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Fiji’s Experimental Environmental Account for Energy 2006 to 2014

Energy Account

The Experimental Environmental Accounts for Energy presented in this release is the first stage of compilation to improve our understanding of the environmental effects of energy production and use. The release is experimental given that it is based on available information and coverage of the Account will expand once other information on energy supply and use becomes available.

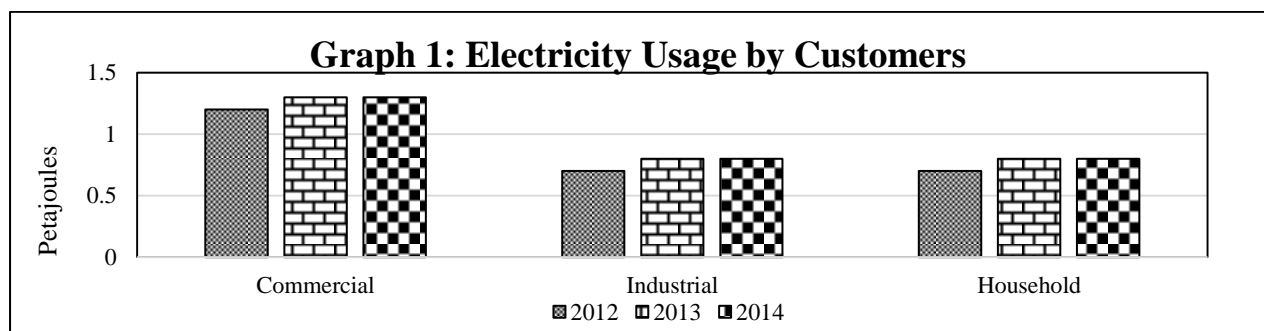
The Account was compiled through a collaborative effort with national stakeholders and international partners using the System of Environmental-Economic Accounting (SEEA) central framework which covers the assessment of energy production and consumption as well as related issues of resource use. The Energy Account only includes electricity generated and distributed by the Fiji Electricity Authority. Energy supply from Fiji Sugar Corporation, Emperor Gold Mine, Village Diesel Plant, Village Hydro Plant and Home Solar Systems will be included once the data becomes available.

Why Energy Account?

The need for reliable and affordable energy, lack of public awareness regarding energy efficiency and the consequent need to monitor energy use and the sustainability of its supply are all key concerns highlighted under Thematic Area 7 in the Green Growth Framework for Fiji¹. The national Energy Policy 2014-2020 outlines Government’s vision and strategic direction for achieving sustainable energy for all.

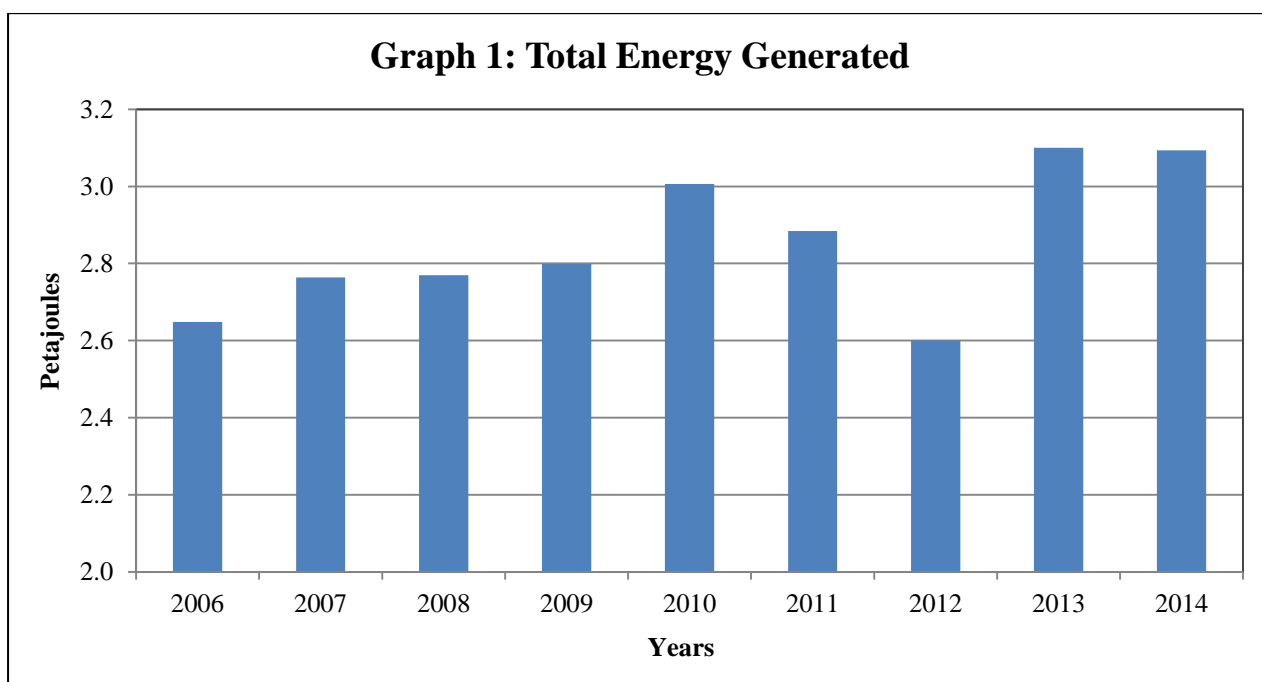
Main Findings

Use of electricity generated by FEA was about 2.86 PJ² in 2014. This represents an increase of about 10.0% over 2005. The major consumer is the commercial sector (45.0%), followed by the industrial sector (28.0%) and domestic sector (27.0%).



