EXPERIMENTAL ENERGY ACCOUNTS FOR THE FEDERATED STATES OF MICRONESIA

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Note: To continuously improve the coverage and quality of the energy accounts, and to assist in the development of the environmental-economic accounts in FSM, feedback can be sent to Ms. Sharon Pelep on spelep@fsmrd.fm

1. INTRODUCTION

This report presents experimental energy accounts for the Federated States of Micronesia (FSM). Complete physical and monetary accounts are presented for the year 2015 for FSM and each of the four States (Chuuk, Kosrae, Pohnpei and Yap). Complete accounts for the island of Kosrae were compiled for 2013, 2014 and 2015. The accounts were developed using the System of Environmental-Economic Accounting – Central Framework (SEEA)[1].

Energy accounts were identified as a priority in an assessment report[2], prepared by Statistics Division of Department of Resource and Development, FSM National Government with support from the United Nations Economic and Social Commission for the Asia Pacific (UNESCAP) in 2015. The assessment, conducted in conjunction with national stakeholders, drew upon key national policy documents to identify areas of national priority and determine technical feasibility based on available statistics.

In particular, the FSM Strategic Development Plan 2004-2023[3], identified several goals, one of which directly related to energy accounts:

> *Strategic Goal 3 is to improve the environment and it states: reduce energy use and convert to renewable energy sources/ minimize emission of greenhouse gases.*

A range of related actions and targets are outlined in the Plan, including:

- Lessening energy demand via conservation strategies and use of more efficient energy using appliances; and
- Installation of alternative energy production technologies (i.e. renewable energy, e.g. solar and hydro-electricity).

The FSM National Government's National Energy Policy (2012) reinforces these goals, and highlights the need for:

- Safe, reliable, cost-effective and sustainable energy supply;
- A diversified energy resource base; and
- Environmentally sound and efficient use of energy.

[1] The SEEA was adopted as an international statistical standard in 2012, and can be integrated with the System of National Accounts (SNA), which among other things produces the indicator of Gross Domestic Product (GDP).

[2] Found at http://www.fsmstats.fm/wp-content/uploads/2017/07/FSM-Environment-Statistics-Assessment-Report.pdf

[3] https://www.adb.org/sites/default/files/linked-documents/cobp-fsm-2015-2017-sd-02.pdf

The overarching target of the Energy Policy includes the need to raise the share of renewable energy sources and improve efficiency in both energy supply, and energy use.

The energy priorities and associated indicators in the FSM Strategic Development Plan 2004-2023 and National Energy Policy are also found in the global Sustainable Development Goal (SDGs) 7 on Energy. Given the integrated and cross-cutting nature of energy data (where it comes from, how it is used and what impacts it has on the environment, economic and society), targeted policy development and implementation as well as monitoring progress towards national and, where appropriate, global targets is important.

Data for the monitoring of several national and SDGs Goal 7 targets can be derived from the SEEA energy accounts model. For example: proportion of population with access to energy services; share of renewable energy in the national energy mix; and rate of improvement in energy efficiency. On a related closely related point, the SEEA carbon and carbon dioxide emission accounts are directly linked to the energy accounts and could be prepared in later stage. This would assist significantly in the development and monitoring of Intended Nationally Determined Contributions[4].

1.1. Focus of the experimental energy accounts

These accounts were prepared with the aim of determining the extent to which existing data sets can support the construction of energy accounts that meet policy demands in FSM.

Two main forms of energy are supplied in the market economy of FSM: fossil fuels by FSM Petroleum Corporation and electricity by four State owned power utilities, namely: Pohnpei Utility Corporation (PUC), Kosrae Utilities Authority (KUA), Yap State Public Services Corporation (YSPSC) and Chuuk Public Utility Corporation (CPUC). It was estimated in 2010 that around 55% of households are connected to the electricity network[5]. Some electricity produced by the power authorities is sold via energy retailers.

