European Commission

The Covenant of Mayors: Energy efficiency and Local Authorities, A big opportunity for change

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European Commission – Joint Research Centre

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Covenant of Mayors
Committed to local sustainable energy

European Commission

Outline

1. The Joint Research Centre and its role in the Covenant of Mayors
2. The Sustainable Energy Action Plan process
3. Some data from submitted SEAPs
4. The BEI methodology
5. Conclusions

Joint Research Centre

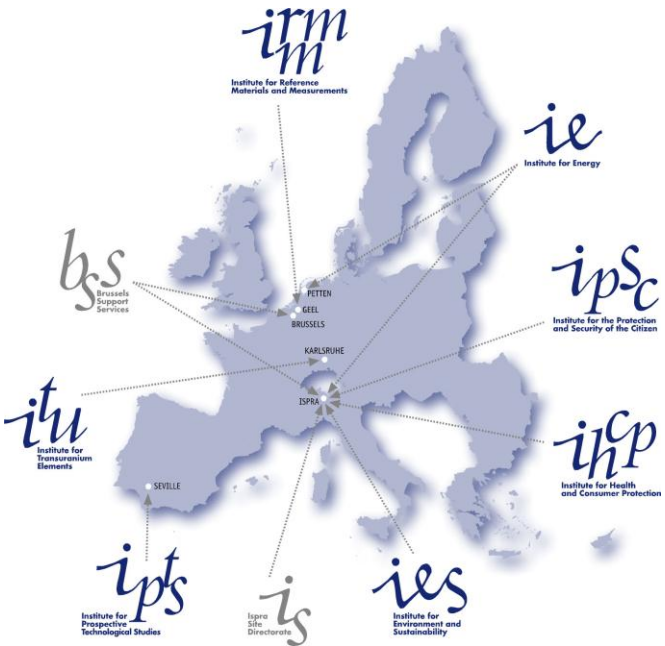
1. The Joint Research Centre and its role in the Covenant

European Commission

JRC - Robust Science for Policy Making

As a Directorate-General of the European Commission, the JRC provides customer-driven scientific and technical support to Community policy making

Supporting citizen's security, health and environmental protection, safety of food and chemicals, alternative energies, nuclear safety, econometrics, prospective technologies…



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The role of the JRC in the CoM

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Scientific-technical support to the development, implementation and monitoring of the CoM

- Development of the guidebook "How to develop a Sustainable Energy Action Plan (SEAP)"
- Monitoring of the CoM implementation, including the development of a specific template & instructions for signatories
- Evaluation of submitted SEAPs, with feedback to Covenant cities
- Operation of the technical helpdesk service

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NB: In addition, the CoM Office in Brussels is in charge of: general coordination, promotion (website etc), networking, administrative support, technical helpdesk (with JRC), etc.

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2. The SEAP process

What is the CoM?

European Commission

Voluntary initiative launched by DG ENERGY in 2008 to support local authorities in the sustainable energy development and the fight against climate change

Mayors commit to go beyond EU energy and climate objectives

at least 20% CO2 reduction in their respective territories by 2020

- Define a Baseline Emission Inventory (BEI)
- Prepare a Sustainable Energy Action Plan (SEAP)
- Implement their Action Plan and report periodically on progress
- Involve citizens and other stakeholders
- Adapt city structures and allocate sufficient resources
- Encourage other cities to join

What we would like to see in signatories' territories in 2020

- Lower CO_2 emissions per capita (tCO_2 per capita/year) – possibly for each key Covenant sector
- Higher energy efficiency in buildings (kWh/m^2 year)
- Higher efficiency in transport (kWh/p km)
- Increased production of electricity and heat from renewable sources (MWh/year)
- Increased share of energy consumed in the territory coming from Local Energy production (%)
- Economic savings and local reinvestments
- Better opportunities for local jobs

Example of Cities CoM objectives

Riga:

•44% emission reduction by 2020

Ghent:

•20% emission reduction by 2020
•Carbon neutral by 2050

Glasgow:

•30% emission reduction by 2020

Gothenburg:

•21% emission reduction by 2020
•<2 tons/capita by 2050

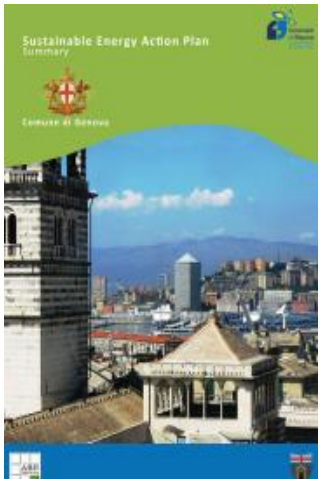
What is a SEAP?

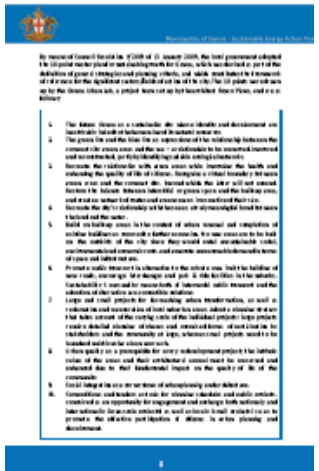
European Commission

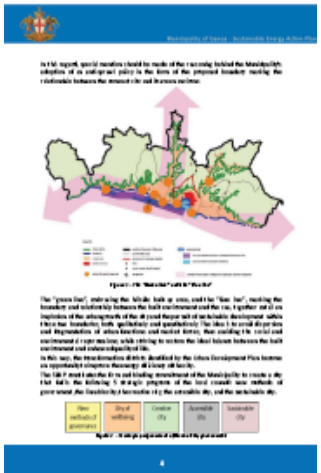
Its nature is threefold

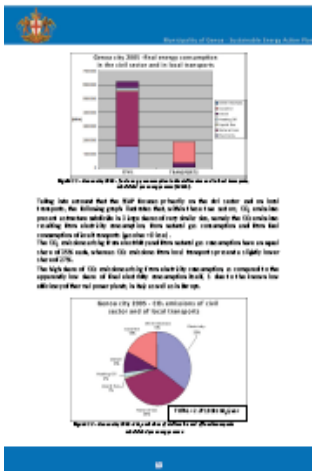
- Political document: it shows how CoM signatories want to reach their target: detailed measures and medium-long term strategies.
- Technical document: it starts from the results of the baseline emission inventory to identify the most appropriate actions
- Communication tool: a clear and structured document addressed to citizens and stakeholders

