Towards the measurement of green jobs in the Mexican TSA

Presented by:
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• 2013. The **company Green Jobs** presented a pilot study on **Mexico**. INEGI joined to the **Interagency Green Jobs Committee**.

• 2014-2016. We worked jointly with ILO-Mexico and the country's environmental sector to work on a **methodology based on the SNA**.

• 2017. A **first exercise** was carried out with the information from the Economic Census of 2008 year.

• Currently, a **new exercise** is being carried out, taking in consideration of the **information from the Economic Censuses 2014 Environmental Module**.
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We take advantage about the existence of the Central Framework of Environmental Accounting, which uses national accounting such a tool in order to measure aspects related to green production.

Chapter IV. Accounts of environmental activities and related flows

Environmental Goods and Services Sector (EGSS)

- Classification of Environmental Activities (CEA)
- Purpose criteria
From the SEEA it is feasible to delimit the **Environmental Goods and Services Sector**, and the **Full-time Equivalent Employment Positions** linked to this sector.

Examples:

- **Production** of bags and containers for garbage
- **Waste Collection**
- **Environmental Education**
- **Manufacture** of electric or hybrid cars
- **Production** of saving lights
Green Jobs definition:

“Green jobs are **decent jobs** that contribute to preserve or restore the environment, be they in traditional sectors such as **manufacturing and construction**, or in new, emerging green sectors such as **renewable energy and energy efficiency**”

https://libguides.ilo.org/green-jobs-en
Production and green jobs

Key issues:
- Employment contract
- Social security
- Decent income
- Working day

Total employment

Production of environmental goods and services:
- Generation of electricity from renewable sources
- Sewage treatment

Environmental activities, without decent work:
- Scavenge
- Waste collection at homes

"Environmentally friendly" production processes:
- Separation of waste in shoe production
- Collection of burned oil in restaurant
It is possible to identify the **green production** and consequently the **Full-time Equivalent Employment Positions**, associated to that production.

**Production and green jobs**

**Total Economy:**
- Building
- Manufacture
- Transport
- Housing
- Tourism

**Green production**
(Envirnomental goods and services)

**Full-time Equivalent Employment Positions...** can be defined as the total hours actually worked by all employed persons divided by the average hours.
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Environmental Goods and Services Sector

Identify Environmental Goods and Services in the economy

You get a green factor ($f$):

$$f = \frac{\text{environmental production}}{\text{Total production}}$$

The Economic Census provide information about more than 20 thousand products, from which the environmental ones are selected.

The green factor for intermediate consumption simulates the same process such as production value, i.e. it helps to approximate to the Value Added of environmental goods and services.
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<table>
<thead>
<tr>
<th>Economic activity</th>
<th>Production</th>
<th>Investment</th>
<th>Expenditures</th>
<th>Occupied jobs</th>
<th>Depending on the company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of shoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botanical gardens and zoos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotels with other integrated services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotels without other integrated services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camps and recreational hostels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabins, villas and similar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Apply the same procedure for the employment indicators.

Paper production

Waste

Finished product
Why Full-time Equivalent Employment Positions?

- Equivalent of employment
- Help measure the productivity of green jobs

2 hours of work per person = 1 Full-time Equivalent Employment Positions of 8 hours

12 hours of work per person = 3 Full-time Equivalent Employment Positions of 8 hours
### Economic activity Census data base

<table>
<thead>
<tr>
<th>Economic activity</th>
<th>Production</th>
<th>Intermediate consumption</th>
<th>Full-time Equivalent Employment Positions</th>
<th>Full-time Equivalent Employment Positions Dependents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotels with other integrated services</td>
<td>(Millions of mexican pesos)</td>
<td>(Units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>94,152</td>
<td>64,448</td>
<td>271,085</td>
<td>136,089</td>
</tr>
</tbody>
</table>

### Value of production of environmental services: 2,589 Millones de pesos

<table>
<thead>
<tr>
<th>Value of environmental production (a)</th>
<th>Production value of the total activity (b)</th>
<th>Green factor (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Millions of mexican pesos)</td>
<td>(Millions of mexican pesos)</td>
<td>(f = (a)/(b))</td>
</tr>
<tr>
<td>2,589</td>
<td>94,152</td>
<td>0.0275</td>
</tr>
</tbody>
</table>
**Calculation of intermediate consumption environmental**

<table>
<thead>
<tr>
<th>intermediate consumption</th>
<th>Green factor ($f$)</th>
<th>Environmental intermediate consumption $(d) = (c) \times (f)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(c)</td>
<td>($f$)</td>
<td>(Millions of mexican pesos)</td>
</tr>
<tr>
<td>64,448</td>
<td>0.0275</td>
<td>1,772</td>
</tr>
</tbody>
</table>

**Production account of environmental goods and services**

<table>
<thead>
<tr>
<th>Value of environmental production $(a)$</th>
<th>environmental intermediate consumption $(d)$</th>
<th>Gross environmental added value $(e) = (a) - (d)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Millions of mexican pesos)</td>
<td>(Millions of mexican pesos)</td>
<td></td>
</tr>
<tr>
<td>2,589</td>
<td>1,772</td>
<td>817</td>
</tr>
</tbody>
</table>
The exercise is replicated for the employment variables.

Calculating environmental jobs

<table>
<thead>
<tr>
<th>Full-time Equivalent Employment Positions (g)</th>
<th>Green factor $f$</th>
<th>Environmental jobs (EA) = (g)*$f$</th>
</tr>
</thead>
<tbody>
<tr>
<td>271,085</td>
<td>0.0275</td>
<td>7,455</td>
</tr>
</tbody>
</table>

Calculating green jobs

<table>
<thead>
<tr>
<th>Full-time Equivalent Employment Positions Dependents (h)</th>
<th>Green factor $f$</th>
<th>Green Jobs (EV) = (h)*$f$</th>
</tr>
</thead>
<tbody>
<tr>
<td>136,089</td>
<td>0.0275</td>
<td>3,742</td>
</tr>
</tbody>
</table>

The TSA reports 144,366 paid Full-time Equivalent Employment Positions Dependents, while 7,455 are environmental and of those, 3,742 are green.
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What’s next?

• To define environmental factors for all economic activities of tourism linked to the green production
• Generate indicators
• For group discussion: Should the methodology consider the number of people to obtain green jobs?