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Moldova

Final Report

Project Title: “ESCO Moldova project - Transforming the market for Urban Energy Efficiency in Moldova by introducing Energy Service Companies”

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List of abbreviations and acronyms:

AWP	Annual Work Plan
CC	Climate change
GEF	Global Environment Facility
GoM	Government of Moldova
IW	Inception Workshop
MoEnv	Ministry of Environment of Moldova
NGO	Non-governmental organization
PB	Project Board
PM	Project Manager
PA	Project Assistant
PMT	Project Management Team
ToR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNDP CO	United Nations Development Program Country Office

I. BASIC DATA / SUMMARY

Date of submission:	10 December 2018
Benefiting country and location of the project:	Republic of Moldova, Eastern Europe
Title of the project:	ESCO Moldova project - Transforming the market for Urban Energy Efficiency in Moldova by introducing Energy Service Companies
Duration of the project:	27 November 2014 - 31 December 2018 (4 years)
Organization responsible for management of the project:	UNDP Moldova
National Implementing Partner	Ministry of Environment / Ministry of Economy
UN executing partners:	<p>UNDP Moldova Dafina Gercheva, Resident Representative Tel: +373-22-220-045, ext. 105 Email: dafina.gercheva@undp.org</p> <p>Common UN Mailing Address UN House 131, str. 31 August MD-2012, Chisinau, Republic of Moldova</p>
Total project cost : <i>(Budget breakdown – Annex 1)</i>	<p>Total resources: USD 1.45 million</p> <p>GEF USD 1.3 million</p> <p>UNDP USD 150,000</p>
Reporting period:	01 January 2015 – 31 December 2018

II. CONTEXT

The Republic of Moldova is highly dependent on energy imports. Over 75% of Moldova's energy needs are ensured through imports. The dependency on the external sources of energy has led to a constant rise in price for energy and to accumulation of large debts to the external providers, like Russia, Ukraine, etc. The energy sector is a key sector for the economy of the Republic of Moldova, being vital for the successful implementation of the national economic development program. The Government has committed itself to reform the energy sector by increasing the energy security of the country, attracting investments in infrastructure, and creating in an energy market based on equitability principles and mutual advantages.

The Energy Strategy of the Republic of Moldova deals with objectives, measures and activities oriented towards a more efficient, competitive and reliable national energy sector whilst ensuring the country's energy security, the upgrading of energy-related infrastructure, improved energy efficiency and use of renewable energy sources, and its integration into the European energy market. There is thus a detailed strategic framework in place, which is aligned to the energy objectives of the European Union.

While Moldova's per capita GHG emissions are considerably lower than the average level of developing economies in Europe and Central Asia (1.88 tCO₂/capita vs. 7.54 tCO₂/capita, respectively), the carbon and energy intensities of its economy are one of the highest among the transition economies of Europe and Central Asia. The key reasons being inefficiency of its industrial sector, the increased use of motor vehicles and continued operation of Soviet-legacy buildings with poor thermal insulation. On the other hand, this also indicates that Moldova has considerable potential in shifting to a more sustainable and climate-friendly development path, achieving energy efficiency gains that could also lead to sizeable reductions in its carbon footprint.

The building sector of Moldova is the biggest energy consumer with around a 40% share of the final energy consumption, of the country. Therefore, the demand for energy efficiency improvements in the public and residential building sectors is one of the national priorities listed in the primary as well as secondary legislation.

The main challenge facing both the public and residential building sectors on the path to achieving energy efficiency targets is the access to finance, which is limited and does not allow for any improvements to the existing building stock. By piloting the first 20 projects implemented through performance contracting, additional opportunities to increase the energy efficiency of the sectors will be introduced to the market.

III. PROJECT BACKGROUND

III.1 Project goal

The project goal is to create a functioning, sustainable and effective ESCO market in Moldova by converting existing engineering companies into energy service companies (ESCOs), as the basis for scaling up mitigation efforts in the municipal building sector in Moldova, leading to CO₂ emission reductions through the implementation of energy performance contracts (EPCs).

III.2 Summary of project objectives and outputs

The ESCO Moldova Project intends to eliminate/address a number of barriers through the following project outputs:

- Green Urban Development Plan adopted by city of Chisinau;
- ESCO Business model in Moldova is operational;
- Financial mechanism and financial support available to ESCOs;
- EPC projects replicated in other municipalities and information disseminated.

The main targets to be achieved by the end of the project are:

- A functional ESCO market with a functional Loan Guarantee Fund (LGF) in place;
- ESCO companies created and consolidated; the creation of new investments in EE measures that will lead to long term energy consumption savings and 20 EE projects implemented;
- Better conditions for occupants in public and residential buildings and overall will advance Chisinau in its sustainable green development ambitions.

Project activities were designed to respond to all the outlined challenges and consequently offer feasible solutions to the requirements of the energy efficiency financing market needs. In addition, they envisaged the opportunity of creating synergies with local stakeholders as well as offer incentives for the ESCO market to start developing. Specific attention was focused on the development of capacities of local energy service providers (potential ESCOs), and local authorities as well as the banking sector. Through planned project activities, such as amendments to the legal framework for energy services and the development of green procurement guidelines, improvements to the Urban Development Plan and ultimately the implementation of the first 20 projects using financial guarantees, the project will achieve the set up targets and overall objectives.

