SF_5.2b: EMPOWERING data collection template and BEI calculation tool

Webinar Case Study: Assumptions

Project: Empowering local public authorities to build integrated sustainable energy strategies – EMPOWERING

WP 5 Integrated Sustainable Energy plan and regional strategy adoption

TASK 5.2: Drafting of Baseline Emission Inventory (BEI) and of detailed energy balance

Subtask 5.2.a: Provision of the methodological approach for the preparation of the Baseline Emission Inventory (BEI) and the detailed energy balance including specific guidelines

Author: Christos Tourkolias

Partner organization: CRES-Centre for Renewable Energy Sources and Saving

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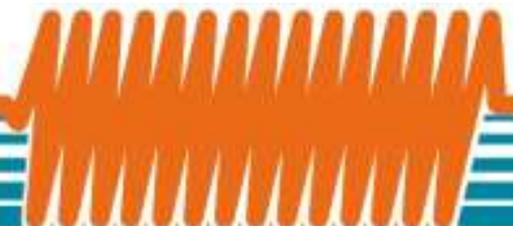
Option A: the <u>actual energy consumption data</u> **strongly recommended!**

Option B: <u>energy consumption data estimation</u>. **When the collection of the actual energy consumption data is not feasible.**

The different options (A and/or B) included in the "EMPOWERING data collection template and BEI calculation tool" can complement each other depending on the data sources availability.

Case study assumptions

1) Municipal buildings

Option A

One office building with area equal to 1000 m^2, which consumes 8.3 tn of heating oil and 200 MWh of electricity.

And

Option B

10 schools, which have average area equal to 500 m^2, unitary electricity consumption 200 kwh/m^2 and unitary thermal consumption 100 kwh/m^2.

Heating oil is utilized for the production of the required thermal energy having heating value equal to 12.05 MWh/tn.

2) Tertiary buildings

Option A

One hospital with area equal to 1000 m^2, which consumes 16.6 tn of heating oil and 300 MWh of electricity.

And

Option B1

100 private offices, which have average area equal to 300 m^2, unitary electricity consumption 200 kwh/m^2 and unitary thermal consumption 100 kwh/m^2.

Heating oil is utilized for the production of the required thermal energy having heating value equal to 12.05 MWh/tn.

3) Residential buildings

Option B1

500 household buildings, which have average area equal to 80 m^2, unitary electricity consumption 60 kwh/m^2 and unitary thermal consumption 100 kwh/m^2.

Heating oil is utilized for the production of the required thermal energy having heating value equal to 12.05 MWh/tn.

4) Public lighting
Option B

Lighting systems with an installed capacity equal to 800 kW, which operate for 3,650 hours annually.

5) Industry-Non ETS
Option B1

10 industries operate in the territory of the municipality with total GVA[1] equal to 100 million €.

The unitary energy consumption of the industrial sector is equal to 932 MWh/mil. € of GVA.

60% of the energy consumption refers to thermal energy, while the remaining to electricity consumption.

Diesel is utilized for the production of the required thermal energy.

6) Agriculture-Forestry-Fisheries
Option B1

100 agricultural units operate in the territory of the municipality with total GVA equal to 30 million €.

The unitary energy consumption of the industrial sector is equal to 585 MWh/mil. € of GVA.

90% of the energy consumption refers to thermal energy, while the remaining to electricity consumption.

Diesel is utilized for the production of the required thermal energy.

7) Municipal fleet
Option B

30 passenger vehicles with mileage equal to 15,000 km/year and unit consumption equal to 8 lt/100 km.

90% of the passenger cars utilize gasoline and the remaining diesel.

10 LDV with mileage equal to 25,000 km/year and unit consumption equal to 15 lt/100 km.

All the LDV utilize diesel.

5 HDV with mileage equal to 50,000 km/year and unit consumption equal to 30 lt/100 km.

All the HDV utilize diesel.

The heating values of gasoline and diesel should be considered equal to 10 MWh/tn and 12 MWh/tn respectively.

The density for both of the examined fuels should be selected equal to 0.83 kg/lt.

8) Private and commercial fleet

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[1] https://en.wikipedia.org/wiki/Gross_value_added

Option B

200 passenger vehicles with mileage equal to 10,000 km/year and unit consumption equal to 8 lt/100 km.

90% of the passenger cars utilize gasoline and the remaining diesel.

30 LDV with mileage equal to 25,000 km/year and unit consumption equal to 15 lt/100 km.

All the LDV utilize diesel.

50 taxis with mileage equal to 50,000 km/year and unit consumption equal to 8 lt/100 km.

All the taxis utilize diesel.

The heating values of gasoline and diesel should be considered equal to 10 MWh/tn and 12 MWh/tn respectively.

The density for both of the examined fuels should be selected equal to 0.83 kg/lt.

9) **Public transport**

Option B

10 buses, which consume 332 tn of diesel.

The heating value of diesel should be considered equal to 12 MWh/tn.

10) **Energy supply**

Option B

3 wind parks with electricity production equal to 65.7 GWh annually.

10 photovoltaic stations with electricity production equal to 6.575 GWh annually.

One CHP plant with electricity and heat production equal to 2.5 and 5 GWh respectively on annual basis. The CHP plant utilizes biomass as fuel (11 GWh fuel input which is allocated 53% to electricity and 47% to heat production).