4. The Baseline Emissions Inventory (BEI)
1. The BEI allows to identify the main CO2 sources on the municipality’s territory, and will thus help select the appropriate actions.

Example: castelldefelds (Spain)
2. The BEI allows to measure the impact of the SEAP actions: it shows where the local authority is at the beginning, and the successive monitoring inventories will show the progress towards the objective.

=> Emission inventories are very important to maintain the motivation of all stakeholders, allowing them to see the results of their efforts.

Example: Sunderland, UK
The Covenant follows essentially (but not exclusively) a territorial approach, looking at the emissions occurring on the territory of the local authority.

Key concept 1: Back to the basics, the key commitment

“WE, THE MAYORS, COMMIT TO:

Go beyond the objectives set by the EU for 2020, reducing the CO2 emissions in our respective territories by at least 20%, through the implementation of a Sustainable Energy Action Plan for those areas of activity relevant to our mandates. The commitment and the Action Plan will be ratified through our respective procedures;”

=> 2 principles

The Covenant follows essentially (but not exclusively) a territorial approach, looking at the emissions occurring on the territory of the local authority.

The focus of the Covenant is on energy.
Key concepts 2: the baseline year

The Baseline year is the reference year for setting the objective.

The Covenant’s goal is to contribute to the EU commitment to reduce the emissions 20% by 2020 compared to 1990. Therefore 1990 is the recommended baseline year.

However, if data availability is insufficient, then a subsequent year must be chosen.
NB: if you choose 1990, it is highly recommended to carry out a recent inventory

Baseline emission inventory (BEI)

Monitoring emission inventories (MEI)

Target 2020:
44% CO2 Reduction

Baseline year

Example from Stockholm
Key concept 4: absolute or per capita objective

- Absolute (kton CO2) or per capita (ktonCO2 / inhabitant) objective?

The choice is free, but in case of strong decrease of population, the spirit of the Covenant would command a per capita objective.
Sectors to be included in the BEI

Reporting is divided in 4 main Sectors:

- **Focus of the Covenant**
  - Final energy consumption in buildings, equipment/facilities and industries
  - Final energy consumption in transportation

- Other emission sources (not related to energy consumption)
  - (e.g. agriculture, waste ...)

- Energy production (electricity, heat, cold)

  - Not mandatory
  - Considered indirectly, via emission factors (for heat, electricity or cold)
Example from Barcelone:

All emissions in the territory of the municipality

Emissions covered by the SEAP and included in the BEI

Emissions of the local authority

The CO$_2$ emissions that have to be reduced by 20% or more
How to calculate the CO\textsubscript{2} emissions

It is just a multiplication!

Emissions = \textbf{Activity data} \times \textbf{Emission factor}

- Activity data:
  - quantity of natural gas consumed (in MWh)

- Emission factor:
  - Value (in t CO\textsubscript{2} / MWh)

Find the proper data related to your local authority

Most emission factors can be found in tables (cfr guidebook)
The energy consumption data has to be relevant to the particular situation of the municipality (national averages will not help)!

The data collection process may require some time and resources.

Sources of data
- Invoices (e.g. for the own buildings of the local authority)
- Market operators (energy suppliers, grid operators, …)
- Ministeries (energy, statistics, environment, ), agencies, regulatory authorities
- Inquiries addressed to energy consumers
- Estimates based on partial data (! Get help of a statistician)

Recommendation: Pay attention to document the data sources and ensure consistency through the years!
The data has to be reported in the « Emission inventory » part of the SEAP template, which is divided in 4 parts:

- Table A: Final energy consumption data
- Table B: CO2 emissions
- Table C: Local electricity production
- Table D: local heat/cold production

![Table Example]

Please note that for separating decimals dot (.) is used. No thousand separators are allowed.
THANK YOU!

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