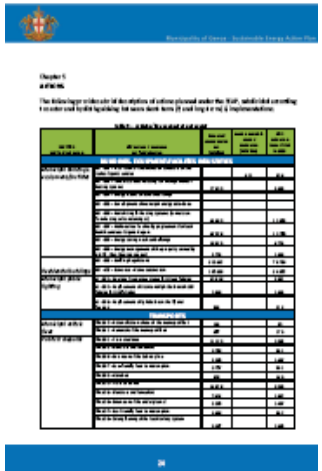
Example: SEAP of Genova











The Covenant step-by-step

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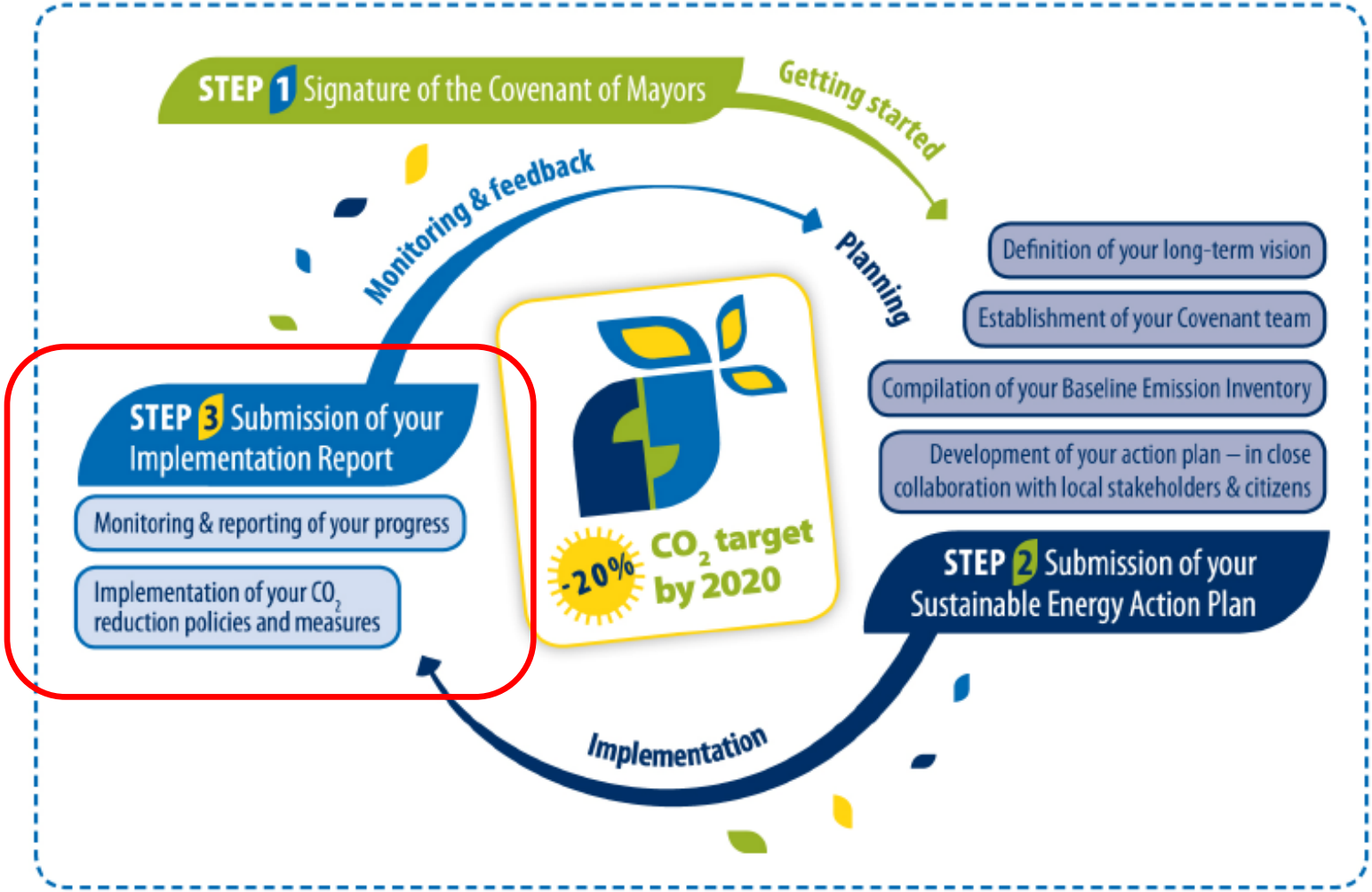
The adhesion to the CoM initiates a process within the local authority



The key steps

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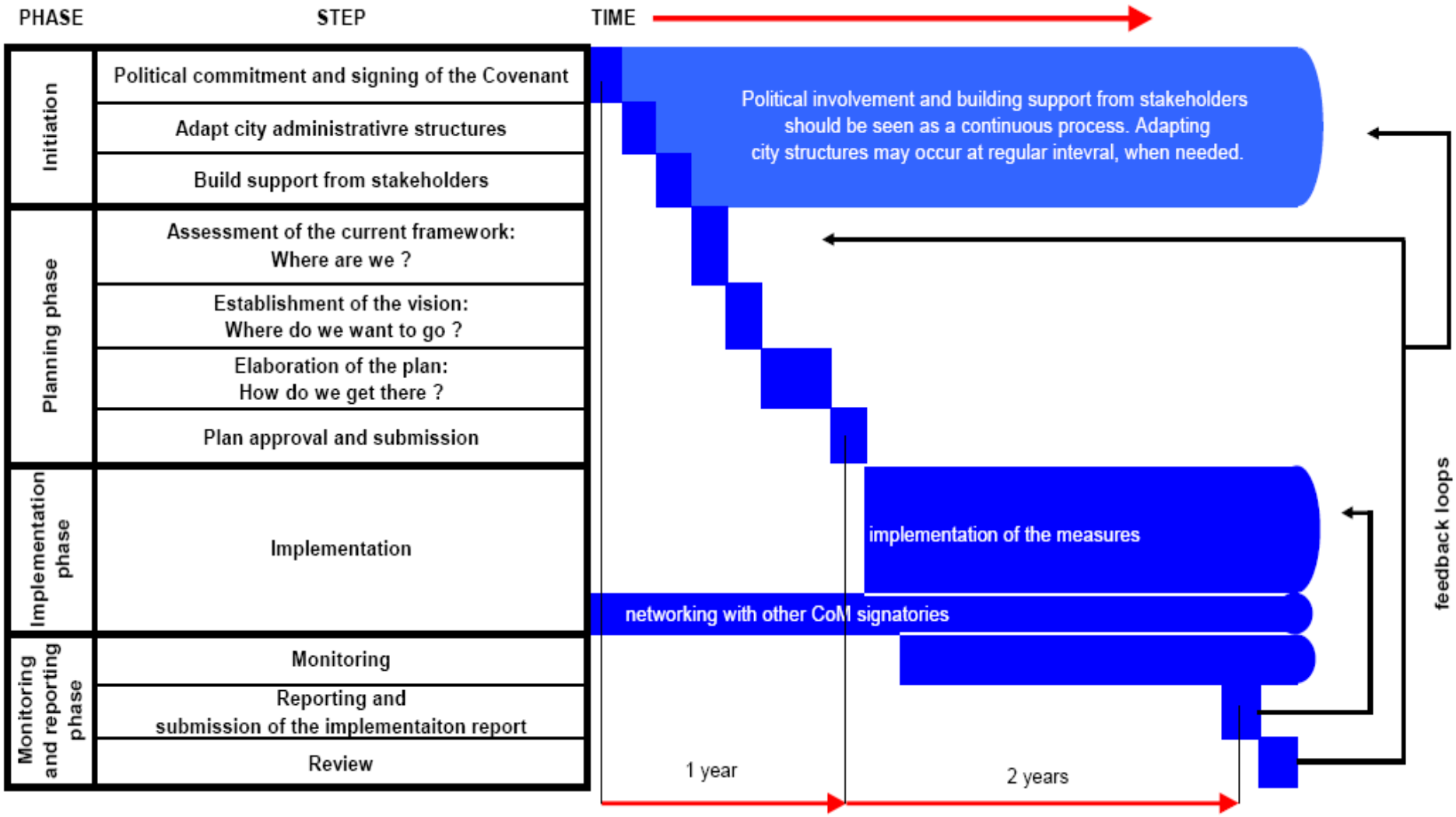
The key steps of a successful SEAP



