United Nations Development Programme

Ukraine

Review of GEF Project:

Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine

(PIMS No: 2921)

Mid-Term Review Report

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# Acronyms and Abbreviations

|  |  |  |
| --- | --- | --- |
| AWP | - | Annual work plan |
| BSU | - | Biomass Support Unit |
| CDM | - | Clean Development Mechanism |
| CEO | - | Chief Executive Officer |
| CO | - | Country Office |
| CoM | - | Covenant of Mayors |
| CPAP | - | Country Programme Action Plan |
| CTA | - | Chief Technical Adviser |
| DEG | - | German Climate and Development Society |
| DIM | - | Direct Implementation Modality |
| DPM | - | Deputy Project Manager |
| EBRD | - | European Bank for Reconstruction and Development |
| EC | - | European Commission |
| EE | - | Energy Efficiency |
| EFO | - | Externally Financed Output |
| EIB | - | European Investment Bank |
| EnC | - | Energy Community Treaty |
| ESCO | - | Energy Service Company |
| ETS | - | Emission Trading Scheme |
| EU | - | European Union |
| FSM | - | Financial Support Mechanism |
| Gcal | - | Gigacalorie |
| GEF | - | Global Environment Facility |
| GGF | - | Green for Growth Fund |
| GHG | - | Greenhouse gases |
| GIS | - | Green Investment Scheme |
| GWh | - | Gigawatt Hour |
| GWP | - | Global Warming Potential |
| GWP | - | Global Warming Potential |
| IBRD | - | International Bank for Reconstruction and Development |
| IBWG | - | Interagency Biomass Support Working Group |
| IEA | - | International Energy Association |
| IFC | - | International Finance Corporation |
| IFI | - | International Financial Institution |
| IFU | - | Investment Fund for Developing Countries |
| INDC | - | Intended Nationally Determined Contributions |
| IRENA | - | International Renewable Energy Agency |
| IRR | - | Internal Rate of Return |
| JI | - | Joint Implementation |
| JISC | - | Joint Implementation Supervisory Committee |
| KfW | - | German (government-owned) Development Bank |
| KIF | - | Danish Climate Investment Fund |
| kW | - | Kilowatt |
| LPAC | - | Local Project Appraisal Committee |
| LTA | - | Long-term Agreement |
| M & E | - | Monitoring & Evaluation |
| MAPF | - | Ministry of Agrarian Policy and Food |
| MENR | - | Ministry of Ecology and Natural Resources |
| MRDCHCS - | | Ministry for Regional Development, Construction, Housing and Communal Services |
| Mtoe | - | Million Tonnes of Oil Equivalent |
| MTR | - | Mid-Term Review |
| MW | - | Megawatt |
| MWh | - | Megawatt Hour |
| NAP RE | - | National Action Plan for Renewable Energy for the period until 2020 |
| NGO | - | Non-governmental Organization |
| NPV | - | Net Present Value |
| O & M | - | Operation & Maintenance |
| PA | - | Project Assistant |
| PIF | - | Project Identification Form |
| PIP | - | Project Implementation Plan |
| PIR | - | Project Implementation Review |
| PM | - | Project Manager |
| ProDoc | - | Project Document |
| R & D | - | Research & Development |
| RES | - | Renewable Energy Sources |
| RFP | - | Request for Proposal |
| RTA | - | Regional Technical adviser |
| SAEE | - | State Agency on Energy Efficiency and Energy Saving of Ukraine |
| SEAP | - | Sustainable Energy Action Plan |
| SGP | - | Small Grants Programme |
| SIDA | - | Swedish International Development Agency |
| TA | - | Technical assistance |
| ToR | - | Terms of Reference |
| TPES | - | Total Primary Energy Supply |
| TT | - | Tracking Tool |
| UKEEP | - | Ukraine Energy Efficiency Programme |
| UNDAF | - | United Nations Development Assistance Framework |
| UNDP | - | United Nations Development Programme |
| UNECE | - | United Nations Economic Commission for Europe |
| UNFCCC | - | United Nations Framework Convention on Climate Change |
| USEFF | - | Ukraine Sustainable Energy Financing Facility |
| USELF | - | Ukraine Sustainable Energy Lending Facility |
| WGRE | - | Working Group for Renewable Energy |

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# Executive Summary

## Project Information Table

|  |  |
| --- | --- |
| Project Title: | Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine |
| GEF Project ID: | 4377 |
| UNDP Project ID: | 2921 |
| Region and countries included in the project: | Europe and Central Asia, Ukraine |
| GEF Operational Focal Area/Strategic Program: | Climate Change/ Objective 3: "Promote Investment in Renewable Energy Technologies" |
| Executing Agency/Implementing Partner and other project partners | UNDP/ State Agency on Energy Efficiency & Energy Saving of Ukraine |
| Project Start Date | 24 June 2014 |
| Project End Date | 31 March 2018 |
| GEF grant | USD 4,700,000 |
| Co-financing | USD 30,057,500 |

## Project Description

The “Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine” Project aims to increase biomass-based energy generation and supply in municipal heat and hot water services in a sustainable way that among others will lead to the direct reduction of the greenhouse gases (GHG) emissions. This objective is in line with the main strategic objective of the energy policy of Ukraine - obtaining energy independence at the sufficient level of energy security. One of the main priorities in this direction is the development of the Renewable Energy Sources (RES) including biomass. Development of RES and improvement of Energy Efficiency (EE) contributes also to the fulfilment of the Ukraine’s international commitments. The development context for this project is also consistent with the UNDP and GEF priorities globally and in Ukraine as well. However, before this Project there was no national programme aimed at developing municipal biomass energy projects; due to the legal and regulatory, institutional, capacity and financial barriers biomass-based energy production accounted to only about 0.5% of the total primary energy supply. The Project have to contribute to the acceleration of sustainable agricultural biomass utilization for municipal heat and hot water services in Ukraine and thereby increase the share of biomass energy up to 7% in overall energy supply. This, in turn, will generate reduction of 63,577 tons of CO2 equivalent during the Project life-time and annually 19,143 tons CO2 afterwards.

The Project aims to achieve this target by introducing a favourable legal and regulatory framework and by offering of financing opportunities (establishing a financial support mechanism) in parallel with the intensive Technical assistance (TA) to the private sector and central and municipal governmental organisations for utilization of agricultural biomass and production of energy crops to supply municipal heat and hot water services. The Project consists of four components: (i) To formulate and introduce a streamlined and comprehensive market-oriented policy and legal/regulatory framework; (ii) To develop capacity to support development and implementation of a municipal biomass programme; (iii) To promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions; and (iv) To formulate an outreach programme and document/disseminate project experience/best practices/lessons learned for replication within the country (and in the region).

## Project Progress Summary

In spite of a significant difference between the actual situation existing at the date of the Project start and that one described in the Project document, due to the broad application of the adaptive management either the tangible results have already been achieved or the clear strategy for their achievement is being implemented. The main achievement are as follows:

* The Project has conducted the review of the existing legal/regulatory framework related to the development of the biomass energy technologies aimed at: (i) identification of gaps; (ii) study of coherence with the EU Directives. As a result, number of legal changes/amendments prepared, which were discussed with all the key stakeholders. In march-May 2016 four Draft Laws (#4334[[1]](#footnote-1) to stimulate the production of heat energy from alternative energy sources; #4580 on the transfer of authority to set tariffs and licensing; #4581 on signing long-term contracts for the supply of heat energy; and #4643 on improvement of relationships in the heating sector) were registered in the Parliament of Ukraine
* Selection criteria for the pilot projects have been developed and 12 biomass-fired boilers with 200 kW thermal capacities are already installed and started operations
* Municipal Biomass Programmes have been deve­loped for 7 pilot oblasts (Poltava, Ivano-Frankivsk, Zakarpattia, Volyn’, Dnipropetrovsk, Zhytomyr and Cherkassy)
* Methodology for economic and financial evaluation of municipal projects on biomass utilization for budgetary support has been developed
* Model business plans for biomass utilization for heat and hot water supply; Municipal Biomass Guide also have been developed
* Study tour to Sweden was organized in 2015 for high-level authorities (Central and local government officials, members of the Parliament) and bioenergy professionals - best practices of biomass utilization in the municipal services were have been. One of the important output: decision made on piloting energy willow nurseries
* A large number of capacity building materials have been prepared and delivered to SAEE, key ministries, Regional and Municipal authorities, responsible for the development and implemen­tation of a municipal biomass programmes
* The Financial Support Mechanism (FSM), in partnership with the IFC, will be created likely within the 6-months period. Financing of bioenergy projects is expecting since 2018 latest. Oschadbank, participating in the FSM, doesn’t have limitations in funds. Therefore, as many projects prove their bankability (will be checked either by Oschadbank or independent auditor – procedures will be agreed) as many will get financed.

At the same time a number of targets haven’t been achieved mostly due to the objective reasons (beyond the Project control) and among them:

* Creation of the favourable legal/regulatory framework is not finalized yet (should be completed within 1.5 years)
* Biomass Support Unit (BSU) will unlikely be established at all. Instead the Interagency Biomass Support Working Group (IBWG) will be established. At the current political and governmental situation in Ukraine, this seems to be the best possible solution. Nevertheless, the scope and corresponding impact of IBWG on development and implementation of biomass municipal programmes will be modest compared with BSU

## MTR Ratings & Achievement Summary Table

Table 1: Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

| **Project Strategy** | **Midterm Level & Assess­ment** | **Achieve­ment Rating** |
| --- | --- | --- |
| **OBJECTIVE:**  To significantly increase the use of biomass energy as a fuel source for heating and hot water services in the municipal sector in Ukraine by at least 20% over the baseline scenario in order to reduce direct GHG by 63,577 tons of CO2 over the 4-year life of the project and, subsequently, 19,143 tons of CO2 during each year of the remaining 16-year life of the boiler equipment. When one looks at the 20 year lifetime of the boilers earmarked for development during the project period, the boilers will have generated 1,618,834 MWhTH, with a combined amount of CO2 reduced of 361,000 tons, equivalent to $13 of GEF funds per tCO2 |  | **MS** |
| **OUTCOME 1:**  A: Streamlined and com­prehensive market-orien­ted policy and legal/regu­latory framework to pro­mote municipal biomass for heat and hot water services  B: Municipal Targets for Biomass Energy for heating are agreed and established |  | **MS** |
| **Output 1A.1:** Report streamlining a market-oriented policy and legal/ regulatory framework to regulate municipal biomass for heat and hot water services |  | **MS** |
| **Output 1A.2:** Strategy docu­ment aimed at sharpening the focus of the respective roles and responsibilities of Ministry of Agrarian Policy and Food (MAPF) and Ministry for Regional Development, Construction, Housing and Communal Services (MRDCHCS) |  | **S** |
| **Output 1A.3:** Criteria and procedures for the introduc­tion of a transparent process in the selection/award of municipal biomass projects for development |  | **S** |
| **Output 1B.1:** National Targets for Biomass Energy in heating until 2020 are agreed and adopted |  | **MS** |
| **Output 1B.2:** Municipal Targets for Biomass Energy in heating (for at least 5 Oblasts including Ivano-Frankivsk and Cherkasy) are agreed and adopted. |  | **S** |
| **OUTCOME 2:**  Capacity availab­le within MAPF to sup­port development and implemen­tation of a municipal biomass programme through the establishment of a Biomass Support Unit |  | **MS** |
| **Output 2.1:** A sustainable Biomass Support Unit (BSU) established within MAPF to support the municipal bio­mass programmme during the project lifetime and beyond. |  | **MU** |
| **Output 2.2:** Suitable metho­do­logy for the economic/ financial evaluation of municipal biomass systems.  Appropriate incentives to attract project developers |  | **S** |
| **Output 2.3:** Technology trans­fer opportunities and delivery models, including develop­ment of boiler construction and installation standards, formulated and operationa­lised |  | **MS** |
| **Output 2.4:** One-stop shop within BSU to provide infor­ma­tion and guidelines on construction licenses and permits to developers |  | **MU** |
| **Output 2.5:**  Capacity of BSU developed to monitor and document project experience |  | **MS** |
| **OUTCOME 3:**  Investment promotion in municipal use of biomass through establishment/ strengthening of Financial Support Mechanism |  | **MS** |
| **Output 3.1:** Financial Sup­port Mechanism (FSM) esta­b­lished within DerzhZem Bank of MAPF and continues to operate beyond project lifetime |  | **MS** |
| **Output 3.2:** Capacity deve­loped within FSM to appraise projects in municipal use of biomass for lending |  | **MU** |
| **Output 3.3:** Feasibility studies and business plans for muni­cipal biomass heat and hot water systems |  | **S** |
| **Output 3.4:** Reports on financial closure with project developers and completion reports for one project each in Cherkassy and Ivano-Fran­kivsk Oblasts and 4 additional projects in other Oblasts |  | **S** |
| **Output 3.5:** Report on comple­tion of a total of 18 municipal biomass heat and hot water systems by project end |  | **S** |
| **OUTCOME 4:**  Outreach programme and dissemination of project experience/ best practices/ lessons learned for replica­tion throughout the country |  | **S** |
| **Output 4.1:** National plan to imple­ment outreach/promo­tional activities to support biomass projects targeting domestic (and international) investors |  | **S** |
| **Output 4.2:** Comprehensive and reliable data compiled and available for future initiatives |  | **S** |
| **Output 4.3:** Published Muni­cipal Biomass Guide detailing a step-by-step approach for implementing municipal biomass programmes |  | **S** |
| **Output 4.4:** Published mate­rials (inclu­ding video) on pro­ject experience/best practi­ces and lessons learned |  | **S** |
| **OVERAL RATING** |  | **MS** |

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator Assessment Key | Green= Achieved | Yellow= On target to be achieved | Red= Not on target to be achieved |

S - Satisfactory; MS - Moderately Satisfactory; MU - Moderately Unsatisfactory

## Concise summary of conclusions

* The Project has made all stakeholders engaged in the process aimed at the achievement of the planned outcomes and outputs
* The Project has widely applied programmatic approach and widened the area of Project influence from municipal to the Regional levels
* A strong and innovative aspect of the project is the financial support mechanism which is being developed with IFC. IFIs, local banks are interested in financing municipal biomass energy projects and are ready to cooperate with the UNDP in establishing of FSM. However, the Project has to further provide TA
* The Project has prepared a number of outreach material; some of them are published and found by stakeholders very useful
* The Project objective and outcomes are on target to be achieved. However, in order to achieve the end-of-project targets without significant shortcomings the efforts, it is recommended to implement the following recommendations:

## Recommendation Summary Table

|  |  |  |
| --- | --- | --- |
| Rec # | Recommendation | Entity Responsible |
| **A** | **Outcome 1:** |  |
| A.1 | Recommendation 2[[2]](#footnote-2): Provide Technical Assistance in the development of the National Programme / Action Plan on use of biomass energy in municipal services | Team |
| A.2 | Recommendation 9: Intensify cooperation with the stakeholders (Verkhovna Rada, Bioenergy Association of Ukraine, Ukrainian Pellet Union, all-Ukrainian association of local self-governments "Association of Ukrainian Cities" | Team |
| **B** | **Outcome 2:** |  |
| B.1 | Recommendation 7: Provide assistance to the municipalities – signatories of Covenant of Mayors | Team, Board |
| **C** | **Outcome 3:** |  |
| C.1 | Recommendation 1: Provide further assistance to the Financial Support Mechanism | Team, Board, FSM |
| C.2 | Recommendation 3: Conduct Monitoring & Evaluation of the operation of pilot projects | Team, FSM |
| **D** | **Outcome 4:** |  |
| D.1 | Recommendation 4: Intensify Outreach programme and dissemination of project experience/ best practices/lessons learned | Team, FSM |
| **E** | **Project Implementation & Adaptive Management** |  |
| E.1 | Recommendation 5: Re-allocate the remaining funds for the hard components of the pilot projects to the TA | Team, Board, CO |
| E.3 | Recommendation 8: Consider Baseline methane emissions in the GHG reduction calculation | Team |
| **F** | **Sustainability** |  |
| F.1 | Recommendation 10: Revise the Project Results Framework and the Exit Strategy | Team, Board, CO |
| F.2 | Recommendation 6: Extend the duration of the Project by 21 months until the end of 2019 | Team, Board, CO |

Recommendation 1: Provide further assistance to the Financial Support Mechanism

It is expected that the FSM will be established within the 6-month period and IBRD/IFC will provide necessary TA for that. However, it will be mostly focused on institutional settings, procedures and modalities of the FSM but not on creation of capacity of the participating banks to appraise projects, loan applicants. This might be achieved through the capacity building activities focused on key technical elements of feasibility studies and business plans, results of Monitoring & Evaluation of already implemented projects, advanced international practices, etc.

TA should also include assistance in developing standard financial products and origination of biomass projects.

For the addressing of this recommendation Project among others should:

* Additional involvement of the Project International Lead Expert on FSM Development and Implementation
* Support from the international CTA in providing guidance and support to the FSM Development
* Hiring of the bioenergy project origination expert
* Hiring of the research expert (technologies, fuel types, evaluation of results, etc.)

Recommendation 2: Provide Technical Assistance in the development of the National Programme / Action Plan on use of biomass energy in municipal services

The Project outcomes and outputs among others include establishment of Municipal Targets for Biomass Energy in heating for at least 5 Oblasts (Output 1B.2) and building of capacity to sup­port development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit (Outcome 2). These outputs can be either integrated in the National RE Programme, or separate National Biomass Energy Programme can be developed. One of the benefits of the development of the National Programme/Action Plan on use of biomass energy in municipal services, will be the reconsideration of the establishment of NSU.

Recommendation 3: Conduct Monitoring & Evaluation of the operation of pilot projects

The use of bioenergy technologies in the municipal services is not a common practice in Ukraine and therefore, their feasibility is not actually proven (meaning that results of their long-term operation aren’t obtained and thus analyzed in details). For this purpose Monitoring & Evaluation has to be implemented. GHG reductions also cannot be calculated without monitoring of certain parameters. Therefore, the monitoring and evaluation of the operation of pilot projects is recommended.

Recommendation 4: Intensify Outreach programme and dissemination of project experience/ best practices/lessons learned

Outreach programme should be strengthened by awareness raising campaign to inform potential FSM’s clients about existing financing opportunities conducted. Project WEB ([http://bioenergy.in.ua](http://www.bioenergy.in.ua)) may play very important role in this. Among others it can initiate public discussions, offer WEB calculator for estimation of: design capacity of the biomass-fired boilers, financial indicators (IRR, NPV) for standard conditions (average costs for boilers and other equipment, biomass, O & M, engineering), GHG reduction, etc. It is highly recommended to the Project to document in details all critical steps undertaken, especially barrier removal process, demonstrated flexibility (adaptive management), etc. It is also recommended to translate some publications of the Project in English.

Recommendation 5: Re-allocate the remaining funds for the hard components of the pilot projects to the TA

Implementation of 12 pilot projects has achieved a goal of piloting and thus no more pilots are necessary. The remaining funds can be used for TA purposes. Additional argument against the subsidizing (according to the ProDoc the Project should cover part of investment costs of the pilot projects) bioenergy projects by the Project is that Partner Banks unlikely would like involvement of any subsidy in financing.

**Recommendation 6: Extend the duration of the Project by 21 months until the end of 2019**

Proposed activities include finalization of the streamlined and market-oriented policy and legal/regulatory framework, determining the roles and responsibilities of MAPF and MRDCHCS and development of criteria for selection of municipal projects, which would be supported by the Project. It is Consultant’s opinion that achievement of this target will take much longer than planned in ProDoc.

Recommendation 3 above considers implementation of monitoring & evaluation of the pilot projects. Considering 2-year monitoring of already implemented pilot projects and 1-year monitoring of projects financed under the FSM, Evaluation of the Project results couldn’t be performed before June 2019. Then Terminal Evaluation shall be conducted, which usually is done 6 months before the project end date.

Recommendation 7: Provide assistance to the municipalities – signatories of Covenant of Mayors

At present 102 municipalities of Ukraine are signatories of the Covenant of Mayors (CoM); many of them have developed Sustainable Energy Action Plans (SEAPs). The goals of SEAPs can be achieved among others through the implementation of measures in the heating and hot water supply services. It has also to be noted that the IFC, the Project partner in establishing FSM is interested in working with CoM signatory municipalities, because they have developed SEAPs. Consideration of CoM factor would allow the implementation of Component 1, especially of activities aimed at Outcome 1B (Municipal targets for biomass energy for heating are agreed and established) in a more effective way.

Recommendation 8: Consider Baseline methane emissions in the GHG reduction calculation

When the biomass-fired boilers use either pellets produced from straw or straw itself, methane (CH4) emissions may occur if in the baseline scenario straw is not combusted but either left in the field, or stored without any use. Taking methane baseline emissions into account will increase the summary GHG reductions (due to the replacement of natural gas + avoidance of methane emissions).

Recommendation 9: Intensify cooperation with the stakeholders (Verkhovna Rada, Bioenergy Association of Ukraine, Ukrainian Pellet Union, all-Ukrainian association of local self-governments "Association of Ukrainian Cities"

The role of Verkhovna Rada will remain crucial even after approval of already submitted Legal Documents. Indeed, for the operationalization of FSM approval of additional legal/regulatory provisions might be required. Corresponding Drafts could be developed under the assistance by the Project but they have to be submitted either by the Government or by group of Deputies. In case of the second option the intensive cooperation with the members of Verkhovna Rada will be necessary.

Associations may be involved in biomass programme development and/or development of project pipelines.

Recommendation 10: Revise the Project Results Framework and the Exit Strategy

If the above proposed recommendations are accepted the Project Results Framework has to be revised accordingly. In addition, the Project has actually implemented 3 pilot projects on establishing energy willow nurseries. This could be considered as a separate output in the Results Framework.

It is very challenging to plan how to ensure the continuation of key activities/achievements of the Project without the need of additional (long-term) donor financing. Therefore, to facilitate and ensure sustainability and hand over the project to the country, beyond the project cycle, the revision of the exit strategy is recommended.

# Introduction

This Mid-Term Review (MTR) report is prepared in accordance with the contract No. IC/2016/214, signed between the United Nations Development Programme (UNDP) and international consultant on Bioenergy Mid-Term Review (herein referred to as the "Consultant"). The report summarizes the findings of the MTR for the UNDP-GEF full-sized project entitled “Project “Development and Commercialization of Bioenergy Technologies in the Municipal Sector of Ukraine” (herein referred to as the “Project”) implemented by the UNDP with financing support provided by the Global Environment Facility (GEF).

## Purpose of the MTR and objectives

The purpose of the MTR of this Project is to assess the progress towards the achievement of the project objectives and outcomes as specified in the Project Document (ProDoc), whether it is on track to its stated objective to significantly increase the use of biomass energy as a fuel source for heating and hot water services in the municipal sector in Ukraine and thereby reduce greenhouse gas (GHG) emissions. The MTR serves as a tool for assessment of the success or failure of the Project and identification of the necessary changes (i.e. –adaptive management) to be made in order to enhance the likelihood of achievement of the Project objectives and intended results by the end of the Project.

As specified in the Terms of Reference for this MTR, the main output of the review shall be specific recommendations for adaptive management to improve the project over the second half of its lifetime.

## Scope & Methodology: principles of design and execution of the MTR, MTR approach and data collection methods, limitations to the MTR

The Consultant has developed a methodology for execution of MTR in accordance with the Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects[[3]](#footnote-3), according to which the MTR among others shall include a review of:

* Project strategy (Project design, Project planning matrix, use of SMART[[4]](#footnote-4) indicators and targets);
* Progress towards the Project objective and outcomes;
* Project implementation and adaptive management;
* Sustainability

In order to prepare draft inception report and elaborate detailed mission programme, just after the signing the contract, the Consultant has established close working relations with the Project manager and Regional Technical Advisor on Climate Change Mitigation. From them the Consultant has got initial information (out of that one included into the MTR ToR) on the Project as well as Project-related materials available in the electronic format. The Consultant also has developed approach for the MTR, which is based on the clear understanding of the task and ways of its addressing. The main elements of the applied approach were as follows:

* The scope of the MTR to cover the entire Project and its components for the period of the Project implementation from November 2014 to January 2017.
* The MTR to be based on the analysis of Project-related documents as well as the evidenced information from different sources, which shall be cross-checked against the consistency.
* In order to use the mission period effectively the interviews of the stakeholders to be thoroughly prepared in order to better understand the sustainable energy policy priorities in Ukraine, overall environment in which the project was being implemented, status of the stakeholders’ involvement, prospects scaling-up including future financing opportunities, etc.
* During the field visits along with the status of the pilot projects: checking of level of engagement of local municipalities and impact of the UNDP project on the municipal energy development.
* Review of the baseline GEF focal area Tracking Tool as well as the midterm GEF focal area Tracking Tool.

This MTR has been executed in accordance with the guidance provided in the ToR except that the MTR mission was split into the parts. The reason was that the contract with the Consultant was signed on December 7, 2016 and that according to the ToR, five working days should be spent on documents review and preparation of MTR Inception Report and that the mission (duration 10 working days) should be scheduled for at least 10 days before the mission, the whole mission could not be organized in December 2016. Therefore, it was agreed to split the mission into two parts: December 19-21 (3 working days) and January 26 – February 3, 2017 (7 working days). The first part was focused on visits to pilot projects’ sites (Kiev, Zhytomir, Uman) while the second part, on interviews of Project stakeholders based in Kiev.

The developed approach in general worked effectively. The Consultant has met all key stakeholders except the GEF Operational Focal Point, who was appointed only by the end of the MTR mission[[5]](#footnote-5). The stakeholders could answer on all the questions of the Consultant s well as provided valuable information from their fields of activities related either to the Project implementation or general policy, legal, regulatory, institutional frameworks, needs and actual opportunities for private investments in sustainable energy.

It must be noted that during the MTR mission the Agreement between the UNDP and the International Bank for Reconstruction and Development (IBRD) on cooperation in establishment of Financial Support Mechanism (FSM), has been signed and the first meeting with participation representatives of UNDP, IBRD, Oscadbank (Public JSC State Savings Bank of Ukraine), Government has been held. Due to these facts the responsible representatives of IBRD/IFC and Oscadbank were very busy and not available for separate meetings with the Consultant. Instead the Consultant participated in four-partite meeting and got all the information regarding planned arrangements, procedures and modalities for operationalization of the FSM.

At the same time the Consultant has experienced certain difficulty in analyzing of the presented Project-related materials especially of the technical reports prepared by the National experts as well as the Project publications since the majority of them were in Ukrainian language. However, on request of the Consultant the brief summaries of some key reports were prepared by the Project.

Based on the above mentioned it is the Consultant’s opinion that the information obtained during the MTR and included in this report is credible and reliable.

## Structure of the MTR report

This MTR report is structured according to the MTR ToR, which in turn is compliant with the Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects. The report consists of three main parts and annexes:

Chapter 3 – description of the project, its background and development context, problems to be addressed and barriers to be overcome, Project strategy, implementation arrangements, milestones, overview of stakeholders

Chapter 4 – description of the findings of the MTR regarding:

* Project strategy and design (project results framework / logframe)
* Progress towards intended results of the Project and remaining barriers to overcome
* Project management (management arrangements, work planning, financing and co-financing, monitoring and evaluation systems, stakeholder engagement, reporting and communications) including by adaptive management
* Sustainability

Chapter 5 – Conclusions and proposed recommendations

Annexes – MTR ToR, MTR evaluative matrix, List of persons interviewed, List of documents reviewed, etc.

# Project Description and Background Context

## Development context: environmental, socio-economic, institutional, and policy factors relevant to the project objective and scope

The “Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine” Project aims to increase biomass-based energy generation and supply in municipal heat and hot water services in a sustainable way that among others will lead to the direct reduction of the greenhouse gases (GHG) emissions.

