

LOW-EMISSIONS DEVELOPMENT STRATEGY OF THE REPUBLIC OF MOLDOVA UNTIL 2020

1. INTRODUCTION

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted on 9 May 1992 at the UN Conference on Environment and Sustainable Development in Rio de Janeiro, as the international community's response to the global climate change phenomenon caused by increasing concentrations of greenhouse gases in the atmosphere.

The overall objective of the United Nations Framework Convention on Climate Change aims at stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. To-date 196 countries are Parties to the Convention. The Republic of Moldova signed the United Nations Framework Convention on Climate Change on 12 June 1992 and ratified it on 16 March 1995.

The 3rd Conference of Parties under the United Nations Framework Convention on Climate Change (Kyoto, 1997) adopted the Kyoto Protocol, which committed industrialized countries and economies in transition included in Annex I to Convention to reduce their total emissions of direct greenhouse gases by at least 5 percent against 1990 levels during 2008-2012 (first commitment period).

The Republic of Moldova ratified the Kyoto Protocol on 13 February 2003. As a non-Annex I Party, the Republic of Moldova has no commitments to reduce its emissions of greenhouse gases during the first commitment period (2008-2012) under the Kyoto Protocol.

1.1. Global Transaction to a Low - Carbon Society

In the Bali Action Plan adopted at the 13 Conference of Parties to UNFCCC (2007), developing countries agreed for the first time to design and implement *National Appropriate Mitigation Actions* (NAMAs) in the context of sustainable development, supported and enabled by technology, financing and capacity building.

The 15th Conference of the Parties, held in Copenhagen in December 2009, approved and recommended the implementation of a political declaration which agrees to limit climate change to not more than 2°C above preindustrial levels in the context of equity and sustainable development. This declaration has taken note of the Copenhagen Accord and reaffirms the developmental aspects of climate change, including by implementing Low-Emissions Development Strategies (LEDS).

The 16th Conference of the Parties to UNFCCC held in Cancun in December 2010 adopted the Cancun Agreement, which encourages developing countries to prepare Low-Emissions Development Strategies in the context of sustainable development and also to undertake National Appropriate Mitigation Actions.

The Cancun Agreement “*realizes that addressing climate change requires a paradigm shift towards building a low-carbon society that offers substantial opportunities and ensures continued high growth and sustainable development*”.

The Republic of Moldova associated itself with the Copenhagen Accord and submitted an emission reduction target, which is specified in Annex II to this Agreement “National Appropriate Mitigation Actions of the developing countries”:

The target of the appropriate mitigation actions of the Republic of Moldova envisaged in this Agreement represent: *“A reduction of no less than 25% of the base year (1990) level total national GHG emissions have to be achieved by 2020 through implementation of global economical mechanisms focused on the climate change mitigation, in accordance with the Convention’s principles and provisions.”*

This target is provided without specific nationally appropriate mitigation actions, identified and quantified, or further clarification on the support needed. However, it is recognized that to achieve this target significant financial, technological and capacity building support will be needed, which can be provided by UNFCCC mechanisms.

1.2. Preconditions for Developing the Low Emissions Development Strategy

The Low Emissions Development Strategy is a strategic plan to assist the Republic of Moldova in shifting its development path to a low carbon economy and achieve sustainable green development, based on the socio-economic and development priorities of the country.

However, the Strategy can also support global goals by providing national strategic context to the mitigation efforts for which countries receive international support for nationally appropriate mitigation actions.

The Strategy is developed according to the provisions of the Government of the Republic of Moldova “European Integration: Freedom, Democracy, Wellbeing” (2011-2014), Chapter “Environmental Protection”, as well as provisions of “Climate Changes” Chapter from the EU Association Agreement.

The Low-Emissions Development Strategy contains a concrete set of measures leading to reduction of greenhouse gases emission, quantification of the corresponding emission reduction for each measure and the financial requirements to implement them.

The measures envisaged in the Action Plan to this Strategy include national appropriate mitigation actions, as stipulated for non-Annex I Parties to the United Nations Framework Convention on Climate Change.

The Strategy outlines the implementation procedure, timelines, as well as the monitoring, measurement, reporting and verification of achieved results.

National appropriate mitigation actions include a wide range of approaches, aimed at mitigating the climate change phenomenon, with or without carbon finance components, such as implementation of policies, programs, individual projects to reduce their emissions of greenhouse gases. The UNFCCC contains three types of national appropriate mitigation actions:

- a) Unilateral actions: *mitigation actions undertaken by developing countries on their own;*
- b) Supported actions: *mitigation actions in developing countries, supported by finance, technology and capacity building from Annex I developed countries;*
- c) Creditable actions: *mitigation actions in developing countries generating credits for the carbon market.*

According to the Copenhagen Accord (2010), non-Annex I Parties to the United Nations Framework Convention on Climate Change, will contribute to the mitigation of climate changes phenomenon through national appropriate mitigation actions.

The unilateral actions will be subject to the domestic monitoring, reporting and verifying procedures and will be reported on every four years through the National Communications and respectively every two years through the Biannual Reviewed Reports, on the basis of guidelines to be adopted by the Conference of the Parties. Provisions are to be made for international consultations and analysis under clearly defined guidelines that will ensure that national sovereignty is respected.

The supported actions will be recorded by the Secretary of the UN Framework Convention on Climate Change in a “*Registry of National Appropriate Mitigation Actions*”. The registry will contain information about the relevant technology, finance and capacity building support. The supported actions will be subject to international monitoring, reporting and verifying procedures in accordance with guidelines to be adopted by the Conference of the Parties.

According to the Durban Platform for Enhanced Action, adopted in 2011 at the 17th Conference of the Parties, the developing countries were invited to communicate to the Secretary of the United Nations Framework Convention on Climate Change, since 2012, the priority mitigation actions to record them in the Registry of National Appropriate Mitigation Actions.

In order to record the national appropriate mitigation actions in the respective Registry and to submit a request for financial support in order to implement these actions, each eligible Party shall first approve the Low-Emissions Development Strategy, which shall contain the list of the nationally appropriate mitigation actions.

The Republic of Moldova, supporting and contributing to the global imperative to stabilize the greenhouse gas concentrations, in line with the effort to limit the increase of the global average temperature by 2°C at most during the following one hundred years, decided to make a transition to low emission development path, and as a first step developing a Low-Emissions Development Strategy.

Approval of this Strategy will allow access to the fast start financing, as well as long-term financing committed by developed Annex I countries to support developing non-Annex I countries, including the Republic of Moldova, in implementing Low-Emissions Development Strategies and national appropriate mitigation actions.

The Low-Emissions Development Strategy was developed by the Ministry of Environment of the Republic of Moldova and the process was guided by the inter-ministerial working group for climate change with the support of the country office of the United Nations Development Program (UNDP Moldova).

The Strategy development process involved extensive consultation with stakeholders, who were represented by line ministries, scientific research institutions, donor organizations, Non-Government Organizations, and civil society.

2. DESCRIPTION OF THE CURRENT SITUATION

2.1. National and Sectoral Greenhouse Gas Emission Trends

The Republic of Moldova consistently monitors and estimates emissions of greenhouse gases (GHG) through national inventories of their sources and sinks. A series of assessments have been made in 2000, 2009 and 2013, as part of the First (2000) Second (2009) and Third National Communication of the Republic of Moldova to the United Nations Framework Convention on Climate Change, as well as in the Regional GHG capacity building programme (2005), implemented by the United Nations Development Program during 2003 - 2006.

National Inventory Report: 1990-2010, the emission sources and sinks in the Republic of Moldova (2013) reveal a downward trend in the emissions of greenhouse gases. Between 1990 and 2010, the national emissions fell by about 69.3 percent: from 43.26 Mt CO₂ equivalent in 1990 to 13.28 Mt CO₂ equivalent in 2010 (Figure 2-1, Table 2-1).

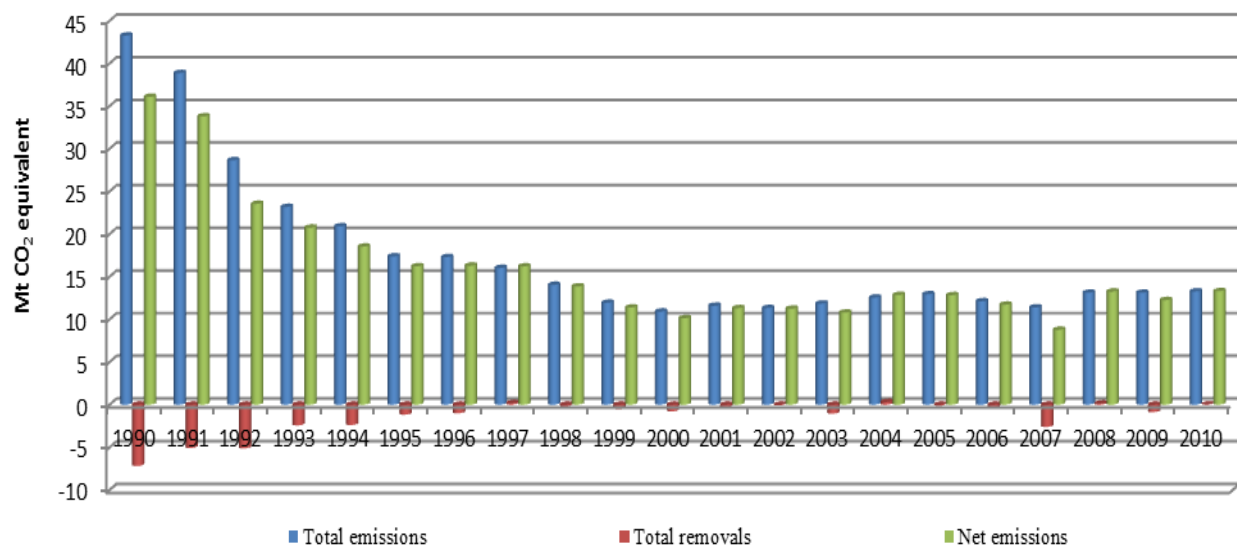


Figure 2-1: Greenhouse Gas Emissions and Sinks Trends in the Republic of Moldova, 1990-2010.

After bottoming out in 2000, greenhouse gases emissions in the Republic of Moldova increased between 2001 and 2010 by about 32.9 percent, mostly due to a 120.6 percent increase in emissions from the mobile combustion of fuels, respectively due to an increase of 58.1 percent from combustion of fossil fuels for production of electrical and heat energy, respectively an increase of 42.7 percent of emissions from combustion of fossil fuels in the residential, institutional and commercial sectors.

The significant reduction in national GHG emissions is a consequence, first of all, of the economic crisis following the break-up of the Soviet Union and characteristic for the transition period (1991-2000) to a market economy in the Republic of Moldova. The years of transition also brought about changes in the fuel mix of energy supply and consumption. Fossil fuels consumption (in particular, coal and residual fuel oil) has substantially decreased, while natural gas, which is less polluting, has become the main fuel for the power stations and boiler houses and has recently reached a share of around 40-50% of the primary energy supply.

The Energy Sector is the most important source of national direct GHG emissions (without contribution of the “Land Use, Land-Use Change and Forestry” or LULUCF), its share varying from a minimum of 57.5% in 2000 and a maximum of 79.8 percent in 1990 (in the last ten years the share of this sector increased, constituting in 2010 about 67.4% of the direct national greenhouse gas emissions).

Table 2-1: Greenhouse Gas Emissions and Sinks Trends by Sector in Mt CO₂ equivalent, 1990-2010

	1990	1991	1992	1993	1994	1995	1996
1. Energy sector	34.52	30.22	21.38	16.48	15.01	11.27	11.62
2. Industrial processes	1.90	1.81	1.17	0.77	0.62	0.49	0.44
3. Solvents	0.09	0.08	0.06	0.05	0.04	0.04	0.03
4. Agriculture	5.12	5.00	4.15	4.00	3.41	3.36	3.07
5. LULUCF	-7.18	-5.08	-5.11	-2.41	-2.38	-1.16	-1.01
6. Waste	1.63	1.76	1.87	1.87	1.82	1.78	1.81
	1997	1998	1999	2000	2001	2002	2003
1. Energy sector	10.10	8.64	6.46	5.74	7.27	6.68	7.43
2. Industrial processes	0.49	0.34	0.31	0.28	0.27	0.33	0.38
3. Solvents	0.03	0.02	0.03	0.03	0.05	0.04	0.04
4. Agriculture	2.99	2.73	2.49	2.28	2.45	2.52	2.20
5. LULUCF	0.18	-0.19	-0.56	-0.78	-0.28	-0.07	-1.05
6. Waste	1.74	1.68	1.75	1.66	1.55	1.48	1.47
	2004	2005	2006	2007	2008	2009	2010
1. Energy sector	8.12	8.20	7.70	7.51	8.43	9.07	8.95
2. Industrial processes	0.43	0.57	0.66	0.95	1.02	0.52	0.56
3. Solvents	0.04	0.07	0.05	0.05	0.05	0.05	0.05
4. Agriculture	2.40	2.37	2.27	1.52	2.12	1.92	2.13
5. LULUCF	0.31	-0.10	-0.40	-2.61	0.13	-0.87	0.03
6. Waste	1.44	1.41	1.43	1.47	1.50	1.56	1.58

According to the International Energy Agency, the greenhouse gas intensity (“CO₂ emissions per GDP”) and the energy intensity (“Total Primary Energy Supply per GDP”) indices in the Republic of Moldova are among the highest among the transition economies from the Central and Eastern Europe (Tables 2-2 and 2-3).

Table 2-2: The greenhouse gas intensity in the countries with economies in transition from the Central and Eastern Europe in 1990-2010, kg CO₂/\$ SUA from Gross Domestic Product, update for the year 2005

	1990	1995	2000	2005	2008	2009	2010	1990-2010, %
Albania	1.11	0.38	0.48	0.49	0.39	0.34	0.35	-68.5
Armenia	5.04	1.59	1.24	0.84	0.78	0.74	0.68	-86.4
Azerbaijan	5.44	6.45	4.23	2.48	1.20	0.92	0.87	-84.0
Belarus	5.25	3.97	2.79	2.05	1.62	1.56	1.52	-71.0
Bosnia and Herzegovina	10.26	1.30	1.60	1.45	1.55	1.55	1.58	-84.6
Bulgaria	2.99	2.43	1.90	1.59	1.41	1.28	1.33	-55.6
Croatia	0.51	0.52	0.49	0.46	0.42	0.42	0.41	-20.9
Estonia	3.57	2.26	1.49	1.21	1.12	1.08	1.33	-62.7
Georgia	2.77	2.38	1.02	0.68	0.59	0.69	0.60	-78.4
Latvia	1.30	1.08	0.63	0.47	0.42	0.46	0.52	-59.9
Lithuania	1.34	0.99	0.63	0.52	0.45	0.46	0.49	-63.5
former Yugoslav Republic of Macedonia	1.40	1.71	1.52	1.47	1.29	1.21	1.16	-17.1
Republic of Moldova	5.06	4.57	2.68	2.27	1.83	1.76	1.75	-65.5
Romania	1.88	1.46	1.15	0.95	0.75	0.70	0.66	-64.8
Russian Federation	2.58	3.01	2.65	1.98	1.69	1.75	1.75	-32.4
Ukraine	5.02	5.97	4.90	3.55	3.04	2.86	2.94	-41.4

Source: OECD/IEA (2012), International Energy Agency Statistics, CO₂ Emissions from Fuel Combustion, Highlights (2012 Edition). Paris, France.

This situation is due to low energy efficiency at the stage of energy supply and at the final usage of it, as well as because of the outdated and inefficient technologies, aging infrastructure and inefficient housing system in terms of low potential for saving energy resources.

Table 2-3: The energy intensity in the countries with economies in transition from the Central and Eastern Europe in 2004-2010, t.p.e. TPES*/thousands \$ SUA from GDP, for 2004-2009 updated for 2000, and for 2010 - at the level of 2005

	2004	2005	2006	2007	2008	2009	2010
Albania	0.51	0.50	0.45	0.41	0.37	0.29	0.19
Armenia	0.74	0.75	0.67	0.65	0.64	0.65	0.41
Azerbaijan	1.65	1.40	1.05	0.71	0.72	0.59	0.42
Belarus	1.61	1.46	1.42	1.29	1.17	1.08	0.65
Bosnia and Herzegovina	0.86	0.77	0.79	0.78	0.71	0.73	0.51
Bulgaria	1.25	1.25	1.19	1.10	1.01	0.91	0.54
Croatia	0.40	0.38	0.37	0.36	0.30	0.31	0.18
Estonia	0.72	0.65	0.52	0.58	0.57	0.59	0.40
Georgia	0.71	0.74	0.70	0.62	0.55	0.61	0.38
Latvia	0.45	0.41	0.36	0.32	0.33	0.38	0.28
Lithuania	0.61	0.52	0.48	0.47	0.46	0.49	0.25
former Yugoslav Republic of Macedonia	0.74	0.71	0.70	0.72	0.70	0.63	0.41
Republic of Moldova	2.01	1.97	1.80	1.71	1.50	1.24	0.74
Romania	0.82	0.78	0.76	0.70	0.64	0.61	0.31
Russian Federation	1.95	1.85	1.81	1.65	1.60	1.63	0.77
Ukraine	3.19	3.17	2.84	2.63	2.55	2.54	1.44

Note: * t.p.e - tone petrol equivalent; TPES - Total Primary energy Supply

Source: OECD/IEA (2006-2012), International Energy Agency, Key World Energy Statistics. Paris, France.

2.2. National and Sectoral Greenhouse Gas Emission Trends

The medium term forecast on „Baseline“ levels of greenhouse gas emissions has been developed within the framework of the Second National Communication of the Republic of Moldova under the United Nations Framework Convention on Climate Change (2009) and on the basis of a series of strategic documents, as well as based upon updated data from ministries, central administrative authorities and research and development institutions.

Below are presented the results of the projections of direct greenhouse gas emissions by sector, under the baseline scenario (without mitigation measures) projection considered for the 2010-2020 time series (Table 2-4).

Table 2-4: The Historic and Projected Baseline Level of Greenhouse Gas Emissions and Sinks in the Republic of Moldova by sectors, according to the baseline scenario, for the 1990-2020 time series

	1990	1995	2000	2005	2010	2015	2020
	Historic values					Projected values	
	Greenhouse Gas Emission Dynamics by Sector in Mt CO ₂ equivalent.						
Energy sector	34.52	11.27	5.74	8.20	8.95	12.34	14.44
Industrial processes	1.90	0.49	0.28	0.57	0.56	0.98	1.29
Agriculture	5.12	5.00	4.15	2.37	2.13	3.16	3.73
LULUCF	-7.18	-5.08	-5.11	-0.10	0.03	-1.15	-1.49
Waste	1.63	1.76	1.87	1.41	1.58	1.84	2.24
Total (with LULUCF)	36.08	15.79	9.21	12.52	13.30	17.16	20.21
Total (without LULUCF)	43.26	16.95	9.99	12.62	13.28	18.31	21.70

	1990	1995	2000	2005	2010	2015	2020
	Historic values					Projected values	
	Changes relative to 1990, %						
Energy sector	100.0	-67.3	-83.4	-76.2	-74.1	-64.3	-58.2
Industrial processes	100.0	-74.1	-85.2	-70.1	-70.3	-48.4	-32.1
Agriculture	100.0	-2.3	-18.9	-53.6	-58.4	-38.3	-27.2
LULUCF	100.0	-29.3	-28.8	-98.5	-100.4	-84.0	-79.2
Waste	100.0	7.9	15.1	-13.3	-3.0	13.1	37.6
Total (with LULUCF)	100.0	-56.2	-74.5	-65.3	-63.1	-52.4	-44.0
Total (without LULUCF)	100.0	-60.8	-76.9	-70.8	-69.3	-57.7	-49.8

As reflected by the dynamics of direct greenhouse gas emissions in the baseline scenario, by 2020 the Republic of Moldova will be on track to overachieving the emissions reduction target set by the Copenhagen Accord and specified in Annex II “National Appropriate Mitigation Actions of the developing countries” (Figure 2-2). However, emissions would continue to increase in the long run in the absence of concrete national appropriate mitigation actions.