Signatories' commitment

Covenant of Mayors
Committed to local sustainable energy

www.eumayors.eu

WE, THE MAYORS, COMMIT TO:

Go beyond the objectives set by the EU for 2020, reducing the CO_2 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;

Prepare a baseline emission inventory as a basis for the Sustainable Energy Action Plan;

Submit the Sustainable Energy Action Plan within the year following each of us formally signing up to the Covenant of Mayors;

Adapt city structures, including allocation of sufficient human resources, in order to undertake the necessary actions;

Mobilise the civil society in our geographical areas to take part in developing the Action Plan, outlining the policies and measures needed to implement and achieve the objectives of the Plan. An Action Plan will be produced in each territory and shall be submitted to the Covenant of Mayors Office within the year following signing up;

Submit an implementation report at least every second year after submission of the Action Plan for evaluation, monitoring and verification purposes;

Share our experience and know-how with other territorial units;

Organise Energy Days or City Covenant Days, in co-operation with the European Commission and with other stakeholders, allowing citizens to benefit directly from the opportunities and advantages offered by a more intelligent use of energy, and to regularly inform the local media on developments concerning the action plan;

Attend and contribute to the annual EU Conference of Mayors for a Sustainable Energy Europe;

Spread the message of the Covenant in the appropriate fora and, in particular, encourage other Mayors to join the Covenant;

Accept termination of our membership of the Covenant, subject to prior notice in writing by the Secretariat, in case of either:

i) failing to submit the Sustainable Energy Action Plan within the year following formally signing up to the Covenant;

ii) non-compliance with the overall CO_2 reduction objective as set in the Action Plan, due to failure to implement or insufficient implementation of the Action Plan;

iii) failing to submit a report in two successive periods.

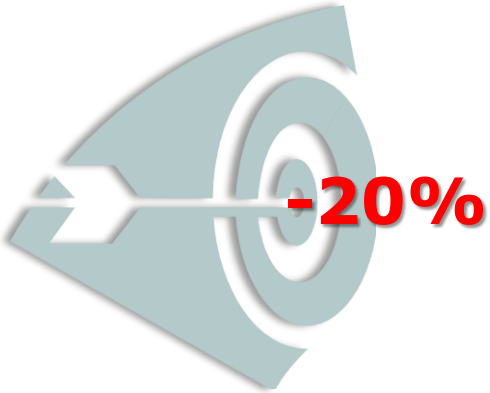
We, the Mayors, commit to…

"Submit an **implementation report** at least **every second year** after submission of the Action Plan for evaluation, monitoring and verification purposes".

(Covenant official text)

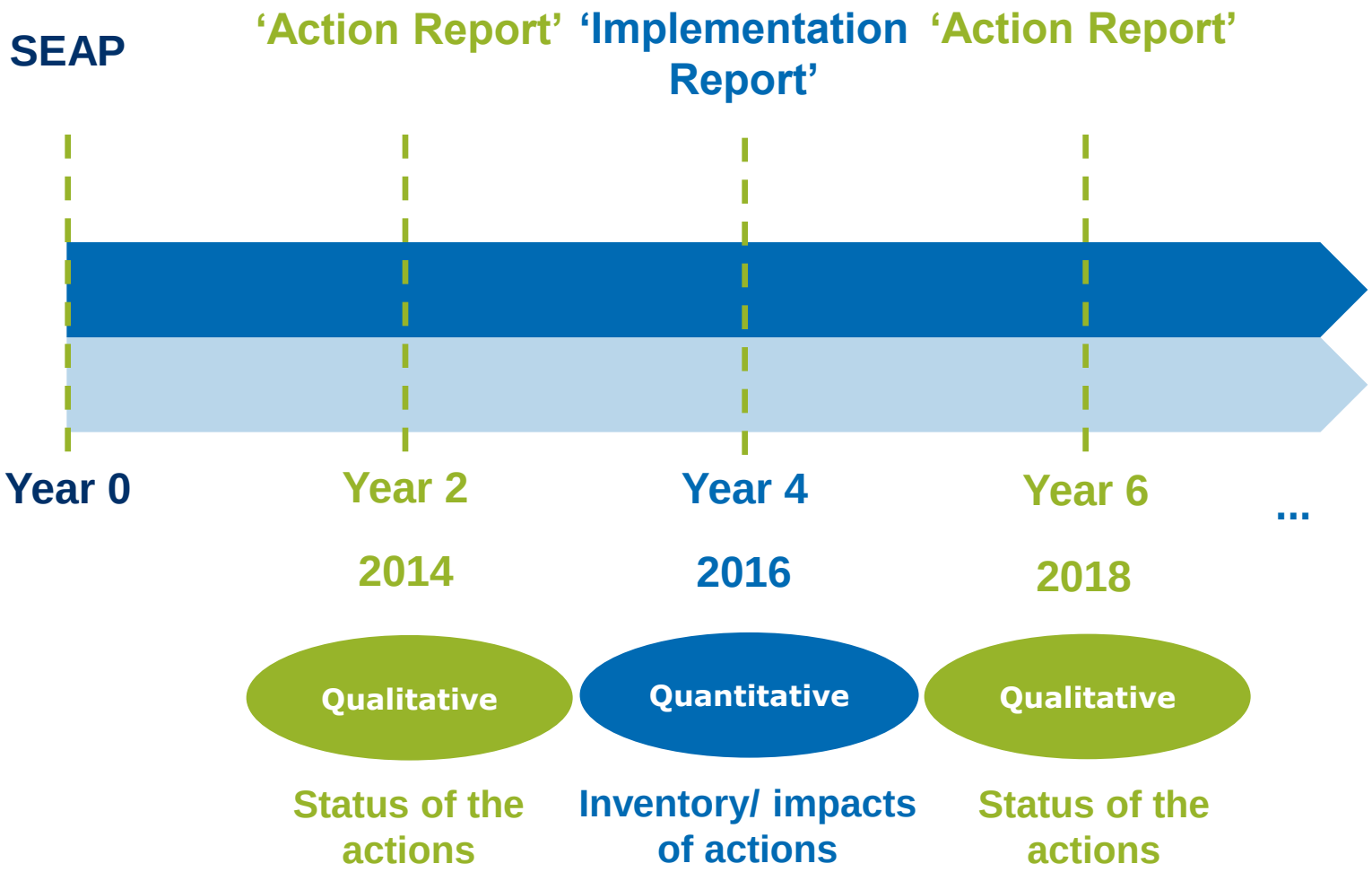
Why is monitoring important?

