Fiji National Energy Policy
2013 - 2020

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The National Energy Policy Review Advisory Committee was made up of the Department of Energy and the Department of Transport of the Ministry of Transport, Works and Public Utilities, the Ministry of Strategic Planning, National Development and Statistics, the Climate Change Unit of the Ministry of Foreign Affairs, the Reserve Bank of Fiji, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the United Nations Development Programme (UNDP).

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Contents

Abbreviations and acronyms

BMZ	German Federal Ministry on Economic Cooperation and Development
FCC	Fiji Commerce Commission
CCCPIR	Coping with Climate Change in the Pacific Island Region
DoE	Department of Energy
EE	Energy Efficiency
ESCO	Energy Service Company
FDI	Foreign Direct Investment
FEA	Fiji Electricity Authority
FJD	Fiji Dollar
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GDP	Gross Domestic Product
GWh	Gigawatt hours
IEA	International Energy Association
IPP	Independent Power Producer (private single purpose investor)
kWh	Kilowatt hours
L	Litres
LPG	Liquified petroleum gas
MJ	Megajoules
NECC	National Energy Coordination Committee
NECF	National Energy Consultative Forum
NEP	National Energy Policy
NEF	National Energy Forum
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PCCPP	Peoples Charter for Change, Peace and Progress
RIAs	Regulatory Impact Assessments
RBF	Reserve Bank of Fiji
RE	Renewable Energy
RESCO	Renewable Energy Service Company
RDSSED	Roadmap for Democracy and Sustainable Socio - Economic Development
SOE	State Owned Enterprise
SE4ALL	Sustainable Energy for ALL (UN Initiative)
SPC	Secretariat of the Pacific Community
UNDP	United Nations Development Programme

Minister's Foreword

1 Introduction

This National Energy Policy sets out the Fiji Government's direction for the energy sector for the period 2013 to 2020 and replaces the 2006 policy.

Rationale for a new energy policy

Over the past seven years Fiji has made significant progress in improving access to modern energy and increasing the share of renewable energy sources in electricity generation. The energy sector in Fiji has seen significant growth in demand for services and infrastructure. Accessible, affordable, safe and reliable modern energy services are necessary inputs for all sectors of society. This has created significant interest from private and other non-government actors that has led to greater participation in energy-related interventions on the ground. Private and public bodies, including development partners, NGOs, financial institutions and education service providers are becoming more involved in provision of rural electricity services, energy efficiency, solar-powered consumer products, energy specific financial products as well as training courses, research, standards development and dissemination of information on renewable energy and energy efficiency.

A new energy policy is required to reflect recent changes and trends in the energy sector and to propose mechanisms to address new challenges, such as the significant increase in Fiji's fuel import bill.

Preparation of the energy policy

The review and update of the National Energy Policy (NEP) has been led by the Department of Energy (DoE) with the assistance of an advisory committee consisting of representatives from key Government institutions, regional development partners and a team of international consultants. The NEP is the product of:

- Broad direction provided in strategic Government documents such as the *Roadmap for Democracy and Sustainable Socio - Economic Development* (RDSSED) 2010 – 2014 which is aligned to the *Peoples Charter for Change, Peace and Progress* (PCCPP) and by recent Cabinet decisions

- A thorough review of documentation and reports relating to the implementation of the 2006 energy policy and documentation relating to significant developments in Fiji's energy sector.

- A broad consultation process that has involved all of the key stakeholders (private sector, public institutions, NGOs, financial institutions, development partners, civil society representatives). This includes a National Energy Forum that was held in April 2013, a second national consultation workshop in August 2013 and a final information seminar in October 2013 as well as two calls for public submissions.

- Preparatory work and analysis undertaken by the consulting team with the assistance of DoE, the advisory committee and other public-sector institutions.

- A high level modelling of future demand and supply for fuels and electricity in order to underpin high level policy targets.

Accompanying documents

This National Energy Policy is accompanied by the following documents:

Preparatory documents

- **Mainstreaming analysis** – Assesses the status of implementation and mainstreaming of the 2006 National Energy Policy and Strategic Action Plan at the national level.
- **SE4ALL rapid assessment and gap analysis** – The National Energy Policy is aligned with the Sustainable Energy for All (SE4ALL) initiative of the United Nations. The rapid assessment and gap analysis establishes the baseline in Fiji for the three objectives of SE4ALL[1] and identifies gaps and support needed.

Supporting documents

- **Strategic action plan** – Sets out the key actions required by different stakeholders to implement the new National Energy Policy.
- **Legislative gap analysis** – Reviews the existing legislative framework and identifies necessary changes or additional legislation(s) needed to implement the new National Energy Policy.

[1]The three objectives of SE4ALL by 2030 are: 1) Ensuring universal access to modern energy services; 2) Doubling the global rate of improvement in energy efficiency; and, 3) Doubling the share of renewable energy in the global energy mix.

2 Vision, outcomes and objectives

Vision

The Government's vision for Fiji's energy sector, as set out in the *Roadmap for Democracy and Sustainable Socio-Economic Development 2009-2014*, is for **a resource efficient, cost effective, and environmentally sustainable energy sector**.

Outcomes

The outcomes of this energy policy will be:

1. Affordable energy for all.
2. Sustainable energy supplies.
3. Reduced import costs.

Objectives

The objectives of this energy policy are:

1. To provide all Fijians with access to affordable and reliable modern energy services[2].
2. To establish environmentally sound and sustainable systems for energy production, procurement, transportation, distribution and end-use.
3. To increase the efficient use of energy and the use of indigenous energy sources to reduce the financial burden of energy imports on Fiji.

[2] Modern energy services is defined as per the IEA's World Energy Outlook as "clean cooking facilities, a first connection to electricity (defined as a minimum level of electricity consumption) and then an increasing level of electricity consumption over time"

3 Overview of the energy sector

An overview of Fiji's energy sector is provided in the following sub-sections.

