B. ENERGY
Government Focal Point – Ministry of Works and Energy
Responding Ministry/Office – Department of Energy

1.0. Progress made in implementation

1.1. The Department of Energy is responsible for overall energy policy and planning, promoting the development of renewable energy resources and renewable energy service companies (RESCOS), energy conservation and the coordination of rural electrification activities through the Rural Electrification Programme. The Fiji Electrical Authority (FEA) is the national utility responsible for urban and peri-urban electricity supply. The Fiji Electricity Authority (FEA), a wholly Government-owned commercial statutory authority, is responsible for the generation, transmission and distribution of electricity in Fiji while the three oil companies Shell, Mobil and British Petroleum undertake the purchase, storage and distribution of petroleum products throughout the country.

1.2. FEA supplies electricity through its grid systems on three main islands in Fiji. Viti Levu has the most extensive grid system extending around most of the island's perimeter. Most of Viti Levu's power comes from the Wailoa hydro station near Monasavu in the centre of the island with 132 kV transmission to the Viti Levu Interconnected System (VLIS). Vanua Levu has two small 11 kV networks around the towns of Labasa and Savusavu and Ovalau has a small 11 kV grid extending from Fiji's former capital, Levuka.

1.3. Currently the main sources of energy for Fiji are biomass from bagasse, firewood and coconut residues; petroleum products; and, hydropower for electricity generation. Solar and wind energy are also utilized, however, their installed capacity and energy production is relatively minor compared to energy usage from the main sources. For example, the Department of Energy (DOE) has determined that the use of solar electrical or photovoltaic (PV) panels in the rural sector, away from the FEA grid, is of major importance to rural development but, presently, the installed capacity is negligible in discussions about country wide energy balances and global usage of energy.

1.4. In 2003 67.3% of electricity requirements were met from hydropower with 28.4% of the balance from imported petroleum products. In 1990 94.5% was from hydropower while in 1999 it went down to 82.3%.

1.5. The proportion of Fiji's total population having direct access to power supplied by the Fiji Electricity Authority was 60% in 2002 compared to 54% in 1990. Based on the population and housing census of 1996, 87% of the total number of urban households had access to some kind of electricity supply compared to 75% in 1986. In terms of rural access, 49% of the total number of rural households had access to electricity supply in 1996 compared to 31% in 1986. At

the end of July 2002 the Household Income and Expenditure Survey reported that 90% of the total number of urban households had access to electricity.

1.6. The level of electricity produced by FEA and the IPP in 2003 was 628 GWh and has increased over the last five years from 507 GWh in 1998. The total number of consumer accounts using electricity services from the FEA grid is about 120,000 and is forecast to increase by 5% per annum during the next three years.

1.7. Since the inception of the Rural Electrification Scheme in 1975 a total of 900 schemes have been installed under a cost sharing arrangement between Government and rural applicants. A total of about 135,000 people of the total rural population have benefited. Diesel schemes and national grid extensions are the main means of electrification.

1.8. The Department of Energy's Rural Electrification Unit (REU) is tasked with the penetration of grid electrification powered by Fiji's hydro resources into the rural areas of the nation. In effect, the REU not only facilitates the provision of electricity services through the FEA, it also provides stand alone electricity services through implementing renewable energy projects such as, copra biofuel, biogas, solar and wind based systems. Rural populace are in fact given an option to choose the type of renewable energy based electrification system preferred however, the final decision on the type of system to be installed will depend upon the assessment and resources available at the Department and at the site. Funds received from the UNESCAP has enabled the review of the Departments Rural Electrification Policy that was last revised in 1993.

1.9. The transport sector is the highest consumer of energy, consuming over 50% of the total energy consumed followed by domestic fuelwood which is the main source of energy used in the rural areas.

Policies and Plans

1.10. Fiji's National Strategic Development Plan 2003-2005 provides an overaching framework with policy objectives and indicators to achieve the energy sector goal: "to facilitate the development of a resource efficient, cost effective and environmentally sustainable energy sector."

1.11. In addition to its Strategic Development Plan the Department of Energy is developing a new national energy policy with the assistance from the European Union Energy Initiative, South Pacific Applied Geosciences Commission (SOPAC) and UNDP. In 1993, Cabinet endorsed a Rural Electrification Policy (REP) that still remains in force. Under the REP, any rural village or settlement can request Government assistance for electrification. A Rural Electrification Unit was set up with the department of energy to implement the REP.