- To monitor how actions defined in SEAPs are progressing and evaluate their effects towards the targets
- To identify the need of adjustments to the plan, e.g. corrective measures
- To take new opportunities not initially foreseen, e.g. changes to the national/international context



Is the signatory on track to reach the target?

The CoM minimum requirements



Which opportunities for CoM signatories?

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Energy efficiency directive (2012/27/EU)

[…] Shifting to a more energy-efficient economy should also accelerate the spread of ***innovative technological solutions*** *and* ***improve the competitiveness*** *of industry in the Union, boosting* ***economic growth*** *and creating* ***high quality jobs*** *in several sectors related to energy efficiency.*

Many of the measures described in the directive can help Covenant Signatories to identify new opportunities to meet their local targets and devise Smart solutions

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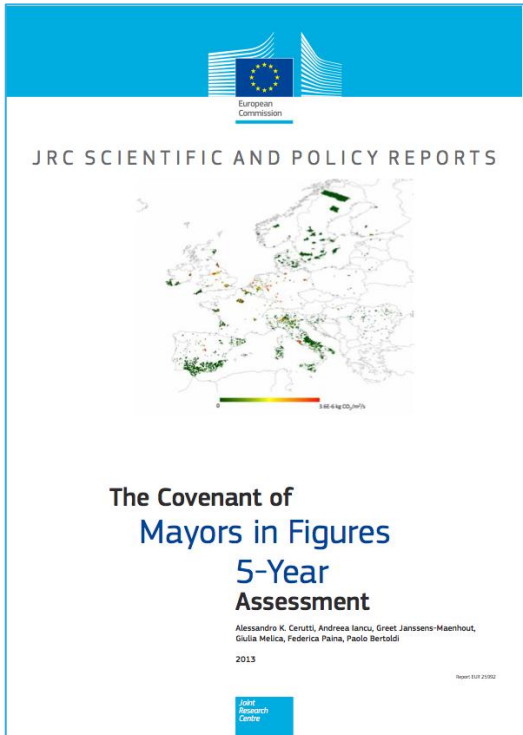
Main measures

- Strategy to mobilise investment in the renovation of buildings [art. 4]
- Central government buildings: 3% of the total floor area to be renovated each year [art. 5]
- Promote energy audits and Energy Management Systems (EN ISO 50001) [art. 8]
- Smart meters [art. 9]
- Promotion of efficiency in district heating and cooling, CHP [art. 14]
- Demand response [art.15]
- Energy services [art.18]

3. Some figures and data on the initiative

based on a sample of 1287 SEAPs accepted by the JRC as of June 2013



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An unprecedented growth

European Commission

Some figures from the initiative

- **5342 Signatories**
- 141 Coordinators
- 89 Supporters

An unprecedented growth

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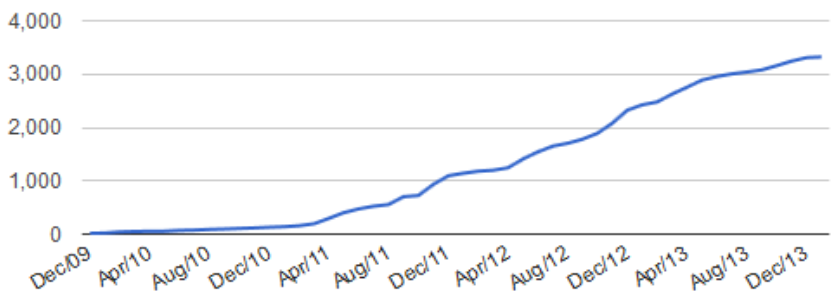
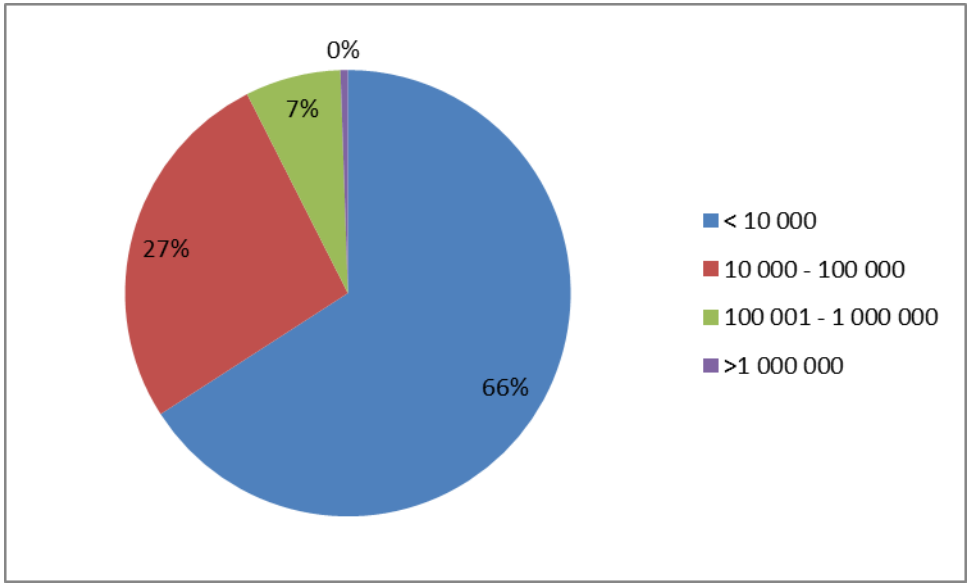
SEAPs over time (EU and beyond)



