THE REPUBLIC OF MOLDOVA
Ministry of Agriculture, Regional Development and Environment

Green Climate Fund National Designated Authority

Country Programme of the Republic of Moldova for the engagement with Green Climate Fund for the years 2019-2024

Chisinau – 2019

FOREWORD

The Country Program (CP) was developed considering the national development priorities and the country's climate-related objectives and targets derived from the strategic documents. The CP has passed a wide consultation process, involving relevant national stakeholders, representatives of CPAs, LPAs, private sector, civil society, with representation of both women and men.

The document provides the analysis of existing capacity and finance gaps, needs and opportunities with regard to climate change mitigation and adaptation at national and sectoral levels. Active engagement of stakeholders helped prioritizing thematic areas for further climate investments in agriculture, forestry, water, health, energy and transport sectors, along with those of cross-sectoral nature. The prioritized thematic areas are aligned with GCF strategic impact framework across mitigation and adaptation.

Through the engagement with GCF, the Ministry of Agriculture, Regional Development and Environment as the NDA will enhance its capacities and leadership as a provider of technical knowledge and expertise in the area of climate change, along with enhanced capacities for improved national coordination mechanism of cross-sectoral climate planning and implementation.

The support received from the GCF includes also the accreditation of national entities for Direct Access Modality (DAE). Having the DAEs will enable the country to directly bring projects forward to GCF and access GCF financing.

The Country Programme is conceived as a living document, with further periodical updating of priority investment areas depending on country's internal circumstances and the impacts of changing climate, along with updating of project ideas' pipeline.

The preparation and consultation of the Country Programme of the Republic of Moldova for the engagement with Green Climate Fund was supported by the GCF Project "Support to the Republic of Moldova in the establishment and strengthening the NDA, development of the strategic framework, and preparation of country programme".

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LIST OF ACRONYMS, ABBREVIATIONS AND UNITS OF MEASUREMENT

AE	Accredited Entity
AEZ	Agro-ecological Zone
AI	Aridity Index
AIPA	Agency of Interventions and Payments for Agriculture
AMP	Aid Management Platform
ANRE	National Agency for Energy Regulation
AOGCM	Atmosphere-ocean coupled general circulation model
ASM	Academy of Science of Moldova
ATU	Administrative-Territorial Unit
BUR1	First Biennial Updates Report
BUR2	Second Biennial Updated Report
CBA	Cost-benefit Analysis
CBT	Climate Budget Tagging
CCA	Climate Change Adaptation
CCCM	Climate Change Coordination Mechanism
CCAS	Climate Change Adaptation Strategy
CCO	Climate Change Office
CDM	Clean Development Mechanism
CH_4	Methane
CHP	Combined Heat and Power Plant
CIS	Commonwealth of Independent States
CO	Carbon monoxide
CO_2	Carbon dioxide
COP	Conference of the Parties
CP	Country Program
CPA	Central Public Authorities
CPD	Capacity Development Plan
CPESS	Civil Protection and Emergency Situations Service
CPI	Consumer Price Index
CVIM	Climate Vulnerability Index of Moldova
DANIDA	The Danish International Development Agency
EbA	Ecosystem-based Approach
EBRD	European Bank for Reconstruction and Development
EC	Council of Europe
EEA	Energy Efficiency Agency
EEC	European Economic Community
EEF	Energy Efficiency Fund
EF	Emission Factor
EIB	European Investment Bank
ENTSO-E	European Network of Transmission System Operators for Electricity
ESCO	Energy Service Company
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIP	Financial Institutions Partnership
GCF	Green Climate Fund
GCM	General Circulation Model
GD	Government Decision
GDP	Gross Domestic Product
GEF	Global Environmental Facilities
GHG	Greenhouse Gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GJ	GigaJoules (1gigajoul = 109 joules = 1 gigacalory / 4,186)

GNC	Compressed natural gas
HDI	Human Development Index
HPP	Hydro Power Plant
IAP	Integrated Adaptation Plan
IBRD	International Bank for Reconstruction and Development
ICA	Institutional Capacity Assessment
ICAS	Forest Research and Management Institute
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
INDC	Intended National Determined Contribution
IPCC	Intergovernmental Panel for Climate Change
IPE ASM	Institute of Power Engineering of the Academy of Sciences of Moldova
IRR	Internal Rate of Return
LECB	Low Emission Capacity Building Programme
LED	Light-emitting diode
LEDS	Low Emissions Development Strategy
LPA	Local Public Authorities
LPG	Liquefied petroleum gas
LTD	Limited
LULUCF	Land Use, Land-Use Change and Forest
LVI	Livelihood Vulnerability Index
MARDE	Ministry of Agriculture, Regional Development and Environment
MCC	Millennium Challenge Corporation
MCDA	Multi-criteria Decision Analysis
MD	Moldova
MDB	Multilateral Development Banks
MDG	Millennium Development Goals
MDL	Moldovan Lei
M&E	Monitoring and Evaluation
MECR	Ministry of Education, Culture and Research
MEI	Ministry of Economy and Infrastructure
MF	Ministry of Finance
MFAEI	Ministry of Foreign Affairs and European Integration
MHLSP	Ministry of Health, Labour and Social Protection
mil	Millions
MJ	Megajoule (10^6 joule)
MJ	Ministry of Justice
MRV	Monitoring, Reporting and Verification
Mt	Megatons (10^6 tone)
MW	Megawatt (10^6 watt)
MWh	Megawatt -hour
N_2O	Nitrous Oxide
NAMA	National Appropriate Mitigation Actions
NAP	National Adaptation Plan
NBM	National Bank of Moldova
NBS	National Bureau of Statistics of the Republic of Moldova
NC4	Fourth National Communication
NCCC	National Commission on Climate Change
NCKP	The National Commission for Implementation of the Provisions of the United Nations Framework Convention on Climate Change as well as the provisions and mechanisms of the Kyoto Protocol
NDA	National Designated Authority