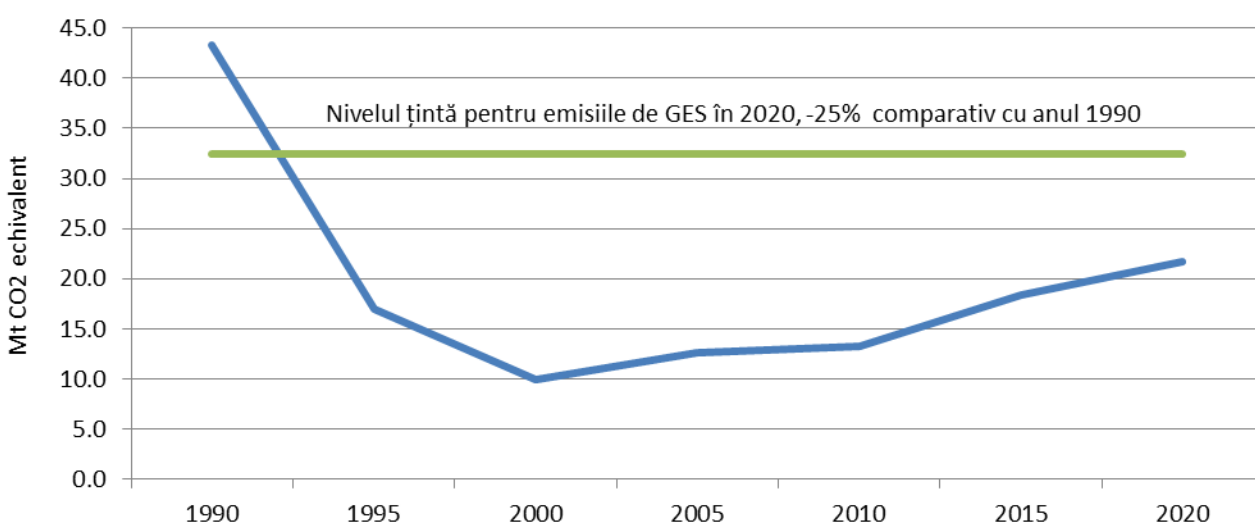


Figure 2-2: Historic and projected greenhouse gas emissions in the Republic of Moldova, 1990-2020, in comparison with the emissions reduction target set by the Copenhagen Accord

2.3. Description of sector situation and their contribution to low-emissions economic development

Energy Sector

The energy sector is the main branch of national economy and, therefore, it requires a high level of energy security. Regretfully, we found that energy security is currently not ensured due to a multitude of causes:

- The own resources of hydropower and fossil fuels are insignificant, the country importing up to 94-98% of the necessary energy resources;
- The gas imported from one supplier (Gazprom, Russian Federation) account for about 40-50% of the country's energy balance;
- Over 70% of the energy demand on the right bank of the Nistru river is brought from outside;

- d) The energy equipment is depreciated in proportion of 70-75%, the lifespan of power sources has literally expired;
- e) The energy efficiency is low, and the energy intensity is three times higher than in Western Europe;
- f) Being recognized as the poorest country in Europe, the Republic of Moldova does not have own financial resources to develop this sector.

Considering the low energy security, the Republic of Moldova assumed the commitment to overcome the current challenges, by developing and initiating appropriate policies. They are reflected in the Energy Strategy of the Republic of Moldova by 2020, the National Development Strategy of the Republic of Moldova 2012-2020 „Moldova 2020” and the Energy Strategy of the Republic of Moldova by 2030.

These documents establish the following priority objectives:

- 1) energy supply security;
- 2) promotion of energy efficiency and economy;
- 3) development of competitive markets and their integration with the regional and European markets; and
- 4) environmental sustainability and combating climate changes.

The policy instruments envisage increasing the share of renewable energy sources in the country's energy balance up to 20 percent by 2020, and covering up to 10 percent of the demand with locally produced renewable energy by 2020.

The Energy Strategy stipulates the development of the energy potential of biomass, solar energy by conversion to power and heat, wind, hydropower, and, in the future, new sources of energy.

To achieve these objectives, the legal and regulatory framework identifies ways of accomplishing the goals, responsible parties and their obligations, rules and mechanisms of influence in the implementation of the appropriate measures, priority areas and the necessary activities to achieve the set objectives.

The primary and secondary legal framework, developed in order to ensure a gradual transition to a liberalized energy market, consists of the Law on Electricity, Law on Gas, Law on Energy Sector, Law on Energy Efficiency, Law on Renewable Energy, Rules of the Electricity Market, Grid Code, Tariff Methodologies on the regulation of the tariffs for end consumers and for the electricity produced from renewable sources and biofuels, etc.

The Republic of Moldova carried out a series of measures aimed at implementing the Energy Community Acquis, including by adopting the Law on Electricity. The activities of the power transportation and distribution systems were separated legally from the generation and supply activities. The timetable for opening the power market was transposed effectively. By joining the Energy Community in 2010 the country is implementing successfully the commitments assumed under the signed Treaty.

The new methodology on the determination, approval and application of the tariffs for the distribution service and, separately, for the power transportation stipulates an adequate return on equity, which will allow strengthening the respective markets and attracting new investments.

The Methodology on approving the fees for the supply of power at regulated tariffs was developed in such a manner so as to motivate the network operators to decrease electricity losses in the distribution and transportation networks, contributing thus to the diminution of greenhouse gas emissions, which is also stipulated in the National Energy Efficiency Program for 2011-2020, another instrument aimed at reducing the greenhouse gas emissions.

The program sets the priority policies and actions that shall be implemented by 2020 in order to respond to the challenges related to the increase in energy prices, dependence on the import of energy resources and the impact of the energy sector on the climate changes.

As humans have an incontestable importance for the reduction of the energy consumption, the National Energy Efficiency Program for 2011-2020 provides for a National Communication Strategy (annexed to the Program), underlying the need to conduct thematic public awareness programs to encourage citizens to use the energy in a sound manner and to adopt wittingly decisions on the procurement of public utilities services, constructions materials, dwelling units, household appliances and products with energy impact.

The National Energy Efficiency Program 2011-2020 is supported by national action plans on energy efficiency, adopted for a three-year period. Further on, the Program will be updated every third year or depending on the technical progress, as well as on the amendments made to the European Directives.

All of the above-mentioned instruments and measures contribute and will continue to contribute to the development of the generation sources, power transportation and distribution networks in the most efficient manner, being correlated with the availability of capital resources and investors.

A transparent and well-developed framework, based on the market rules for the energy sector, will create favorable conditions for investors in the energy sector and will adjust the sector to market-based environment protection policies.

It is worth mentioning that during 2010-2012 the Energy Efficiency Agency, Energy Efficiency Fund and mechanisms for accessing, use and monitoring of the released funds for energy efficiency.

Generalizing the above-mentioned, we may state that for the energy sector the focus was placed on the development of a comprehensive and modern comprehensive legislative and regulatory framework. A more predictable and favorable investment environment decreases the risks perceived by investors and attracts capital into the sector. This is a precondition for the ongoing modernization of the sector and therefore a way to low-carbon development.

Transportation Sector

The objectives related to mitigation of greenhouse gas emissions in the transportation sector are stipulated in the Energy Strategy of the Republic of Moldova until 2020. Thus, according to the strategy, the following types of activities are regarded as short and medium term priorities in decreasing the impact of the transportation sector on the environment:

- replace the traditional fuels with less polluting compressed gas and liquefied petroleum gas;

- develop and implement national environment protection standards and norms according to the EU standards with the view to decrease harmful emissions, including in the transportation sector;
- implement Directive 93/76/EEC to limit carbon dioxide emissions, Directive 94/63/EEC and Directive 96/59/EEC;
- improve awareness in this area among preselected target groups, as well as among the general public;
- develop a creative financing scheme by replicating the programs that were implemented successfully in other countries.

The National Program on Energy Efficiency 2011-2020, the National Development Strategy of the Republic of Moldova 2012-2020 “Moldova 2020”, respectively the Energy Strategy of the Republic of Moldova until 2030 refresh the objectives related to the mitigation of the greenhouse gas emissions in the transportation sector and request to increase the share of biofuels used in the transportation sector by 2020, with an intermediate objective of 4 percent by 2015.

The above-mentioned policies also stipulate that the authorized public authority shall develop energy saving programs in the transportation sector and develop an action plan in order to specify the potential use of biofuels that will be produced from biomass.

The Strategy on Road Transport Infrastructure for 2008-2017 is focused on three priority directions: infrastructure rehabilitation, infrastructure development and institutional framework. The implementation of the Strategy will have an important positive impact on public health and safety, reducing the number of accidents and air pollution levels as result of keeping the traffic speed on particular sections of the rehabilitated road more constant.

Over the recent past years, the vehicle fleet of the Republic of Moldova has increased, including as a result of the import of new, less polluting vehicles. This was achieved by prohibiting, through the law, the import of cars, minibuses, trucks and buses that were operated for more than 10 years.

The modernization of the road transport is also a main precondition to provide quality services at affordable prices in the rail transport area in order to support long-distance international trade transactions and enhance the efficiency of the national economy. The restructuring of the rail sector must be done in parallel and should be supported by the rehabilitation of the existing railway network by ensuring adequate financing.

It is worth mentioning that the Air Transport Development Strategy by 2012 stipulates that the planned renewal of the aircrafts stock improves the efficiency of fuel consumption and decreases the dioxide emissions.

Starting with this year the aviation sector, which contributes with about 2% to the global greenhouse gas emissions, will be compulsory included in the European Union Emission Trading Scheme (EU ETS). This means that all airline companies flying from and to the European Union must compensate the flight emissions by procuring European Union Allowances (EUA) and/or Certified Emission Reductions (CER).

The emission ceiling for 2012 was 3%, and for the period between 2013 and 2020 - 5%, as compared with the baseline emissions from 2004-2006 (EU Directive 2008/101/EC, 2008).

Therefore, the EU regulations for the flights from the Republic of Moldova to EU and vice-versa are also valid for our country, thus the aviation sector is the first sector in the Republic of

Moldova that will be included compulsorily in the EU Emission Trading Scheme, with a formal emission ceiling.

The possibility to include other sectors of the national economy in EU ETS is currently negotiated. This could impact the development of the national economy after 2018.

Buildings Sector

The current legislation requires the development of state standards for the use of renewable energy and for technical regulations, standardisation, certification and methodological support of energy efficiency and renewable energy. They also insure development and introduction of Energy Performance Certificates for buildings and development of standards for compulsory energy audits for certain categories of consumers.

Development and implementation of economic and financial mechanisms for energy efficiency are included in the Terms of References of the Energy Efficiency Agency, so that the enterprises that implement energy efficiency measures may request loans or investment guarantees from the Energy Efficiency Fund.

Given the above mentioned, it is worth stating that the National Program on Energy Efficiency 2011-2020 stipulates development and approval of the draft Law on Energy Performance of Buildings to promote the energy performance of buildings, taking into account the impact of external and internal weather factors and the cost-efficiency of the undertaken measures. The program also stipulates that the authorized public authority in the buildings sector shall develop regulations on the minimum energy performance of buildings and their elements. The requirements will be established taking into accounts the optimal balance between the costs/investments and energy savings, which will be achieved during the buildings' operation period.

The program stipulates that the Government shall develop a program of gradual increase in the number of buildings with zero-energy consumption in the public sector. The National Energy Efficiency Action Plan for 2012-2014 includes intermediate objectives for enhancement of the energy performance of new buildings until 2015, information about the policies and other financial measures, including details on the requirements and measures related to the use of renewable energy in new buildings and the existing buildings under renovation. Taking into account the national circumstances, the Government will establish the most relevant instruments to finance and encourage the energy performance of buildings during the transition to zero-energy consumption buildings.

Besides, since January 2012, the Government is providing Energy Performance Certificates for buildings with an area of 500 m² that are built, sold or leased. Until July 2015, this threshold will be decreased from 500 m² to 250 m².

The authorized public authorities will develop an additional program for the rehabilitation of old buildings for the period of 2013-2020, aimed at improving the energy performance of old buildings and decreasing the heating costs.

The competent public authorities will consider the possibility to introduce, since January 2013, sanctions for the failure to comply with the above-mentioned provisions. The sanctions will be effective, proportional and dissuasive.

Industrial Sector

The Industry Development Strategy until 2015 envisages structural reforms in the industrial sector aimed at establishing an efficient infrastructure in the sector, as well as at ensuring environment protection and sound use of natural resources.

The National Development Strategy of the Republic of Moldova 2012-2020 „Moldova 2020”, respectively the Energy Strategy of the Republic of Moldova by 2030, provide for a decrease in the energy intensity, including in the industrial sector, by 10 percent until 2020.

The National Program on Energy Efficiency 2011-2020 stipulates that the Government shall encourage the industries to invest “in energy efficiency by creating new favorable tax incentives, as well as relevant support funds”. The program also envisages energy efficiency measures for the industrial sector, including:

- Preparing and submitting volunteer agreements by which the industrial sector assumes the commitment to implement energy efficiency measures to decrease the energy demand;
- The volunteer agreements must contain information about staged and measurable objectives, as well as information about monitoring and reporting;
- The Government will also support lending of energy facilities for the industrial sector;
- The Energy Efficiency Fund will provide opportunities for industrial enterprises with a view to implement energy efficiency projects;
- The energy consumption in the industrial sector will be monitored by the Energy Efficiency Agency by compulsory questionnaires and inquiries, which shall be prepared by the industrial enterprises with the highest energy consumption at the end of each calendar year.

Agricultural Sector

The overall objective of the National Strategy for Sustainable Development of the Agro-Industrial Sector for 2008-2015 consists in ensuring the sustainable growth of the agricultural sector and food industry, which will improve the quality of life in the rural area by boosting the productivity and competitiveness of this sector.

The Program on Soil Fertility Conservation and Enhancement for 2011-2020 stipulates measures aimed at recovering the green protective layer of forest strips around agricultural lands and water basis, planting trees around highly degraded lands, planting grass on highly eroded lands located on a slopes, planting vineyards and orchards, promoting the culture of planting grass between the lines of trees in orchards to prevent soil erosion, which overall will impact level of carbon capture and greenhouse gas emissions. The Program lists a series of other measures that contribute directly or indirectly to the accomplishment of this objective, such as:

- *use of green fertilizers (leguminous plants mixed with grass)*: introduce in the soil the carbon of temporary vegetation between the harvesting periods of the main agricultural cultures;
- *incorporate the vegetal residuals in the soil*: increase the carbon content in the soil by incorporating the agricultural residuals remained after the harvesting of the main crop;
- *optimize the use of fertilizers*: a lower use of chemical nitrogenous fertilizers will decrease the emissions of N₂O;
- *crop rotation*: use of rotation of crops, including the frequently sown cultures may increase significantly the sequestration of carbon in the soil;

- *include leguminous plants in the crop rotation scheme*: inclusion of nitrogen-fixing leguminous plants, such as beans, peas, soybeans, vetch, alfalfa, sainfoin decreases the need for nitrogenous fertilizers, respectively the related emissions of N₂O and CO₂ will decrease and the content of organic carbon in the soil will increase.

As stipulated in the Program on Soil Fertility Conservation and Enhancement for 2011-2020, the optimized structure of agricultural cultures plays a significant role in conserving the carbon in the soil. Besides, a way of reducing the carbon losses from agricultural soils and, therefore, to enhancing the agricultural productivity, is to decrease the area of uncultivated (fallow) land, improve and replicate the soil fertility, including of the degraded ones, combat the soil erosion and use the lands with a low productivity, introduce some sustainable practices of soil fertilization with manure, sideral fertilizers and incorporation of vegetal residuals in the soil.

Other components of sustainable agriculture, such as agroforestry practices, integrated plant growing practices by applying sideral fertilizers are also efficient in terms of diminishing the greenhouse gas emissions.

Another precondition for a sustainable agriculture is a reduction in the number of soil tillage (implementation of conservative soil tillage systems: “Mini-Till” and “No-Till”).

Integrated application of sustainable agricultural practices ensure recovery and enhancement of soil fertility, a higher productivity of the crop production sector, respectively a more balanced ratio between the crop production and livestock sectors, contributing thus to the significant reduction of greenhouse gas emissions from agricultural sector.

Implementation of sustainable animal breeding policies minimizes the greenhouse gas emissions from livestock manure, including by applying sustainable manure management practices, as well as by using methane emissions recovery techniques (biogas production).

Forestry Sector

The existing policy instruments in the forestry sector include a series of provisions that influence directly or indirectly the sector ability to increase the carbon capture capacity. Focus will be made on the extension of the forest areas, conservation of biological diversity, strengthening of institutional and human capacity, international cooperation, etc.

Articles 78 and 80 of the Forest Code (1996) prohibit fragmentation and reduction of the forest area and areas outside the forest fund covered with forest vegetation, except for the special cases.

The Law on Afforestation of Degraded Lands (2000) regulates the allocation and afforestation of degraded lands. The afforestation and tree planting works (design, planting and taking care of the new forests and forest protection belts until they become solid wood) should be funded from the funds designated for the enhancement of degraded lands, allocations from the state budget, national and local environmental funds, external funding, sponsorships, etc. The central forestry authority, assigned as technical coordinator of the actions aimed at enhancing the degraded lands, will provide sibling material and will plant trees on the degraded lands.

According to the Strategy of Forest Sector Sustainable Development (2001), the direct contribution of the forest sector to the sustainable development of the Republic of Moldova will be achieved by two main strategic directions: regeneration and extension of areas covered by forests and strengthening the bioprotective and ecoproductive potential of the existing forests.

According to the Strategy, during the period between 2003 and 2020, the forested areas of the Republic of Moldova should be extended by about 150 thousand ha. The further policy and planning documents divided this objective in specific afforestation objectives for the natural and assisted regeneration, planting of new forests, protective belts, etc. These efforts will decrease the greenhouse gas emissions by carbon sequestration.

The National Strategy and Action Plan on Biodiversity Conservation (2001) establish a set of priority actions that shall be carried out, some of them having an impact on the forest sector:

- a) rehabilitate structurally and functionally the degraded ecosystems;
- b) establish the national ecological network as a basis for stabilizing the landscapes, ecosystems and biodiversity conservation;
- c) decrease the negative impact of human activity on ecosystems and biodiversity;
- d) improve the legal and institutional framework for the management of biodiversity conservation;
- e) provide environmental information and education to the population, involve them in taking decisions on the conservation and sound use of biodiversity.

A series of Government Decisions define other programs and regulatory instruments that envisage enhancement of sustainable use of lands and management of forests.