III.3 Reference on how the project aims to attain the outputs

Output 1: Green Urban Development Plan Adopted by City of Chisinau

Activities under Output 1 aims at providing recommendations to the development of a green urban development plan for Chisinau in line with the existing Urban Development Plan (UDP) in order to give a “green focus” and special emphasis on energy

efficiency in the building sector. This component will help define those specific areas in which the municipal ESCO will invest to achieve the emissions reduction targets established by the City and the development of a 'Green Procurement Guide'. Its adoption will ensure that all public tenders meet minimum standards of environmental integrity and provide guidelines to other major municipalities to implement the same strategy towards their green urban development objectives.

Output 2: Business Model in Moldova is operational.

Output 2 aims at strengthening the capacity of established Energy Service Providers and creating EE project opportunities. A series of 20 EE projects will be implemented in the Chisinau area and the ESCO business model will be piloted in Moldova.

A training program design and delivery will provide sufficient understanding on the issues related to energy performance contracting modalities, the specifics of the ESCO business model as well as the main opportunities and challenges. Based on the experience of developed countries, developing the ESCO market is impossible without incentives and technical support. Therefore, a series of technical partnerships and working agreements with key partner institutions will be signed to ensure the appropriate institutionalization of the model on the local market. In addition, under Output 2 20 EE Projects will be selected and implemented to pilot the EPC modality in Republic of Moldova.

Output 3: Financial Mechanism and Financial Support available to ESCOs

Output 3 will aim at establishing a sustainable mechanism ready to finance EPC projects. The activities under this output will focus on developing an agreement on LGF Regulations and Operational Guidelines, a financial Institution and Partnership Agreement, a financial Partnership and Working Agreement with the Energy Efficiency Fund, a model Energy Performance Contract (EPC), LGF Management and Accountability Arrangements as well as a Monitoring and Reporting mechanism. The LGF Exit Strategy to be developed will ensure the sustainable use of funds after the project completion.

Output 4: EPC Projects Replicated in Other Municipalities and Information Disseminated

Output 4 will focus on a transformative impact on the greening of cities and towns in the Republic of Moldova. A replication strategy for ESCO activities towards green urban development needs will be elaborated at the stage of the preparation of the Green Urban Development Plan. At least one other city should embark on the green investments. At the stage of the EE projects implementation through the Energy Performance Contract approach, other municipalities will be invited to attend the training sessions related to the municipal sector. In addition, the project will provide other municipalities with reports, studies and templates as well as the needed TA within Component 4. At least another municipality must replicate EE efficiency improvements with the support of ESCOs.

III.4 Project national partners

Ministry of Economy and Infrastructure (successor of Ministry of Economy and Ministry of Regional Development and Construction)

Ministry of Agriculture, Regional Development and Environment (successor of Ministry of Environment)

Energy Efficiency Agency

Energy Efficiency Fund

Chisinau Municipality

Local engineering companies

NGOs

Mass media

Individual experts and consulting companies

Representatives of academia

The project further maintains a productive collaboration with the main national stakeholders and international donor agencies active in the energy sector in the Republic of Moldova, through the participation at the regular meetings of donors in EE ad RES sector.

IV. SUMMARY OF IMPLEMENTATION PROGRESS AGAINST OBJECTIVES AND TARGETS FOR 2015-2018:

Output 1: Green Urban Development Plan Adopted by City of Chisinau

<p><u>Targets for 2015:</u></p>	<ul style="list-style-type: none"> • GUDP/SEAP situation analysis conducted, recommendations and conclusions provided to the beneficiary, resources Mobilization Plan for SEAP developed and delivered; • Green Procurement Guidelines developed and delivered; • Findings of the GUDP/SEAP/Resource Mobilization Plan/GPG disseminated and awareness raising about GHG emissions increased;
<p><u>Targets for 2016:</u></p>	<ul style="list-style-type: none"> • The Chisinau General Urban Plan Terms of Reference – A Practice Guide to Green Urban Development Planning developed and handed over to Municipality of Chisinau • Standard set of documents for Public Procurement of energy services developed and endorsed by public procurement agency • Sustainable Energy Action Plan updated and handed over to the municipality for approval.

Green Urban Development Situation Analysis / SEAP / Resources Mobilization Plan developed.

The Green Urban Development situation analysis was developed following an international expert one-week mission to Moldova. Local stakeholders, City officials, representatives of Government Agencies and Ministries and local utility companies were engaged with the aim to gain an understanding of the context and the current baseline position. The existing plans for the city were studied in detail and contact was made with the lead designer INCP URBANPROJECT. Pilot Energy Efficiency (EE) projects were visited and the initial outcomes of these were discussed with City officials. During the week, initial findings and recommendations were tested with the City Architect and his team to validate these, and gain an insight into the current implementation of the existing plan. Whilst the gap analysis demonstrated that much of the local planning policy frameworks are either neutral or benign environments for green urban development (GUD), the economic baseline and context has changed radically since both the General Urban Plan (PUG) 2007 and Territorial Plan (PAT) 2007 were adopted. City officials stated that it was their desire to commission a new plan, based on GUD principles, rather than revise the current plans.

A number of options were presented to the stakeholders at the meeting and these can be summarized as:

1. Produce a separate document as supplementary guidance alongside the adopted plan, at the time presented as PUG 2007 in isolation to PAT 2007.
2. Provide an update to the adopted UDP, i.e. PUG 2007 within the document providing additional detail.
3. The complete redrafting of the UDP to embrace GUD principles from the ground up.