NDC	National Determined Contribution
ND-GAIN	Notre Dame Global Adaptation Initiative
NDS	National Development Strategy
NOx	Nitrogen oxides
ODA	Official Development Assistance
ODA	Technical assistance and cooperation program between the Republic of Moldova and the Czech Republic on the implementation of projects in the field of environmental protection
OECD	Organization for Economic Cooperation and Development
ONG	Non-Governmental Organization
PCA	Partnership and Cooperation Agreement with European Union
PIN	Project Identification Note
PISA	Programme for International Student Assessment
PPF	Project Preparation Facility
PPP	Purchasing Power Parity
PV	Photovoltaics
RCP	Representative Concentration Pathway
RES	Renewable Energy Source
RM	The Republic of Moldova
RRP	Risk Rate Premium
SAP	Sectoral Adaptation Plan
SDR	Standardized Death Rate
SF_6	Sulphur hexafluoride
SHS	State Hydrometeorological Service
SIDA	Swedish International Development Cooperation Agency
BLS	Baseline Scenario
SO_2	Sulphur dioxide
t.c.c.	tonnes of conventional fuel (coal)
TACIS	Technical Aid to the Commonwealth of Independent States
TB	Tuberculosis
TC	Technical Committees
TNA	Technology Needs Assessment
TNC	Third National Communication
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
URSS	Union of Soviet Socialist Republics
US AID	United States Agency for International Development
VAT	Value Added Tax
VRIM	The Vulnerability-Resilience Indicators Model – VRIM
WB	World Bank
WEAP	Water Evaluation and Planning System
WHO	World Health Organisation
WM	With Measures Scenario
WAM	With Additional Measures Scenario
WMO	World Meteorological Organization
WTE	Waste to Energy

1 COUNTRY PROFILE

Geographic location	Central Europe, in the northwest of the Balkans
Land area	33 846 km^2
Population	3.551 million (2017)[1], 57.3% rural residents, and urban - 42.7%; women representing 51.8% and men - 48.2%.
Types of climate	Temperate continental, characterized by relatively mild winters and little snow, with long, warm summers and low humidity
GHG emissions profile	3.5 t CO_2 equivalent / capita[2]
Key emitter sectors	Energy – 68.1%, including 30% - energy industries and 15.8% - transports; agriculture – 15.2%[3]
Key climate risks	Droughts and floods, increasing annual average temperature, uneven rainfall distribution
Vulnerable sectors	Agriculture, Health, Water, Forestry, Transport, Energy
NDA	Ministry of Agriculture, Regional Development and Environment
National/regional AE	National AEs are not yet created
International Aes	EIB, FAO, GIZ, IFAD, IFC, EBRD, UNDP, UNEP, World Bank, ADA
Potential AEs	MOBIASBANCA, Victoriabank

1.1 Climate change profile

1.1.1 Climate change scenarios

The Republic of Moldova is located in the central part of Europe, in the northwest of the Balkans, on a territory of 33 846 km2.The average annual air temperature varies from 8 to 10 °C across the country, however, the observations showed 6.3 °C in the North (1980, MS Briceni) to 12.3 °C in the south (2007, MS Cahul). The maximum temperature is 42 °C and the minimum temperature reaches -35 °C. These extreme temperatures are, however, very rarely recorded, every 45-50 years. The average annual wind speed varies between 2.5-4.5 m/s. The probability of winds at speeds above 10 m/s is 6-10%. Warm periods take about 190 days.

During the last 127 years[4], the climate in the Republic of Moldova has become warmer and more arid, with an average annual temperature increase of more than 1.0 °C (Figure 1-1) and rainfall of only 54.7 mm (Figure 1-2).

The beginning of the 1980s is generally considered a "turning point" in the long-term air temperature curve, in which the human influence on the atmosphere is most clearly expressed[5], fact confirmed by both

[1] National Bureau of Statistics of the Republic of Moldova. <http://www.statistica.md/category.php?l=ro&idc=103>
[2] Fourth National Communication (2017). <www.clima.md>
[3] Ibid.
[4] Instrumental observation period: for temperature – since 1887, for precipitation - since 1891, the longest series of uninterrupted instrumental observations of climatic data was carried out at the meteorological station in Chisinau.
[5] IPCC, (2007), Climate change 2007: The physical science basis. Contribution of Working Group I to the Fourth Assessment Report. Summary for policymakers [Solomon S. Qin 0, Manning M, Chen Z, Marquis M. Averyl KB, Tignor M, Miller HL (eds)]. Cambridge University Press, Cambridge, p.1-18.

international[6] and national studies[7,8]. According to the recorded data during the last two decades, the increase in temperatures in the Republic of Moldova is very obvious, especially during the summer, when the average Temperature (T_{av}) increases by 0.9-1.0 °C/decade, and the maximum Temperature (T_{max}) by 0.9-1.3 °C/decade. For the southern regions of the country, the highest increase in temperature is recorded according to the T_{max}, while for the north and central regions – according to the minimum Temperature (T_{min}) increase.

