

NS-274 - The promotion of small scale CHPs in the Republic of Moldova

Republic of Moldova

NAMA Seeking Support for Implementation

A Overview		
A.1 Party	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 scale 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 injected into the electric network. Internal Combustion Engines (ICE) CHP technology fueled by natural gas was selected as the most reliable and 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 a reduction of 10,000 tonnes of CO2 eq per year GHG emissions reduction. The realization of the NAMA will decrease the country power deficit by 3% by 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 ☐ Residential and Commercial buildings ☐ Agriculture ☐ Waste management ☐ Other ☐ Transport and its Infrastructure ☐ Industry ☐ Forestry	
A.5 Technology	☐ Bioenergy ☒ Energy Efficiency ☐ Hydropower ☐ Wind energy ☐ Carbon Capture and Storage ☐ Land fill gas collection ☐ Other ☐ Cleaner Fuels ☐ Geothermal energy ☐ Solar energy ☐ Ocean energy ☐ Low till / No till	
A.6 Type of action	☐ National/ Sectoral goal ☐ Strategy ☒ National/Sectoral policy or program ☐ Other ☐ Project: Investment in machinery ☐ Project: Investment in infrastructure ☐ Project: Other	
A.7 Greenhouse gases covered by the action	☒ CO2 ☐ N2O ☐ PFCs ☐ Other ☐ CH4 ☐ HFCs ☐ SF6	
B National Implementing Entity		
B.1.0	Name	Ministry of Agriculture, Regional Development and Environment
B.1.1	Contact Person 1	Vasile Scorpan
B.1.2	Address	156"A", Mitropolit Dosoftei str., of. 37, MD-2004 Chisinau, Republic of Moldova
B.1.3	Phone	+373 22 232247
B.1.4	Email	clima@clima.md
B.1.5	Contact Person 2	Marius Taranu
B.1.6	Address	156"A", Mitropolit Dosoftei str., of. 37, MD-2004 Chisinau, Republic of Moldova
B.1.7	Phone	+373 79469883
B.1.8	Email	marius.taranu@clima.md
B.1.9	Contact Person 3	
B.1.10	Address	
B.1.11	Phone	
B.1.12	Email	
B.1.13	Comments	

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C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	8
C.2	Expected start year of implementation	2018

D Currency

D.1	Used Currency	USD 
Conversion to USD: 1		

E Cost

E.1.1	Estimated full cost of implementation	23,450,000 Conversion to USD: 23,450,000
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' 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 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. CHP of 75 kW_e 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); 3. Payback period (PbP) of investments.
E.2.1	Estimated incremental cost of implementation	 Conversion to USD: 0
E.2.2	Comments on estimated incremental cost of implementation	

F Support required for the implementation of the mitigation action

F.1.1	Amount of Financial support	14,960,000 Conversion to USD: 14,960,000
F.1.2	Type of required Financial support	☒ Grant ☐ Loan (sovereign) ☐ Loan (Private) ☒ Concessional loan ☐ Other ☐ Guarantee ☐ Equity ☐ Carbon finance
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 11.54 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 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 by Government decree. Capacity building is considered to be one of the most effective measures to promote energy efficiency in the Republic of Moldova, including small CHPs. Capacity building will be performed through trainings, workshops and demonstration tools. Trainings will cover technical, economical, financial, and operational aspects and will target different stakeholder groups corresponding to residential heat plants, hospitals, hotels, campuses, industry and staff of the National 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 presumes 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	
F.2.2	Comments on Technological support	
F.3.1	Amount of capacity building support	453,000 Conversion to USD: 453,000
F.3.2	Type of required capacity building support	☒ Individual level ☒ Institutional level ☐ Systemic level ☐ Other
F.3.3	Comments on Capacity Building support	

The NAMA Capacity Building Programme will offer a series of trainings and workshops to beneficiaries identified during the Research/Studies and Planning stage. relevant, trainings will have theoretical and practical elements. Trainings will target different stakeholder groups corresponding to residential heat plants, hospital campuses, and industry. Training will also be provided to staff of the NAMA ESCO, Energy Efficiency Agency (EEA), EEI, research and design institutions with focus on climate change related topics. Trainings will cover technical, economical, financial, regulatory and operational aspects. To promote small CHPs, such energy auditing, CHP designing, construction, commissioning and operation are needed.

G Estimated emission reductions

G.1 Amount	1.0364
G.2 Unit	MtCO ₂ e
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 "In generation or tri-generation systems supplying energy to commercial buildings". The most plausible baseline scenario for this NAMA corresponds to the 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. 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 Other indicators

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 in
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I Other relevant information

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 NAMA will lead to higher levels of economic productivity through technological upgrading and innovation, including through a focus on high value added and labor sectors, promotion of development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, encourage 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.
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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 efficiency. The Law on thermal energy and promotion of cogeneration (No. 92 dated May 29th 2014) provides for the promotion of high efficiency cogeneration 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 2009) 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 2010) provides for promotion of high efficiency cogeneration based on useful heat demand that will conserve primary energy sources, avoid losses in the network 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 National Emission Development Strategy (LEDS) extending through 2030 pending approval and NAMAs are expected to be an important element of the LEDS.
J.2 Link to other NAMAs	(none)

K Attachments

K Attachments	<table><tr><th>Title</th><th>Description</th></tr><tr><td colspan="2">No records to display.</td></tr></table>	Title	Description	No records to display.	
Title	Description				
No records to display.					
K.1 Attachment description					
K.2 File	Choose File No file chosen				

L Support received

L.1	Outside the Registry					
L.2	Within the Registry	Support provided	SupportType	Amount	Comment	Date
No records to display.						