

Terms of Reference
Consultant for development of public buildings inventory
for energy efficiency (EE4GreenMNE)

1. PROJECT BACKGROUND

The Government of Montenegro received a loan from the International Bank for Reconstruction and Development in amount of 11,5 million Euro toward the cost of financing Montenegro Energy Efficiency Project (MEEP), aimed at improving energy efficiency in 25 public buildings. The focus of MEEP was on public facilities due to strong demonstration and promotion impacts that can be achieved in the society regarding the promotion of energy efficiency. Twenty-five buildings were retrofitted (eight schools, one student dorm and sixteen hospitals). The buildings retrofitted through this loan have not only brought positive results in savings, but created capacity within the ministries involved: Ministry of Economy (MoE), Ministry of Health (MoH) and Ministry of Education (MoE), in the private sector, and increased awareness of the population in the benefits of energy efficiency measures.

Given the demonstrated success to date on the MEEP, the Government of Montenegro signed a new loan agreement with International Bank for Reconstruction and Development (IBRD) for the implementation of the second phase of the Montenegro Energy Efficiency Project (MEEP 2). The MEEP 2 have aims to: (i) finance retrofit of additional 18 health buildings, (ii) establish the monitoring system of energy consumption and (iii) develop a sustainable energy savings capture model that will enable the use of the funds, obtained by savings for implementation of future energy efficiency projects.

The part of the received loan will be used for the preparation of energy efficiency inventory of state-owned and local government buildings. The data from inventory will be later used for the purpose of establishing the Central Information System for Energy Efficiency. Namely, the project Energy Efficiency Programme in Public Buildings, Phase II (EEPPB II) funded by the KfW and implemented by the Ministry of Economy, between others has the aim to introduce an integrated energy management system in facilities refurbished under EEPPB, including design and establishment of an integrated Central Information System for Energy Efficiency that will cover all public buildings in Montenegro.

The activity of data collection performed under this Contract will be of great importance, for the monitoring system that EEPPB II project will developed. Namely, the data collected under this contract, will be the basis for establishing Central Information System for Energy Efficiency that will be implemented by MoE.

Furthermore, this activity is in line with the Law on Efficient Use of Energy (Official Gazette of Montenegro No. 57/14, 03/15), and it is direct support of the MEEP 2 to activities; (i) that will have significant influence on the Law realization and (ii) monitoring of the energy efficiency savings in adopted buildings.

The development of the software for the Central Information System for Energy Efficiency is not part of this assignment.

2. DESCRIPTION AND SCOPE OF SERVICES

This Terms of Reference (ToR) describe in detail task, duties and responsibilities of the Consultant for development of public buildings inventory for energy efficiency (in further text Consultant), as well as its Scope of Services.

The selected Consultant shall be hired to perform the following tasks:

- **Task 1 – Collection of the general data per state and local self-government institutions, including: name of institution, address, municipality, gross or net area, number of users, number of electric meter, consumed electricity per months in 2018 and 2019, number of water meter, consumed water per months in 2018 and 2019.**

The bellow institutions should be contacted and their databases should be collected in order to collect the required data. The institutions that should be contacted are, but not limited to:

- *Property administration* – database of public real estates
 - *Ministries* - data for buildings that ministries using
 - *Local self-governments* - data for buildings that local self-government using
 - *CEDIS* – data of public (state and local) institutions to which CEDIS delivers the invoices for consumed electricity
 - *Utilities companies* - data of public (state and local) institutions to which utilities companies delivers the invoices for consumed electricity, gas, fuel, water and waste water services
 - Other available data.
- **Task 2 –Preparation of unified electronic database energy efficiency inventory of state and local self-government buildings (in further text EE4GREENMN).** The EE4GREENMN should contain data collected by Task 1, as well the energy efficiency (EE) data to be collected by the questionnaire (Task 3).
 - **Task 3 – collection of the EE data from the field.** It should be emphasized that one institution may match one single building, but it may be also a part of a building or it may be located in a complex of buildings. In case that institution is located in a complex of buildings, the separate questionnaire shall be filled for each building.
The total number of buildings from which the EE data should be collected should not exceed the number of 2.000 buildings. The ‘building’ means a roofed construction having walls, for which energy is used to condition the indoor climate. The buildings are located in all municipalities.
 - **Task 4 – Final presentation.,** The Consultant should make the final presentation of performed tasks.

Consultant is responsible for organization and execution of all above tasks.

Before the tasks are to be carried out, the Consultant will gain a thorough understanding of the required collection of data, through review of relevant background materials and discussions with the MEEP 2 Project Implementation Unit (MEEP 2 PIU) and Ministry of economy.

The Consultant will carry out the following four main tasks in close cooperation with the MEEP 2 PIU:

TASK 1 – COLLECTION OF GENERAL DATA

The Consultant will be responsible to contact and collect the general data from: property administration, CEDIS, utilities management companies, ministries, local self-government, etc., in order make a unified list of institutions (state and local self-government) with corresponding data per institution, including: **name of institution, address, municipality, gross or net area, number of users, number of electric meter, consumed electricity per months in 2018 and 2019, number of water meter, consumed water per months in 2018 and 2019.**

Consultant should be aware that some of the data from above mentioned sources can be available in different kind of electronic form and as well some data can be available only in hard copy format.