No. of SEAPs per population range



As of 1st April 2014	
SEAPs	Inhabitants
3534	>145.7 million

Most of the SEAPs come from municipalities <10,000 inhabitants

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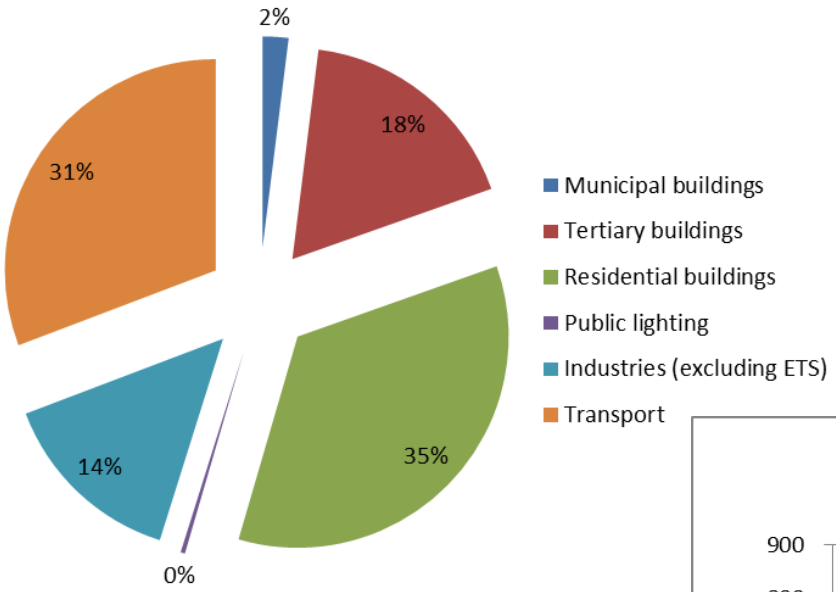
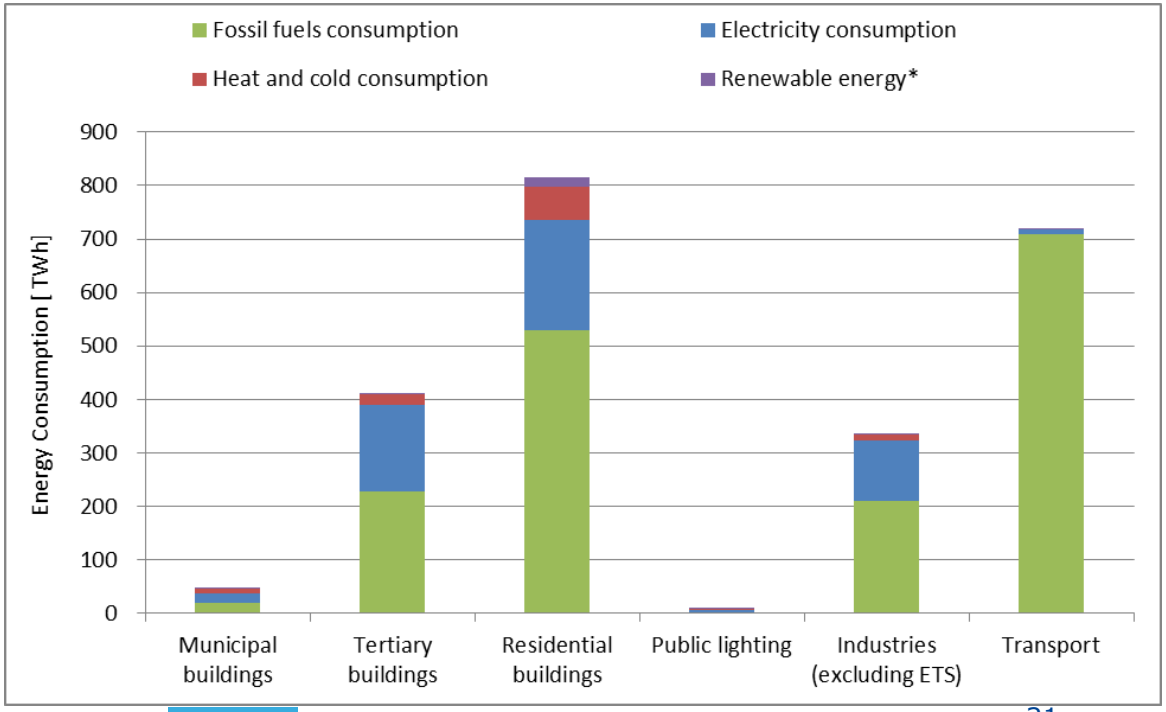
Data from BEIs (SEAPs submitted as of end of February)



Buildings and transport account for 85% of final energy consumption



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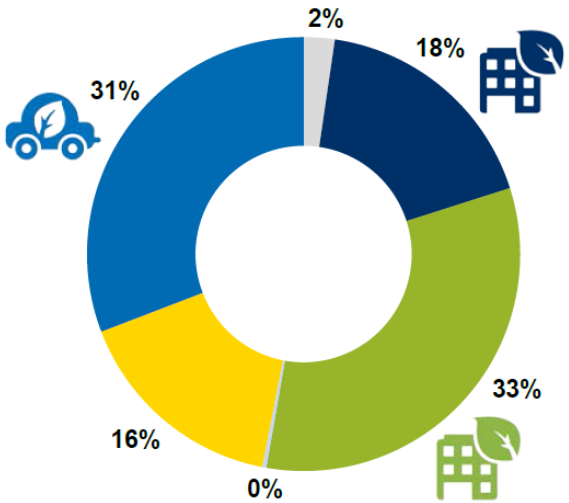
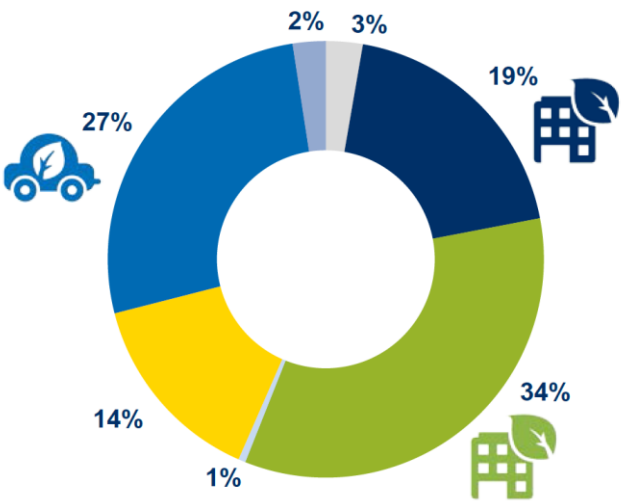
Breakdown of energy consumption and GHG emissions by sector