Concerns were raised with Option 1 because of the consensus that the existing PUG was not fit for purpose and not meeting the needs of the municipality in decision-making or the setting of programs. Equally, Option 2 was equally dismissed due to the perceived difficulties of fitting updates into the current local planning framework. Option 3 was favored as the plan was long past an update within the existing national legislation and as such was further out of date, therefore the request of the City was for a redraft. A request was made that this project could be used to develop a detailed Brief and Terms of Reference to procure international assistance to develop a completely new UDP for the city.

The Chisinau General Urban Plan Terms of Reference - A Practice Guide to Green Urban Development Planning is providing guidance to the selected institute(s) on the elaboration of the emerging PUG and PAT for Chisinau. It provides a comprehensive practice guide that works with both the wider context, challenges and opportunities in Chisinau and within the statutory planning system. The document also provides everyday guidance on the principles of GUD to inform everyday decision-making.

The Practice Guide is cross-referenced to the required reports and evidence bases of the PUG and PAT, required by law and demonstrates the connections and opportunities for an integrated urban planning approach (IUPA) in the elaboration and implementation of the plans. Developed in line with best international practice the Practice Guide also specifies a number of key additional documents that should be developed to support the development of the PUG and PAT and unlock various interrelated benefits for the Municipality:

- A Green Infrastructure Strategy
- A Sustainable Urban Transport Plan (SUTP) building on the statutory 'Transport Scheme'
- A Green Design Code for both new development and existing buildings.

(As an aside specific reference is made to the elaboration of these supported by the upcoming Green Cities Project as they are not part of the statutory plan and not currently resourced, but are crucial building blocks to the creation of a suite of plans and strategies to support GUD).

The underlying principles of the Practice Guide can be summarized as:

- Securing multiple benefits from an IUPA;
- Ecosystem services;
- Green economic growth; and
- Livability.

Integral to the Practice Guide are the principles of ‘Compact Growth’ and ‘Transit Oriented Development’.

The Practice Guide deals with a number of interrelated areas;

- Transport
- Land Use and Growth Models
- Green Infrastructure
- Sustainable Urban Drainage
- New and Existing Buildings
- Renewable Energy
- Landscape
- Waste
- Drinking Water
- District Heating
- Air Quality
- Local Distinctiveness and the Historic Environment

Finally the Practice Guide suggests funding routes to support the implementation of the plan, in order to demonstrate viability and deliverability and a matrix is supplied correlating the statutory diagnostic documents and evidence bases with the required studies to create new plans to support GUD within the statutory planning framework.

The elaboration of the practice guide exceeded the time allowed to update the Urban Development Plan. This unique, leading edge document if used correctly will stimulate a step-change in the understanding of integrated approaches to GUD.

During 2016 the PIU has insistently discussed with the Municipality of Chisinau in terms of promoting the green urban development principles. In this sense, the final ToR was submitted to the chief architect’s office as well as presented to a wider audience. Taking into consideration the need of the municipality to develop a new General Urban Development Plan, the elaboration of The Chisinau General Urban Plan Terms of Reference - A Practice Guide to Green Urban Development Planning was in line with the expectations. A letter confirming the satisfaction with the achieved result has been submitted to the PIU by the Deputy Mayor of Chisinau.

Draft of the Platform towards Chisinau's Cooperation with the EU Covenant of Mayors

The Municipality of Chisinau became a signatory to the Covenant of Mayors (CoM) in 2011. In order to comply with the requirements of the Covenant the Municipality was required to elaborate and submit a SEAP based on the most accurate baseline data available. In the case of Chisinau, the baseline year was 2010.

A Sustainable Energy Action Plan (SEAP) was drafted but never adopted by the Council or submitted to the CoM because of there being no-one to present the document to gain approval. Overall, the Municipality still lacks the presence of experienced staff to draft, implement or monitor the SEAP, although the ambition remains to adopt one with a view to gaining EU support for projects.

The developed SEAP was revealed to be too long with an extended baseline section that detracted from the key messages and ambitions of the SEAP, whilst also failing to identify the wider benefits that could be gained from taking a sustainable approach. Of the actions identified, many were undeliverable within the life of the plan and few of the projects had a realistic adaptive
or resource allocation.

In order to address these deficiencies and produce a shorter and more accessible version, the document was reduced to the essential messages, basing the format on recently adopted SEAP's from elsewhere as best practice precedents. The wider benefits of the SEAP were emphasized such as:

- Increasing the modal split towards public transport and away from private motorized modes.
- Reducing fuel poverty within the Municipality.
- Increasing the capacity of citizens and businesses to make smart choices and save energy through information and behavior change.
- Educating the next generation in 'energy literacy' to ensure that future citizens make good and informed choices.
- Stimulating the green economy to create high value jobs.
- Delivering solutions that not only reduce emissions but also improve quality of life and tackle other environmental challenges and the effects of climate change.

The updated SEAP was aligned to the wider development ambitions of the Municipality and was based on the core principles of 'Working in Partnership', using the energy hierarchy to inform strategies, policies and actions. The required baseline, from 2010, was reassessed and presented in the correct format and edited to make this accessible to the reader. The SEAP was then split into three phases, recognizing the scale of the challenge in terms of investment. These phases were characterized as:

- Groundwork;

- Scaling-up; and
- Acceleration.