If Consultant find difficulties in performing the Task 1, the Consultant must info MEEP 2 PIU in reasonable time, no more than 10 days after Consultant find that he cannot collect the data.

TASK 2 – PREPARATION OF EE4GREENMN

Consultant should analyze the received data, how they are presented, the available data per required categories, the level of presented information, the quality of received data etc.

Based on performed analyses, received data, and as well taking into consideration the data that should be collected from the field (Task 3), the Consultant should develop the EE4GreenMNE. The EE4GreenMN should allow entrance /presentation of all collected data.

The EE4GreenMN have to contain database and user-friendly interface which allows easy data manipulation. The EE4GreenMN must allowed different types of data aggregation and analysis per given parameters that (like per municipalities, per m2, per energy consumption, water consumption etc.).

The presentation of data in the EE4GreenMN shall be made per building.

All buildings should have unique identification number. The Consultant should receive from MEEP 2 PIU detail information how the unique identification numbers should be generated.

The draft design EE4GreenMN must be presented to the Ministry of economy and MEEP 2 PIU for comments and approval.

After Consultant receive no objection on developed design, the Consultant should transfer the data from the received database into EE4GreenMN.

The Consultant is obliged to merge the collected databases, and to link all available data to each building to which the data belongs. Namely, buildings belonging to one facility (as is the case with the Clinic Center of Montenegro, whose complex consists of a number of objects, not just one) should be linked to one another, that they are an integral part of one unit.

After merging, the Consultant must clean the EE4GreenMN of double data. For the buildings that available data from above mentioned sources are different (like name of buildings, street etc.) the Consultant must perform additional analysis through web sites, communication with ministries, local self-governments to make connection between data.

EE4GreenMN have to be based on technologies which does not require additional costs in terms of software licenses. Finalized EE4GreenMN have to be delivered to the Ministry of Economy together with permissions for further development (source code).

TASK 3 – COLLECTION OF THE DATA FROM THE FIELD

From the database, the Consultant will draw up a list of buildings (with corresponding data) that have the gross or net area of 200 m². This list is subject of no objection of the Ministry of economy and MEEP 2 PIU.

For these buildings the Consultant should perform data collection from the field, using already prepared questionnaire.

It is expected that field data collection for around 2.000 buildings should be performed.

Questionnaire provided in Annex of this ToR represents minimum information to be collected from the field for each building. The Consultant may propose additional information to be collected if he considers it will lead to the improvement of the results. Nevertheless, it is Consultant's obligation to collect all required information from the field.

During the work Consultant can found on possible problems to find water meter and to read consumption. In this case, the Consultant must present clearly (by photography) that he cannot present information in respect to the water meter.

In order to provide a unique approach in the collection of data, the Consultant is obliged to prepare detailed instructions for completing the questionnaire and carry out the training of qualified persons who will collect data on the field. The Consultant must have the appointed supervisors for the persons that will collect the data from the field.

During the collection of data, the Consultant is obliged to identify and document all the specifics that could have an impact on the implementation of comprehensive data collection on public facilities.

All collected data, the Consultant is obliged to enter in EE4GreenMN.

To support Consultant work in this task, the Ministry of economy will put on disposal and usage the Final report from the pilot project „Introduction of the inventory for public buildings “, where the Methodology for caring our research and collection of data are in detail prescribed.

TASK 4 – FINAL PRESENTATION

The Consultant is obliged to make the final presentation of the results of above mentioned tasks, namely of completed EE4GREENMN.

3. DELIVERABLES AND TIME SCHEDULE

No.	Deliverables	Number of copies/language	Time schedule
1	COLLECTION OF GENERAL DATA	Electronic version	2 months
2	PREPARATION OF EE4GREENMN	Electronic version	2 months
3	COLLECTION OF THE DATA FROM THE FIELD	Electronic version	3 months
4	FINAL PRESENTATION	Electronic version	1 month

4. QUALIFICATION OF CONSULTANT

It is expected that a qualified company will be hired to carry out the assignment. The company will have to demonstrate a proven track record in carrying out assignments same or similar assignment, including experience in crossing various databases in order to get the data.

Key staff must consist of at list 3 persons:

- engineer with experience in database development and in crossing various databases
- economist or statistician or other relevant science, with experience in creation of methodology, data collection and data analysis.
- architect or engineer with experience in preparation of detail energy audit or main technical design for implementation of energy efficiency measures.

The key persons should have at least 5 years general experience and at least 3 years in the field same or similar to this assignment.

Key staff and their CVs will be evaluated as indicated in the RFP document.

