



NAMA Seeking Support for Implementation

A Overview

A.1 Party The Republic of Moldova

A.2 Title of Mitigation Action The promotion of small scale CHPs in the Republic of Moldova

A.3 Description of mitigation action The objective of the NAMA is to implement 40 small scale high efficiency CHPs plants, ranged from 40kWe to 1000kWe, with a total capacity of about 20MW, at sites where heat loads exist throughout the year such as hospitals, hotels, residential living blocks, industrial enterprises etc. The total country potential of such CHPs is much higher and may reach 80 units and more. The heat produced by these small high efficiency CHPs will be used at sites where CHPs are built. The electricity produced will cover the sites' needs and the surplus will be delivered into the electric network. Internal Combustion Engines (ICE) CHP technology fueled by natural gas was selected as the most reliable and cost effective technology to implement through this NAMA. The NAMA project implementation is planned for 8 years. The estimates indicate that the implementation of this NAMA will lead to 32% fuel savings resulting in USD 4.39 million annual cost savings for CHPs owners and 41,456 tonnes of CO₂ eq per year GHG emissions reduction. The realization of the NAMA will decrease the country power deficit by 3% by the year 2025. The cost of foreign investments to reduce 1 tonne of CO₂ in Moldova CHP NAMA project is equal to USD11/tCO₂.

A.4 Sector ☒ Energy supply ☐ Transport and its Infrastructure
☐ Residential and Commercial buildings ☐ Industry
☐ Agriculture ☐ Forestry
☐ Waste management ☐ Other

A.5 Technology ☐ Bioenergy ☐ Cleaner Fuels
☒ Energy Efficiency ☐ Geothermal energy
☐ Hydropower ☐ Solar energy
☐ Wind energy ☐ Ocean energy
☐ Carbon Capture and Storage ☐ Low till / No till
☐ Land fill gas collection ☐ Other



- A.6 Type of action
- ☐ National/ Sectoral goal
 - ☐ Strategy
 - ☒ National/Sectoral policy or program
 - ☐ Project: Investment in machinery
 - ☐ Project: Investment in infrastructure
 - ☐ Project: Other
 - ☐ Other:

A.7 Greenhouse gases covered by the action

- | | |
|-----------------------------------------------------|------------------------------------------|
| <input checked="" type="checkbox"/> CO ₂ | <input type="checkbox"/> CH ₄ |
| <input type="checkbox"/> N ₂ O | <input type="checkbox"/> HFCs |
| <input type="checkbox"/> PFCs | <input type="checkbox"/> SF ₆ |
| <input type="checkbox"/> Other | |

B National Implementing Entity

- B.1.0 Name Ministry of Agricultur, Regional Development and Environment
- B.1.1 Address 156"A", Mitropolit Dosoftei str., of. 37,
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C. Expected timeframe for the implementation of the mitigation action

- C.1 Number of years for completion 8, including first 3 years for capacity building and one CHP built
- C.2 Expected start year of implementation 2018

- D.1 Used Currency USD

E Cost

- E.1.1 Estimated full cost of implementation 23,450,000.00

E.1.2 Comments on full cost of implementation

The sources of financing for this NAMA are national or local budgets, beneficiaries or ESCO budgets and donors' support. Due to budget scarceness, a limited contribution from national and local budgets of about USD 0.16 million (0.7 % of total investments) is expected to be involved for small scale CHPs construction. Beneficiaries and ESCO contribution for NAMA implementation is considered to be about USD 8.33 million (35.5 % of total investments). International support to implement the NAMA is USD 14.96 million (about 63.8 % of total investments).



NAMA will be implemented in two phases: Readiness phase (Phase I, Year 1-Year 3) and Scale-up phase (Phase II, Year 4-Year 8).

The focus of the “Readiness Phase” is to develop and implement activities necessary for the promotion and facilitation of the construction of small scale CHPs and to build a CHP of 75 kWe to supply heat to Falesti Hospital. The investments necessary for implementation of the Phase I are equal to USD 0.24 million.

To implement the Phase II there will be necessary USD 23.21 million.

Financial analysis of investments was done using three financial indicators: 1. Net present value (NPV); 2. Internal rate of return (IRR) and 3. Payback period (PbP) of investments.

E.2.1 Estimated incremental cost of implementation n/a

E.2.2 Comments on estimated incremental cost of implementation <Pls enter Comments here>

F Support required for the implementation of the mitigation action

F.1.1 Amount of financial support 14,960,000.00

F.1.2 Type of required financial support

- | | |
|-------------------------------------------------------|-----------------------------------------|
| <input checked="" type="checkbox"/> Grant | <input type="checkbox"/> Carbon finance |
| <input type="checkbox"/> Loan (sovereign) | <input type="checkbox"/> Other |
| <input type="checkbox"/> Loan (Private) | |
| <input checked="" type="checkbox"/> Concessional loan | |
| <input type="checkbox"/> Guarantee | |
| <input type="checkbox"/> Equity | |

F.1.3 Comments on Financial Support

Donors' contribution is considered the primary funding source to support NAMA implementation. Donors' support is requested in the form of grant in the amount of USD 3.42 million and concessional loan in the amount of USD 11.54 million.

From total support of USD 14.96 million, USD 14,507,000.00 will be invested in high efficiency internal combustion engine CHP technology, a mature technology available on the market for small CHPs and, USD 453,000.00 will be used for capacity building and for the activity of the NAMA Implementation Unit that will be created according to a Government decree. Capacity building is considered to be one of the most effective measures to promote energy efficiency in the Republic of Moldova, including efficient small CHPs. Capacity building will be performed through trainings, workshops and demonstration tools. Trainings will cover technical, economical, financial, regulatory and operational aspects and will target different stakeholder groups corresponded to residential heat plants, hospitals, hotels, campuses, industry and staff of the NAMA ESCO, Energy Efficiency Agency, Energy Efficiency Fund, research and design institutions with a special focus on climate change related topics.