Final energy consumption



GHG emissions

- Municipal buildings, equipment/facilities
- Tertiary buildings, equipment/facilities
- Residential buildings
- Public lighting
- Industry
- Transport
- Others

A huge potential for emission savings

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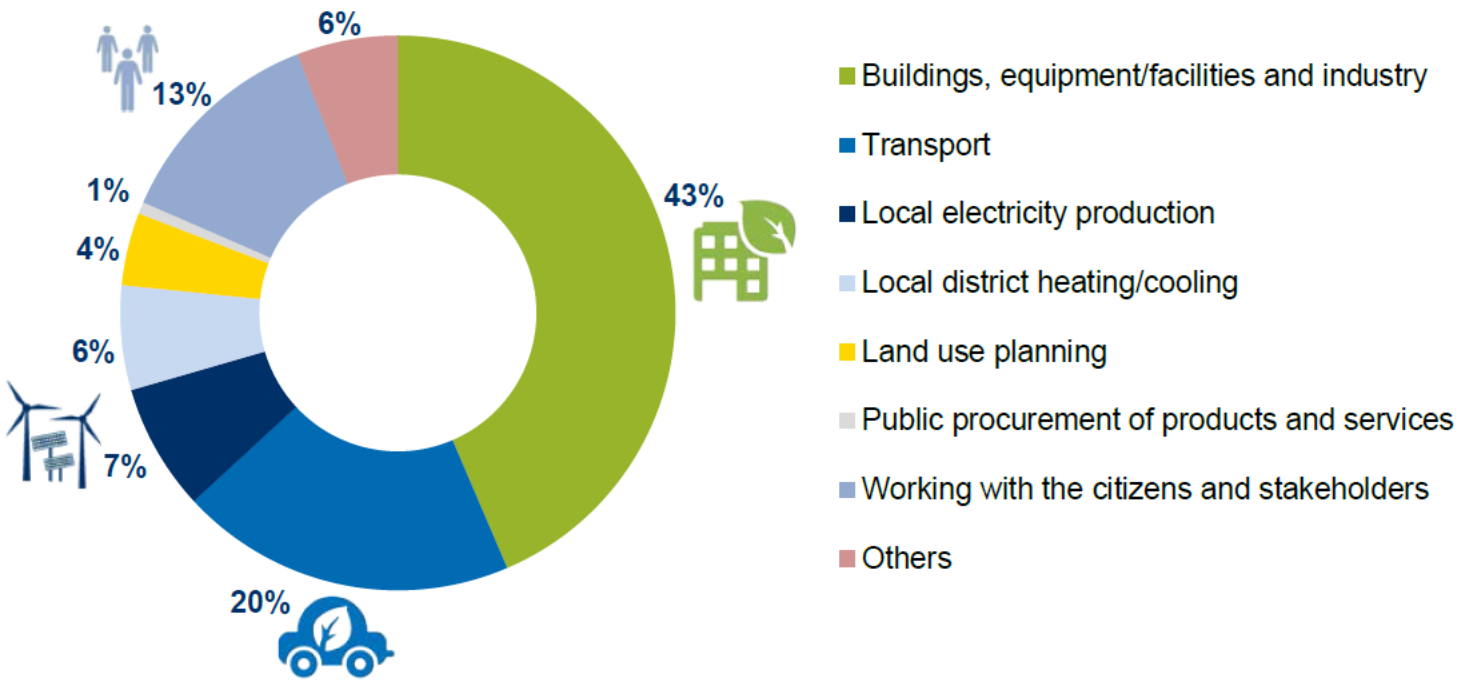
Breakdown of expected GHG emissions reduction by field of action in 2020



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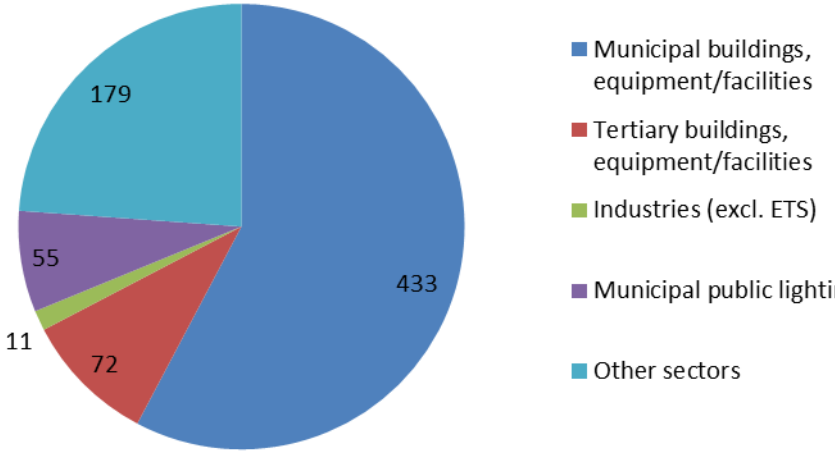
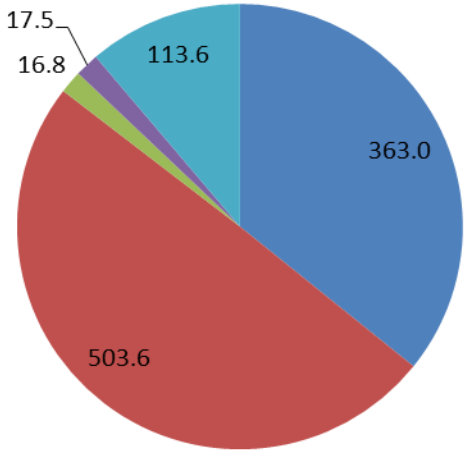
545 SEAPs contain at least one measure on energy audits

Tot no. of measures on energy audits: 750



Expected annual savings in 2020 associated with measures on energy audits (1014.4 GWh/year)



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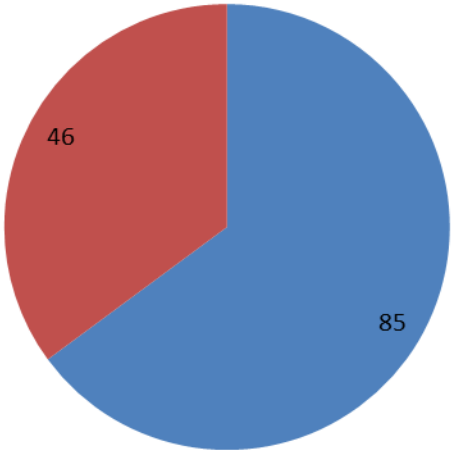
127 SEAPs contain at least one measure on Energy Management Systems