Annex: Questionnaire

Questionnaire

Name of the building (building complex, building or part of a building):

Address: _____

GPS address: _____

Contact person: _____

Contact details: _____

Name of the questioner:

Date when the survey was conducted: _____ Time when the survey has started: ____ h ____ min

Questionnaire code: _____

1. Type of building:

- a. Part of a building
- b. One building
- c. Complex of ____ buildings (specify the number, fill out the questionnaire for each building separately)

2. Code of the building _____ (we will create it)

3. Owner of the building (circle your answer): PRIVATE/STATE

4. Competency over the building, i.e. who pays the received bills:

5. Building user:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____

6. Number of floors in the building? _____

7. Year when the building was constructed (just state the decade for buildings older than 30 years) _____

8. Gross area of the building (in m²- required accuracy of the data is 95%) _____
9. Net area of the building (in m²-the net area is calculated by reducing the gross area by 20%: $N\ m^2 = Bm^2 \times 0,20$. Specify if there are major parts of the building which are not used or not heated and what is the net area of such parts of the building out of the total area of the building (it can be specified also in percentage compared to the total net area): _____
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10. Type of building:

- a. Administrative
- b. Technical
- c. Hospitality facility
- d. Educational
- e. Healthcare
- f. Warehouses
- g. Facilities for accommodation of persons (e.g. Dormitories, special institutions)
- h. Cultural heritage buildings
- i. Sports facilities
- j. Other, specify _____

11. How often is the building used?

- a. Months when the building is not in operation (circle your answer):
January/February/March/April/May/June/July/August/September/October/November/December/or _____
- b. Operating days of the building (circle your answer): Mon-Fri/Sat/Sun/ or _____
- c. Daily working hours: (circle your answer): 8/16/24(shifts) or _____

12. What is the main heating system in the building?

- a. Central heating system
- b. Individual heating systems (electric heaters, storage heaters, air-conditioners etc.)
- c. Other, specify _____

13. What is the main fuel for heating?

- a. Electricity
- b. Fuel oil
- c. Fuel wood
- d. Heavy fuel oil
- e. Coal
- f. Pellets/Briquettes
- g. Other, specify _____

14. Is there a cooling system in the building?

- a. Yes, Central system for cooling
- b. Yes, individual systems for cooling (e.g. air-conditioners)
- c. Yes, Other, specify _____
- d. No

15. Is there a sanitary hot water heating system in the building?

- a. Yes, decentralized, through electric boilers
- b. Yes, as a part of the heating system
- c. No

16. Number of metering places in the building?

- a. For electricity _____
- b. For water _____

17. Meter reference number/billing code for electricity per meter:

- a. Meter 1 _____
- b. Meter 2 _____
- c. Meter 3 _____
- d. Meter 4 _____
- e. Meter 5 _____
- f. Meter 6 _____

18. Number of electricity meters per building:

- a. Meter 1 _____
- b. Meter 2 _____
- c. Meter 3 _____
- d. Meter 4 _____
- e. Meter 5 _____
- f. Meter 6 _____

19. Code of consumers for water consumption per building:

- a. Water meter 1 _____
- b. Water meter 2 _____
- c. Water meter 3 _____
- d. Water meter 4 _____
- e. Water meter 5 _____
- f. Water meter 6 _____

20. Number of water meters for water consumption per building:

- a. Water meter 1 _____
- b. Water meter 2 _____
- c. Water meter 3 _____
- d. Water meter 4 _____
- e. Water meter 5 _____
- f. Water meter r 6 _____

21. Total annual consumption of fuels which are used in the building:

	2016.		2017.		2018.	
	quantity	Unit price(€)	quantity	Unit price(€)	quantity	Unit price(€)
Fuel oil (l)	l-		l-		l-	
Liquefied petroleum gas (l)	l-		l-		l-	
Fuelwood (m ³)	m ³ -		m ³ -		m ³ -	
Heavy fuel oil (t)	t-		t-		t-	
Coal (t)	t-		t-		t-	

Pellets/Briquettes (t)	t-		t-		t-	
Other, specify _____						
Other, specify _____						

22.

Performed refurbishments in last 10 years (acceptable only if it is completely done)	YES	NO
Demit facades		
Thermal insulation of the roof		
New external joinery (PVC or AL)		
Replacement of a heat generator (new heat pump, new boiler etc.)		
Replacement of heating devices and installation of thermostatic valves		
Replacement of lighting system		
Installation of solar collectors or other system for obtaining energy from renewable sources		
Other, specify _____		

23. Is there a person responsible for managing/monitoring the energy consumption?

- a. Name and surname/ contact phone number _____
- b. No
- c. He/she does not know

24. Are there any internal rules and procedures for managing/monitoring energy consumption?

- a. Yes
- b. No
- c. He/she does not know

25. Name and description of photos:

- a. Photo 1: _____
- b. Photo 2: _____
- c. Photo 3: _____
- d. Photo 4: _____
- e. Photo 5: _____
- f. Photo 6: _____
- g. Photo 7: _____
- h. Photo 8: _____
- i. Photo 9: _____
- j. Photo 10: _____

26. Notes:

Date when the questionnaire was filled out: _____

Time when the questionnaire was filled out: ____ h ____ min