Wastes Sector

In the Republic of Moldova, wastes management is regulated by the Law on Industrial and Household Wastes, which establish the legal framework for waste management, consisting of the following stages: waste formation, accumulation, transportation, treatment and disposal.

Due to the lack of financial resources at the national level, the planned activities were implemented only partially, and some of them had to be renewed, as they are not relevant any more.

However, a series of activities that contribute to reduction of greenhouse gas emissions were implemented. Thus, even without networks of separate waste collection, the biodegrading waste, such as paper and cardboard, are partially recoverable; besides, a biogas recovery system was installed in 2009 at the landfill of household waste of Tantareni, where solid household waste generated in Chisinau municipality were brought and buried.

Currently, the Ministry of Environment is developing the National Strategy of Waste Management in the Republic of Moldova (2013-2027), in accordance with its responsibilities deriving from the implementation of the Activity Program of the Government of the Republic of Moldova „European Integration: Freedom, Democracy, Welfare” (2011-2014), “Environmental Protection” Section, including the commitment to transpose the European legislation of waste management and according to the new Law on Waste Management (draft).

2.4. Problems and Barriers to Low-Emissions Economic Growth

A series of financial, technologic and institutional problems and barriers affect the effective achievement of low-emissions economic growth in the key sectors of the national economy.

Energy Sector

Investments attraction in the energy sector has been the Government’s priority for many years. However, given the lack of an appropriate regulatory framework, the consumers’ low

payment capacity and the relatively high cost of capital in the Republic of Moldova, the investments are either difficult or unbearably expensive.

Thus, lack of appropriate financing and technological transfer is one of the barriers that affect the efficiency of heat and power plants.

At the same time, most of the measures aimed at decreasing the greenhouse gas emissions require investments that will increase the price for energy resources, which does not ensure economic sustainability.

The interests charged by local banks for loans are very high, while the external loans are subject to significant risks, because the Republic of Moldova is defined as a high risk country (*the long term country risk is evaluated at B3, the Global Risk Premium is 14.8%*). For comparison, the country with the highest risk in the world is Belize (*Long term risk – Caa3, Global Risk Premium 20.8%*), Greece having 16.3% (Caa1).

The investment risks of the Republic of Moldova are determined, in particular, by the separatism of the Transnistrian region, as well as by the low political and economic stability, which impacts negatively the access to foreign loans.

The lack of interest in the rehabilitation or construction of new power plants on a free power market is another important barrier. The availability of sources of power generation (Ukraine and Moldovan Heat and Power Plant) at lower prices than the ones produced by the new installation, limits the investors' willingness to build new power plants in the country.

It seems that a more favorable framework for the development of renewable sources was established. At the same time, investors are reluctant to use it, because the tariffs for renewable energy are not known in advance, i.e. *Feed-in* tariffs are missing. Therefore, it becomes problematic to implement the objectives envisaged in the strategic documents of the country related to the promotion of renewable energy sources.

The high investment costs of renewable energy technologies and lack of secure availability of balancing energy, when these sources are supposed to cover the energy demand, represent another major barrier to the extension of renewable energy sources in the Republic of Moldova. An exception would be the use of biomass for the production of heat in the rural areas of the country, where a number of such projects are launched with the support of foreign partners.

Due to the low institutional capacity there are few viable projects in the energy sector. An eloquent example in this respect is the lack of an integrated plan for the restructuring of the centralized heating system, including in the Chisinau municipality.

Once the Republic of Moldova achieves its objective of joining the European Union, the country will have to comply compulsorily with the European Union Emission Trading Scheme (EU ETS). Therefore, the activities of CO₂ emissions reduction become an important factor to encourage energy efficiency in the Republic of Moldova.

The Republic of Moldova evaluates the opportunity to conclude a bilateral agreement with EU, aiming at identifying the crediting potential of the Clean Development Mechanism of Kyoto Protocol, related to the projects approved after 2012, loans to be used as part of the European Union Emission Trading Scheme EU ETS. However, the uncertainty of the future demand for such loans affects negatively the prices and investors' interest.

Currently no certain solution has been identified at the international level regarding the policy framework that regulates the CO₂ emissions. At the same time, the mitigation policies will be for sure based on market instruments and price ceiling.

This approach is already confirmed by the European Union's decision to apply on its territory the limits and prices of CO₂ emissions. This means that the Republic of Moldova should start preparing an institutional reform and change the paradigm of all entities that emit greenhouse gases, including power plants, so that when this system is implemented, it could cover quickly not only the emissions from the international air transport, but also from other categories and sources of emission.

Transportation Sector

To decrease the greenhouse gas emissions from the transportation sector, profound changes will be necessary in planning the transport and infrastructure, as well as a transition to low-carbon fuels. The perceived commercial risk of investments in development of efficient technologies is one of the barriers to the enhancement of the vehicles' energy efficiency, which is partially caused by the lack of clear regulation signals in form of vehicle's efficiency standards.

On the demand side, the pre-operational costs for electric and hybrid cars are high. The lack of infrastructure to charge the electric cars is also a barrier.

Such fuels as compressed gas, liquefied petroleum gas and biofuels (bioethanol, biodiesel) should be promoted as less carbon-intensive alternatives than the conventional petroleum-based fuels.

The domestic resources of fossil fuels are very limited and the Republic of Moldova is facing problems related with security of fuels supply, similarly with the supply with gas and fuel.

The use of biofuels, taking into account the demand for arable lands and water resources for irrigation, competes with the more pressing objectives of the domestic policy of food security.

A major challenge of the projects related to public transport infrastructure is associated to very high pre-operational costs of capital.

Other aspects include unsatisfactory urban planning and inappropriate institutional mechanisms for the management of transport demand in the urban area.

Buildings Sector

In the Republic of Moldova there are high opportunities for profitable increase of energy efficiency at the final use of energy in the buildings sector. However, there are a number of obstacles and barriers to this.

In cases when taking the decisions to procure energy saving technologies, or when the entities responsible for investment decisions are others than the beneficiaries of energy savings, for instance in case of institutionally fragmented organizational structures, the stimuli also move. This limits the consumer's role and frequently undermines the importance of investments in energy efficiency.

A number of energy efficiency projects for the buildings sector are too small to attract investors and financial institutions. The small project size, together with disproportionately high transaction costs impede some energy efficiency investment.

In addition, the low share of energy expenses in the disposable income of the relevant groups of population, as well as the opportunity costs related to the frequently limited available time of these groups in order to identify and implement efficient solutions, limit significantly the motivation to increase the energy efficiency in the buildings sector.

Besides, the information about the energy efficiency options are frequently incomplete, unavailable, costly and difficult or less reliable.

Moreover, few small enterprises from the constructions sector have enough training in new technologies, new standards, regulations and best practices.

Other important obstacles include the limited availability of capital in the constructions sector, limited access to the capital markets for low-income households and small enterprises with limited availability of energy efficient equipment in the networks of retail trade.

The deteriorating institutional capacity to coordinate and lead the implementation of energy efficiency in the Republic of Moldova impeded significantly the possibility to overcome these barriers in the long run.

Industrial Sector

In the industrial sector the companies will invest in mitigation of greenhouse gas emissions to the extent that the other factors will generate profits from their investments. Though there exists a wide range of cost-efficient technologies of decreasing the greenhouse gas emissions, their full implementation is limited by a series of economic barriers.

The existing equipment of the industrial enterprises of the Republic of Moldova are obsolete, and the Government has limited possibilities to support financially the restructuring and re-equipment of industrial enterprises.

The industry is affected by an increasing shortage of qualified engineering and technical staff and a large gap between the vocational training of the technical staff and the industrial needs.

The low rate of capital stock rotation in a number of areas hinders the mitigation of greenhouse gas emissions. The extra capacity that exists in certain industrial branches may delay the rotation of capital stock. The policies that encourage the capital stock rotation will increase the mitigation of greenhouse gas emissions. The relatively expensive new technologies have frequently longer investment recovery periods and are subject to higher risks.

Besides, except for the cases provided for in the law, the options of mitigation of greenhouse gas emissions will have to compete for financial and technical resources. The projects on capacity building or new products placement on the market are prioritized in the Republic of Moldova, where a large share of the industrial capacity is represented by small and medium enterprises that have a high potential to achieve the objective of greenhouse gas emissions reduction.

The lack of a favorable business environment is also a barrier to technological transfer. The small and medium enterprises' ability to access and absorb information about the best technologies is often limited. Even the large companies have limited technical resources to interpret and translate the available information on this subject.

Another important constraint is the lack of energy service companies (ESCO), who could assume the role of helping the small and medium enterprises to find and finance efficiency enhancements. The establishment of energy service companies is constrained by the unavailability

of start-up capital from financial institutions, which are not used to the business model of these organizations.

Agricultural Sector

Agriculture in the Republic of Moldova is a volatile activity, very vulnerable to risks, being very susceptible to climate factors (such as drought, freezing, floods, hail, landslides). Decreasing the dependence on such phenomenon is a major challenge for this sector. Other barriers to low-emissions development strategy:

- lack of budgetary allocations, in particular for the renewal of the technical-material base, as well as lack of capital investments for property rehabilitation;
- insufficient financial coverage of the Fund for Agricultural Subsidies (over the past years the agricultural subsidies have not exceeded 3% of the budgetary expenses);
- underdevelopment of the agriculture insurance market;
- the excessive fragmentation of agricultural lands, which decreases the efficiency of agricultural production by non-compliance with the soil tillage technologies;
- insufficiently developed of conservative agriculture;
- insufficient and unbalanced fertilization of agricultural cultures with chemical fertilizers (20-25 kg/ha active substance, of which 80-90% - chemical nitrogenous fertilizers), gradual exhaustion of the phosphorus and potassium reserves in the soil with a negative impact on the volume and quality of agricultural produce;
- failure to use fully organic fertilizers on arable lands, which decreases the efficiency of chemical fertilizers, forming a profoundly negative balance of humus and carbon in the soil, increases the greenhouse gas emissions, destructuring and high compaction of arable layer and increases the risk of soil drought with severe impact on the quality and productive capacity of agricultural lands;
- lack of investments in the recovery of the livestock sector and implementation of sustainable systems of animal manure management;
- lack of an integrated and comprehensive approach to the efficient use of renewable energy sources (agricultural wastes, animal manure);
- insignificant development of the value chain segments of high value added agricultural products;
- inefficient statistical system to keep records of agricultural crops and stock poultry and livestock;
- insufficient safety of agri-food safety and food safety.

The initial period of the agricultural sector, finished by mid 2000 by restructuring the agricultural farms and privatization of the main factors of production (land, fixed and current assets), may be regarded as a stage of deep structural changes of the sector.

Unfortunately, besides some positive changes (privatization, multitude forms of organization of the production process, establishment of an environment of competition, initiative, entrepreneurship, etc.), these structural changes led to the emergence of some obvious inter-branch discrepancies, resulting in lost jobs, lower investments, high share of subsistence agricultural farms, predominant use of outdated agricultural equipment, low labor productivity and high production costs, excessive simplicity of crop rotation, limited range of products and insufficient quality of agricultural production, lower use of mineral and organic fertilizers, respectively a large negative balance of humus and soil fertility, etc.

The forage crops and some technical crops, including tobacco, partially the sugar beet, as well as vegetables, potatoes, essential oil crops, medical herbs and other high value products were taken out of the rotation of crops on agricultural farms. The production of the main livestock decreased significantly due to the fact that the livestock sector is dominated by small individual farms that use extensive production technologies. As a consequence, the sector productivity decreased and the environment pollution worsened, because the animal manure is not used as organic fertilizers in the fields, but is stored in the rural settlements.

Over the past years the share of foreign direct investments in agriculture accounted for about 1.5% of total investments, which confirms indirectly the low competitiveness of this sector of the national economy.

Forestry Sector

The forest resources of the Republic of Moldova are limited, and the issue of illegal exploitation of forests is regarded as a major problem of the forest sector. In spite of the fact that since mid 1990's the Government of the Republic of Moldova has developed a series of laws and regulations on forestry, and the Parliament adopted a number of decisions and amendments to the existing legislation on the prevention and combating of illegal exploitation of forests, the recent studies show that the total volume of wood from unidentified sources (in particular from illegal forest exploitation) amounts to about 400 thousand m³ annually, which is almost equal to the volume of wood collected formally.

The main causes leading to this situation are: low purchasing power of the population, who is not able to procure legally the necessary wood, in particular the fire wood; poverty in the rural area and lack of other sources of revenue; high taxes for the legally procured wood material, the supply of legally collected wood does not match the domestic demand and the latter is not affected by the legality of the wood material; the capacity of the local wood processing companies exceed the legally supplied quantities; lack of specialized staff to guard the lands under forest vegetation of some owners (most Mayor's Offices); inappropriate and/or corrupt application of forest legislation, low salaries of the staff from the forest sector and lack of material incentives; and inappropriate monitoring of the wood flows and their origin.

Other deficiencies, contributing to the above-mentioned problems, include: statistical data that do not reflect accurately the conditions and size of this phenomenon, moreover, data that reflect the import and export of wood products shall be clarified and amended to reflect fully and objectively the situation; settlement of the problem related to the illegal cutting of forests is not a priority for the local governments and central and local environmental authorities; insufficient cooperation between forestry and environmental authorities, local governments, police and legal authorities to prevent and combat illegal cutting of forests; low level of public awareness, in particular at the local level; participatory management of forests is not promoted in the country; inefficient legislation on forestry and environment protection to ensure the integrity of forest vegetation.

The current system for the monitoring and control of the production processes in the forest sector is applied only the forest areas managed by "Moldsilva" Agency. So that a wide range of monitoring efforts, practical implementation and forest management are necessary to approach the current forest cutting practices in the country.

Wastes Sector

The legal aspect of wastes management in the Republic of Moldova is currently underdeveloped, requiring a restructuring of the legal and institutions framework, as well as the establishment of an integral system for waste recycling and recovery.

The worsening of the waste management, in particular management of household waste, is generated by the lack of waste processing capacities. Another important problem, related to the implementation of waste management projects, is determined by the lack of available lands for the landfills of solid household waste, which would require procurement of these lands.

The complexity of problems and standards on waste management increase the requirements for waste recycling, treatment and/or disposal units. A controlled waste management system covers the recovery and recycling, closure of non-compliant landfills and reduction of the quantity of stored biodegradable wastes. To decrease the biodegradable fraction in municipal wastes, significant investments and specialized treatment facilities are needed, which have significant operation costs and are based on advanced technologies. Also note that the current statistical system on waste management uses another approach than the European Union.

Wastes will remain an important environment pollution source in the Republic of Moldova, as long as no concrete measures are undertaken to establish an appropriate waste management on the basis of a legal, regulatory and technical framework aligned to the European Union's directives.

3. VISION, GOAL AND OBJECTIVES

The Low-Emissions Development Strategy of the Republic of Moldova until 2020 comes to present an integral vision on changing the long-term development paradigm of the economy of the Republic of Moldova towards a green economic development, based on a study of constraints to low-emissions economic growth. From this perspective, it will consolidate and guide the sector development approach.

Areas like energy, transportation, buildings sector, industry, agriculture, forestry sector and waste management are priorities for environment protection and country's sustainable development. The established approach is to enhance the financial coverage in order to promote some adequate policies for mitigation of greenhouse gas emissions in these sectors, without compromising the economic growth.

Such an approach will ensure sustainability of foreign assistance, which will be received by the available financial mechanisms as part of the United Nations Framework Convention on Climate Change and Kyoto Protocol, which the Republic of Moldova is party to. It is expected that the Strategy objectives will be attained fully only if the Republic of Moldova obtains access to "quick start" funding, such as long term funding, for which the industrially developed countries, Parties to the United Nations Framework Convention on Climate Change, assumed the commitment to support the developing countries that are not included in Annex I to this Convention, including the Republic of Moldova, in implementing Low-Emissions Development Strategies and national appropriate mitigation actions, through financial and technological support and capacity building assistance.

The Strategy **Goal** is to:

"Adjust the development path of the Republic of Moldova towards low-carbon economy, which would allow increasing the current level of mitigation commitments, assumed by the association to the Copenhagen Accord, focused on a reduction of total national emissions of greenhouse gases by 2020 with no less than 20% compared with 1990, without compromising the economic growth and country's development".

Overall objective of the Strategy:

Reduce, by 2020, the total national greenhouse gas emissions with no less than 20% of the baseline scenario, to support the global imperative to stabilize the concentrations in line with 2 degree temperature increase scenario for the following one hundred years.

The overall objective is supported by the following **specific objectives**:

1. Reduce, by 2020, the direct greenhouse gas emissions from the **energy sector** (stationary combustion of fossil fuels, as well as operations with oils and gas), by 25% compared with the baseline scenario;
2. Reduce, by 2020, the direct greenhouse gas emissions from the **transportation sector** (mobile combustion of fuels), by 15% compared with the baseline scenario.
3. Reduce, by 2020, the direct greenhouse gas emissions from the **buildings sector** by 20% compared with the baseline scenario.
4. Reduce, by 2020, the direct greenhouse gas emissions from the **industrial sector** by 20% compared with the baseline scenario.

5. Reduce, by 2020, the direct greenhouse gas emissions from the **agricultural sector** by 20% compared with the baseline scenario.
6. Increase, by 2020, the capacity of dioxide sequestration in the **Land Use, Land-Use Change and Forestry sectors**, by 25% compared with the baseline scenario.
7. Reduce, by 2020, the direct greenhouse gas emissions from the **wastes sector** by 15% compared with the baseline scenario.

To support these objectives by 2020 the following activities have been already initiated and will be continued:

- identification of ways to mitigate the greenhouse gas emissions without affecting the development and economic growth;
- identification and elimination of the barriers hindering the transition to low-emissions development;
- consolidation and further promotion of projects and/or investments focused on low-emissions economic development;
- prioritization of the identified mitigation actions;
- submitting the national appropriate mitigation actions that require international support to development partners and donors;
- periodic recording of mitigation actions in the Register of National Appropriate Mitigation Actions, managed by the Secretary of the UN Framework Convention on Climate Change;
- use of the relevant existing potential in the implementation of the unilateral national appropriate mitigation actions, etc.

4. DIRECTIONS OF ACTION

The direction of actions for the achievement of the Strategy goal and objectives include a wide range of different approaches, such as policy implementation, activity programs and projects aimed at decreasing the greenhouse gas emissions.

This section approaches a wide range of mitigation options, depending on the specific objectives in three types of national appropriate mitigation actions:

- 1) *Unilateral*: mitigation actions carried out on their own;
- 2) *Supported*: mitigation actions supported by funding, technological transfer and capacity building by development countries included in Annex I to the United Nations Framework Convention on Climate Change; and
- 3) *Creditable*: mitigation actions, with the possibility of generating credits for the carbon market.

4.1. Unilateral Mitigation Actions

As discussed previously, the Republic of Moldova has already initiated a series of successful initiatives to promote some objectives of low-carbon economic growth, such as: incorporation of energy efficient technologies, adjustment of energy tariffs and support for the regulatory framework necessary for the development of renewable energy sources.

The following are considered as candidates for unilateral national appropriate mitigation actions:

- continuation of the ambitious policies and programs of green economic development of the Republic of Moldova;
- active role of the Government in promotion of legislative and regulatory reforms to support the Low-Emissions Development Strategy;
- strengthen the necessary institutional framework for the proper implementation of the Low-Emissions Development Strategy;
- implementation of priority mitigation actions with financial support ensured from the State Budget and extra-budget funds (such as Energy Efficiency Fund, National Regional Development Fund, Roads Fund, National Ecological Fund, Social Investments Funds and other relevant funds).