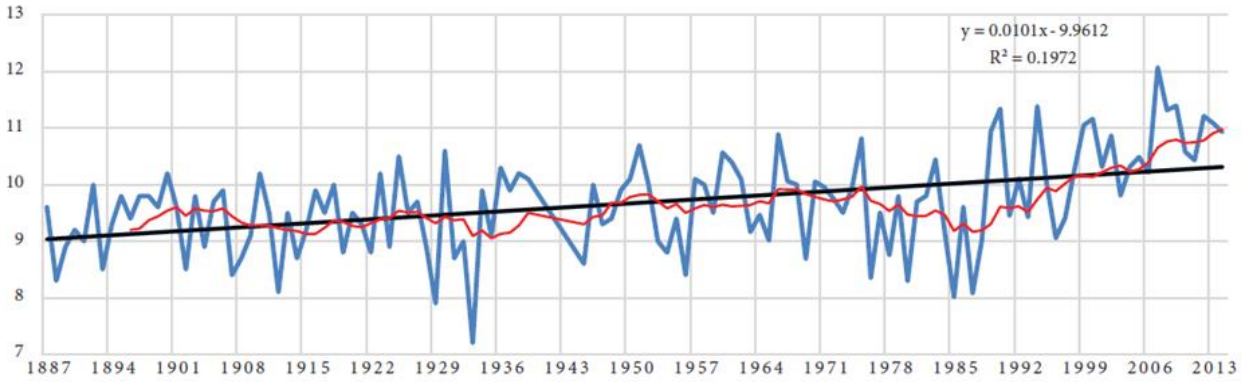

Figure 1-1: *The average annual air temperature variation trends (°C) for the years 1887-2014: the blue line - the current trend of the course, the black solid line - the linear secular course and the red line - the 10-year average trend, the Chisinau meteorological station (Source: NC4, 2018).*

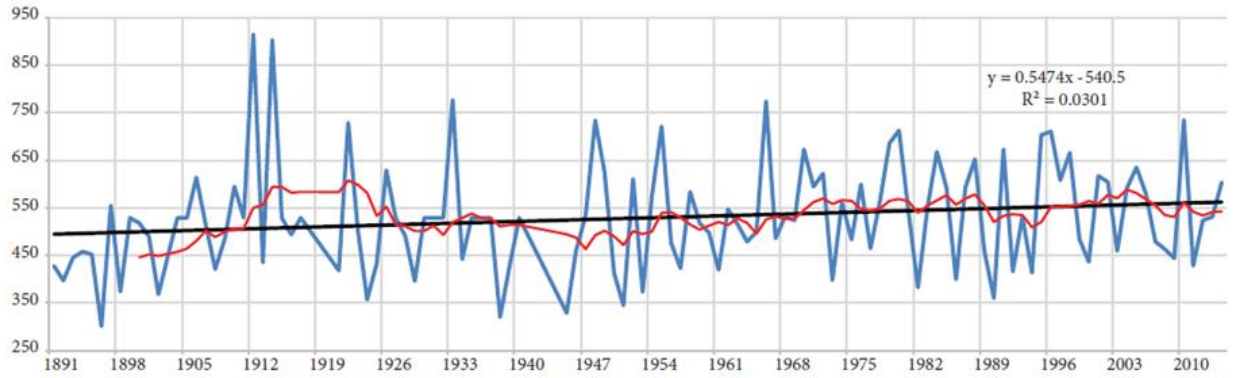

Figure 1-2: *The average annual precipitation trend (mm) for the years 1891-2014: the blue line - the current trend of the course, the solid black line - the linear secular course and the red line - the average ten-year course, the Chisinau meteorological station (Source: NC4, 2018).*

Unlike temperature, statistically, no significant changes are observed in the variation of precipitation, with the exception of the summer precipitation increase (by 30 mm per decade) in Briceni. An upward trend of annual average precipitation is observed in the north of the country (44.7 mm per decade) and in the center (13.2 mm per decade), while in the south there is a slight increase in autumn precipitation (9.2 mm per decade) and a tendency of precipitation decrease over the rest of the seasons. In the central region of the country the precipitation decrease tendency is observed only during the summer. However, the very uneven time and space distribution of atmospheric precipitation, associated to high air temperature,

[6] Gil-Alana LA (2008), Time trend estimation with breaks in temperature lime series. Climate Change 89: p. 325-337.
[7] Corobov R., Mitselea M. (2013), some characteristics of current climate in the Moldavian part of the Nistru river's basin. Transboundary Nistru river basin management in frames of a new river basin treaty. Proceedings of the International Conference, Chişinău, September 20-21, 2013, p. 167-173.
[8] Ţaranu L. (2014), An Assessment of Climate Change Impact on the Republic of Moldova's Agriculture Sector: A Research Study Complementing the Vulnerability and Adaptation Chapter of the Third National Communication of the Republic of Moldova under the United Nations Framework Convention on Climate Change. Chişinău: S. n., 2014 (Î.S. F.E.-P. "Tipografia Centrală"), 260 p.

creates frequent and intense droughts. The likelihood of the severe droughts' frequency (≤ 50% of the precipitation amount standard), with catastrophic consequences in some months of the vegetation period, constitutes 11-41%[9].