Finally, the key suite of actions were identified by sector and divided into programs: Buildings, Transport, Utilities, Behavior Change and Spatial Planning.

For each action the owner, resources, resource gap, additional funding source or partner, program phase and comments were identified. This was presented alongside a review of the potential sources of funding for the SEAP.

Overall the document was reduced in size by over a half, was edited to reflect best international practice and details a reduced range of deliverable projects, clearly identifying the project owner and the resources required for implementation, where this was available. Overall, the resource gap is identified for each action that will assist in the securing of funding where this is not available.

For many actions, the Municipality of Chisinau is the project owner and the SEAP is a clear message that resources need to be made available to support energy efficiency, alongside the need for additional skills and capacity within the Municipality.

To support the development of the ESCO sector the projects where this was the preferred mechanism to secure investments were identified.

The SEAP was presented to Chisinau Municipality and it was accepted as a document ready to be approved. For a period of 2 months the document was debated in specialized commissions and is expected to be approved in short time. After its approval by the Municipal Council, it is expected there will be easier access to EU financing tools under the Covenant of Mayors framework.

During 2016 the updated SEAP has been presented to the Municipal Council in several rounds. The local expert has been requested to provide detailed answers to the questions addressed by 2 specialized commissions within the Municipality. Though explained in details and answered all the posed questions, the municipal council is still pending to approve the document, claiming the impossibility to meet all the obligations described in the SEAP. During 2017 and 2018 a number of meetings have been held with the municipality of Chisinau, but because of frequent changes in the administration there was no possibility to promote the adoption of the document. Now, with the new agreement with the timeline of 2030, the obligations assumed by signatories are even more difficult to achieve, therefore the implementation of what has been proposed until 2020 is a necessity for Chisinau which would open the door for signing the new Covenant of Mayors agreement.

Draft of the Green Procurement Guidelines (GPG) for the City of Chisinau

The Green Public Procurement Guideline (GPPG) was developed to assist municipality of Chisinau in purchasing goods and services with lower environmental impact over the life compared to other goods and services, the same primary utility, which would otherwise have been purchased. The guide aims to provide an analysis of the national framework, the procurement procedures and best practice in regard to the possibility of public institutions considering environmental consideration in public procurement and deliver results related to sustainable development.

The Green Public Procurement Guideline is providing an overall review of green public procurement best practice and the possibilities of implementing it in Republic of Moldova. The EU legal framework is described from the perspective of its transposition into national legislation, providing a direct answer to the need of introducing the elements of green procurement into national practice.

A new Public Procurement Law has been adopted in Republic of Moldova which transposes the main principles of green public procurement widely applied in EU countries. The national legal framework with its specificities is described in detail, providing practical advice on how green procurement should be made part of the regular procurement process.

The description of the national public procurement process provides insights on the required level of detail and volume of information for the process to be valid as well as practical recommendations on what should be added to make the procurement green.

The guideline is responding to the need of explaining the way the principles of green procurement should be applied and how are they fit into the new procurement process. It describes the basic principles of national procurement, the planning of procurement procedures, modalities and rules of choosing the appropriate procedure. It also touches on elements of public procurement transparency, legal deadlines and other relevant elements that determine the framework of the public procurement process.

The environmental issues in the tender documentation are an important part of the process providing details about the type of specification required and determination of contractual clauses. The selection of suppliers of goods and services reflects the qualification and exclusion criteria to be used by the authority in the procurement process. The next important step is the examination and evaluation of tenders, which focuses on the principles applied to the process of awarding the contract, and provides recommendations towards general rules and additional (environmental) criteria to be exercised in the process.

Using the examples of several products such as interior lighting, street lighting and road signal systems, PVC windows and doors as well as wall panels, the guide explains the additional environmental criteria that should be used by the specialists active in public procurement.

The Green Procurement Guidelines were developed and delivered to the

Municipality of Chisinau in line with the Annual Working Plan along with a series of training for relevant staff. The adoption and day-by-day use of the guide will greatly contribute to sustainable development of Chisinau Municipality and will encourage procurement of clean technologies with a reduced call on natural resources.

Review and Define Targets for Emissions Reduction and Prioritization by the City of Chisinau.

The updated SEAP for the Municipality of Chisinau was based on the original draft and baseline of 2011. The document as it stood was extensive and over-ambitious with a large number of actions that were not prioritized. Within this, there were also a number of actions that were not cost-effective and would have delivered little in terms of emission reductions. In an environment of shrinking municipal budgets and a scarcity of resources, the actions were edited to maximize emission reductions and capitalize on the actions of partners, for example in public transport. These allied to the planned and phased investment in plant, equipment and vehicles were prioritized over actions that may have been highly visible but would not deliver significant emission reductions within the life of the plan.

Based on the Baseline Emissions Inventory (BEI) the main areas of activity were prioritized in the following order:

Programme 1 - Buildings, in particular the energy efficient refurbishment of the existing building stock, recognizing the importance of this sector in reducing GHG emissions and adding to the quality of life of citizens.

Programme 2 - Transport, both public and private alongside investments in EE street lighting, recognizing the trends in this sector of increasing private motor vehicle use and the need to show leadership at a Municipal level in terms of vehicle efficiency.