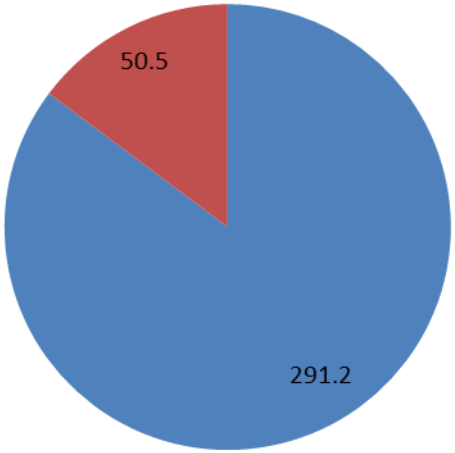
Number of measures on EnMS



Municipal buildings, equipment/facilities

Other sectors

Expected annual savings in 2020 [GWh/year] associated with measures on EnMS



Some common measures

- 5586 measures in public lighting in 3203 SEAPs (87% of SEAPs include at least one measure in public lighting)
- 3645 measures in schools in 1598 SEAPs (44% of SEAPs include at least on measure in schools)

City of Jastrebarsko

- Type of Project: **Outdoor-Square**
- Effective energy savings per year: **10 673 kWh**
- Effective energy savings per year: **83 %**
- Simple payback period: **13 years**

This outdoor project includes instalation of decorative lighting of the two churches in the City of Jastrebarsko. The old HP Sodium lamps have been replaced with LED lamps

Landratsamt Main-Spessart, Secondary School, Germany

Type of building: **School**

Reduction in energy consumption*: **70 %**

Energy savings*: **181 MWh/year**

A pellet heating and panel radiators have been installed as well as a central ventilation system with a ≥ 85%; heat recovery. Lighting has been improved as well as the building envelope using 20 cm mineral foam boards. Also the roof and basement have been insulated and triple-pane windows installed.

** Compared to building code*

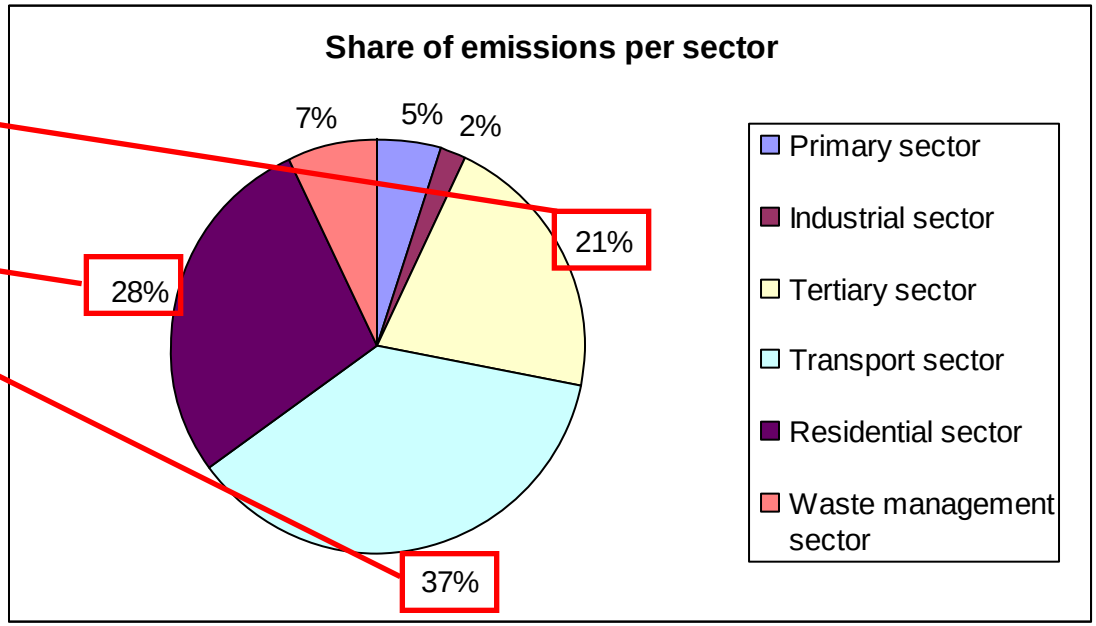
4. The CoM methodology to calculate emission inventories

Described in details in the Guidebook "How to develop a SEAP – Part II"

The Baseline Emission Inventory (BEI)

A prerequisite to SEAP elaboration: the BEI quantifies the amount of CO_2 emitted due to energy consumption in the municipality's territory, and will thus help select the appropriate actions

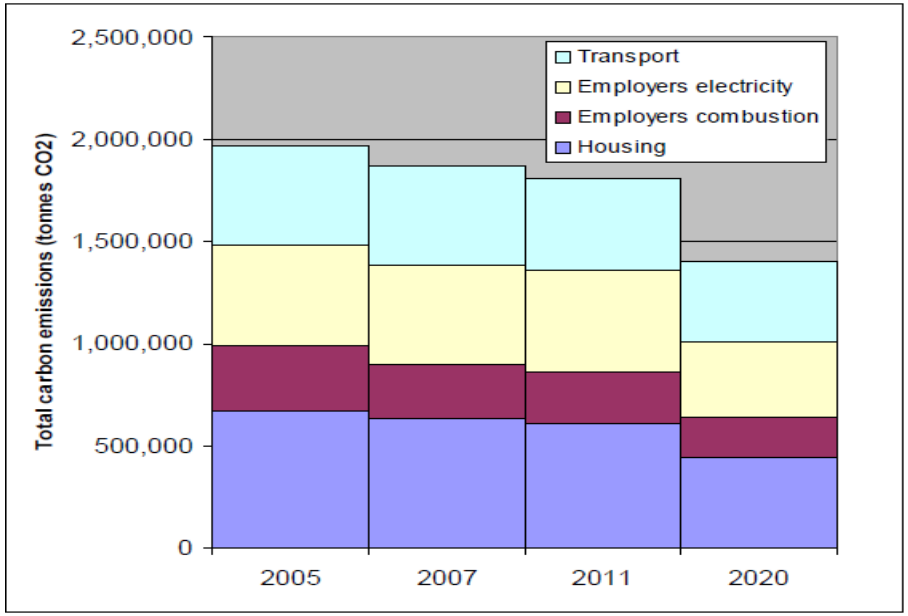
Three sectors represent 86% of the emissions of the city



Example: Castelldefelds (Spain)

The Monitoring Emission Inventory (MEI)

An instrument to measure the impact of the SEAP actions: the BEI shows where the local authority is at the beginning. The successive MEIs will follow the same methods and principles of the BEI and will show the progress towards the objective.