Future climate changes have been examined for three agro-ecological zones (AEZ): north, center and south of the Republic of Moldova for the: short term (2016-2035), medium term (2046-2065) and long term (2081-2100), by reference to the period 1986-2005. As we move to the last decades of the 21st century, a general trend of increasing annual and seasonal average temperatures is projected in all scenarios, with values from low GHG emissions scenario (RCP2.6) to the increased GHG emissions scenarios (RCP4.5 and RCP8.5). Precipitation projections show more varied amount of precipitation from one scenario to another, from one sub region to another and from one season to another.

The temperature changes are quite homogeneous for the three agro-ecological zones. The warming rate projections until 2100 are higher, according to the RCP8.5 scenario, being + 4.6 °C; medium, according to RCP4.5 scenario, + 2.4 °C; and lower, according to RCP2.6 scenario, + 1.3 °C; (Figure 1-3). By 2100, the following increases in summer temperatures are estimated based on the following scenarios: RCP8.5 – from + 5.9 °C in the north to + 6.1 °C in the south; RCP2.6 – from +1.3 to + 1.5 °C, over the country. For the winter season, the increase in temperatures could be higher for the RCP8.5 scenario, with up to +4.6 °C in the north and up to + 4.2 °C in the south. The RCP2.6 scenario reveals less intense warming with temperatures from +1.2 to + 1.4 °C, over the Republic of Moldova.

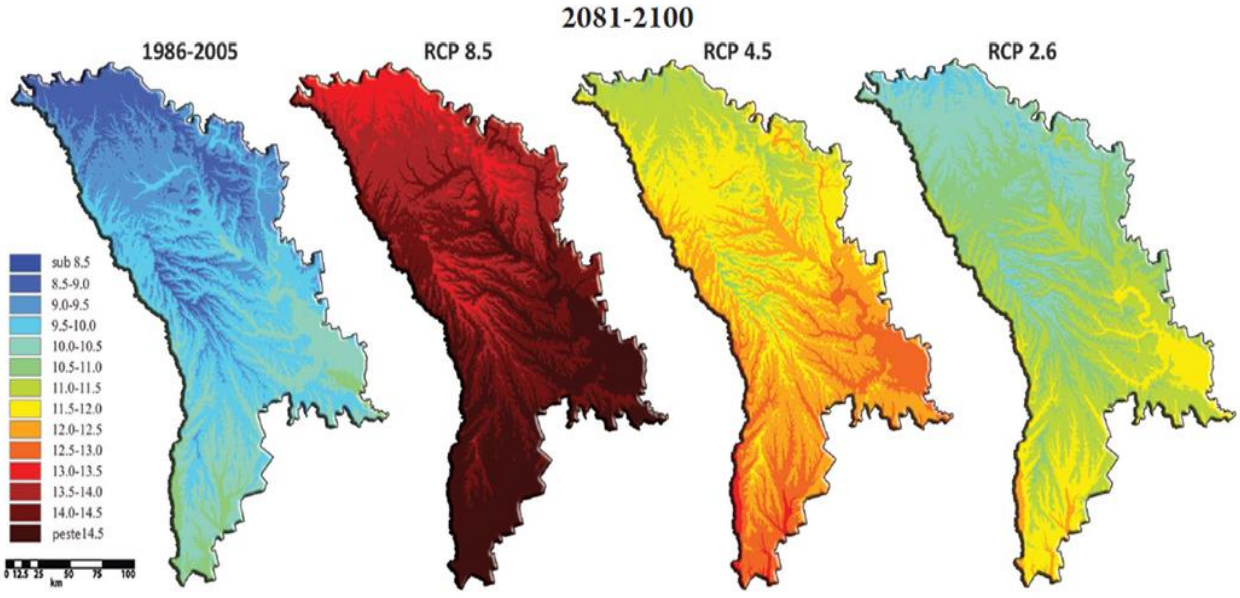

Figure 1-3: *Possible projections of annual average air temperatures (°C) throughout the Republic of Moldova, according to three climatic scenarios defined by the Concentration Representative Pathways (RCP8.5, RCP4.5 and RCP2.6), as compared to the period of 1986-2005, (Source: NC4, 2018).*

The multi-model projections of the RCP8.5 scenario show a general annual precipitation decrease in the Moldova's agro-ecological zones (AEZ), ranging from 9.9% in the northern AEZ to 13.4% in the southern AEZ. On the contrary, according to the RCP2.6 scenario, by 2100 moderate increase in precipitation is projected for the northern AEZ, from 3.1% to 5.1% in the southern AEZ (Figure 1-4). The results of the RCP4.5 scenario indicate a moderate increase in precipitation by 2100 only for the central and northern areas: from 1.6% to 3.6%, respectively.

[9] Boian I. (2012), Risk of droughts in the Republic of Moldova. The Environment, no. 3(63), 2012, p. 43-47.