3.1 Overall energy situation in Fiji

Fiji's energy situation is characterised primarily by a high reliance on imported fuels. Therefore there is a need to act now to reduce the reliance on imported fossil fuels through renewable energy while increasing the efficiency of use of current fossil fuel supplies. Challenges will remain in the short-term, but planning and implementing suitable measures today will enable substantive reductions in the medium to long-term. This will improve Fiji's macro-economic stability by making it less vulnerable to volatile international fuel prices and high import payments. Fiji's two other main sources of energy are biomass for cooking and hydropower generated electricity.

Fiji's **energy demand is driven by household consumption of electricity and transport fuels** and by the need of its major industries, in particular agriculture, forestry, tourism, and mining. Demand has increased over the past decade and is likely to continue increasing, although the rate will depend significantly on the effect of future political developments on Fiji's economic growth.

With the majority of Fiji's population living on the two main islands of Viti Levu and Vanua Levu and Fiji being endowed with significant renewable energy resources such as hydropower, biomass, wind, geothermal and solar (the extent of which is not fully known), **grid-based power supply has arguably the most immediate potential to make Fiji's energy sector more efficient, cost effective, equitable, and environmentally sustainable**. Over 50%[3] of Fiji's electricity is already generated from hydropower. There is exploitable potential to raise the share of renewable electricity rapidly to over 80%, given that there are still likely a number of medium size undeveloped hydro sites and significant unexplored geothermal, solar, and wind resources. However, there has been limited private investment in Fiji's power sector to date. This will need to change to enable Fiji to meet its potential for renewable electricity generation and meet the need for capital investment for future power sector developments.

The **majority of the population has access to modern forms of energy**, thanks to significant improvements in the last two decades through rural electrification initiatives. However approximately 11%[4] of the population is still without access to electricity and challenges still remain to provide remote areas with access to electricity in a sustainable manner. Also, where electricity supply is available issues of affordability or inequalities within communities may prevent people from maximising the benefits of modern energy supplies.

[3] *Annual Report 2011*, FEA

[4] Preliminary data from the *2007 Census,* Fiji Bureau of Statistics.

The **transport sector is the main user of imported fuel** in Fiji[5] and therefore is where the greatest potential for fossil fuel import reduction lies in the medium to long-term. There have been attempts to reduce petroleum imports through the use of biofuels, but further investigation in this area in needed to prove the cost-effectiveness of biofuels as a petroleum substitute.

The transport sector needs to increase its emphasis on energy efficiency in land and sea vehicles and vessels, while researching potential renewable energy options for land and sea transportation. Gains will take time and impacts are more likely to be felt in the medium to long-term.

Despite the fact that Fiji has a relatively low energy-intensity economy, **improving Fiji's energy efficiency** – in the transport sector and also in the power sector and amongst households, businesses and industry **– is likely a cost-effective way to reduce the cost and increase the availability of energy** in Fiji. Fiji has made some progress in recent years, but there is still much to be done, in particular with regard to emerging mining projects which will increase the energy intensity of Fiji's economy.

3.2 Sector governance and implementation

Fiji's current **institutional and policy framework for the energy sector is quite complex**, with overlapping responsibilities and significant gaps in the areas of coordination, regulation and oversight. This has led to weak sector governance that must be improved going forward.

Coordination of the various public sector institutions with responsibilities in the energy sector has traditionally been a key weakness of sector governance and implementation of the previous National Energy Policy. These institutions include (but are not limited to) the Ministry of Works, Transport, and Public Utilities, the Ministry of Tourism and Public Enterprises, the Ministry of Finance and National Planning, the Ministry of Foreign Affairs and International Cooperation, the Fiji Commerce Commission, the Fiji Electricity Authority, and the Land Transport Authority.

The **lack of an institution with overall responsibility for energy planning and policy development** has been another key weakness. The previous energy policy foresaw a significant restructure of institutional responsibilities for planning and regulation in the energy sector, including new legislation that would empower the Department of Energy (DoE) to become Fiji's central policy-making and planning entity for the energy sector. However this did not eventuate and DoE remained largely focused on detailed implementation in specific areas such as energy efficiency and rural electrification, rather than focusing on sector-wide planning and oversight which have greater potential to bring about change and development in the sector. Lack of an institution with overall responsibility has also limited the opportunities for broad-based consultation and interaction in energy planning processes with other relevant Government institutions and external stakeholders including the private sector, civil society, non-governmental and faith-based organisations and community representatives.

[5] Fiji Bureau of Statistics

Effective sharing and management of energy information is another serious challenge for sector governance. Numerous recent energy sector studies in Fiji and the wider Pacific region have identified the quality and availability of national and regional energy sector data as limiting opportunities for policy, planning, rational decision-making, private investment and future performance improvement.

Economic regulation of the energy sector is led by the Fiji Commerce Commission, however **transparency in the manner in which prices have been set needs to be improved**. This is particularly the case for electricity tariffs and petroleum pricing. A number of different studies have highlighted the need for a multi-year regulatory contract that reduces discretionary powers with respect to electricity tariffs. Fiji Electricity Authority (the state-owned power utility responsible for providing grid based electricity) has traditionally self-regulated on technical matters, including issuing licences and grid connection of IPPs and distributed generation. This creates possible conflicts of interest.

Fiji has been **unsuccessful in encouraging significant private sector participation** in the energy sector. This is largely due to weak sector governance (in particular the lack of a clear regulatory framework for encouraging third party electricity generation), resource information not being made public and a general weakness in Fiji's business climate[6].