CHP specific investments and O&M costs are highly dependent on power plant capacity. This implies different structure of investment portfolio for the case when CHP capacity is small (Case 1) in comparison with one when it is larger (Case 2). For Case 1, the investment scenario presume 35 % of investments coming from Beneficiaries' budgets, 30 % - in the form of grant from donors and 35 % - concessional loan for 5 years with an annual interest rate of 0-3%. For Case 2, - 30 % of investments coming from Beneficiaries' budgets and 70 % - in the form of concessional loan for 5 years period with an annual interest rate of 3-5 %.

F.2.1 Amount of Technological Support 0.00

Conversion to USD <to be filled automatically>

F.2.2 Comments on Technological Support <Pls enter Comments here>

F.3.1 Amount of capacity building support 453,000.00 \$ (Dollars)

Conversion to USD <to be filled automatically>

F.3.2 Type of required capacity building support

- ☒ Individual level
- ☒ Institutional level
- ☐ Systemic level
- ☐ Other

F.3.3 Comments on Capacity Building Support

F.4 Financial support for implementation required ☒

F.5 Technological support for implementation required ☒

F.6 Capacity building support for implementation required ☒

G Estimated emission reductions

G.1 Amount 1.0364

G.2 Unit MtCO₂e

G.3 Additional information (e.g. if available, information on the methodological approach followed):

GHG emissions reduction is calculated based on the 2006 IPCC Guidelines for National Greenhouse Inventories and UNFCCC CDM Methodology "Installation of co-generation or tri-generation systems supplying energy to commercial buildings". The most plausible baseline scenario for this NAMA corresponds to the existing Falesti Hospital (FH) heat supply system status-quo or Business as usual (BAU). Only natural gas is used in Base Line Scenario (BLS) and the mitigation scenarios. CO₂ emissions in the mitigation scenario are created as a result of:

a) burning natural gas at CHP-FH to produce 359 MWh at the average annual efficiency of 36.3%;

b) natural gas by FH Heat Plant to produce peak heat of 545 MWh at the efficiency of 91%;



c) displacing 6.31 MWh electricity production in the national power system, including 10.3% of electricity losses in the grid.

H.1 Other indicators of implementation: Natural gas and Electricity consumed savings per each location, where small CHP is built, will be used as indicator as well to evaluate NAMA implementation impact.

I.1 Other relevant information including co-benefits for local sustainable development

The implementation of the NAMA will enhance international cooperation to facilitate access to clean energy research and technology, promote investment in energy infrastructure and clean energy technologies, expand infrastructure and upgrade technology for supplying modern and sustainable energy services. The implementation of the NAMA will lead to higher levels of economic productivity through technological upgrading and innovation, including through a focus on high value added and labour-intensive sectors, promotion of development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, encourage formalization and growth of micro-, small- and medium-sized enterprises and strengthen the capacity of domestic financial institutions to encourage and to expand access to banking, insurance and financial services. Co-benefit indicators for sustainable development are:

Climate change adaptation and mitigation

Affordability of electricity

Energy security

Capacity building

Income generation/ expenditure reduction/ Balance of payments

Asset accumulation and investments

Job Creation.

J Relevant National Policies strategies, plans and programmes and/or other mitigation action

J.1 Relevant National Policies The promotion of the construction of combined heat and power plants of high efficiency is an important priority for the Energy Sector of the country. The Energy Strategy of the Republic of Moldova until 2030 approved by the Government (No. 102 dated February 5th 2013) provides for improving energy security and energy efficiency. The Law on thermal energy and promotion of cogeneration (No. 92 dated May 29th 2014) provides for the promotion of high efficiency cogeneration that results in at least 10 % savings of primary energy in comparison with separate generation of heat and electricity. The Electricity Law (No. 107 dated May 27th 2016), transposing the EU Directive 72/2009 EC, provides for nondiscriminatory access to electric networks and promotion of distributed electricity generation. The construction of small scale high efficiency CHPs implemented as a NAMA is a path for the implementation of the concept of distributed electricity generation. The National Energy Efficiency Program for the period 2011-2020 approved by the Government of the Republic of Moldova (No. 833 dated November 10th 2011) provides for promotion of high efficiency cogeneration based on useful heat demand that will conserve primary energy sources, avoid losses in the networks and reduce emissions especially of GHG. The Environmental Strategy for 2014-2023 and the action plan for its implementation were approved by the Government of the Republic of Moldova in 2014. For the Energy Sector, the GHG emissions will be reduced by 25% by 2020 compared to the baseline scenario. This will be achieved through the improvement



of the efficiency of energy generation, supply and consumption as well as the utilization of renewable energy. There is drafted a new Low Emission Development Strategy (LEDS) extending through 2030 pending approval and NAMAs are expected to be an important element of the LEDS.

J.2 Links to other mitigation actions <Pls enter/select NAMA ID>

K Attachments

K.1 Attachment description: NAMA on Promotion of small CHPs in The Republic of Moldova, Project Design Document report. On 81 pages, following UNDP NAMA template, the report describes in details all aspects of NAMA promotion in the Republic of Moldova. NAMA PDD will be presented on request.

K.2 File [Browse](#)

L Support received No support received until now

L.1 From outside the Registry <Please enter text here>

L.2 From within the Registry

Source	Amount	Date