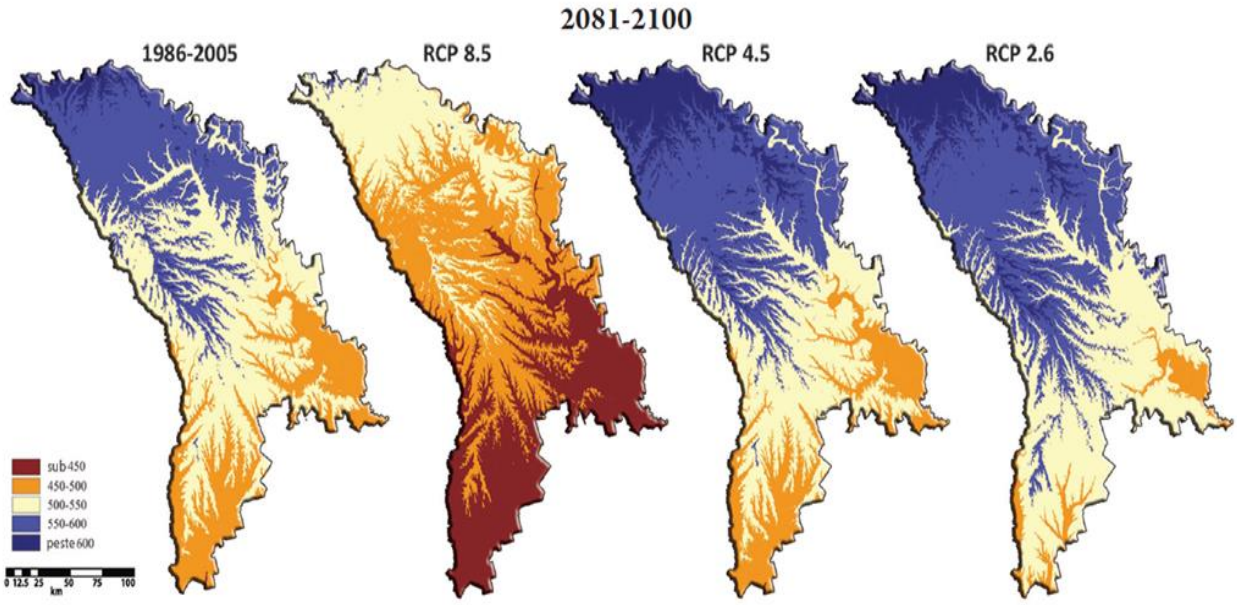

Figure 1-4: *Possible projections of total annual precipitation (mm), throughout the Republic of Moldova, according to three climatic scenarios defined by the Concentration Representative Pathways (RCP8.5, RCP4.5 and RCP2.6), as compared to the reference period of 1986-2005 (Source: NC4 2018).*

Thus, climate models predict continuous increases in average temperatures and variations in precipitation, from a slight increase to a significant decrease in total precipitation volume. However, even in the scenarios predicting an increase of the average precipitation volume, the availability of water will decrease due to higher temperatures and evapotranspiration rates. At the same time, variations in frequency, distribution and intensity of precipitation will increase due to more frequent extreme events.

In country's AEZs climatic evaluations, the trends of agro-climatic moisture indices were established: Aridity Index (AI), Potential Evaporation (in the Vegetation Period (E_V) and Annual (E_A) and Ivanov's Biological Effectiveness Index (IBEC). It has been established that most of RM's territory is currently characterized by dry or sub humid climates ($0.50 \geq AI \leq 0.65$)[10]. Some south-eastern areas have semi-arid climate ($AI \geq 0.48$) and the northern area and areas with altitudes of over 350-400 meters above sea level have a sub humid and humid climate ($AI \geq 0.65$).

Possible projections for aridity index future changes indicate that the Republic of Moldova is heading towards a drier, semi-arid climate. The humidity conditions are expected to worsen throughout the Republic of Moldova, for all three RCP scenarios. Decreasing summer and autumn precipitation (uncompensated by a slight increase in winter and spring rainfall) against the background of increased temperatures will cause a severe moisture shortage and a sequential increase in evaporation potential during the 21st century.

It could be that potential evaporation will increase by 7-11% during the growing season between 2016 and 2035 and up to 42-47% over the period of 2081-2100 and may reach from 1022 mm in northern AEZ to 1312 mm in southern AEZ in the High Emission Scenario (RCP8.5). Compared to the reference climate, the smallest increase of 10-11%, is projected in the RCP2.6 scenario, from 779 mm in the northern AEZ to 990 mm in the southern AEZ.

[10] *The aridity rate was assessed using the following rating scale: AI ≤ 0.05 – hyper arid climate; AI = (0.05-0.20) - arid climate; AI = (0.21-0.50) – semi arid climate; AI = (0.51-0.65) - dry-sub humid climate and AI ≥ 0.65 - sub humid and humid climate.*

1.1.2 Vulnerability profile

According to the National Communications[11,12,13], and as mentioned above, Moldova is more likely to be affected by three types of climate impacts: temperature increases; changes in precipitation regimes and increased climate aridity, which are associated with the frequency and intensity amplification of extreme weather events such as heat waves and frost; floods; storms with heavy rains and hail; severe droughts.

The analysis of the national climatic data revealed that the drought frequency in the Republic of Moldova over a period of 10 years is about 1-2 droughts in the northern part of the country; 2-3 droughts in the central part and 5-6 droughts in the south. Between 1990 and 2015, 12 years (1990, 1992, 1994, 1996, 1999, 2000, 2001, 2003, 2007, 2011, 2012, 2015) with droughts of varying intensity were recorded on the territory of the RM[14]. In 1990, 1992 and 2003, droughts continued throughout the growing season (April to September). The most severe and disastrous droughts during the recorded period were in 2007 and 2012, affecting more than 70 percent of the country's territory.

Floods also affect the Republic of Moldova repeatedly. Over the past 70 years, 10 major floods of the Nistru River and the Prut River have been reported, three of which occurred in the 21st century (in 2006, 2008 and 2010). The floods caused by smaller rivers in the country are quite common as well.

The socio-economic costs of climate change associated natural disasters such as droughts and floods are significant. During the period 1984-2006 they amounted to about 61 million US dollars. The 2007 and 2012 droughts caused estimated economic losses of about US $ 1.0 billion and US $ 0.4 billion respectively.

