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Appendix 1

Requirements concerning the deliveries

Analysis of Options for increased use of Renewable Energy in the Heating Sector in Ukraine

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Instructions for tenderers: The requirement specification consists of 7 competitive requirements. The competitive requirements must be answered shortly but thoroughly by tenderer (max 3 A4 pages per requirement) either by filling in this document or by submitting an attachment with clear reference to the specific requirement. Pages exceeding 3 A4 pages will not be taken into account.

1. DESCRIPTION OF THE DELIVERIES

1.1 Background

Ukraine is seeking to strengthen its security of supply while at the same time transforming its energy sector. The Danish Energy Agency (DEA) is sharing substantial experience on cost-efficient long-term energy planning in order to provide input to the Ukrainian government's efforts on formulating new well-founded policies and result-focused actions plans to reform the country's energy sector.

The Ukrainian-Danish cooperation focuses on long-term energy planning. The Danish Energy Agency is providing technical assistance to Ukrainian Institutions on energy data, modelling and energy efficiency, heat generation and renewable energy.

The assistance is provided through the Ukrainian-Danish Energy Centre (UDEEC), which was established in the Ministry of Energy and Coal Industry (MoECI) in Kiev in 2015 with the aim of making long-term energy planning based on improved collection of reliable data on energy consumption and supply to forecast and prepare for future energy needs. DEA is providing technical assistance to UDEEC on the following six main outputs:

1. Methodology for long-term forecast modelling of the national energy balance
2. Methodology for greenhouse gas inventory and United Nations Framework Convention on Climate Change (UNFCCC) reporting
3. Monitoring system for energy efficiency at industrial sub-sector level
4. Tools for balancing renewable energy generation in regional grids
5. Methodology and software for energy scenario analysis
6. Analysis of options for increased use of Renewable Energy in Heating Sector

Output 6 aims at delivering support to Ukraine concerning options for increased use of renewable energy in the heating sector, thereby contributing to enabling the formulation of well-founded policies and action plans.

The concrete task for the consultant will be to assist UDEEC and DEA in delivering results on possible options for increased use of RE in the heating sector.

The 2014 baseline for output 6 is district heating systems in Ukraine using natural gas as almost the only fuel source while there is a potential for using biomass, biogas and municipal waste for heat generation.

The overall outcome for UDEEC is reliable forecast data on energy consumption and supply, harmonized with corresponded IEA indicators and insights from simulations about complex system interactions enabling the formulation of well-founded policies and result-focused action plans, with progress towards the achievement of quantitative targets being monitored by well-functioning data collection systems.

The analysis of options for increased use of RE in heating sector is to be prepared in the context of the UDEC overall outcome. Hence the analysis must be concerned with relevant data on energy consumption and supply, relevant IEA indicators and insights from simulations enabling formulation of policies as well as contribution toward enabling monitoring of targets.

1.2 Deliverables

The Consultant must deliver a report on Analysis of options for increased use of RE in heating sector.

The report must be submitted in English and Ukrainian.

The report must consist of:

- 1) A detail guidance manual on the options for increased use of RE in heating sector to be used by policy makers and municipal and regional planning authorities in Ukraine.
- 2) Technical options and a catalogue for increased use of renewable energy technologies i.e. biomass, biogas and waste in the Ukrainian heating sector.
- 3) 2-3 RE forecasts/scenarios towards 2035 calculated for the heating sector based on technical options and economic development to be included.
- 4) Policy options and recommendations for increased use of renewable energy i.e. biomass, biogas and waste in the Ukrainian heating sector.

A fact finding mission, mid-term workshop and a final workshop must be undertaken by the consultant.

The analysis on options for increased use of RE in heating sector must include:

- a. *A brief description of the experience of Denmark in the context of the heating sector in Ukraine and develop policy recommendations for stimulation of the use of biomass for heat and / or electricity production in Ukraine*

This will include a brief overview of Danish/international experiences and main policies for implementing renewable energy primarily biomass and to some extent biogas, and municipal waste in the heating and power sectors with focus on local resources and sustainability including community self-sufficiency. Furthermore, technical solutions and economic models for fueling district heating with renewable energy using best practice solutions will be described. Main focus shall include reporting on the Danish policies to promote fossil-to-biomass conversion and their cost effectiveness from a socio economic point of view.