Programme 3 - Utilities and Renewable Energy, recognizing the importance of supporting ongoing investments in this sector, allied to the refurbishment of buildings and the trend towards increased electrical consumption.

Programme 4 - Behavior Change, supporting the measures of the SEAP ensuring that citizens and businesses are informed and empowered to make smarter choices in terms of energy use and costs and transport.

Programme 5 - Spatial Planning, complementary to the emerging UDP for the city and identifying energy efficiency priority areas.

Programs 3, 4 and 5 are envisaged to support programs 1 and 2, with the bulk of resources and effort allocated to these.

In terms of Programme 1, wherever possible, the ESCO EPC modality was defined as the delivery route for the Municipal building stock, recognizing the current barriers to investment in energy efficiency and the opportunity to deliver actions in a cost effective way through this form of financing, that was not in the original draft SEAP.

Output 2: ESCO Business Model in Moldova is operational.

Targets for 2015:	<ul style="list-style-type: none">• At least 20 of Public Building managers, 20 ESPs and 5 Financial Institutions, including the EEF are trained on the ESCO business model;• Long-term agreement between the EEA, Chisinau and PMU approved and signed and a documented long-list of EE projects approved;
Targets for 2016:	<ul style="list-style-type: none">• A number of 20 energy audits conducted for the selected project sites.• First five buildings are selected for the public procurement of energy services
Targets for 2017:	<ul style="list-style-type: none">• First 10 public procurement sets of documents prepared for launch• 10 Contracts signed and works started• Look into utilities and public-sector services for potential projects

Training Program Designed and Delivered

Under the period of review, a comprehensive training program has been developed and implemented. The component was aiming to provide integrated support for the capacity building of all the stakeholders and to support this, a training needs assessment methodology was developed. The main stakeholders identified having training needs are:

- Candidate ESCOs;
- Consultants companies;
- Energy and maintenance managers at the municipal level;
- Likely trainers (Energy Efficiency Agency, Energy Efficiency Fund, etc.);
- Public procurement officials;
- Banking specialists

A total of 12 training sessions were conducted for all stakeholders to introduce the concept of energy performance contracting and present the main elements of this

financing modality. The training sessions were attended by around 150 persons in total and comprised of subjects relevant to each separate target group.

Specifically the trainings covered the following subjects:

- **Training WS for candidate ESCOs.**
 1. EPC project basic characteristics,
 2. EPC project identification and selection criteria
 3. EPC contracting process.
- **Training WS for Municipal decision makers, EEA and EEF** on the role of public authorities in the EPC contracting scheme. The presentations were centered on the above topics plus some legislative aspects from the EU directives.
- **Training WS for candidate ESCOs and private companies.** The topics focused on Financial Mechanisms (ESCO financing, Customer financing and mixed schemes) and potential business opportunities based on shorter payback periods. Real project examples were presented. Emphasis was placed on the ESCO Business Model, the three EU type EPC templates, the calculation of the Baseline Energy consumption methodology, international Tendering Procedures for ESCOs, as well as tools for Energy Audit of Buildings and the Green Public Procurement of certain products.
- **Training for banking institutions.** Financial Mechanisms for EPC financing (Guarantees, Leasing, Cession, Forfeiting) were presented as modalities to implement projects in energy efficiency.

In addition with the support of the Czech Trust Fund, a series of additional trainings conducted by ENVIROS, an experienced consulting company from Czech Republic, organized for the most proactive participants a study visit to existing and operational projects in the field located in the Czech Republic.

At the same time, a training program was conducted by ENVIROS s.r.o. Being the consulting wing of a group of companies dealing with implementation of real-life projects, the training sessions were specifically useful because of the presented practical aspects. The training has been composed of the following modules:

Module 1: Policy and legal framework will include following topics

Provisions of the Energy Performance Buildings Directive 2010/31 of the European Parliament as of 19.05.2010 in relation to the transposed Moldovan Law Nr. 128 as of 11.07.2014, defining requirements on energy management of public buildings modernization and construction. The topic will include:

- Exemplary role of the public sector;
- Setting up minimum energy performance requirements in buildings;
- The application of alternative energy supply systems;
- Nearly zero-energy buildings – technical experience, objectives and subsidies;

- Inspection of boilers and air-conditioning systems in the Czech Republic – short summary of the proposed executive decree;
- Energy Certification process in the EU. Importance and practical benefits obtained. (e.g. Czech experience);
- Knowledge and experience of the Building certification, certificate proposal and its use in Czech republic and other selected EU,
- Monitoring of Energy Consumption in Residential Buildings in the EU. Best practice cases; introduction of intelligent metering systems and active control systems
- Directive 2012/27/EU on energy efficiency and its Articles related to energy services and role of public administration in increased energy efficiency (Articles 5, 18 mainly, Attachment XIII of the Directive – quality parameters of EPC contract).

Module 2: ESCO business model – how it works (1 module added)

Principles of Energy Performance Contracting (and other existing models, e.g. energy supply contracting/power purchase agreements);

- A brief introduction to EPC models which work in various countries;
- Model which is operational in the Czech Republic and simplicity of the approach;
- How to get to the contract? What is the ESCO contract about?
- Explanation of how the Contract is structured and how it works;
- Before we get to the Contract – why and when?
- Limits of EPC; and
- Advisory services in decision making and role of Facilitators.