The climate change negative impacts present challenges for people's health and country's economic growth, directly and indirectly affecting the sectors based on natural resources (e.g. agriculture, water and forestry) but also basic sectors, such as energy; transport or industry, with a negative impact on the reduction of poverty in the country (the poverty incidence – see Figure 1-6).

Out of 181 countries, Moldova ranks 83rd in the ranking of the most climate-vulnerable countries in Europe, according to the ND-GAIN Index[15] methodology, which, based on a series of economic and social indicators, including adaptive capacity, sums up a country's vulnerability to climate change and other global challenges, combined with its readiness to increase resilience.

The aim of the Climate Change Adaptation Strategy of the Republic of Moldova (CCAS, 2014) is to develop *"adaptation mechanisms to the current and potential impacts of climate change, integrated and implemented in all sectors of the national economy to reduce vulnerability and increase resilience to the effects of these changes"*. CCAS identifies six high-risk sectors: agriculture; water resources; forestry; human health; energy; transport. The process of adaptation to climate change takes place at different levels (national, regional, local), considering the needs of each sector. In order to provide viable sectoral solutions, adaptation is integrated into the development planning of the given sector. In this respect, adaptation measures are either integrated into current sectoral policies, or new strategies and new action plans for climate change mitigation and adaptation are being developed (e.g. the *Health Sector Climate Change Adaptation Strategy and Forestry Sector Climate Change Adaptation Strategy and Action Plan* – under approval process).

Specific adaptation measures have been identified within each sector, taking into account: (i) the climate risks and sectoral vulnerabilities; (ii) the overall objectives and intermediate objectives at sector level; (iii) available and necessary resources; (iv) the implementation institutional framework and the distribution of

[11] Second National Communication of the RM, Chișinău, 2009, <http://www.clima.md/doc.php?l=ro&idc=81&id=458>
[12] Third National Communication of the RM, Chișinău, 2013, <http://www.clima.md/doc.php?l=ro&idc=81&id=3506>
[13] Fourth National Communication of the RM, Chișinău, 2018, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>
[14] Hydrometeorological State Service, <http://old.meteo.md/hazard/secetele.htm>
[15] Country Index <https://gain.nd.edu/our-work/country-index/>

responsibilities; (v) best practices for the integration of climate change adaptation; (vi) indicators for monitoring and evaluation of vulnerability reduction and adaptation progress, other indicators.

The Strategy for ensuring equality between women and men in the Republic of Moldova for the years 2017-2021 and its implementation Action Plan include the intervention area (2.6) of Climate Change, stipulating as Specific Objective 1.10: Adjustment of Climate Change Sectoral Adaptation Strategies with reference to the gender dimension mainstreaming [16].

Agriculture sector: *Socio-economic factors contributing to the agricultural sector climate vulnerability.* Agriculture has always played a key role in the Moldova's economy. Due to favourable climate and good soil quality, the country's agriculture has been focused on high-value crops such as fruit, vegetables, and vines. However, in the last decades, agricultural practices have fundamentally changed: high value crops areas have halved and irrigated areas have declined about ten times (in 1992 the irrigation area was about 312,000 hectares with 78 centralized irrigation systems and it declined to 32,000 hectares by 2007), and crop selection has become less diversified, cereals and industrial crops occupying nearly 90 percent of the sown areas. The animal production has been declining as well since the 1990s. At present, as a result of the privatization reforms undertaken, about 85% of the rural households are owners of agricultural land, but most of the peasant farms (about 400 thousand) are small, with an average land area of only 1.6 hectares and less, that focus in particular, on subsistence farming.

During the last decades, the amount of mineral and organic fertilizer applied is substantially lower due to the over-using the sowing surface with technical crops and tillage. Thus, the amount of organic fertilizer applied to 1 ha of arable land fell 70 times in 2016 compared to 1990 and the amount of mineral fertilizers decreased 2.7 times, constituting 0.08 t/ha and 44.6 kg/ha, respectively[17]. The total area of technical crops (sunflower, soy, oilseed rape, sugar beet, tobacco) increased to 442.0 thousand ha, which represents 29.1% in the structure of the sowing areas and exceeds 3 times the allowable crop rotation standard. As a result, the danger of plant pest and disease infestation increases, which leads to higher use of the chemicals for pest and weed control. The combination of over-using of the technical crops, with the insufficient amount of organic fertilizers, along with erosion losses under the influence of climate factors, considerably diminished the soil fertility.

The current agricultural production level is far below the potential level. FAO data consistently found a lower yield for cereals, vegetables and fruits in Moldova compared to the European and Eastern Europe average. Based on comparisons with international data, lost production currently accounts for US$ 250 million, including US $ 235 million of crops and US $ 15 million of livestock[18]. Given that 85% of Moldovan households own agricultural land, the effects of climate change are a major threat to the country's food security, and improving performance as compared to neighbouring countries would require hundreds of millions of US dollars of increased annual production[19].