3.3 Status by energy area

Grid-based power supply

Key issues to be addressed:

- ☐ Need to improve FEA's efficiency by building on its strong past performance
- ☐ Fiji still has significant unutilised renewable energy resources
- ☐ There is a weak enabling framework for private sector investment
- ☐ Weak regulatory oversight of FEA and technical self-regulation by FEA
- ☐ Institutional fragmentation in the energy sector

Fiji Electricity Authority (FEA) is the vertically integrated, state-owned power utility that is responsible for providing grid based electricity in Viti Levu, Vanua Levu and Ovalau. FEA has been performing well in comparison with other utilities in the Pacific region, although arguably less so when compared with the better-performing island utilities around the world. FEA scores well with respect to supply-side energy efficiency, both with respect to fuel consumption and technical losses on the network. However, there are still signficant opportunities to improve planning in order to deliver grid electricity in the most efficient

[6] Fiji was ranked 60th in the 2013 *Doing Business* report by the World Bank. Fiji is well below the regional average in some categories, including starting a business. Similar conclusions are drawn in the ADB's 2011 *Private Sector Assessment* which states "The general business climate in Fiji is not conducive to attract sufficient private capital..."

and least cost manner and improve asset management to further reduce technical losses. In addition, little progress has been made with respect to developing the potential of smart grid technologies which would allow greater participation by customers in managing demand.

FEA's total generation was 823 GWh in 2011, 55% of which is hydro generation, 40% diesel, 4% co-generation (bagasse and wood chips), and 1% wind. More than 93% of generation is supplied on the main island of Viti Levu. The total installed capacity of FEA is 263 MW across three main systems of Viti Levu, Vanua Levu, and Ovalau. [7] Electricity demand has been largely flat over the last six years, although it is expected to increase in the future. Possible mining developments could also have a substantial impact on Fiji's electricity demand.

The cost of imported fossil fuel for power generation is currently around 100 million FJD per annum. This could be reduced significantly if Fiji can fully utilise its renewable resources, in particular geothermal, hydro, wind, biomass and solar resources. Further resource assessments are needed to fully understand this potential.

Fiji's electricity system needs significant investment over the next decade (estimated to be in the order of FJD 1.5 billion)[8], which cannot be financed by the public sector alone. Therefore Fiji needs to attract private investment in generation capacity. As yet there has not been a single true (sole-purpose and private sector) Independent Power Producer (IPP)[9] project in Fiji. This is largely due to the lack of a clear regulatory framework for encouraging private generation, uncertainty with regard to the Government's plans to reform FEA, resource information not being made public, and general weaknesses in Fiji's business climate.

Regulatory oversight of FEA is weak. Tariffs are controlled by the Fiji Commerce Commission, but the manner in which tariffs are reviewed is not transparent. Two ministries have a mandate to oversee FEA, but in practice FEA has been self-regulated for many years with respect to all non-tariff aspects of the electricity system, including issuing licences, developing technical rules, and defining incentives for third party generation.

[7] *Annual Report 2011*, FEA

[8] FEA Power Development Plan, 2010 - 2020

[9] The World Bank Definition for IPP is used here: A long-term contract between a private party and a government agency, for providing a public asset or service, in which the private party bears significant risk and management responsibility (Reference Guide PPP, World Bank, 2012 p11)

Rural electrification

Key issues to be addressed:

- ☐ Despite recent success in improving access, the sustainability of current schemes is at risk and their affordability for rural communities with limited cash income is uncertain
- ☐ Schemes are funded by Government (and by FEA when they are deemed financially viable) but funding over the last six years has been variable and often technology specific
- ☐ There is no clear and costed overall plan of how to provide the remaining unserved population with access to electricity or analysis of existing social and economic barriers to affordable energy

In 2007, 81% of the rural population had access to electricity.[10] The on-going efforts of DoE and FEA under the Government funded rural electrification programme have made significant progress towards full coverage over the past decade (rural electrification was approximately 69% in 2003), but rural access is still significantly less than 96% of the urban population with access (2007). The number of remote islands in Fiji poses additional challenges for electrification (previous estimates suggest that only 10% of the rural population not electrified are within economic reach of FEA's grid).

The delivery methods used to provide electricity access to rural areas in Fiji include FEA grid extension on the main island (which has likely had the greatest impact on access, with 487 grid extensions having been undertaken), diesel-based mini-grids (around 14 MW of installed capacity[11]) operated by the Public Works Department or community cooperatives, and solar home systems (in over 3,000 homes)[12] which are maintained by private contractors paid for from a monthly household charge plus a subsidy from DoE. There is currently no overall plan in place to show how each community should be served and how it will be funded.

The sustainability of the Government funded rural electrification schemes is not secured– community operated models often lead to deteriorated and inoperable diesel and hydro systems, while collection rates from households for solar home systems are low and as a result have to be heavily subsidised. Furthermore, the supply to consumers connected to isolated grids and solar home systems is constrained to a limited number of hours each day or limited quantity of energy supply, impacting quality of life for rural households.

[10] Preliminary data from the *2007 Census,* Fiji Bureau of Statistics. Since then DoE estimates around 1,500 households per year have been electrified (primarily through the installation of solar home systems), although these gains will likely have been offset by population growth and the deterioration of existing systems.

[11] DoE, 2013

[12] DoE, 2013

Renewable energy

Key issues to be addressed:

- ☐ There is no comprehensive assessment of Fiji's renewable energy resources and their viability
- ☐ Lack of access to resource data has been a strong impediment to private sector project development in the past
- ☐ Incentives for a wider participation of the population in renewable generation are insufficient

Fiji is fortunate to have significant renewable energy resources. In particular, Fiji stands out in the Pacific region due to its high use of hydro (~55%) in its grid-based generation mix.[13] There are also a small number of diesel mini-grids that use a CNO-diesel blend (20/80) and over 3,000 solar home systems.[14]

In rural areas, biomass fuels still play a major role with more than 70% of rural households using wood for cooking purposes. [15] While this can be considered renewable in most cases, the negative health impacts, particularly on women, of cooking on open fires means this practice should not be encouraged. Going forward, there is a need to actively involve women as a target group when introducing other forms of energy sources for cooking.

