Sustainable Energy Action Plans (SEAPs)
Challenges in planning and monitoring in the transport sector

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Outline

1. Key CoM sectors: focus on transport
2. Updating the Guidebook
3. Conclusions
1. Key CoM sectors: focus on transport
Scientific coherence → knowledge of the starting point (BEI)

Territorial approach

Reducing GHG emissions by focusing on final energy consumption:

- In Buildings, equipment/facilities (and industries):
  → Municipal sector (exemplary role of the local authority)
  → Residential sector
  → Tertiary sector

- Transport

Actions on energy efficiency and renewable energy
**TRANSPORT**

**Share in CoM**

Share of Final Energy Consumption per macro-sector in the Baseline Emission Inventories

- **BUILDINGS**: 71%
- **TRANSPORT**: 29%

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**Recommended** to include in the BEI:

- Municipal fleet
- Public transport (incl. urban rail transp.)
- Private and commercial transport

**Optional**:

- Other road transportation (e.g. highways)
- Other rail transportation (e.g. cargo, regional rail transp.)

**Explicitly excluded** from the BEI:

- Aviation
- Fluvial transport

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*Data extracted from the baseline inventories as of 13th of May 2014*

*Source: “Covenant of Mayors in Figures and Performance Indicators: 6-year Assessment”, Kona. A. at all.*

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*Joint Research Centre*
Measures related to the TRANSPORT sector related to:
• Decreasing the energy consumption;
• Promoting the use of greener energy carriers;
2. Next phase: Updating the Covenant Guidebook
Updating the Guidebook

• Addressing some of the challenges the signatories face:

  1. Data collection (final energy consumption);
  2. Assessing the potential of the actions in terms of energy saving/ CO2 emission reduction;
  3. Monitoring the impact of the implemented actions.
What data are needed

When calculating an emission inventory, signatories have to provide energy consumption data for all the relevant energy carriers used in each of the transport subsectors.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Electricity</th>
<th>Heat/cold</th>
<th>Fossil fuels</th>
<th>Renewable energies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural gas</td>
<td>Liquid gas</td>
<td>Heating oil</td>
<td>Diesel</td>
</tr>
<tr>
<td></td>
<td>Gasoline</td>
<td>Lignite</td>
<td>Coal</td>
<td>Other fossil fuels</td>
</tr>
<tr>
<td></td>
<td>Plant oil</td>
<td>Biofuel</td>
<td>Other biomass</td>
<td>Solar thermal</td>
</tr>
<tr>
<td></td>
<td>Geothermal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The corresponding GHG emissions will then be calculated based on the emission factors inserted.
Municipal fleet

Generally two methods are used to calculate Total fuel consumption [MWh]:

1) \[ \text{Tot FC} = \sum_{i=1}^{n} SC_i \text{ (km)} \times km_i \times NCV_{fuel} \]

Where:
- \( SC_i \text{ (km)} \) is the specific fuel consumption [litre/km] or [m$^3$/km]
- \( km_i \) are the total number of kilometres driven by vehicle \( i \)
- \( NCV_{fuel} \) is the Net Calorific Value of the fuel [MWh/litre] or [MWh/m$^3$]

2) \[ \text{Tot FC} = \text{Litres}_{fuel} \times NCV_{fuel} \]

- \( \text{Litres}_{fuel} \) is the total fuel consumption [litre] or [m$^3$]
- \( NCV_{fuel} \) is the Net Calorific Value of the fuel [MWh/litre] or [MWh/m$^3$]
1. Data collection

Public transport:

1) Electricity

\[
\text{Tot FC} = \sum_{i=1}^{n} SC_i \text{ (MWh/km)} \times km_i
\]

Where:

- \( SC_i \text{ (MWh/km)} \) is the specific electricity consumption
- \( km_i \) are the total number of kilometres driven by vehicle

2) Diesel

\[
\text{Tot FC} = \sum_{i=1}^{n} SC_i \times n_i \times km_i \times NCV_{\text{fuel}}
\]

Where:

- \( SC_i \text{ (km)} \) is the specific fuel consumption [litre/km] or [m\(^3\)/km]
- \( km_i \) are the total number of kilometres driven by vehicles for itinerary \( i \) [km]
- \( n_i \) are the number of rides for Itinerary \( i \)
- \( NCV_{\text{fuel}} \) is the Net Calorific Value of the fuel [MWh/litre] or [MWh/m\(^3\)]
1. Data collection

Private and commercial transport: these are generally the most difficult data to gather!

Estimates of the fuel used are based on:
- mileage driven in the territory of the local authority [km];
- vehicle fleet in the territory of the local authority (cars, buses, two-wheelers, heavy and light-duty vehicles);
- average fuel consumption of each vehicle type [litres/km].

Information on mileage driven can be taken from:
- transport department
- traffic counts (made by national or local authorities)
- surveys
1. Data collection

Questions:

1. What **tools** are currently available for measuring the energy consumption in the transport sector?

2. What methods would **motivate small cities** to take actions in the transport sector?

3. What methods would allow accounting also for the energy consumption on the territory of the **commuting and (or) transiting vehicles**?

4. Could **supra-local authorities help municipalities** in gathering energy data, specific for the local level, which is relevant and consistent over time?
2. Assessing the potential of the actions

Part of the report to be sent every 2 years regarding the implementation of the actions

### Areas of intervention
- Cleaner/efficient vehicles
- Electric vehicles (incl. infrastructure)
- Modal shift to public transport
- Modal shift to walking & cycling
- Car sharing/pooling
- Improvement of logistics and urban freight transport
- Road network optimisation
- Mixed use development and sprawl containment
- Information and Communication Technologies
- Eco-driving
- Other

### Policy instruments
- Awareness raising/training
- Integrated ticketing and charging
- Grants and subsidies
- Road pricing
- Land use planning regulation
- Transport / mobility planning regulation
- Public procurement
- Voluntary agreements with stakeholders
- Not applicable
- Other
2. Assessing the potential of the actions

1. Methods / Tools available for estimating the potential annual energy savings / GHG emission savings associated to different types of measures

2. Examples of implemented measures with associated measured savings (and how the savings were measured)

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3. Monitoring the impact of the implemented actions

What is monitored under the CoM

Every 2 years CoM signatories have to report (qualitatively) on the implementation of their actions.

Every 4 years it is mandatory for signatories to submit an Emission Inventory (EI).
3. Monitoring the impact of the implemented actions

Performance indicators

In the context of the Covenant, the main indicators are those linked to energy consumption or level of emissions per unit of measure, e.g.:

- Per capita energy consumption, by fuel and mode [MWh/capita]
- Carbon intensity of transport [t CO2/pkm] or [t CO2/Vkm]
Question:

1. What parameters can be collected on a regular basis by a local authority (e.g. yearly or every 2 years or less often) or what indicators (e.g. no. of passenger/km by transport mode) can be used to monitor the energy consumption and CO2 emissions from the urban transport?
3. Conclusions

1. Signatories of the Covenant face various challenges related to:
   • *Data collection (final energy consumption)*;
   • *Assessing the potential of the actions in terms of energy saving/CO2 emission reduction*;
   • *Monitoring the impact of the implemented actions*.

2. SEAP and SUMP should complement each other at the level of the local authority;

3. CoM could benefit from the experience of the SUMP experts;
Thank you!

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