The main strategic objective of the energy policy of Ukraine is obtaining energy independence at the sufficient level of energy security by adapting of the legal and regulatory framework in line with the EU energy policy. One of the main priorities in this direction is the development of the Renewable Energy Sources (RES) including biomass because of: (i) abundance RES potential; (ii) high dependence on traditional energy imports, first of all, natural gas and growth of their prices; and (iii) negligible environmental impact. Development of RES and improvement of Energy Efficiency (EE) contributes also to the fulfilment of the Ukraine’s international commitments. Ukraine, as a member of the Energy Community (since 2011), is reforming the energy sector in accordance with the EU acquis (i.e. with focus on RES and EE) and in compliance with the Energy Community Treaty (EnC). The main goal of the National Action Plan for Renewable Energy for the period until 2020 (NAP RE), developed in accordance with the requirements of Directive №2009/28/EC on the promotion of the use of energy from renewable sources and approved by Order of the Cabinet of Ministers of Ukraine of October 1, 2014, № 902-р, is to increase the share of energy from RES in final energy consumption from 3.8 % (2009) to 11% by 2020 (slightly above 2% in 2016). The quantitative targets for power and heat production are determined in the NAP RE for different types of RES. In particular, about 16% of RES-based electricity will be generated by bioenergy power plants by 2020 (4,220 GWh out of 26,000 GWh by the all types of RES) and **more than 85% of energy for heating and cooling will be generated from the biomass (50 million Gcal out of 58.5 million Gcal)**. If the targets of NAP RE are achieved, in 2020, energy from biomass will replace up to 5.4 billion m3 of natural gas.

Before the Project start, some biomass, mostly woody biomass was used for the heating in agricultural regions of the country. According to IEA as well as National Statistics data, bioenergy in Ukraine comprised the largest share of Total Primary Energy Supply (TPES) from RES with about 1.9 Mtoe (59.3%) in 2013 and 73.5% in 2014. However, the usage of agricultural biomass was far below the potential. The reasons for the undeveloped biomass-to-heat technologies are existing legal and regulatory, financial, capacity and other barriers delaying the implementation of the energy strategies and stimulating wider use of RES, including biomass and thereby achieve the determined targets.

The development context for this project is also consistent with the UNDP and GEF priorities globally and in Ukraine as well. In particular, it falls within the:

* UNDAF Outcome #2: Reduced energy, resource and carbon intensity of economy through the application of energy efficient technologies, renewable and alternative sources of energy
* UNDP Strategic Plan Environment and Sustainable Development Primary Outcome: Mainstreaming environment and energy
* UNDP Strategic Plan Secondary Outcome: Mobilising environmental finance

The Climate change mitigation, in particular, GHG emissions reduction in the communal sector at national and local level is the priority of the Country Programme Action Plan (CPAP) between the Government of Ukraine and UNDP for 2012-2016 (Expected CP Outcome:Policy frameworks and mechanisms adopted to ensure reversal of environmental degradation, climate change mitigation and adaptation, and prevention and response to natural and man-made disasters; Expected CPAP Output 6: National and local capacities for climate change resilient policies and practices enhanced).

## Problems that the project sought to address: threats and barriers targeted

Even though the development of the renewable energy including energy of biomass has become an integral part of the Ukrainian energy strategy aimed at enabling the country to diversify and secure its energy supply as well as the interest shown by various actors to develop bioenergy technologies in the municipal sector, not much has happened yet in terms of implementing the suggested supportive measures and realizing concrete investment projects in practice. Indeed, before the initiation of this Project there was no national programme led by a single Government Agency aimed at developing municipal biomass energy projects; there were in the country some tens of manufacturers of pellets and briquettes from biomass and most biomass pellets were being exported to Western Europe; biomass-based energy production accounted to about 0.5% of the total primary energy supply - mainly firewood for domestic purposes as well as for fuel in forestry and wood processing enterprises. On the other hand, considering the biomass potential at least six times more energy from biomass could be generated.

There are no threats and barriers identified explicitly in the ProDoc. However, based on the analysis of the Project Results Framework it can be concluded that the Project is addressing the following barriers:

* Legal and regulatory barriers – absence of comprehensive market-oriented policy and legal/regulatory framework to promote municipal biomass for heat and hot water services
* Institutional barriers – not clearly defined roles and responsibilities of main governmental bodies responsible for the municipal biomass for heat and hot water services - Ministry of Agrarian Policy and Food (MAPF) and Ministry for Regional Development, Construction, Housing and Communal Services (MRDCHCS); absence of the any official governmental structure responsible for the support of municipal biomass development including determination of the municipal targets for biomass energy
* Capacity barriers – lack of capacity to develop municipal biomass programmes, to develop, implement and operate bankable biomass projects
* Financial barriers – not attractiveness commercial loans (high interest rates, short loan duration, guaranties to be provided); low tariffs on heat energy; limited access to financing (absence of specialized funds, credit lines, other financial support mechanisms)

## Project Description and Strategy: objective, outcomes and expected results

The objective of the Project is to accelerate sustainable agricultural biomass utilization for municipal heat and hot water services in Ukraine and thereby increase the share of biomass energy up to 7% in overall energy supply, as outlined in the “Energy Strategy of Ukraine to 2030”. This, in turn, will generate significant GHG reductions, namely, 63,577 tons of CO2 equivalent during the Project life-time and annually 19,143 tons CO2 afterwards.

The Project aims to achieve this target by introducing a favourable legal and regulatory framework and by offering of financing opportunities (establishing a financial support mechanism) in parallel with the intensive Technical assistance (TA) to the private sector and central and municipal governmental organisations for utilization of agricultural biomass and production of energy crops to supply municipal heat and hot water services.

The Project consists of four components:

* To formulate and introduce a streamlined and comprehensive market-oriented policy and legal/regulatory framework (“macro level” activities) to promote municipal biomass for heat and hot water services in the country, which includes national/municipal targets for biomass energy for heating;
* To develop capacity within the Ministry of agrarian policy and food of Ukraine (MAPF) (“micro level” activities) to support development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit and to formulate appropriate incentives to attract project developers;
* To promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions;
* To formulate an outreach programme and document/disseminate project experience/best practices/lessons learned for replication within the country (and in the region).

In the absence of the Project (business as usual scenario) bioenergy resource would receive limited attention. Due to the implementation of the Project the following outcomes are expected to achieve:

**Outcome1: 1A:** Streamlined and comprehensive market-oriented policy and legal/regulatory framework to promote municipal biomass for heat and hot water services; **1B:** Municipal Targets for Biomass Energy for heating are agreed and established

**Outcome 2:** Capacity available within MAPF to support development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit (BSU)

**Outcome 3:** Investment promotion in municipal use of biomass through establishment/strengthening of Financial Support Mechanism

**Outcome 4:** Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country

## Project Implementation Arrangements: short description of the Project Board, key implementing partner arrangements, etc.

The Project is being implemented under the UNDP Direct Implementation Modality (DIM). Hence, the UNDP Ukraine is responsible for the overall management of the project; while the day-to-day management and decision-making for the Project, consolidation of work plans and their revisions, preparation of progress- and other reports, supervising the work of the Project experts and other Project staff is the responsibility of the full-time Project Manager (PM). Full-time Project Assistant (PA) is supporting the PM on administrative and financial issues.

Since November 2016 the Project Manager is supported by a short-term Chief Technical Adviser (CTA).

The Project Board initially consisted of the senior representatives of UNDP Ukraine, Ministry of Regional Development, Construction, Housing and Communal Services, Verkhovna Rada of Ukraine (Parliament) and the Project Manager. After signing the Partnership Memorandum between the State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE, a Government agency reporting to the Cabinet of Minister of Ukraine and coordinated through the Vice Prime Minister of Ukraine - Minister of Regional Development, Construction, Housing and Communal Services) and UNDP, Deputy Head of SAEE became a Chairperson of the Project Board. The Board is responsible for making management recommendations for a Project when guidance is required by the Project Manager. The Project Board has had two meetings in June 2015 and February 2016; the third meeting is scheduled for March 2017.

## Project timing and milestones

15.09.2010 – Project concept received by GEF

29.03.2012 – Project preparation grant approved by GEF

01.06.2012 – Project concept note approved by GEF

27.02.2014 – Project approved for implementation by GEF Council/CEO Approval

**24.06.2014 – Project start date**

22.09.2014 – Project Manager took up his duties

**01.10.2014** – **The National Renewable Energy Action Plan until 2020** adopted by the Decree # 902-р of the Cabinet of Ministers of Ukraine. The contribution of biomass is planned mostly in the heating sector with 5000 ktoe/yr in 2020 (85% of all RES).

**19.11.2014** **– Inception workshop conducted in Kyiv.**

30.03.2015 – Memorandum signed between UNDP and Municipality of Uman

**16.06.2015 – 1st Project board meeting**

21.06.2015 – Swedish experience studied by representatives from national and regional authorities

03.07.2015 – Memorandum signed between UNDP and Municipality of Zhytomyr

06.07.2015 – Memorandum signed between UNDP and Poltava Oblast Council

07.08.2015 – Memorandum signed between UNDP and the National Ecology and Nature Centre in Kyiv

16.08.2015 – Memorandum signed between UNDP and Zhytomyr National Agroecological University

**22.08.2015 – Commissioning of 2 biomass-fired boilers in Uman**

11.09.2015 – Project activity presented at International Charity Forum "Step by step" (Yuriivka, Donetsk region, Ukraine)

16.09.2015 – Project activity and results presented at the 2nd International Conference “Energy Efficiency in Industry, Agribusiness, Housing and Communal Services” (Kyiv)

24.09.2015 – Project activity and results presented at the Conference "Prospects for recovery on the basis of Eastern Ukraine sustainable development" (Slaviansk, Donetsk region, Ukraine)

29.09.2015 – Developed draft legislation presented for national authorities in Kyiv (representatives of the Ministry of Regional Development, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Saving of Ukraine, Ministry of Agrarian Policy and Food of Ukraine, Ministry of Ecology and Natural Resources of Ukraine)

03.10.2015 – Renewable energy roadmaps for Ukraine were discussed with the national level authorities, academia and NGOs in Kyiv

29.10.2015 – Memorandum and Action Plan signed between UNDP and the State Agency of Energy Efficiency and Energy Saving of Ukraine

10.11.2015 – Project activity and results presented at the VIII International specialized exhibition "Energy. Renewable Energy - 2015" (Kyiv)

11.11.2015 – Developed draft legislation presented at VII International Investment Business Forum on Energy Efficiency and Renewable Energy (Kyiv)

**30.11.2015 – Commissioning of 3 biomass-fired boilers in Zhytomyr**

01.12.2015 – Project activity and results presented at the second Swedish-Ukrainian forum on energy efficiency and clean technologies (Zhytomyr)

03.12.2015 – Representative of the Project included in Scientific & Technology Section for Housing & Municipal Economy for Science & Technology Council under the Ministry of regional development, construction, housing & municipal economy of Ukraine

14.12.2015 – Memorandum signed between UNDP and Zakarpattia Oblast Council

15.12.2015 – Memorandum signed between UNDP and Ivano-Frankivsk Oblast State Administration

**01.02.2016 – State Registration of the Project** **at Ministry of Economic Development and Trade of Ukraine (**in line with the established procedure of state registration of international technical assistance projects) and **the State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE) has been defined as the project beneficiary** according to the Project Registration Card #3332-01 dated 01-02-2016

**05.02.2016 – 2nd Project board meeting**

**08.02.2016 – WEB-portal of the project launched**

10.02.2016 – Developed draft acts of legislation were presented at the scientific-practical seminar "Development potential of bioenergy in agriculture" at the National University of Life and Environmental Sciences of Ukraine (Kyiv)

17.02.2016 – Developed draft acts of legislation along with project activities and results were presented for the Ministry of Agrarian Policy and Food of Ukraine

18.02.2016 – Developed draft acts of legislation along with project activities and results were presented at the seminar-training "Bioenergy village – a way to sustainable and self-sufficient energy supply (Kyiv)

22.02.2016 – Documented best practices in the application of bioenergy technologies in the municipal sector in Ukraine were presented by the Project

22.02.2016 – Analytical report and recommendations for growing energy crops in Ukraine was presented by the Project

22.02.2016 – Analytical report "Legal framework for bioenergy technologies in the municipal sector" was presented by the Project

30.03.2016 – Draft law #4334 "On Amendments to the Law of Ukraine "On Heat Supply" to stimulate the production of heat energy from alternative energy sources" based on the project’s suggestions and provided draft legislation was registered in the Parliament of Ukraine

11.04.2016 – Developed draft acts of legislation were presented at the conference "Building the future: energy efficiency, passive, self-contained" (Kamenec-Podilskiy, Khmenitskiy region)

21.04.2016 – Developed draft acts of legislation were presented on the exhibition-forum "Independent power system in 2016" (Kyiv)

21.04.2016 – Project results were presented at UNDP Project Management Training (Poltava)

27.04.2016 – Project’s representatives were appointed to the Working Group under the SAEE on calculating the share of energy from renewable sources in gross final energy consumption and preparing a report on the Directive 2009/28/EC implementation

04.05.2016 – Draft law #4580 "On Amendments to the Law of Ukraine "On Heat Supply "on the transfer of authority to set tariffs and licensing the production of energy from alternative energy sources" based on the project’s suggestions and provided draft legislation was registered in the Parliament of Ukraine

04.05.2016 – Draft law #4581 "On Amendments to Article 19 of the Law of Ukraine "On Heat Supply "on signing long-term contracts for the supply of heat energy" based on the project’s suggestions and provided draft legislation was registered in the Parliament of Ukraine

11.05.2016 – Draft law #4643 "On Amendments to some legislative acts of Ukraine concerning improvement of relationships in the heating sector, including district heating and hot water supply services" based on the project’s suggestions and provided draft legislation was registered in the Parliament of Ukraine

16.05.2016 – Energy willow nursery (mother plantation) established in Poltava region (over 5 hectares)

18.05.2016 – Energy willow nursery (mother plantation) established in Zakarpattia region (over 5 hectares)

19.05.2016 – Energy willow nursery (mother plantation) established in Ivano-Frankivsk region (over 5 hectares)

24.05.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Poltava region was presented at Poltava Oblast State Administration

24.05.2016 – Students from Poltava State Agrarian Academy were trained in energy willow cultivation

01.06.2016 – Draft law 4581 was considered by the Parliament of Ukraine & forwarded to the Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety for improvement

03.06.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Ivano-Frankivsk region was presented at Ivano-Frankivsk Oblast State Administration

15.06.2016 – Fuel pellets quality testing results presented by the Project

17.06.2016 – Developed draft acts of legislation were presented at the round table "Development and implementation of programs according to the principles of sustainable development" (Korsun-Shevchenkivskiy, Cherkassy region)

17.06.2016 – Project results presented for the Ministry of Agrarian Policy and Food of Ukraine

21.06.2016 – Modern bioenergy technologies studied by representatives from regional authorities on international conference POWER-GEN Europe and Renewable Energy World Europe (Milan, Italy)

29.06.2016 – Project activities and results presented at the international seminar "Using the potential of biofuels in the municipal sector"

06.07.2016 – Developed draft acts of legislation were presented at VII Interuniversity Conference of Students and Young Scientists "Formation of public administration in Ukraine" (Dnepropetrovsk)

16.08.2016 – Developed draft acts of legislation and Project activities were presented on region seminar "Preparation and implementation of local communities for sustainable development" (Korsun-Shevchenkivskiy, Cherkassy region)

14.09.2016 – Developed draft acts of legislation were presented during the Finnish Energy Day (Kyiv)

22.09.2016 – Draft law 4334 was considered by the Parliament of Ukraine & passed in its first reading

29.09.2016 – Students from Uzhgorod National University were trained in energy willow cultivation

30.09.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Zakarpattia region was presented at Zakarpattia Oblast State Administration

**18.09.2016 – commissioning of 3 biomass-fired boilers in Kyiv**

20.10.2016 – Developed draft acts of legislation were presented at the investment forum of RES for sustainable development of the City as a driving force for sustainable development in Ukraine (Kyiv)

01.11.2016 – Project results were presented at VIII international investment forum "Energy Efficiency and Renewable Energy" (Kyiv)

08.11.2016 – Developed draft acts of legislation were presented at the International Congress "Institutional and technical aspects of reforming housing and communal services" under the International specialized exhibition COMMUNTECH (Kyiv)

18.11.2016 – A Comprehensive Study of Ukrainian biomass boilers market was presented by the Project

18.11.2016 – Detailed Bioenergy (solid biomass) Roadmap to support implementation of the National Renewable Energy Action Plan until 2020 was presented by the Project

18.11.2016 – A study "Complex analysis of the Ukrainian biomass pellets market” was presented by the Project

08.12.2016 – Municipal Biomass Guide with detailed step-by-step approach for implementing municipal biomass programs was presented by the Project

08.11.2016 – Developed draft acts of legislation were presented at the National forum "waste management in Ukraine: legislation, economy, technologies" (Kyiv)

06.12.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Volyn region was presented at Volyn Oblast State Administration

08.12.2016 – Analytical Report on tariff and price regulation for heat and hot water supply in the municipal sector in Ukraine was presented by the Project

09.12.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Zhytomyr region was presented at Zhytomyr Oblast State Administration

12.10.2016 – Methodology of economic and financial evaluation of municipal biomass projects was presented by the Project

13.12.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Dnipropetrovsk region was presented at Dnipropetrovsk Oblast State Administration

15.12.2016 – Developed draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Cherkasy region was presented at Cherkasy Oblast State Administration

**20.12.2016** – **EFO Agreement** for the Banking products for EE projects Externally Financed Output was signed **between the United Nations Development Programme and the International Bank for Reconstruction and Development** in December 2016 to engage IBRD/IFC for the FSM development and implementation.

23.12.2016 Regional Council’s MP inquiry was registered to Poltava Oblast Council about acceptance of the draft Regional program for the use of bioenergy technologies in heating and hot water supply sector of Poltava region

26.12.2016 – Developed draft law #5598 “On Energy Efficiency Fund” based on the project’s suggestions and provided draft legislation was registered in the Parliament of Ukraine

**Future milestones**

20.03.2017 – approval of MTR Report

24.03.2017 – 3rd Project Board Meeting

31.03.2017 – Signing agreement for Project Awareness Campaign development and organization

15.04.2017 – Opening and launching of 2 biomass-fired boilers in Cherkaske Village, Donetsk Oblast

30.06.2017 – Launching of the Financial Support Mechanism

18.09.2017 – Launching of All-Ukrainian Awareness Campaign to accelerate sustainable biomass utilization

01-02.11.2017 – Annual Biomass Conference

01.2018 – Terminal Evaluation

16.01.2018 – 4th Project Board Meeting

19.03.2018 – Final Conference to disseminate project experience, best practices and lessons learned

31.03.2018 – Project end date

## Main stakeholders: summary list

Due to the complex nature of the Project its activities cover different sectors of economy (energy, agriculture, Regional development); the Project is assisting/cooperating with various representatives of the Supplier and Beneficiary. The main Project stakeholders include:

* High level stakeholders:
  + State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE) who serve as the main partner for this Project
  + Ministry of Regional Development, Construction, Housing and Communal Services (MRDCHCS)
  + Ministry of Agrarian Policy and Food (MAPF) - is responsible for formulating and implementing the Government’s policy in the field of agriculture and food production. According to the ProDoc, MAPF, as the Government Agency directly responsible for agricultural biomass, was supposed to be entrusted with implementation of the Project. In doing so, it would host Biomass Support Unit (BSU), work very closely with MRDCHCS in the provision of heat and hot water services to the municipal sector. However, actual role of MAPF in the implementation of the Project is not as significant as initially planned
  + Verkhovna Rada of Ukraine – by approving proposed legislative changes aimed at the improvement of the legal and regulatory framework and thereby promoting penetration of bioenergy technologies to the market in a sustainable way
  + Regional (Oblast) State Administrations – responsible for approval and implementation Regional Development Plans elaborated by the Project
* Interagency Biomass Working Group established (08.12.2015) under the SAEE and composed of relevant State executive bodies
* International Bank for Reconstruction and Development (IBRD) / International Finance Corporation (IFC) / - based on the Agreement between the UNDP and IBRD, will provide TA to develop different financial mechanisms, with focus on filling the market gap of developing the commercial lending mechanisms to finance RES and EE projects
* JSC “Oschadbank”, other local banks ready to participate in the financing of bioenergy projects under the created Financial Support Mechanism (FSM)
* Municipalities interested in bioenergy technologies for municipal heating and hot water supply
* Private companies acting in the field of biomass energy – project owners/investors, project developers (engineering & consulting, construction, operation & maintenance, etc.), technology manufacturers, etc.
* Bioenergy Association of Ukraine, Ukrainian Pellet Union, other sectoral Non-governmental Organizations (NGOs) – potentially may play active role in achieving Outcome 1 (by proposing legal changes, bioenergy strategy priorities, research & development, etc.) and Outcome 4 (by participating in planning and implementation of awareness raising campaigns, disseminating experience, best practices and lessons learned of the Project, etc.)
* All-Ukrainian association of local self-governments "Association of Ukrainian Cities" – may initiate/develop bioenergy projects
* Owners of pilot/technical demonstration projects (installation of straw pellets fired boilers; establishment of willow plantations/nurseries) – primarily responsible for the post-implementation monitoring & evaluation

# Findings

## Project Strategy

The strategy of this Project is focused on creation of attractive and competitive business environment for extensive use of agricultural biomass potential of Ukraine for municipal heat and hot water supply; optimization and simplification of administrative procedures; capacity building of banks and implementation of pilot municipal projects. The strategy can be reviewed only in conjunction with the developments in the country and first of all, political changes occurred. Due to the weak institutional memory, which is common in countries with the relatively short history of independence and Ukraine among them, the political changes, even if they have a “natural” character, e.g. the Government is changed after the elections, have a strong impact on the sectoral strategies. The reason is that new decision makers replacing previous authorities may have other priorities and if the institutional memory is not strong, initiatives of previous Government might be not necessarily followed. The consistency in the economy development including renewable energy development might be more seriously affected in case of sharp political changes. This was a case in Ukraine where after the “[Euromaidan](https://en.wikipedia.org/wiki/Euromaidan) Revolution” in 2014 socio-economic and political transformation resulted in the national context changes. In order to avoid the country’s financial default, the Ministries including the Ministry of Agrarian Policy and Food (MAPF), the Implementing Partner (Executing Agency) for this project as per the Project Document, went through the restructuring and significant reductions in personnel. On the other hand, after signing [EU-Ukraine Association Agreement](http://eeas.europa.eu/delegations/ukraine/press_corner/all_news/news/2014/2014_06_27_01_en.htm) (27 June 2014) the development of RES and improving of EE as main priorities of the energy policy were re-confirmed and consequently harmonization of the national legislation with the EU one became of critical importance.

Due to the abovementioned for the Project planning and effective implementation the new challenges have been arisen, which couldn’t be exist during the Project preparatory phase.

### Project Design

Problem addressed – need in development and commercialization of bioenergy technologies in the municipal sector is convincingly justified: energy security/energy independence (diversification of supply, less dependence on natural gas imports), available resources of biomass (woody, agricultural, energy crops), certain capacity of pellets production, etc.), compliant with the energy policy priorities.

Underlying assumptions

Assumptions are outlined in the Project Results Framework and built around the continued commitment of all Project partners including Government agencies, municipalities, investors and developers, equipment suppliers, etc. However, the basis for such assumption is not always evidenced. In particular:

* **Political will to accelerate energy production from biomass – is overestimated**. Indeed, the importance of the use of biomass in for energy production is presented in almost every strategic document developed in the country last decade. However, the analysis of the status of their implementation clearly shows that most of them failed to achieve the targets due to the several reasons and among them: unrealistic (optimistic) assessment of the economically feasible potential of biomass, lack of capacity to develop bankable biomass energy projects, lack of financing sources, absence of supportive legal and regulatory framework, etc. As for the political will, considering that there have been no substantial policy efforts in recent decades to promote the use of bioenergy in Ukraine, it can be concluded that support to the wide spread of the biomass technologies is declared but not actually provided. Due to the overestimation of the political will, activities under the Component 1 aimed at achieving Outcome 1A, are being implemented with a sufficient delay and requires more resources (due to the more intensive policy advice), which in turn will seriously affect the implementation of other components as well.
* **Application of the programmatic approach** – it is assumed (implicitly) in the Project design that the strategies and action plans, listed in the ProDoc, are well developed with high probability of their effective implementation. Therefore the strategic/programmatic approach is applied only for municipal biomass programmes, which are to be developed under the Component 2 (determined output – Output 2.1). In reality, neither Energy Strategy of Ukraine for the period until 2030 (adopted 2006, updated in 2012-2013) nor the National Renewable Energy Action Plan until 2020 (2014) are expected to be successfully implemented. As stated by the representatives of the key stakeholders of the Project, the Strategy until 2030 is of poor quality and thus doesn’t work; instead the new National Energy Strategy until 2035 has to be developed. Due to the above mentioned, in addition to the development of the Regional/municipal biomass programmes, the Projects will be additionally dealing (or this MTR report recommends to deal with) with aforementioned strategies by providing the Technical Assistance (need in such TA was several times underlined during the meetings of the Consultant with stakeholders). But since such TA was not considered in the Project design, re-allocation of funds for the remaining duration, establishing of close cooperation with other parties involved, would be necessary.
* **Feasibility of municipal biomass energy projects.**  Feasibility (technical, financial, environmental) of the use of biomass for municipal heating and hot water services is a key for the development of these technologies. The title of this Project contains two objectives: development and commercialization, i.e. the Project should be interested for the Government authorities and private investors as well. That means the authorities based on the economic analysis should support the proposed by the Project strategy by providing appropriate and adequate conditions for the private investors, who in turn on the basis of the financial/investment analysis make investment decisions. It is Consultant’s opinion that the Project document a priory considers biomass energy projects for municipal heat- and hot water supply as feasible. In fact without deep analysis, only making reference to one local author, the ProDoc concludes that *“if locally-available baled straw, for example, had been used instead of imported natural gas, the per unit cost of thermal energy delivered to the housing-communal sector, including mechanised harvesting, baling/briquetting and transportation, would have been ... at 17% of the present cost to industries and at 62% of the present cost even in the highly subsidised housing-communal sector. This clearly shows that utilisation of agricultural biomass for municipal heat and hot water services, is a financially viable proposition that does not necessitate any need for a subsidy from the Government”*. Stemming from this assumption the design does not consider any changes in the legislation aimed at introduction of financial incentives for investors in this sector.

Country ownershipisaddressed appropriately; the Project concept in line with the national sector development priorities and plans.

Gender issues **-** No significant gender concerns were considered; the Project is aimed at achieving gender equality through the empowerment of women to fully participate in all project activities.

Areas of concern

In principle, Project strategy provides a route towards expected/intended results. However, this route is not the most effective one.Out of the reasons mentioned above the following could be considered in the design:

* The Project design was quite poor as it is not based on comprehensive barrier analysis; it is only stated in the ProDoc document that “The objective is to assist the Government of Ukraine in addressing the various barriers” without their description and ways of removal. Other similar projects (e.g. UNDP/GEF projects “Energy and Biomass (Phase 2)” in Moldova, “Biomass Production and Utilization in Georgia”) are designed in the following way: first the barriers are identified and corresponding removal measures planned if the barriers are likely to remain in the baseline scenario; barrier removal will be resulted in the project outcomes and outputs; for each output the corresponding activities are planned. If the design of the project is based on this scheme, then Results Framework is more logical and consistent.
* The monitoring of the pilot projects after the commissioning is not adequately considered; it is only stated that Project outputs should include “BSU’s capacity to monitor and document project experience developed and strengthened”. However, this is not reflected in the Results Framework. Without proper monitoring in place comprehensive evaluation of the pilot projects, whether the energy outputs are in line of designed ones, what are the actual O&M costs, fuel costs, etc. would be not possible. Finally, without analysis of the materials of Monitoring, Evaluation, Reporting (and Verification and Certification when applied), outreach materials on best practices would be incomplete.
* The Project is designed in a way that only supply side is addressed. From one hand this is appropriate because biomass is used for generation and further supply of heat energy. However, without proper demand-side management, and first of all, energy efficiency measures in buildings (public, residential, of industrial facilities) the efficiency of a whole system, generation + supply + services (heating, hot water), will be questionable. The Project has addressed the problem by including this issue in the selection criteria. However, the Project is designed not only for pilot projects but whole sector and thus should elaborate some provisions on this matter (e.g. state of EE be included in the selection criteria).
* ***Working with other Stakeholders***. In 2008 with the support of the European Commission the Covenant of Mayors (CoM) has been launched, which brings together local and regional authorities voluntarily committed to implementing EU climate and energy objectives. Many Ukrainian cities became the signatories of CoM and have to develop and implement Sustainable Energy Action Plans (SEAPs). Since the municipal heating and hot water supply services are one of the largest GHG emitters, naturally, their reduction should be an essential part of SEAPs. Thus, CoM signatories will have one more incentive to adopt bioenergy technologies this could be addressed in the Project design.