The selection process of an ESCO - Public Procurement and its legal implications for Energy Services, legal, institutional and administrative barriers and bottlenecks towards adopting public procurement of energy services. Ways of overcoming them based on the Czech Experience with brief discussions on:

- Negotiated procedure with prior announcement and its availability in Moldova
- Prequalification of companies and setting qualification criteria
- Evaluation of offers and what evaluation criteria

Module 3: Urban planning and Infrastructure

- Green Urban development policy, green urban design, town-planning basic requirements – as stipulated by the Building Code of Moldova;
- Approaches to energy efficiency improvement in urban design – focusing on assistance to the Chisinau Green Urban Development (GUDP) plan, planning

for the potential of sustainable construction approaches, passive houses, etc. and the potential use of renewables. This topic has little relation to ESCO models and ESCO operations.

- For the construction sector - institutional arrangement for public authorities, owners, design and development businesses, and building contractors. Their role and responsibilities in general, and when implementing energy efficiency measures in particular;
- Public examination and approval of design & construction documentations, institutional and legal frameworks, their status, role and responsibilities in the context of EPC implementation; and
- Construction inspection- Institutional and legal frameworks, their status, role and responsibilities in the context of EPC implementation.

Module 4: Technical aspects

- Energy auditing – various stages of energy auditing – IGA and other methods of energy efficiency assessment;
- Costs of the approaches – what is needed to promote EPC?
- Tools, methodologies. Best case examples in public and residential sectors;
- Consumption baseline evaluation and setting – necessary requirements for a proper proposal by an ESCO;
- Identification of an optimal set of EE measures – what it depends on? What “optimal” means; and
- Monitoring and Verification Protocol (IPMVP) – briefly about the most widely used methods in buildings.

Module 4: Financing the EPC project – available resources

- Sources of financing: own, third-party, client – availability of own and credit resources, long-term financing sources with regard to repayment terms of the projects;
- Collateral: Future project revenues as main “collateral” – how to make the savings visible and reliable? Verification of energy savings, reliability of revenues, knowledge and skills and necessary prerequisites for proper energy management, measurement and reporting, International energy efficiency financing Protocol of EVO (IEEFP), briefly about IPMVP (International Energy Efficiency Measurement and Verification Protocol);
- Project risks and their mitigation; and
- What are the guaranteed savings, how it works?

Module 5: Financing EPC: Risk evaluation and management – from the point of view of the Client, and of an ESCO.

Due to the ampleness of the activity aimed at forming an understanding of the

model for all stakeholders, the main conclusions of the overall capacity building effort generated some important conclusions, which will be taken into account while piloting the ESCO model on the local market.

First, there is a certain level of skepticism in the private sector about the possibility of implementing the model in Republic of Moldova. The main risks identified and emphasized by the candidate ESCOs were related to the overall instability of the country. Second, the beneficiaries of such services do not have sufficient background to understand and consequently trust the financing model. This imposes a serious barrier towards market development.

Thirdly, that the lack of overall experience in conducting tenders for energy services, the preparation of bids for tenders, the evaluation and negotiation of tenders are key elements determining the potential development of the market.

Nevertheless, the training program has been designed in such a way as to provide most of the answers to these concerns/questions, there is an urgent need however to develop a more comprehensive facilitation assistance package to the market. The main recommendations towards achieving the balanced development of the ESCO market are as follows:

- Best practices should be exploited to serve as a good precedent for the development of the market;
- The formal training should be replaced by on the job and/or coaching of stakeholders through the process of project implementation;
- The training of local key actors (both public and private) should be intensified, involving important entities such as the Chamber of Engineers and/or Technologists, Chamber(s) of Commerce, other state organizations with national coverage on the issues of Energy Efficiency, Energy Auditing, Public Procurement and Financial Reporting;
- The standardization of certified training modules via e-learning platforms may be one solution to overcome certain time and distance restrictions;
- The organization of a forum of local and international actors (financial institutions, equipment manufacturers, consulting firms, utilities, key state representatives) to greatly enhance and promote the whole project; and
- A standardized protocol to implement ESCO projects should be developed, consulted and adopted for a better replication potential.

The overall training and capacity building activity performed with the ESCO Moldova project support was aiming at increasing the trust of all stakeholders for the financing mechanism by providing a mix of formal training and practical examples. The feedback that was collected from attendees of the training indicates a continuous formal and on the job training need.

The drafting the Final Energy Performance Contract (EPC) and EU-type templates was one of the activities that was greatly supported by the training program. Most of the development scenarios explained during the learning sessions were explained from the perspective of the Energy performance contract template, which should lay the future grounds for the legal aspects of ESCO market development in Moldova.

During 2016 the model EPC has been presented to all stakeholders as well as to international development partners. The initial model has been modified according to suggestions and recommendations received. The PIU has also developed a model of Energy Supply Contract which is recommended to be used in relevant projects.

To support the implementation of the model in Republic of Moldova, an international company has been contracted to facilitate the process. ENVIROS is a company having extensive 20 years' experience in supporting the tendering of energy services in Czech Republic, Slovakia, Ukraine and other countries. Replicating the existing positive Czech experience by applying its general rules and principles but adjusted to Moldovan realities is one of the most promising ways of achieving the project objective. The templates of the EPC have been developed and shared with all stakeholders.