4.2. Donor Supported Mitigation Actions

The Republic of Moldova is eligible to request foreign support for the formulation and implementation of the activities envisaged in the Low-Emissions Development Strategy.

At the 15th Conference of the Parties (Copenhagen, Denmark) in December 2009, the industrialized countries assumed the commitment to ensure the so called “Fast Track” financing for developing countries, to support the Low-Emissions Development Strategy.

According to the conclusions of the Ad-Hoc Working Group on Long-Term Cooperation Action, at the 16th Conference of the Parties (Cancun, Mexico) in December 2010 it was decided to establish the Green Climate Fund, as a specialized vehicle to fund the national appropriate mitigation actions of the developing countries. The Green Climate Fund will support projects, programs, mitigation and adaptation policies, as well as other activities in developing countries, as targeted financing.

The Scaling-Up Renewable Energy Program in low-income countries, implemented by the Strategic Climate Fund, could be of special interest for the Republic of Moldova. It focuses on increasing the access to energy by producing and using renewable energy in low-income countries. The Republic of Moldova is one of the eligible countries for the program.

Support for the implementation of the Low-Emissions Development Strategies and the identified priority National Appropriate Mitigation Actions may also have the form of a bilateral agreement between the donor and host country. This is the most probable way, taking into account the donors' interest to associate the "Fast Track" financing with certain countries and lack of any agreed provisions in the Framework Convention of the United Nations Organization for Climate Change on multilateral financing of national appropriate mitigation actions.

A number of donors, such as EU Member States, have already announced the completion of preparation and implementation of the priority national appropriate mitigation actions in some developing countries. The Republic of Moldova should start accumulating experience in formulating mitigation actions, so that it can act promptly in order to use the financial resources for the implementation of donor-supported national appropriate mitigation actions.

4.3. Crediting Mitigation Actions

The Cancun Agreements confirm unequivocally the firm support of the Signatory Parties of the United Nations Framework Convention on Climate Change to continue the Clean Development Mechanism (CDM) of the Kyoto Protocol.

It is expected that the European Union will be prevailing player, accounting for about three quarters of the forecast demand during the first and second commitment period. In financial terms, the value of carbon markets between 2013 and 2020 could read up to EUR 80 billion.

The bilateral agreements between potential buyers and sellers will have an important role on the carbon market after 2012, as the European Union regards them as a cornerstone in its strategy on international offset markets).

In this respect, the Republic of Moldova will have to evaluate the opportunity of initiating some negotiations with the European Union on the conclusion of a bilateral agreement, which could allow recognizing the CDM credits generated in the Republic of Moldova after 2012 as part of the EU ETS.

The concepts of sectoral crediting and trading have not been yet agreed at the international level, however there is a general expectation that the latter can become eligible under the United Nations Framework Convention on Climate Change under a separate category known as "crediting national appropriate mitigation actions".

These two approaches are strongly supported by the European Union and would increase the likelihood to receive bilateral financing from Member States, as well as from the climate funds, managed by the European Union.

In the Republic of Moldova this approach could be used particularly to finance energy efficiency measures in various sectors of the national economy.

5. NECESSARY MEASURES TO ACHIEVE THE OBJECTIVES AND EXPECTED RESULTS

In order to achieve the general and specific objectives of the Low-Emissions Development Strategy of the Republic of Moldova until 2020, national appropriate mitigation actions (technologies and/or measures) have been identified for each examined sector (energy, transportation, buildings, industry, agriculture, forestry and wastes).

The mitigation actions prioritized for implementation were selected from all of the identified ones using the “Multi-criteria analysis method”. The mitigation actions were assessed by the following criteria: (i) investments; (ii) unit price (criteria 1-2 are part of the “Costs” aggregate criterion); (iii) reduction of greenhouse gas emissions; (iv) social benefits; (v) economic benefits; (vi) other environment benefits (criteria 3-6 are part of the “Benefits” aggregate criterion). Each of the applied criteria was scored on a scale from 1 (minimum score) to 10 (maximum score), depending on the impact of the mitigation action under the respective criterion. Further, in order to determine the priority mitigation actions the steps provided by the “Multi-criteria analysis method”: weighting of criteria, repeated computation of the score for each action and criterion, repeated computation of the total score for each action, prioritization of actions in order to apply the “Cost-Benefit” framework if the number of actions is higher than four, respectively prioritization on the basis of the maximum scoring accumulated by actions, for three and fewer actions.

Note that the maximum score for each criterion of the mitigation action was established, taking into account the sectoral development priorities. For example, for the energy sector the following critical questions were taken into account:

- to what extent the mitigation actions contribute to the increase of economic competitiveness and poverty reduction by limiting the increase of energy costs?
- to what extent the mitigation actions contribute to the diversification of sources of energy supply?
- do the mitigation actions contribute to the decrease of dependence of energy imports by large scale use of domestic energy resources?
- do the policy instruments comply with the macroeconomic stability criteria, such as limiting the growth of public expenses?
- do the mitigation actions increase the reliability/security of energy supply, for instance by improving the quality of power and heat supplied to consumers?
- can the external funding from the carbon markets or public donors compensate the increase in the cost of implementation of some mitigation actions?

These concerns suggested that the priority national appropriate mitigation actions in the energy sector should:

- be economically competitive and, therefore, not increase the energy prices for end users, taxes or Government expenses;
- decrease the losses in the energy distribution networks and, therefore, allow to increase the demand for energy without increasing the emissions;
- decrease the energy costs for end users by implementing cost-effective energy efficiency measures among commercial and private consumers, as well as in the infrastructure of energy resources supply;

- diversify the sources of energy supply, by cost-efficient development of renewable energy sources;
- combine carbon sequestration with sustainable practices of forest and agricultural lands management, as well as with agricultural productivity, etc.

Thanks to the favorable circumstances, there are a number of mitigation opportunities in the energy sector of the Republic of Moldova, which could satisfy these criteria with low or even negative costs.

Note that the actions that are feasible to be implemented in the future will be established after the approval of the Low-Emissions Development Strategy. To determine them first it will be necessary to analyze the barriers and develop project ideas for each of the correctly selected priority action.

Below the priority mitigation actions are presented, grouped by specific objectives of greenhouse gas emissions reduction, as well as the expected results during the 2013-2020 period (Table 5-1 and Annex 1).

Specific objective 1: Reduce, by 2020, the direct greenhouse gas emissions from the energy sector (stationary combustion of fossil fuels, as well as operations with oils and gas), by 25% compared with the baseline scenario.

The most obvious unilateral mitigation action in the energy sector consists in continuing the enhancement of the regulatory framework to increase the energy efficiency of renewable energy sources.

The following unilateral mitigation actions are evaluated:

- review the Concept and Program of Heat Supply, focusing on cogeneration or on combined heat and power cycle, use of the potential of renewable energy sources in the territory, efficient use of the existing centralized heating system;
- introduce Feed-in tariff for the renewable energy produced;
- develop a clear and transparent methodology of cost allocation for power and heat produced in cogeneration;
- encourage private investments for the development of electric heating (cogeneration) plants or combined power and heat cycle, whose development is not possible without the implementation of the private sector because of high investment costs;
- establish an attractive investment climate, which would impose clear rules for the determination and approval of power and heat tariffs to recover the costs and earn profits;
- promote subsidized tariffs and/or grant schemes, which would encourage the use of green energy production technologies;
- develop and implement a national monitoring system for the power and energy system.

The donor-supported mitigation actions in the energy sector shall be focused particularly on the enhancement of the efficiency of energy supply and use, as well as on the production of green power:

- power production by promoting cogeneration or combined heat and power groups;
- refurbishment and modernization of the existing power plants;

- reconstruction of the existing thermal power plants, so that they work in co-generation mode, especially in the areas that have centralized heat supply or power plants owned by industrial enterprises;
- promotion and production of green energy (wind power units, wind electric systems for pumping, photovoltaic energy for small irrigation, small hydropower plants without dams and small hydroelectric plants, biomass heat, etc.)
- reduction of energy losses at distribution and transportation.

Currently it is possible to implement creditable mitigation actions in the energy sector through a series of methodologies already approved under the Clean Development Mechanism of the Kyoto Protocol, which facilitate carbon financing for investments in the production of power, heat and fuels from renewable energy sources (e.g. solid biomass: straw bales, wood pellets and briquettes; wind, hydro, solar).

Lending can provide the necessary motivation or, in order to make the projects economically viable, carbon financing can complement other internal incentive schemes or donor financing.

Specific objective 2: Reduce, by 2020, the direct greenhouse gas emissions from the transportation sector (mobile combustion of fuels), by 15% compared with the baseline scenario.

The legislative and policy regulation component in the transportation sector is assessed as a candidate for unilateral mitigation action.

The donor-supported mitigation actions in the transportation sector shall be focused particularly on supporting investments for fuel substitutions, vehicle conversion, fuel supply infrastructure and management systems:

- wide use of vehicles consuming compressed gas and liquefied petroleum gas;
- use of hybrid electric vehicles (that combine internal combustion engine with one or more electric motors) and grid-connected hybrid electric vehicles;
- production of biodiesel and bioethanol;
- implementation of "Bus Rapid Transit" system (high capacity transport system used to change the trend of modal transfers towards the public transport);
- implementation of electronic road pricing systems;
- establishment of non-motorized transport infrastructure, etc.

Currently it is possible to implement creditable mitigation actions in the transportation sector through a series of methodologies already approved under the Clean Development Mechanism of the Kyoto Protocol, which facilitate carbon financing for investments in the production of biodiesel and bioethanol.

So far, few reductions of emissions from the transportation sector were encouraged by carbon financing at the global level. The available methodologies do not yet include fully the priority policies of the sector.

Specific objective 3: Reduce, by 2020, the direct greenhouse gas emissions from the buildings sector by 20% compared with the baseline scenario.

Unilateral mitigation actions in the buildings sector would include:

- further development of laws and regulations;

- implementation of energy efficiency standards;
- implementation of certification systems;
- implementation of other regulatory actions for energy efficiency enhancement and use of renewable energy sources.

The institutional framework, such as operation of the Energy Efficiency Agency would be a natural role for the Government, but because the costs of professional operation, energy audits, and certification schemes may be too high, such actions also remain candidates for donor assistance.

The donor-supported mitigation actions in the buildings sector shall be focused particularly on supporting investments for application of energy efficient technologies in buildings, such as:

- insulation of buildings' walls;
- use of automatic temperature control systems in rooms including day/night mode;
- installation of heat meters in each dwelling unit;
- replacement of incandescent light bulbs with energy efficient bulbs, etc.

There are several options for implementing creditable mitigation actions in the buildings and energy efficiency sectors, including the deployment of small-scale renewable energy plants, such as:

- solar installations for the production of domestic hot water;
- grid-connected photovoltaic systems to produce DC power, and/or
- small, medium and large capacity heat pumps.

Specific objective 4: Reduce, by 2020, the greenhouse gas emissions from the industrial sector by 20% compared with the baseline scenario.

Unilateral mitigation actions in the industry sector would include:

- implementation of energy efficiency standards;
- volunteer agreements between industrial enterprises and Government, by reducing greenhouse gas emissions;
- other regulatory actions for energy efficiency enhancement and use of renewable energy sources; as well as
- adjustment of the national legal framework to the EU legislation (EC Regulation No 842/2006 on certain fluorinated greenhouse gases), for staged suppression of some fluorinated greenhouse gases.

The donor-supported mitigation actions in the industrial sector shall be focused particularly on supporting investments for:

- implementation in industrial enterprises of the country of energy management systems (EnMS) and of the National Standard MS ISO 50001:2012 "Energy management systems. Requirements with guidance for use";
- stimulation of the adoption of energy efficient technologies and use of renewable energy technologies;
- development of electronic system for reporting data on import of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆), as well as products and equipments with HFCs, PFCs and SF₆;

- strengthening the capacity of the Customs Service of the Republic of Moldova in order to improve the system for reporting data on import of HFCs, PFCs and SF₆, as well as products and equipments with HFCs, PFCs and SF₆;
- development of technical criteria adjusted to EC Regulation No 305/2008 to train refrigeration specialists in servicing the refrigeration, air conditioning and electrical equipment;
- updating the Best Practices Code in refrigeration and air conditioning, mandatory training and certification of technicians in refrigeration and air conditioning;
- gradual reduction of the consumption of hydrofluorocarbons by retrofitting and refurbishing the refrigeration and air conditioning equipment with alternative new generation freons.

There are several options for implementing creditable mitigation actions in the industrial sector, including the deployment of small-scale renewable energy plants, such as:

- small, medium and large capacity heat pumps;
- 2nd generation biofuels for heat production;
- solar installations for the production of hot water.

Specific objective 5: Reduce, by 2020, the direct greenhouse gas emissions from the agricultural sector by 20% compared with the baseline scenario.

Unilateral national appropriate mitigation actions in the agricultural sector will include institutional capacity development to regulate and support sustainable practices, for example:

- implementation on slopes with an angle higher than 5° of crop rotations involving only often sown crops (cereals, annual leguminous grasses, perennial grasses);
- replacement of heavy disc harrow for soil tillage up to 20 cm in depth;
- use of cattle feeding technology of scientifically based rations, consisting of separate feed (hay, silage, green plants, concentrated, etc.);
- use of cattle feeding technology of scientifically based rations, consisting of unique mixtures (bulky, coarse, juicy, concentrated fodder, protein-vitamin-mineral supplements are mixed uniformly with mixers and distributed to animals as unique mixtures - monoration), etc.

The donor-supported mitigation actions in the agricultural sector shall be focused particularly on supporting investments for:

- main soil tillage, using in the crop rotation on five fields of a field under sideral leguminous crop (two crops of autumn and spring vetch incorporated into the soil as green fertilizer on each field every five years);
- conservative "No-Till" system with preliminary positive restoring of the features of post-arable layer, using every second year the vetch as an intermediate crop, or green fertilizer;
- conservative "Mini-Till" system with preliminary positive restoring of the features of post-arable layer, using every second year the vetch as an intermediate crop, or green fertilizer;
- conservative "Mini-Till" system, using mineral fertilizers and secondary agricultural products as fertilizers;
- use of feed additives in the cattle nutrition that reduce the formation of methane in the digestion process;
- storage of manure in platforms;
- manure composting;

- manure processing to obtain biogas.

The use of agricultural residues and animal manure for energy production provides a significant additionality to the agricultural sector and can be achieved by using different energy generating technologies, supported both by carbon credits and a combination of donor support and carbon finance.

However, a priority for the Republic of Moldova is to create a more favorable balance of soil carbon and to maintain the long-term soil fertility, so that the secondary production of crops (straw and other vegetable residues) is preferably incorporated into the soil and not used as an energy source.

There are several options for the implementation of creditable mitigation actions in the agricultural sector, particularly mitigation projects focused on manure management:

- storage of manure in platforms;
- manure composting;
- manure processing to obtain biogas.

Methodologies are currently developed to support other mitigation options, such as the use of sideral fertilizers and conservative soil tillage technologies (No-Till, Mini-Till).

Specific objective 6: Increase, by 2020, the capacity of dioxide sequestration in the use of the land, changing the use of the land and forestry sectors, by 25% compared with the baseline scenario.

The unilateral mitigation actions in the use of the land, changing the use of the land and forestry sectors will include the implementation and application of this broad set of policies and regulations and institutional capacity development to ensure the effective application and implementation of legislative and policy acts; ensure decentralization of the public authority's activity in order to improve further the management of forest resources and support various forms of ownership of forests and forest vegetation; also implement a set of quantitative and qualitative improvement activities, focused on expanding the areas of land covered by forest vegetation, increasing the carbon capture capacity and consolidating the ecoprotection and bioprotection potential of the existing forests, including:

- planting trees in the protection belts of rivers and water basins by creating/rehabilitating the forest protection belts of rivers and water basins on an area of 30.4 thousand ha;
- extending the forest areas on account of degraded areas, impracticable for agriculture by 81.0 thousand hectares, on account of degraded lands in public and private ownership;
- expanding the areas covered by forest vegetation outside the forest fund by 55.0 thousand hectares, including a higher promotion of silvopasture and agroforestry practices: for example, by improving the quality of grasslands;
- reconstructing the damaged trees and taking active measures against forest pests.

The donor-supported mitigation actions in the Land Use, Land-Use Change and Forestry sectors shall be focused particularly on supporting investments for:

- reduction of emissions from deforestation and forest degradation (REDD + program);
- reconstruction/rehabilitation of forest protection belts of agricultural fields on an area of about 2.0 thousand hectares (according to standards, the area of forest protection belts must be 4% of arable land);

- community support for sustainable and integrated management of forests, including by:
 - improving the productivity of about 800 hectares of community pastures;
 - reconstructing and/or restoring about 1.2 thousand hectares of forests and other types of forest vegetation owned by Mayor's Offices;
 - developing forest arrangements for about 3.2 thousand hectares of forests and other types of forest vegetation owned by Mayor's Offices.
- plantation of energy forest crops, consisting of quickly growing varieties, managed in small production cycles (10-15 years) on an area of approximately 10.0 thousand hectares.

There are several opportunities to implement creditable mitigation actions in the Land Use, Land-Use Change and Forestry sectors, in particular projects implemented as part of the REDD+ Program. Currently two projects are being implemented as part of the Clean Development Mechanism of the Kyoto Protocol, generators of carbon credits:

- "Soil Conservation in Moldova" Project, as part of which about 20.3 thousand hectares of forest will be planted on degraded lands;
- "Developing the Community Forest Sector in Moldova" Project, as part of which about 8.5 thousand hectares of forest will be planted on degraded lands.

Note that the current prices do not provide a substantial economic contribution to most of such projects. Besides, the REDD+ projects are not eligible for compliance as part of the European Union Emission Trading Scheme (EU ETS).

Specific objective 7: Reduce, by 2020, the greenhouse gas emissions from the wastes sector by 15% compared with the baseline scenario.

The unilateral mitigation actions in the waste sector are associated primarily with the modernization of the legal and regulatory framework for waste management, critical measure as the basis for investment in the new waste management infrastructure. Unilateral appropriate mitigation measures in this sector could include:

- development of integrated municipal waste management by harmonizing the legal, institutional and regulatory framework to EU standards, based on regional approach (geographical location, economic development, existence of access roads, soil and hydrogeological conditions, number of people etc.);
- increase of the amount of recycled and recovered waste by 20-30% by promoting separate collection of solid waste and increasing the capacities of energy recovery;
- reduction of the amount of landfilled biodegradable waste by developing the waste composting capacity in the transfer stations or waste processing centers, including agro-industrial businesses, depending on the amount of biodegradable waste generated;
- recultivation of at least 50% of the number of non-compliant landfills of solid household waste.

The donor-supported mitigation activities in the wastes sector shall be focused particularly on supporting investments for the implementation of the following technologies:

- biogas recovery from landfills of solid household waste;
- waste composting;
- waste incineration;
- mechanical-biological treatment of wastes with subsequent disposal of residuals through

- storage; and
- anaerobic digestion.

The donor-supported mitigation actions in the wastes sector are associated with:

- development of regional infrastructure for waste disposal, by building seven landfills for solid household waste, 34 transfer stations and two mechanical-biological treatment plants in Chisinau and Balti municipalities;
- inclusion of anaerobic sludge treatment technologies in the technological scheme of wastewater treatment at the water utilities of Chisinau, Balti and Cahul municipalities.