¹ A Green Growth Framework for Fiji: Restoring the Balance in Development which is Sustainable for Our Future, Government of Fiji, August 2014.

² Joules is the international standard unit of measurement for energy. Refer to appendix for conversion factors



FEA represents 97.5% of all electricity generated on the grid in Fiji. If the trend in FEA generation is representative of all electricity, then the electricity intensity of the economy in 2014 represents an improvement of about 33.0% over 2005.

Given that 53.0% of FEA’s electricity is generated from thermal generation, the quantity and type of fuels consumed represent not only a significant cost, but also environmental impacts. Imported fuel for thermal generation cost \$180m. The fuel was converted into 454 GWh in 2014, resulting in an estimated loss in transformation (mainly heat, which could be recaptured) of about 61.0% of the energy content of the fuel.

Further Work

Electricity represents only a small portion of Fiji’s energy mix. Further, the FEA client base covers only a part of Fiji’s population. The Energy Accounts could be expanded to provide a more comprehensive picture of Fiji’s energy supply and use. Further work could include providing information on additional sources of energy supply (fuel for transportation, cooking and industry) and more detail on users.

For example, the energy intensity of specific industries would help focus on managing energy use. More detail on rural and outer island households would help understanding where to focus improvements in access to energy. Understanding the overall energy supply, demand and distribution would provide a framework within which to better manage Fiji’s future energy requirements and impacts.

Energy consumers are based on the classification used by FEA to classify their customers (commercial, household and industry).

Please find attached the following Appendices for your reference:

- Appendix 1: Fiji's Energy Account; and
- Appendix 2: Technical Notes.

The following contact persons are available to attend to any further enquiries:

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Reproduction of Material

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Appendix 1: Fiji's Energy Account

Energy Account 2006 - 2014 Petajoules [PJ]

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sources of Energy									
Hydro	1.2	1.8	1.8	1.7	1.5	1.6	1.9	1.9	1.4
Solar and Wind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel oil	3.7	2.4	2.6	2.9	3.8	3.1	2.5	3.0	4.1
<i>less loss during Transformation</i>	2.3	1.5	1.6	1.8	2.3	1.9	1.8	1.9	2.5
Energy Available for distribution	2.6	2.7	2.8	2.8	3.0	2.8	2.6	3.1	3.1
Users:									
<i>Commercial</i>	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3
<i>Industrial</i>	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8
<i>Domestic</i>	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8
Loss during distribution	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2
Returns to the environment	5.0	4.2	4.3	4.5	5.3	4.8	4.7	4.9	5.6
<i>% of energy loss during transformation</i>	47%	36%	36%	39%	43%	40%	41%	38%	45%
<i>% of energy loss during distribution</i>	4%	5%	5%	4%	6%	4%	7%	6%	4%

Any discrepancy in totals and sum of components are due to rounding.

N.B. This is a simplified version of the energy account, the SEEA Conceptual Framework Version of the Energy Account i.e. inclusive of the Physical Supply and Use Tables is available on the website: www.statsfiji.gov.fj.

Appendix 2: Technical Notes

Definition (SEEA 2012 – UNSD)

SEEA 2012 Central Framework – is a multipurpose conceptual framework for understanding the interactions between the economy and the environment, and for describing stocks and changes in stocks of environmental assets.

Energy Account - Energy flow accounts record flows of energy, in physical units, from the initial extraction or capture of energy resources from the environment into the economy; the flows of energy within the economy in the form of the supply and use of energy by industries and households; and, finally, the flows of energy back to the environment.

Joules – the basic unit of measurement for energy.

Petajoules – is equivalent to quadrillion joules.

Gigajoules – the equivalent to one billion joules.

Loss during transformation – refers to the energy lost, for example, in the form of heat, during the transformation of energy product into another energy product.

Loss during distribution – are losses that occur between a point of abstraction, extraction or supply and a point of use.

Commercial user – refers to users in businesses and light industries.

Industrial user – refers to users in heavy industries.

Domestic user – refers to household users.

Returns to environment – comprises of all energy that is returned to the environment i.e. sum of loss during transformation, billed energy (electricity), and loss during distribution.

Energy available for distribution – refers to energy after transformation available for distribution to users.

MWh - A megawatt hour (MW) is equivalent to one million watt.

Conversion Factors:

1 MWh = 0.0000036 Petajoules

1 tonne of fuel = 1111.20 litres of fuel

1 tonne of fuel = 0.000043 Petajoules