### Results Framework

As mentioned in the Chapter 4.1.1 the Project has been designed without detailed barrier analysis. Therefore, the Results Framework, at the certain level, is lacking internal logic and consistency. For instance:

* Outcome 1.A. should be achieved in 1.5 years (15 months for the Project to complete activities and another 3 months for Approval by the Government). Proposed activities include finalization of the streamlined and market-oriented policy and legal/regulatory framework, determining the roles and responsibilities of MAPF and MRDCHCS and development of criteria for selection of municipal projects, which would be supported by the Project. Other similar UNDP/GEF projects, as a rule, start with updating the analysis of the barriers (in this case of institutional, legal and regulatory, financial) and making recommendations for their removal, which may include simplification of procedures and principles for the licensing, technical regulation to enable connection to the heat network (when necessary), tariff methodology, etc. These activities are missing in the Results Framework but the Project Team had to and it actually has had undertaken the above steps. Another issue is that the approval process of the legal changes takes long in Ukraine because the intensive reforming is taking place practically in all sectors and there is a long line of Laws (new ones and amendments to the existing ones) waiting for their approval by the Verkhovna Rada of Ukraine (about 5,000 at present) and this will seriously affect the timing. Considering the aforementioned, it is Consultant’s opinion that this target is not adequately Time-bound.
* Output 2.1 considers creation of capacity within the BSU for development of municipal biomass programmes and this is appropriate. However, such programmes cannot be developed without active cooperation of municipalities and thus some capacity building activities should be considered for them as well, especially if they are CoM signatories and have to develop/update SEAPs.
* Output 2.2 among others considers “Appropriate incentives to attract project developers”. It is unclear what kind of incentives are meant; this wouldn’t be incentives provided by the legal/regulatory framework (in this case this should be included in Outcome 1, which is towards the policy, but not Outcome 2 – capacity development).
* One of the decisive factors for Financial Institutions (FI) to participate in the Financial Support Mechanism (FSM) is the scale of project pipeline and corresponding credit amounts. Unlikely FIs will participate if only projects in selected (by Project) municipalities will apply for financing; other potential loan applicants also might be identified and in this Project assistance might be required. Therefore, additional output on should be considered on marketing to originate projects, potential FSM’s clients.
* As correctly stated in the ProDoc, the country’s vast agricultural lands and favourable climate make it also ideal for production of energy crops and these can be utilised for energy purposes. Utilisation of energy crops is considered for achieving of Output 3.5 as the identified target by the end of the Project envisages completion of 18 municipal biomass heating and hot water systems (list of 18 potential biomass projects is presented in the ProDoc), 6 out of which were designed for combustion of energy willow. Since there was no practice in Ukraine of cultivation of the willow for energy purposes, the Project has actually implemented 3 pilots on establishing energy willow nurseries. This also should be considered as a separate output in the Results Framework.

The Consultant has also assessed whether the project is on track to reduce **direct and indirect GHG emissions** as defined in the ProDoc. For this purpose the Consultant compared the data in the midterm Tracking Tool (TT) with data provided in the GEF TT submitted to the GEF for CEO endorsement. From one hand there are fewer pilot projects implemented to date (12 projects involving installation of biomass-fired boilers vs. 18 in the ProDoc) and thus less direct GHG reduction. On the other hand, after establishing of the FSM, which will be different from the original design (details are presented in the below chapters), more projects would be assisted by the Project because the actual FSM will be used not only by the selected (by the Project) municipalities but with others as well and thus the direct GHG emissions for the remaining Project period may exceed the planned ones. Therefore, significant difference in achieving the global environmental benefits with regard GHG direct emissions is not expected. The situation is different towards the indirect GHG reductions. The existing policy, institutional and capacity barriers are not adequately addressed in the ProDoc and thus the planned activities might appear insufficient for their removal. In this case application of the 80% of causality factor (in pre-Project GEF TT), which corresponds to the Level 4 of the GEF impact and causality: The GEF contribution is dominant, but some of this reduction can be attributed to the baseline[[6]](#footnote-6), might be inappropriate; instead Level 3 = The GEF contribution is substantial, but modest indirect emission reductions can be attributed to the baseline, GEF causality = 60%, should be applied, which will lead to the lower GHG indirect reductions.

The abovementioned issues were discussed during the MTR mission with the Project Manager and Chief Technical Advisor and parties agreed on necessity of revision of the Results Framework. Just after the MTR mission the Project Team has developed a draft of the revision (Annex 9), which also was reviewed by the Consultant and found generally in line with the above bullet points. At the same time, as it is clear from the revised Results Framework, majority of the revised targets can be achieved only after 4 years from the start, i.e. beyond the Project timeframe.

## Progress towards Results

The overall objective of the Project is to significantly increase the use of biomass energy for municipal heating and hot water services in Ukraine in order to reduce direct GHG emissions by 63,577 tons of CO2 over the 4-year life of the project and, subsequently, 19,143 tons of CO2 during each year of the remaining 16-year life of the boiler equipment. By achieving this objective a number of outcomes and outputs also will be achieved. Since the GHG reduced is the main target to achieve the objective, the methodology for its estimation has to be carefully reviewed.

GHG reduction is determined as a difference between the baseline emissions, i.e., GHG emissions that would have existed in the absence of the project, and the emissions associated with the project (project emissions). There are many methodologies (methodological tools) for calculation of GHG emission reductions, developed by different organizations and sponsors, including the Kyoto Protocol, the GEF, IFIs etc. They may differ in the technique for the calculation for the different types of technologies, in this case bioenergy technologies, but they are all based on the determination of emissions in the baseline and project scenarios.

The GHG reduction in this Project is generated due to the replacement of the natural gas by the biomass, the combustion of which in the biomass-fired boilers is carbon neutral, i.e. zero GHG emissions. Besides, the efficiencies of the baseline boiler (gas-fired) and biomass-fired boiler, have to be taken into account. At the same time, there might be another source of emission reduction as well, which is considered neither in pre-implementation nor mid-term GEF TT. In particular, if the straw is used as a biomass either (i) for pellet production and further combustion in biomass-fired boilers (this is a case for small-scale projects with a boiler capacity up to 500 kWth); or (ii) for direct combustion in the boilers (for capacities above 500 kWth). In both cases methane (CH4) emissions may occur if straw is not combusted in the baseline scenario. In the baseline straw might be either left in the field, or stored without any use. The "Guidelines for National Greenhouse Gas Inventories", IPCC, 2006, which are used in Ukraine for the GHG inventories Methane emissions, provide CH4 calculation procedure for both cases. Considering that Global Warming Potential (GWP) of methane is 21-times higher than of CO2, taking methane baseline emissions into account will increase the summary reductions (due to the replacement of natural gas + avoidance of methane emissions).

The estimation of methane emission will not only increase the value of the GHG reduced by the Project but it will have significant side effect as well. The applied methodology for calculations will consider comprehensive monitoring of quantity of straw used for energy purposes, that in turn, will improve the accuracy of Ukraine’s GHG Inventory (up to date no difference was made in the inventories whether the straw is used as a fodder, for energy purposes, left in the fields or stored and decayed).

### Progress towards outcomes analysis

This analysis is conducted based on the review of indicators in the Results Framework against progress made towards the end-of-project targets, i.e. Project’s achievement against objective and outcomes; for each outcome all outputs are analysed.

For some critical outputs indicator-level progress reported in the second PIR (2016) also was reviewed; deviations between the MTR and PIR assessments are noted and explained.

According to Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects the assessment of progress should be based on data provided in the PIRs, supplemented by data provided in the GEF TTs, the findings of the MTR mission, and interviews with the project stakeholders. In addition to this the Consultant used also Project Progress Reports (2015, 2016), materials of Inception Workshop and minutes of Project Board meetings.

For the analysis original Results Framework was used. As mentioned above some outputs are lacking internal logic and consistency and therefore, couldn’t be achieved under the existing circumstances. Some indicators also are outdated. For instance, indicators and targets related to the BSU are impossible to be achieved because the BSU will not be established (see details below). Achievement of some other targets would need revision of outputs, indicators, targets.

Details of Project progress towards results are presented in Table 1.

### Remaining barriers to achieving the project objective

In spite the significant progress observed in the Project implementation there are still existing barriers hampering the achievement of the planned outcomes and outputs. In particular:

* **Legal/regulatory barrier** – the proposed legal/regulatory changes of are not approved by the Verkhovna Rada of Ukraine yet. The barrier will remain even after its approval until the mechanisms for the implementation of those legal changes are in place and operational. This may require another legal provisions (e.g. secondary legislation)
* **Institutional and capacity barriers** – Biomass Support Unit is not established under any ministry and thus there is not a formal Governmental entity/unit responsible for support to the development of the municipal biomass. Some duties of BSU are/will be delegated to the Working Group for Renewable Energy (WGRE) (is established under the State Agency on Energy Efficiency and Energy Saving) and Interagency Biomass Working Group (not established yet). However, these groups cannot facilitate the issuance of construction licenses and permits to developers of municipal biomass projects; they cannot monitor and document project experience/best practices/lessons learned; develop and implement an outreach programme of promotional activities. The Project will continue seeking adequate solutions of these issues.
* **Financial barrier –** this barrier is not removed until Financial Support Mechanism is established and operational and proven to work (i.e. loans are being disbursed through Oschadbank). Theoretically it may remain even after the FSM started disbursement of loans to the municipal bioenergy projects if for whatever reasons such projects appear financially non-feasible (In this case the Project would further work on improvement of legal/regulatory framework). Or in opposite, the resources of Oshchsdbamk may be not enough for all the loan applicants (this is unlikely to happen because in this case IFC can fill the gap).

Table 1: Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator Assessment Key | Green= Achieved | Yellow= On target to be achieved | Red= Not on target to be achieved |

| **Project Strategy** | **Indicator** | **Base-line Level** | **Level in 1st PIR (self- reported)** | **Midterm Target** | **End-of-project Target** | **Midterm Level & Assess­ment** | **Achieve­ment Rating** | **Justification for Rating** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **OBJECTIVE:**  To significantly increase the use of biomass energy as a fuel source for heating and hot water services in the municipal sector in Ukraine by at least 20% over the baseline scenario in order to reduce direct GHG by 63,577 tons of CO2 over the 4-year life of the project and, subsequently, 19,143 tons of CO2 during each year of the remaining 16-year life of the boiler equipment. When one looks at the 20 year lifetime of the boilers earmarked for development during the project period, the boilers will have generated 1,618,834 MWhTH, with a combined amount of CO2 reduced of 361,000 tons, equivalent to $13 of GEF funds per tCO2 | Municipalities/ Private Sector have operatio­na­lised direct investment in municipal biomass projects for heat and hot water supply | GHG in the municipal heating sector schedu­led to increase from 434.4 million tCO2 (2005) to 740.7 milli­on tCO2 by 2030. The pre­­­sent contri­bution of biomass towards heat/ hot water supply is esti­mated at 75 GWhTH.  Negligible invest­ments taking place in munici­pal biomass for heat and hot water supply | No GHG reduction because no pilot project implemented | ProDoc:  Year 1: 0; Year 2: 27,188 MWh heat energy generated; Emission Factor: 0.223 t CO2 /MWh.  Thus **Mid-term target** ( 2 years after the Project start):  **27,188 MWh**  **6,063 t CO2** | **285 GWhTH** in terms of heat and hot water generated (as a result of the 18 municipal biomass systems brought on-line) by project completion.  Direct reduction of **63,577 tons of CO2** over the 4-year FSP project life cycle |  | **MS** | 12 biomass-fired boilers with 220 kW thermal capacities are already installed and started operations. GHG reduction equals to 2,889 t CO2. The total capacity of 12 boilers equals to 2.64 MW while the End-of-project target was established for 26.1 MW. That means, tenfold higher capacity has to be installed additionally.  Municipalities and partly private sector are ready to invest in municipal biomass projects for heat and hot water supply but actually are unable under the current legal/regulatory framework (details see below in this table). Progress achieved so far and future prospects towards the Outcome 1 makes it pos­sible to suppose that there is a likelihood of removal of legal/regulatory barriers.  The FSM will be created likely within the 6-monts period. Financing of bioenergy projects is expecting since 2018 latest. Oschadbank, participating in the FSM, doesn’t have limitations in funds. Therefore, as many projects prove their bankability (will be checked either by Oschadbank or independent auditor – procedures will be agreed) as many will get financed.  The abovementioned means that the objective is expected to achieve most of its end-of-project targets. The funda­men­tal question is whether this will happen within the Project timeframe or beyond it. Likely, after the Project end date, which is March 31, 2018? By that date, probably, some municipal projects would be financed under the FSM support (mostly those ones, which are already in the Oschadbank’s portfolio – e.g. Oschadbank is working closely with the municipality of Boryspil on this matter) and just few will be commissioned. Therefore, both targets (energy output, GHG reduction) will be achieved with significant shortcomings.  In the last PIR (2016) the Project Manager rated the Project Progress toward Develop­ment Objective as “Satisfactory”, stating that the noticeable progress has been made under all four project components, especially com­­ponents 1 and 4; less dynamic progress under components 2 and 3 achieved due to the external factors (BSU, FSM not established), beyond the project control. This is true but it does not mean that targets will be achieved with only minor shortcomings. In other words the rating depends on whether the objective is expected to achieve or not regardless the reason of non-achievement (under- or beyond the control of the Project). |
| **OUTCOME 1:**  A: Streamlined and com­prehensive market-orien­ted policy and legal/regu­latory framework to pro­mote municipal biomass for heat and hot water services  B: Municipal Targets for Biomass Energy for heating are agreed and established | Policy and le­gal/ regulatory framework finalized, adopted and available for consultation by potential investors.  Confirmation that municipal targets have been established | None available | Policy and legal/regulatory frame­work review has started. Key partner Oblasts and municipali­ties selected and appro­ved | To be comple­ted within 15 months of recruitment of project mana­ger and approved by Government 1.5 years after start of project | The same |  | **MS** | In Ukrainian reality in the municipal heating and hot water supply systems biomass energy projects are being developed either by municipalities (or municipal utilities) or by private companies supplying energy to the municipal consumers (selling the energy to the private non-residential consumers is not a common practice in Ukraine; as a rule private non-residential consumers of the heat and hot water are installing boilers themselves). For the municipalities critical legal/regulatory issue is getting and paying back loans while for private developers – licensing and signing of long-term contracts at the reasonable tariff guarantying the full cost recovery (existing “Green Tariff scheme” is lacking funds thus isn’t considered as a long-term source for this purpose).  The Project has conducted the review of the existing legal/regulatory framework related to the development of the biomass energy technologies aimed at: (i) identification of gaps; (ii) study of coherence with the EU Directives. As a result, number of legal changes/amendments prepared and among them: Secured allocations or partial reimbursement of loans taken for purchase of energy generating or energy efficient equipment; Introduction of long-term contracts for RES-based heat supply to public institutions; Fixing energy tariffs under Energy Performance Contracts for the heat generated by RES; Tax relief for RE equipment manufacturers and users; etc. Proposed changes were discussed with all the key stakeholders (Ministry of Regional Development, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Saving of Ukraine, Ministry of Agrarian Policy and Food of Ukraine, Ministry of Ecology and Natural Resources of Ukraine). In march-May 2016 four Draft Laws (#4334 to stimulate the production of heat energy from alternative energy sources; #4580 on the transfer of authority to set tariffs and licensing; #4581 on signing long-term contracts for the supply of heat energy; and #4643 on improvement of relationships in the heating sector) were registered in the Parliament of Ukraine. In total about 5,000 Draft Laws are registered at present in the Parliament, which makes long the approval process. That’s why none of those 4 Draft Laws are approved yet. Nevertheless, based on the interviews of key stakeholders, the Consultant has got an understanding that the Drafts response to the existing demand, are well-prepared and there is a high chance for their approval. However, due to this long procedure, not all the recommendations were taken into account while preparing Drafts (in Ukraine Drafts are prepared and submitted either by the Government or by group of Deputies), they’ve been either consolidated or taken out.  After the establishing FSM another set of legal amendments may be required and if so, unlikely they will be approved within the Project timeframe (due to the long approval process)  Based on the abovementioned, it can be concluded that unlikely the streamlined and com­prehensive market-orien­ted policy and legal/regu­latory framework will be created before the end of Project and thus investors/project developers would not fully benefit it (short time period from the approval to the Project end; not all recommendations considered)  As for the municipal targets, the Project has deve­loped 7 Regional Programmes for Biomass utiliza­tion in the Municipal Sector that covers more than 8,000 municipalities (more than 11 mln. people). Programmes are developed, but not adopted by the Oblast Councils yet (in progress)  Therefore, the Outcome is rated as “Moderately Satisfactory”.  In PIR-2016 the Project Manager rated this Outcome as “Satisfactory”, probably because the PIR was prepared couple months after the registration the Draft Laws for approval and expectation was to get them approved soon. |
| **Output 1A.1:** Report streamlining a market-oriented policy and legal/ regulatory framework to regulate municipal biomass for heat and hot water services | Report confir­ming that poli­cy and frame­work Arrange­­ments are adopted and in place | Potentially over­lapping responsi­bi­lities of various Government institutions make the decision process quite cumbersome | Policy and legal/regulatory frame­work review has started. Key partner Oblasts and municipali­ties selected and appro­ved | To be comple­ted within 15 months of recruitment of project mana­ger and approved by Government 1.5 years after start of project | The same |  | **MS** | This is the main output of Outcome 1; it has practically the same targets (except the establishing of municipal targets) and therefore, justification of rating is also similar and thus not duplicated here |
| **Output 1A.2:** Strategy docu­ment aimed at sharpening the focus of the respective roles and responsibilities of Ministry of Agrarian Policy and Food (MAPF) and Ministry for Regional Development, Construction, Housing and Communal Services (MRDCHCS) | Document out­lining individu­al roles and responsibilities formulated, adopted and procedures in place | Not available | Roles and responsibili­ties determined | To be comple­ted within 15 months of recruitment of project mana­ger and approved by Government 1.5 years after start of project | The same |  | **S** | The individual roles and responsibilities of MAPF and MRDCHCS in the Project implementation have been rather not identified but MAPF itself stepped out of the Project main Partner role. The same is regarding the development of policy and legal/ regulatory framework to regulate municipal biomass sector. After the political and institutional transformations in Ukraine in 2014, the State Agency for Energy Efficiency and Energy Savings under the MRDCHCS was authorized for biomass policy issues. Corresponding strategy document hasn’t been prepared. Nevertheless, since the only actor has left (SAEE) there is no urgent need in it. Instead, the roles and responsibilities will be clearly determined in strategy documents, the development of which is recommended by this MTR (Recommendation 2) |
| **Output 1A.3:** Criteria and procedures for the introduc­tion of a transparent process in the selection/award of municipal biomass projects for development | Guidelines for the selection of projects available and put into practice | Not available | Works started | To be comple­ted within 15 months of recruitment of project mana­ger and approved by Government 1.5 years after start of project | The same |  | **S** | The Project has implemented all planned activities at full scale. The “Analytical Report of possible criteria and procedures that can be applied to a transparent process of selecting biomass projects in the municipal for heating and hot water sectors” has been prepared by the Project experts |
| **Output 1B.1:** National Targets for Biomass Energy in heating until 2020 are agreed and adopted | Confirmation that national targets for biomass until 2020 have been established | None available | Works started | To be comple­ted within 18 months of project start | The same |  | **MS** | Municipal Biomass Programmes have been deve­loped for 7 pilot oblasts (Poltava, Ivano-Frankivsk, Zakarpattia, Volyn’, Dnipropetrovsk, Zhytomyr and Cherkassy), which in principle can be upgraded to the National programme, which among others will include quantitative targets. However, this can be done at the advanced level only by applying integrated resource planning principles and computerized Tools (see Recommendation 2 for more details) |
| **Output 1B.2:** Municipal Targets for Biomass Energy in heating (for at least 5 Oblasts including Ivano-Frankivsk and Cherkasy) are agreed and adopted. | Confirmation that municipal targets for agricultural and wood biomass have been agreed and adopted | None available | Works started | Municipal tar­gets for at least 5 Oblasts inclu­ding Ivano-Frankivsk and Cherkasy) completed within 12 months of  project start |  |  | **S** | Municipal level targets have been developed as a part of the Regional Biomass Programmes for 7 pilot oblasts (Poltava, Ivano-Frankivsk, Zakarpattia, Volyn’, Dnipropetrovsk, Zhytomyr and Cherkassy) |
| **OUTCOME 2:**  Capacity availab­le within MAPF to sup­port development and implemen­tation of a municipal biomass programme through the establishment of a Biomass Support Unit | Number of staff who parti­­cipated in and successful­ly completed capacity deve­lopment prog­ramme, inclu­ding training on the revised and updated Municipal Biomass Guide | None available | Technical knowledge and aware­ness of bio­mass utiliza­tion practices enhanced among 15 government officials, policy makers and energy professionals through participation in a study tour to Sweden | Ten staff trained within 15 months of recruitment of project manager | The same |  | **MS** | After the political and institutional transformations in Ukraine in 2014-2015 the duties responsibilities of MAPF towards the BSU have been delegated to the MRDCHCS. Later the Project has been regis­tered at the Ministry of Economic Development and Trade of Ukraine (in line with the established procedure of state registration of international technical assistance projects) and SAEE has been identified as the project beneficiary (Project Registration Card #3332-01 dated 01.02.2016). Therefore, the BSU couldn’t be established within the MAPF. It couldn’t be established in SAEE as well because of its lower status. The Project has conduc­ted several formal and working meetings and discussions with the key stakeholders but estab­lishment of the BSU under the initial concept couldn’t be followed; what is even more important, unlikely the BSU will be established at all.  The Project has developed alternative institutional settings, namely the establishing an Interagency Biomass Working Group (IBWG). Discussions with the MRDCHCS, SAEE, the Ministry of Ecology and Natural Resources and MAPF have held and BWG likely will be established under the Cabinet of Ministers. Before that the Project is providing support to the Renewable Energy Working Group established in 2015 under SAEE.  After the adapting the capacity building plans (by taking into account issues related to establishment of BSU/IBWG) the Project started their implementation even before the establishing of IBWG. In particular:   * Study tour to Sweden was organized in 2015 for high-level authorities (Central and local government officials, members of the Parliament) and bioenergy professionals - best practices of biomass utilization in the municipal services were have been. One of the important output: decision made on piloting energy willow nurseries * A large number of capacity building materials have been prepared and delivered to SAEE, key ministries, Regional and Municipal authorities, responsible for the development and implemen­tation of a municipal biomass programmes (details see below)   Formally, this activity should be rated as “Moderately Unsatisfactory” because main target, establishment of BSU will be not achieved. However, considering that alternative solution is proposed, capacity building activities are being implemented, that when completed, in principle, can ensure the achievement of those goals set for BSU.  Due to the above mentioned steps undertaken by the Project, in PIR-2016 the Project Manager rated this Outcome 2 as “Satisfactory”. The Consultant disagrees on this because IBWG will be unable to facilitate the issuance of construction licenses and permits to developers of municipal biomass proj­ects; they cannot monitor and document project experience/best practices/lessons learned; develop and implement an outreach programme of promo­tional activities. Therefore, the Consultant rates the Outcome 2 as **“Moderately Satisfactory”**. |
| **Output 2.1:** A sustainable Biomass Support Unit (BSU) established within MAPF to support the municipal bio­mass programmme during the project lifetime and beyond. | Biomass Support Unit, including website, in place and operational | None available | Working on alternative solutions | To be fully operational within 15 months of recruitment of project manager | The same |  | **MU** | BSU will unlikely be established at all. Instead the IBWG will be established. This is also not an easy task; IBWG hasn’t been established even after a year of development of Draft Regulations for Interagency Biomass Support Working Group. The scope and corresponding impact of IBWG on development and implementation of biomass municipal programmes will be modest compared with BSU |
| **Output 2.2:** Suitable metho­do­logy for the economic/ financial evaluation of municipal biomass systems.  Appropriate incentives to attract project developers | Methodology applied by BSU for municipal biomass projects  Incentives ope­rationalized | Not available | Works stated | To be comple­ted within 15 months of recruitment of project mana­ger and applied by Government thereafter | The same |  | **S** | Methodology for economic and financial evaluation of municipal projects on biomass utilization for budgetary support has been developed;  Model business plans for biomass utilization for heat and hot water supply; Municipal Biomass Guide also have been developed  It is unclear what kind of incentives is meant. If this refers to the financial incentives, they should be offered by the legal/regulatory framework, i.e. under the Component 1 and be a part of Outcome 1. |
| **Output 2.3:** Technology trans­fer opportunities and delivery models, including develop­ment of boiler construction and installation standards, formulated and operationa­lised | Reports confir­ming that tech­nology models and boiler stan­dards have been develop­ed and are be­ing implemen­ted | None | No achievement | Completed within 24 months of project start | The same |  | **MS** | The Project has implemented a number of pilot projects; all of them involved installation of biomass-fired boilers produced by the domestic manufacturers. The boilers were certified; the contracts included 1-year warranty; no significant technical issues have been observed during the after-commissioning monitoring. Thus there is no urgent need in technology transfer by meaning imports and adjusting of bioenergy technologies to the local conditions.  Boiler standards haven’t been established. Howe­ver, the Project has carried out “Comprehensive analysis of market of boilers running on biomass in Ukraine” as well as “Comprehensive analysis of the Ukrainian market of biomass pellets” (The results of both studies have been published). Neverthe­less, the standards are still to be developed. Unlikely boiler construction and installation stan­dards will be operationa­lised before the Project end and thus end-of-project targets will be achieved with shortcomings. At the moment, it is difficult to assess whether the short­comings will be minor or significant. Therefore, for the conserva­tive­ness purposes this output is rated as “Moderately Satisfactory” |
| **Output 2.4:** One-stop shop within BSU to provide infor­ma­tion and guidelines on construction licenses and permits to developers | One-stop shop is operational.  Information brochure and website are available. | Under the busi­ness-as-usual scenario, the average time to secure all requi­red construction licenses and per­mits can take up to 12 months | No achievement | All construction licenses and pe­r­mits are issued within 6 months | All construction licenses and pe­r­mits are issued within 6 months following com­ple­tion of feasi­bility studies and selection of promoters |  | **MU** | One-stop-shop is established neither within BSU nor any other institution. Moreover, BSU unlikely will be established at all.  Required construction licenses and pe­r­mits have been issued for the pilot project – this makes Project rating MU but not Unsatisfactory. |
| **Output 2.5:**  Capacity of BSU developed to monitor and document project experience | Capacity deve­lopment mate­rial prepared, including les­sons learned | No capacity development programme |  |  | 10 BSU staff trained by the end of  project |  | **MS** | The end-of-project target is irrelevant. Capacity cannot be measured only by the number of trainees. Besides, BSU, if established, unlikely would have large number of staff (out of which 10 should be trained) |
| **OUTCOME 3:**  Investment promotion in municipal use of biomass through establishment/ strengthening of Financial Support Mechanism | Funding availa­ble from Derzh­ZemBank,  Inclu­ding funds under FSM, to support Prepa­ration of feasi­bility studies, business plans and investment | Not available | Implementation of 2 muni­ci­pal biomass projects is completed, 5 projects launched | Construction of 12 municipal bio­mass projects completed (ProDoc, p.26: 3 boilers in the first year; 9 in the second) | Construction of at least 18 municipal bio­mass projects completed by the end of the project |  | **MS** | In ProDoc FSM should be established within the state-owned DerzhZem bank. However, it has been liquidated in September 2014 by the Cabinet of Ministers’ decision. IFC was identified as a new potential partner in this; the state-owned bank “Oschadbank” was selected as a partner for implementing a FSM. It was decided to engage IFC via the International Bank for Reconstruction and Development (IBRD); The Agreement between the UNDP and IBRD was signed in December 2016. The next steps would be the launching of FSM and call for loan applications. The partner banks (at present only Oschadbank) will be the provider of the finan­cial product to the municipalities, ESCOs or other private investors. The financing of projects under FSM will involve also TA but not grants to cover investment costs (ProDoc consider capital subsidy will up to 25% of the total cost). Grants (if any) will be used as a blending mechanism to lower the market interest rates. From one hand the proposed approach will slightly reduce the number of loan applications, but on the other hand, in long-term perspective, will contribute to the sustainability of investments in municipal biomass projects.  In total 12 pilot projects involving installation of biomass-fired boilers were implemented by the Project (key data are presented in Tab. 2). In cooperated with the GEF Small Grants Programme, 3 pilot projects on energy willow nurseries (over 15 ha of privately-owned lands in total) are under the implementation. These pilot projects (of boilers and nurseries) were included in the UNECE publication.[[7]](#footnote-7)  Projects involving installation of boilers were co-financed by the Project and project owners.  It must be noted that the identified baseline level in the Results framework is rather underestimated. Actually, About 30 thousand biomass boiler units were imported to Ukraine during 2012-2015 with a total capacity of 1,134 MW[[8]](#footnote-8). Even though these boilers are of small capacity (up to 100 kW), mostly for household use, unlikely they were financed by the equity only, probably debts also were involved, i.e. some kind of FSM exists outside the Project boundary.  Based on the above mentioned it can be concluded that the Outcome is on target to be achieved; however, until the FSM is operational and project pipelines are financed, there are risks that the FSM might be not as effective as expected. The reasons for that may include: lack of capacity of investors to prepare loan capacity; lack of capacity of Oschad bank to assess the loan applications; investors may not pass the technical/financial due diligence, etc. These issues cannot be resolved without TA, additional to that one, which is considered under the UNDP-IBRD/IFC Agreement. If the additional TA is not provided, end-of-project targets will be likely achieved but with significant shortcomings |
| **Output 3.1:** Financial Sup­port Mechanism (FSM) esta­b­lished within DerzhZem Bank of MAPF and continues to operate beyond project lifetime | Financial Sup­port Mecha­nism (FSM) established and operati­onalized and is supporting projects to be implemented | None available | Negotiations started with IFC to involve it as the FSM development and imple­mentation partner | FSM is operati­onal 2 years after project start  As a mid-term target, the pro­ject will look into an even­tual need for further subsidy and subsequ­ent support to the Govern­ment for conti­nu­ing with the subsidy sche­me | The same |  | **MS** | The Project made a lot of efforts to identify new partner (UNDP cannot directly be involved in any credit schemes) and re-design the original FSM. The International expert has carried out the research and developed a Road Map for the FSM. Then the FSM issues were discussed at a number of mee­tings with IFC and reached the agreement, which has been formali­zed in December 2016 by the sig­ning of a Agree­ment by UNDP to Reimburse the IBRD for the Ban­king products for EE projects Externally Financed Output (the EFO).  Oschadbank has been selected as a partner bank for FSM. Justification of the rating (MS) is similar to that one for Outcome 3 |
| **Output 3.2:** Capacity deve­loped within FSM to appraise projects in municipal use of biomass for lending | Number of fi­nancial institu­tion’s staff successfully trained | None available | FSM is not established | Five to six finan­cial insti­tution staff trained within 15 months of recru­­itment of project manager | The same |  | **MU** | FSM is not established yet and thus no capacity development activity is implemented so far.  Capacity needs are determined by the IFC; Oschad bank is working with the municipalities (e.g. of Boryspil) to prepare project portfolio, i.e. certain capacity is being built – this makes Project rating Moderately Unsatisfactory but not Unsatisfactory. |
| **Output 3.3:** Feasibility studies and business plans for muni­cipal biomass heat and hot water systems | Reports available | Non-existent | Feasibility studies for 10 pilot project in the selec­ted munici­palities completed | Completed within 18 months of project start | The same |  | **S** | After having the Partnership Memoranda signed, the project has started implementation of 10 demonstration project in the selected municipalities. For all projects the feasibility studies have been prepared. |
| **Output 3.4:** Reports on financial closure with project developers and completion reports for one project each in Cherkassy and Ivano-Fran­kivsk Oblasts and 4 additional projects in other Oblasts | Signed financial closure documents | Not available | Implementation of 10 pilot project in the selec­ted mu­nici­palities started |  | Completed within 30 months of pro­ject start |  | **S** | The target has been achieved. However, it must be noted that the pilot project haven’t been financed under the FSM. The co-financing was provided by Projects (for purchase of boilers - 60-80% of the total costs) and project owners (to cover costs of feasibility studies, permits, arrangement of the project sites, etc.). |
| **Output 3.5:** Report on comple­tion of a total of 18 municipal biomass heat and hot water systems by project end | Completion  reports | Almost none being built | Implementation of 10 pilot project in the selec­ted mu­nici­palities started, no completion report available |  | 18 municipal biomass hea­ting and hot water systems com­ple­ted by pro­ject end which will have gene­rated 1,618,834 MWhTH ther­mal energy with a combined amo­unt of CO2 reduced of 361,000 tons over the 20 year lifetime of the boilers |  | **S** | Pilot projects involving installation of 12 biomass boilers in total, have been successfully implemented and reported; Due to the bureaucratic issues the launching of 2 boilers installed in Donbass is delaying for 4 months  3 Energy willow projects are under the implementation and when completed, reports will be available;  The reporting will be a mandatory requirement for the projects, which will be implemented under the FSM |
| **OUTCOME 4:**  Outreach programme and dissemination of project experience/ best practices/ lessons learned for replica­tion throughout the country | Outreach pro­gramme for­mu­lated  Project expe­rience compi­led, ana­lysed and dissemina­ted | Lack of sufficient information to pursue program­mme | Development of the Natio­nal plan for implementing outreach/ promotional activities to support bio­mass projects targeting do­mestic (and international) investors has started |  | Increased awa­reness among stakeholders in place to promo­te and develop the market for municipal bio­mass |  | **S** | Plan for implementing outreach/ promotional activities to support bio­mass projects, is prepared and being implemented, primarily focused on trainings and informational campaign. In particular:   * Municipal Biomass for implementing municipal biomass programmes has been developed based on a step-by-step approach ; * Report and Recommendations on energy crops cultivation prepared; * For the implementation of the outreach programme a ToR has been developed and Request for Proposal (RFP) announced: Development of Biomass training/information toolkit (including manuals, materials and presentations) and delivery of trainings; * Brochures, road maps, analysis of bioenergy technologies utilization in the municipal sector in Ukraine was published:   + Roadmap for development of the solid bio-fuel market of Ukraine   + Use of Biomass in the Municipal sector   + Comprehensive analysis of the Ukrainian market of biomass pellets   + Comprehensive analysis of market of boilers running on biomass in Ukraine   Project WEB <http://bioenergy.in.ua> is operational |
| **Output 4.1:** National plan to imple­ment outreach/promo­tional activities to support biomass projects targeting domestic (and international) investors | National Plan for suppo­r­ting national bio­mass projects available and operationalised | No such plan available | Development of the plan started | Completed within 18 months of project initiation | The same |  | **S** | Plan for implementing outreach/ promotional activities to support bio­mass projects, is finalized. As a result the informational campaign was launched (under the procurement procedures at present) |
| **Output 4.2:** Comprehensive and reliable data compiled and available for future initiatives | Project expe­rience, lessons learned and best practices compiled | None available | Data compilation started | The compre­hensive and reliable data on the situation before the completion of the projects financed under FSM, compiled | Completed within 3 months of project end |  | **S** | Data are compiled; comprehensive analysis pre­pared and published. However, these publications are not available for all domestic and international investors due to the limited number copies. This problem will be resolved after the signing the Long-term Agreement (LTA) by the UNDP Ukraine. Before that the publications are disseminated at the various sectoral events with total number of attendees (specialist, municipalities etc.) more than 3000 people. Electronic versions of those materials are placed at the Project WEB as well as of Bioener­gy Association WEB [http://uabio.org/activity/ uabio-analytics](http://uabio.org/activity/%20uabio-analytics); In addition, availability of publicati­ons in English would be useful for foreign investors |
| **Output 4.3:** Published Muni­cipal Biomass Guide detailing a step-by-step approach for implementing municipal biomass programmes | Increased ca­pa­city of muni­ci­palities to im­plement muni­cipal biomass programmes | None available | Works started | Completed within 12 months of project initiation | The same |  | **S** | Practical guide biomass in the municipal sector published and made available for the municipalities;  After the development of training/information toolkit and delivery of trainings capacities of municipalities will be increased |
| **Output 4.4:** Published mate­rials (inclu­ding video) on pro­ject experience/best practi­ces and lessons learned | Project experi­ence and best practices com­piled published and availa­­ble on website  Short video available  Annual Summit of the Regions Biomass Conference | Lack of informati­on on best prac­tices and lessons learned  None available  None is being held | No experi­ence/ best practi­ces and lessons learned gained | The mate­rials on pro­ject ex­perience/best practi­ces and lessons learned gained before the completion of the projects financed under FSM, compiled | Completed within 3 months of project end  Completed within 3 months of project end  Annual Summit of the Regions Biomass Confe­rence organised in different re­gions each year |  | **S** | Pro­ject experience/best practi­ces and lessons learned are being compiled and included in the publications, Project WEB, publications of other UN entities (UNECE), etc. |

