PHYSICAL ENERGY FLOW ACCOUNTS AND ENVIRONMENTAL TAXES IN MONGOLIA

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Outline of Presentation

1. Brief history
2. ADB TA 9043-Mon
3. Physical Energy Flow Accounts (PEFA)
   • Data sources
   • Data collection
   • Compilation of PEFA
4. Environmental Taxes
   • Data sources
   • Framework
   • Compilation of Environmental Taxes
A Brief History

- **2013**: Study the Handbook of SEEA 2012
- **2013**: Assessment on the quality of indicators and data sources of environmental statistics
- **May, 2013**: NSOM have signed the memorandum with the Ministry of Environment, Green Development and Tourism
- **Sept, 2014**: Development of action plan for the implementation of the SEEA
- **2014**: Compilation of the Energy Physical Supply and Use Table (PSUT) by 2010-2013 in the initial stage.
- **April, 2016 – March, 2018**: TA 9043-MON: Technical Assistance from ADB - Compilation of PSUT: Energy, Environmental Taxes and MFA
- **May, 2017**: National Strategies for the Development of Statistics (2017-2020) including goals related to SEEA implementation

ADB TA 9043-MON

**Objective 1.** Develop the national methodologies for compiling the Environmental Taxes, Energy Accounts and Material Flow Accounts under the SEEA framework;

**Objective 2.** Compile the accounts and estimate relevant Green development and SDG indicators;

**Objective 3.** Strengthen the monitoring and data analysis capacity of the National Statistical Office and relevant agencies.

Three New Statistics
- Environmental Taxes
- Material Flow Accounts
- Energy Accounts

**PSUT-ENERGY 2015, 2016**
DATA SOURCES


Initial Status:
- No established regular official statistics for making energy balances or energy accounts
- Only heat (incomplete), electricity and coal production statistics
- No information on energy use – who uses the energy? Only some from national accounts Use Table (monetary only)

DATA COLLECTION

In some cases collected data twice from different sources

- Survey
  - Importers – what they purchased & sold to whom
  - Electricity producers, Thermal heat producers and Coal Mines – how much they produced and sold to whom
  - Sample survey for Agriculture, Manufacturing, Construction, Water and sewerage industries

- Databases / registers to figure out WHO is using these products
  - Electricity distributors, heat distributors
  - VAT register – petrol purchases

- Calculations for households living in ger areas
  - Nomadic herder households
  - Households living in ger areas in urban
  - Households living in ger areas in rural
COMPILATION OF THE PEFA

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Supply, TJ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energ Products</strong></td>
<td></td>
</tr>
<tr>
<td>P00 Energy Products</td>
<td>808,979.6</td>
</tr>
<tr>
<td>P08 Hard coal</td>
<td>478,906.1</td>
</tr>
<tr>
<td>P09 Brown coal</td>
<td>127,027.4</td>
</tr>
<tr>
<td>P15 Crude oil</td>
<td>51,914.2</td>
</tr>
<tr>
<td>P11 Motor spirit (without bio)</td>
<td>19,204.5</td>
</tr>
<tr>
<td>P12 Other spirits</td>
<td>389.2</td>
</tr>
<tr>
<td>P13 Kerosene</td>
<td>195.8</td>
</tr>
<tr>
<td>P14 Transport diesel (without bio)</td>
<td>28,229.5</td>
</tr>
<tr>
<td>P15 Fuel Oils</td>
<td>128.5</td>
</tr>
<tr>
<td>P16 Lubricants</td>
<td>467.4</td>
</tr>
<tr>
<td>P17 Other petroleum products</td>
<td>68.8</td>
</tr>
<tr>
<td>P18 Aviation Fuels</td>
<td>2,188.8</td>
</tr>
<tr>
<td>P19 Other oils</td>
<td>37.2</td>
</tr>
<tr>
<td>P20 Waste oils</td>
<td>0.3</td>
</tr>
<tr>
<td>P21 LPG - Propane</td>
<td>556.2</td>
</tr>
<tr>
<td>P22 LPG - butane</td>
<td>562.8</td>
</tr>
<tr>
<td>P23 Petroleum Jelly, paraffin waxes</td>
<td>2.7</td>
</tr>
<tr>
<td>P24 Bitumen and asphalt, natural</td>
<td>1,791.3</td>
</tr>
<tr>
<td>P30 Coke and semi-coke of coal</td>
<td>6.3</td>
</tr>
<tr>
<td>P27 Electrical energy (million kWh)</td>
<td>23,317.1</td>
</tr>
<tr>
<td>P28 Heat (Hot water) (thous.giga.cal)</td>
<td>43,429.4</td>
</tr>
<tr>
<td>P29 Heat (Steam) (thous.giga.cal)</td>
<td>3,025.9</td>
</tr>
<tr>
<td>P26 Wood, wood waste &amp; other solid biomass, charcoal</td>
<td>27,414.0</td>
</tr>
</tbody>
</table>

