

The compilation of a tentative Physical Energy flow account

Outline

1. Introduction
2. Data sources and compilation methods for PEFA
3. Preliminary Result
4. Next Step and the way forward

Introduction

SISE

Lao Statistics Bureau has launched the development of Statistical Information System on the Environment (SISE) with support from Luxembourg Government and STATEC

SEEA

The System of Environmental-Economic Accounting (SEEA) plays a central role in Lao PDR strategy for the development of environment statistics, as well as for the mainstreaming of their use in policy processes.

2019

Two priority Environmental Economy Accounting have been identified:

- Material Flow Accounts (MFA)
- Physical Energy Flow Accounts (PEFA).

Existing Environmental-Economic Accounting in Lao

System of Environmental-Economic Accounting (SEEA)

01	Material Flow Account	Completed
02	Physical Energy Flow Account	Pilot compilation
03	Environmental Taxes Account	Preliminary result
04	Environmental Goods and Services Sectors	Preliminary result
05	Natural Capital Accounting	Completed (Khammuane Province)

Identified with data are available

level	code	label
1	N00	NATURAL ENERGY INPUTS
2	N01	Fossil non-renewable natural energy inputs
2	N02	Nuclear non-renewable natural energy inputs
2	N03	Hydro based renewable natural energy inputs
2	N04	Wind based renewable natural energy inputs
2	N05	Solar based renewable natural energy inputs
2	N06	Biomass based renewable natural energy inputs
2	N07	Other renewable natural energy inputs
1	P00	ENERGY PRODUCTS
2	P08	Hard coal
2	P09	Lignite & Peat
2	P10	Derived gases (= manufactured gases excl. biogas)
2	P11	Secondary coal products (coke, coal tar, patent fuel, BKB and peat products)
2	P12	Crude oil, NGL, and other hydrocarbons incl. Oil shale/sands(excl. bio)
2	P13	Natural gas
2	P14	Motor spirit (without bio)
2	P15	Kerosenes & jet fuels (without bio)
2	P16	Naphtha
2	P17	Transport diesel (without bio)
2	P18	Heating and other gasoil (without bio)
2	P19	Residual Fuel Oil
2	P20	Refinery gas, ethane & LPG
2	P21	Other petroleum products incl. additives/oxygenates and refinery feedstocks

2	P22	Nuclear fuel
2	P23	Wood, wood waste & other solid biomass, charcoal
2	P24	Liquid biofuels
2	P25	Biogas
2	P26	Electrical energy
2	P27	Heat
1	R00	ENERGY RESIDUALS
2	R28	Renewable waste
2	R29	Non-renewable waste
2	R30	Energy losses all kinds of (during extraction, distribution, storage and transformation, and dissipative heat from end use)
2	R31	Energy incorporated in products for non-energy use

Energy Accounts in general

- Supply and use of energy by
 - economic activity and households
 - Energy inputs, products and residuals (16 classes)
 - Imports, exports and changes in inventories are also included
- Divided by economics activities, not by sectors as in Energy statistics
- First time compiled in 2019.
- Year 2012 was chosen as it had the best auxiliary data readily available
- The 'pilot' shouldn't be considered as a final version of the year 2012

PEFA framework

Natural energy inputs (3 items)

- Fossil non-renewable natural energy inputs
- Hydro based renewable natural energy inputs
- Biomass based renewable natural energy inputs

Energy products (10 items)

- Anthracite
- Lignite
- Motor spirit
- Kerosenes and jet fuels
- Transport diesel
- Refinery gas, ethane and LPG
- Other petroleum products
- Wood, wood waste and other solid biomass,
- charcoal
- Electrical energy

Energy residuals (3 items)

- Loss transformation
- loss distribution
- Loss end use

Compiling Energy Accounts

- Data is mostly based on "Lao PDR Energy Statistics 2018" energy balance data and auxiliary data from National Accounts
- Sector data is allocated ISIC classes with ancillary data
- Energy use in each sectors are allocated with monetary supply and use tables (National Account)
- Export and Inport of Energy items are calculated with Customs data
- All unit measure of items (one, liter, Kwh) are converted to “*Ktoe*”