1.12. A number of bills have been drafted in recent years for consideration by Fiji's Parliament and several have become Acts and other legal instruments were prepared to some extent have effects on the energy sector. These include Electricity Act (Cap 180); Petroleum Act (Cap. 190); Fuel and Power Emergency

Act (Cap 191); Petroleum Act (Cap 148); Public Enterprise Act (1996); FEA Reorganisation Charter (1998); Electricity Reform Bill (1998); Hotels Aid Act (amended 1999); Commerce Act (1998); Environment Management Act (2005); and Renewable Energy Service Company Bill.

1.13. Government places emphasis on the importance of conserving energy through its **Energy Conservation Program** that entails energy assessment and implementation programs to identify possible areas of energy and financial savings and further ensures that these savings are realised. During the past decade, the Department has been able to include energy conservation topics in the Fiji schools curriculum, disseminate information on energy conservation via newsletters, stickers and posters, conduct energy audits of several government departments and hospitals. Advice on energy audits have also been provided to the private sector who undertake their own energy conservation programs.

1.14. The Department has also embarked on energy conservation and renewable energy initiatives/projects with the SOPAC. These involve appliance labeling of electrical household appliances, earth day competitions for schools, wave and wind energy assessments, energy information and database expertise. Human resources development through training courses and advice/informational exchanges has also assisted both organizations. The Fiji Electricity Authority (FEA) has also been active with the Department in promoting and aggressively pursuing energy conservation programs such as energy for cash rebates and public awareness around Fiji through "customer awareness" campaigns.

1.15. The Department with funding from the Global Environmental Facility (GEF) through UNDP, established a new Unit "**Office for the Promotional of Renewable Energy Technology" (OPRET**), that has been active in establishing the framework for the participation of *renewable energy service companies* (RESCO's) for the electrification of the rural sector. The objective of this project is to minimize barriers to the implementation of renewable energy systems for rural electrification. The GEF-RESCO model has also been accepted by the Cabinet and a Bill for RESCO's is being developed.

1.16. Over the years the department has worked with regional based organizations for the betterment of the energy sector. At the 2002 Regional Energy meeting in Cook Island, Fiji was a party to the endorsement of the Pacific Islands Energy Policy and Plan, which was prepared by the Committee of Regional Organizations of the Pacific (CROP) – Energy Working Group.

1.17. The Pacific International Centre for High Technology Research (PICHTR), a Hawaii based organization has been active in the promotion and dissemination of renewable energy based technologies, facilitation of funds and human resource development of the Departments efforts in its expansion of rural based renewable energy projects. PICTHR and through its major sponsor, the Ministry of Foreign Affairs – Japan, provided assistance in the purchase and installations of solar home systems for over 250 rural homes to have electricity for the first time in their lives.

1.18. The Secretariat of the Pacific Community (SPC) has been active in energy projects and assisted the Department in the feasibility study and technical expertise in the development of alternative fuels for electricity generation. SPC with its partnership with the French Embassy and a French based research institution, CIRAD-FRANCE, provided assistance in acquiring biofuel generators and oil production technology for 2 villages to supply electricity to over 200 households.

1.19. The continuing need for training and specialists in the technical, management and planning areas of energy, is partly fulfilled by the graduate and postgraduate programmes offered by the USP. To this end, several targeted initiatives such as DANIDA funded capacity building on wind project (jointly between UNEP, SOPAC and USP); UNESCO's assistance towards school curriculum in energy and USP's efforts to host a Centre of Excellence in Rural Energy, are important ongoing activities.

1.20. UNESCAP, has conducted a training needs assessment of staff involved in renewable energy systems, yet there has not been any actual training programs developed. UNESCAP has however assisted with the review of the Department's collection, analysis and dissemination of energy data for its **Energy Statistics/Database Program.**

2.0. Trends and emerging issues

2.1. Fiji has a number of renewable indigenous energy resources such as hydro, geothermal, wind, solar and biomass. The development of these resources could create local industries and employment, could attract concessionary financing and private sector investment. Development of these resources could diversify energy supply, reduce vulnerability of the economy and improve access to modern energy for remote and isolated communities. In the absence of an adequate enabling framework, development of these resources is currently slow.

