

NS-279 - Hybrid and electric buses and minibuses in the city of Chisinau

Republic of Moldova

NAMA Seeking Support for Implementation

A Overview		
A.1 Party	Republic of Moldova	
A.2 Title of Mitigation Action	Hybrid and electric buses and minibuses in the city of Chisinau	
A.3 Description of mitigation action	General objective – the promotion and implementation of cleaner technologies in urban transport such as electric and hybrid vehicles and reducing the environmental impacts (lower GHG emissions), economic (lower expenditures on fossil fuels) and social impacts (health benefits) impacts of cleaner technologies used in the passenger transport sector. This NAMA is intended to be implemented in the city of Chisinau. In addition to the general objective, NAMA will also contribute to achieving other related objectives, including reducing the dependence on fossil fuels, which will lead to greater energy security of the country; creation of new skilled jobs; new ways of clean technology and opening opportunities for collaboration, knowledge transfer and development of local clean industries; achieving sustainable development benefits, such as improved air quality and capacity-building. Hybrid Electric Vehicles - see <http://www.climatechwiki.org/technology/hev/>, Electric Vehicles - see <http://climatechwiki.org/technology/electric-vehicles/>.	
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
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B.1.9	Contact Person 3	
B.1.10	Address	
B.1.11	Phone	
B.1.12	Email	

B.1.13	Comments	
Add Additional Entity		
C Expected timeframe for the implementation of the mitigation action		
C.1	Number of years for completion	12
C.2	Expected start year of implementation	2019
D Currency		
D.1	Used Currency	USD
Conversion to USD: 1		
E Cost		
E.1.1	Estimated full cost of implementation	344,292,865 Conversion to USD: 344,292,865
E.1.2	Comments on full cost of implementation	The sources of financing for this NAMA are local budgets, private investors and donors' support. Buses and minibuses equipped with Diesel engines need to be replaced with others. High investment costs of new technologies (electric and hybrid), limited budgets of local public authorities and unavailability of private mini operators to bear a higher cost for new technologies under the same income conditions are the main drivers that determine procurement of classic technologies engines. To change this practice support schemes are required. An electric bus requires twice as high investments as the Diesel one, additional cost for a charging station and battery replacement. The total number of vehicles considered within this NAMA is 130 buses and 1842 minibuses. This NAMA is proposed to be implemented in 5 years – 26 electric buses and 370 hybrid minibuses annually. Replacing the Diesel buses and minibuses with other electric buses and hybrid minibuses involves a total cost of \$ 344.3 million, the difference between technologies (electric/hybrid and Diesel) of \$ 60.1 million. The total cost of operating an electric bus over a 12 years life span is \$ 777 thousand, including purchase of the vehicle - \$ 539 thousand, a charging station - \$ 10 thousand, an additional battery of \$ 86 thousand, electricity costs - \$ 74 thousand and maintenance expenses - \$ 68 thousand. While in the case of a Diesel bus the amount is \$ 644 thousand, including vehicle – \$ 270 thousand, fuel costs - \$ 262 thousand and maintenance expenses - \$ 113 thousand. Direct comparison indicates that an electric bus is more expensive by 21%. The same situation is observed when comparing the total costs of hybrid (\$ 132 thousand, vehicle – 96, fuel – 25 and maintenance - 11) and diesel minibus (\$ 196 thousand, vehicle – 60, fuel – 36, maintenance - 13), the first being more expensive by 21%.
E.2.1	Estimated incremental cost of implementation	60,130,000 Conversion to USD: 60,130,000
E.2.2	Comments on estimated incremental cost of implementation	This cost was determined by comparing the total cost of electric and hybrid technologies with conventional technologies equipped with Diesel engines.
F Support required for the implementation of the mitigation action		
F.1.1	Amount of Financial support	80,718,000 Conversion to USD: 80,718,000
F.1.2	Type of required Financial support	☒ Grant ☐ Guarantee ☐ Loan (sovereign) ☐ Equity ☐ Loan (Private) ☐ Carbon finance ☐ Concessional loan ☐ Other
F.1.3	Comments on Financial support	Based on the financial analysis performed using the NPV and PB indicators (3-5 years required), there is a need to apply for a \$ 80.7 million grant, including \$ 27.3 million for electric buses and \$ 53.4 million for hybrid minibuses.
F.2.1	Amount of Technological support	80,718,000.00
F.2.2	Comments on Technological support	
F.3.1	Amount of capacity building support	80,000 Conversion to USD: 80,000
F.3.2	Type of required capacity building support	☒ Individual level ☒ Institutional level ☐ Systemic level ☐ Other
F.3.3	Comments on Capacity Building support	This NAMA capacity building program will provide a series of trainings and workshops (To inform about environmental, health and safety benefits and to enhance the local skills that are required to operate the new technology) for a range of commercially-focused business people, including those with little or no previous engineering transport industry background, from among: transport investors; bus manufacturers; project management firms; equipment & service suppliers; law firms and contract managers; the Chisinau City Hall is responsible for the development of road transport in the municipality; Government energy policymakers and planners (Energy Efficiency Agency, Energy Efficiency Fund, Ministry of Economy and Infrastructure - General Energy Security and Efficiency Directorate); utility transport companies; research and design institutions and any others with an interest in understanding the key factors in successful implementation of electric buses and minibuses development and planning.