Most electricity is generated from fossil fuel (diesel) but a small amount is generated from solar, and this amount is predicted to increase[6], while a small hydro-electric plant operates in Pohnpei. Practically all fossil fuel is imported by the FSM Petroleum

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[4] United Nations Framework Convention on Climate Change, INDCs: http://unfccc.int/focus/indc_portal/items/8766.php

[5] Expression of Interest to Participate in SREP, Micronesia Climate Investment Funds: https://www-cif.climateinvestmentfunds.org/sites/default/files/meeting-documents/federated_states_of_micronesia_eoi_0.pdf

[6] World Bank Energy Sector Development Project: http://www.cpuc.fm/wp-content/uploads/2014/03/Chuuk-State-FSM-WB-ESDP-Consultation-Report-10-Mar-14-Final.pdf

Corporation (a small amount may be imported by fishing and marine transport vessels re-fueling from tankers at sea). In addition, to fossil fuels and electricity, firewood and other vegetable matter (especially coconut husks) are also used as energy sources.

The experimental energy accounts are focused on the supply and use of fossil fuels and electricity for which there is readily available national information. This includes information from the national accounts on the use of energy in monetary terms for the period 2009 to 2015 as well as more detailed data from FSM Petroleum Corporation and the power utilities for 2013 to 2015.

Previous work on the use of firewood and other vegetable matter as energy (Fifita 1999) is indicative but unlikely to reflect current use. Information on the generation and use of solar and hydro-electricity has not yet been obtained. If data can be identified or new data collected, then the generation and use of renewable energy could be included in future energy accounts for FSM.

A range of unpublished data that supported the construction of national accounts is also available although not fully explored. The compilation of the accounts brought to light some limitations and inconsistencies in the data which will need to be addressed over time (and suggestions for this are made in Section 5 “Next Steps”).

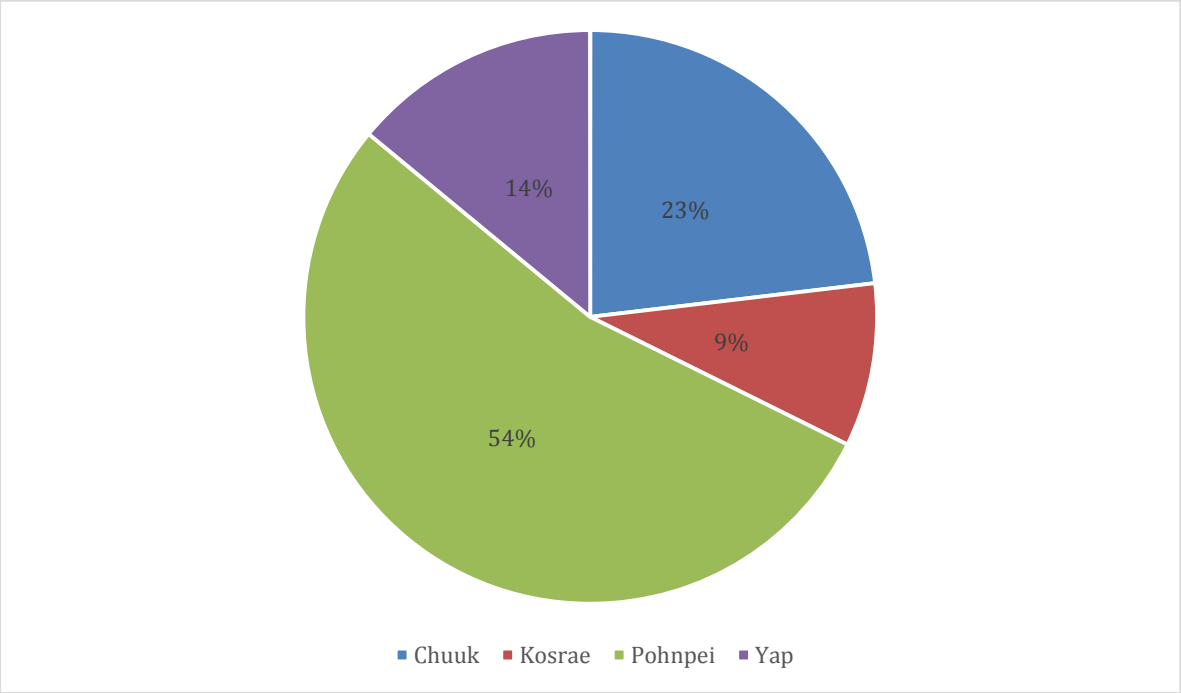
The tables included are simplified versions of those presented in the SEEA Central Framework. In particular, the industry split in the supply and use table is very limited, the imports by the FSM Petroleum are shown as a direct supply to uses and there is no inventory column. The simplification is used to align with the data available and to aid interpretation by those new to the SEEA. Overtime the tables can be expanded to include greater detail and more information (and again suggestions for this are made in Section 5 “Next Steps”).