Energy Efficiency Projects Selected

During the period of review, the public and residential building data collection and processing has been conducted by PMU, in close collaboration with Municipality of Chisinau. A comprehensive database of all public and residential buildings has been compiled as a result, containing energy, architectural and other relevant information.

A list of selection criteria has been developed in close collaboration with the Energy Efficiency Agency and Municipality of Chisinau. The criteria were applied to the overall list of buildings to determine the first 15 public institutions suitable to enter into energy performance contracting. The list has been endorsed with the beneficiary and shall be presented to the ESCO Moldova project Board for approval.

An energy engineer has been contracted by the ESCO Moldova project to check the validity of the data and produce short energy reports on all the buildings to preliminarily estimate the potential of EPC implementation for 20 buildings. As recommended by both international consultants, the project will focus its first interventions to buildings having the greatest energy savings potential with as little investment as possible to achieve a reasonable payback period and demonstrate the feasibility of the ESCO model implementation.

Detailed energy audits will be conducted in the selected buildings after their final approval to determine the real potential of the energy efficiency measures to be conducted. Municipality of Chisinau committed to conduct the audits and provide them at request.

During 2016 the energy audits for the first 15 buildings have been conducted and delivered to the municipality. Also, a sort of investment grade audit has been performed

by ENVIROS to present the potential of measures to be implemented in the selected buildings. As a result, the first 4 buildings having the potential to enter into the energy performance contracting have been selected and prepared for the public procurement tenders.

Output 3: Financial Mechanism and Financial Support available to ESCOs

<u>Targets for 2015:</u>	<ul style="list-style-type: none"> • EE project loan guarantee scheme is available in its draft version; • The EEF agreed on the principles of the Financial Framework Agreement; • LGF Regulation Document negotiated and duly signed by all parties: Chisinau, PMU, UNDP and the financial partner (bank) to be selected through a Request for Proposal Procedure by the PMU and UNDP.
<u>Targets for 2016:</u>	<ul style="list-style-type: none"> • Develop and implement in cooperation with EEF the loan program for the energy efficiency projects launched by ESCO project • Work on overcoming the barriers of the ESCO modality implementation in Moldova
<u>Targets for 2017:</u>	<ul style="list-style-type: none"> • Energy audits conducted to determine the level of potential savings as well as the necessary budget to perform the measures. • Start the tendering of first round of EPC files and proceed in cooperation with EEF the loan program for the energy efficiency projects launched by ESCO project • Widen the projects profile to be financed to utilities and public-sector services.

Agreement on LGF Regulation and Operational Guidelines

The draft LGF Operational Guidelines and the LGF Regulation were developed and consulted with Energy Efficiency Fund as the institution selected to manage the LGF. In addition, several meetings with local banks have been conducted to consult on the LGF regulation. It was supposed to get the local banks embarked on the LGF management, but because of changes on the local financial market, the feasibility of this idea has decreased dramatically. Nevertheless, the proposed comments and suggestions were accepted and introduced in the regulation.

Despite the progress achieved in preparing the necessary steps towards implementation of the projects, the continuous structural changes in partner organizations, including the Energy Efficiency Fund, it finally wasn't possible to finance EPCs because of lack of lending experience by EEF. This has made the implementation of the initially planned projects impossible.

A mission to revise the project concept and propose alternative scenarios has been conducted but was not convincing enough to let the project change the course of action and implement the EPCs in the timeframe of up to 2020.

Technical and Financial Partnerships and Working Agreements developed

The analysis of the development of the energy services market in the EU member states shows a greater success rate with a background of the availability of cheap capital, i.e. where the interest on borrowed capital do not exceed the annual rate of 6 to 9 percent. From prior reference made vis-a-vis terms of lending applied by the local banks, the currently applied standard interest rates are excessively high, which is being corroborated by the current ongoing stagnation of lending activity in the Republic of Moldova. Regardless of the fact that the study has obviously achieved its objective by endorsing one of local banks in which ESCO Moldova project could place the LGF, it is highly probable that this guarantee fund will not be in demand since the potential service providers will not be tempted to access the loans at interest rates applied. Arising from these considerations, there appeared a desire to carry out an alternative analysis, which could offer a viable solution so that ESCO Moldova project could achieve its final objectives. Conducted to that end was the analysis of the potential actors capable of undertaking the role of the LGF manager as well as the role of a financier of the projects implemented by the energy services providers. In that sense, the Energy Efficiency Fund (EEF) was already acting as a developed public institution having the state as its founder. The statute of this institution allowed disbursement of loans earmarked for running projects in the energy efficiency field and thus the given option could have served as a viable alternative in achieving the objectives pursued by ESCO Moldova.

As a result of this study, the stakeholders agreed that following the circumstances of the financial market in Republic of Moldova, the best option of placing the LGF into a lucrative environment is to operationalize it through the Energy Efficiency Fund.

Under these circumstances, the LGF agreement between UNDP and Energy Efficiency Fund was signed on 10th of December 2015. The prospect of implementing EE projects using the energy performance modality is estimated for first half of 2016. The partnership agreement was discussed with the EEF management and signed to offer 3 Mil. USD in loans and 1 Mil. USD in grants to selected companies. This secured leverage of 4 Mil. USD against the offered financial guarantees of only 900.000 USD (provided by UNDP) that

will give an impulse to the local energy services market resulting in energy savings and reductions of CO₂ emissions.

