TERMS OF REFERENCE

Title: (a) Assessments of the district heating demands for the Global GEF project "Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator" and (b) data collection and analysis for the preparation of the District Heating Project in Banja Luka, Bosnia and Herzegovina

Project(s): (a) Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator

(b) Rehabilitation and modernization of the district heating (DH) system in the City of Banja Luka - focus on energy efficiency

1. General Background and Justification

UNEP's Energy, Climate, and Technology Branch leads one of the key focus areas of UNEP's climate change sub-programme: mitigation through reduction of energy-related greenhouse gas emissions (GHG) and the rapid adoption of low-carbon technologies. With its team of experts and a network of partners, the Branch supports the deployment and scaling up of cutting-edge clean energy technologies, and removal of financial and other barriers to renewable energy and energy efficiency.

Globally, heating, cooling and hot water represent 60% of the energy demand in buildings. Measures to reduce demand and shift to supply sources and means that are consistent with our global climate and energy ambitions are urgently required. Reducing the energy demand of heating and cooling through building and appliance efficiency improvements will be crucial to achieving decarbonisation. However, even with demand side reductions in buildings, cities will still have significant demands for heating and cooling from the buildings sector and other sectors which will need to be supplied from low-carbon and efficient sources.

Modern district energy systems can reduce primary energy consumption for heating and cooling of urban buildings by up to 50%. Such systems create synergies between the production and supply of heat, cooling, domestic hot water and electricity and can be integrated with municipal systems such as power, sanitation, sewage treatment, transport and

waste, and this means heating and cooling can be low-carbon and efficient and maximise 'free', renewable resources. Modern district energy systems (DES) provide the means to use of low-quality thermal energy (waste heat) to provide heat, cool and hot water services in buildings. They allow for high levels of affordable renewable energy supply through economies of scale, diversity of supply, balancing and storage making them a key measure for cities/countries that aim to achieve 100% renewable energy or carbon neutral targets. If DES is compared with competitive technologies on an even playing field, it is frequently more cost effective – by up to 50% - than individual heat or cooling production if the energy demand density of a neighbourhood is sufficient enough.

Additionally, UNEP has a history of working with national and Entity authorities in Bosnia and Herzegovina (BiH) and has successfully worked with the Government of BiH on carrying out the National Capacity Self-Assessment process, as well as a number of other projects dealing with MEA implementation and environmental governance. Local presence of UNEP in BiH through a project office in Sarajevo, closely related to UNEP Vienna.

Banja Luka is the second largest district heating (DH) system in BiH. It experiences significant energy losses (in large part due to hot water leakages and heat losses) during transmission and end-use, thereby incurring major, avoidable costs to the City and the DH Company, while also producing unnecessarily high amounts of GHG emissions.

Modernising the DH network would reduce fuel consumption by 27%, approximately 4,500 tons of crude oil which corresponds to 50,293.88 MWh of thermal energy - reducing emissions by 20,000 t CO_2 annually and saving the City 4.5 million euros per year. Insulation of existing buildings would provide additional savings in energy consumption of 36,000 MWh and emission reduction of 14,400 t CO_2. Developing the DH system to be fully renewable has the potential to save over 80,000 t CO_2 per year and would mean at least one third of Banja Luka would receive renewable heat.

2. Development Objective

The general development objective is climate change mitigation through decrease of energy-related GHG emissions and the swift adoption of low-carbon technologies through advancing the modern DES.

(a) The objective of the project "Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator" is to assist developing countries and selected cities to accelerate their transition to lower-carbon and climate resilient societies through promoting.

The DES Initiative has selected minimum four countries for pilot city work over the next three years with a high degree of variation between countries in order to maximise global replication. As district energy is a local technology application, new tools, methodologies and best practice must be demonstrated at the city level within particular countries and then scaled-up nationally and regionally through awareness raising, regional capacity building and wider support to

multiple countries. The DES Initiative activities in the four countries will have significant regional and global replication value. The pilot country selection will be reviewed and approved by the DES Initiative Steering Committee. The list of countries include China, India, Serbia, and a Latin American country.

(b) Implementation of the "Rehabilitation and modernization of the DH system in the City of Banja Luka - focus on energy efficiency" project is expected to increase the energy efficiency of DH operations in the City of Banja Luka, leading to reduction in the use and procurement of crude oil, helping the City of Banja Luka to reduce heat and financial losses, while encouraging the local economy and creating possibilities for local job development. Furthermore, the project is expected to contribute to the improved operational efficiency of the DH Company, through the process of knowledge transfer and capacity building of the City and the DH Company representatives.

3. Immediate Objective

In order to provide necessary support for development of the projects "Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator" and the "Rehabilitation and modernization of the DH system in the City of Banja Luka - focus on energy efficiency", UNEP has decided to engage a company with both local and international experience in order to assure effective and efficient implementation of the two projects.

(a) The main objective of the first part of the assignment is to conduct desk assessments and analysis of the local DH demands based on collected data obtained through other implemented activities within the DES Initiative in the cities in four selected countries, including China, India, Republic of Serbia and a Latin American country.

(b) The main objective of the second part of the assignment is to conduct data collection and analysis for developing short term recommendations for DH system improvements in the City of Banja Luka.

4. Methodology and Activities

(a) The service provider should, based on the data collected during other activities within the DES Initiative – specifically, the site visits and meetings with stakeholders in cities in four selected countries, including China, India, Serbia and a Latin American country – conduct the following desk analyses:

- Preparation of the analysis on heating/cooling local demand in each country – max. 4 person days;
- Preparation of the brief cost-benefit analysis, including range of consumer groups for each country – max. 10 person days;
- Analysis of long-term district heating/cooling growth potential in each country – max. 3 person days;
- Policy/ institutional gap analysis – max. 7 person days;

- Analysis on the potential for private sector participation in district heating/cooling development in the selected city in each country – max. 2 person days.