Fiji is well endowed with a variety of renewable energy resources including hydro geothermal, biomass, solar, and wind, and development of these should be encouraged. The exposure of hydropower to droughts and climate change is an issue that needs to be considered. Significant progress has been made in assessing Fiji's renewable resources, but further investigations are necessary particularly in improving data quality and access to data. Relevant resource information, feasibility studies and performance data of implemented projects need to be openly shared in order to attract reputable private sector developers to Fiji's energy sector.

While countries in the region and the rest of the world have seen significant successes in decentralised, embedded renewable energy generation by households and public and private organisations and institutions, investments in small-scale renewable (for example, roof mounted solar and small scale wind) has not taken off in Fiji because amongst others there is no national net-metering policy and the current feed-in tariff offered by FEA is too low to stimulate such investments[16].

[13] *Annual Report 2011*, FEA

[14] DoE, 2013

[15] Preliminary data from the *2007 Census*

[16] In 2013 FEA's feed-in tariff for non-firm power was FJD 0.15 per kWh

Transport

Key issues to be addressed:

- ☐ A very high dependency on imported fossil fuels
- ☐ Limited use of fuel-efficient vehicles and vessels
- ☐ Despite significant improvements in public transport, issues remain around access, affordability and quality
- ☐ Limited infrastructure, including pavements and cycle-paths, for non-motorised transport
- ☐ To date there has been limited research for alternative fuels such as biofuel, electricity or gas

The transport sector is the main user of imported fuel, accounting for over 60% of Fiji's total petroleum consumption in recent years.[17] There are limited short-term opportunities for efficiency gains however, planning now to identify and implement opportunities to reduce imported fuel consumption will enable significant efficiency improvements to be felt in the medium to long-term.

The biggest opportunity in short-term fuel savings and energy conservation is in land transport (which makes up around 16% of Fiji's total petroleum consumption). The number of registered land vehicles has grown by around 40% over the last decade. At present, around 2% of land transport uses alternative energy sources (predominantly LPG)[18].The Government also promotes improvements in the fuel efficiency of land vehicles through age restrictions on imported cars, maximum axel weight restrictions, and duty concessions on low emission vehicles.

Electric vehicles have potential to transform the sector, although this depends on grid-based electricity being from renewable sources or there is no true move away from dependency on petroleum products.

The air and marine transport industries are major imported fuel users (26% and 22% of Fiji's total petroleum consumption respectively[19]). The potential for Fiji, acting alone, to increase efficiency in the air and international marine transport sectors is much more limited given that these industries are largely governed by international treaties and conventions. According to research performed by the University of South Pacific, national and regional fuel use in maritime operations, however, offers significant opportunities to reduce fuel consumption through increased fuel efficiency and the use of renewable energy.

Fiji's transport policy is currently under development and will address both land and maritime transport. It provides a significant opportunity to increase the sector's focus on energy efficiency and to a lesser extent renewable energy, in particular by improving public transport and the layout of urban areas to encourage other non-motorised transport and reduce congestion.

[17] Fiji Bureau of Statistics

[18] Land Transport Authority

[19] Fiji Bureau of Statistics

Petroleum and biofuels

Key issues to be addressed:

- ☐ High national petroleum import bill
- ☐ Despite several demonstration projects at the local level, the viability of biofuels has yet to be demonstrated at a larger scale
- ☐ Although national E 10 and B 5 biofuel standards have been introduced, there has been limited local production to date

There is general agreement on the desirability of reducing the volume and cost of imported petroleum products in Fiji and several feasibility studies and demonstration projects in the area of biofuels have been undertaken over the years.

In 2011, Fiji imported a total of 707 million litres of petroleum products at a value of 1.17 billion FJD.[20] Approximately 50% of imports are consumed and stored in Fiji, while the balance is re-exported to supply smaller Pacific Island states. Fuel is supplied by three major international oil companies, Pacific Energy, Mobil Oil, and Total Oil, who each have their own storage facilities in Fiji. The distribution of fuel supplies to remote islands is expensive and irregular.

The main imported fuels in Fiji are diesel (over 50% of total imports), aviation fuel (~30%), and motor spirit (~ 10%). Other imported fuels include LPG, kerosene, and heavy fuel oil. The Fiji Commerce Commission regulates all retail fuel prices, based on three-monthly submissions made by the oil companies in accordance with a pricing template (based on the cost of supply plus a return on investment for the oil companies). FEA purchases its petroleum fuel through bulk procurement arrangements with the oil companies. There are two retail suppliers of LPG in Fiji, which is used mainly for cooking (replacing kerosene and open wood fires), although 2% of land transport vehicles also run on LPG.

The Government's strategy to curb petroleum imports has been to encourage the development of indigenous local energy resources and investigate the potential to replace fuel imports with locally produced biofuels. Cabinet has already approved biofuel standards for B 5 (blend of vegetable oil ester and diesel) and E 10 (blend of anhydrous ethanol and petrol). Efforts to promote biofuel also include operating a pilot program to blend neat coconut oil and diesel (20%/80%) as a fuel for Government vehicles and for rural electrification schemes. A number of recent studies in the region have raised concerns about the economic viability of using coconut oil as a replacement fuel. In addition, the potential issue of fuel versus food should be considered.

The possibility of ethanol production in Fiji has been repeatedly considered, however its financial viability is highly sensitive to a consistent supply of feedstock, and the performance of the sugar industry over the last 10 years has deterred investors. Similarly, molasses based ethanol production requires taxes and levies to be waived in order to make it financially viable as fuel supply. [21] A more recent study commissioned by the state owned

[20] Fiji Bureau of Statistics

[21] LMC/World Bank 2008

FSC shows more encouraging results with regard to molasses based ethanol production and the state owned company has indicated that it will embark a FJD 80 million investment programme to establish an ethanol production of 16,000 KL per annum syndicating the debt from foreign and local lending agencies.