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator Assessment Key | Green= Achieved | Yellow= On target to be achieved | Red= Not on target to be achieved |

Table 2: Key data on the pilot projects

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Pilot/Grant Title** | **Receiving Entity/Beneficiary** | **Provider of Co-financing** | **Costs, USD** | | | **Capacity, MW** | **Annual GHG reduction, t CO2** |  |
| **by the Project** | **Co-financing** | |
| **Parallel** | **In kind** |
| 1 | Biomass boiler installation | Uman Secondary School #9 | Uman City Council | 107,500 | 44,257 |  | 0.2 | 240.76 | 6,019 |
| 2 | Biomass boiler installation | Uman Specialized School #12 | Uman City Council | 107,500 | 47,939 |  | 0.2 | 240.76 | 6,019 |
| 3 | Biomass boiler installation | Uman Kindergarten #21 | Uman City Council | 107,500 | 40,127 |  | 0.2 | 240.76 | 6,019 |
| 4 | Biomass boiler installation | Zhytomyr Secondary School #1 | Zhytomyr City Council | 215,000 | 135,603 |  | 0.4 | 481.52 | 12,038 |
| 5 | Biomass boiler installation | Zhytomyr Pre-School Educational Facility #10 | Zhytomyr City Council | 107,500 | 53,672 |  | 0.2 | 240.76 | 6,019 |
| 6 | Biomass boiler installation | Zhytomyr National Agroecology Univercity | Zhytomyr National Agroecology Univercity | 107,500 | 15,424 |  | 0.2 | 240.76 | 6,019 |
| 7 | Biomass boiler installation | Kyiv National Ecology and Nature Youth Centre | Kyiv National Ecology and Nature Youth Centre | 322,500 | 104,000 |  | 0.6 | 722.28 | 18,057 |
| 8 | Biomass Boilers Installation | Pilot Objects in Cherkasske Village, Donetsk Oblast | Cherkasske Village Council | 215,000 | Construction works are still in process | | 0.4 | 481.52 | 12,038 |
| 9 | Grant: Independent Testing of Biomass Pellets Quality Available on Ukrainian Market | State Agency on Energy Efficien­cy and Energy Savings of Ukraine | n/a | 129,800 |  |  |  |  |  |
| 10 | Grant: Establishing energy willow nurseries to provide Poltava oblast with planting material | Poltava Oblast | n/a | 48,455 | 28,404 | 21,543 |  |  |  |
| 11 | Grant: Establishing energy willow nurseries to provide Zakarpattia oblast with planting material | Zakarpattia Oblast | n/a | 47,751 | 31,590 | 17,937 |  |  |  |
| 12 | Grant: Establishing energy willow nurseries to provide Ivano-Frankivsk oblast with planting material | Ivano-Frankivsk Oblast | n/a | 48,029 | 32,204 | 22,920 |  |  |  |
|  |  |  |  | 775 |  |  |  |  |  |
|  | **TOTAL** |  |  | **1,535,382** | **595,620** |  | **2.4** | **2,889.11** | **72,228** |

## Project Implementation and Adaptive Management

**Overall rating for Project Implementation and Adaptive Management is “Satisfactory”, i.e. Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action**. The details for that are provided in below chapters.

### Management Arrangements

As mentioned in Chapter 3.4 above the Project is being implemented under the UNDP Direct Implementation Modality (DIM) and thus the UNDP Ukraine is responsible for the overall management of the project. Full-time Project Manager (PM) is responsible for the day-to-day management and decision-making for the Project, work planning, reporting, supervision of the work of the Project experts and other Project staff. Full-time Project Assistant (PA) is supporting the PM on administrative and financial issues. The Project Board, chaired by the by the UNDP Country Director, is responsible for making management recommendations for a Project when guidance is required by the Project Manager. The Project Board has had two meetings in June 2015 and February 2016; the third meeting is scheduled for March 2017.

Considering the Ukrainian realities in 2013-2014, the decision on DIM was appropriate. However, at present the level of political stability is increased and thus higher ownership from the Government can be ensured. For this purpose the role of the Project Board might be more important. The changes in the Board composition were appropriate and they facilitated to the improvement of its efficiency and impact. Since the Board is chaired by the Deputy Head of SAEE, it would be more chances to ensure synergy between the Project and SAEE in policy/strategy development. Based on the analysis of the Minutes of the Board Meetings as well as interviews with the Board members the Consultant got an understanding that the Board is not formally approving the agenda items pre-prepared by the PM but is actively discussing them, offering new initiatives and making agreement on the consensus basis, which is appropriate. However, the impact on overall Project implementation would be stronger if the Board would meet more frequently (annually at present).

Consequences of the political and institutional transformations in Ukraine occurred in 2014 have affected the Project stronger than anticipated (in ProDoc). During the implementation the Project was facing a number of unexpected challenges and problems, which caused the delays in achievement of targets. To address these challenges adequately, in some cases the PM might be working under pressure to meet the milestones. Ideally, the Project management could include a Deputy Project Manager (DPM) from the early stages of the Project implementation. PM would be mostly focused on policy dialogue/advice, strategy issues, interactions with stakeholders, administrative and financial issues, while the focus of DPM would be on the technical aspects of the Project. It must be noted that it would be not difficult to avoid overlapping of the duties and responsibilities of DPM and CTA. However, at the current stage, there is no urgent need in the DPM.

Below the findings by components are presented. The findings are presented in a “questions and answers” format.

#### Component 1 - Market-oriented policy and legal/regulatory framework

Question[[9]](#footnote-9): How has the project contributed to improvement of the policy and legal/regulatory framework related to biomass energy in Ukraine?

Answer: Even the Project Results Framework had not clearly justified the rationale for the improvement of the policy and legal/regulatory framework (very poor barrier analysis is presented in the ProDoc), the Project applied comprehensive analysis of the framework, identified gaps and worked out recommendations. Even though not all the recommendations made by the Project, have been adequately reflected in the Draft Laws (4 in total) registered in the Verkhovna Rada, policy makers are aware on the background and the logic which made the basis for the recommendations. This was ensured by a large number of meetings and discussions at the working level, workshops and conferences, etc. It is worth to mention that the Project was trying not only to develop favourable legal/regulatory framework for the bioenergy development but also to make them compliant to the EU Directives.

The scope of activities under this component covered a variety of the issues starting from the budgeting of the municipalities, permits and licenses for municipal biomass project development and ending with tariff methodology for the thermal energy produced by using the biomass.

The activities initiated by the Project were supported by the other actors (e.g. Bioenergy association) and vice versa, the Project was supporting their initiatives in this field. The Project has got full support from the main Project Partner, State Agency on Energy Efficiency and Energy Saving.

In short, even the proposed by the Project legal/regulatory changes are not approved yet by the Verkhovna Rada, the Process has greatly contributed to getting the process accelerated, consolidation of efforts of the interested parties and in the end to the increase of likelihood of creation of the appropriate and adequate policy and legal/regulatory framework related to biomass energy in Ukraine.

Question: How has the project contributed to sharpening the focus of the respective roles and responsibilities of Ministry of Agrarian Policy and Food, Ministry for Regional Development, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Savings of Ukraine with regard to biomass energy?

Answer: Based on the interviews of the representatives of the MRDCHCS, SAEE, Ministry of Ecology and Natural Resources, other stakeholders, the Consultant has got a firm opinion that biomass energy might and should play a significant role in the overall energy balance and that it cannot be developed at that level within the existing legal/regulatory framework and without Research & Development, i.e. without determined targets and provided incentives. SAEE clearly understands its role not only in the development of biomass energy (as a driving force), but also in introducing integrated planning and thereby specify quantitative targets for different types of RES, introducing of workable financial incentives, etc. Another question is whether or not the SAEE has enough capacity for that, likely not enough.

MRDCHCS and the Project team could play more effective role in lobbying the approval of Drafts of Laws. Moreover, one of the registered Drafts was submitted by the People’s Deputies but not the Government.

Question: How has the project contributed towards the establishment of criteria and procedures for the introduction of a transparent process in the selection/award of municipal biomass projects?

Answer: The Project has applied 2-step approach for establishment of such criteria. At first the theoretical basis has been created (Analytical report on possible criteria and procedures that can be applied to a transparent project selection process for the use of biomass in the municipal heating and hot water supply services) and then the criteria themselves elaborated. The Project also developed a Draft of Order of the Minister of RDCHCS on Regulation on the criteria and procedures for selecting projects using biomass in the production and supply of thermal energy for provision of central heating and hot water supply.

#### Component 2 - Capacity building within the Ministry of agrarian policy and food of Ukraine (MAPF) including the establishment of a Biomass Support Unit (BSU)

Question: Assess the adaptive management that been carried out on the establishing a Biomass Working Group.

Answer: As several times mentioned in this MTR report, due to the objective reasons, Biomass Support Unit couldn’t be established. The crucial role of the BSU was well-understood by the Project management who tried to find alternative solution. Despite the fact that the biomass utilization in the municipal sector is within the authority of MRDCHCS and biomass policy - of SAEE, the Project proposed the establishment of an Interagency Biomass Working Group (IBWG) under the possible leadership of MRDCHCS; Draft Regulations for IBWG cooperation, including explanatory note, also has been developed. Giving higher status to IBWG (interagency vs. within the ministry) is appropriate. However, the efforts of the Project in this direction haven’t been reflected in the establishing of IBWG, it is still not established and considering that a little bit more than 1 year is left before the Project official end date, it can be assumed that the effectiveness (i.e. actual promoting the bioenergy development) of the IBWG even if established soon, would be insignificant because the activities under Component 1 are almost finalized (just approval of registered Laws is left); under Component 2: methodology for the economic/financial analysis is developed, Regional biomass programmes are developed, etc. At the same time, it is the Consultant’s belief that IBWG will be unable to facilitate the issuance of construction licenses and permits to developers of municipal biomass projects as effectively as BSU; it cannot monitor and document project experience/best practices/lessons learned; develop and implement an outreach programme of promotional activities, etc. Therefore, the adaptive management applied with regard substitution of BSU was not always adequate.

Question: What progress has been made on establishing a Biomass Support Unit (BSU) within the Governmental Institutions and what is the likelihood of this unit being sustainable beyond the lifetime of the project?

Answer: No progress at all because the Project correctly understood from the beginning that BSU couldn’t be established as it was proposed in the ProDoc. Instead the establishment of IBWG has been proposed. However, when it became obvious that IBWG couldn’t establish within the short timeframe, the Project started using newly established, within SAEE, the Working Group for Renewable Energy (WGRE) as a substitute of IBWG. However, the status of this Group is lower compared with IBWG and its positive impact unlikely will be significant, first of all, due to the absence of enforcement mechanisms – to ensure that the institutions, other than SAEE, fulfil their duties and responsibilities prescribed by the resolutions of WGRE.

There is rather unlikely that IBWG will sustainable beyond the Project end date, because for 1 year (until March 31, 2018) IBWG unlikely will obtain status of the crucial body for biomass energy development as well as necessary capacity for that. But the situation would be different if the Project gets the extension of its duration.

Question: How has the project contributed towards development of a sustainable methodology for the economic/financial evaluation of municipal biomass systems?

Answer: The Project has prepared Analytical Report: Methodology for the economic and financial evaluation of municipal biomass projects. Draft of the Resolution of the Minister of RDCHCS On approval of the Methodology of economic and financial assessment of municipal biomass projects to budget support, also was prepared.

Question: How has the capacity of the BSU been built and strengthened and what is planned in this regard for the future? What specifically should the project do in order to strengthen the capacity of the BSU?

Answer: Since the BSU is not established, its capacity building activities weren’t planned. The duties and responsibilities of IBWG unlikely will included Research & Development, comprehensive Monitoring & Evaluation of bioenergy projects/programmes (it can rather review and approve of M & E reports), i.e. the fields, where the capacity building is mostly required. Therefore, as recommended below (Chapter 5.2, recommendations 2-4), TA would be better to provide to the particular institutions in implementation of particular activities.

#### Component 3 - Promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions

Question: Assess the adaptive management that has been carried out in the design and implementation of the financial support mechanism from what was envisaged in the UNDP project document to what is actually being implemented under the project

Answer: Only properly designed FSM could be actually implemented under the current reality. In general, original design of the FSM was appropriate with minor exceptions. The design considered USD 3 million for the investment support to at least 10 investment projects. In principle grant component may be considered in FSM but as a rule, in a form of TA but not direct subsidies. However, the main problem was not in the Project design but in the liquidation of DerzhZem bank. To address this issue the Project has undertaken adaptive management. The Project has hired an International consultant on FSM who identified IFC as a new potential partner in FSM. Since the IFC usually is involved in such financing schemes through the local banks, the state-owned bank “Oschadbank” was selected as a partner for implementing a FSM. Another problem has arisen due to the legal requirements; to resolve it the IFC has been engaged via the International Bank for Reconstruction and Development (IBRD). The long negotiations have been finalized in December 2016 by signing an Agreement between the UNDP and IBRD. The design and operation modalities of the FSM will be specified in the nearest future but unlikely they would be significantly differ from the originally define ones (main difference probably will be the absence of direct subsidy). In spite of long process of establishing of FSM (still not completed), the Project is very close to achieve the target, to have the FSM operational. Hence the applied adaptive management can be assessed as appropriate and effective.

Question: Assess the design of the financial support mechanism, as it has been carried out, with regards to whether or not the proposed approach is likely to encourage and appropriately incentivize additional investment in biomass energy in the municipal sector in Ukraine

Answer: There is likelihood that the FSM will be workable even under the interest rates, which will be offered (slightly below the market rates) and which will likely lead to the long payback period because the main financial barrier is no or limited access to financing but not the financial viability of investments. The reasons for that are that: (i) for two years since the Project start, a number of bioenergy pilot projects have been implemented that demonstrated feasibility (at least technical feasibility and much lower fuel costs) of investments; (ii) newly designed FSM will involve TA component; (iii) loan conditions will be slightly but still better than market ones; (iv) Oschadbank already started working with the municipalities in order to develop project portfolio; and (v) all the parties, including municipalities and private developers/ investors, believe in the financial viability of the investments in this sector, of course, after the legal/regulatory framework is changed as proposed by the Project.

Question: Undertake (as part of the review on financial support mechanism) a brief review of other financial support mechanisms (FSMs) for renewable energy in Ukraine (e.g. UKEEP, USELF, etc.) and determine how the proposed financial support mechanism, being developed under this project, either duplicates or is complementary to other ongoing existing initiatives to support renewable energy in Ukraine

Answer: There are a number of FSMs existing in Ukraine with similar objective, to development of RES by co-financing of the projects. However, bioenergy projects in municipal heating and hot water services are not always meeting either the eligibility criteria or financing conditions.

The objective of the Ukraine Sustainable Energy Lending Facility (USELF), launched by the EBRD, is similar to this FSM: to promote sustainable energy projects by providing financing as well as TA to the investors and local authorities. However, the eligibility criteria (Substitution of electricity from conventional energy sources) and financing conditions (Expected loan volume of EUR 1.5-15 million makes) makes financing of bioenergy projects in municipal heating and hot water services rather not possible through the USELF.

Another credit facility developed by the EBRD (with support of Swedish International Development Agency (SIDA), the European Union and Austrian Federal Ministry of Finance), targeting at financing of energy efficiency (EE) or renewable energy (RE) projects, is Ukraine Energy Efficiency Programme (UKEEP). Most of the bioenergy projects in municipal heating and hot water services cannot be financed through the UKEEP because only bioenergy produced for own use is considered within the project assessment and thus municipalities, private investors producing bioenergy for commercial purposes are not eligible for financing.

One more facility established by the EBRD, Ukraine Sustainable Energy Financing Facility (USEFF), is already completed.

Initiated by the European Investment Bank (EIB) and German development Bank (KfW), Green for Growth Fund, Southeast Europe (GGF) is the specialized fund to advance EE and RE in Southeast Europe. GGF provides refinancing to Financial Institutions to enhance their participation in the EE and RE sectors; GGF involves TA Facility. However, minimum credit volume (be in a range of EUR 10-15 million), makes it not attractive for investors of municipal bioenergy projects.

German Climate and Development Society (DEG) provides grants (up to 50% of costs; up to EUR 200,000) – Climate Partnership with the Private Sector. This is exactly what would be very attractive for the bioenergy projects. However, the eligibility criteria, beneficiary to be a German or European private company in cooperation with Ukrainian partners, dramatically decreases the number of eligible projects.

Requirement of loan applicant be a Danish company, willing to participate in Ukraine, also establishes limitation to benefit from the Investment Fund for Developing Countries / Danish Climate Investment Fund (IFU/KIF).

Question: What is the progress of the project in having 18 municipal biomass heating and hot water systems supported

Answer: 18 projects, identified in the ProDoc as potential loan applicants, have different thermal capacities and are designed for different types of biomass. The lowest capacity of straw-fired systems is 500 kW. Actually FSM hasn’t been established yet and thus those 18 projects couldn’t be financed through it. On the other hand there was a high demand on best practices / success stories in order to keep the interest of all parties involved in the utilization of biomass energy for municipal heating and hot water supply purposes. Therefore, the Project has decided to implement a limited number of pilot projects in different Oblasts of Ukraine and spend part of USD 3 million planned for the investment support of projects financed through the FSM. In order to implement sufficient number of pilot projects at the reasonable costs and thereby leave sufficient resources out of those USD 3 million, the implementation of small-scale projects of the same type was decided. The pilot implementations clearly demonstrated the advantages of bioenergy technologies and led to the sharp increase of the willingness of the municipalities, where the pilot projects have been implemented, in scaling up.

As for those 18 projects, if they still not implemented, after updating of feasibility studies, when the FSM is established, they can apply for the financing.

Question: Assess the likely effectiveness of the planned training and capacity building activities that are taking place/planned to take place and assess their likely effectiveness

Answer: Capacity building activities under Component 3 will be implemented in two different ways: (i) under the FSM to build the capacity of the Partner Bank(s) and also provide TA to the loan applicants; and (ii) through the planned “Development of Biomass training/ information toolkit (including manuals, materials and presentations) and delivery of trainings” (evaluation of RFP is ongoing). The ToR of RFP among others includes preparation of a Handbook on biomass utilization in the municipal sector for different target groups; preparation of a Training manual for different target groups; delivery of 72 oblast- and 266 rayon-level trainings. Tentative duration of works under this RFP is estimated as 65 weeks. The scope and duration of the trainings allow to assume that all the interested parties will be covered by the training programme and all the relevant aspect will be deeply addressed.

Question: Assess the likelihood of the financial support mechanism (FSM) being sustainable beyond the lifetime of the project

Answer: If the FSM is implemented as agreed with IBRD/IFC it is high probability that it will remain sustainable beyond the Project lifetime. The reasons for that are as follows: (i) high interest of potential investors; (ii) ongoing process of improvement of legal/regulatory framework; available TA – by FSM, by the Project itself; (iii) in the future: corrective actions (if needed) implemented based on the results of monitoring & evaluation of first projects financed through the FSM; results of M & E are disseminated to the parties involved

***Component 4 - Outreach programme and dissemination of project experience/best practices***

Question: Assess the progress towards preparing and finalizing a national Plan to implement outreach/promotional activities for supporting national biomass projects

Answer: The National plan to implement outreach/promotional activities, has been finalized in early 2016; its implementation started in 2016.