It is possible to implement creditable mitigation actions in the wastes sector, through projects focused on:

- biogas recovery from managed landfills of solid household waste; and
- biogas recovery from wastewater treatment plants (using the anaerobic sludge treatment technologies).

Table 5-1: Mitigation potential of national appropriate mitigation actions during 2013-2020, presented by objectives of greenhouse gas emissions objectives

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
	General objective Reduction, by 2020, of total national emissions of direct greenhouse gases, with no less than 20% compared to the baseline scenario, supporting the global effort to limit temperature increase to 2°C.			
1.	Specific objective 1: Reduction, by 2020, of direct greenhouse gases emissions coming from the energy sector (stationary combustion of fossil fuels, as well as from the operations with oil and natural gas), by 25% compared to the baseline scenario.			
1.1.	Gas condensing boilers	The gas condensing boilers use the latent heat of condensing vapors of the flue gas, thus increasing boiler's efficiency by 10-15% compared with conventional gas boilers. The capacity of these boilers is up to 100 kW of heat. Such gas condensing boilers are used to heat homes, offices and other spaces.	Using these boilers \approx 5% of the total heat can be produced, which according to forecasts will be 46.6 PJ in 2020	6,500 tonnes of CO ₂ /year
1.2.	Implementation of the cogeneration technology based on use of internal combustion engines with capacity up to 500 kW electric power	The technology allows achieving environmental, economic, social benefits and enables to decrease the dependence on fuel imports due to the efficiency of simultaneous production of power and heat compared to their separated production. Use duration of the heat load during the year must exceed 4,500 hours. The technology decreases the losses of power and heat in the power or heating networks. Technology efficiency can reach up to 80-85%. The fuel used is natural gas.	10,000 kW, it will be 1.1% from the maximum load equal to \approx 900 MW	10,000 tonnes of CO ₂ /year, after the implementation of forecast capacity
1.3.	Implementation of the cogeneration technology based on use of gas turbines with capacity up to 500 kW electric power	The technology allows achieving environmental, economic, social benefits and enables to decrease the dependence on fuel imports due to the efficiency of producing simultaneously power and heat compared to their separated production. Usage duration of the heat load during the year must exceed 4,500 hours. The technology decreases the losses of power and heat in the power or heating networks. Technology efficiency can reach up to 80-85%. The fuel used is natural gas.	5,000 kW, it will be 0.55% from the maximum load equal to \approx 900 MW	4,000 tonnes of CO ₂ /year, after the implementation of forecast capacity
1.4.	Cogeneration electrical plants based on the use of internal combustion engines and gas turbines with capacity exceeding 1 MW electric power	Efficiency - up to 80-85%. Cogeneration electrical plants will be built where there is heat load during the whole year. The fuel used – natural gas.	150,000 kW, it will be 16.6% from the maximum load equal to \approx 900 MW	134,000 tonnes of CO ₂ /year, after the implementation of forecast capacity, substituting 855 million kWh at the existing condensation plants
1.5.	Electrical plants with combined gas-steam cycle of high capacity	The clusters with combined gas-steam cycle consist of one or two gas turbines, recovery boiler, in which the energy of exhaust gases from the gas turbine are used to produce steam, then used in steam turbine to produce power. The electric efficiency of the cluster reaches 60%. The fuel used – natural gas.	300,000 kW, it will be 33.3 % from the maximum load equal to \approx 900 MW	330,000 tonnes of CO ₂ /year, substituting 2.1 billion kWh power produced by the existing condensing clusters
1.6.	Clusters on combined cycle with cogeneration, of large capacities	50-55% electrical efficiency, global efficiency can be up to 80-85%. Simultaneously it is noted that this efficiency can be achieved only if there is heat load.	150,000 kW, it will be 16.6% from the maximum load equal to \approx 900 MW	140,000 tonnes of CO ₂ /year, substituting 900 mln kWh power produced by the existing condensing clusters
1.7.	Cluster on integrated	Coal gasification technology to produce power, named as cluster	200,000 kW, accounting for	390,000 tonnes of CO ₂ /year,

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
	gasification combined cycle	on integrated gasification combined cycle (IGCC) is a unit of energy that uses synthesis gas instead of natural gas. The technology integrates the production of purified synthesis gas with power production. This technology has a positive impact on the environment because it reduces the pollutant emissions when carbon capture and storage are used. IGCC can achieve an efficiency over 45%, since it combines the synthesis gas combustion and uses the flue gas energy for the production of live steam and then from it - power. The fuel used is coal, which is cheaper than the natural gas.	22.2% of the maximum load equal to ≈ 900 MW	due to CO ₂ capture installations, substituting 1.4 billion kWh power produced by the existing condensing clusters
1.8.	Grid-connected wind power plants	On the territory of RM there are areas where the average annual wind speed at the height of 100 m above the ground is equal to 7.0-7.5 m/s. For such sites wind turbines for class IIIA wind are recommended, which means an efficient operation in sites with wind speed between 5.5 and 8.5 m/s. The power of a cluster 1.8-3.0 MW, tower height 80-120 m Considering the wind speed of RM these wind turbines would operate annually at the nominal capacity of 2.2-2.6 thousand hours or capacity factor will be 0.25 to 0.30.	250 MW	313,300 tonnes of CO ₂ /year
1.9.	Wind-electric pumping systems	Eliminates the need to use storage battery and inverters. The wind generator is directly coupled with an AC motor, which drives the centrifugal pump. Voltage and frequency vary depending on wind speed complying with the law $U/f = \text{constant}$. Provides a perfect correspondence between the wind characteristic (the power proportional to the cube of speed) and centrifugal pump characteristic (the required power is also proportional to the cube of the speed of rotation).	850 systems with full power 8.5 MW	20,000 tonnes of CO ₂ /year
1.10.	Grid-connected photovoltaic plants	The direct conversion technology excludes intermediate transformations: solar radiation into heat, heat into mechanical energy, mechanical energy into AC power. The photovoltaic generator, so-called photovoltaic cell, unlike the electromechanical generator produces DC power. Exclusion from the technological chain of intermediate transformations, lack of movement, noise, vibrations, existence of a modular construction, the operational life of over 25 years, are arguments which assert that the future of decentralized energy system will belong to the photovoltaic technology.	10 MW	7,100 tonnes of CO ₂ /year
1.11.	Photovoltaic energy for small-scale irrigation	FV pumping systems contain the following main elements: the solar panel, inverter and surface or submersible pump. If pumps driven by DC motor are used, the inverter is not necessary, also batteries are not needed, the function of which is taken up by the water tank. Consequently, FV pumping systems compete economically with motor pumps or gensets.	1800 systems with installed power 2.7 MW	144,000 tonnes of CO ₂ /year
1.12.	Small hydropower plants	Small hydropower plants (up to 1 MW) are equipped with water	17 MW	43,700 tonnes of CO ₂ /year

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
		turbine, multiplier and generator. Different types of turbines with different areas of application have been developed to have the highest efficiency. Each type of turbine is reasonable to use for specific water falls and flows: Pelton turbine - for big falls and low flows; Francis turbine - for medium falls and average flows, Kaplan turbine - for small falls and high flows.		
1.13.	Micro-hydro station without dams	The technology is based on the effect generated by a hydrodynamic profile of the blade and oriented under an optimal angle towards the direction of the water velocity. When the blade moves in the direction of the water current, the momentum is produced by hydrodynamic forces as well as by pressure forces exerted by the water on the blade surface. When the blade moves against the water currents are used only the hydrodynamic forces to generate power. The main advantages of these types of Micro-hydro station are: reducing the environmental impact; the civil engineering works are reduced to a minimum.	500 micro-hydro stations, 2.7 MW	18,000 tonnes of CO ₂
1.14.	Solid biomass: application of thermal power plants based on straw and pellets to provide heat to the social and cultural objects	These types of plants could provide heat, first to social and cultural objects, such as preschool institutions, schools, culture houses, etc. Thermal power plants based on bales of straw and/or wood products (pellets, wood briquettes) should be used in rural areas where natural gas use is impossible or too costly. Thermal energy production capacity is 150 -750 kW.	560 MW	221,000 tonnes of CO ₂
2.	Specific objective 2: Reduction, by 2020, of direct greenhouse gases emissions coming from the transportation sector (mobile combustion of fuels), by 15% compared to the baseline scenario.			
2.1.	Biodiesel	The biodiesel is used to substitute diesel, being mixed with fossil fuel in various proportions. In Europe, the standards applied to fuel allow a blend up to 5% of biodiesel, due to the limitations of fuel and vehicle specifications. Use of blends above 20% may require some modest adjustments of the vehicle. Biodiesel may be produced from various vegetal oils, such as rape seeds and soya, palm oil and animal fat.	20% of annual consumption of diesel in the country or 100 thousand tonnes of biodiesel per year.	50,000 tonnes of CO ₂ /year
2.2.	Bioethanol	The bioethanol can be produced from sugar or starch cultures. The bioethanol is mixed with gasoline in proportions from 5 to 85%. Smaller proportions of the mixture are applicable to conventional gasoline engines. Mixtures containing more than 10% of bioethanol can be used only in modified engines. The process of obtaining bioethanol starts from processing the raw material in order to obtain sugar in which later is added yeast for fermentation. Sugar is fermented in a closed anaerobic room, resulting in more products, including lactic acid, hydrogen, carbon dioxide and ethanol. Sorghum, sugar beet, as well as other sugar-containing plants are used in the most widespread processes.	20% of annual consumption of gasoline in the country or 50 thousand tonnes per year.	35,000 tonnes of CO ₂ /year

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
2.3.	„Bus Rapid Transit” Systems	A "Bus Rapid Transit" system is a high-capacity transport system with its own right of way. This is a key technology for developing countries that can change the trend of modal transfers to public transport, thus bringing a range of benefits including reduced congestion, less pollution and higher quality services for poor people. A disadvantage of this system against other urban transport systems is the need for urban spaces.	1,665 mln. passengers-km/year or 25% of urban road transport of passengers	128,000 tonnes of CO ₂ /year
2.4.	Direct injection for internal combustion engines	Direct injection means injecting fuel, under high pressure, directly into the engine cylinders. The process of direct injection provides a precise control over the timing and quantity of injected fuel. This precise control allows the engine management system to inject a relatively large quantity of fuel only when required, for example when accelerating the vehicle. Direct injection results in modifying the system of fuel injection into the engine, but do not require additional changes in vehicle design and transport infrastructure. At the same time, direct injection engines require more robust components.	25% of private cars with gasoline consumption	47,000 tonnes of CO ₂ /year
2.5.	Compressed gas in transport	From technical point of view, vehicles with compressed natural gas consumption work very similar to vehicles with gasoline consumption. To use compressed natural gas for cars is required to reequip them with gas tank. But these cars are not so efficient as the cars with consumption of natural gas the manufacturers put up for sale.	1,118 mln. passengers-km/year or 25% of annual transport of passengers with the buses	11,000 tonnes of CO ₂ /year
2.6.	Electronic road pricing	Road pricing can be implemented in several ways, including: road toll - a fee (usually fixed) to travel on a particular road; congestion pricing - a variable fee depending on the congestion level in a specific area; belt toll - usually imposed for driving through urban centers; fee for the traveled distance - applies per vehicle and traveled distance; The methods of electronic road pricing include: electronic toll, users are charged when they pass over specific points on the road; optical recognition of the vehicle, which apply the an optical pricing system; GPS, by which vehicles are located, their users being charged based on the traveled distance.	3,820 mln. passengers-km/year or 25% of urban road transport of passengers	93,000 tonnes of CO ₂ /year
2.7.	Liquefied petroleum gas in transport	Liquefied petroleum gas is a widely used alternative fuel generally applied to light commercial vehicles and cars.	25% of car fleet of private cars with gasoline consumption	28,000 tonnes of CO ₂ /year
2.8.	Non-motorized transport	Non-motorized transport (also known as active transport and transport driven by humans) include walking and cycling, various specific transport units (rickshaw, roller skates, skateboards, scooters and strollers) and wheelchairs. These means of transportation provide both recreation, as well as transportation and are especially important for short travel distances of up to 7 km, which covers most of the journey in urban areas. The	25,0 mln. passengers-km/year or 0.5% of urban road transport of passengers	4,200 tonnes of CO ₂ /year

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
		implementation path - creating such infrastructure and education.		
2.9.	Hybrid Electric Vehicles	A hybrid vehicle uses two or more distinct power sources, for instance hybrid electric vehicles combine an internal combustion engine and one or more electric motors. The internal combustion engine provides most of the power needed to move the vehicle, and the electric motor provides additional power when accelerating. This allows the use of a smaller, more efficient engine. The electric power for the engine is generated by the regenerative braking and the internal combustion engine. Thus, electric motors need not be connected and loaded from a power source.	2,352 mln passengers-km/year or 25% of annual transport of passengers with the buses	25,000 tonnes of CO ₂ /year
2.10.	Grid connected Hybrid Electric Vehicles	A plug-in hybrid electric vehicle is powered from an external source such a electric power source. Such a vehicle can run either involving the internal combustion engine or battery. The key advantage of this technology compared to purely electric vehicles running on battery consists in the flexibility of fuel use. The first have no limits in distance traveled and if the charging infrastructure is not available, does not limit the use of the vehicle.	4,000 mln passengers-km/year or 30% of the total number of private vehicles	97,000 tonnes of CO ₂
3.	Specific objective 3: Reduction, by 2020, of direct greenhouse gases emissions coming from the buildings sector, by 20% compared to the baseline scenario.			
3.1.	Wall insulation of dwellings	In 2011, the housing fund of RM was 79.342 mln m ² , of which 30.423 mln m ² in urban localities and 48.919 mln m ² – in rural localities. In 2020, the housing fund will be ≈ 82.4 mln m ² , of which 32.25 mln m ² in urban localities. In 1997, when the requirements of buildings wall insulation were modified, the housing fund was 73.2 mln m ² . In the dwellings built before 1997 wall insulation corresponded to 70 W/m ² in urban sector and 160 W/m ² in rural sector. After 1997 these values were reduced to 50 W/m ² and respectively to 130 W/m ² . In the past decade insulation measures have been implemented in about 10% of the old urban buildings and 1-2% of rural housing: wall insulation, replacing old windows with insulated technology, replacement of doors, etc.	Rehabilitation of 25% of housing fund	Savings 150,000 TCF/year, emission reduction with 246,000 tonnes of CO ₂ /year
3.2.	Thermostats in rooms, programmable	In the centralized system of heat supply, the temperature of the heat is controlled at the source, by regulating the water temperature in the pipes. At the same time reducing indoor temperature from 18-20°C to 10-12°C during the periods when rooms are not used, the heat consumption can be reduced by 20-30%. This technology can be implemented in buildings with centralized heat supply, which is ≈ 60% of all urban housing fund. Installing thermostats (which cost 10-12 USD per unit) to every heating unit will allow to change the room temperature to	By using these types of controllers the fuel consumption can be decreased by 60 thousand TCF until 2020.	98,600 tonnes of CO ₂

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
		10-12 ⁰ C, during the periods when rooms are not used which is ≈ 50% of the time.		
3.3.	Automatic temperature regulators, including day/night mode	These thermostats can be also used in other types of rooms. In the administrative buildings people work about 10 hours during 5 days a week. During other periods of time, the room temperature can be reduced to 10-12 ⁰ C, the "night" mode	Savings 700 TJ/year or 29.8 thousand TCF/year	≈ 49,000 tonnes of CO ₂ /year
3.4.	Replacing incandescent bulbs with energy efficient bulbs	Incandescent bulbs (Class E) used at present have luminous efficiency of 10-12 lm/W, while the energy efficient bulbs (Class A) respective indicator is 50 lm/W. If energy intensity during illumination is on average of 10 W/m ² , then using fluorescent light bulbs this indicator will be 2 W/m ² .	Lighting an area of 22 mln m ² saves 254 mln kWh/year	170,000 tonnes of CO ₂ /year
3.5.	Installation of heat meters in each apartment	Currently heat meters are installed in apartment buildings. If it is decided to replace the current scheme of vertical distribution of heating in the apartment buildings with horizontal distribution scheme, it will be necessary to install heat meters in each apartment. This will lead to consumption reduction of thermal energy in the buildings with at least 5%	≈ 60% of the urban housing fund	≈ 98,000 tonnes of CO ₂ /year
3.6.	Solid biomass: implementation of pellet boilers	Pellets are solid fuel produced from raw materials of vegetable origin (wood sawdust and, energy plants, agricultural waste) cylindrically shaped, with a diameter up to 25 mm. The heat capacity ranges from 14 to 19 MJ/kg. Pellet boilers can be applied to ensure supply to households. The exploitation of these boilers is simple and requires no major maintenance expenses. Boilers with thermal energy production capacity of 12-100 kW are manufactured.	20,000 units with power of 25 kW, in total 490 MW	194 000 tonnes of CO ₂
3.7.	Heat pumps of small, medium and large capacity	The heat pumps increase the temperature of the heat source of reduced potential to the temperature required by the consumer. The reduced potential heat source can be the atmospheric air, soil, surface waters and groundwaters, as well technological sources of heat (the air provided for ventilation, waste waters, cooling fluids from power plants and technological equipment and long-term the heat from the asphalt roads, etc.). Heat pumps do not eliminate pollutant emissions. Lately ozone-active refrigerants are replaced with hydrocarbons that are neutral to the ozone layer. Heat pumps use 1 kWh power to get 3-5 kWh of heat.	By using heat pumps can be assured ≈ 2% of the necessary heat energy by 2020, or 46.6 PJ	37,142 tonnes of CO ₂ /year
4.	Specific objective 4: Reduction, by 2020, of direct greenhouse gases emissions coming from the industrial sector, by 20% compared to the baseline scenario.			
4.1.	Energy Management System Implementation	Energy Management System (EMS) introduced by ISO 50001, already approved as a national standard in 2012, is a series of management processes that enable enterprises (organizations) to systematically maintain and improve energy performance. EMS includes the collection, processing and analysis of data on consumption of all forms of energy and different energy carriers	Implementation in 15% of enterprises and organizations reduces the energy consumption by about 1%, equivalent to 25 million kWh/year	By 2020 will be saved ≈ 25 mln kWh/year, emissions will be reduced by ≈ 12,000 tonnes of CO ₂ /year