During 2017 under the roof of Ministry of Economy a working group has been created to offer solutions for overcoming barriers of EPC implementation in Moldova. During the first meeting, several issues regarding the fiscal and accounting of energy savings in public sector have been approached. Possible solutions were listed and were planned to be solved until the end of the year. Some solutions were identified and checked against the Czech experience, but should be validated by the relevant authorities, such as Ministry of Finance and Public Procurement Agency.

The Energy Efficiency Fund has been working on the call for proposal for the private sector to implement energy efficiency projects using the energy performance contracting. While the regulation was still under development due to the EEF need to create the loan due diligence capacity. In this sense additional support and capacity building was required. On a later stage, however, the Energy Efficiency Fund has made a turnaround in its intention to finance EPC projects which led to a blockage of project activities. Alternative scenarios have been analyzed by an international expert contracted by UNDP Moldova, but were not sufficiently convincing of the successfulness of its implementation in the foreseen timeframe of the project.

V. ISSUES ENCOUNTERED AND ACTIONS TAKEN. LESSONS LEARNED

Description of the issue	Measures undertaken to overcome the issue	Lessons learned
Reliability in state institutions as financial partners	Meetings with EEF on the issues concerning the financing of projects were conducted regularly	Selection of state institutions as financial partners should be done more accurately
Lack of understating of the ESCO model at all levels of decision makers	Personal meeting as well as public events organized to explain the main elements of the financing modality	This is one of the main constraints and barriers in facing the ESCO market
Lack of a fully-fledged normative basis for ESCO model implementation.	Regular meetings with all stakeholders and persons involved to address the issues of concern	It was difficult to establish a productive dialog when law ownership from the beneficiaries

Description of the issue	Measures undertaken to overcome the issue	Lessons learned
Lack of proper ESCO companies on the local market	Formal capacity building activities as well as study visits to countries where this model is operational	Constant communication and support to potential EPC companies is needed to be provided though multidisciplinary team of EPC facilitators.
Lack of access to project financing of business (equity financing is the main form of financing)	Promotion of alternative modalities for financing energy efficiency projects through thematic activities	Solid international experience is required along with existing projects as demonstration. Lack of capacity in the municipality of Chisinau drives to the need establish an energy management institute

Conclusions and lessons learned

The financial crisis and removal of banks from the Project was a drawback, but created an opportunity. EEF and ESCO Moldova were free to create a tailored, flexible financing and guarantee model for the (unique) situation of Moldova. EEF claiming its incapacity to provide loans was the ultimate step back after which the project could not continue as proposed.

Being a financial mechanism that was new to Moldova in 2015, it was at the edge of being implemented in 2017-2018. The nature of the impediments towards achieving the objectives of the project are two folded:

1. Political – starting the beginning of the project in 2015 the circumstantial barriers towards piloting the EPC modality were influencing the implementation processes continuously. The banking crisis (2014) as well as the GoM restructuring (2016-2018), replacing partner institutions representatives, put the project in the position to chase the institutions for getting on board and be in line with the project objectives. The constant political change also has driven to uncertainties of practical matter. Companies, willing to embark on the EPC model were cautious and were reluctant to make the first step, because of the above mentioned reasons. It influenced at the end the potential beneficiaries consequently, making them resistant to the new financing modality. As soon as the business was considered the professional service provider and which could not convince the public sector of the success of the model, the latter reacted consequently.
2. Institutional – on its path to achieving the project objectives, the ESCO Moldova team has been constantly considering the possibility of getting the project activities institutionalized. A good example in this sense is the hardship of getting the Green Urban Development plan

on the municipal council agenda as part of the Architecture Department of MUNI. It never reached the expected target of providing the advice in improving the urban planning and making it “green” and more energy efficient. It did not happen because of the assumption that Chisinau has a General Urban Plan in place. Another important output of the project which was developed but not used is the Sustainable Energy Action Plan, a document that provides a strategic view on the development of the EE&RES of the city for the following 10 years. It has been easily disapproved in 2 instances by the municipal council on reasons of having no detailed bill of quantities for the activities proposed. The incapacity to understand the importance of the project combined with a major fluctuation of staff on the beneficiary side makes it impossible to constantly adjust and re-adjust the need of achieving the objectives.

The lessons learned during the implementation of the project have been discussed in many instances with all the stakeholders and are as follows:

- There was a need for a stronger will of project partners and beneficiaries to achieve the specific objectives of this project and establish a long term, trustful, financially viable solution for energy efficiency investments. Chisinau municipality as the main beneficiary of the project was too vulnerable and could not put the necessary stake into achieving the initially set objectives.
- Selection of financing beneficiaries should be done all the time based on open competition, otherwise there is a perpetual issue of beneficiary ownership.
- Immature capital markets did not allow to fully reap the benefits of the opportunities envisaged by the ESCO model and triggered delays in project implementation.
- The benefits of collaborating with the public sector are outweighed by the lack of capacity, flexibility and ownership comparing to the similar private one.
- Lack of knowledge about ESCO model. Some constant drivers of pro-active information dissemination and stronger emphasis on the benefits of ESCO model should have been considered. The project team of 2 persons was not sufficient to play the role of “ESCO driver”
- Project didn’t envisaged work on supporting the Government policies to support ESCO activities, including regulations, economic incentives, information policies, etc. If would, project results were much more positive.