Petroleum exploration was undertaken in Fiji in the 1970s and 1980s and recoverable reserves were estimated to be up to 1 billion barrels per potential oil field. However, there has been no further external interest in exploration and Fiji has not conducted any licensing rounds.

Energy efficiency

Key issues to be addressed:

- ☐ Energy efficiency achievements in Fiji have been limited
- ☐ The minimum energy performance standards and labelling scheme has so far been limited to household freezers and refrigearators
- ☐ Limited information systems to collect, manage, store and analyse data

Fiji's economy has a relatively low energy intensity of around 2.89 MJ input per FJD of GDP [22], reflecting the dominance of the service sector in its economy. However improving energy efficiency is still likely a highly cost-effective way to increase the availability of energy in Fiji.

The Government's initiatives relating to demand-side energy efficiency have so far focused on appliance labelling for refrigeration technology, the development of training materials for a programme on energy efficiency in schools and public awareness campaigns. There is clearly potential to expand these initiatives and make more of an impact on energy efficiency, including by continued and more targeted awareness campaigns, expanding the labelling programme and related awareness campaigns and targeting improvements in the public sector. There is also scope for review of relevant codes and standards for building industry and industrial operations.

Currently there are limited information systems to collect, manage, store and analyse data so that a verifiable data trail is created and energy savings can be reasonably verified. Addressing this issue would also assist in setting sector specific baselines and targets which are currently lacking.

[22] Fiji Bureau of Statistics, 2011

4 Targets

Targets for Fiji's energy sector are provided below. The present energy policy covers the period and corresponding targets to 2020. However, in order to align the policy with the Sustainable Energy for All (SE4ALL) initiative of the United Nations, targets for 2030 are also outlined here although these would be subject to review alongside the next review of the energy policy.

Table 1 Targets

Indicator	Baseline	Targets		
		2015	2020	2030
Access to modern energy services				
Percentage of population with electricity access	89%[1] (2007)	90%	100%	100%
Percentage of population with primary reliance on wood fuels for cooking	20%[2] (2004)	18%	12%	<1%
Improving energy efficiency[3]				
Energy intensity (consumption of imported fuel per unit of GDP in MJ/FJD)	2.89[4] (2011)	2.89 (- 0%)	2.86 (- 1%)	2.73 (- 5.5%)
Energy intensity (power consumption per unit of GDP in kWh/FJD)	0.23[4](2011)	0.219 (- 4.7%)	0.215 (- 6.5%)	0.209 (- 9.1%)
Share of renewable energy				
Renewable energy share in electricity generation	56%[5] (2011)	67%	81%	99%
Renewable energy share in total energy consumption	13%[6] (2011)	15%	18%	25%[7]

1. Preliminary data from *2007 Census*, Fiji Islands Bureau of Statistics
2. *2002-03 Household Income and Expenditure Survey*, Fiji Islands Bureau of Statistics. Reliance on wood fuels alone for cooking.
3. Based on 15% fuel substitution to local fuels and a 3% annual efficiency improvement.
4. Fiji Islands Bureau of Statistics based on average 36 MJ per litre of fuel
5. *Annual Report 2011*, FEA
6. Based on total energy consumption of 16,500 TJ (Fiji Islands Bureau of Statistics) and 55% power generation from renewables (FEA)
7. Based on 99% renewable power and 25,000 KL of biofuel

Further information on these targets and how they were set is provided in the SE4ALL report accompanying this National Energy Policy. These targets take account of likely constraints on investment. They assume that an annual average investment in electrification and renewable energy of approximately FJD 50 million can be achieved between 2014 and 2030. In energy efficiency an average annual investment of FJD 2 million is assumed. If the implementation of the policy encourages even larger increases in investment then the dates for achieving targets can be advanced over the life of the policy.

5 Policies

Policy statements for each key area of Fiji's energy sector are provided below. These policies have been selected through a process of consultation, multi-criteria analysis and submissions and comments received on a draft of the NEP. The statements are organised by area of the energy sector for ease of reading. Inevitably some policies will impact on more than one area. The priority policies are clearly identified and have been chosen on the basis that they are both readily achievable and have the greatest expected impact in achieving the objectives for the energy sector.

5.1 Grid-based power supply

Priorities

5.1.1 Increase private sector investment in large-scale electricity generation by establishing a transparent process for procurement of new large-scale capacity from Independent Power Producers (from both renewable and non-renewable energy sources), pricing and other principles to be applied in all new Power Purchase Agreements and grid-connection standards.

5.1.2 Increase private sector investment in small-scale grid-connected renewable generation by establishing economically justified feed-in tariffs or similar mechanisms to give incentives and reduce the risks for electricity production from small-scale renewable sources that are connected to the grid (including by providing investors an adequate return on capital). These mechanisms should not disadvantage either FEA or investors and the implementation of such mechanisms should not add unduly to the overall cost of electricity supply in Fiji. This will be accompanied by net- metering arrangements that give electricity consumers incentives to invest in on-site small-scale renewable energy generation.

5.1.3 Strengthen transparency and effectiveness of the regulation of the electricity industry. This includes establishing a formal regulatory contract with Fiji Electricity Authority (FEA) that sets out a process for regularly reviewing the efficient costs of electricity supply and setting tariffs to recover these and making all forms of electricity subsidy transparent **including** to energy consumers. It also includes ensuring the technical and economic regulatory functions (including licensing and defining frameworks for encouraging Independent Power Producers) are carried out by the DoE and the Fiji Commerce Commission.