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
		by points of energy consumption (power, heat, cooling, compressed air, natural gas, other fuels, etc.) and informing the top management on the data collected and the proposing measures to eliminate energy waste, implementing the adopted measures, including monitoring the obtained results. The practice of EU enterprises shows that the SME implementation may result in reduced energy consumption by enterprises with about 10-30%.		
4.2	Applying 2nd generation biofuel for generating heat	The process takes place at temperatures of 450-800°C, by the decomposition of lignocellulose from biomass, finally obtaining gaseous biofuel (syngas), solid biofuel (charcoal), liquid biofuel (bio-oil). The fast pyrolysis process is directed and depending on the temperature applied and duration of the deployment of the pyrolysis process the quantity of fuel can be achieved in various proportions. For the conditions Republic of Moldova it is sound to use installations with 65-75% of liquid biofuel production, 20%-gaseous, and 15%-solid.	190 units with power of 130 kW	57,000 tonnes of CO ₂
4.3.	Adjusting the national regulatory framework to that of EU (EC Regulation No. 842/2006 on certain fluorinated greenhouse gases) to staggered suppression of some fluorinated greenhouse gases	Development and promotion by the Government Decision of a National Program or Regulation on regulation of fluorinated greenhouse gases (HFC, PFC and SF ₆); prohibiting the importation of certain types of products and equipment with fluorinated gases (new and used); stimulation of innovation, development and deployment of new techniques; development and promotion of the Law on amending and supplementing Law No. 1540-XIII from 25 February 1998 on payment for environmental pollution; determining and approving the annual import quotas of F-gases, products and equipment which contain them.	National level	n/a
4.4.	Elaboration/improving the reporting system of data on import and consumption of HFC, products and equipment with HFC, PFC and SF ₆	Designing the system, inclusively electronic of reporting the data on import and consumption of HFC, products and equipment with HFC, PFC and SF ₆	National level	n/a
4.5.	Training and endowment with tools/available tooling for regulating HFC, PFC and SF ₆	Elaboration of technical criteria adjusted to EU regulations (Regulation No. 305/2008) for training the refrigeration technicians from the servicing sectors of refrigeration technique, air conditioning and electrical equipment in which F-gases (PFC and SF ₆) are used as dielectric; development/procurement of professional training materials; updating the Code of Good Practice for refrigeration and air conditioning; mandatory training and certification of technicians from the refrigeration and AC sector; endowment of refrigeration technicians with tools and equipment for servicing refrigeration and AC technique.	National level	n/a

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
4.6.	Strengthening the capacity of Customs Service of the Republic of Moldova	Development/procurement of professional training materials; updating the Guide for customs officers; theoretical and practical training of customs staff/brokers, equipping the Customs Service with freon identifiers.	National level	n/a
4.7.	Gradual reduction of HFC consumption	Retrofitting and reequipping the current refrigerating and air conditioning equipments that work with HFC by replacing it with alternative freon of new generation, including natural freon (propane, isobutane, isopentane, H ₂ O, NH ₃ , air, helium, CO ₂)	National level	n/a
5.	Specific objective 5: Reduction, by 2020, of direct greenhouse gases emissions coming from the agricultural sector, by 20% compared to the baseline scenario.			
5.1.	Replacing the plow with the heavy disc harrow for basic soil tillage at the depth to 20 cm without introducing organic fertilizers	The work with the disc harrow has the advantage of saving fuel and achieving productions practically equal to those obtained in conventional technology.	Annually the basic work with disks is implemented on about 40-50 percent of the agricultural land surface. The worked surface is recommended to be about 200 thousand ha/year.	74,000 tonnes of CO ₂ /year 0.37 tonnes of CO ₂ /ha/year x 200 thousand ha
5.2.	Implementation on slopes with the inclination greater than 5° of the crop rotations involving only often sown crops (straw cereals, annual legumes, perennial herbs)	The technology is based on the principle of differential erosion protection provided to the soil by different agricultural crops: grass plants and perennial legumes after the first year of use ensures a protection of 90-95 percent; Good protecting crops - straw cereals, legumes, annual forage plants with high density provide 70-90 percent protection.	200 thousand ha arable lands slope more than 5°, 5 years in the 2013-2020 period, on 40 thousand ha each time	300,000 tonnes of CO ₂ /year 1.5 t/ha/year x 200 thousand ha
5.3.	Technology of feeding the cattle by separate use of fodders	Traditional technology for RM of feeding the cattle by using rations consisting of separate fodders - hay, green plants, concentrates, etc. Depending on the physiological condition and productivity of the animals rations differ by the amount of fodders and the ratio between them (structure). If the structure of the rations is optimal then the productivity, animals health condition, forage digestibility and formation of gas in the rumen are at an optimal level.	It is currently the most widespread technology that includes over 50% of the cattle livestock in the country. Subsequently the implementation area will decrease.	14,175 tonnes of CO ₂ equivalent

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
5.4.	Technology of feeding the cattle by using fodders in form of unique mixtures (mono ration)	Technology widely used in countries with a developed animal husbandry. In RM this technology is being implemented, currently is used for about 5% of the cattle livestock. The main difference of this technology is that the rations calculated based on the physiological requirements of the animals, consisting of voluminous, coarse, juicy, concentrated fodders, protein-vitamin-mineral supplements are mixed evenly with special equipment (mixer) and is distributed to animals in the form of unique mixture. This moment positively influence the digestibility of fodders, animals health, breeding indices, and finally resulting in productivity increase by up to 20-25% compared to traditional technology.	Currently the newly created and reconstructed farms for dairy cows practically at 95-100%. By 2020, at least 25% of the cattle livestock of the country.	14,700 tonnes of CO ₂ equivalent
5.5	The classic basic soil tillage, using the crop rotation with five fields of which one field occupied by a leguminous crop (two crops of autumn and spring vetch incorporated into the soil as green fertilizer on each field once every 5 years)	The classic soil tillage system because of the specific cultivation of some agricultural crops (sugar beet and forage, vegetables etc.), cannot be replaced by conservative soil tillage system. Resulting from this, it is proposed that on 400 thousand ha the classical soil tillage system to be improved by introducing into the crop rotation with five fields of a "field with vetch as green fertilizer".	400 thousand ha, during 10 years, 40 000 ha each time, thereby the technology will gradually be implemented on this area	880,000 tonnes of CO ₂ /year 2.2 tonnes/ha/year x 400 thousand ha
5.6.	The "mini-till" conservative system of soil tillage by introducing in the soil mostly only mineral fertilizers	To implement the technology are required: combined grower with lightweight discs and a regular seeder or combined seeder which performs the soil tillage and sowing.	200 thousand ha or 20% of the arable area, during 5, 40 thousand ha every time, primarily for the cultivation of straw cereals crops	220 thousand tonnes of CO ₂ /year 1.1 tonnes of CO ₂ /ha/year x 200 thousand ha
5.7.	The conservative "mini-till" system of soil tillage by using as fertilizer mineral fertilizers and all the secondary agricultural production (straws, stalks, vegetal residues, etc.).	In soil for 1.0 tonne of main harvest dry mass accumulates plant debris 1.0 t/ha during the straws and 1.43 t/ha and during incorporation of straws into the soil. Thus, during incorporation of 1 tonne of straws into the soil accumulates additionally 0.43 t/ha of plant debris with 40-45% carbon and 0.05-0.08% nitrogen content. Based on the standard harvest in Republic of Moldova 3 t/ha of primary production, into the soil will accumulate additionally 1.3 t/ha of plant debris, from which will be synthesized 140 kg of humus and will be seized 81 kg of carbon, which will additionally contribute to reduce CO ₂ emissions from agricultural soils by about 0.3 t/ha. To implement the technology the following are necessary: combined grower with lightweight discs and a regular seeder or combined seeder which performs the soil tillage and sowing. Straw choppers should be installed on combines.	200 thousand ha of arable area, during 5 years, 40 thousand ha every time, for cultivating straw cereals crops	60,000 tonnes of CO ₂ 0.3 tonnes of CO ₂ /ha/year x 200 thousand ha
5.8.	The conservative system "Mini-Till" system with	"No-Till" is a conservative system of soil tillage according to which seeding is done directly in the stubble. The main aggregate	200 thousand ha of arable area, during 10 years, 20	1.06 mln tonnes of CO ₂

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
	preliminary positive restoring of the features of post-arable layer, using every second year the vetch as an intermediate crop, or green fertilizer;	is the seeder. The main element of the "No-Till" seeder is the plowshare. The superficial soil layer gradually becomes biogenic, well structured, loose, is formed an aero-hydric and feeding regime favorable for plants, is increased their resistance to drought. It is proposed to improve the "No-Till" system by using within it the vetch as successive crop for green fertilizer. Until the implementation of the "No-Till" technology it is recommended to perform the prior restoration of the arable layer. For this one year the land is used occupied field, sowing with autumn and spring vetch, whose green mass is incorporated into the soil.	thousand ha every time	5.3 tonnes of CO ₂ /ha x 200 thousand ha a positive balance of the carbon is ensured in soil during two years, annual CO ₂ emissions from soil compared to conventional soil tillage is completely reduced.
5.9.	The conservative system "No-Till" system with preliminary positive restoring of the features of post-arable layer, using every second year the vetch as an intermediate crop, or green fertilizer;	The minimum works system became a variant of the conservative soil tillage system, based on the reasons: agrotechnical, energy economy, ecological. This system provides the restitution of plant debris into the soil, they partially remain as mulch on the soil surface. It is proposed to improve this system by using within it the vetch as successive crop for green fertilizer. Applying the system is conditioned by the availability of appropriate agricultural machinery. To implement the technology the following are required: combined grower with lightweight discs and a regular seeder or combined seeder which performs the soil tillage and sowing.	200 thousand ha of arable area, during 10 years, 20 thousand ha every time, primarily for cultivating straw cereals crops	1.06 mln tonnes of CO ₂ 5.3 tonnes of CO ₂ /ha x 200 thousand ha is ensured a positive balance of the carbon in soil during two years, annual CO ₂ emissions from soil compared to conventional soil tillage is completely reduced.
5.10.	Manure storage platforms	Manure being stored on waterproof platforms can be separated. For appropriate fermentation it will be covered with a plastic wrap to prevent nutrient leaching and decrease volatilization of CH ₄ and NH ₃ . So it will become possible to limit penetration into the soil and water of nitrates and nitrites, reduce GHG emissions and obtain valuable organic fertilizers.	40% of the total 3.0 mln tonnes of manure	50,000 tonnes of CO ₂ equivalent
5.11.	Manure composting	Currently, manure composting is done by volume of about 1% of the total obtained. Composting results in minimizing the emissions of CH ₄ and N ₂ O, obtaining a valuable organic fertilizer - humus and consequently, improving soil structure and increase the productivity of plants. Simultaneously, it ensures protection of the environment against the adverse consequences of soil, water and air pollution.	50% of the total 3.0 mln tonnes of manure	62,500 tonnes of CO ₂ equivalent
5.12.	Using in the diet of cattle forage additives that reduce the formation of methane in the process of digestion	In the unique blends (mono rations) for cattle additionally are introduced special forage additives containing substances (saponins, ionophore, etc.) that influence the formation and elimination of methane decreasing this index to 30%.	By 2020, application of this technology could achieve at least 10% of the cattle livestock	9,450 tonnes of CO ₂ equivalent
5.13	Processing of manure to obtain biogas	The anaerobic fermentation of biomass which is produced in the fermenter allows obtaining biogas as a result of the activity of microorganisms, 1 tonne of CH ₄ which is the equivalent of 21 tonnes of CO ₂ , but the obtained biogas will not be released in the atmosphere but will be used as a source of power and heat.	10% of the total of 3.0 mln tonnes of manure	12,500 tonnes of CO ₂ equivalent

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
6.	Specific objective 6: Increase, by 2020, the capacity of dioxide sequestration in the Land Use, Land-Use Change and Forestry sectors, by 25% compared with the baseline scenario.			
6.1.	Afforestation of the areas and protection strips for rivers and water basins	Provides for the establishment/rehabilitation of forest protection belts, rivers and water basins on an area of 30.4 thousand ha, according to GD No.593 of 01 August 2011 on the approval of the National Programme on the establishment of the national ecological network for the period 2011-2018.	32.0% of 96,000 ha	590,773 tonnes of CO ₂
6.2.	Expanding the forested areas	The measure consists in expanding the forested areas with 81,000 ha of the degraded lands impracticable for agriculture	9.4% of the total area of degraded land of 860,000 ha	3,163,050 tonnes of CO ₂
6.3.	Expanding the areas covered with forest vegetation	The measure consists in expanding the areas covered with forest vegetation with 55 thousand ha, beyond the forestry fund	55 thousand ha	4,526,500 tonnes of CO ₂
6.4.	Reconstruction/rehabilitation of the forest protection belts of the agricultural fields	Provides for the reconstruction/rehabilitation of the forest protection belts of the agricultural fields on an area of approximately 2,000 ha. According to the regulations, the surface of the forest protection belts must be 4% of the arable land area (about 1.8 mln ha).	72,000 ha, implementation capacity about 2.8%	49,800 tonnes of CO ₂
6.5.	Program to support communities for sustainable and integrated management of forests and carbon sequestration through afforestation	Improving the productivity of 800 ha of communal grassland, the total area of grassland is about 370 000 ha; Rebuilding and/or restoration of 1200 ha forests and other types of forest vegetation owned by town halls, the total area of the forest fund public property of the territorial administrative units is 54,500 ha; Development of forest management plans for 3,200 ha of forests and other types of forest vegetation owned by Mayor's Offices.	For grasslands – 0.2% of the total; for the forest vegetation – 2.2% of the total	102,000 tonnes of CO ₂
6.6.	Planting forestry energy crops	Planting rapid growth forestry crops, managed to small production cycles (10-15 years).	10 thousand ha	1,287,000 tonnes of CO ₂
6.7.	Reducing emissions from deforestation and forest degradation (REDD+)	Reducing emissions from deforestation and forest degradation may be achieved by: a) amplifying the security of forests and other types of forest vegetation; b) improving the management of existing forests, by: <ul style="list-style-type: none"> reconstruction/replacement of degraded/poorly productive trees on 10 thousand ha; carrying out appropriate care and management works on 40 thousand ha; developing forest management projects for the whole area of forests and other types of forest vegetation owned by town halls on about 100 thousand ha; timely implementation of the forestry treatments under the forest arrangements (progressive cuts etc.) on about 10 	See the heading "Brief description of the mitigation action"	1,378,000 tonnes of CO ₂

No.	Name of the national appropriate mitigation action	Brief description of the mitigation action	Implementation capacity of the mitigation action	Estimated reductions of emission of the greenhouse gases
		thousand ha.		
6.8.	“Soil Conservation in Republic of Moldova” Project	Planting 20,300 ha of forest on degraded land.	2.3% of the total area of 860 thousand ha degraded land	3,600,000 tonnes of CO ₂
6.9.	“Developing the communal forestry sector in Republic of Moldova” Project	Planting 8,468.9 ha of forest on degraded land.	0.98% of the total area of 860 thousand ha degraded land	3,800,000 tonnes of CO ₂
7.	Specific objective 7: Reduction, by 2020, of direct greenhouse gases emissions coming from the waste sector, by 15% compared to the baseline scenario.			
7.1.	Development of primary collection and storage of waste in urban and rural areas	Provides for the extension of the current primary collection and storage of waste from urban to rural areas, in perspective five years, by the end of 2017, according to the draft National Waste Management Strategy.	Endowment with containers (35,650 units) and vehicles with a capacity of 8 m ³ (120 units) for waste collection	420,000 tonnes of CO ₂ /year or 1,680,000 tonnes of CO ₂ total
7.2.	Development of the regional infrastructure of municipal waste disposal by building regional landfills for solid household wastes and transfer stations	The measure consists in developing of regional infrastructure of waste disposal by building of seven regional deposits for solid household waste, 34 transfer stations and 158 vehicles with capacity of 16 m ³ for transferring the waste to deposits.	See the heading “Brief description of the mitigation action”	420,000 tonnes of CO ₂ /year or 5,040,000 tonnes of CO ₂ total
7.3.	Development of the regional infrastructure of municipal waste disposal by building mechanical-biological treatment centers	The measure consists in developing the regional infrastructure of waste disposal by building two mechanical-biological treatment centers, in the municipalities Chisinau and Balti.	See the heading “Brief description of the mitigation action”	630,000 tonnes of CO ₂ /year or 7,560,000 tonnes of CO ₂ total
7.4.	Treatment of sludge from the wastewater treatment plants of Chisinau, Balti and Cahul	Providing to the technological scheme of sewage treatment afferent to Apa-Canal plants of Chisinau, Balti and Cahul with sludge treatment technologies under anaerobic conditions. The technology includes: methane tank; pumping station; sludge concentrator; systems for storage and combustion of methane; dehydration tank; distribution and communications network.	Wastewater treatment in Chisinau and Balti municipalities and Cahul town	28,640 tonnes of CO ₂ /year including: 22,900 tonnes of CO ₂ /year - Chisinau; 4,690 tonnes of CO ₂ /year - Balti; 1,050 tonnes of CO ₂ /year – Cahul
7.5.	Biogas recovery from the deposit of solid household waste from Tintareni	Equipping and putting into service the biogas recovery plant from the solid household landfill Tintareni.	Alongside the existing 325 kW electric power generators will be built additional 825 kW	47,549 tonnes of CO ₂ /year

6. ASSESSMENT OF THE IMPACT AND IMPLEMENTATION COSTS

The direct impact of the Low Emissions Development Strategy of Republic of Moldova will be changing the development paradigm of Republic of Moldova in the long term towards green economic development path.

SWOT analysis (Table 6-1) revealed the strengths and weaknesses as well as the opportunities and threats associated with implementing the Low Emissions Development Strategy of the Republic of Moldova until 2020.

