and commercial activities, e.g. fishing and a separate 4 million litres of HFO per annum is imported for the phosphate industry.

Under a new arrangement to be put in place under the government restructuring programme, the importation and storage of petroleum fuels fall under the responsibility of the NUA. However, the Ministry of Finance is responsible for the purchasing of the fuel imported for public power supply – with funding currently derived from government budget and donors sources. The Ministry of Finance is also responsible for determining the wholesale market price of fuel sold on-island. There is enough storage capacity available to cater for the next supply schedule. For diesel storage, there is capacity available to store more than 11 million litres. Given the current demand needed for power generation of 600 kl per month, the storage capacity available would be able to cater for more than a year's supply of 7.2 million litres.

The absence of regulations for standards governing the quality of imported fuel may lead to poor performance of NUA generators. Maintaining a national fuel quality standard can be a costly exercise for a small economy such as Nauru. Adopting the Australian national standard should be considered.

Strategies:

1. *Secure supply and storage of fossil fuels.*
2. *Ensure fuel receiving and distribution infrastructure meet international standards.*
3. *Reduce dependence on fossil fuels by investing in renewable energy projects.*



4.3 RENEWABLE ENERGY

Policy Statement: 50% of energy used in Nauru comes from renewable sources by 2015.

As highlighted in chapter 3.3, solar is the only renewable energy source that has the potential to contribute significantly to Nauru's energy mix. While wind and ocean based resources are available, their potential has yet to be assessed. Moreover, ocean based renewable energy technologies are still under development and are not considered as immediate options for Nauru.

Strategies:

1. *Encourage the use of renewable energy as an alternative source of power generation.*
2. *Build in-country capacity in renewable energy technologies.*



4.4 CUSTOMERS

Policy Statement: Universal access to reliable and affordable energy services.

The different customer groups' energy needs are a vital consideration to an effective energy policy framework. The customers' expectations can range from a simple energy source for lighting in the home to high voltage electricity needed for an industrial process like mining. In Nauru, there are three major categories of customers: residential, government, and commercial and industrial. Energy services and the means by which they are provided to each different customer group will need to be addressed carefully by the energy policy framework.

Strategies:

1. *Ensure the provision of electricity to all customers is financially sustainable.*
2. *Ensure that the different energy needs are equally addressed and promoted at all levels of society.*
3. *Ensure dissemination of relevant information to the public.*



4.5 FINANCE

Policy Statement: Financial sustainability of the energy sector.

Finance is a fundamental problem in Nauru's Energy Sector. Nauru Utilities Authority (NUA) faces significant financing constraints – at the core of which is the fact the organisation is not financially viable as long as it allows consumers (specifically households) to access unlimited free power, with funding provided by government and donors.

A schedule of planned load shedding was implemented in November 2006 as a tactic to limit the financial burden caused by non-recovery of electricity bills in the household sector. At the same time, a stringent disconnection policy for the non-payment of commercial electricity bills was implemented. However, until NUA introduces full cost-recovery through the introduction of prepayment meters for household power consumers (expected December 2008), the financial problems of NUA will remain.

Finance is also key to the implementation of any policy framework. For the NEPF to be effective, financial resources will have to be secured. The financial resources needed to implement the NEPF cannot be obtained entirely from donor agencies. Therefore the NEPF is designed to encourage the promotion of partnerships with the private sector through appropriate legal and financial mechanisms. The current absence of proper financial and banking systems in Nauru is a major challenge to enticing private sector investment.

Strategies:

1. *Ensure a robust financial framework is in place.*



4.6 INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING

Policy Statement: Efficient, robust and well resourced institutions for energy planning and implementation.

The policy framework highlights the need to build in-country capacity to allow sustainability of energy sector projects. Further, the policy framework has identified areas where capacity is most needed and offers suggestions as to how capacity can be built. The government agency tasked with formulating the energy sector plan must be well staffed with suitably qualified personnel and be provided with enough resources for proper functioning. International assistance may be required to build capacity within the government. The introduction of new technologies (namely renewable energy technologies) will require new skills; therefore specialized training will be necessary. Likewise, implementing and managing large energy projects in the country will require a broad knowledge base that extends beyond traditional management and technical skills, as well as a good understanding of the legal and financial systems necessary to make the project sustainable.

Strategies:

1. *Ensure appropriate policies and legislations are in place.*
2. *Ensure an appropriate skill base is available.*
3. *An institutional structure that promotes accountability.*
4. *Encourage stakeholder partnerships.*



4.7 ENERGY EFFICIENCY AND CONSERVATION

Policy Statement: An efficient supply and use of energy.

As a first step towards achieving energy security, Nauru has to put in place measures – supported by policies and strategies – to make the production and use of energy more efficient. Strict measures should be put in place to discourage wastage. In addition, switching to locally available energy efficient appliances and technologies should be encouraged. It is important to undertake public awareness and education campaigns on the benefits of energy efficiency and conservation, as customers have had the luxury of free electricity for several decades. In the face of the current economic situation, where providing free electricity is no longer possible, customers need a clear understanding of the importance of paying their electricity bills.

Strategies:

1. *Encourage at all levels the use of energy efficient appliances and equipment.*
2. *Promote energy conservation and efficiency at all levels of society.*
3. *Promote environmentally friendly and sustainable use of energy.*



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