Example: Sunderland, UK

In a few words

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Guiding principles of the CoM approach

- **Scientific soundness** → knowledge of starting point (BEI)
- **Territorial approach**
- **Focus 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 implementation of Renewable Energies

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From the CoM to Smart Cities

The CoM is a "platform" for sustainable energy and climate policy at local level: it encompasses the fundamental **governance challenges** and provides a methodological and scientific **framework for action**.

The CoM is the living laboratory of energy/climate policy at local level: **smart solutions** are already planned in several SEAPs

The Smart Cities initiative could help the CoM signatories to better devise, implement and integrate the most advanced low carbon solutions, allowing them to set **more ambitious objectives**.

Covenant is a basis for **systemic, integrated sustainable energy evolution**, while Smart cities can be a **part of the solution** to help this evolution materialize.

European Commission

Thank you!

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A simple concept: final energy consumption

Reporting is divided in four main sectors:

Final energy consumption in buildings, equipment/facilities and industries

Final energy consumption in transport **Focus of the Covenant**

Other emission sources not related to energy consumption
(e.g. waste, wastewater…) **Not mandatory**

Local electricity generation

Indirectly considered, if included in SEAP

Flexibility and simplicity: which sectors should be included in the BEI? Some examples*

Municipal buildings, equipment/facilities Tertiary (non municipal) Residential Transport	**STRONGLY RECOMMENDED**
Industries not involved in the EU ETS Other road transportation (e.g. highways) Wastewater treatment, solid waste treatment	**RECOMMENDED IF IN SEAP**
Industries involved in the EU ETS Aviation Agriculture (enteric fermentation, fertilizer application, etc…) Land use, land use change, forestry	**NOT RECOMMENDED**

* a more comprehensive list of sectors to be included in the BEI is provided in the Guidebook "How to develop a SEAP".

How to calculate the emissions?

It is just a multiplication!

Emissions = Activity data x Emission factor

MWh of natural gas consumed

Value in t CO_2 / MWh

Data relevant to the particular situation of the local authority need to be found

Most emission factors can be found in tables

How to report to the Covenant?

European Commission

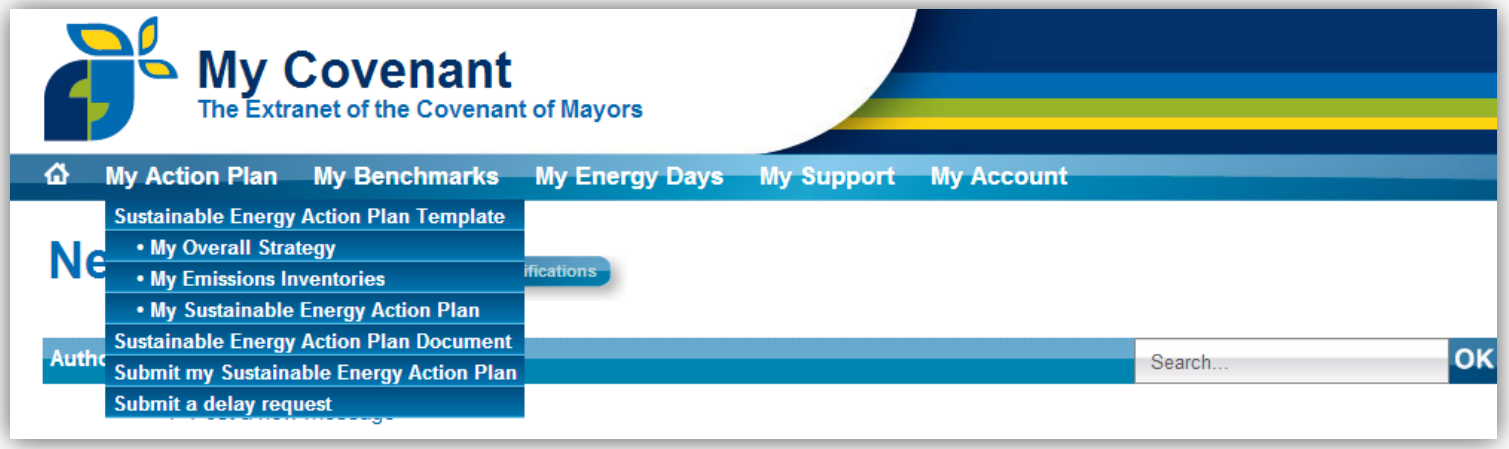
On-line Monitoring Template

The template has been developed by JRC and CoMO with the collaboration of a group of practitioners from local and regional authorities

I. Update Overall Strategy

II. Add Monitoring Emission Inventory (MEI)

III. Report on the implementation status of the actions



New features in the monitoring template

The monitoring template will be pre-filled from the SEAP template. New fields will allow reporting on the implementation.

Overall Strategy section

- New fields to report on the **staff capacity allocated** and on the **budget spent** for SEAP implementation so far

4) Staff capacity allocated

SEAP preparation:

- ☐ Local authority
- ☐ Local/regional energy agency
- ☐ External consultant
- ☐ Covenant Territorial Coordinator
- ☐ Other

SEAP implementation:

- ☐ Local authority
- ☐ Local/regional energy agency
- ☐ External consultant
- ☐ Covenant Territorial Coordinator
- ☐ Other

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6) Overall budget for the implementation of your SEAP

☐ Local authority — Investment / Non-investment

☐ Other actors — Investment / Non-investment — Investment / Non-investment

Time period: years

Time period: years

New features in the monitoring template

European Commission

Overall Strategy section

- Barriers to SEAP implementation

A dedicated section in the monitoring template will allow Signatories to rate the most recurrent **barriers faced by CoM signatories**, among:

- Limited financial sources
- Absence of / weak regulatory framework
- Lack of technical expertise
- Lack of support from stakeholders
- Lack of political support at other admin. levels
- Changes in the local political priorities
- Incompatibility with national policy orientations
- Immature or high cost of technologies

New features in the monitoring template

European Commission

Benchmarks of excellence section

- To facilitate the exchange of best practices with fellow signatories and to identify **cost effective approaches**, each signatory is asked to provide **more detailed information** (e.g. impacts and/or key economic figures) on some completed or ongoing actions from the SEAP

Monitoring Synthesis report

- **Automatically generated** at the end of the monitoring stage
- Some **graphical elements** ease the follow-up of the SEAP implementation and **showcase the progress** already achieved