G Estimated emission reductions									
G.1	Amount	0.1716							
G.2	Unit	MtCO2e ▼							
G.3	Additional information (e.g. if available, information on the methodological approach followed)	GHG emission reductions were calculated on the basis of the 2006 IPCC Guidelines for National Greenhouse Inventories. The base scenario for this NAMA corresponds to the emissions of the existing fleet of buses and Diesel minibuses. The annual mileage of a bus is about 56 thousand km, and the specific fuel consumption of 47 liters/10 km for a bus and a 13 liters/100 km for a minibus.							
H Other indicators									
H.1	Other indicators of implementation	- Number of replaced vehicles; - Fuel and electricity consumption; - Investments made in Hybrid and electric buses and minibuses, including in the form of grant, loan, budget support and beneficial financing							
I Other relevant information									
I.1	Other relevant information including co-benefits for local sustainable development	Implementation of NAMA will contribute to reducing the dependence on imported petroleum fuels, which will lead to greater energy security for the country; increasing opportunities for skilled labor through the development of multiple ancillary industries							
J Relevant National Policies strategies, plans and programmes and/or other mitigation action									
J.1	Relevant National Policies	In 2010, the Republic of Moldova joined the Copenhagen Accord and submitted an emission reduction target to the UNFCCC Secretariat, which states that "a reduction of no less than 25% of the level total national GHG emissions has to be achieved by 2020 through implementation of global economic mechanisms focused on climate change mitigation, in accordance with the Convention principles and provisions." In support of these technologies the Tax Code has been amended to allow reduction of the VAT by ½ for imported hybrid vehicles starting with 01.01.2017. In the Emissions Development Strategy of the Republic of Moldova until 2030 it is mentioned that the mitigation actions to be supported by donors include the use of hybrid electric vehicles and vehicles connected to the grid. The priority action specified in the Environmental Strategy for 2014-2023 include the promotion of European standards for vehicles in order to align with EU standards, as well as the development of a mechanism to stimulate and promote the renewal of the national vehicle fleet.							
J.2	Link to other NAMAs	(none)							
K Attachments									
K	Attachments	<table><tr><th>Title</th><th>Description</th></tr></table>	Title	Description					
Title	Description								
K.1	Attachment description	No records to display.							
K.2	File	Choose File	No file chosen						
L Support received									
L.1	Outside the Registry								
L.2	Within the Registry	<table><tr><th>Support provided</th><th>SupportType</th><th>Amount</th><th>Comment</th><th>Date</th></tr></table>	Support provided	SupportType	Amount	Comment	Date	No records to display.	
Support provided	SupportType	Amount	Comment	Date					