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## **Moldova Energy and Biomass Project**

### **Terms of Reference**

#### **National Consultant - Development of a Technical Guide for Sound Operation of Combined biomass-based and solar collectors systems for provision of hot water**

<b>Duty station:</b>	<b>Chisinau, Moldova</b>
<b>Reference to the project:</b>	<b>Moldova Energy and Biomass Project /MEBP</b>
<b>Contract type:</b>	<b>Individual Contract</b>
<b>Duration of the assignment:</b>	<b>February 2016 – April 2016</b>

#### **A. BACKGROUND**

The first phase of the Moldova Energy and Biomass Project (MEBP) funded by the European Union and UNDP and implemented by UNDP, succeeded to contribute to a more secure, competitive and sustainable energy production in the Republic of Moldova through targeted support to the most viable and readily available local source of renewable energy, which is biomass from agricultural wastes.

In 2015 the project, based on its continued high relevance and the clearly identified need to further support the consolidation of the emerging biomass market in the country, entered its second phase in the framework of the Eastern Partnership Integration and Cooperation (EaPIC) programme. The extension timeframe spans until the end of 2017 with EU-funding of 9.41 million EUR.

The main objective of the project phase II is to scale up the successful activities and extend them to so far not covered or underrepresented regions, specifically Transnistria, Gagauzia and Taraclia, and to support the further consolidation of the Biomass market.

As the first phase (2011 – 2014) of MEBP demonstrated, strong and well informed operational staff of the biomass-based and solar systems for provision of hot water is vital for ensuring the life-long cycle of green technologies. In order to enable the municipal leaders and operators of the biomass-based heating systems and solar systems for provision of hot water from the newly selected communities, i.e. mayors, municipal council members, managers of public institutions (schools, kindergartens, health care institutions, etc.) to effectively manage the operation of green technologies installations in their communities, the project will continue to deliver training programs for all beneficiary communities. However, additional educational material shall be developed to serve as self-learning tools for the operational staff.

Within the first MEBP phase comprehensive training modules and educational materials for operators of the biomass-based heating systems were developed. Topics covered by the training' modules and support materials included: general principles of operation, necessary maintenance routines, optimum building heating system operation (including such issues as overheating and under heating of various floors of the building), regular and sustained performance monitoring (including standard forms and reports), and sound management of fuel suppliers (including competitive tendering (standard tender formats), contracting (standard contracts), quality control (checking quality and condition of supplied fuel), and storage).

The second phase of the project also envisions combined systems (biomass heating systems and solar collectors for hot water provision) therefore additional educational support materials shall be developed to answer the knowledge and educational needs of the operators and manager of public institutions.

The content of the Technical Guide for Sound Operation of Combined biomass-based and solar collectors for provision of hot water systems should be need-based and would seek to respond to the practical aspects of managing combined systems. The Guide will be distributed during the capacity building activities and should serve as self-teaching material.

To accommodate the needs of information and training for the above mentioned beneficiaries, UNDP Moldova Energy and Biomass Project is seeking to contract a national expert to develop the educational materials for operators of combined biomass-based heating and solar collectors for provision of hot water system.

## **B. OBJECTIVE, KEY ACTIVITIES AND EXPECTED OUTPUTS**

The main objective of the assignment is to support MEBP in its efforts to address the need for information and in-depth knowledge of the operators and public institution managers on effective management and operation of combined systems from the project-assisted communities. The consultant needs to design and develop a **Technical Guide**, focusing on technological and economic aspects and taking into consideration the knowledge needs of the following target groups:

1. Municipal leaders, members of local councils, public servants from mayors' offices, managers of public buildings (directors of the schools, kindergartens, health care institutions etc.) from target communities have enhanced their knowledge and expertise in the area of sound management of biomass based installations for heating and solar systems for provision of hot water at community level.
2. The operators of the biomass-based municipal heating systems and solar systems for provision of hot water are equipped with skills, knowledge and understanding regarding green technologies, thus enabling them to ensure optimal functioning and maintenance of the boiler and solar systems installed in the public buildings from beneficiary communities.

In order to achieve the stated objectives, the consultant is expected to develop the content of the **Technical Guide** and provide inputs to the design process. The selected consultant shall assume full responsibility for the entire process related to the development of the Guide's content. The contractor will be assisted by the MEBP team in the process of consultation with the main actors in the field: Energy Efficiency Agency, Academia, operators and managers of public institutions.

The Guide is expected to be a practical manual for operators of the combined systems and will serve as a substantive self-study and reference material for operators and managers of public institutions regardless of their experience in the industry. The Guide should take into consideration technical parameters and functional requirements of the technologies (biomass-based heating systems and solar collectors for provision of hot water); maintenance aspects; economic aspects, etc.