5.1.4 Improve the efficiency and effectiveness of management of the FEA electricity grid. This includes instituting a regular process of power development planning to ensure that enough generation is built to meet peak demand and that it is delivered in an efficient and least cost manner, the development of asset management plans that detail historical and planned capital and operational spending to ensure that assets are adequately maintained, and investigating the potential for adopting smart grid potential allowing greater participation by customers in managing demand.

5.2 Rural electrification

Priorities

5.2.1 Develop a national electrification master plan, showing how each un-electrified area of Fiji will be served with least cost solutions. Technological solutions to be considered in consultation with communities will include grid extension, diesel and hybrid mini-grids, and solar home systems. The plan will also clearly define a minimum level of service which qualifies as 'electrification'.

5.2.2 Establish a dedicated electrification fund and an associated framework that will be used to provide capital subsidies for electrification projects. The electrification fund will facilitate the implementation of the national electrification master plan. The fund framework should consider how to facilitate equitable electricity access taking into account gender aspects and vulnerable groups. Going forward, funding being provided by the Government for the implementation of rural electrification projects will be channelled into this fund, thereby making subsidies more transparent and easier to monitor and evaluate. Subsidies will leverage capital contributions from beneficiaries and project promoters as far as possible and will be provided as once-off capital contributions for viable projects. Recurrent costs will not be subsidised.

5.2.3 FEA will be responsible for electrification by grid extension, in accordance with the national electrification master plan. FEA will have specific electrification obligations. It will have access to subsidies as appropriate to ensure that it is not commercially disadvantaged by these obligations.

5.2.4 Improve the effectiveness and sustainability of the existing management models for off-grid rural electrification including Renewable Energy Service Companies (RESCO) and community cooperatives being used to provide electricity to isolated communities and areas not served by FEA. An analysis of existing community governance and decision making structures, including their transparency, gender-balance and existing capacities, will support the identification of measures to improve the effectiveness of community management. Fiji will also research and learn from approaches adopted in other developing countries. Attention will be given to the establishment of appropriate governance mechanisms that ensure full community participation in decisions and training related to energy infrastructure, access, and finance.

5.2.5 Establish a framework for encouraging off-grid rural electrification projects by non-government providers including community-based organisations, social service providers (schools, health centres etc.), NGOs, and the private sector. These providers will be eligible for subsidies as considered appropriate and will be supported with appropriate training and capacity building. To support this, a standardised concession agreement for small and medium size grids will be considered. Consideration will be given to competitive tendering of concessions where the level of interest permits this.

5.3 Renewable energy

Policy statements on renewable energy that relate specifically to grid-based power supply, rural electrification, and biofuels are given in the other sections.

Priorities

5.3.1 Maintain a comprehensive assessment of Fiji's renewable energy resources, including hydro, wind, biomass, solar, and geothermal resources. This assessment will include an inventory of available sites and technologies, their technical and economic viability and social and environmental impacts.

5.3.2 Make all data on renewable energy resources available to the public and prospective investors through a single national repository at the Department of Energy. This will ensure that a lack of information on resource potential does not continue to be an impediment to private sector and other relevant project developers.

5.3.3 Conduct further investigations into geothermal energy resources with a view to identifying a pilot project for development. This recognises the contribution that geothermal energy can make to diversifying the energy mix, providing base load generation and thereby reducing the reliance on hydropower and petroleum imports.

5.3.4 Research and promote new renewable energy technologies, including assessing their technical and economic viability and their environmental and social impacts and acceptability. This means keeping abreast of international developments and innovations and working with other countries and regional bodies so as to have research programmes, which complement one another, rather than duplicating efforts. It also means monitoring and improving the existing tax incentives that are in place for investments in renewable energy technologies and encouraging tertiary institutions to extend their research programmes on renewable energy technologies.

5.3.5 Promote and improve guidelines and technical standards for renewable energy technologies. Fiji will use existing technical standards where available and relevant, including those produced by the Sustainable Energy Industries Association of the Pacific Islands.

5.3.6 Work with industry associations, civil society, non-governmental organisations and communities to identify and remove barriers to the uptake of renewable energy technologies in power generation and transport.

5.4 Transport

Priorities

5.4.1 Promote the fuel efficiency of imported motor vehicles in order to reduce petroleum consumption. This includes continuing to enforce age limits for second hand vehicles and provide import tax incentives. It may also include introducing new measures such as labelling for vehicle fuel economy of imported land transport vehicles.

5.4.2 Investigate the potential and cost-effectiveness of energy efficiency and renewable energy solutions for sea vessels, including biofuels, solar and sail-assisted sea transport and efficient motors, vessel design, and improved maintenance models to improve the overall efficiency and reduce fuel consumption in sea transport within Fiji.

5.4.3 Support the development and implementation of the Department of Transport's land and marine transport policies that encourage a shift towards more energy efficient forms of land and sea transport, as well as the policies set out below.

5.4.4 Explore the costs and benefits of introducing mandatory fuel efficiency standards based on those applied internationally. Proper due diligence and wide stakeholder consultation will be undertaken before any internationally applied standard is adopted for the local transport sector, including shipping, tuna long line fishing, taxi and bus industry.

5.4.5 Explore the potential for introduction of hybrid and electric vehicles.

5.4.6 Promote the fuel efficiency of the existing motor vehicle fleet, including promoting fuel-efficient driving practices through information campaigns and driver training and by improving the enforcement of vehicle maintenance and maximum axel weight standards.

5.4.7 Encourage consideration of more fuel efficient means of motorised land transportation, such as motorcycles, scooters and other smaller sized vehicles.

5.4.8 Support voluntary actions of businesses, industry and private users, including the aviation industry and commercial land transport, to implement energy efficiency measures.

5.4.9 Promote public transport, including buses and railways.

5.4.10 Promote cycling and establishment of cycle-paths in urban areas, for example through employers' participation in cycle-to-work and public transport schemes.