2. SUMMARY OF RESULTS

A summary of information related to the supply and use of energy in FSM is presented in Table 1 and Figures 1-10. The full experimental energy accounts for FSM and each of the states for 2015 are found in Appendix 1 and the data sources and methods are described in Appendix 2.

Total use of energy products (fossil fuels and electricity) in physical terms was 4,610 million Gigajoule (Gj) in FSM in 2015. The greatest use of energy products was in Pohnpei, which accounted for 54% of the total (Fig. 1). The total value of energy product use in FSM increased 25% between 2009 and 2015, from $32.4 million to $40.4 million[7]. This increasing trend was seen in all states except Yap (Fig. 2). Energy use by states was generally reflective of the size and growth of the economy in each state as measured by Gross Domestic Product (GDP) (Fig. 3).

Figure 1. Total use of energy products by state, 2015 (percentage)



[7] These are all in current prices and hence the changes reflect both the changes in the amount of fuel used as well as the price of fuel

Figure 2. Total value of energy product use by state, 2009 – 2015 (US$ million, current price)

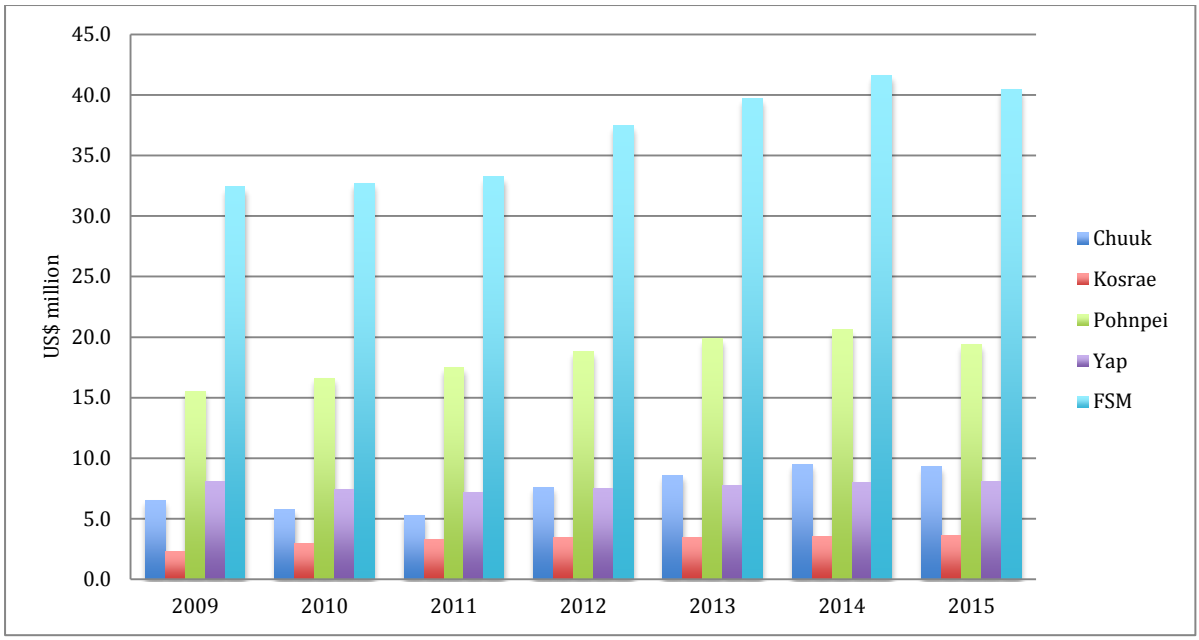
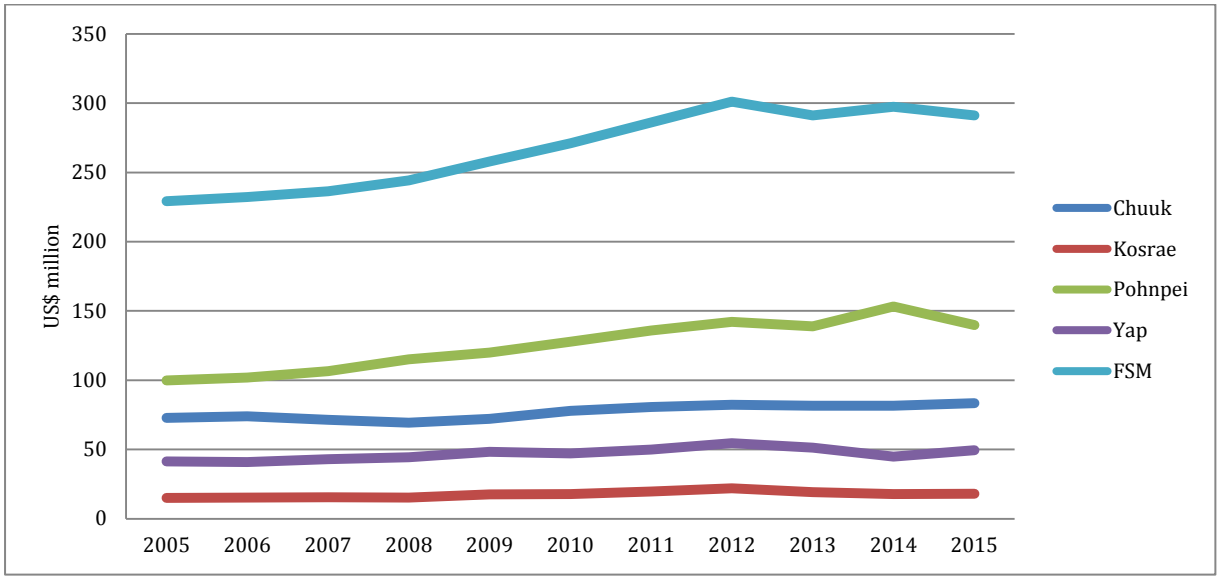


Figure 3. State GDP and GDP growth, 1995 to 2015 (US$ million basic[8] prices, current price[9])



[8] Basic prices are the amounts received by the producers of goods and services. The prices excludes taxes or subsidies paid by the purchasers as well as transport costs separately invoiced by the producers. See SNA 2008, Para 6.205.

[9] Current prices are the prices of goods and services that prevail in the accounting period in which they are consumed. See SNA 2008, para 1.67. They are distinct from constant prices which apply the price prevailing in a single reference year to all other years.

The ratio of economic production to the value of energy used in FSM is shown in Figure 4. This is GDP for each dollar of energy product used. Total economic productivity in FSM has declined 10 %, from 8.66 US dollars GDP per energy dollar used in 2009 to 7.79 dollars in 2015. Declines in economic productivity between 2009 and 2015 were also seen Chuuk (-19%), Kosrae (-36%) and Pohnpei (-7%) but increased in Yap by 1%. The overall decline in economic productivity of energy use indicates that the value of energy used is increasing faster than GDP. It is also noted that the industry value added (IVA)[10] of the energy sector is increasing as a share of the FSM economy (Fig. 5).

Figure 4. Economic productivity of energy use, FSM 2009 to 2015 (US$ of GDP at purchasers price[11] per total value of energy used, current prices)