Table 6-1 SWOT analysis

Strengths	Weaknesses
<p>The existence of the potential to reduce the greenhouse gas emissions;</p> <p>Experience gained in implementation of projects to mitigate emissions of greenhouse gases, including the Clean Development Mechanism of the Kyoto Protocol;</p> <p>In the structures of the central public authorities there is a minimum number of qualified and capable of performance staff, as well as a functional system capable to ensure the implementation of sufficient mitigation projects;</p> <p>Existence of appropriate institutions to implement future mitigation projects, including in cooperation with specialized offices;</p> <p>A robust framework for monitoring, reporting and verification and effective training skills for future requirements by consolidating and them;</p> <p>The existence of strategies, action plans and comprehensive programs at national and sectoral level, some of which already include mitigation approaches and measures;</p> <p>Political will and support instruments (Energy Efficiency Fund, National Regional Development Fund, Road Fund, National Ecological Fund, Social Investment Fund and other relevant) in order to implement the priority mitigation measures to support the green economic development path;</p> <p>High level of awareness of the political factor and civil society on issues related to climate change;</p> <p>A broad dialog framework to promote intersectoral coordination of the mitigation activities, established by creating the Inter-ministerial working group for climate change.</p>	<p>Inadequate execution and inconsistent application of policies as well as legal and regulatory framework;</p> <p>Underdeveloped institutional capacity to implement the Strategy, therefore it is possible to miss investment opportunities;</p> <p>Improper management at various levels related to solving acute problems at sectoral level in a timely and efficient manner;</p> <p>Limited access to capital and high capital costs;</p> <p>Insufficient investment in key sectors of the national economy;</p> <p>Insufficient equipped with technology, equipment and modern technique;</p> <p>Lack of specific background knowledge in the field of climate change mitigation at the sectoral level;</p> <p>Lack of capacity to address the mitigation problems at regional, community and individual level;</p> <p>Presence of more urgent problems at national, of political and/or socio-economic nature, to move the emphasis from the low emissions development path;</p> <p>Lack of coordination and communication between different ministries in addressing intersectoral issues of mitigation;</p> <p>Inadequate involvement all interested parties in solving problems associated with mitigating emissions of greenhouse gases;</p> <p>The level of public awareness in mitigating emissions of greenhouse gases is reduced, particularly at individual and community level.</p>
Opportunities	Threats
<p>Approval of the Strategy, will open access to funding with "quick start", as well as long-term financing of the supported actions, including preparing feasibility studies, technical assessments and full project documentation for the appropriate mitigation actions priority at at national level;</p> <p>Approval of the Strategy will contribute to place the country among the states eligible for international funds designed to reduce emissions of greenhouse gases (the Green Climate Fund, the Strategic Climate Fund, etc.); thus increasing the flow of external investments, diminishing the investment risk, balancing funding from the private sector and significantly reducing cost of the projects;</p> <p>The support to implement the strategy and priority mitigation actions can take the form of a bilateral agreement between the EU and Republic of Moldova; bilateral agreements between potential buyers and sellers represents a cornerstone of the EU strategy towards international markets "payments" (in Eng.: offset markets); the bilateral agreement with the EU will allow recognition of CDM credits generated in the country after 2012 and in the EU ETS; the agreement will enhance the opportunity to receive bilateral funding from EU Member States through Fast Track mechanism as well as from the climate funds managed by EU;</p> <p>Additionally, our country can benefit from the resources of the Global Environment</p>	<p>Lack of initiative, capacity of organization and political will;</p> <p>Changes in legislative and organizational framework which have occurred as a result of political instability;</p> <p>Limited capacity of fund absorption caused by the complex process of designing and managing projects, as well as due to costly co-financing;</p> <p>Little support from local and central public authorities in developing and implementing mitigation projects;</p> <p>Reduced budget resources compared to existing needs for the implementation of the unilateral mitigation activities;</p> <p>Challenges in attracting adequate</p>

<p>Fund, which also has a catalytic role in development of markets with products associated with climate change, allocating and distributing grants for projects aimed at combating climate change;</p> <p>Approval of the Strategy will help getting the support to expand the capacity of producing renewable energy by implementing creditable mitigation actions, both in the format of CDM projects, as well as in the format of the Program of Activities.</p> <p>Achieving the Strategy will allow, the most likely, to exceed the commitment made within the Copenhagen Accord;</p> <p>Increased international recognition through reporting tools within the UNFCCC (National Communications, Biennial reviewed reports, National inventory reports, Reports on the identification of technological needs);</p> <p>The Register of the appropriate mitigation actions at national level administered by the UNFCCC Secretariat will serve as an effective mechanism to inform potential donors about national priorities on the development of low emissions path;</p> <p>The new policy framework on climate change (<i>Low-emission development strategy and Adaptation strategy to climate change</i>), provides additional opportunities on the integration of climate change mitigation and adaptation, in the agenda of priority achievements of the Government, along with the EU Association Agreement; it will stimulate the development of long-term investment plans to ensure the green economic development path, respectively will provide new opportunities for large scale use of emerging technological innovations in the field of climate change mitigation, to obtain technical and capacity assistance for implementation of mitigation projects, with effect on the modernization of the infrastructure objectives, increase of energy efficiency, construction of renewable energy sources, soil conservation, afforestation of degraded land, waste processing, etc.;</p> <p>Approval of the Strategy will give new impetus to the consolidation process of the national inventory system of the greenhouse gas emissions, both by legislative and institutional means, as well as for capacity building at national and regional level in the field of collection of statistical information concerning the required activity data for the compilation of the national communications, revised biennial reports and national inventories of greenhouse gas emissions as well as of the specific performance indicators of mitigation policies and appropriate mitigation actions at national level;</p> <p>Implementation of the mitigation actions is associated with a wide range of other co-benefits, firstly - financial and developmental, with an impact of creating new jobs and business opportunities, improved health and life quality of the population, increased energy security and not least, better environmental standards and increased ecological security;</p> <p>Improving the normative and business environment for investors;</p> <p>Greater involvement of the private sector in planning and financing climate change mitigation;</p> <p>Increasing the role of mass media in rising the awareness of the policy makers and society at large on the acute need for mitigation actions.</p>	<p>capital to implement large investment projects, as well as limited access to capital, high risk perception of the country, etc.;</p> <p>Poor involvement of the private sector in climate change mitigation activities;</p> <p>Line ministries have different priorities at the sectoral level, which they consider priority than climate change mitigation;</p> <p>Technological innovations are too expensive or too complicated for their proper implementation the Republic of Moldova, without foreign assistance of the donors and key partners;</p> <p>The level of prices for carbon emissions, currently do not offer a substantial contribution from economic point of view for most CDM projects; the uncertainty of demand for carbon credits in the future adversely affect the prices and interest of the investors; there are also major uncertainties over the evolution of these prices in the second commitment period of the Kyoto Protocol; as well, REDD+ projects are not eligible for compliance in the trading scheme for emissions reductions of the European Union (EU ETS);</p> <p>The external economic environment is unfavorable at international and European level;</p> <p>Remains the risk of global and regional crises (financial, energy, food) that could undermine national efforts to mitigate climate change.</p>
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It is anticipated that Low-Emissions Development Strategy of the Republic of Moldova will strengthen and guide the sectoral approach characteristic to the government program.

The strategy will also enhance the budgetary coverage to promote appropriate policies to mitigate greenhouse gas emissions at sectoral level.

The information associated with the responsible institutions, terms of achieving the proposed priority mitigation activities appropriate at national level, their estimated costs related to the implementation and funding sources are available in **Annex 1**.

7. IMPLEMENTATION FRAMEWORK

Directing the country on the low-emissions economic growth path requires strong national institutions, their effective management, as well as adequate financial assistance and support from the international community.

This chapter describes the key elements that are necessary to implement this major national initiatives, including:

- The institutional capacity,
- Appropriate normative framework.

The objective of the institutional arrangements for the implementation of Low-Emission Development Strategy will cover three main areas:

- 1) national planning and integration of the low emissions economic development priorities within the national regulatory framework and strategic development priorities;
- 2) efficient management of the public finances and those provided by donors, of the environmental friendly technologies transferred to support the implementation of the Low-Emission Development Strategy and Appropriate mitigation actions at national level, described in the Action Plan (**Annex 1**);
- 3) monitoring and controlling the implementation of the planned actions for low emissions economic development described in the Low-Emissions Development Strategy.

Highlighting low emissions development priorities in the national political agenda can be achieved through a high-level national institution able to cover the intersectoral aspects of response to the complete challenges of climate changes to support the green economic development.

Such a institution is the "National Committee for implementation and accomplishment of the provisions of Framework Convention of the United Nations Organization for Climate Change, as well as of the mechanisms and provisions of the Kyoto Protocol" (further, the National Committee), created by the Government Decision no. 1574 of 26 December 2003.

In order to ensure a higher level representatives of the ministries and key partners and extending of the tasks, that covers as well the implementation process of the appropriate mitigation activities at national level, nominal composition of the National Committee shall be amended as follows:

Committee President - minister of the Environment;

Committee Vice President - Deputy Minister of Economy;

Committee Secretary - manager of the Climate Change Office, Ministry of Environment;

Committee members:

- vice President of the Parliamentary committee for Environment and Climate Change;
- vice President of the Parliamentary committee on Economy Budget and Finance;
- head of the Economy, Infrastructure and Environment Division, the State Chancellery of the Republic of Moldova;
- head of the General Division for Sectoral Development Policies, the Ministry of Agriculture and Food Industry;

- director of the General Division of Security and Energy Efficiency, Ministry of Economy;
- director of the General Division of Industrial and Competitiveness Policies, Ministry of Economy;
- head of the Division of National Economy Finances, Capital Expenditures and Public Procurement, Ministry of Finance;
- head of the Division of Policy Analysis, Monitoring and Assessment, Ministry of Transport and Road Infrastructure;
- director of the General Division of Architecture, Building and Housing, Ministry of Regional Development and Construction;
- head of the Division of Policy Analysis, Monitoring and Assessment, Ministry of Environment;
- director of the Agency for Energy Efficiency, Ministry of Economy;
- director of the National Centre for Public Health, Ministry of Health;
- director of the Energy Institute of the Academy of Sciences of the Republic of Moldova;
- director of the Pedology Institute, Agrochemistry and Soil Protection “Nicolae Dima”;
- director of the Research and Forest Management Institute;
- prime prorector, vice president of the Administration Board, Technical University of Moldova;
- head of the Department "Thermomechanics and Management in Energy Sector" Energy Department, Technical University of Moldova.

Committee members will act as focal points in the relationship of the ministries and institutions they represent with the National Commission on issues related to the implementation of mitigation and adaptation actions to climate change, specified in the Low-emission development strategy of the Republic of Moldova by 2020 and the Adaptation strategy to climate change of the Republic of Moldova.

Promotion of mitigation actions supported by donors and creditors actions in the energy sector are assigned to the Ministry of Economy and the Agency for Energy Efficiency; in the transportation sector - to the Ministry of Transportation and Road Infrastructure; in the buildings sector - to the Ministry of Regional Development and Construction; in the industrial sector - to the Ministry of Economy; in the agricultural sector - to the Ministry of Agriculture and Food Industry; in forestry sector - to the "Moldsilva" Agency; and those related to waste sector and refrigerant and air conditioning sub-sector - to the Ministry of Environment.

The Central Public Authority for Environment of the Republic of Moldova is assigned the responsibility of developing, promoting and coordinating national policies on climate change and their reporting in accordance with the decisions of the United Nations Framework Convention on Climate Change.

Initial decisions on the general regulatory framework for Low- Emission Development Strategy and National appropriate mitigation actions adopted at the 16th Conference of Parties (Cancun, 2010), establish two ways of Monitoring, Reporting and Verification (MRV):

- The MRV of the unilateral mitigation actions, as well as the analysis and general assessment of the implementation of the Low-Emission Development Strategy;
- The MRV of the mitigation actions supported by donors and creditors.

These categories of MRV will require different approaches of skills and capabilities of the institutions responsible. While the MRV of the unilateral mitigation actions and the progress made within the Low-Emission Development Strategy allows the application of reporting procedures and principles to the United Nations Framework Convention on Climate Change through the National Communications , National Inventory Reports and Biennial Reviewed Reports; the MRV of the mitigation actions supported by donors or creditors will be made on the basis of principles and procedures similar to those currently applied for the projects within the Clean Development Mechanism of the Kyoto Protocol.

To gain international recognition and support for its actions, for Republic of Moldova is important to demonstrate its national commitment by the necessary institutional strengthening and making the preliminary steps to promote the low-carbon economic growth agenda. Thus, the first steps in the implementation of the Low-Emission Development Strategy, will focus primarily on achieving the internal commitments and measures, as well as on creating an institutional and regulatory framework.

Once the national commitment will be assumed, and the institutional basis set up, Republic of Moldova will request registration of its appropriate mitigation actions at national level in the Register of nationally appropriate mitigation activities administered by the Secretariat of the Convention. Simultaneously, will be initiated feasibility studies, technical assessments and preparation of full project documentation for appropriate mitigation actions at national level which Republic of Moldova has identified as priorities for funding and support from the international community, including by “*Fast Track*” financing mechanism and Green Climate Fund.

8. REPORTING AND MONITORING FRAMEWORK

Monitoring the implementation of Low-Emission Development Strategy is an important way of tracking the country's progress in achieving the goal and objectives of the strategy. Moreover, it is an important compliance mechanism at international level, which may facilitate the recognition of actions implemented by Republic of Moldova within the post-Kyoto climate policy (i.e. at the end of the first commitment period (2008-2012), under the Kyoto Protocol).

Considering the international context regarding anticipated support for the implementation of this strategy, we have to state that the procedures for monitoring, reporting and evaluation are not designed as a static process, but rather as a continuous process, and these will be updated and revised in the context of international negotiations under the United Nations Framework Convention on Climate Change, emergence of new information, as well as based on lessons learned, with the advancement process.

For the developing countries not included in annex no. I at the Convention, including the Republic of Moldova, the new reporting requirements, essentially refer to two main areas:

- national emissions of greenhouse gases, respectively monitoring the mitigation policies and unilateral mitigation actions;
- implementation of the mitigation actions supported by donors and creditors.

For the first time, the developing countries will be required to submit Biannual Reviewed Reports (the first report is to be reported to the Secretariat of the Convention by the end of 2014), containing updated information on total national emissions of greenhouse gases, as well as the most recent National Inventory Reports greenhouse gas emissions; information on the implementation of the unilateral mitigation actions, needs for financial support and support given for the implementation of mitigation actions supported by donors and creditors.

The Biannual Reviewed Reports will be object of analysis within the International Consultations and Analysis (ICA) of the Subsidiary Body for Implementation (SBI) within the United Nations Framework Convention on Climate Change.

Also, any national appropriate mitigation actions supported by donors implemented in the developing countries will be subject to international procedures for monitoring, reporting and verification (technical procedures to be developed and approved).

National unilateral appropriate mitigation actions will be subject to internal procedures for monitoring, reporting and verification.

The harshest reporting and verification provisions are anticipated for the mitigation actions supported by international funding. Actions for which support is requested will be to be recorded in a “Registry of National Appropriate Mitigation Actions” administered by the Secretariat of the United Nations Framework Convention on Climate Change. The registry will facilitate the compatibility between the actions and available support.

It is anticipated that the requirements for monitoring, reporting and verification for actions supported by donors may not differ much conceptually from the current provided requirements compared to procedures for monitoring, reporting and verification for projects of the Clean Development Mechanism of the Kyoto Protocol.

Despite the lack of definitive requirements towards the inventory procedures of the greenhouse gas emissions in the developing countries, the overall direction, as well as the intention of the post-Kyoto framework for monitoring, reporting and verification, is clear. Through a favorable conjuncture, Republic of Moldova already has a robust framework for monitoring, reporting and verification and will be able to prepare for future requirements by consolidating and strengthening it.

Under the Cancun Agreements, the steps to preparing for the implementation of the provisions on monitoring, reporting and verification will include:

- strengthening the national inventory system of greenhouse gas emissions through a legislative and institutional way;
- capacity building at national and regional level, regarding the collection of statistical information on activity data required for the compilation of national communications, reviewed biennial reports and national inventories of emissions of greenhouse gases, as well as specific indicators of performance of the mitigation policies and appropriate mitigation actions at national level;
- identification and implementation of a system of specific indicators regarding the monitoring progress in implementation of various appropriate mitigation actions at the sectoral level, as identified in Low-Emission Development Strategy, in order to analyze their current performance and identify opportunities for improving their performance in the future;
- developing country-specific approaches and methods for assessing national emission factors, as well as performance indicators for estimating the emissions reductions that would be suitable for the Republic of Moldova;
- capacity building of strategic planning and performance assessment at national and regional level in order to measure and analyze the effectiveness of national appropriate mitigation actions.

National Committee for implementation and accomplishment of the mechanisms and provisions of Framework Convention of the United Nations Organization for Climate Change, and of the Kyoto Protocol will develop a plan for monitoring and evaluation in accordance the UNFCCC Decisions. Monitoring and evaluation will be performed every semester (every six months):

- the advancements will be monitored compared to the purpose, general and specific objectives of the Low-emission Development Strategy and will be recorded in a progress report each semester (when a goal is achieved or completed, this should be noted in the progress reports);
- at national, sectoral, branch, enterprise, organization, agency and public local authorities level are to be given clear instructions to keep track of annual funds expended to implement the Low-emission Development Strategy and Appropriate mitigation actions at national level that supports its implementation, which will allow to perform the assessment of its technical and economic effectiveness, as well as accurate reporting to the international community through the National Communications, Reviewed Biennial Reports and National Inventory Reports;
- the monitoring findings should be incorporated into future planning and used to identify the activities and actions that do not show significant improvements and which would require greater investigation and changes of the activities, in order to achieve the objectives, as well as specific response mechanism to findings (e.g. if no progress is observed, which is the concrete process to decide what actions will be taken, who will implement them).

**ANNEX 1: ACTION PLAN ON PRIORITY IMPLEMENTATION OF THE NATIONAL APPROPRIATE MITIGATION ACTIONS
IN ORDER TO ACHIEVE THE GENERAL OBJECTIVE OF THE LOW-EMISSION DEVELOPMENT STRATEGY OF REPUBLIC
OF MOLDOVA BY 2020**