CASE 1. VAT REGISTER DATA

**Challenges:** No data about the end use of these fuel products by industries and households. The HIES questionnaire contains questions on consumption of oil products but two or three products are combined in one item.

**Solution:** "No need to develop transportation model using vehicle register"

- Calculation of use of the fuel products based on the big data
- In Mongolia, there is a register listing all sales of products of which VAT is paid, including the sales of fuel-products from gas-stations. The sale is registered in monetary and physical units for the fuel products. This VAT register data therefore contains data that is needed in the PEFA for distributing the sale from gas-stations by industries.
- The vast amounts of information in the VAT register data has been systematized according to ISIC-2-digit industries and by fuel-types.
CASE 1. VAT REGISTER DATA

The main purpose of considering the VAT-register as a possible data source for the PEFA were:

• The main source for the total use of fuels by industries

• To estimate the total household use of fuels (Total use of HHs = Total supply - Total use of fuels by industries)

• To calculate a distribution key for fuels for the different ISIC industries.

### TABLE D: Calculation of share of total use by industries and HH

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Diesel (Aircraft fuel), tonne</th>
<th>LPG</th>
<th>Lubricants</th>
<th>Bitumen and asphalt, nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total use (supply from ET)</td>
<td>582,946</td>
<td>387,021</td>
<td>40,316</td>
<td>5,882</td>
<td>3,929</td>
<td>2,589</td>
</tr>
<tr>
<td>Total industries (from VAT)</td>
<td>421,926</td>
<td>138,777</td>
<td>40,316</td>
<td>5,882</td>
<td>3,929</td>
<td>2,589</td>
</tr>
<tr>
<td>Total Households (residual)</td>
<td>161,020</td>
<td>248,245</td>
<td>0</td>
<td>22,721</td>
<td>8,928</td>
<td>0</td>
</tr>
<tr>
<td>% industries of total import or supply</td>
<td>72%</td>
<td>30%</td>
<td>100%</td>
<td>22%</td>
<td>31%</td>
<td>100%</td>
</tr>
<tr>
<td>% households of total import</td>
<td>28%</td>
<td>64%</td>
<td>0%</td>
<td>79%</td>
<td>69%</td>
<td>0%</td>
</tr>
</tbody>
</table>

CASE 2. DATABASES OF DISTRIBUTORS

Structure of the Mongolian Energy (electricity) System

- **Western Energy System**
  - Hydro PP-1, electricity transmission and distribution

- **Central Energy System**

- **Eastern Energy System**
  - Thermal PP-1, electricity transmission and distribution

Source: Ministry of Energy
CASE 2. DATABASES OF DISTRIBUTORS

Challenges: No data about the end use of electricity and heat by services industries and households. We collected some data by specific survey from electricity producers, thermal heat producers – how much they produced and sold to whom. In the survey result, the most amount of total supply were distributed to retail trade and others.