2.2. The use of biomass or bioenergy has not been fully developed. Bioenergy can be used to provide heat, make fuels, and generate electricity. Apart from wood, there are other types of biomass that can be used to produce energy such as residues from the agriculture and forest industries, sugar mills, aquatic plants, and wastes produced from cities and factories. The use of bioenergy needs attention especially with the imminent restructuring of the sugar industry, which will loose preferential ACP trade conditions. Bioenergy development seems to offer interesting opportunities that could help to smoothen the industries transition and create new employment opportunities.

3.0. Constraints and Challenges

3.1. Fuel imports are a major component of the country's current import bill. Fiji currently requires an average of approximately 300 million litres per year of liquid petroleum fuels for land, sea and air transport, electricity generation, industrial production and household use. At current world market prices this represents import cost of more than FJ$ 200 million. Although annual growth

rates have only been in the order of 2%, from 1990 – 2000, consumptions seem to have accelerated significantly in the last two years. With no control over world market price development, only limited room to influence retail prices through fiscal measures and no local substitutes currently developed the economy's leading sectors are heavily exposed to price volatility. There is also the threat of potential supply disruption.

3.2. Rural sector electricity demand has not been rigorously determined. The following estimate is presented to establish an order-of-magnitude baseline. Approximately 200,000 people, or one-half of the rural population are without electricity. To quantify the demand for electricity posed by the people residing in the rural sector, two different consumption scenarios are utilized: an entry-level rate (5 persons per household, consuming 0.2 kWh/day) and eventually a relatively high demand rate (consumption at 2.0 kWh/day per household). The potential electricity demand ranges from 3 to 30 GWh/year in the rural sector.

3.3. High Capital Costs Programs conducted by the Department have proven that generating energy from a number of indigenous renewable resources are feasible options for application in Fiji. However, due to the high capital costs associated with renewable energy projects, the main constraints in the implementation phase is the funding of such projects.

3.4. Despite the initiatives for promotion of renewable energy undertaken by the Department and the energy sector as a whole, the level of uptake for such technologies have been rather limited because of the high costs. As such, locally the demand for such technologies has been limited to the rich in our society.

3.5. Another testimony to this predicament is the number of companies that are available locally that have ventured into the business of selling and servicing renewable energy technologies. Today at most three private companies have been able to put up the much needed capital and more importantly armed with backup services that have enabled them to survive in this industry.

3.6. In the past and to date, foreign aid has been the main source of funding for renewable energy projects. As aid assistance for the funding of renewable energy projects is insufficient, the Department is promoting the involvement of the private sector in the implementation of its various projects. The GEF projects aims to address this issue and the Department would assist more now that the duty on renewable energy equipment has been removed.

3.7. Lack of Institutional Framework, Capacity and Capability: There is no existing sustainable institutional framework in Fiji and which can operate rural electrification on a commercial basis and provide reliable service. The current institutional framework does not provide any incentive even for Government to operate rural electrification systems on a commercial and sustainable basis. Even at local community level, basic skills to manage renewable energy projects are lacking, and when trainings are provided, the commitment to adhere to its

principles are weak. In essence, there is lack of local area leadership on guidance.

3.8. Lack of definition regarding tariffs for rural electricity supply: The current tariff is substantially lower than the full cost of electricity. True costs must be documented long with the tariff and subsidies established by the government.

3.9. Lack of revenue collection technology: Fee collection can create local disputes. It is usually difficult to collect service fees from villagers or to disconnect customers that do not pay their fees.

3.10. Limited in-country expertise in design, installation, operation, and maintenance of renewable energy systems: Because Fiji has limited experience with renewable energy there is a lack of in-country design experience as well as familiarity with state-of-art equipment and particularly their installation and maintenance.

3.11. Lack of information and awareness of the potential for renewable energy systems: Although the Rural Electrification Policy provides three options for electrification schemes, the villagers are not well informed of the costs and benefits of each scheme. The Department does not have the additional staff required to disseminate information and promote renewable energy.

3.12. Renewable energy is not considered a priority sector: While the Government is addressing the expansion of electrification into un-electrified areas, diesel fuel is still being used. Funding for renewable energy projects is a negligible amount when compared to diesel projects.