Question: Assess the progress towards preparing a Municipal Biomass Guide?

Answer: Municipal Biomass Guide detailing a step-by-step approach for implementing municipal biomass programmes was developed in 2016. The status of biomass utilization and legal/regulatory framework; available programme documents describing opportunities for the biomass utilization in the municipal heat and hot water supply sector; analysis of land-use issues that typically arise in the process of bioenergy facilities construction, are presented in the Guide. It also covers feasibility analysis requirements, business plan methodology, design, construction and operation requirements for bioenergy facilities, etc.

Question: What other activities has the project carried out related to marketing, awareness raising, and dissemination of information related to the use of biomass energy at the municipal level. How successful have these initiatives been?

Answer: The Project has prepared two publications on Ukrainian biomass boilers market and Ukrainian biomass pellets market; brochure on bioenergy technologies utilization in the municipal sector in Ukraine. The publications are very informative and thus useful for municipal authorities, private investors in the fields of municipal heating and hot water supply. Some international organisations asked the Project for translation into English.

Question: Assess any other activities or outputs carried out by the project that were not directly listed under component 1, 2, 3, or 4 and assess their relevance and effectiveness in terms of supporting the overall goals of the project

Answer: The Project has planned and implemented pilot projects aimed at introducing of energy crop practices, which in turn will contribute to the large scale deployment of biomass for energy and heating. For this purpose the opportunities for energy crops cultivation were identified by oblasts. Considering the climate conditions Swedish energy willow has identified as the initial focus. The Project assisted environmental NGOs to be awarded grants of the GEF Small Grants Programme (SGP) and energy crops cultivation have started in 3 Oblasts of Ukraine, where energy willow nurseries have been planted over a total of 15 ha of privately-owned lands.

Question: Evaluate the adaptive management that was carried out in order to implement these additional activities and outputs, the justification, and their relevance for the project implementation

Answer: Due to the application of adaptive management the energy willow nurseries are operating. The willows will be harvested every three-four years, during winter when the soil is frozen (in this case there would be no need in replanting).

### Work planning

Work planning is being carried out in a manner which is consistent with the ProDoc. In particular, it is conducted on the basis of annual work plans (AWPs), which are reviewed and approved by the Project Board. The detailed Annual Work Plan is formulated in the form of the Project Implementation Plan that incorporates the project Annual Procurement Plan. In general the planning is based on the Results-Based principles. However, the Project results framework is not always used as a management tool in work planning. Otherwise it would be revised since some indicators and most of the targets are outdated.

The delays in project start-up and implementation, as mentioned in previous chapters of this report, were caused by the objective reasons and mostly beyond the Project control.

### Finance and co-finance

Project progress is reflected in the rate of expenditure until December 31, 2016. The original budget considered USD 612,000 expenditures in 2014; USD 1,396,250 and USD 1,161,250 in 2016. The implementation of the Project has been started late 2014 and actual expenditures in 2014-2015 equaled USD 1,226,502 and in 2016 – USD 1,336,439.

Taking into account significant difference between the originally planned activities and actual realities, the budget has been several times revised. This indicates that the financial control was in place.

One of the most important issues the Project Team should to deal with is the implementation of activities under the Component 3. As mentioned above the implementation of pilot projects wasn’t considered in the ProDoc. In fact 18 projects should be implemented under the financing through the FSM and up to 25% grant. Actually the Project has implemented pilot projects, for which the Project provided grant financing for the purchase and installation of the biomass-fired boilers and the rest by the equity financing. One of the arguments for this decision might be the delivery rate, which would be very low without pilot project implementation. At the same time, there was a high risk of failure, i.e. costs might appear ineffective. Thanks to risk mitigation measures (Partnership Memoranda signed with Oblast State Administrations; selection of pilot projects through the transparent procedures; precise preparation of tender documents; proper monitoring of the implementation of contractual works), the pilot projects were implemented successfully.

Since the FSM is not established yet the closure of financing of the projects is forthcoming. Nevertheless, it is expected that co-financing will be the Partner Banks and investors (municipalities, private investors) will be committed and actually provided.

The project has got co-financing for establishing three energy willow nurseries in the Poltava, Zakarpattia and Ivano-Frankivsk Oblasts. UNDP-GEF Project Contribution: **total US$ 144,235** (including US$ 48,029 USD to NGO Shyrokyi step; US$ 48,455 USD to NGO Ecomerezha; US$ 47,751 to NGO Molochay); In-Cash Co-financing:  **total US$ 92,198** (US$ 32,204 NGO Shyrokyiv step project; US$ 28,404 NGO Ecomerezha project; US$ 31,590 NGO Molochay project); In-Kind Co-financing:  **total US$ 62,400** (US$ 22,920 NGO Shyrokyiv step project; US$ 21,543 NGO Ecomerezha project; US$ 17,937 NGO Molochay project).

### Project-level monitoring and evaluation systems

The project-level monitoring & evaluation is in place. The monitoring worked very well during the implementation of the pilot projects. Oversight activities have been carried out timely and efficiently. Project Manager, UNDP CO staff and management, UNDP-GEF RTA and key national partners participated in the project-related official and working meetings, site/monitoring visits, outreach activities. At the same time post-implementation monitoring and evaluation is to be implemented in the future. The Project has to develop monitoring methodology for pilot projects (biomass boilers, nurseries) and implement actual monitoring. The Project also has to develop monitoring data flow scheme and on the basis of the monitored data to perform comprehensive evaluation of the results. Hopefully, recommendations of this MTR will improve the level of the project-level monitoring & evaluation.

### Stakeholder engagement

From the very beginning of the Project, it has established close partnerships with all key stakeholders. The Project also managed to engage all relevant stakeholders and target groups to its implementation.

The project is closely cooperating with key state Governmental bodies authorized in RES development including biomass energy development in Ukraine (MRDCHCS, SAEE, MAPF, MENR), project recipients, private companies, numerous environmental NGOs and Associations, etc. In many cases the relationships were formalized by signing Partnership Memoranda (at the moment the Memoranda are signed with SAEE; municipalities of Uman, Zhytomyr; Oblast councils of Poltava, Ivano-Frankivsk, Zakarpattia; National Ecological-Naturalistic Center; Zhytomyr National Agro-Ecological University).

During the MTR interviews all stakeholders expressed the full support to the Project, its objectives and implementation strategy. This support is actually provided in forms of lobbying biomass energy development, presenting of their views at the events organized by the Project, discussing Project plans, etc. In short, they are playing an active role in project decision-making and further implementation.

### Reporting

The Project is preparing annual progress reports as well as PIRs. PIRs follow the standard UNDP/GEF format and provide general ratings and comments on Project progress from the Implementing Partner, the Project Manager UNDP Country Office Programme Officer, Project Implementing Partner and the Regional Technical Advisor. The reports are well-structured and provide information on planned and implemented activities. However, not all activities actually implemented are documented, especially the details on why and how the adaptive management has been applied (details of resolving the issues by applying adaptive management are presented neither in Progress Reports nor in PIRs). Such details are very important for better understanding of the Project implemented environment, reasons for delay and not implementation of the planned activities at the full-scale (e.g. why not all the recommended changes of legal/regulatory framework were included in the registered Drafts of Laws). The Project really did its best for its successful implementation and permanently was/is applying the adaptive management and thus learning its experience from the reports, documents, publications, woyld be very helpful for other similar projects.

### Communications

The internal communications between the Project and its stakeholders is regular through e-mail, phone, informal meetings, and at a higher level, the Project Board meetings, which are held annually. None of the key stakeholders is left out of communication. The stakeholders actively participate in the Project Board meetings, provide feedbacks to the legislative initiatives, municipal and regional biomass programmes; participate in the awareness raising activities, etc. The Consultant can confirm that all the stakeholders interviewed are aware not only on the objectives and strategy of the Project but also on current situation and future activities as well. One of the reasons for that might be that the Project has involved a large number of national and international experts representing different stakeholder groups.

To date the external communication was mostly ensured through the Project WEB, dissemination of prepared publications, case studies, organized Renewable Energy Days within VII International Investment Business Forum on EE and RE and International exhibition “EE & RE – 2015, etc.

#### Summary of the Project’s progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits

The Project has ambitious goal to commercialize the biomass-to-energy market for municipal heating and hot water supply. The Project has 4 main targets to be achieved: (i) to have corresponding legal/regulatory framework in place, which would allow biomass energy projects to be financially feasible and bankable; (ii) to have capacity and capability at the Regional, municipal and project levels to develop such projects; (iii) to have unlimited access to financing for the bankable projects; and (iv) to disseminate results for further scaling up. Nowadays the Project has reached its critical stage when practically all preparatory works are done. In particular, draft Laws aimed at improvement of legal/regulatory framework are registered in the Verkhovna Rada, existing Governmental bodies responsible for biomass energy development are identified and deeply involved through the participation either in the Project Board or IBWG (likely will be established in the nearest future), FSM is agreed with the IBRD/IFC, outreach programme is planned. The preparatory works created a basis for the sound move to the second stage, main outcomes of which are finalization of legal provisions and operationalization of the FSM. It must be noted that the Project has successfully implemented a number of pilot projects even before achieving of these outcomes and these projects demonstrated energy, environmental and financial benefits obtained. However, the sustainability of such projects, which in turn will accelerate the wide use of biomass energy technologies in the liberal market environment, would be possible only in case of achieving of all Outcomes of the Project.

The Project will contribute to both local and global environmental benefits. The experience of the pilot project demonstrated the little impact on the local environment; water and soil pollutions are negligible; air pollution is within the standards.

As for the global environment benefits the Project contributes to the reduction of GHG emissions due to the replacement of natural gas by the carbon-neutral biomass and avoidance of methane emissions when the biomass is left to decay in the baseline scenario. This contribution is modest for the individual projects but the implementation of the Regional biomass programmes, developed by the Project, potentially might be resulted in significant GHG reductions.

## Sustainability

In the ProDoc the risks have been identified and potential mitigation measures discussed. Since the ProDoc was not based on the comprehensive barrier analysis, not all the risks were identified and first of all, financial risks (bioenergy projects might be not feasible, instable national currency). In addition, political and institutional risks, related to the political changes in 2014, which couldn’t be predicted during the ProDoc preparation, became critical from the beginning. Therefore, the Project should pay a big attention to the risk management. This was not fully addressed/presented in the Annual Project Review/PIRs. On the other hand the information from the ATLAS Risk Management Module (Annex 10) shows that the political, institutional and some financial risks have been increased by the date of Project start and thus should be carefully monitored. It must be noted that due to the risk mitigation measures many risks have been decreased. However, the political risk: Lack of political will to adopt a necessary policy and legal/regulatory framework, remains critical. It must be also noted that the Project only monitored the already identified (in the ProDoc) risks but didn’t identify new ones. Theoretically this might be due to insufficient monitoring of risks.

**Overall rating for sustainability is Moderately Likely (ML), i.e. moderate risks, but expectations that at least some outcomes will be sustained due to the progress**

### Financial risks to sustainability

Question: What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project’s outcomes)?

Answer: Moderately unlikely. This risk is related to the overall investment climate in the country but not specifically to the municipal biomass energy projects

Question: What is the likelihood of the financial support mechanism being established by the project being sustainable (meaning that the FSM will continue to operate and function beyond the lifetime of the project)?

Answer: Likely. The FSM through its Partner Bank (Oschadbank) has planned allocation of necessary resources for financing of all bankable projects. Therefore, the main financial risk will be related to the bankability but not resource availability. Bankability of the municipal biomass energy projects depends on tariff on thermal energy, clear procedures for the project developers/investors in obtaining needed permits and licenses, soundness of technologies, financial status of loan applicants. The issues related to the tariff and procedures are to be resolved under the Component 1; FSM will finance only proven technologies; unfortunately the Project cannot seriously affect the status of loan applicants.

### Socio-economic to sustainability

Question: Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?

Answer: No social risks can be identified. But the political risks related to the ownership by the central, Regional and municipal Governments as well as the Parliament, is a critical factor to achieve the outcomes. The strong ownership has not been demonstrated so far; otherwise there would be more progress in improving legal/regulatory framework, establishing of one-stop-shop for biomass-to-energy promotion, etc.

Question: Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Answer: Certainly yes, stakeholders are interested in successful implementation of the Project because all they will benefit it. For instance, SAEE will improve its strategy development and implementation capacity; Ministry of Ecology will better plan and fulfil country’s GHG reduction targets; FIs will diversify their credit portfolio; project developers (engineering/ consulting) will have more job opportunities; residents will enjoy higher standard services, etc.

### Institutional framework and governance risks to sustainability

Question: Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place

Answer: The coordination of activities is very important and the establishing of the BSU was appropriate to ensure not only coordination of the different institutions but also to perform Research & Development, Monitoring & Evaluation, assistance in getting permits/licenses. Therefore, there is a risk that IBWG alone wouldn’t be able to adequately address these challenges, especially when IBWG is still to be established.

Question: To what extent has the project managed to improve or contribute to legal frameworks related to biomass energy in Ukraine?

Answer: The Project did its best. It carried out the analysis of the legal/regulatory framework; identified gaps and worked out recommendations for changes; the Project facilitated to the Government and People’s Deputies to elaborate the drafts of Laws based on the recommendations.

### Environmental risks to sustainability

Question: Are there any environmental risks that may jeopardize sustenance of project outcomes?

Answer: Not really; water and soil pollutions are negligible; air pollution is within the standards. As for the risk associated with a decrease in biomass resource due to climatic conditions, this is unlikely to happen within the project timeframe.

# Conclusions and Recommendations

## Conclusions

* The Project has made that all stakeholders understood the importance of the development of biomass energy technologies for the municipal heating and hot water services in achieving the National strategic goals and thereby the ownership by governments and other key stakeholders has been increased but not to the required level. Due to the insufficient ownership the improvement of legal/regulatory framework takes long (the Drafts of Laws on the matters related to the municipal biomass energy development were registered in March-May 2016 while the Project started in June 2014; At present about 5,000 Laws are registered in the Verkhovna Rada and waiting for approval), that in turn affects the timely achievement of the outcomes and outputs
* The Project has widely applied programmatic approach and widened the area of Project influence from municipal to the Regional levels. Instead of originally planned (in the ProDoc) municipal programmes for selected municipalities the Project has developed regional Biomass Programmes based on comprehensive market analysis (of biomass pellets, biomass boilers). To determine the quantitative targets for the Regional programmes, the Project applied economic analysis and on its basis developed also the tariff methodology. The Regional Biomass Programmes can serve as a basis for the development of the National Programme (highly recommended)
* IFIs, local banks are interested in financing municipal biomass energy projects and are ready to cooperate with the UNDP in establishing of FSM. However, the FSM cannot operate on a sustainable way if there is insufficient capacity in the country to develop bankable investment projects. The TA foreseen under the UNDP-IBRD/IFC Agreement unlikely will build this capacity and the Project has to further contribute activities in this direction.
* The Project has developed a plan of the intensive training, information toolkit (including manuals, materials and presentations); training programme includes delivery of 72 oblast- and 266 rayon-level trainings
* The Project has prepared a number of outreach material; some of them are published and found by stakeholders very useful
* The Project objective and outcomes are on target to be achieved. However, in order to achieve the end-of-project targets without significant shortcomings the efforts, in addition to the planned activities, shall be made. This efforts are formulated in the next Chapter, Recommendations.

## Recommendations

**Recommendation 1: Provide further assistance to the Financial Support Mechanism**

After signing of the Agreement between the UNDP IBRD/IFC the FSM is expected to be established within the 6-month period; IBRD/IFC will provide necessary TA for that. However, this TA will be mostly focused on institutional settings, procedures and modalities of the FSM but the need in TA will remain after the launching FSM as well. In particular, in order to make decision on financing of potential pilot projects, participating banks have to be able to implement technical and financial due-diligence (or at least review and accept the results of the third party due-diligence). Therefore, it is recommended to create within the participating banks capacity to appraise projects in municipal use of biomass for lending. This might be achieved through the capacity building activities focused on key technical elements of feasibility studies and business plans, results of Monitoring & Evaluation of already implemented projects, advanced international practices, etc.

For large projects loan financing might be implemented through more than one tranches. In this case the decision on the next tranche might be made based on the monitoring data, which have to provide evidence through the implementation monitoring that the implementation is compliant with the planned scope and time schedule. Thus the FSM has to verify the monitoring reports. In this the Project has to provide necessary TA to the Oschad bank and any other banks, which will participate in FSM. This TA should include assisting the banks with developing standard financial products, with biomass project origination and with due diligences and providing training and capacity building services for local bankers on how to assess adequately the risks from biomass projects.

The Project has an ambitious target to mobilize USD 30 million co-financing. About USD 340,000 co-financing has been already provided by the owners of pilot projects (except in Cherkassy, where the pilot projects are not finalized yet); USD 62,000 grants have been mobilized from the SGP for the energy willow nurseries. Considering that the Project has paid USD 107,500 for each of (12 in total) 220 kW biomass-fired boilers installed at the pilot project sites and other costs were on average was about USD 50,000, it comes to the USD 150,000 average investment costs to the projects of similar size. Then the number of projects to be financed under the FSM or otherwise would equal to 200. Therefore there will be a need in the originating the bioenergy projects. Unlikely this can be done by the FSM participants and strong assistance by the Project will be required in marketing to originate projects, potential FSM’s clients.

The Partner Bank(s) (only Oschad bank at present) also will need to develop standard products for the potential clients/borrowers. In most cases the clients will be the municipalities (preferable borrowers for Oschad bank) and private project developers. It would be very useful if the Project provides assistance in development of business model for both categories of clients. Considering that for the municipalities and private investors there might be different priorities. For the private investors the business model should include investment analysis to demonstrate positive cash flow (in this case future trends of tariff should be carefully studied); for the municipalities investment comparison analysis also might be applied.

The loan applicant projects will unlikely be financed if the demand-side management is not addressed appropriately and the assistance might be required.

The TA among others should include:

* Additional involvement of the Project International Lead Expert on FSM Development and Implementation
* Support from the international CTA in providing guidance and support to the FSM Development
* Hiring of the bioenergy project origination expert
* Hiring of the research expert (technologies, fuel types, evaluation of results, etc.)

**Recommendation 2**: **Provide Technical Assistance in the development of the National Programme / Action Plan on use of biomass energy in municipal services**

There is a negative trend in Ukraine regarding the implementation of National Strategies on energy in general and renewable energy in particular. For instance, neither Energy Strategy of Ukraine for the period until 2030 nor the National Renewable Energy Action Plan until 2020, are expected to achieve their goals. Main reason for that is the insufficient application of the integrated resource planning approach.

The Project outcomes and outputs among others include establishment of Municipal Targets for Biomass Energy in heating for at least 5 Oblasts (Output 1B.2) and building of capacity to sup­port development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit (Outcome 2). Actually BSU has not been and will not be established. The Project Team applied adaptive management and delegated part of BSU’s duties and responsibilities to the newly established Working Group for Renewable Energy (WGRE) was established under the State Agency on Energy Efficiency and Energy Saving of Ukraine (Interagency Biomass Working Group, proposed by the Project is not established yet). However, the WGRE cannot provide any capacity building for the development and implementation of a municipal biomass programme. Moreover, the overall objective of the Project is much broader than implementation of biomass programmes in selected municipalities of 5 Oblasts. Actually the Project has implemented a number of activities, which weren’t planned initially. In particular: Legal/regulatory framework – gap analysis, draft Laws; Model business plans for biomass utilization for 3 Oblasts; Regional biomass Programmes for 7 Oblasts; Roadmap for development of the solid bio-fuel market; comprehensive analysis of the Ukrainian market of biomass pellets; comprehensive analysis of market of biomass boilers. These activities are implemented at the advanced level; the enhancement of the coverage from municipal to the Regional and National levels is appropriate.

In-country capacity built and research & development implemented by the Project, makes it possible to provide very valuable assistance to the up-date of the above mentioned National Programmes and corresponding Action Plans. Biomass energy can be either integrated in the National RE Programme, or separate National Biomass Energy Programme can be developed. When the National Programme is developed, implementation of the already developed Regional programmes will be much easier and more effective at the same time.

One more benefit of the development of the National Programme/Action Plan on use of biomass energy in municipal services, will be the reconsideration of the establishment of NSU. Indeed, for the implementation of the National Programme/Action Plan the creation of flexible mechanisms including for financial incentives, simplification of procedures to implement one-stop-shop, further development of domestic or adaptation of imported technologies, would be necessary. These issues will be easiest to resolve by establishing the BSU.

The application of the integrated resource planning principles for the development of the National Programme(s) is also recommended. Ideally this planning should be based on the proven model (e.g. MARKAL, LEAP), which later will be used by the entity designated/responsible for the implementation of those programmes (e.g. this might be SAEE)

**Recommendation 3: Conduct Monitoring & Evaluation of the operation of pilot projects**

The use of bioenergy technologies in the municipal services is not a common practice in Ukraine and therefore, their feasibility is not actually proven (meaning that results of their long-term operation aren’t obtained and thus analyzed in details). Owners of all pilot projects visited during the mission provided evidences for the less operational and maintenance (O & M) costs including fuel costs and increased comfort (uninterrupted heat supply, regulated temperature, etc.). However, the financial feasibility depends not only O & M but also on investment cost, financing terms and conditions, etc. The critical issue is also whether or not the energy output corresponds the designed one. And last but not the least, GHG reductions cannot be calculated without monitoring of certain parameters. Therefore, the monitoring and evaluation of the operation of pilot projects is recommended. The monitoring among others may include: development and approval of the monitoring plans; development of monitoring methodology and identification of parameters to be monitored (e.g. unit type, cost, quantity and calorific value of bio-fuel, indoor temperature, quantity and temperature of hot water, etc.), as well as default values of parameters – if applied; development of monitoring data flow system. The evaluation will include: calculation of: heat energy supplied, amount of natural gas that would be necessary in the baseline scenario, boiler efficiency, GHG reduction. In addition, it is recommended to conduct investment analysis for each pilot project based on the actual investment costs and monitoring data. This would provide very good inputs to the development of the National Biomass Energy Programme as well as adjustment of the business model for the use of biomass in the municipal services.

The Project has to allocate corresponding resources for the implementation of this recommendation. In particular, the energy expert has to be hired for development and implementation of the monitoring plan. Alternatively, the M&E expert hired for the implementation of Recommendation 8 below, can develop the monitoring plan. He/she also has to create capacity within the pilot project staff to continue monitoring after the Project end. The duties of the M&E expert should also include calculation of GHG emission reductions achieved by the pilot projects as well as by the Project in line with GEF rules and procedures (direct project, direct post-project, indirect GHG benefits).

**Recommendation 4: Intensify Outreach programme and dissemination of project experience/ best practices/lessons learned**

Outreach programme should be strengthened by awareness raising campaign to inform potential FSM’s clients about existing financing opportunities conducted. Project WEB ([http://bioenergy.in.ua](http://www.bioenergy.in.ua)) may play very important role in this. Among others it can initiate public discussions, offer WEB calculator for estimation of: design capacity of the biomass-fired boilers, financial indicators (IRR, NPV) for standard conditions (average costs for boilers and other equipment, biomass, O & M, engineering), GHG reduction, etc.

Publications of Project are mostly in Ukrainian. However, they are / would be very useful also for donors, IFIs, foreign investors. Therefore, it is recommended to translate in English, at least some publications (IEA, IRENA already asked the Project for that).

The Project is addressing a variety of barriers, issues by permanently applying adaptive management practices. The experience gained and lessons learned will greatly facilitate to the successful implementation of the similar initiatives. Under similar initiatives other types of RES and/or other countries with similar circumstances are meant. Therefore, it is highly recommended to the Project to document in details all critical steps undertaken, especially barrier removal process, demonstrated flexibility (adaptive management), etc. Unfortunately, the practiced formats of reports (PIR, first of all) do not allow long narratives describing the above mentioned issues and some important moments might be left outside the reports. As a compromising solution the Project Team is preparing annual Progress Reports with more descriptions not only the results but also the process of achieving those results. Nevertheless, the Consultant has got a full picture of the environment, in which the Project is being implemented, as well as the appropriateness of the application of adaptive management practices while mitigating risks and/or dealing with the identified issues, only after long interviews and discussions with the Project Manager and key field experts. Unfortunately, parts of this information are not presented in reports and if they aren’t documented, Lessons Learned report to be prepared by the end of the Project may miss important aspects/moments of the implementation.

**Recommendation 5: Re-allocate the remaining funds for the hard components of the pilot projects to the TA**

Implementation of 12 pilot projects has achieved a goal of piloting. The technical and environmental soundness and financial attractiveness have been demonstrated. Therefore, no more pilots are necessary. The remaining funds can be used for TA purposes. One more additional argument against the subsidizing bioenergy projects by the Project is that Partner Banks unlikely would like involvement of any subsidy in financing. The ProDoc considers USD 3 million for the investment support. Actual costs of the implemented pilot projects is USD 1,290,000. Thus the difference can be allocated to the extended TA (Recommendations 1-4, 7-8) as well as management of the Project in case of no-cost extension of the Project (Recommendation 6).

**Recommendation 6: Extend the duration of the Project by 21 months until the end of 2019**

The Outcome 1.A. should be achieved in 1.5 years (15 months for the Project to complete activities and another 3 months for Approval by the Government). Proposed activities include finalization of the streamlined and market-oriented policy and legal/regulatory framework, determining the roles and responsibilities of MAPF and MRDCHCS and development of criteria for selection of municipal projects, which would be supported by the Project. Other similar UNDP/GEF projects, as a rule, start with updating the analysis of the barriers (in this case of institutional, legal and regulatory, financial) and making recommendations for their removal, which may include simplification of procedures and principles for the licensing, technical regulation to enable connection to the heat network (when necessary), tariff methodology, etc. These activities are missing in the Results Framework but the Project Team had to and it actually has had undertaken the above steps. Another issue is that the approval process of the legal changes takes long in Ukraine because the intensive reforming is taking place practically in all sectors and there is a long line of Laws (new ones and amendments to the existing ones) waiting for their approval by the Verkhovna Rada of Ukraine (about 5,000 at present) and this will seriously affect the timing. Considering the aforementioned, it is Consultant’s opinion that this target is not adequately Time-bound.

Recommendation 3 above considers implementation of monitoring & evaluation of the pilot projects. In order to have enough data for the Evaluation, at least two full heating seasons might be monitored. For the Evaluation of not only individual pilot projects but the Project as a whole, a matter of statistical confidence should be addressed, i.e. the sufficient number of projects has to be monitored. If assume that the 2-year monitoring of the pilot projects will be completed by April 2019 and the first 15-20 projects, financed under the FSM, will be completed in early 2018, and by April 2019 1-year monitoring data will be available, Evaluation of the Project results under this activity could not be performed before June 2019. Then Terminal Evaluation shall be conducted, which usually is done 6 months before the project end date.

Considering above mentioned it is recommended to extend the duration of the Project without cost extension until December 31, 2019.

**Recommendation 7: Provide assistance to the municipalities – signatories of Covenant of Mayors**

At present 102 municipalities of Ukraine are signatories of the Covenant of Mayors (CoM), and among them Cherkassy and Zhitomyr, in which the bioenergy pilot projects have been implemented. In 2012 Cherkassy has developed Sustainable Energy Action Plan[[10]](#footnote-10) (SEAP) for 2013-2020 and in 2015 Zhytomyr for 2015-2024. According to SEAP of Zhytomyr annual natural gas consumption has to be reduced by 14.1% by 2020 and by 18.4% by 2025. This strategic objective is supposed to achieve among others, through the implementation of measures in the heating and hot water supply services. These measures are mostly on demand-side (energy efficiency measures in buildings). As for the supply, for public buildings, fuel switch from natural gas to alternative fuels is planned. In particular, 15 public buildings will use heat pumps for these purposes. No bioenergy technologies are considered in SEAP. SEAP for Cherkassy considers rehabilitation of 8 boiler houses by installing small-scale biomass boilers. These projects should be implemented in 2013-2015.