Solution: Databases were collected from 12 companies that distribute electricity and thermal energy to users.
• 11 companies supply 90.2% of total electricity to users.
• 1 company supply 91.6% of total heat to users in UB.
The companies use “customer number” which been utilized.

The main purpose of considering the databases as a possible data source for the PEFA were:
• The main source for the total use of electricity and heat by industries and HHs

CASE 3. HOUSEHOLDS LIVING IN GER AREA

Challenges: No data about the use of electricity and solid fuels of by households in the specific area

• Households in rural areas use a variety of different sources of energy for producing electricity (from solar panels) and heat (firewood, dung and coal).
• Households living in ger area in urban areas use solid fuel for cooking and heating.

Solution:
1. Own use production of electricity (Nomadic HHs) – based on Livestock census

Indicators:
• Number of solar panels
• Number of equipment by type— TV, lighting, charging cell phone, power to satellite disk, small refrigerator, washing machine, computer
• Average amount of electricity used per hour (kWh/hour) from distributer
• Number of hours using electricity each day of summer or winter from the time use survey and other sources
CASE 3. HOUSEHOLDS LIVING IN GER AREA

2. Own use production of firewood, coal and dung (Nomadic HHs) – based on Livestock census

**Indicators:**
- Number of HH use solid fuel for cooking and heating by fuel’s type by province
- Average amount of solid fuel used per year by province
- Forested area information

3. Own use production of firewood, coal and dung in urban areas and rural area (non-nomadic HHs)

**Indicators:**
- Number of HH use solid fuel for cooking and heating by fuel’s type by province – based on the Population Database
- Average amount of solid fuel used per year by province – based on HIES

ENVIRONMENTAL TAXES

FRAMEWORK RELATED TAXES STATISTICS

(1) Energy products (including fuel for transport)
- Excise tax on imported petroleum
- Import duty on petroleum
- Special tax on petroleum

(2) Transport (excluding fuel for transport)
- Excise tax on imported vehicles
- Import duty on vehicles
- Tax on vehicle (Annual)

(3) Pollution
- Air pollution tax on vehicle (CO2)
- Fee on water pollution
- Air pollution tax on volatile organic compounds
- Air pollution tax on raw coal
- Air pollution tax on large sources
(4) Natural Resources
- Fee on permit to use of natural resources other than minerals
- Fee on use of natural resources (“The minimum amounts of fee revenues to be spent on an annual basis on environmental protection and natural resource restoration measures as designated in article 18.1 of Law of Mongolia on Natural resource fee are as follows:
  • Fee on hunting (50% of fee revenues)
  • Fee on use of firewood (85% of fee revenues)
  • Fee on use of natural plants (15% of fee revenues)
  • Fee on use of mineral water, water resource (1) ground water and spring, and (2) industrial and household use (35% of fee revenues)
- Fee on use of commonly occurring minerals – sand, gravel, stones
- Land fee (“Depending on the measures to be taken in a year and the year’s land fee revenue, the Government shall decide each year the amount of fund to be expended on land protection, rehabilitation, or land organization measures” Law of Mongolia on Land fees. 10.3.)

Data sources:
- Ministry of Finance
- General Department of Taxation
- Customs Agency
- Local tax authorities

Challenges:
- Difficulty - to identify environmental taxes
- For some of the local taxes, such as the fee on use of natural resources that are collected through local governance, they have the information about who has paid the taxes.
- The taxes on fuels that are purchased through retail and wholesale dealers

Solution:
- Fee on use of natural resources - Additional information that who paid the taxes collected from the local tax authorities.
- The taxes on fuels - distribution keys are based on the energy accounts which have used the VAT-register as a basis
Next Steps...

- Physical energy data
  - Energy Accounts
  - Energy Balances
  - Air emissions from energy use (CO₂)

- Monetary energy data
  - Monetary Energy Accounts
  - Improve National Accounts

Thank you for your attention.

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