The methodology for implementing above-mentioned activities includes desk review and qualitative and quantitative assessments based on existing data (no data collection on site/ field work).

Maximum total person days: 26.

(b) The service provider shall provide a description and an assessment of the existing situation in the City of Banja Luka and the status of the DH system/services. The service provider will conduct background analysis of the DH sector in general and its operations in the City of Banja Luka.

The service provider is expected to conduct following activities:

- Data collection and preparation of the socio-economic analysis of the City of Banja Luka – max. 3 person days;
- Data collection and preparation of the DH system analysis of the City of Banja Luka – max. 8 person days
- Data collection and preparation of the analysis of regulatory/institutional framework – max. 3 person days;
- Data collection and preparation of the analysis of the potential alternative fuels sources for the DH system in Banja Luka – max. 5 person days.

Maximum total person days: 19.

5. Expected Outputs

(a) The first part of the assignment includes rapid assessments that should be based on information received on selected cities in each of the four countries. Each rapid assessment should include the following:

- Current and projected impact of heating/cooling demand locally;
- Identify specific demonstration projects in the city and complete simple cost-benefit analysis, including range of consumer groups;
- Analysis of long-term district heating/cooling growth potential;
- Analysis of long-term benefits of district cooling to the city (cost, CO_2, refrigerants, fossil fuel reduction, reduced peak load & electricity consumption, increase in local renewable energy);
- Barrier analysis (including: financial, political, capacity, regulatory, planning, etc.);
- Potential for private sector participation in district heating/cooling development in the city.

Visits to the countries and direct meetings with stakeholders are not subject of this ToR. The above-mentioned analyses is to be made mainly based on data collected during other activities undertaken under the DES Initiative.

(b) The service provider is expected to deliver following results through data collection and analysis for the City of Banja Luka DH project:

- Analysis of the DH Company, socio-economic analysis of the City and the DH network;
- Analysis of the alternative fuel sources;
- Policy/regulatory gap analysis.

6. Required Assets and Inputs

The service provider will have the responsibility of conducting assessments in regards with the immediate objectives above, including producing reports against these specific objectives.

The service provider shall possess excellent verbal and oral communication skills to be able to liaise with government officials both locally and nationally, but also to communicate with a wide range of stakeholders. Excellent knowledge of Bosnian/ Croatian/Serbian and English languages is mandatory for all engaged experts, both in speaking and writing.

The potential service provider will have to demonstrate technical expertise necessary for successful implementation of the project activities. The company should have at least 3 (three) contracts dealing with similar topics executed successfully during the last 7 years. Reference letters to be provided. At least one out of three should be implemented internationally.

The potential service provider should have minimum 3 years of experience in energy efficiency projects.

Based on the field of expertise and the activities mentioned above, it is proposed that the potential service provider's team should consist at least of a team leader and three (3) core experts, all with minimum experience of 6 years in relevant fields:

- Team leader:
    - Technical expert with experience in implementation of energy related projects in BiH and internationally with at least MSc in relevant field;
- Core experts:
    - Economist/financial expert(s) with experience in socio-economic analysis with at least BA in economy;
    - Institutional/legal expert(s) with relevant experience with at least BA in law;
    - Environmental specialist(s) with experience in similar assignments with at least BA in relevant field.

The service providers with experience working with international organizations on DH and energy efficiency in buildings is considered an important asset.

7. Technical and Financial Proposals

The potential service provider should provide a comprehensive plan for the implementation of the assignment within the technical proposal of the bid. As a minimum, the plan must contain the following sections (which should be indicated separately for the two parts of the assignment (a+b)):

- Problem description
- Objectives
- Expected outcomes
- Implementation methodology/approach, including detailed description of tools to be used and activities to be implemented
- Envisaged partnerships (if any)
- Human resources plan including curriculum vitae of each proposed expert
- Time schedule
- Monitoring plan with clear and measurable indicators of achievements.

The technical proposal should also contain a reference list indicating the experience of the service provider in similar relevant projects in the last 7 years.

The potential service providers are strongly encouraged to follow the suggested order of sections within the technical proposal.

The potential service providers should make a separate financial proposal based on indicated maximum person days for each planned activities as per provided human resources plan and Section 4 of this ToR. As the assignment refers only to desk analysis, no organization of meetings and travels should be included in the financial proposal.

8. Timing

(a) The assessments are planned to be finalized by the end of June 2016.

(b) The data collection and analysis should be finalized within 1 month after the signing of the contract but not later than 15 May 2016.

Service provider submitting an offer with shorter delivery times will be given preference during the evaluation.

9. Final Outcome and Reporting

Under the supervision the UNEP DH Coordinators for the Balkans and in coordination with the DH Project Team, the service provider will prepare and deliver a final document reflecting the main results of conducted assessments, including the following:

(a) Assessments of the district heating demands for the Global GEF project "Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator"

- Background information on each selected city, including brief socio-economic analysis;
- Description of the applied methodology;
- A comprehensive analysis of the local DH demands as per required outputs, individually reported for the four selected countries.

(b) Assessment of the DH system in Banja Luka, BiH

- Background information on the City of Banja Luka;
- Description of applied methodology;
- A comprehensive analysis of the district heating system in Banja Luka, as per requested outputs.

The document will be submitted both electronically and in hard copy in two (2) copies to UNEP and two (2) to UNOPS.

All reporting and deliveries must be done in English.

Short summary reports of the progress of action should be delivered on a regular monthly basis to the UNEP Project Manager and the DH Project Team.