Preliminary Result_Supply Energy

Label	Agricultural, forestry and fishing	Industrial activities	Services	Household	Import	Environment	Total
NATURAL ENERGY INPUTS						1,353	1,353
Fossil non-renewable natural energy inputs						246	246
Hydro based renewable natural energy inputs						1,105	1,105
Biomass based renewable natural energy inputs						2	2
ENERGY PRODUCTS	2	1,351	-	-	829	-	2,181
Anthracite	-	91	-	-	-	-	91
Lignite	-	155	-	-	-	-	155
Motor spirit (without bio)	-	-	-	-	160	-	160
Kerosenes and jet fuels (without bio)	-	-	-	-	44	-	44
Transport diesel (without bio)	-	-	-	-	517	-	517
Fuel oil	-	-	-	-	8	-	8
Refinery gas, ethane and LPG	-	-	-	-	2	-	2
Other petroleum products	-	-	-	-	2	-	2
Wood, wood waste and other solid biomass, charcoal	2	-	-	-	-	-	2
Electrical energy	-	1,105	-	-	97	-	1,201
ENERGY RESIDUALS	4	226	663	169	-	-	1,062
Loss transformation	-	0	-	-	-	-	0
loss distribution	-	81	-	-	-	-	81
Loss end use							980
Total Supply	5	1,577	663	169	829	1,353	4,596

Preliminary Result_Use Energy

Label	Agricultural, forestry and fishing	Industrial activities	Services	Household	Export	Environment	Total
NATURAL ENERGY INPUTS	-	1,353	-	-	-	-	1,353
Fossil non-renewable natural energy inputs	-	246	-	-	-	-	246
Hydro based renewable natural energy inputs	-	1,105	-	-	-	-	1,105
Biomass based renewable natural energy inputs	-	2	-	-	-	-	2
ENERGY PRODUCTS	4	145	663	169	1,133	-	2,181
Hard coal	-	-	-	-	91	-	91
Brown coal and peat	-	-	-	-	155	-	155
Motor spirit (without bio)	-	-	135	25	-	-	160
Kerosenes and jet fuels (without bio)	-	-	44	-	-	-	44
Transport diesel (without bio)	0	78	396	42	-	-	517
Fuel oil	-	8	-	-	-	-	8
Refinery gas, ethane and LPG	-	-	1	1	-	-	2
Other petroleum products	-	-	2	-	-	-	2
Wood, wood waste and other solid biomass charcoal	-	0	0	1	-	-	2
Electrical energy	3	58	85	100	886	-	1,201
ENERGY RESIDUALS	-	-	-	-	-	1,062	1,062
Loss transformation	-	-	-	-	-	0	0
loss distribution	-	-	-	-	-	81	81
Loss end use	-	-	-	-	-	980	980
Total Use	4	1,497	663	169	1,133	1,062	4,596

Challenges

- The main issue regarding the basic energy data include deficiencies in both availability of data and the quality of data;
- Data availability is a problem particularly with biomass-based fuels.
 - For example, data on fuel wood supply and use isn't readily available and the measurements and units used in the available data are not clear
- NA SUT doesn't provide enough detailed product breakdown to be useful for distribution;
- The fuel use by households was estimated for the 'pilot' account with data on household expenditure;
- As relevant data sources weren't readily available operated by non-resident units occur inside the Lao territory, as well as resident units operating abroad, so these items wasn't established.

Next step

- Finding reliable sources for missing information, such as supply and use of biomass in energy production.
- Solving the data gaps in available data, such as supply and use of electricity, consistent data sources for supply (imports) and use of transport fuels.
- Finding more timely data sources for breakdown in the use of electricity by industries (electricity bill information can be potential).
- Finding data sources for breakdown in the use of transport fuels by industries.
- Estimating the potential scale of bridging items and finding potential data sources

Thank You