Although, exports to the EU, including agro-food products, during the implementation of the Association Agreement with the European Union have strongly risen, compensating for export losses on the CIS market[20] caused by trade restrictions established by the Russian Federation and those that arose as a result of the armed conflict in Ukraine, access to high-value markets remains a major challenge for Moldovan

[16] <http://lex.justice.md/viewdoc.php?action=view&view=doc&id=370442&lang=1>
[17] Statistical Directories of the Republic of Moldova, National Bureau of Statistics, <http://www.statistica.md/pageview.php?l=ro&idc=263&id=2193>
[18] IIASA (2015) Report on the crop yield gap, prepared by International Institute for Applied Systems Analysis, Austria for project "Exploring the potential for agricultural and biomass trade in the Commonwealth of Independent States".
[19] World Bank. 2016. Moldova - Climate adaptation investment planning technical assistance (English). Washington, D.C.: World Bank Group, <http://documents.worldbank.org/curated/en/469311500273762091/Moldova-Climate-adaptation-investment-planning-technical-assistance>
[20] According to the NBS, exports of goods destined for the European Union countries held a share of 65.8% in 2017 and 68.8% in 2018 and in the CIS countries exports of Moldova were present with a weight of 19.1% in 2017 and 15.4% in 2018, the share to other countries was 15.1% in 2017 and 15.8% in 2018. <http://www.statistica.md/newsview.php?l=ro&idc=168&id=6256>

producers. Inappropriate agricultural practices, road infrastructure and inappropriate post-harvesting equipment (limited access or total lack of facilities for processing, storage, handling, packaging or distribution that affect the availability, quality and added value of food) as well as weak organization and cooperation among value chain actors are major impediments to accessing international markets, adhering to international quality and food safety standards, and improving processes across the entire agro-food chain.

The circumstances described above are part of and contribute to the climate vulnerability of the agricultural sector, in addition to the direct impact of climate factors on agricultural production such as extreme climatic events, but also due to gradual, not less dangerous cumulative effects.

Current impacts of climate change on the agricultural sector. Droughts represent the climate phenomenon with a negative effect and, in some cases, with a catastrophic effect faced periodically by Moldova's agricultural sector. Spring drought periods are the most dangerous, with negative impact on the level of production of autumn wheat, grain maize, sunflower, sugar beet, vine and tree crops, by up to 32% of the crops average yield. The impact of the severe drought from 2007 generated US $ 1.2 billion losses[21].

Increasing *annual average temperature* (including minimum and maximum daily temperatures[22]) has a significant impact with a cumulative effect on agricultural production causing a reduction of cultivated varieties and varieties resistance, affecting the pollination process, the phenological development, the reproductive process and stimulating the aggression of harmful species. The negative effect of the temperatures interferes with water shortages or water excess during droughts and floods, which typically occur in the Republic of Moldova. This impact requires the implementation of urgent measures that will increase the resilience of both plant and animal production sectors. Unfortunately, Research and Development capacities of the country's specialized institutions in crop and animal breeding have declined drastically over the last decades, thus, being one of the major elements of the sector's adaptation deficit.

Floods. In addition to its negative social impact on the population, especially the rural one, floods directly affect agricultural production. The total area of Moldova's land, subject to periodic floods, represents about 20% of the entire territory of the country, or more than 600 thousand ha[23]. In Moldova, floods occur along the Nistru and Prut rivers and have a dramatic impact on agricultural production in river meadows, being classified as risk areas and having a suppressive impact on the whole country's agriculture. The largest floods were recorded in 1969, 1980, 1991, 1994, 2008, 2010[24], due to heavy rainfalls and frequency of flash floods, but also to the poor management of existing hydro-technical constructions (dams and banks), the majority being damaged and inefficient in reducing the impact of floods. Due to the fact that about a quarter of the population of the Republic of Moldova (1.03 million people) lives in the 6 km buffer zone of the Nistru and Prut rivers, these people are extremely vulnerable to the impact of the floods. The floods in 2008 caused US $ 120 million costs for the country, and the total damage and losses due to floods in 2010 are estimated at about US $ 42 million. These are significant financial effects in a country whose GDP reached only US $ 8 billion in 2017.

The climate impacts, the main vulnerabilities and the options for climate change adaptation of the Moldovan agricultural sector are presented in Table 1-1.

Table 1-1: *The climate impacts, the main vulnerabilities and the options for climate change adaptation of the Republic of Moldova's agricultural sector.*

[21] Socio-economic impact and adaptation options policy, National Human Development Report (2009-2010), UNDP,<http://www.md.undp.org/content/moldova/ro/home/library/human_development/nhdr-2009.html>
[22] Third National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Environment, Chișinău, 2013, <http://www.clima.md/doc.php?l=ro&idc=81&id=3506>
[23] V. Cazac, I. Boian. Flood risk in the Republic of Moldova. The environment, 2008, no. 4 (40), p.43-48.
[24] The Concept of reforming the national system for flood consequences management, prevention and reduction <https://gov.md/sites/default/files/document/attachments/intr12_147.pdf>

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing temperatures	- Increasing water shortage and water resources demand; - Increasing demand for irrigation water; - Decrease of the areas occupied by agricultural crops, caused by the degradation of the optimal agricultural conditions; - Reduction of wheat and maize crops; - Reduction of vine and fruit crops; - Changes in the biological cycle and/or the pest spreading area, the appearance of new/emerging pests and diseases of crops.	- Access to irrigation and efficient use of irrigation water; - Optimal use of local water sources; - Improvement of drainage infrastructure in irrigation areas; - Sustainable soil management; - Implementation of modern agronomic technologies and practices (implementation of conservative agriculture methods, modification of planting: crop rotation, intercalated crops, etc.); - Varieties and breeds improvement; - Optimizing fertilizer application; - Introducing alternative crops and changing the distribution of existing crops; - Appropriate use of protection measures (such as switching to the cultivation of vegetables in protected areas, the use of anti-hail nets and providing in good time the weather information to farmers); - Provision of extension services for farmers; - Providing information about agricultural markets; - Financial access for farmers, etc.
Water regime changes	- Extraction of underground water for irrigation, depletion of water reserves; - Biodiversity losses; - Reduction of crop productivity and harvest quality; - Changes in crop distribution.	
Extreme phenomena: - heat waves; - frost; - droughts; - floods; - winds, hailstorms, more frequent and intense strong rains	- Degradation of conditions for livestock production; - Reducing water quality due to intense use of pesticides; - Increasing risk of soil salinization; - Reduction of soil fertility as a result of increased erosion processes; - Desertification; - Agricultural land abandonment; - Increased costs on emergency actions and soil remediation; - Decreasing food security in areas with poor economic development; - Reduction of rural population income; - Rising poverty as a result of food prices increase; - Increasing the risk of social conflicts, accentuating gender gaps in all areas of life.	