5.4.11 Encourage town planning and work with local councils to encourage consideration of energy aspects, so that people and freight can move about more easily and efficiently. Also work in rural areas to promote energy efficient transport strategies.

5.5 Petroleum and biofuels

Priorities

5.5.1 Reduce the cost of imported petroleum products by negotiating directly with fuel suppliers and reviewing the pricing templates for petroleum products. Also continue to explore the costs, potential benefits and risks of bulk procurement of petroleum, building on existing studies and initiatives in this regard. This may include regional cooperation or the creation of a monopsony buyer to improve bargaining power.

5.5.2 Improve the transparency of petroleum supply, including collecting data on fuel quantity imports, re-exports, consumption, and pricing and making this data publicly available.

5.5.3 Continue research to explore the potential for increased production and use of biofuels. This includes encouraging the production of coconut oil in remote islands and the use of locally produced molasses for ethanol production. Any actions for the widespread development of biofuels in Fiji should be based on rigorous analysis showing that it is both technically and economically feasible and should be mindful of the risks, in particular the trade-offs between production of crops suitable for conversion to biofuels and production of food and cash crops.

5.5.4 Encourage the use of relatively environmentally friendly petroleum products such as LPG over kerosene. This includes exploring the environmental impact of different fuel options and the relative taxation levels on different petroleum products, and running education/awareness programs. However, direct subsidisation of LPG or any other petroleum products is to be avoided, on the basis that such programmes can often not be sustained.

5.5.5 Keep fuel standards up-to-date and ensure that they are adhered to, including in rural and remote areas, among others to enhance environmental protection, health, and safety.

5.5.6 Prepare and maintain contingency plans for fuel supply to ensure that there is adequate supply during business as usual and during emergency times, including natural disasters, and hydro shortages. This includes considering minimum stockholdings for industry and the acquisition of reservation stockholdings in other countries.

5.5.7 Continue to apply national biodiesel and ethanol fuel standards in a way that supports the uptake of these commodities.

5.6 Energy efficiency

Policy statements on energy efficiency that relate specifically to grid-based power supply and transport are given in the other sections.

Priorities

5.6.1 Continue to increase public education and awareness of energy efficiency by providing targeted information to end-users on the range of energy saving technologies and options available. This should include encouraging businesses to undertake energy audits and to factor in the operating costs of energy use as well as the capital costs when investing. Public awareness campaigns should be informed by analysis of energy consumption patterns and market research of appliance purchases. Education and awareness campaigns should target specific groups.

5.6.2 Extend the current system of energy labelling and minimum energy performance standards to all widely imported electrical appliances and industrial equipment that contribute substantially to energy demand. A system will be put in place to prevent and protect consumers from the use of false energy rating labels.

5.6.3 Develop and implement an energy information database, so that demand side data is collected and analysed and a verifiable data trail is created upon which energy savings can be verified. Where possible this data should be disaggregated by rural and urban users, sex and socio-economic groups. This database will be integrated with other supply-side energy information databases where possible.

5.6.4 Monitor and improve the existing customs and tax incentives that are in place to encourage the use of energy efficient appliances and equipment.

5.6.5 Update the codes and standards for buildings and industry. These codes will provide among others minimum standards for energy use for ventilation, cooling and lighting and will be regularly reviewed in response to new research, building practices and technologies.

5.6.6 Promote energy efficiency in the public sector, as a platform for demonstrating the feasibility of energy efficiency projects. This includes launching demonstration projects on public buildings, establishing energy efficiency protocols for public sector facilities, reviewing and amending budgeting processes and procurement rules to ensure that they allow and encourage energy saving investments and monitoring the energy performance of large public energy users.

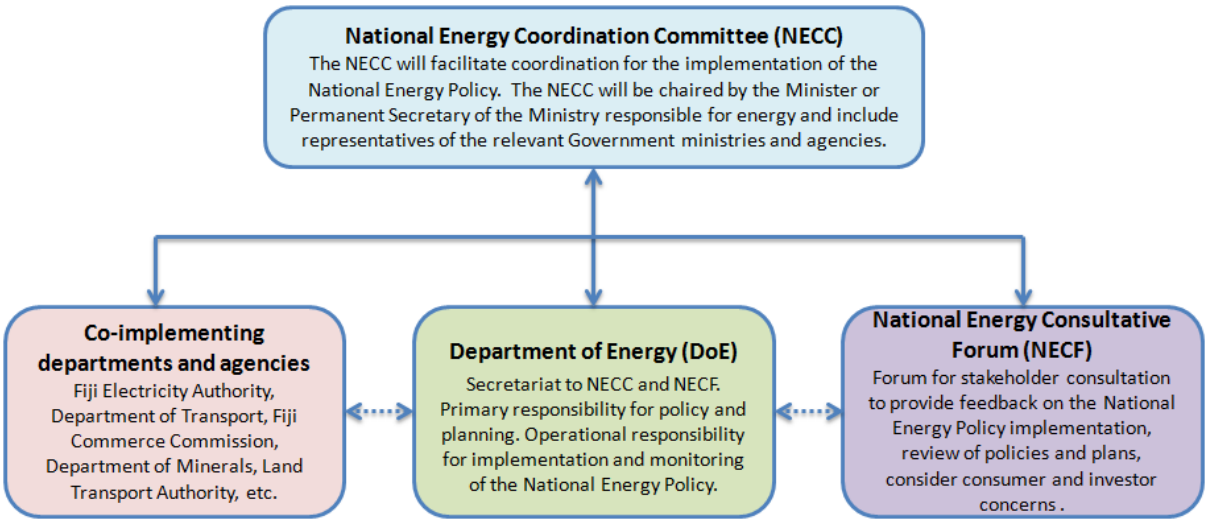
5.6.7 Strengthen the enabling environment for energy service companies (ESCO) to undertake and finance public and private sector energy efficiency projects.