Since the municipal heating and hot water supply services are one of the largest GHG emitters, naturally, their reduction should be an essential part of SEAPs and thus, CoM signatories will have one more incentive to adopt bioenergy technologies, especially considering that in 2015 new integrated Covenant of Mayors for Climate & Energy was launched, which steps up the initial CO2 reduction commitment and includes also adaptation and secure, sustainable and affordable energy. This will be a case for Zhytomyr as well, because after the positive results of the pilot bioenergy projects in Zhytomyr, the municipality is planning further installation of the biomass-fired boilers and possibly, revision of SEAP. It has also to be noted that the IFC, the Project partner in establishing FSM is interested in working with CoM signatory municipalities, because they have developed SEAPs. Consideration of CoM factor would allow the implementation of Component 1, especially of activities aimed at Outcome 1B (Municipal targets for biomass energy for heating are agreed and established) in a more effective way. In the absence of BSU the Project has to take a lead in this.

**Recommendation 8: Consider Baseline methane emissions in the GHG reduction calculation**

When the biomass-fired boilers use either pellets produced from straw or straw itself, methane (CH4) emissions may occur if in the baseline scenario straw is not combusted but either left in the field, or stored without any use. Taking methane baseline emissions into account will increase the summary GHG reductions (due to the replacement of natural gas + avoidance of methane emissions). If in the baseline, the straw is left to decay in some storage then this increase will be significant. It must be noted that if in the project scenario straw is used for production of pellets then the associated methane emissions for the bioenergy project have will be “upstream emissions”; in this case “double counting” should be excluded (when the emission reductions are claimed by pellet manufacturer and pellet combustor as well). If the straw is directly combusted in the boiler, then the CH4 emissions are attributed only to the bioenergy project.

For calculation of the GHG reduction corresponding methodology should be used. The Project may either use CDM methodology or any other methodology developed in accordance with the guidance of Joint Implementation Supervisory Committee (JISC).

Methodologies for calculating GHG reductions and procedures for their approval due to the implementation of the projects, most clearly itemized for the Clean Development Mechanism (CDM), defined in Article 12 of the Kyoto Protocol. For example, the GEF's Manual for Calculating GHG Benefits determines direct GHG reductions similarly to CDM projects; IFC and EBRD Guidelines[[11]](#footnote-11) make reference to the CDM methodology. Ukraine is included in Annex B of the Kyoto Protocol, i.e. it is not CDM but Joint Implementation (JI) country. However, according to the Guidance on Criteria for Baseline Setting and Monitoring[[12]](#footnote-12), approved by the JISC, JI Project Participants may select either an approach for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (JI-specific approach); or a methodology for baseline setting and monitoring approved by the Executive Board of the CDM, including methodologies for small-scale project activities, as appropriate; or An approach for baseline setting and monitoring already taken in comparable JI cases. Of course, the pilot projects implemented by the assistance of this Project are not necessarily JI projects. Nevertheless, for conservativeness purposes and also if those projects are implemented in CoM signatory cities (e.g. in Zhytomyr), it would be better (for verification of GHG reductions) to apply above mentioned guidance of JISC.

The GHG reduction in this Project is generated due to the replacement of the natural gas by the biomass, the combustion of which in the biomass-fired boilers is carbon neutral, i.e. zero GHG emissions. Besides, the efficiencies of the baseline boiler (gas-fired) and biomass-fired boiler, have to be taken into account. At the same time, there might be another source of emission reduction as well. In particular, if the straw is used as a biomass either (i) for pellet production and further combustion in biomass-fired boilers (this is a case for small-scale projects with a boiler capacity up to 500 kWth); or (ii) for direct combustion in the boilers (for capacities above 500 kWth). In both cases methane (CH4) emissions may occur if straw is not combusted in the baseline scenario. In the baseline straw might be either left in the field, or stored without any use. The "Guidelines for National Greenhouse Gas Inventories", IPCC, 2006, which are used in Ukraine for the GHG inventories Methane emissions, provide CH4 calculation procedure for both cases. Considering that Global Warming Potential (GWP) of methane is 21-times higher than of CO2, taking methane baseline emissions into account will increase the summary reductions (due to the replacement of natural gas + avoidance of methane emissions). If in the baseline, the straw is left to decay in some storage then this increase will be significant. It must be noted that if in the project scenario straw is used for production of pellets then the associated methane emissions for the bioenergy project have will be “upstream emissions”; in this case “double counting” should be excluded (when the emission reductions are claimed by pellet manufacturer and pellet combustor as well). If the straw is directly combusted in the boiler, then the CH4 emissions are attributed only to the bioenergy project.

The estimation of methane emission will not only increase the value of the GHG reduced by the Project but it will have significant side effect as well. In particular, every applied methodology for calculations, regardless of CDM or JI-specific approach, will consider comprehensive monitoring not only on quantity of straw used for energy purposes but also its availability in order to correctly address the issue of “leakage”[[13]](#footnote-13) by deducting of leakage emissions. This in turn, will improve the accuracy of the estimation of straw potential. In addition, accounting of the methane emissions will improve the quality of Ukraine’s Greenhouse Gas Inventory (up to date no difference was made in the inventories whether the straw is used as a fodder, for energy purposes, left in the fields or stored and decayed).

It must be also noted that launching of Emission Trading Scheme (ETS) is expected in Ukraine. The GHG reductions of individual biomass project will be low and unlikely subject to ETS but a large number of individual projects might be bundled and participate. In this case, proper monitoring system and verification of the monitoring will become of critical importance.

In U2016 Ukraine submitted to the UNFCCC Intended Nationally Determined Contributions (INDC), which later will be revised and the GHG reduction potential through the implementation of the municipal biomass programmes/projects can be adjusted.

**Recommendation 9: Intensify cooperation with the stakeholders (Verkhovna Rada, Bioenergy Association of Ukraine, Ukrainian Pellet Union, all-Ukrainian association of local self-governments "Association of Ukrainian Cities"**

The role of Verkhovna Rada will remain crucial even after approval of already submitted Legal Documents. Indeed, for the operationalization of FSM approval of additional legal/regulatory provisions might be required. Corresponding Drafts could be developed under the assistance by the Project but they have to be submitted either by the Government or by group of Deputies. In case of the second option the intensive cooperation with the members of Verkhovna Rada will be necessary.

Associations may be involved in biomass programme development and/or development of project pipelines.

**Recommendation 10: Revise the Project Results Framework and the Exit Strategy**

If the above proposed recommendations are accepted the Project Results Framework has to be revised accordingly. In addition, the Project has actually implemented 3 pilot projects on establishing energy willow nurseries. This could be considered as a separate output in the Results Framework.

The Project implementation strategy does not consider updating of the barrier analysis; only regular up-date of the risk log is planned and implemented. However, the changing environment, in which the Project is being implemented (political changes, liquidation of DerzhZem bank, MAPF not hosting BSU), causes not only changes of the status of risk and corresponding management responses to mitigate risks, but also raises an issue of sustainability. It is very challenging to plan how to ensure the continuation of key activities/achievements of the Project without the need of additional (long-term) donor financing. Therefore, to facilitate and ensure sustainability and hand over the project to the country, beyond the project cycle, the revision of the **exit strategy** is recommended.

# Annexes

## Annex 1: MTR ToR (excluding ToR annexes)

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| **International Consultant on Bioenergy Mid-Term Review** | |
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| **Advertised on behalf of :** | |
|  | |
| **Location :** | Home based and Ukraine, Kyiv, UKRAINE |
| **Application Deadline :** | 22 November 2016 |
| **Type of Contract :** | Individual Contract |
| **Post Level :** | International Consultant |
| **Languages Required :** |  |
| **Starting Date :** (date when the selected candidate is expected to start) | 1st December 2016 |
| **Duration of Initial Contract :** | 25 working days spread over a three months period from 1st December 2016 – 28th February 2017 |
| **Expected Duration of Assignment :** | 25 working days of which a minimum of 10 working days must be spent in Ukraine |

|  |
| --- |
| **Background** |
| **Introduction**  This is the Terms of Reference (ToR) for the UNDP-GEF Midterm Review (MTR) of the full-sized project titled “Development and Commercialization of Bioenergy Technologies in the Municipal Sector of Ukraine” (PIMS #2921) implemented through the UNDP Direct Implementation Modality (DIM). The project started on 24 June 2014 (the Project Document signature date) and is in its third year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated before the submission of the second Project Implementation Report (PIR). This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects:  <http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf>  **Project Background Information**  Bioenergy is one of the most promising renewable energy sources in Ukraine. However, its productive use remains very limited. At present, energy production from bioenergy sources is about 0.5% of the total primary energy supply - mainly firewood for domestic purposes as well as for fuel in forestry and wood processing enterprises. The aim here is to assist the Government of Ukraine in addressing the various barriers with a view to having some 7% of the country’s annual primary energy supply for heating and hot water services supplied by agricultural biomass by 2030, and with a view to reducing gas imports.  In this context the objective of UNDP/GEF Project “Development and Commercialization of Bioenergy Technologies in the Municipal Sector of Ukraine”, which actually started in November 2014, is to accelerate sustainable agricultural biomass utilization for municipal heat and hot water services in Ukraine over its four-year implementation period (2014-2018) to enable Ukraine to substantially move closer to its target of having some 7% of the country’s energy supplied by biomass, as outlined in the “Energy Strategy of Ukraine to 2030”. This, in turn, is expected to generate direct global benefits of 63,577 tons of CO2 over the same period and 19,143 tons CO2/yr. thereafter in avoided greenhouse gas (GHG) emissions. When one looks at the 20 year lifetime of the boilers earmarked for development during the project period, the boilers will have generated 1,618,834 MWhTH, with a combined amount of CO2 reduced of 361,000 tons, equivalent to $13 of GEF funds per tCO2  The project aims to achieve this target by introducing a conducive regulatory framework and by establishing a financial support mechanism that together will facilitate private sector participation in utilizing agricultural biomass and production of energy crops to supply municipal heat and hot water services and assist the Government in closing private sector funded investments in municipal biomass.  The main components of the project are:   * To formulate and introduce a streamlined and comprehensive market-oriented policy and legal/regulatory framework (“macro level” activities) to promote municipal biomass for heat and hot water services in the country, which includes national/municipal targets for biomass energy for heating; * To develop capacity within the Ministry of agrarian policy and food of Ukraine (MAPF) (“micro level” activities) to support development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit and to formulate appropriate incentives to attract project developers; * To promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions; * To formulate an outreach programme and document/disseminate project experience/best practices/lessons learned for replication within the country (and in the region).   Objectives of the MTR  The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document, and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to strengthen the project and, if necessary, set the project on-track in order to increase the chances of the project achieving its objective and intended results by the end of the project.  The MTR will also review the project’s strategy, its risks to sustainability. The main output of the MTR will be specific recommendations for adaptive management to improve the project over the second half of its lifetime.  MTR Approach and Methodology  The MTR must provide evidence based information that is credible, reliable and useful. The MTR International Consultant will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that he/she considers useful for this evidence-based review). The MTR International Consultant will review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins.  The MTR International Consultant is expected to follow a collaborative and participatory approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office, UNDP-GEF Regional Technical Adviser, and other key stakeholders (For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see [UNDP Discussion Paper: Innovations in Monitoring & Evaluating Results](http://www.undp.org/content/undp/en/home/librarypage/capacity-building/discussion-paper--innovations-in-monitoring---evaluating-results/), 05 Nov 2013).  Engagement of stakeholders is vital to a successful MTR (for more stakeholder engagement in the M&E process, see the [UNDP Handbook on Planning, Monitoring and Evaluating for Development Results](http://www.undg.org/docs/11653/UNDP-PME-Handbook-(2009).pdf), Chapter 3, pg. 93.). Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to: UNDP, Project Manager and project team, International Project Advisor, UNDP Ukraine staff, UNDP Istanbul Regional Technical Advisor on Climate Change Mitigation, key experts and consultants in the subject area, key stakeholders such as the IFC, Project Steering Committee (Board) members, project stakeholders, academia, local government and CSOs, etc.  Additionally, the MTR Consultant is expected to conduct field missions to project sites in Uman, Zhytomyr, Poltava and Ivano-Frankivsk. There he/she will meet with local authorities’ representatives and assess the relationships the project has developed and results of the pilot locations implementations.  The time allocation for the MTR is broken down into 25 working days of which 6 man days are estimated as required reviewing documents and speaking to key stakeholders prior to the two weeks mission to Ukraine, 10 man days are required in Ukraine (5 working days in Kiev, 5 working days visiting project sites) and then 9 man days are required to prepare the draft and final report.  The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review. |
| **Duties and Responsibilities** |
| Detailed Scope of the MTR  The MTR Consultant will assess the following four categories of project progress. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions.  I. Project Strategy  Project design:   * Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document; * Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results.? Were lessons from other relevant projects properly incorporated into the project design? * Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)? * Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes? * Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines; * If there are major areas of concern, recommend areas for improvement.   Results Framework/Logframe:   * Undertake a critical analysis of the project’s logframe indicators and targets, assess how “SMART” the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary; * Are the project’s objectives and outcomes or components clear, practical, and feasible within the project time frame? * Is the project on track to achieve its global environmental benefits in terms of tonnes of CO2 to be reduced (direct and indirect GHG emissions) as defined in the project document; * Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women’s empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis; * Ensure broader development and gender aspects of the project are being monitored effectively.? Develop and recommend SMART ‘development’ indicators, including sex-disaggregated indicators and indicators that capture development benefits.   II. Progress Towards Results  Progress Towards Outcomes Analysis:   * Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a “traffic light system” based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as “Not on target to be achieved” (red).   Table 1-1: Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)  This table should assess project’s achievement against all project objectives/outcomes described by indicators and include following information for every outcome indicator:   * Baseline level * Level in 1st PIR (self-reported) * Midterm Target * End-of-project Target * Midterm Level and Assessment * Achievement Rating * Justification for Rating   Indicator Assessment Key:   * Green = Achieved * Yellow = On target to be achieved * Red = Not on target to be achieved   In addition to the progress towards outcomes analysis:   * Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review. * Identify remaining barriers to achieving the project objective in the remainder of the project. * By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.   III. Project Implementation and Adaptive Management  Management Arrangements:   * Review overall effectiveness of project management as outlined in the Project Document.? Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement; * Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement; * Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.   Specific issues and activities to be reviewed in relation to each of the following project components:  Component 1 - Market-oriented policy and legal/regulatory framework  This component aims to contribute to the improvement and introduction of a streamlined and comprehensive market-oriented policy and legal/regulatory framework (“macro level” activities) to promote municipal biomass for heat and hot water services in the country, which includes national/municipal targets for biomass energy for heating.   * How has the project contributed to improvement of the policy and legal/regulatory framework related to biomass energy in Ukraine; * How has the project contributed to sharpening the focus of the respective roles and responsibilities of Ministry of Agrarian Policy and Food, Ministry for Regional Development, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Savings of Ukraine with regard to biomass energy; * How has the project contributed towards the establishment of criteria and procedures for the introduction of a transparent process in the selection/award of municipal biomass projects?   Component 2 - Capacity building within the Ministry of agrarian policy and food of Ukraine (MAPF) including the establishment of a Biomass Support Unit (BSU)  This component aims to support development and implementation of a municipal biomass programme and to formulate appropriate incentives to attract project developers.   * Assess the adaptive management that been carried out on the establishing a Biomass Working Group; * What progress has been made on establishing a Biomass Support Unit (BSU) within the Governmental Institutions and what is the likelihood of this unit being sustainable beyond the lifetime of the project? * How has the project contributed towards development of a sustainable methodology for the economic/financial evaluation of municipal biomass systems? * How has the capacity of the BSU been built and strengthened and what is planned in this regard for the future? What specifically should the project do in order to strengthen the capacity of the BSU?   Component 3 - Promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions.  This component is aimed to design and implement a Financial Support Mechanism (with financial institution(s)) able to encourage and appropriately incentivize additional investment in biomass energy in the municipal sector in Ukraine; as well as implement pilot projects in municipal biomass heating and hot water systems.   * Assess the adaptive management that has been carried out in the design and implementation of the financial support mechanism from what was envisaged in the UNDP project document to what is actually being implemented under the project; * Assess the design of the financial support mechanism, as it has been carried out, with regards to whether or not the proposed approach is likely to encourage and appropriately incentivize additional investment in biomass energy in the municipal sector in Ukraine; * Undertake (as part of the review on financial support mechanism) a brief review of other financial support mechanisms (FSMs) for renewable energy in Ukraine (e.g UKEEP, USELF, etc …) and determine how the proposed financial support mechanism, being developed under this project, either duplicates or is complementary to other ongoing existing initiatives to support renewable energy in Ukraine; * What is the progress of the project in having 18 municipal biomass heating and hot water systems supported; * Assess the likely effectiveness of the planned training and capacity building activities that are taking place/planned to take place and assess their likely effectiveness; * Assess the likelihood of the financial support mechanism (FSM) being sustainable beyond the lifetime of the project.   Component 4 - Outreach programme and dissemination of project experience/best practices.  This component is to formulate an outreach programme and document/disseminate project experience/best practices/lessons learned for replication within the country (and in the region). It also includes marketing-related activities, awareness raising, and dissemination of information related to the use of biomass energy at the municipal level.   * Assess the progress towards preparing and finalizing a national Plan to implement outreach/promotional activities for supporting national biomass projects; * Assess the progress towards preparing a Municipal Biomass Guide? * What other activities has the project carried out related to marketing, awareness raising, and dissemination of information related to the use of biomass energy at the municipal level. How successful have these initiatives been?   Other Activities Carried Out by the Project not defined under component 1, 2, 3 or 4:   * Assess any other activities or outputs carried out by the project that were not directly listed under component 1, 2, 3, or 4 and assess their relevance and effectiveness in terms of supporting the overall goals of the project; * Evaluate the adaptive management that was carried out in order to implement these additional activities and outputs, the justification, and their relevance for the project implementation.   Work Planning:   * Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved; * Has the work planning been carried out in a manner which is consistent with the project document and with the project workplan or are there significant deviations; * Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results? * Examine the use of the project’s results framework/ logframe as a management tool and review any changes made to it since project start.   Finance and co-finance:   * Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions meaning that GEF grants should have all leveraged significant co-financing. What is the co-financing ratio? * Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such budget revisions; * Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds? * Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?   Project-level Monitoring and Evaluation Systems:   * Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? * Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?   Stakeholder Engagement:   * Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders? * Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project?? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation? * Participation and public awareness: to what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?   Reporting:   * Assess how adaptive management changes have been reported by the project management and shared with the Project Board. * Assess how well the project has worked with UNDP Ukraine and the UNDP Istanbul Regional Hub in identifying and implementing adaptive management measures; * Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?) * Assess how lessons derived from the adaptive management process has been documented, shared with key partners and internalized by partners.   Communications:   * Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results? * Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?) * For reporting purposes, write one half-page paragraph that summarizes the project’s progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.   IV. Sustainability   * Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why. * In addition, assess the following risks to sustainability:   Financial risks to sustainability:   * What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project’s outcomes)? * What is the likelihood of the financial support mechanism being established by the project being sustainable (meaning that the FSM will continue to operate and function beyond the lifetime of the project)?   Socio-economic risks to sustainability:   * Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? * Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?   Institutional Framework and Governance risks to sustainability:   * Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place; * To what extent has the project managed to improve or contribute to legal frameworks related to biomass energy in Ukraine.   Environmental risks to sustainability:   * Are there any environmental risks that may jeopardize sustenance of project outcomes?   V. Conclusions & Recommendations  The MTR International Consultant will include a section of the report setting out the MTR’s evidence-based conclusions, in light of the findings with the main goal of making recommendations on how to significantly improve the project over the second half of the project lifetime. Alternatively, MTR conclusions may be integrated into the body of the report.  Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant.  A recommendation table should be put in the report’s executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for guidance on a recommendation table.  It is highly recommended that the MTR International Consultant will make no more than 15 recommendations in total.  VI. Ratings  The MTR International Consultant will include its ratings of the project’s results and brief descriptions of the associated achievements in a *MTR Ratings & Achievement Summary Table* in the Executive Summary of the MTR report. See Annex E for ratings scales. Ratings are required for Project Design & Strategy, Progress Towards Results, Project Implementation and Adaptive Management, and Sustainability. An overall project rating is optional. The ratings are 6 points (highly satisfactory), 5 points (satisfactory), 4 points (marginally satisfactory), 3 points (marginally unsatisfactory), 2 points (unsatisfactory), and 1 point (highly unsatisfactory). For sustainability ratings, they are 4 (likely), 3 (moderately likely), 2 (moderately unlikely) and 1 (unlikely).  MTR Ratings & Achievement Summary:   * The MTR Ratings and Achievement Summary Table should contain the following information: * Overall rating – rate 6 pt. scale – Achievement description *(the overall rating is optional)* * Project Design and Strategy – rate 6 pt. scale – Achievement description * Progress Towards Results: * Objective Achievement – rate 6 pt. scale – Achievement description * Outcome 1 Achievement Rating – rate 6 pt. scale – Achievement description * Outcome 2 Achievement Rating – rate 6 pt. scale – Achievement description * Outcome 3 Achievement Rating – rate 6 pt. scale – Achievement description * Etc. * Project Implementation & Adaptive Management – rate 6 pt. scale – Achievement description * Sustainability – rate 4 pt. scale – Achievement description   Timeframe (Schedule of Work)  The total duration of the MTR will be approximately 25 working days spread over a period of 3 months from 1st December 2016 to 28 February 2016 and shall be broken down as follows:   * By 1st December 2016:   + Contract issuance prior to 1st October and Preparation for the MTR (initial phone conversation and handover of all relevant Project Documents); * By 20th December – 5 days:   + Documents review, initial discussions with key stakeholders, and preparation of MTR Inception Report; * By 31st December – 1 day:   + Finalization and Validation of MTR Inception Report which includes list of stakeholders for interviews during the mission, and full list of questions being asked by the evaluator; * December 2016 - January 2017 – 10 days:   + MTR mission: stakeholder meetings, interviews, field visits;   + Mission wrap-up meeting & presentation of initial findings- earliest end of MTR mission. The mission includes 10 working days but minimum number of days to be spent in Ukraine is 12 days because the weekend is not included as working days. At the end of the mission a power point presentation with initial findings should be made to UNDP Ukraine showing the initial findings of the evaluation; * By 10th February – 6 days:   + Preparing draft MTR report and submitting to Project Manager, UNDP Ukraine, and UNDP Istanbul Regional Hub and holding conference call to discuss the draft report; * By 15th February – 2 days:   + Incorporation of comments into the draft MTR report from the Project Manager, UNDP Ukraine, UNDP IRH, and other key stakeholders. In addition, the consultant should incorporating audit trail from feedback on draft report/Finalization of MTR report with a view to finalization of the draft report; * By 28th February – 1 day:   + Hold conference call with UNDP Ukraine and UNDP IRH related to discussion of the draft Management Response by UNDP Ukraine (to be prepared by UNDP Ukraine in consultation and discussion with MTR Consultant)   The two weeks or 10 working days mission to Ukraine should be broken down into Kiev (5 days), Poltava (1 day), Uman (1 day), Zhytomyr (1 day) and Ivano-Frankivsk (1 day). The travel within Kiev may be altered following discussions between UNDP and key project stakeholders. The dates of the mission to Ukraine will be agreed at the start of the assignment but it should be carried out in December 2016 -January 2017. The evaluation mission should start no later than the middle of January 2017 and finish no later than the end of January.  Midterm Review Deliverables   * MTR Inception Report:   + Description: MTR Consultant clarifies objectives and methods of Midterm Review;   + Timing: No later than 10 days before the MTR mission;   + Responsibilities: MTR International Consultant submits to the Commissioning Unit and project management. * Presentation:   + Description: Initial Findings;   + Timing: End of MTR mission;   + Responsibilities: MTR International Consultant presents to project management and the Commissioning Unit a power point presentation. * Draft final report:   + Description: Full report (using guidelines on content outlined in Annex B) with annexes;   + Timing: Within 3 weeks of the MTR mission;   + Responsibilities: Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OFP. * Final report\*:   + Description: Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report;   + Timing: Within 1 week of receiving UNDP comments on draft;   + Responsibilities: Sent to the Commissioning Unit.   \*The final MTR report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.  MTR Arrangements  Institutional arrangements  The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project’s MTR is UNDP Ukraine Country Office*.* The commissioning unit will contract the Consultant and ensure the timely provision of per diems and travel arrangements within Ukraine for the MTR Consultant. The Project Team will be responsible for liaising with the MTR Consultant to provide all relevant documents, set up stakeholder interviews, and arrange field visits.  Duty Station  Homebased with one two weeks mission (10 working days) to Ukraine which should be carried out before the end of January 2016.  Travel:   * International travel (2 weeks mission, 10 working days) will be required to Ukraine during the MTR mission; * The Basic Security in the Field II and Advanced Security in the Field courses must be successfully completed prior to commencement of travel; * Individual Consultant is responsible for ensuring he/she has vaccinations/inoculations when travelling to certain countries, as designated by the UN Medical Director; * Consultant is required to comply with the UN security directives set forth under [https://dss.un.org/dssweb/.](https://dss.un.org/dssweb/)   All envisaged travel costs and per diems (DSA) and terminal expenses must NOT be included in the Offeror’s financial proposal. UNDP shall purchase for the consultant with the air tickets (not exceeding those of the economy class) to join duty station (Kyiv) and repatriate, vehicle transport for mission travel in Ukraine and air tickets if flights are required (e.g – Ivano-Frankivsk). If the consultant wishes to fly business class, the consultant should cover the cost of upgrade from economy class to business class with their own funds. UNDP shall also pay the consultant a per diem for their time to be spent in Ukraine in accordance with UNDP rules and procedures. The official UNDP DSA rate for Kiev is currently $263 per day, and for elsewhere it is $83 per day. The means of reimbursement will be via signed F10 form and payment/reimbursement into the nominated bank account of the consultant. |
| **Competencies** |
| * Strong client orientation and advisory skills; * Excellent communication and negotiation skills; * Excellent analytical skills; * Strong interpersonal skills. |
| **Required Skills and Experience** |
| The MTR International Consultant should be an international expert with experience and exposure to sustainable energy projects and evaluations in the Europe & CIS region and/or other regions globally. The international consultant cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project’s related activities, meaning that the international consultant should not have previously been contracted by this project in any manner, shape or form.  The MTR Consultant should have the following qualifications and experience:  Education:   * At least a Master’s degree in Energy, Environment, Business Administration, Economics, Engineering or other closely related field.   Experience:   * Competence in designing, working on or evaluating renewable energy projects, including biomass projects, in the last seven years; * Experience working with the UNDP and/or the GEF or UNDP GEF or other GEF project evaluations within the past seven years including experience with SMART based indicators (Project evaluation/review experiences within United Nations system will be considered as meeting this criteria meaning that it can be with UNDP or with another UN Agency); * Experience working with international technical assistance projects in the Eastern Europe countries or CIS region in the past seven years; * At least 10-years work experience and proven track record with policy advice and/or project development/implementation on renewable energy and biomass projects * Experience with developing financial support mechanisms for renewable energy * Demonstrated understanding of issues related to gender; experience in gender sensitive evaluation and analysis.   Languages:   * Writing and verbal skills in English, knowledge of Russian/Ukrainian would be an asset.   Payment Modalities and Specifications   * 10 % of total consultancy fee:   + Upon approval by UNDP of the final MTR detailed workplan and submission of related invoice, prior to mission to Ukraine; * 50 % of total consultancy fee:   + Upon submission of the draft MTR report and acceptance of the report by UNDP and submission of related invoice; * 40 % of total consultancy fee:   + Upon finalization of the MTR report and acceptance of the report by UNDP and submission of related invoice; * Travel costs:   + 80% of the total travel cost to join the duty station will be paid upon confirmation on the travel dates and provision of a copy of the air ticket (this amount includes two-way economy air ticket, visa costs, and living allowances in Kyiv / field visits;   + The remaining 20% of travel cost will be paid at the end of the mission upon submission of the UNDP Travel Claim Form (F10).   Note   * Travel costs (including ticket, per diems and terminal expenses) must NOT be included in the offeror’s financial proposal as these costs will be covered by UNDP; * Individual contractor wishing to upgrade his/her travel to business or first class shall do so at his/her own expense; * Each payment will be made in US dollars upon satisfactory completion of the tasks and respective deliverables as per submission of deliverables/claims by the consultant and the project/UNDP approvals; * Each payment will be transferred by UNDP through Electronic Fund Transfer to the Dollar account number of the contractor introduced through an official letter indicating full banking information; * Any payment under this contract will be made using UN Operational Rate of Exchange.? For update rates please see: [http://treasury.un.org/operationalrates/OperationalRates.aspx;](http://treasury.un.org/operationalrates/OperationalRates.aspx) * Payments will be made according to UNDP regulations as explained in the contract documents; * The International Consultant shall not do any work, provide any equipment, materials and supplies or perform any other services which may result in any cost in excess of the agreed contract amount.   Application Process  Applicants shall submit the following documents:   * Letter of Confirmation of Interest and Availability using the template provided by UNDP; * Financial Proposal that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template.   *\*Please note that the financial proposal is all-inclusive and shall take into account various expenses incurred by the consultant/contractor during the contract period (e.g. fee, health insurance, vaccination and any other relevant expenses related to the performance of service, etc.). Travel costs, including those to join duty station (Kyiv) and repatriate, travel costs in Ukraine to perform site visits and per diems (DSA) must NOT be included into the financial proposal and will be provided by UNDP. The number of overnights is estimated as 12 and not 10 because weekend stay is required during the mission to Ukraine. Therefore, there are two non-working days covered as part of the DSA cost. The UN DSA rate for Kiev is $263 USD per day and for other parts of Ukraine is $83 per day.*  If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.   * CV or a Personal History Form (P11 form), including information about past experience in similar assignments and contact details for referees;   Evaluation  **Criteria for Evaluation of Proposals:**  Offers will be evaluated according to the rules for the UNDP EITT Roster which is that proposals are sent to technically compliant candidates and UNDP will choose the best value for money. All candidates who are sent the proposal are assumed to meet the technical criteria and therefore the contract will be granted to the candidate offering lowest price. The panel will screen the candidates against the following technical criteria:  Education:   * At least a Master’s degree in Energy, Environment, Business Administration, Economics, Engineering or other closely related field.   Experience:   * Competence in designing, working on or evaluating renewable energy projects, including biomass projects, in the last seven years; * Experience working with the UNDP and/or the GEF or UNDP GEF or other GEF project evaluations within the past seven years including experience with SMART based indicators (Project evaluation/review experiences within United Nations system will be considered as meeting this criteria meaning that it can be with UNDP or with another UN Agency); * Experience working with international technical assistance projects in the Eastern Europe countries or CIS region in the past seven years; * At least 10-years work experience and proven track record with policy advice and/or project development/implementation on renewable energy and biomass projects * Experience with developing financial support mechanisms for renewable energy * Demonstrated understanding of issues related to gender; experience in gender sensitive evaluation and analysis.   Languages:   * Writing and verbal skills in English, knowledge of Russian/Ukrainian would be an asset. |

