



Collecting data for SEAP measures

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Centralized training for supporting structures

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Overview of SEAP Reporting

- **Action Reporting – at least every 2 years**
 - Part I Overall Strategy
 - Part III Sustainable Energy Action Plan
- **Full Reporting – at least every 4 years**
 - Part I Overall Strategy
 - Part II Emission Inventories (Monitoring Emission Inventory)
 - Part III Sustainable Energy Action Plan

Collecting data for SEAP measures

- Methodology for data collection
 - Direct communication
 - Local authorities
 - Energy suppliers
 - Public transport, service providers
 - The Environmental Protection and Energy Efficiency Fund (provides subsidies)
 - Questionnaires
 - Reports
 - City/municipal budget
 - SMIV – System for monitoring , measuring and verification of energy savings

Example of questionnaire

Number	1.
Activity name	Installation of thermometers in buildings owned by the City
Responsible body	<ul style="list-style-type: none">• Local authority
Energy saving assessment (MWh)	71,71 MWh of thermal energy
CO ₂ -emission-reduction assessment (t CO ₂)	11,89 t CO ₂
Funding for measure implementation	TOTAL: 1.300 EUR <ul style="list-style-type: none">• City budget
Short description/commentary	Installation of 200 thermometers in rooms in buildings owned by the City

Mandatory data

- Buildings sector:
 - Municipal buildings
 - Tertiary buildings
 - Residential buildings
- Transport sector:
 - Municipal fleet
 - Public transport
 - Private and commercial transport
- Public lighting

Mandatory data

Each SEAP measure has to describe:

- Area of intervention
- Policy instrument
- Origin of the action
- Responsible body
- Implementation timeframe
- Implementation status and
- Implementation cost
- Energy savings (MWh)
- CO₂ reduction

Example

Edit Key Action

Sector	MUNICIPAL BUILDINGS, EQUIPMENT/FACILITIES
Name	Thermostatic radiator sets installation in all mu
Area of intervention	Behavioural changes
Policy instrument	Awareness raising / training
Origin of the action	Local authority
Responsible body	City
Start time	2011
End time	2018
Status of implementation	Not started
Estimated implementation cost (€)	79500
Implementation cost spent so far (€)	0

Estimates in 2020

Energy savings [MWh/a]	554
Renewable energy production [MWh/a]	0
CO ₂ reduction [t/a]	111,3

Examples of indicators

Area of intervention	Indicator
Municipal - Residential - Tertiary Buildings	
Energy audits	Floor area (m ²)/potential of energy saving (kWh)
Heating meters	Number of heating meters and size of the building (m ²)
Behavioural changes	Number of participants in awareness raising campaigns
Renewable energy for space heating	Energy consumption (kWh/year) (before and after the implementation of measures)
Renewable energy for space heating and hot water	Surface area of solar thermal collectors installed (m ²)
Energy efficient lighting systems	Number and power (kW) of replaced lamps

Examples of indicators

Area of intervention	Indicator
Public Lighting	
Energy efficiency	Number and power (kW) of lamps replaced
Municipal - Public - Private Transport	
Cleaner/efficient municipal vehicles	Number of vehicles replaced, energy consumption of old and new vehicles (liters/year)
Municipal fleet - efficient driving behavior	Example: no. of courses, Number of participants
Cleaner/efficient public transport	Energy consumption (old and new vehicles)

Calculation example

Energy-efficient indoor lighting

Ordinance of monitoring system, measuring and verification of energy savings (OB 71/15)

$$UFES = \frac{P_{init} \times n_{hinit} - P_{new} \times n_{hnew}}{1000}$$

$$UFES = \frac{P_{init} - P_{new} \times r}{1000} \times n_h$$

$$FES = \sum_{i=1}^{N_{limit}} UFES_i$$

	Installed power (kW)	Working hours (h)	Consumption (kWh)	Energy savings (kWh/year)
Before measures	64,974	1.200	77.968,80	55.909,20
After measures	18,383	1.200	22.059,60	

Calculation example

Energy-efficient public lighting

$$UFES = \frac{P_{init} \times n_{hinit} - P_{new} \times n_{hnew}}{1000}$$

$$UFES = \frac{P_{init} - P_{new} \times r}{1000} \times n_h$$

$$FES = \sum_{i=1}^{N_{linit}} UFES_i$$

	Installed power (kW)	Working hours (h/year)	Number (lamps)	Energy savings (kWh/year)
Before measures	400,576	4.100	2.312	784.109
After measures	209,33	4.100		

Calculation example

Renewable energy for space heating and hot water

$$UFES = \frac{USAVE}{\eta_{average}}$$

$$FES = \sum_{i=1}^n UFES_i \cdot A_i$$

	Number of systems	Average of thermal energy production kWh/m ²	Average efficiency (%)	Surface area (m ²)	Energy savings (kWh/year)
Solar collectors	25	530	0,80	140	92.750

Calculation example

Household appliances with A+++

$$UFES = AEC_{init} - AEC_{new}$$

$$FES = UFES \times N$$

	Number	Energy consumption kWh/year_old appliances)	Energy consumption (kWh/year_new appliances)	Energy savings (kWh/year)
Refrigerator with freezer	7	240	175	455

Calculation example

Energy audits

$$UFES = TSP \cdot DV$$

Floor area (m ²)	DV	Potential of energy savings (kWh/year)	Energy savings (kWh/year)
50.534,00	0,05	515.263,23	25.763,16

Calculation example

Electric car

$$UFES = (FC_{init} \times f_{c,init} - FC_{new} \times f_{c,new}) \times D$$

$$FES = \sum_{i=1}^N UFES_i$$

Fuel (old)	Fuel (new)	Fuel consumption (old)	Fuel consumption (new)	Number	Km	Energy saving (kWh/year)
Gasoline	Electricity	7,1 l/100 km	10 kWh/100 km	2	12.000	13.890,24

Conclusion and recommendations

- Data collection is time consuming and demanding
- Maximum engagement of local stakeholders is needed
- Recommendations
 - Determine responsible person in local authority
 - Continuous monitoring of energy indicators for each subsector
 - Regular reports on implemented energy measures (according to national legislation)
 - Education - seminars, webinars, workshops



Thank you for your attention!

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