5.6.8 Support voluntary efforts by the business community to improve energy efficiency including public recognition of best performers, providing information on potential, dissemination of best practice and encouraging development partner energy efficiency programmes. For example promotion of use of the International Organisation for Standardisation (ISO) approved standard on Energy Efficiency and Conservation (ISO 50001 – Energy Management Systems).

6 Implementation arrangements

The institutional arrangements for implementing the National Energy Policy are summarised in the figure below.

Figure 1 Summary of implementation arrangements



These arrangements are detailed in the following sub-sections.

6.1 Coordination

Overall coordination for the implementation of this National Energy Policy will be led by a National Energy Coordination Committee (NECC). The NECC should be chaired by the Minister or Permanent Secretary of the Ministry responsible for energy and its membership should include representatives of the relevant Government ministries and agencies, including those responsible for environmental and social issues.

The NECC will be responsible for facilitating coordination across ministries and the departments under them in implementing the National Energy Policy. This includes facilitating aligning policies and activities of individual ministries with the overall energy policy, reviewing planning and policy proposals prepared by the Department of Energy (DoE), providing advice and recommendations as appropriate and resolving any inter-ministry or inter-agency conflicts that may emerge. The NECC would meet at least once annually. DoE will be the secretariat to the NECC.

6.2 Planning and policy development

Primary responsibility for planning and policy development in the energy sector will lie with DoE. Legislation will be established to provide DoE with a clear mandate to carry out this and other responsibilities, including regulatory (see section 6.4). National master plans

and cross-cutting policies developed by DoE will be reviewed by the NECC. DoE as required will conduct Regulatory Impact Assessments (RIAs) on specific plans and programmes under the National Energy Policy. The overall structure of the DoE will be examined including that the necessary human resources are available to implement the policy. This may require increased staffing and capacity building support to DoE.

The Fiji Electricity Authority (FEA) will remain responsible for planning of the national grid, including generation and network planning and planning of grid extensions. DoE will be responsible for national master plans, including for renewable energy and electrification, and the plans prepared by FEA will be expected to be in accordance with these. Responsibility for policy matters such as the role of the private sector in the electricity industry and development of frameworks for private sector participation in the electricity sector will be transferred from FEA to DoE to avoid potential conflicts of interest.

DoE should not combine a remit for planning and policy development with continued responsibility for detailed implementation, including the installation and maintenance of electrification installations and energy efficiency equipment. DoE will continue to gradually contract out these functions as part of the development of new electrification models.

A focus of DoE's lead role in the energy sector will be a systematic collection and processing of data and information relevant for energy planning. This will include areas that are currently not adequately documented such as the use of traditional biomass household fuels. DoE will co-operate with the Fiji Bureau of Statistics in efforts to improve energy data collection in future household income and expenditure surveys and in the national census. A national energy information system and database will be established and housed at DoE. This will be publicly accessible. The national energy information system will include an electronic record of all relevant past studies in the energy sector, such as resource assessments, feasibility studies and project evaluations. The database will include demand and supply-side data on all aspects of energy in Fiji and detailed fuel and electricity price data obtained from the Fiji Commerce Commission.

The organisational structure and resourcing of DoE will be reviewed in light of its role as defined in this policy. This will include a training needs assessment and the development of a human resource plan, which will seek to provide DoE with the required set of skills and knowledge to fulfil its new mandate.

6.3 Stakeholder consultation

As well as informal discussions and public consultations on specific proposals, DoE will also consult more generally at least once yearly with representatives of external stakeholders in the energy sector. Measures should be adopted to ensure full and inclusive consultation processes including with private users, communities, civil society and non-governmental organisations. These consultations will be used to present and receive feedback on on-going activities under the National Energy Policy, progress with implementation of plans and policies and preliminary proposals on new or revised plans and policies. Consideration will be given to consumer protection and consumer and investor concerns. The consultations will be conducted through a National Energy Consultative Forum (NECF) modelled on the similar body established for the transport sector. The material presented and minutes of the consultations will be made publicly available.

6.4 Regulation

Regulation in the energy sector will consider the national interest; while balancing both consumer and investor interests.

The Fiji Commerce Commission will continue to be responsible for the regulation of fuel and electricity tariffs (the latter through a new regulatory contract mechanism). The Fiji Commerce Commission will be able to call on technical expertise including those contained within DoE where sector-specific knowledge is required.

Non-tariff regulatory functions in the electricity sector that are currently held by FEA, including licensing and approvals, will be transferred to DoE in line with the proposed separation of operational and regulatory functions of FEA. DoE will also take responsibility for developing an IPP framework, which will include procurement processes and power purchase agreement principles for large-scale capacity and feed-in tariffs and net-metering arrangements for grid-connected small-scale renewables. This means that in regulating retail electricity tariffs, the Fiji Commerce Commission will only allow FEA to recover its power purchase costs that are in line with the IPP framework put in place by DoE.

Changes to regulatory responsibilities will be covered by amendments to existing and new legislation where necessary. To avoid DoE's policy-making, planning and regulatory responsibilities being confused, a separate unit under DoE will be established to undertake regulatory functions.

6.5 Reporting, monitoring, and evaluation

DoE will lead reporting and monitoring of all energy sector activity, including the implementation of the National Energy Policy. Evaluation will be carried out externally of DoE including by relevant Government agencies and/or independent non-government organisations as appropriate.

DoE will monitor the implementation of the National Energy Policy, including specific progress against the actions contained in the Strategic Action Plan and inform the NECC on a yearly basis. Based on the findings, Government may decide to amend targets and actions as considered necessary. An annual report will be presented to the NECF and comments received from stakeholders through this mechanism will be provided to NECC for its consideration.