## Annex 2: MTR evaluative matrix (evaluation criteria with key questions, indicators, sources of data, and methodology)

| **Evaluative questions** | **Indicators** | **Sources** | **Methodology** |
| --- | --- | --- | --- |
| **Project Objective:** To significantly increase the use of biomass energy as a fuel source for heating and hot water services in the municipal sector in Ukraine | | | |
| Is the project is on track to the objective? | Ratio of positive/negative answers by the key stakeholders  Readiness of municipalities and private investors/developers to invest in municipal bioenergy projects  Local capacity to develop such projects  Available opportunities for financing | Project staff  Key stakeholders  Municipal authorities, private investors/developers  Capacity needs assessment, capacity building plans  FSM related reports | Interviews  Analysis of information and data |
| **Outcome1:** Market-oriented policy and legal/regulatory framework | | | |
| How has the project contributed to improvement of the policy and legal/regulatory framework related to biomass energy in Ukraine? | New/amended Laws providing more favourable conditions for biomass energy development | SAEE, Verkhovna Rada, Bioenergy association, Project experts | Interviews  Analysis of information and data |
| How has the project contributed to sharpening the focus of the respec­tive roles and responsibilities of Ministry of Agrarian Policy and Food, Ministry for Regional Deve­lop­­ment, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Savings of Ukraine with regard to biomass energy? | Clear understanding of their roles, first of all, by SAEE | SAEE, MRDCHCS | Interviews |
| How has the project contributed to­­wards the establishment of crite­ria and procedures for the introdu­ction of a transparent process in the selection/award of municipal biomass projects? | Introduced criteria and procedures  Transparency of the selection process | Project staff, experts  Project reports  Municipal authorities | Interviews  Analysis of the criteria |
| **Outcome 2**: Capacity building within the Ministry of agrarian policy and food of Ukraine (MAPF) including the establishment of a Biomass Support Unit (BSU) | | | |
| Was the adaptive management that been carried out on the establishing a Biomass Working Group adequa­te? | Adaptive Management in place  Adequacy of adaptive management meaning that there is a high likelihood that Biomass Working Group will be effective | Project staff  Minutes of Board meetings  Project reports  Key stakeholders | Interviews  Analysis of information  Analysis of experience of the Consultant related to the establishment of inter-agency working groups |
| What progress has been made on establishing a BSU within the Go­vernmental Institutions and what is the likelihood of this unit being sustainable beyond the lifetime of the project? | Actual status of BSU  Likelihood of sustainable operation | Project staff  Minutes of Board meetings  Project reports  Key stakeholders | Interviews  Analysis of information |
| How has the project contributed to­wards development of a sustai­nable methodology for the economic/ financial evaluation of municipal biomass systems? | Sustai­nable methodology for the economic/ financial evaluation in place | Project technical reports  Minutes of Board meetings | Interviews  Analysis of the technical reports |
| How has the capacity of the BSU been built and strengthened and what is planned in this regard for the future? What specifically should the project do in order to streng­then the capacity of the BSU? | Capacity assessment  Capacity building plans | Project staff  AWPs  Project reports  Key stakeholders | Interviews  Review of the documentation |
| **Outcome 3:** Promote investment in municipal biomass through the establishment/strengthening of a Financial Support Mechanism (FSM) within financial institutions | | | |
| Assess the adaptive management that has been carried out in the design and implementation of the FSM from what was envisaged in the ProDoc to what is actually being implemented under the project | Adaptive Management in place  Adequate design of FSM  Established and effectively operated FSM | Project staff  Minutes of Board meetings  Project reports  UNDP-IBRD Agreement | Interviews  Analysis of information  Analysis of experience of the Consultant related to the establishment of FSM |
| Is the design of the FSM, as it has been carried out, appropriate and adequate with regards to whether or not the proposed approach is li­kely to encourage and appropriate­ly incentivize additional investment in biomass energy in the municipal sector in Ukraine? | Investment in biomass energy in the municipal sector incentivized | FSM related official documents  Reports of Project international expert  IFC/IBRD  Oschad bank | Interviews  Review of documentation  Analysis of experience of the Consultant related to the establishment of FSM |
| Are there other FSMs for renewable energy existing in Ukraine? Does the proposed FSM, being developed under this project, either duplicate or is complementary to other ongoing existing initiatives to support renewable energy in Ukraine? | Proposed FSM complementary to the existing FSMs | FSM related official documents  Stakeholders  WEB sites of existing FSMs | Analysis of information |
| What is the progress of the project in having 18 municipal biomass heating and hot water systems supported? | Status of implementation of municipal biomass heating and hot water supply projects | Project reports  Project WEB  First results of monitoring | Analysis of the information and data |
| What is the likely effectiveness of the planned training and capacity building activities that are taking place/planned to take place and what is their likely effectiveness? | Capacity assessment indicates the increase of capacity to develop or finance municipal biomass energy projects  Number of capacity building activities for parties involved in the FSM (Partner banks, loan applicants) | FSM related official documents  Project staff  Project international expert on FSM  Stakeholders | Interviews  Review of documentation |
| What is the likelihood of the FSM being sustainable beyond the life­time of the project? | Minimized risks  FSM long-term plan in place | Parties involved in the FSM  Project international expert on FSM | Interviews  Review of documentation |
| **Outcome 4:** Outreach programme and dissemination of project experience/best practices | | | |
| What is the progress towards pre­pa­ring and finalizing a national Plan to implement outreach/promotio­nal activities for supporting national biomass projects | National plan developed | Project staff  Project reports  RFP (Development of Biomass training/ information toolkit) | Interviews  Review of RFP |
| What is the progress towards pre­pa­ring a Municipal Biomass Guide? | Municipal Biomass Guide prepared | Municipal Biomass Guide with detailed step-by-step approach | Review of Municipal Biomass Guide |
| What other activities has the pro­ject carried out related to marke­ting, awareness raising, and disse­mination of information related to the use of biomass energy at the municipal level. How successful have these initiatives been? | Published materials | Project staff  Comprehensive analysis of market of boilers running on biomass Comprehensive analysis of the Ukrainian market of biomass pellets  Road Map for promotion of biomass in municipal sector | Interviews  Review of publications |
| **Other Activities Carried Out by the Project not defined under component 1, 2, 3 or 4** | | | |
| What adaptive management was carried out in order to implement these additional activities and out­puts, the justification, and their rele­vance for the project imple­mentation | Study tour conducted  Energy willow nurseries under implementation | Project staff  Project reports | Interviews  Review of reports |

## Annex 3: Example Questionnaire or Interview Guide used for data collection

Interviews with the Project Team, Project Experts and Consultants, key stakeholders were focused on well-prepared questions presented in the MTR ToR; all these questions are appropriate and thus the Consultant used them. These are already incorporated into the evaluative matrix (Annex 2 above) and therefore, are not reproduced here.

## Annex 4: Ratings Scales

|  |  |  |
| --- | --- | --- |
| **Ratings for Progress Towards Results:** (one rating for each outcome and for the objective) | | |
| 6 | Highly Satisfactory (HS) | The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/ outcome can be presented as “good practice”. |
| 5 | Satisfactory (S) | The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings. |
| 4 | Moderately Satisfactory (MS) | The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings. |
| 3 | Moderately Un­satis­factory (HU) | The objective/outcome is expected to achieve its end-of-project targets with major shortcomings. |
| 2 | Unsatisfactory (U) | The objective/outcome is expected not to achieve most of its end-of-project targets. |
| 1 | Highly Unsatis­factory (HU) | The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets. |

|  |  |  |
| --- | --- | --- |
| **Ratings for Project Implementation & Adaptive Management:** (one overall rating) | | |
| 6 | Highly Satisfactory (HS) | Implementation of all seven components – management arrangements, work plan­ning, finance and co-finance, project-level monitoring and evaluation sys­tems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”. |
| 5 | Satisfactory (S) | Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action. |
| 4 | Moderately Satisfactory (MS) | Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action. |
| 3 | Moderately Unsatisfactory (MU) | Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action. |
| 2 | Unsatisfactory (U) | Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management. |
| 1 | Highly Unsatisfactory (HU) | Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management. |

|  |  |  |
| --- | --- | --- |
| **Ratings for Sustainability:** (one overall rating) | | |
| 4 | Likely (L) | Negligible risks to sustainability, with key outcomes on track to be achieved by the project’s closure and expected to continue into the foreseeable future |
| 3 | Moderately Likely (ML) | Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review |
| 2 | Moderately Unlikely (MU) | Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on |
| 1 | Unlikely (U) | Severe risks that project outcomes as well as key outputs will not be sustained |

## Annex 5: MTR mission itinerary

The MTR mission included meetings with UNDP CO Senior Management (Country Director, Deputy Country Director); meetings and discussions with the Senior Programme Manager, Regional Technical Advisor; meetings/interviews with the project staff (project manager, project assistant) and project consultants/experts (CTA, sectoral experts); meetings/interviews with the stakeholders (Verkhovna Rada, Ministry of Regional development, Ministry of Ecology, State Agency on EE and ES, Uman and Zhytomyr Municipalities, International and local FIs, representatives of sectoral NGOs and private sector, pilot project beneficiaries/recipients); visits of pilot projects’ sites. Details are presented in the below table.

| **Time** |  |
| --- | --- |
| **Sunday, 18 December 2016** | |
|  | Arrival to Kiev |
| **Monday, 19 December 2016** | |
| 9.00-10.00 | Meeting in UNDP CO with:   * Ms. Blerta Cela, Deputy Country Director * Mr. John O’Brien, Regional Technical Advisor * Mr. Sergei Volkov, Senior Programme Manager (Energy and Environment) * Mr. Volodymyr Lyashchenko, Project Manager * Ms. Yuliia Decheva, Project Assistant |
| 10.00-17.00 | Site visit to Uman   * Visiting the pilot locations and conducting the meeting with the deputy mayor Mr. Sergiy Klochko * Meetings with the heads of schools and head of department for construction of Uman city council * Visiting the bioenergy technologies production facilities of UNDP contractor (company Avers)   *Accompanied by Mr. John O’Brien, Mr. Volodymyr Lyashchenko* |
| 17.00-18.00 | Meeting with the project consultant Mr. M.Devoe |
| **Tuesday, 20 December 2016** | |
| 9.00-11.00 | Meeting with the IBRD/IFC:   * Ms. Sophia Lynn, Operations Officer * Ms. Zoia Goptsii, Operations Officer * Ms. Blerta Chela, UNDP   *Accompanied by Mr. John O’Brien, Mr. Volodymyr Lyashchenko, Mr. Michael Devoe* |
| 11.30-12.30 | Meeting with Mr. Georgiy Geletukha, Head of Board of the Association of Bioenergy of Ukraine |
| 13.00-14.00 | Site visit to National Ecology and Nature Youth Centre of Ukraine (Kyiv) and meeting with Mr. Volodymyr Verbitskiy, Director |
| 15.30-16.30 | Meeting with the Project Lead Expert Mr. Oleksandr Ignatenko |
| **Wednesday, 21 December 2016** | |
| 9.00-17.00 | Site visit to Zhytomyr   * Meeting with the Mayor of Zhytomyr Mr. Serhiy Suhomlyn * Visiting the pilot project locations * Working meeting with Head of the Department of Economic and Investment Activities * Working meeting with project’s consultant on development of the Regional programme for biomass utilization for heat and hot water services in Zhytomyr oblast Ms. Svitlana Yarosh |
| **Thursday, 22 December 2016** | |
|  | Departure from Kiev |
| **Wednesday, 25 January 2017** | |
|  | Arrival to Kiev |
| **Thursday, 26 January 2017** | |
| 9.00-11.00 | Meeting with Project Team:   * Mr. Volodymyr Lyashchenko, Project Manager * Ms. Yuliia Decheva, Project Assistant   Subject: discussion of the mission programme |
| 11.00-12.30 | Meeting with Ms. Svitlana Yarosh, Director, StrawEnergy LLC; Advisor to the Zhytomyr City Mayor |
| 13.30-17.00 | Meeting/interview with Project Team |
| **Friday, 27 January 2017** | |
| 10.00-11.00 | Meeting with Mr. Oleg Nedava, Deputy Chair of the Parliament Committee for Environmental Policy, Nature Management and Liquidation of Consequences of Chernobyl Catastrophe |
| 11.30-12.30 | Meeting with Mr. Mykola Kolomiychenko, Chairman of Ukrainian Pellet Union |
| 13.30-15.00 | Meeting/interview with Project experts:   * Taras Borgun, Project Lead Expert on EU Directives implementation * Oleksandr Ignatenko, Project Lead Expert on Legal/Regulatory Framework |
| 15.00-17.30 | Desk work |
| **Monday, 30 January 2017** | |
| 10.00-12.00 | Meeting/interview with Project Team |
| 14.00-16.00 | Meeting/interview with Project manager and Ms. Marina Olshanskaya, Project Chief Technical Advisor |
| 15.00-18.00 | Desk work |
| **Tuesday, 31 January 2017** | |
| 10.00-12.00 | Meeting in IFC office   * Ms. Sophia Lynn, Senior Operations Manager, IFC * Mr. Artem Kuznetsov, Lead Expert on the FSM Development, IFC * Mr. Vyacheslav Hordienko, Lead Expert on Financial Markets, IFC * Mr. Eugene Cherviachenko, Lead Expert on Energy Efficiency and Energy Savings Financing; Advisor to the Vice Prime Minister of Ukraine * Glib Denisiuk, Head of the Department for International Business Support Programs Finance, JSC “Oschadbank” * Mr. Michael Devoe, Project International Lead Expert on FSM Development and Implementation |
| 14.00-15.00 | Meeting in the Ministry of Ecology and Natural Resources of Ukraine   * Mr. Viktor Kantsurak, Deputy Minister * Ms. Lesya Karnaukh, Head of the Department of Strategic Environmental Policy * Ms. Svitlana Grynchyk, Head of the Department of Climate Change policy and Ozone Layer Protection |
| 16.00-17.00 | Meeting with Mr. Janthomas Hiemstra, UNDP Ukraine Country Director |
| **Wednesday, 1 February 2017** | |
| 10.00-11.00 | Meeting in the Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine   * Ms. Olena Vasylkivska, Deputy Head of the Department, Head of the Unit of Normative and Methodological Support * Ms. Iryna Vyshnyak, Lead Expert of the Department of Energy-Saving in Housing and Communal Services |
| 12.00-13.30 | Meeting with the State Agency for Energy Efficiency and Energy Savings of Ukraine   * Mr. Valentin Shlikhta, Deputy Head * Mr. Igor Kovaliov, Head of the Renewable Energy Department |
| 14.00-18.00 | Desk work |
| **Thursday, 2 February 2017** | |
| 11.00-12.00 | Meeting in the Ministry of Ecology and Natural Resources of Ukraine   * Ms. Svitlana Grynchyk, Head of the Department of Climate Change policy and Ozone Layer Protection * Ms. Olha Yukhymchuk, Head of the ETS Implementation and Registry Division * Mr. Mykhailo Chyzhenko, Head of Climate Policy and Reporting Division * Mr. Igor Onopchuk, Lead Expert of the National Center for Greenhouse Gas Emissions Accounting * Mr. Sergiy Shmarin, Lead Expert of the National Center for Greenhouse Gas Emissions Accounting |
| 13.00-18.00 | Desk work |
| **Friday, 3 February 2017** | |
| 9.30-15.30 | Desk work |
| 16.00-17.00 | De-briefing meeting with Mr. Sergey Volkov |
| **Saturday, 4 February 2017** | |
|  | Departure from Kiev |

## Annex 6: List of persons interviewed

|  |  |
| --- | --- |
| Project Team | * Volodymyr Lyashchenko, Project Manager * Yuliia Decheva, Project Assistant |
| UNDP Ukraine | * Janthomas Hiemstra, Country Director * Blerta Cela, Deputy Country Director * Sergey Volkov, Head of Energy and Environment Cluster   In addition, de-briefing meeting has been hold with Mr. Sergey Volkov |
| State Agency for Energy Efficiency and Energy Savings of Ukraine | * Valentin Shlikhta, Deputy Head * Igor Kovaliov, Head of the Department |
| Ministry of Ecology and Natural Resources of Ukraine | * Viktor Kantsurak, Deputy Minister * Lesya Karnaukh, Head of the Department of Strategic Environmental Policy   Separate meeting has been organized on GHG inventory   * Svitlana Grynchyk, Head of the Department of Climate Change policy and Ozone Layer Protection * Olha Yukhymchuk, Head of the ETS Implementation and Registry Division * Mykhailo Chyzhenko, Head of Climate Policy and Reporting Division * Igor Onopchuk, Lead Expert of the National Center for Greenhouse Gas Emissions Accounting * Sergiy Shmarin, Lead Expert of the National Center for Greenhouse Gas Emissions Accounting |
| Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine | * Olena Vasylkivska, Deputy Head of the Department, Head of the Unit of Normative and Methodological Support * Iryna Vyshnyak, Lead Expert of the Department of Energy-Saving in Housing and Communal Services |
| Verkhovna Rada of Ukraine | * Oleg Nedava, Deputy Chair of the Parliament Committee for Environmental Policy, Nature Management and Liquidation of Consequences of Chernobyl Catastrophe |
| Uman City Council | * Sergiy Klochko, First Deputy Mayor * Valentyn Zagorodniy, Head of the Department for Capital Construction * Uriy Gyrtovenko, Director of the Umanteplokomunenergo Communal Utility Company |
| Zhytomyr City Council | * Sergiy Sykhomlyn, Mayor * Sergiy Garaschuk, Head of the Budget and Finance Department * Borys Pakholiuk, Head of the Department for Economic Development * Dmytro Mamrai, Head of the Department for Capital Construction * Svitlana Kovtunenko, Head of the Department of Education |
| Bioenergy Association of Ukraine | * Georgiy Geletukha, Head of the Board |
| Ukrainian Pellet Union | * Mykola Kolomiychenko, Charman |
| Manufacturers of biomass boilers | * Dmytro Muravskyi, Director, Aver-Tech * Dmytriy Tonenchyk, Managing Director, Aver-Tech * Aleksandr Ruzhyn, Head of the Uman office, Aver-Tech |
| Biomass project developers | * Svitlana Yarosh, Director, StrawEnergy LLC; Advisor to the Zhytomyr City Mayor |
| International Finance Corporation | * Sophia Lynn, Senior Operations Manager * Zoia Goptsii, Operations Manager * Artem Kuznetsov, Lead Expert on the FSM Development * Vyacheslav Hordienko, Lead Expert on Financial Markets |
| World Bank | * Eugene Cherviachenko, Lead Expert on Energy Efficiency and Energy Savings Financing; Advisor to the Vice Prime Minister of Ukraine |
| JSC “Oschadbank” (Public Joint Stock Company “State Savings Bank of Ukraine”) | * Glib Denisiuk, Head of the Department for International Business Support Programs Finance |
| Representatives of pilot projects in Uman | * Oksana Melnyk, Head of the Department of Education of the Uman City Council * Volodymyr Tarasenko, Deputy Head of the Department of Education * Mykola Chorniy, Chief Engineer of the Department of Education * Specialized School #12   + Nadiya Kuzmenko, Director   + Natalia Melnyk, Deputy Director   + Larysa Kotliarenko, Deputy Director   + Secondary School #9   + Iryna Tents, Director   + Oksana Orlyk, Deputy Director   + Lesia Zernyk, Deputy Director * Kindergarten #21   + Liudmyla Girska, Director   + Tatiana Nebykova, Deputy Director |
| Representatives of pilot projects in Zhytomyr | * Zhytomyr National Agro Ecology University   + Oleg Skydan, Director   + Liudmyla Romanchuk, Deputy Director   + Yuzef Tsal-Tsalko, Deputy Director   + Yuriy Demianenko, Deputy Director   + Ivan Mrtenchuk, Deputy Director * Secondary School #1   + Mykola Melnyk, Director   + Lyudmyla Filianovych, Deputy Director * Kindergarten #10   + Tetiana Sheliuk, Director   + Halyna Bogdanenko, Methodologist |
| Representatives of pilot projects in Kiev | * National Ecology and Nature Youth Centre   + Volodymyr Verbytskyi, Director   + Tetiana Verbytska, Deputy Director * Roman Kharitonov, Deputy Director |

In addition, discussions, meetings and/or e-mail correspondence took place with:

* John O’Brien, UNDP Regional Technical Advisor on Climate Change Mitigation
* Marina Olshanskaya, Project Chief Technical Advisor
* Michael Devoe, Project International Lead Expert on FSM Development and Implementation
* Taras Borgun, Project Lead Expert on EU Directives implementation
* Oleksandr Ignatenko, Project Lead Expert on Legal/Regulatory Framework

## Annex 7: List of documents reviewed

* Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine.Project Identification Form (PIF)
* Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine. GEF Secretariat Review for Full/Medium-Sized Projects
* Minutes of LPAC meeting
* Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine. Project Document
* Ukraine-United Nations Partnership Framework 2012 – 2016
* Country Programme Action Plan between the Government of Ukraine and the United Nations Development Programme for 2012-2016
* Project Inception Report
* Project Implementation Review (PIR) 2015
* PIR 2016
* Project Progress Report 2015
* Project Progress Report 2016
* PIMS2921 UKR Biomass LogFrame, February 2017
* Annual Work Plans (AWPs) and their revisions (2014-2018)
* Project Implementation Plan (PIP) - Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine, 2015
* PIP 2016
* Minutes of the Project Board Meeting dated 16.06.2015
* Minutes of the Project Board Meeting dated 05.02.2016
* Partnership Memorandum between State Agency on Energy Efficiency and Energy Saving of Ukraine and UNDP
* Draft Agreement by UNDP to Reimburse the International Bank for Reconstruction and Development for the Banking products for EE projects Externally Financed Output (the EFO)
* Request for Proposal (RFP): Development of Biomass training/information toolkit (including manuals, materials and presentations) and delivery of trainings
* GEF Tracking Tool submitted to the GEF for CEO endorsement
* Midterm GEF Tracking Tool
* Ukraine’s Greenhouse Gas Inventory for 1990-2014, 2016
* Technical reports prepared by the Project experts and consultants:
  + M. Devoe. Recommendations for the Preferred Option for the Operation of the Financial Support Mechanism, 2016
  + A. Danicek. Mission report, 2016
  + Road Map for Financial Support Mechanism for the Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine, 2016
  + On tariffs and price regulations for heat and hot water supply, 2016
  + On the Ukrainian legislation and regulation, 2016
  + Best practices of bioenergy technologies utilization in the municipal sector of Ukraine available, 2015
  + Bioenergy Roadmap in pursuance to the National Action Plan for renewable energy for a period till 2020, 2016
  + Criteria and procedures aimed to ensure transparent selection of biomass projects, 2015
  + Draft Regulations for Interagency Biomass Support Working Group cooperation, including explanatory note, 2016
  + Methodology for development of feasibility studies for energy willow cultivation and utilization, 2016
  + Independent Testing of Biomass Pellets Quality Available on Ukrainian Market, 2016
  + On financial and economic evaluation of the municipal projects
  + Model business plans for biomass utilization
    - Ivano-Frankivsk Oblast, 2015
    - Poltava Oblast, 2015
    - Zakarpattia Oblast, 2015
  + Regional Programmes
    - Cherkassy Oblast, 2016
    - Dnipropetrovsk Oblast, 2016
    - Ivano-Frankivsk Oblast, 2016
    - Poltava Oblast, 2016
    - Volyn Oblast, 2016
    - Zakarpattia Oblast, 2016
    - Revised draft regional programme for Zhytomyr Oblast
  + On market oriented policy and legal regulatory framework, 2016
  + Ukrainian legislation and regulation in force covering bioenergy technologies in the municipal sector, 2015
  + The GEF Small Grants Programme, Case Study, Ukraine: Supporting “Energy Farming” for Municipal Purposes, 2016
* Project publications
  + Roadmap for development of the solid bio-fuel market of Ukraine, 2016
  + Use of Biomass in the Municipal sector, 2016
  + Comprehensive analysis of the Ukrainian market of biomass pellets, 2016
  + Comprehensive analysis of market of boilers running on biomass in Ukraine, 2016
* Financial and Administration guidelines used by Project Team
  + UNDP Ukraine, Standard Operating Procedures, Administrative Processes
  + UNDP Ukraine, Standard Operating Procedures, Finance Processes
  + UNDP Ukraine, Standard Operating Procedures, Procurement Processes
* In addition for better understanding of the sustainable energy policy of Ukraine the following documents have been studied:
  + National Energy Efficiency Action Plan Through 2020
  + National Action Plan for Renewable Energy for the period until 2020, 2016
  + In-Depth Review of the Energy Efficiency Policy of Ukraine, Energy Charter Secretariat, 2013
  + Intended Nationally-Determined Contribution (INDC) of Ukraine to a New Global Climate Agreement

## Annex 8: Co-financing table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sources of Co-financing54** | **Name of Co-financer** | **Type of Co-financing55** | **Amount Confirmed at CEO endorsement (US$)** | **Actual Amount Contributed at stage of Midterm Review (US$)** | **Actual % of Expected Amount** |
| **Municipalities / Local Government** | **Uman City Council,**  **Zhytomyr City Council,**  **Zhytomyr National Agroecology University,**  **Kyiv National Ecology and Nature Youth Centre** | **Parallel financing** | **5,137,500** | **441,022** |  |
| **Other Partners (Private sector?)** | **NGO Ecomerezha,**  **NGO Molochai,**  **NGO Shyrokyi Step** | **In-Kind Contribution** | **0** | **62,400** |  |
| **Other Partners**  **(Private sector?)** | **NGO Ecomerezha,**  **NGO Molochai,**  **NGO Shyrokyi Step** | **In-cash (parallel financing)** | **0** | **92,198** |  |
|  |  | **TOTAL** |  | **595,620** |  |