To meet the objective of the present assignment, the selected contractor will perform the following activities:

- 1.1. Develop and coordinate with the Project Management Team (PMT) the Work Plan of the entire contract period, with timelines set for the development of the Technical Guide content;
- 1.2. Familiarize with the project documents regarding training and capacity building efforts undertook previous years and envisioned for 2016-2017 for the respective target groups ( municipal leaders and operators of biomass-based heating systems);
- 1.3. Study the knowledge gaps of the respective groups, assess and understand their specific training needs. Undertake two-three site-visits to meet with local communities leaders and operators in order to discuss the content of the Guide, most relevant topics and aspects to be covered;
- 1.4. Study the results, lessons learned and best practices in managing biomass-burning boilers at the community level, effective intra-communal cooperation models in the first phase of MEBP and incorporate them in the Guide. Together with PMT, take part in meetings with relevant stakeholders to discuss and share ideas regarding the proposed content and lessons learned from previous interventions;
- 1.5. Identify the most relevant knowledge needs of the operators of the biomass-based heating systems operators and managers of public institutions on managing combined systems;
- 1.6. Develop the draft content of the self-study Technical Guide (**in Romanian**) and consult it with main stakeholders, namely the Ministry of Economy, Energy Efficiency Agency, Academia, operators and managers of public institutions.
- 1.7. The draft content of the Guide should take into considerations the following:
  - Provide simple, user-friendly instructions on how to effectively operate...
  - Whenever feasible and/or advisable, produce or re-produce technical drawings illustrating key processes associated with operational aspects of the combined systems;
  - Consult the developed contents, section by section, with project engineers, Energy Efficiency Agency (EEA) experts and Academia in order to ensure accuracy and technical correctness;

- Address all comments and recommendations expressed by the experts and incorporate them in the final version of the guide.
- 1.8. Assist the PMT with the design concept of the Guide (printing of the guide will be done on project's expense).
- 1.9. In the course of contract execution, the selected consultant will be required to produce one Final Report upon the conclusion of the contract period. The Final Report needs to be submitted in electronic version and on paper support. The report should comprise:
- A narrative section to reflect the main findings of the consultant, the extent to which contract objectives have been attained, a description of the methodology and approach, and main findings with respect to the content of the Technical Guide;
  - Summary of the sector analysis conducted: including knowledge gap analysis;
  - Summary of the Evaluation Forms filled in by all participants, and the evaluation forms as such;
  - A photographic portfolio of the assignment;
  - Summary of lessons learned for future interventions;
  - Follow-up activities;
  - General Conclusion and Recommendations.

#### **Expected Outputs:**

- **Technical Guide for Sound Operation of Combined biomass-based and solar collectors systems for provision of hot water**

#### **C. DELIVERY TIMEFRAME:**

<b>Deliverables/Milestones</b>	<b>Timeframe</b>
1. Work Plan developed	29 February 2016
2. Knowledge gaps analysis	10 March 2016
3. Draft content of the Technical Guide elaborated and consulted with main stakeholders, including visual and graphic information	22 March 2016
4. Final content of the Technical Guide developed and approved by PMT and main national partners ( EEA and ME)	05 April 2016
5. Final report	15 April 2016

**Note:** Exact dates for deliveries will be confirmed upon the selection of the candidate. The volume of work has been estimated at up to **20 working days for whole assignment** during which all the activities and outputs/results envisaged under the present assignment are expected to be performed. The mentioned number of working days has been estimated as being sufficient/ feasible for the envisaged volume of work to be completed successfully and is proposed as a guideline for the duration of assignment, and it cannot be used as criteria for completion of work/assignment. The provision of envisaged deliverables approved by the Project Team would be the only criteria for the Contractor's work being considered completed and eligible for payment/s.

#### **D. MANAGEMENT ARRANGEMENTS**

**Organizational setting:** The consultant will work in close cooperation with the Training and Capacity Building Officer and under the overall guidance of the Project Manager of Moldova Energy and Biomass Project. PMT will put at the contractor's disposal all available materials and necessary information for the achievement of tasks and will facilitate the meetings, as needed. **Printing** of the Technical Guide will be covered by the PMT.

The payment for services provided by the Consultant under the MEBP will be made on a lump-sum basis upon the service delivery and acceptance by MEBP according to the timeframes stated above.

All in-country transportation related to this assignment will be provided by MEBP, upon preliminary coordination.

#### **E. ELIGIBILITY CRITERIA**

In particular the consultant must meet the following qualification criteria:

##### *Education*

- University Degree in Technical Sciences, Engineering, Mechanics, Energy, Agriculture, Rural Development or related field;

#### *Experience*

- At least 5 years of experience in heating/energy engineering or closely related field
- Hands-on experience in writing instructions, Standard Operating Procedures, operation manuals is a strong advantage;
- Experience in developing training and educational materials in the field of renewable energy, energy efficiency, engineering is an asset.

#### *Competencies and skills*

- Strong analytical and drafting skills. Ability to present ample information in a simple and concise manner;
- Good training and facilitation skills;
- Practical understanding of the knowledge gaps and needs of the biomass-based and solar collectors systems operators;
- Excellent interpersonal skills, as well as the ability to communicate effectively with all stakeholders and to present ideas clearly and effectively;
- Excellent proficiency in Romanian and Russian. Knowledge of written and spoken English is an advantage;
- Proven commitment to the core values of the United Nations, in particular, respecting differences of culture, gender, religion, ethnicity, nationality, language, age, HIV status, disability, and sexual orientation, or other status.