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
	General objective Reduction, by 2020, of total national emissions of direct greenhouse gases, with no less than 20% compared to the baseline scenario, supporting the global effort to limit temperature increase to 2°C.					
1.	Specific objective 1: Reduction, by 2020, of direct greenhouse gases emissions coming from the energy sector (stationary combustion of fossil fuels, as well as from the operations with oil and natural gas), by 25% compared to the baseline scenario.					
1.1.	Gas condensing boilers	2013-2020	Private companies, ME, EEA	Investments, produced energy, emission reductions established by MRV procedures approved at national level	Specific investment in such boilers is \approx 2 times higher than investment in conventional boilers	Private investment
1.2.	Implementation of the cogeneration technology based on use of internal combustion engines with capacity up to 500 kW electric power	2014-2020	Private companies, LPA, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 11.5 mln U.S. dollars, operating and maintenance costs, without fuel – 1.7 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
1.3.	Implementation of the cogeneration technology based on use of gas turbines with capacity up to 500 kW electric power	2014-2020	Private companies, LPA, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 11.5 mln U.S. dollars, operating and maintenance costs, without fuel – 1.68 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
1.4.	Cogeneration electrical plants based on the use of internal combustion engines and gas turbines with capacity exceeding 1 MW electric power	2014-2020	Private companies, LPA, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 150 mln U.S. dollars, operating and maintenance costs, without fuel – 6.0 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
1.5.	Electrical plants with combined gas-steam cycle of high capacity	2014-2020	Private companies, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 225 mln U.S. dollars, operating and maintenance costs, without fuel – 10.8 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
1.6.	Clusters on combined cycle with cogeneration, of large capacities	2014-2020	Private companies, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at	Total investments – 195 mln U.S. dollars, operating and maintenance costs, without fuel – 9.0 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
				international level		
1.7.	Cluster on integrated gasification combined cycle (IGCC)	2014-2020	Private companies, ME, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 600 mln U.S. dollars, operating and maintenance costs, without fuel – 24.0 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
1.8.	Grid-connected wind power plants	2014-2020	Private companies, ME, NAER, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	525.0 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
1.9.	Wind-electric pumping systems	2014-2020	Private companies, MAFI, NAER, EEA	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	10.2 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
1.10.	Grid-connected photovoltaic plants	2014-2020	Private companies, ME, EEA, NAER	Investments, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	16.3 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
1.11.	Photovoltaic energy for small-scale irrigation	2014-2020	Private companies, MAFI, EEA, NAER	Investments, number of installed systems, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	6.5 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
1.12.	Small hydropower plants	2014-2020	Private companies, ME, MAFI, EEA, NAER	Investments, number of plants built, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	37.4 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
1.13.	Micro-hydro station without dams	2014-2020	Private companies, ME, MAFI, EEA, NAER	Investments, number of micro-hydro station built, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	1.1 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
				international level		
1.14.	Solid biomass: application of thermal power plants based on straw and pellets to provide heat to the social and cultural objects	2014-2020	Private companies EEA, LPA	Investments, number of thermal plants built, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	176.4 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
2.	Specific objective 2: Reduction, by 2020, of direct greenhouse gases emissions coming from the transportation sector (mobile combustion of fuels), by 15% compared to the baseline scenario.					
2.1.	Biodiesel	2014-2020	MTRI	Investments, the quantity of biodiesel produced and supplied on fuel market, reduced emissions established by MRV procedures approved at international level	Total investments – 12 mln U.S. dollars, operating and maintenance costs – 2 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.2.	Bioethanol	2014-2020	MTRI	Investments, the quantity of bioethanol produced and supplied on fuel market, reduced emissions established by MRV procedures approved at international level	Total investments – 11 mln U.S. dollars, operating and maintenance costs – 1 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.3.	„Bus Rapid Transit” Systems	2015-2020	MTRI	Investments, share in the urban road transport of passengers covered by the system, the number of transported passengers km/year, reduced emissions established by MRV procedures approved at international level	Total investments – 100 mln U.S. dollars, maintenance costs – 0.5 mln U.S. dollars	Green Climate Fund, Road Fund, the National Fund for Regional Development, Private investments; Projects and grants
2.4.	Direct injection for internal combustion engines	2014-2020	MTRI	Investments, number of cars on gasoline consumption with fuel injection systems in modified motor, their share in the total number of vehicles, reduced emissions established by MRV procedures approved at international level	Total investments – 130 mln U.S. dollars, operating costs – 2 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.5.	Compressed gas in transport	2014-2020	MTRI	Investments, number of re-equipped vehicles with compressed natural gas tank, their share in the total number of vehicles, number of	Total investments – 59 mln U.S. dollars, maintenance costs – 1 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
				transported passengers km/year, reduced emissions established by MRV procedures approved at international level		
2.6.	Electronic road pricing	2014-2020	MTRI	Investments, share in the urban road transport of passengers covered by the system, the number of transported passengers km/year, reduced emissions established by MRV procedures approved at international level	Total investments – 130 mln U.S. dollars, maintenance costs – 33 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.7.	Liquefied petroleum gas in transport	2014-2020	MTRI	Investments, number of cars on liquefied petroleum gas consumption, their share in the total number of vehicles, reduced emissions established by MRV procedures approved at international level	Total investments – 263 mln U.S. dollars, maintenance costs – 4 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.8.	Non-motorized transport	2014-2020	MTRI, LPA	Investments, share in the urban road transport of passengers, the number of passengers-km/year substituted by applying this mitigation measure, reduced emissions established by MRV procedures approved at international level	Total investments – 1 mln U.S. dollars, maintenance costs – 0,05 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.9.	Hybrid Electric Vehicles	2014-2020	MTRI, LPA, private enterprises from urban areas	Investments, share in the urban road transport of passengers, number of transported passengers km/year, reduced emissions established by MRV procedures approved at international level	Total investments – 57 mln U.S. dollars, maintenance costs – 1 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants
2.10.	Grid connected Hybrid Electric Vehicles	2014-2020	MTRI, LPA, private enterprises from urban areas	Investments, share from the number of private vehicles and the number of transported passengers km/year, reduced emissions established by MRV procedures approved at	Total investments – 1.770 mln U.S. dollars, maintenance costs – 25 mln U.S. dollars/year	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
				international level		
3.	Specific objective 3: Reduction, by 2020, of direct greenhouse gases emissions coming from the buildings sector, by 20% compared to the baseline scenario.					
3.1.	Wall insulation of dwellings	2014-2020	MRC, EEA, LPA, private and public enterprises	Total investments, share of restored buildings of total housing fund, saved energy, reduced emissions established by MRV procedures approved at international level	Total investments – 700 mln U.S. dollars, operating and maintenance costs do not change	Green Climate Fund, Energy Efficiency Fund, Private investments; Projects and grants
3.2.	Thermostats in rooms, programmable	2014-2020	EEA, LPA, CS, private and public enterprises, housing fund managers	Total investments, number of thermostats imported and marketed annually, the amount of energy saved, reduced emissions established by MRV procedures approved at international level	Total investments – 22.5 mln U.S. dollars, operating and maintenance costs will increase slightly	Green Climate Fund, Private investments; Projects and grants
3.3.	Automatic temperature regulators, including day/night mode	2014-2020	EEA, LPA, CS, private and public enterprises, housing fund managers	Total investments, number of thermostats imported and marketed annually, the amount of energy saved, reduced emissions established by MRV procedures approved at international level	Total investments – 6 mln U.S. dollars, operating and maintenance costs do not change	Green Climate Fund, Private investments; Projects and grants
3.4.	Replacing incandescent bulbs with energy efficient bulbs	2014–2020	EEA, LPA, CS, private and public enterprises	Total investments, number of energy efficiency bulbs imported and marketed annually, the amount of energy saved, reduced emissions established by MRV procedures approved at international level	Total investments – 14.4 mln U.S. dollars	Green Climate Fund, Energy Efficiency Fund
3.5.	Installation of heat meters in each apartment	2014-2020	EEA, LPA, private and public enterprises, housing fund managers	Total investments, number of installed heat meters, the amount of energy saved, reduced emissions established by MRV procedures approved at international level	Total investments – 45.0 mln U.S. dollars	Energy Efficiency Fund, Private investments; Projects and grants
3.6.	Solid biomass: implementation of pellet thermal plants	2014-2020	EEA, LPA, private and public enterprises,	Total investments, number of installed thermal plants, total installed capacity, the amount	Total investments – 61.7 mln U.S. dollars	Green Climate Fund, Energy Efficiency Fund, Private investments;

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
			residential customers	of energy produced annually, reduced emissions established by MRV procedures approved at international level		Projects and grants
3.7.	Heat pumps of small, medium and large capacity	2014-2020	EEA, LPA, TUM, private and public enterprises	Total investments, number of installed heat pumps, total installed capacity, the amount of energy produced annually, reduced emissions established by MRV procedures approved at international level	Total investments – 93.0 mln U.S. dollars, operating and maintenance costs – 13.5 U.S. dollars/GJ	Green Climate Fund, Energy Efficiency Fund, Private investments; Projects and grants
4.	Specific objective 4: Reduction, by 2020, of direct greenhouse gases emissions coming from the industrial sector, by 20% compared to the baseline scenario.					
4.1.	Energy Management System Implementation	2014-2020	Private companies, ME, EEA, NISM	The number of enterprises that have implemented the energy management system and ISO 50001:2012 National Standard SM, the amount of energy saved, reduced emissions established by MRV procedures approved at international level	Total investments – 5.74 mln U.S. dollars	Green Climate Fund, Energy Efficiency Fund, Private investments; Projects and grants
4.2	Applying 2nd generation biofuel for generating heat	2014-2020	Private companies, EEA	Investments, number of installations built, total installed capacity, produced energy, emission reductions established by MRV procedures approved at international level	Total investments – 1.12 mln U.S. dollars, proceeding from 190 units with power of 130 kW at a cost of 45 U.S. dollars/kW	Green Climate Fund, Energy Efficiency Fund, Private investments; Projects and grants
4.3.	Adjusting the national regulatory framework to that of EU (EC Regulation No. 842/2006 on certain fluorinated greenhouse gases) to staggered suppression of some fluorinated greenhouse gases	2014-2020	ME, Ozone Office, Customs, TUM	National regulation on the regulation of certain approved F-gases, annual import quota of F-gases, products and equipment with these approved	No need of financial coverage	
4.4.	Elaboration/improving the reporting system of data on import and consumption of HFC, products and equipment with HFC, PFC and SF ₆	2014-2015	ME, Ozone Office, Customs, TUM	Electronic reporting system of data on import and consumption of HFC, products and equipment with HFC, PFC and SF ₆ created and functional	25 thousand U.S. dollars	Projects and grants
4.5.	Training and endowment with tools/available tooling for regulating HFC, PFC and SF ₆	2014-2020	ME, Ozone Office, TUM	Technical criteria, adjusted with EC Regulation No. 305/2008 for training the refrigeration technicians from	100 thousand U.S. dollars	Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
				the servicing sectors of refrigeration technique, air conditioning and electrical equipment with elaborated F-gases; updated Code of Good Practice for refrigeration and air conditioning; mandatory training and certification of technicians from the refrigeration and AC sector; endowment of refrigeration technicians with tools and equipment for servicing refrigeration and AC technique.		
4.6.	Strengthening the capacity of Customs Service of the Republic of Moldova	2014-2016	ME, Ozone Office, Customs Service	Development/procurement of professional training materials; updated Guide for customs officers; theoretical and practical training of customs staff/brokers, equipping the Customs Service with freon identifiers.	30 thousand U.S. dollars	Projects and grants
4.7.	Gradual reduction of HFC consumption	2016-2020	Private companies, ME, Ozone Office	Retrofitting and reequipping the current refrigerating and air conditioning equipments that work with HFC by replacing it with alternative freon of new generation, (propane, isobutane, isopentane, H ₂ O, NH ₃ , air, helium, etc.), the total amount of refrigerant replaced, reduced emissions established by MRV procedures approved at international level	300 thousand U.S. dollars	Green Climate Fund, Projects and grants
5.	Specific objective 5: Reduction, by 2020, of direct greenhouse gases emissions coming from the agricultural sector, by 20% compared to the baseline scenario.					

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
5.1.	Replacing the plow with the heavy disc harrow for basic soil tillage at the depth to 20 cm without introducing organic fertilizers	2014-2020	Private companies, MAFI, LPA	Total investments, the total area on which annually basic work is done with discs (thousand ha/year), reduced emissions established by MRV procedures approved at national level	Total investments – 38.8 mln U.S. dollars, once in 10 years, in the first year, for 200 thousand ha, based on 194 U.S. dollars/ha; operational costs – 69.6 mln U.S. dollars for 200 thousand ha, based on 348 U.S. dollars/ha/year	Sources of the economic agents
5.2.	Implementation on slopes with the inclination greater than 5° of the crop rotations involving only often sown crops (straw cereals, annual legumes, perennial herbs)	2014-2020	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at national level	Total investments – 42.6 mln U.S. dollars, once in 10 years, in the first year, based on 213 U.S. dollars/ha/year, for 200 thousand ha, operational costs – 87.5 mln U.S. dollars, based on 416 U.S. dollars/ha/year	Sources of the economic agents
5.3.	Technology of feeding the cattle by separate use of fodders	2014-2020	Private companies, MAFI, LPA	Share of application of technology (in % of the cattle livestock in the country), reduced emissions established by MRV procedures approved at national level	300 thousand U.S. dollars	Sources of the economic agents
5.4.	Technology of feeding the cattle by using fodders in form of unique mixtures (mono ration)	2014-2020	Private companies, MAFI, LPA	Share of application of technology (in % of the cattle livestock in the country), reduced emissions established by MRV procedures approved at national level	200 thousand U.S. dollars	Sources of the economic agents
5.5	The classic basic soil tillage, using the crop rotation with five fields of which one field occupied by a leguminous crop (two crops of autumn and spring vetch incorporated into the soil as green fertilizer on each field once every 5 years)	2014-2022	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at international level	Total investments – 88.8 mln U.S. dollars, once in 10 years, in the first year, based on 222 U.S. dollars/ha, on 400 thousand ha, each time 40 thousand ha, – operational costs – 145.2 mln U.S. dollars for 400 thousand ha, based on 316 U.S. dollars/ha/year	Green Climate Fund; Private investments; Projects and grants
5.6.	The “Mini-Till” conservative system of soil tillage by introducing in the soil mostly only mineral fertilizers	2014-2022	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at international level	Total investments – 38.4 mln U.S. dollars, once in 10 years, in the first year, based on 192 U.S. dollars/ha on 200 thousand ha, during 5 years, 40 thousand ha each time, operational costs – 64 mln	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
					U.S. dollars for 200 thousand ha/year, based on 320 U.S. dollars/ha/year	
5.7.	The “Mini-Till” conservative system of soil tillage by using as fertilizer mineral fertilizers and all the secondary agricultural production (straws, stalks, vegetal residues, etc.).	2014-2022	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at international level	Total investments – 44.4 mln U.S. dollars, once in 10 years, in the first year, based on 222 U.S. dollars/ha on 200 thousand ha, during 5 years, 40 thousand ha each time, operational costs – 64.0 mln U.S. dollars for 200 thousand ha, based on 320 U.S. dollars/ha/year	Green Climate Fund; Private investments; Projects and grants
5.8.	The "No-Till" conservative system for soil tillage with prior restoration in positive direction of the post-arable layer characteristics and use after one year of vetch as intermediate crop used as green fertilizer	2014-2022	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at international level	Total investments – 170 mln U.S. dollars for 200 thousand ha or 17 mln U.S. dollars/year, during 10 years, 20 thousand ha each time, based on 850 U.S. dollars/ha, maintenance and operational costs – 112 mln U.S. dollars for 200 thousand ha, based on 560 U.S. dollars/ha/year	Green Climate Fund; Private investments; Projects and grants
5.9.	The “Mini-Till” conservative system for soil tillage with prior restoration in positive direction of the post-arable layer characteristics and use after one year of vetch as intermediate crop used as green fertilizer	2014-2022	Private companies, MAFI, LPA	Total investments, the total area on which annually is implemented the technology (thousand ha/year), reduced emissions established by MRV procedures approved at international level	Total investments – 46 mln U.S. dollars for 200 thousand ha or 4.6 mln U.S. dollars/year, during 10 years, 20 thousand ha each time, based on 230 U.S. dollars/ha, maintenance and operational costs – 77.0 mln U.S. dollars for 200 thousand ha, based on 384 U.S. dollars/ha/year	Green Climate Fund; Private investments; Projects and grants
5.10.	Manure storage platforms	2014-2020	Private companies, MAFI, ME, LPA	Total investments, amount of manure deposited annually in platforms, reduced emissions established by MRV procedures approved at international level	133.0 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants
5.11.	Manure composting	2014-2020	Private companies, MAFI, ME, LPA	Total investments, amount of manure composted annually, reduced emissions established by MRV procedures approved at international level	39.0 mln U.S. dollars	Green Climate Fund; Private investments; Projects and grants

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
5.12.	Using in the diet of cattle forage additives that reduce the formation of methane in the process of digestion	2014-2020	Private companies, MAFI, LPA, ASM	Total investments, share of application of technology (in % of the cattle livestock in the country), reduced emissions established by MRV procedures approved at international level	8.45 mln U.S. dollars	Green Climate Fund, Private investments, Projects and grants
5.13	Processing of manure to obtain biogas and using it to produce energy	2014-2020	Private companies, MAFI, ME,EEA, NAER, LPA	Total investments, amount of manure fermented to produce biogas, the amount of biogas and produced energy, reduced emissions established by MRV procedures approved at international level	3.3 mln U.S. dollars	Green Climate Fund, Energy Efficiency Fund, Private investments, Projects and grants
6.	Specific objective 6: Increase, by 2020, the capacity of dioxide sequestration in the Land Use, Land-Use Change and Forestry sectors, by 25% compared with the baseline scenario.					
6.1.	Afforestation of the areas and protection strips for rivers and water basins	2014-2018	Agency „Moldsilva”	Total investments, total area afforested annually, sequestered CO ₂ emissions annually, established by MRV procedures approved at national level	3.6 mln U.S. dollars	State budget, Projects, grants
6.2.	Expanding the forested areas	2014-2020	Agency „Moldsilva”, LPA	Total investments, total area afforested annually, sequestered CO ₂ emissions annually, established by MRV procedures approved at national level	14.6 mln U.S. dollars	State budget, Projects, grants
6.3.	Expanding the areas covered with forest vegetation	2014-2020	Agency „Moldsilva”, LPA	Total investments, total area afforested annually, sequestered CO ₂ emissions annually, established by MRV procedures approved at national level	6.7 mln U.S. dollars	State budget, Projects, grants
6.4.	Reconstruction/rehabilitation of the forest protection belts of the agricultural fields	2014-2020	Agency „Moldsilva”; LPA	Total investments, surface of agricultural fields planted annually with protective forest belts, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level	2.3 mln U.S. dollars	Green Climate Fund, Projects and grants, state budget
6.5.	Program to support communities for sustainable and integrated	2009-2013	Agency „Moldsilva”; LPA	Total investments, surface of the communal grasslands with	1.0 mln U.S. dollars	World Bank, budgets of local public authorities

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
	management of forests and carbon sequestration through afforestation			improved productivity; surface of forests and other types of forest vegetation owned by town halls reconstructed and/or restored; surface of forests and other types of forest vegetation owned by town halls for which were elaborated forest arrangements, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level		
6.6.	Planting forestry energy crops	2014-2020	Agency „Moldsilva”; ME; LPA; private owners	Total investments, surface of the plantations with forestry energy crops, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level	30.0 mln U.S. dollars	Green Climate Fund, Projects and grants, State budget
6.7.	Reducing emissions from deforestation and forest degradation (REDD+)	2014-2020	Agency „Moldsilva”; LPA, ME	Total investments, surfaces of reconstructed low-productive forest; lands on which have been performed care works; forests and other types of forest vegetation owned by town halls for which have been designed forest management projects; forests in codru regime for which were applied forestry treatments, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level	55.5 mln U.S. dollars	Green Climate Fund, Projects and grants, State budget
6.8.	“Soil Conservation in Republic of Moldova” Project	2002-2022	Agency „Moldsilva”, LPA	Total investments, surface of degraded areas on which had been planted forest, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level	19 mln U.S. dollars	State budget, World Bank Carbon Fund

No.	Name of the national appropriate mitigation action	Accomplish ment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
6.9.	“Developing the communal forestry sector in Republic of Moldova” Project	2006-2036	Agency „Moldsilva”, LPA	Total investments, surface of degraded areas on which had been planted forest, sequestered CO ₂ emissions annually, established by MRV procedures approved at international level	32 mln U.S. dollars	State budget, World Bank Carbon Fund
7.	Specific objective 7: Reduction, by 2020, of direct greenhouse gases emissions coming from the waste sector, by 15% compared to the baseline scenario.					
7.1.	Development of primary collection and storage of waste in urban and rural areas	2014-2018	LPA	Total investments, number of containers and transport units purchased for waste collection, reduced emissions established by MRV procedures approved at national level	30.1 mln U.S. dollars	State budget, the National Fund for Regional Development, Projects and grants
7.2.	Development of the regional infrastructure of municipal waste disposal by building regional landfills for solid household waste and transfer stations	2015-2027	LPA, ME	Total investments, number of regional landfills for solid household wastes and transfer stations built, number of transport units purchased for the transfer of waste, reduced emissions established by MRV procedures approved at international level	162 mln U.S. dollars	Green Climate Fund, Projects and grants, State budget, National Fund for Regional Development
7.3.	Development of the regional infrastructure of municipal waste disposal by building mechanical-biological treatment centers	2015-2027	LPA, ME	Total investments, number of mechanical-biological treatment centers built in Chisinau and Balti municipalities, reduced emissions established by MRV procedures approved at international level	169 mln U.S. dollars	Green Climate Fund, Projects and grants, State budget, National Fund for Regional Development
7.4.	Treatment of sludge from the wastewater treatment plants of Chisinau, Balti and Cahul	2015-2020	LPA, ME	Total investments, number of sewage treatment plants equipped with sludge treatment technologies under anaerobic conditions, the amounts of methane recovered, reduced emissions established by MRV procedures approved at international level	Total investments – 10.6 mln U.S. dollars, including: 3.14 mln U.S. dollars – Chisinau; 2.48 mln U.S. dollars – Balti; 2.44 mln U.S. dollars – Cahul	Green Climate Fund, Projects and grants, State budget, National Fund for Regional Development

No.	Name of the national appropriate mitigation action	Accomplishment term	The institution in charge	Monitoring indicators	Estimative costs	Funding sources
7.5.	Biogas recovery from the deposit of solid household waste from Tintareni	2009-2020	TEVAS Grup SRL	Total investments, amount of biogas recovered, electric power generators installed, amount of produced energy, reduced emissions established by MRV procedures approved at international level	4.0 mln U.S. dollars	Private investments

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