

Explanatory Note

Energy – CO₂ monitoring tool for the public sector

This tool may assist local authorities signing the Pact of Islands to monitor the energy demand and respectively the CO₂ emissions of the public sector during the implementation and monitoring period of their ISEAP. The tool is developed in a way to adapt to the energy data available to the public sector in order to make easier the monitoring process.

The user can choose between a simple and a full monitoring method, the differences will be explained next.

Detailed instructions are incorporated in the tool and should be advised in any case before the use of the tool.

Simple version

In this version the user can directly fill in total or subtotal energy demand values for each sub-sector (NACE code) related to the public sector. This can be done directly in the “Energy-CO₂” sheet. The user can be benefited by the plotting options and also calculate and plot CO₂ monitoring indicators.

Full version

In this version the user can take the monitoring process deeper and use the full capabilities of the tool. Here, the energy consumed per building, the electricity provided to each energy supply and the energy consumed by each vehicle can be monitored in the respective sheets. This is a bottom up approach for the monitoring, based on the data that are usually available to the local authorities.

The tool is divided into 11 sheets; the purpose of each one will be explained below. Further instructions are incorporated in every sheet.

Start here: In this sheet some principal choices should be made (Monitoring method, CO₂ calculation method). Basic information for the tool contents are given also.

Translation: In this sheet the user can translate the contents of the tool from English to the preferred language.

CO₂ Factors: In this sheet the user can define the type and values of the CO₂ emission factors (IPCC or LCA). These basic values are used for further calculations. The energy

density¹ of the different energy carriers and a conversion factor can also be defined in this sheet annually and need to be registered. This serves mainly for the centralized energy services for which the CO₂ factor can change with time depending on the fuel mix used as primary source.

Public Energy Profile: In this sheet the user can monitor the public energy profile on an annual and monthly basis. The recorded values reflect the total demand of each energy carrier from the whole of the public sector providing a general overview. Four tables are used for this purpose.

In the first table the user shall record data in the units that are usually provided by the different providers (ex. diesel in liters, biomass in tons, etc.).

In the second table the energy density data from the “CO₂ factors” sheet is used to convert the amounts of energy carriers to energy.

In the third table the CO₂ factors from the “CO₂ factors” sheet are used to calculate the CO₂ emissions.

Finally, in the fourth table the user is asked to fill in the monthly energy carrier prices.

At any point it is possible to register the recorded values. By selecting the respective year, the registered data appear in the four tables.

Public Energy Graphs: In this sheet the user can plot two different types of graphs presenting the results from the registered data in the “Public Energy Profile” sheet.

In the two top graphs of the first type (left side of the sheet) the user can plot the energy or CO₂ emissions distribution per energy carrier for a defined time period on a monthly or annual basis. There is the option to define the chart titles, to select the time period, the annual or monthly analysis and the energy carriers to be plotted. Similarly the fuel prices progress can be plot in the bottom graph.

For the second type of graphs (right side of the sheet – pie graphs) the user can plot in pie graphs the annual energy and CO₂ distribution per energy carrier or energy carrier category. There is the option to define the chart titles, to select the respective year and the energy carriers to be plot in common with the first type of graphs.

In the three following sheets, “Energy per Building”, “Electricity” and “Transportation” the user has the possibility to fully monitor the public energy demand in a more analytical way, to get the best insight to the public energy profile. These sheets are available only in the full monitoring method.

Energy per Building: In this sheet the user can monitor on a monthly basis the energy demand of the public buildings per energy carrier, excluding the electricity consumption from the public grid (this will be monitored on the next sheet). The data can be extracted from the bills paid for each building. The building type (town hall, health center, school, storehouse, etc.) and the respective activity classification (according to the respective NACE code) should be recorded initially. Two tables are available. In the

¹ The user should be consistent in using either the gross or the net calorific value of the fuels.

first table (left side of the sheet) the data can be recorded as they are available on the bills. In the second table (right side of the sheet) the public energy demand is automatically calculated.

At any point it is possible to register the recorded values. By selecting the respective year, the registered data appear in both tables.

Electricity: In this sheet the user can monitor on a monthly basis the electrical consumption per electricity supply code according to the bills. For every electricity supply code, the corresponding activity classification, the electricity supply type, the possible building number and additional information connected to topographical and technical characteristics should be recorded.

At any point it is possible to register the recorded values. By selecting the respective year, the registered data appear in the table.

Transportation: In this sheet the user can monitor on a monthly basis the energy demand of the public vehicles. Initially, once for each vehicle type (car, truck, motorcycle, bus, minibus, etc.) general information (activity classification, license plate and year of vehicle supply) and technical characteristics (fuel type, typical consumption) should be recorded for the best description of the vehicle and the energy demand calculation respectively. The data that should be monitored by the user are the vehicle's odometer indication and possible useful additional data that can assist the energy demand calculation. The user can choose the registration unit (liters, euro, kWh, hours) of the additional data for each vehicle depending on the data availability and the type of the vehicle (ex. for a heavy duty vehicle the hours of work or the fuel demand is useful in order to estimate the full energy demand of the vehicle besides the calculation based on the odometer indication). The public energy demand for transport per vehicle is calculated combining the above data.

At any point it is possible to register the recorded values. By selecting the respective year, the registered data appear in the table.

Energy – CO2: In this sheet the user can monitor on an annual basis the overall public energy demand and the corresponding CO2 emissions arranged by activity classification (NACE codes).

For the full monitoring method the data in the two tables are automatically filled in using information from the "Energy per Building", "Electricity" and "Transportation" sheets. Subtotals for each public activity sector is calculated and automatically registered to be used in the following "Total Graphs" sheet.

For the simple monitoring method the user has to manually fill in and register the subtotal values per sector.

This arrangement of the energy data is complying with the energy data collection template used during the ISEAP development period. A similar template is expected to be used in the monitoring period for the ISEAP implementation reporting.

Total Graphs: In this sheet the user can plot two different types of graphs presenting the results from the registered data in the “Energy – CO2” sheet.

The plotting options are similar to those of the “Public Energy Graphs” sheet. However, here the user is given the possibility to plot graphs per activity sector for a time period only on annual basis.

Energy – CO2 Indicators: In this sheet the user can calculate in an easy way two different sets of Energy or CO2 monitoring indicators. Plotting options are also provided for each set of indicators. Further instructions are included in the respective sheet.