Elements that could be taken into consideration in a Ukrainian context are e.g.: heat planning, laws ensuring socio economic analysis as decision point for conversion, policies for converting existing district heating plants into biomass plants, Danish policies for ensuring investments in assets-to-house and district heating monopoly, user-owned heat plants, project planning, resource estimation, local producers (waste collectors and farmers) contracts with district heating plants in Denmark of varying sizes, value estimates of fuel quality and storage, re-ash for farmers and establishing reliable data on energy consumption and supply.

b. Development of financial model on construction of new biomass fired CHP with electric capacity of 5-20 MW

This must be based on experiences in Ukraine by International Financing Institutions (IFI)'s like European Bank for Reconstruction and Development (EBRD) and Nordic Environment Finance Corporation (NEFCO). The financial model must be well documented including explanation of all relevant assumptions. The model must be delivered in a format (e.g. Excel) making it possible to adapt according to future needs and analysis of UDEC and DEA.

c. Creation of a biomass market for supply of fuels for new Combined Heat and Power (CHP) plants and a general high increase of biomass for energy.

This must include recommendations related to further development of the biomass market in Ukraine and how to ensure sustainability of forestry used for supply of biomass and establishment of infrastructure and fuel supply logistics. Finally also considerations about location of new plants in relation to a mapping of the location of biomass resources

d. Waste management - waste incineration for supply of district heating.

This must include the advantages of incineration compared to dumping incl. environmental and health issues and a proposal for the legal provisions necessary for promoting supply of heating from waste incineration plants. The analysis must also include considerations related to possibility of connections to district heating grids, waste collection and transport logistics and necessary the sales price for the waste heat.

e. Assessment of specific biomass investment projects in Ukraine to identify barriers for investments and recommendations to government.

This must be based on items b and c. above.

1.3 Time Schedule

The supplier shall submit the deliverables specified in section 1.2. above, within 4 months (120 days) and latest by 15 September 2017.

A fact finding mission, mid-term workshop and a final workshop must be undertaken by the consultant before final delivery. On the workshops, proposals for change (within the scope of section 1.2) may need to be included before final delivery.

2. COMPETITIVE REQUIREMENTS

Instructions for tenderers: The contracting authority will evaluate tenderers answers to the below listed competitive requirements, and award points depending on how/to which degree the answers substantiate or provide proof of tenderers ability and technical competency to meet each individual requirement. For this reason it is important, that tenderer thoroughly describes how the requirement will be met.

2.1 Requirement: The consultant team must be staffed with experts possessing Danish, international and Ukrainian experience on heat sector specifically related to increased use of renewable energy in the context of the heating sector in Ukraine.

Preference: The evaluation will reflect to what extend the supplier in its tender demonstrates its ability to deliver a consultant team with the required experience and competencies. Experience of heat sector in Denmark and in Ukraine in particular with assessment of biomass investment project and with IFIs in the context of the heating sector in Ukraine will be evaluated positively.

2.2 Requirement: The consultant team must have a thorough knowledge of the Danish energy policies and laws – especially concerning the heat sector and promotion of renewable energy in subsectors as well as a thorough knowledge of the Ukrainian heating sector and heat planning practices.

Preference: The evaluation will reflect to what extend the supplier in its tender will demonstrate its ability to deliver the required knowledge on Danish energy policies and laws and Ukrainian heating sector. Experience of Denmark and IFIs in the context of the heating sector Ukraine will be evaluated more positively.

2.3 Requirement: The consultant must describe a clear methodology for the analysis conducted for each of the tasks a-e above incl. the use of data, tools, maps, templates for reporting etc.

Preference: The evaluation will reflect to what extend the supplier in its tender demonstrates its ability to describe a clear and sound methodology involving all relevant knowledge and tools at its disposal to support the analysis in a convincing manner relevant in a Ukrainian context

2.4 Requirement: The consultant must describe a clear process and schedule suggesting relevant milestones with a clear indication of activities in Denmark as well as in Ukraine for the 4 months project period.

Preference: The evaluation will reflect to what extend the supplier in its tender will demonstrate its ability to involve relevant stakeholders in DK as well as in Ukraine and its ability to deliver the project successfully within a 4 months period.

2.5 Requirement: The consultant must describe the team incl. roles, experiences and competencies for each team member relevant for the assignment as well as the proposed general project management approach.

Preference: The evaluation will reflect to what extend the supplier in its tender will demonstrate its ability to suggest team members with experience with the heating sector in Denmark and Ukraine from an energy planning context and the ability to transfer best practice. Furthermore, the project management structure and capabilities in an international context should be reflected.

2.6 Requirement: The consultant must describe the approach to be used for planning, facilitation and reporting in terms of the fact finding mission, mid-term workshop and final workshop

Preference: The evaluation will reflect to what extend the supplier in its tender will demonstrate its ability to undertake fact finding mission and workshops

2.7 – Requirement: The supplier shall submit the deliverables specified in section 1.2. above, within 4 months (120 days) and latest by 15 September 2017.

Preference: The evaluation will reflect to what extend the supplier in its tender will demonstrate its ability to meet the milestones in the time schedule.