## Annex 9: Project Results Framework (proposed revision by the Project Team)

By the end of the MTR mission the Project Team provided to the Consultant the proposed revision of the Project Results Framework. This revision is not approved yet.

|  |
| --- |
| **This project will contribute to achieving the following Country programme Outcome as defined in CPAP or CPD:**  **Outcome # 10:** Government adopts policy frameworks and mechanisms adopted to ensure reversal of environmental degradation, climate change mitigation and adaptation, and prevention and response to natural and man-made disasters. |
| **Country Programme Outcome Indicators:**  **Indicator 1:** Number of newly adopted environmental policy frameworks.  **Indicator 2:** Number of active green investment schemes (GIS) and energy efficient (EE) projects.  **Indicator 3:** % of national budget allocated to environment and energy sectors. |
| **Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page):**  Output 6: National and local capacities for climate change resilient policies and practices enhanced. |
| **Applicable GEF Strategic Objective and Programme:** To promote investment in renewable energy technologies. |
| **Applicable GEF Expected Outcomes:** Total avoided GHG emissions from utilisation of biomass for municipal heat and hot water services. |
| **Applicable GEF Outcome Indicators:** Avoided GHG emissions from utilisation of biomass for municipal heat and hot water services (tons CO2) and $/t CO2. |

|  | **Indicator** | **Baseline** | **Targets**  **End of Project** | **Sources of Verification** | **Risks and Assumptions** |
| --- | --- | --- | --- | --- | --- |
| **Objective** |  |  |  |  |  |
| The objective of the project is to significantly increase the use of biomass energy as a fuel source for heating and hot water services in the municipal sector in Ukraine by at least 20% over the baseline scenario in order to reduce direct greenhouse gas emissions by 63,577 tons of CO2 over the 4-year life of the project and, subsequently, 19,143 tons of CO2 during each year of the remaining 16-year life of the boiler equipment. When one looks at the 20 year lifetime of the boilers earmarked for development during the project period, the boilers will have generated 1,618,834 MWhTH, with a combined amount of CO2 reduced of 361,000 tons, equivalent to $13 of GEF funds per tCO2. | Municipalities/ Private Sector have operationalised direct investment in municipal biomass projects for heat and hot water supply. | GHG in the municipal heating sector schedu­led to increase from 434.4 million tCO2 (in 2005, as per Ukraine’s Third, Fourth and Fifth National Communica­­tions to UNFCCC prepa­red in 2009 (all three is­su­ed in one docu­ment)) to as high as 740.7 milli­on tCO2 by 2030. The pre­­­sent contri­bution of biomass towards heat/ hot water supply is esti­mated at 75 GWhTH.  Negligible investments taking place in munici­pal biomass for heat and hot water supply. | 285 GWhTH in terms of heat and hot water generated ~~(as a result of~~ ~~the 18 municipal~~ ~~biomass systems brought on~~-~~line)~~  by project completion.  Direct reduction of 63,577 tons of CO2 over the 4-year FSP project life cycle and 361,000 over the full lifetime of the plants. Es­­ti­mated cumulative indirect GHG emission reduction of over 1.4 million tons of CO2 by 2035 on the basis of a conservative policy scenario and a GEF causality factor of 80%. | Project’s annual reports, GHG monitoring and verification reports.  Project final evaluation report. | Continued commitment of project partners, inclu­­ding Government agencies and investors/ developers. |
| **Outcomes** |  |  |  |  |  |
| **Outcome 1A:** Streamlined and comprehensive market-oriented policy and legal/regulatory framework to promote municipal biomass for heat and hot water services. | Policy and legal/ regulatory framework  ~~finalized, adopted and~~ ~~available for~~  ~~consultation by~~  ~~potential investors~~ proposed, discussed with potential investors and adopted by the Government. | None available at the present time. | To be completed within ~~15~~ 48 months of recruitment of project manager and approved by Government ~~1.5 years after start~~ by the end of project. | Published documents. Government decrees/laws.  Records of consultations with investors | Commitment of the various Government institutions. |
| **Output 1A.1:** Report streamlining a market-oriented policy and legal/regulatory framework to regulate municipal biomass for heat and hot water services. | ~~Report confirming~~  ~~that policy and framework~~  ~~arrangements are~~  ~~adopted and in place~~ Report reflecting the status of policy and framework arrangements. | Potentially overlapping responsibilities of various Government institutions make the decision process quite cumbersome. | To be completed within ~~15~~ 48 months of recruitment of project manager and approved by Government ~~1.5 years after start~~ by the end of project. | Project reports “Policy and legal/regulatory framework to regulate municipal biomass for heat and hot water services”  Published documents. | Commitment of the various Government institutions. |
| **Output 1A.2:** Strategy document, including national roadmap, aimed at sharpening the focus of the respective roles and responsibilities ~~of Ministry of Agrarian Policy and Food (MAPF) and Ministry for Regional Development, Construction, Housing and Communal Services (MRDCHCS)~~ among relevant national authorities | Document outlining individual roles and responsibilities formulated, adopted and procedures in place. | Not available at the present time. | To be completed within ~~15~~ 48 months of recruitment of project manager and approved by Government ~~1.5 years after start~~ by the end of ~~project~~ year 4. | Published documents. | Commitment of the respective Government institutions. |
| **Output 1A.3:** Criteria and procedures for the introduction of a transparent process in the selection/award of municipal biomass projects for development. | Guidelines for the selection of projects available and put into practice. | Not available at the present time. | To be completed within ~~15~~ 24 months of recruitment of project manager and approved by the Government  ~~1.5~~2 years after project start.  ~~Competitive~~ ~~selection/ award of~~ ~~projects completed by~~ ~~the end of 3 years after~~ ~~project start~~. | ~~Published~~ ~~documents~~Project report.  ~~Signed documents.~~ | Commitment of the various Government institutions and project developers. |
| **Outcome 1B:** Municipal Targets for Biomass Energy for heating are agreed and established. | Confirmation that municipal targets have been established. | None available at the present time. | To be completed within ~~12~~ 48 months of project start. | Published document. | Commitment of Municipalities. |
| **Output 1B.1:** National Targets for Biomass Energy in heating until 2020 are agreed and adopted. | Confirmation that national targets for biomass until 2020 have been established. | None available at the present time. | To be completed within ~~18~~ 24 months of project start. | Published document. | Commitment of Government institutions and municipalities. |
| **Output 1B.2:** Municipal Targets for Biomass Energy in heating ~~(for at least 5 Oblasts including Ivano-Frankivsk and Cherkasy)~~  are agreed and adopted. | Confirmation that municipal targets for agricultural and wood biomass have been agreed and adopted. | None available at the present time. | Municipal targets for at least 5 ~~Oblasts~~ ~~including Ivano~~-~~Frankivsk and~~ ~~Cherkasy) completed within 12 months of~~  ~~project start~~ municipalities proposed  within 48 months ofproject start and adopted by project end. | Published document. | Commitment of 5 ~~Oblasts~~  ~~including~~  ~~Ivano-Frankivsk and~~  ~~Cherkasy~~ municipalities. |
| **Output 1B.3:** Regional Programmes for promotion of biomass energy in munici­pal heat and hot water supply sector are agreed and adopted | Number and status of Regional Programmes | N/a | At least 5 Regional Bio­mass Promotion Progra­mmes are developed within 24 months of the project start and officially adopted by the end of the project | Legal documents confirming the status of regional programmes | Commitment of regional authorities to pursue transition to biomass energy |
| **Outcome 2:** Capacity available within ~~MAPF~~ relevant national bodies to sup­port development and implementation of a municipal biomass programme through the establishment of a Biomass Support Unit or alternative arrangements. | Number of staff who participated in and successfully completed capacity development programme, including training on the revised and updated Municipal Biomass Guide. | None available at the present time. | Ten staff trained within 15 months of recruitment of project manager. | Training modules/number of staff trained.  Project report. | Concerned institutions willing to release staff for training. |
| **Output 2.1:** ~~A sustainable Biomass~~ ~~Support Unit (BSU) established within MAPF to~~ Appropriate institutional arrangements are in place to support the ~~municipal~~ regional biomass programmmes during the project lifetime and beyond. | ~~Biomass~~ ~~Support Unit,~~ ~~including website, in~~ ~~place and operational~~ Status of institutional arrangements to sup­port regional biomass programmes. | None available at the present time. | To be fully operational within ~~15~~ 48 months of recruitment of project manager. | ~~Biomass Support Unit~~ ~~in place.~~  Project report.  ~~Evidence that BSU~~ ~~has been integrated~~ ~~within MAPF~~ ~~structures~~ | Support of ~~MAPF~~ the Government ensured ~~prior to commencement~~ ~~of project~~ ~~activities~~ throughout all project duration. |
| **Output 2.2:** Suitable methodology for the economic/financial evaluation of municipal biomass systems.  ~~Appropriate incentives to attract project developers.~~ | Status of ~~M~~ethodology ~~applied~~ ~~by BSU~~ for municipal biomass projects.  ~~Incentives operationalized~~ | Not available at the present time. | To be completed within ~~15~~ 24 months of recruitment of project manager and applied by Government thereafter. | Project report. | Cooperation of concerned entities and staff. |
| **Output 2.3:** Technology transfer opportunities and delivery models, including ~~development~~  description of relevant best practices in boiler construction and installation identified, ~~standards, formulated and~~ operationalised reviewed and presented. | ~~Reports confirming~~ ~~that technology~~ ~~models and boiler~~ ~~standards have been~~ ~~developed and are~~ ~~being~~ ~~implemented~~ Status of technology transfer/adoption and associated delivery models | None at the present time. | Technology transfer oppor­­tunities and deli­­ve­­ry models identified and implemented ~~Completed~~ within ~~24~~ 48 months of project start. | Project reports. | Commitment of equipment suppliers and project developers. |
| **Output 2.4:** One-stop shop ~~within BSU~~ to provide information and guidelines on construction licenses, ~~and~~ permits and other aspects of biomass project development and implementation is in place ~~to developers~~. | Status of ~~One~~one-stop  shop ~~is operational~~.  Information brochure and website are available. | Under the business-~~as~~-  ~~usual scenario, the~~  ~~average time to secure~~  ~~all required~~  ~~construction licenses~~  ~~and permits can take~~  ~~up to 12 months.~~N/a | One-stop-shop set-up and is operational ~~All construction licenses~~ ~~and permits are issued~~ within 6 ~~months~~ following completion of ~~feasibility studies and selection of promoters~~. | ~~Signed documents.~~ Report | Continued investor interest. |
| **Output 2.5:**  ~~Capacity of BSU~~ developed to monitor and document ~~p~~Project experience regularly monitored and documented. | Status of project  monitoring.  Capacity development material prepared, including lessons learned. | No capacity development programme. | ~~10 BSU staff trained by the end of~~  ~~project.~~  Monitoring methodology developed, including for GHG emission reduction. Regularly monitoring reports prepared | Project reports. | Designation of staff by Government. |
| **Outcome 3:**  Investment promotion in municipal use of biomass through establishment/strengthening of Financial Support Mechanism. | ~~Funding available~~  ~~from DerzhZemBank,~~  ~~including funds under~~  ~~FSM, to support Prepa­ration of~~ ~~feasibility studies, business plans and~~ ~~investment.~~  Status of investment  in municipal biomass  projects  Status of FSM | Not presently available. | ~~Construction of at least 18 municipal bio­mass~~ ~~projects completed by~~ ~~the end of the~~ ~~project~~  At least 12 projects suppo­­­r­ted with first 24 months  XXX $ mobilized for  investment in biomass  projects  FSM mechanism is launched and operation by the end project. | ~~Signed Heat and Hot~~  ~~Water Purchase~~  ~~Agreements and other~~  ~~Relevant documents.~~ Report about FSM  Monitoring reports on demo-projects | Government has a sustainable financing mechanism in place. |
| **Output 3.1:** Financial Support Mechanism (FSM) established ~~within DerzhZemBank of MAPF~~ and continues to operate beyond project lifetime. | Financial Support Mechanism (FSM) established and operationalized and is supporting projects to be implemented. | None available at the present time. | FSM is operational ~~2~~ 4 years after project start.  As a mid-term target, the project will look into an eventual need for further subsidy and subsequent support to the Government for continuing with the subsidy scheme. | Applications for loans from project developers processed.  Disbursements made to project developers. | ~~Cooperation of MAPF and DerzhZemBank.~~  Sustained interest of  developers.+ fin risk |
| **Output 3.2:** Capacity developed within FSM to appraise projects in municipal use of biomass for lending. | Number of financial institution’s staff successfully trained. | None available at the present time. | ~~Five to six~~ financial insti­tution staff trained within 15 months of recruitment of project manager. | ~~Number of staff~~  ~~trained~~ Project report. | Cooperation IBRD and partner bank(s) continues ~~Cooperation of~~  ~~DerzhZemBank~~ |
| **Output 3.3:** Feasibility studies and business plans for municipal biomass heat and hot water systems. | ~~Reports available.~~ Num­­ber of feasibility studies | Non-existent at the present time. | Completed within 18 months of project start. | Project documentation. | All necessary data available to project developers. |
| **Output 3.4:** Marketing and awareness raising campaign to inform potential FSM’s clients about existing financing  opportunities conducted | Number of workshops/ events conducted | N/a | 338 within 48 months since the project start | Workshop reports |  |
| **Output 3. ~~4~~5:** Reports on financial closure with project developers and completion reports for one project each in Cherkasy and Ivano-Frankivsk Oblasts and 4 additional projects in other Oblasts. | Signed financial closure documents. | Not presently available. | ~~Completed within 30~~  ~~months of project~~ ~~start.~~ Financial closure documents signed by the end of 4th year | Project reports. | Supportive financial regulations in place.  Sustained interest of developers. |
| **Output ~~5~~6:** ~~Report on completion~~  ~~of a total of 18 municipal~~ Status of  investment in biomass heat and hot  water systems promoted by the  project ~~end~~. | Status of ~~Completion~~  report~~s~~. | Almost none being built at the present time. | 18 municipal biomass hea­ting and hot water systems ~~completed~~ initiated by project end which will have generated 1,618,834 MWhTHin thermal energy with a combined amount of CO2 reduced of 361,000 tons over the 20 year lifetime of the boilers. | Site visits and project reports. | Supportive policy, institutional, legal and regulatory framework, and sustained interest of investors. |
| **Outcome 4:** Outreach programme and dissemination of project experience/ best practices/lessons learned for replication throughout the country. | Outreach programme formulated. Project ex­perience compiled, ana­lysed and disseminated. | Lack of sufficient information to pursue programme. | Increased awareness among stakeholders in place to promote and develop the market for municipal biomass. | Project final report and website. | Growth of programme will be sustained. |
| **Output 4.1:** ~~National p~~Plan to imple­ment outreach/promotional activities to support biomass projects targeting domestic (and international) investors. | National Plan for suppo­r­ting national biomass projects available and operationalised. | No such plan available. | Completed within ~~18~~ 24 months of project initiation. | Project documentation. | Expected expansion of programme. |
| **Output 4.2:** Comprehensive and reliable data compiled and available for future initiatives. | Project experience, lessons learned and best practices compiled. | None available. | Completed within 3 months of project end. | Project documentation. | Successful completion of project. |
| **Output 4.3:** Published Municipal Biomass Guide detailing a step-by-step approach for implementing municipal biomass programmes. | Increased capacity of municipalities to implement municipal biomass programmes. | None available. | Completed within 12 months of project initiation. | Project publication. | On-time finalisation of Municipal Biomass Guide. |
| **Output 4.4:** Published materials (inclu­ding video) on project experience/best practices and lessons learned. | Project experience and best practices compiled, published and available on website.  Short video available.  Annual Summit of the Regions Biomass Conference. | Lack of information on best practices and lessons learned.  None available.  None is being held. | Completed within 3 months of project end.  Completed within 3 months of project end.  Annual Summit of the Regions Biomass Conference organised in a different region each year. | Project documentation and web site.  Video posted on website.  Conference Proceedings. | Successful completion of project.  Successful completion of project.  Project activities are proceeding as per plans. |

## Annex 10: Updated Risk Log

| **Risks Description** | **Type** | **Critical status** | **Management Response** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| At Project Design  (February 2014) | At Project Inception  (November 2014) | At Project Mid-term Review  (January 2017) | |
| Lack of political will to adopt a necessary policy and legal/regulatory framework. | Political | Y | This risk will be mitigated by creating a coalition of interested parties including the association of Municipalities for Biomass Energy in Ukraine, government, private project developers, and NGOs like the Bioenergy Association of Ukraine and others. The coalition will work together to encourage and support investment in bioenergy projects in the municipal sector.  **Probability & Impact:**  P = 2  I = 3 | Status: Increasing  The change of National Implementing Partner from the Ministry of Agrarian Policy and Food (MAPF) to the State Agency for Energy Efficiency and Energy Saving (EE Agency) under the Ministry of Regional Development, Construction, Housing and Communal Services (MRDCHCS) will partially help mitigate the risk. Unlike MAPF, the EE Agency has clear mandate to design and ensure implementation of policy and regulatory framework in the area of renewable energy, including biomass. Further, MRDCHCS is the main governmental body responsible for municipal sector, including modernization and investment in heat supply sector. Both, the EE Agency and the Ministry of Regional Development are better positioned to support the adoption of required policy and legal changes than MAPF, as originally envisaged by the project document. | Status: No change  Apart from close collaboration with the EE Agency and the Ministry for Regional Development, the project works closely with the relevant Parliamentary Committees (e.g. the Committee on environmental policy, Nature Resource Use and Mitigation of the Consequences of the Chernobyl Accident) to support and promote the process of Parliamentary review and adoption of the proposed policy and regulatory packages.  Another risk mitigation strategy adopted by the project is to facilitate the inclusion of relevant biomass-related provisions in the key strategic documents and legal documents under preparation by the Government, such as the draft Strategy on Heat Supply, the draft National Energy Strategy, the draft Strategy on the development of the communal sector, etc. All above referred strategic documents represent high priority for the Government and therefore have higher likelihood to be approved than a stand-alone biomass-only package.  Further, the project offered assistance to the EE Agency to contribute to the development of new National EE and RES Plans (as mandated by Energy Community – to start in 2018-2019) to ensure inclusion of biomass (thermal) -related targets and specific implementation and M&E provisions. | |
| Apprehension that the likelihood of a biomass programme for municipal heat and hot water services may not take off. | Institutional | N | A Biomass Support Unit will be established within the Ministry of Agrarian Policy and Food to develop and support a National Programme on Biomass, including raising awareness, which would target both national and international investors. In addition, there is already investor interest in developing business opportunities in the municipal biomass sector.  **Probability & Impact:**  P = 2  I = 3 | Status: Increasing  At project Inception stage the likelihood and feasibility of having a stand-alone Biomass Programme for Municipal Heat and Hot water services have been re-assessed in consultation with new project partner, the EE Agency. It was decided that preparation of such document would result in duplication of work since the Government already has National RES Action Plan, (based on Ukraine’s obligation under the Energy Community Treaty) which already cover biomass sector, including thermal biomass. Instead, it was agreed upon that the project would support the elaboration of Road Map for promotion of biomass in municipal sector, as well as the development of several Regional Biomass Support Programmes. | Status: No change | |
| Bio-energy technology failure. | Technical (Other) | N | Bioenergy technologies are generally well known and are widely used in the rest of the world, including neighbouring EU countries. The project will be designed and implemented to identify, transfer and adopt best available bioenergy technologies and practices in Ukraine. There are also several companies in Ukraine which have started boiler manufacturing under license with foreign companies, including a share of foreign components.  **Probability & Impact:**  P = 1  I = 1 | Status: No change | Status: Decreasing  The following risk mitigation measures have been taken: 1. The contract for equipment supply considered 1 year guarantee and the contractor is providing maintenance. 2. Contractor has (after installation) further analysed the needs of consumers and has improved/adjusted the technology accordingly (e.g. wither doors of furnaces in order to use wood as a fuel). 3. Post-implementation monitoring is being implemented in all sites that shows the saving of funds (some figures), etc. | |
| Biomass supply chain disruptions. | Operational | N | Economic efficiency of energy use of biomass is dependent on the logistics of the full chain of biomass harvesting/collection, processing and supply. The project will work with the different partners in the biomass supply chain to minimise disruptions from cultivation all the way to delivery at the boiler site. It is recognised that agricultural biomass collection will take place in summer/early autumn, while its usage for heating will be in late autumn, winter and early spring - complementary, in a sense.  **Probability & Impact:**  P = 2  I = 2 | Status: No change | Status: Decreasing  For the demonstration projects implemented the Contractor has provided supply of pellets and there by the Project contributed to the establishment of reliable supply chain.  To help create a sustainable business model the project has implemented tree pilots on establishing energy willow nurseries in three regions of Ukraine to support provision of energy crop rootstocks and the following supply of biomass for bioenergy feedstocks. | |
| Low domestic demand for bioenergy in municipalities. | Operational | N | Although more than 90% of produced pellets (from wood chips and sunflower husks) in Ukraine are exported to the European Union, the increase in gas prices would facilitate domestic demand for agricultural biomass which is not widely utilized at the present time. Moreover, this project will promote and encourage demand in the municipal sector for biomass-based heat and hot water services.  **Probability & Impact:**  P = 1  I = 2 | Status: Decreasing  Starting from spring 2014, greatly due to the economic crisis caused by the armed conflict in eastern Ukraine and political tension with the Russian Federation, Ukraine is actively promoting the development of alternative energy sources as Ukraine’s dependence on foreign energy supplies is perceived to be one of the key threats to the country’s national security. The current government pays particular attention to energy security issues trying to increase the level of energy independence and substitute expensive imported natural gas (both for economic and political reasons). | Status: Decreasing  The heat production from biomass is gradually growing (from 1433ktoe in 2009 to 1934ktoe in 2014 and 2102ktoe in 2015). Bioenergy is to be the main contributor to the renewable energy sector and is expected to take around a 85% share in renewable heating (5000 ktoe out of 5850 ktoe total renewable heat energy target till 2020 set by the National Renewable Energy Action Plan adopted in October 2014. | |
| Environmental/  Climate Change | Environmental | N | There are multiple environmental risks (e.g. a drop in biomass resource due to a change in climatic conditions) which are potentially associated with development and deployment of bioenergy technologies. On the resource supply, the risk will be mitigated by focusing on ready available straw and willow (thus minimizing existing negative environmental impact from their uncontrolled combustion/storage). With regard to a decrease in biomass resource due to climatic conditions, this is unlikely to happen within the project timeframe, as evidenced in the national communications. In addition, environmental risk management will be carefully integrated and studied in the course of technology development for biomass combustion in order to avoid any potential negative impact.  **Probability & Impact:**  P = 2  I = 2 | Status: No change | Status: No change | |
| Financial: Lack of commitment from private and public sector to invest in municipal biomass. | Financial | N | Already during the project design stage several potential investors participated in the municipal biomass projects competition, signifying their interest and commitment to invest provided a conducive and appropriate investment environment is created. In the unlikely event that investment does not materialize from proposed investors, alternative investors will be sought.  **Probability & Impact:**  P = 1  I = 2 | Status: Increasing | Status: Decreasing | |
| Financial: DerzhZemBank experiences longer than expected loan processing times, resulting in hardships to potential investors. | Financial | N | DerzhZemBank became operational on 1 January 2013, under the purview of the Ministry of Agrarian Policy and Food, and is still in a “running-in” period with regard to its banking operations. This Bank will “host’ the Financial Support Mechanism to provide loans to potential investors, while also managing the investment grant from GEF. Thus, the project is in a unique position towards “moulding” the Bank in the right direction from almost its very start.  It is not expected that disbursements for municipal biomass will start right after initiation of project activities; however, monitoring of the Bank’s operations will take place to ensure that lending for such activities stays on track.  **Probability & Impact:**  P = 2  I = 3 | Status: Increasing  DerzhZemBank is to be liquidated following the Parliament decision taken in June 2014, and the adaptive management needs to be taken on the project in order to re-design the financial support mechanism with a new partner. | Status: Decreasing (adaptive management applied)  The project collaborated with the International Finance Corporation (IFC) to efficiently design, jointly manage and implement a Financial Support Mechanism (FSM) aimed at the development of a standardized financial product that banks can use to finance the types of technical projects being supported by the Project. In May 2016 Recommendations for the Preferred Option for the Operation of the FSM implementation were developed by the project’s International Consultant on the FSM to help kick-off the process.  After lengthy legal disputes between UNDP and World Bank Group (where the IFC belongs to) on the format and details of the agreement, it was finally signed in December 2016. A local financial institution – the state-owned bank “Oschadbank” (the second largest bank in Ukraine) was also selected and engaged as a partner for implementing the FSM. | |
| Insufficient Information and Awareness | Operational | N | Biomass is often perceived as waste with zero cost and insufficient information on bioenergy technologies is typical for Ukraine. However, since 2002 international Ukrainian conferences on biomass have become regular events in the country and BSU will support and participate in these conferences. Ukraine has also sufficient scientific, technological and engineering base for production of certain RES technologies. Moreover, the Municipal Biomass Guide and capacity building activities of the project will help to raise the awareness on biomass related issues.  **Probability & Impact:**  P = 1  I = 2 | Status: No change | Status: Decreasing  During 2015-2016 the project has developed a number of biomass-related informational and analytical materials (in line with the National plan for implementing outreach/promotional activities formulated by the project in 2015), including the Municipal Biomass Guide detailing a step-by-step approach for implementing municipal biomass programmes. For 2017-2018, a large-scale outreach programme (primarily focused on trainings and informational campaign among municipal authorities and specialists) is planned to promote use of agricultural biomass for heating and hot water services. |

Note: The underlines are made by the Consultant

## Annex 11: Signed UNEG Code of Conduct form

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| MTR Consultant Agreement Form  Agreement to abide by the Code of Conduct for Evaluation in the UN System:  I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.  Paata JANELIDZE  Signed at Kiev, 19.12.2016  Signature-2.jpg  Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

## Annex 12: Signed MTR final report clearance form

 *Annexed in a separate file:* Audit trail from received comments on draft MTR report

 Annexed in a separate file: Relevant midterm tracking tools

1. This law was adopted on 21 March 2017 by the Parliament [↑](#footnote-ref-1)
2. Numbers of recommendations in this table correspond to those ones in Chapter 5.2 [↑](#footnote-ref-2)
3. <http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf> [↑](#footnote-ref-3)
4. Specific, Measurable, Achievable, Relevant and Time-Bound [↑](#footnote-ref-4)
5. #### Ukraine. Mr. Vladyslav Marushevskyi. Operational Focal Point since 2017-02-02 (Source: <https://www.thegef.org/focal_points_list/U> )

   [↑](#footnote-ref-5)
6. Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects (<https://www.thegef.org/gef/sites/thegef.org/files/documents/C.33.Inf_.18%20Climate%20Manual.pdf>) [↑](#footnote-ref-6)
7. UKRAINE: Supporting “Energy Farming” and Waste Agricultural Biomass Utilization for Municipal Purposes. Experience in Europe and the CIS Region with Clean Energy: UNDP, GEF, And UNECE. UNECE, 2016. [↑](#footnote-ref-7)
8. Project Progress Report 2016 [↑](#footnote-ref-8)
9. Questions are from the ToR [↑](#footnote-ref-9)
10. План дій для сталого енергетичного розвитку міста Черкаси на 2013-2020 роки. План дій зі cталого енергетичного pозвитку міста житомира на 2015-2024 роки. SEAPs can be downloaded from <http://www.covenantofmayors.eu/about/signatories_en.html?city_id=4619&seap> [↑](#footnote-ref-10)
11. IFC Greenhouse Gas Reduction Accounting Guidance For Climate Related Projects, 2013;

    EBRD Greenhouse Gas Assessment Methodology, 2010 [↑](#footnote-ref-11)
12. <http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf> [↑](#footnote-ref-12)
13. Leakage - GHG emissions which occurs outside the CDM project boundary, and which is measurable and attributable to the CDM project activity. Potentially leakage may occur in cases if in the baseline scenario straw is used for energy purposes by others and if its potential is limited, in the project scenario, those ones, in order to meet their energy demand, may use e.g. fossil fuel instead of straw, i.e. increase GHG emissions. [↑](#footnote-ref-13)