Expected impact of climate change on the agricultural sector. In the absence of the adaptation measures[25], future climate provisions show a substantial undermining of agricultural production. According to the three typical climate scenarios RCP8.5, RCP4.5 and RCP2.6, defined by the Concentration Representative Pathways, CMIP5 Ensemble of 21 GSMs, the negative global warming effects will not be balanced by increased precipitation volume in the 21st Century. Under these conditions, in the absence of adaptation measures, depending on the three climatic scenarios, the following can be predicted by 2100: a significant decrease of maize productivity - between 34-67%; between 22% and 46% of winter wheat; between 16 and 57% of sunflower; between 9-37% of sugar beet; compared to the average productivity of the respective crops during 1981-2010.

A drier climate, predicted for the next decades, will directly lead to a decline in crop productivity, with a stronger north-south gradient magnitude of the impact. According to the forecasts for the agricultural sector, the most vulnerable regions of the Republic of Moldova will be the Southern regions (South Moldovan Plain, Prut and lower Nistru Terraces) and partially the Center (Central Moldovan Plateau, Nistru, Prut, Raut, Bac, Botna rivers Terraces, etc.), which are mostly at high probability risks. Based on the RCP8.5 scenario, animal production will also have a dramatic reduction by 2100, due to the decline in crop production: milk production will fall between 30-60%; beef production between 62-82%; pork meat between 44-55%, poultry meat between 34-68% and sheep meat between 29-59%.

Water Resources sector: Moldova's main source of drinking water is the groundwater, which supplies 100% of the rural population and 30% of the urban population, or 65% of the entire population of the country[26]. At the same time, the supply of safe drinking water is a problem in many rural areas because of the

[25] Fourth National Communication of the RM, Chișinău, 2018<http://www.clima.md/doc.php?l=ro&idc=81&id=4256>
[26] National Bureau of Statistics <http://www.statistica.md/public/files/publicatii_electronice/Note_analitice_teritorial/Nota_Canalizare.pdf>

decreasing level of groundwater and its quality. About 44% of the country's population has no access to safe drinking water[27].

Moldova's water resources are sensitive to climate change in terms of both quantity and quality. More and more frequently (in the last decades: 1991, 1994, 1998, 1999, 2005, 2006, 2008, 2010), Moldova has excess water in the form of floods on extended areas (for example, along the Nistru and Prut rivers and on the small rivers) [28,29] , along with flash floods caused by summer torrential rains, which are observed systematically every year, as well as by seasonal droughts of different intensity[30]. In October 2016, for the first time during the observation period of 60 years, the amount of rainwater (100-185 mm) exceeded 4-6 times the average monthly value.

The local surface water resources in the South and the Central parts of the country are exposed to exhaustion in the arid years (for example, in the summer of 2007 several reservoirs on the Isnovăţ river have dried up). Water scarcity areas, with expansion tendencies towards the North, have already reached the most densely populated localities, characterized by the most intensive use of water and exerting the greatest pressure on water use.

The climate impact, the main vulnerabilities and the options for climate change adaptation in the Republic of Moldova's water resources sector are presented in Table 1-2.

Table 1-2: *The climate impact, the main vulnerabilities and the options for climate change adaptation of the Republic of Moldova's water resources sector.*

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing temperatures	- Increased water deficit; - Depth of groundwater; - Changes in water demand - Impact of water quality indices (e.g. mineralization, hardness, dissolved oxygen) due to higher water temperatures and flow variations)[31]; - Requirements for additional drinking water treatment.	- Performing studies to assess available water resources, determine their vulnerability to climate change, water requirements and needs for the main categories of consumption, including gender equality; - Ensuring the availability of water point source by developing infrastructure for the transformation of hydrological resources into socio-economic resources; - Developing water supply infrastructure in rural areas to improve the water supply for the agriculture sector and the population; - Development and implementation of solutions for collecting and using rainwater; - Increase the efficiency of municipal and industrial water supply systems; - Increasing the water recycling level for industrial and domestic needs;
Water regime changes	- Annual changes in rivers water flow; - Low water availability in surface and underground water sources; - Low availability of water for the population; - Changes in water demand.	
Extreme phenomena: - heat waves; - frost; - droughts; - floods; -winds, hailstorms, more frequent and	- Increased water shortage resulting from severe droughts; - Conflicts between water users; - Adverse health effects in low-income areas; - Increasing water pollution with pesticides and fertilizers due to higher surface runoffs; - Requirements for additional drinking water treatment; - Occurrence of floods due to torrential rains; - Higher erosion; - Land abandonment;	

[27] <http://www.serviciilocale.md/public/files/Strategia-de-Aprovizionare-c-u-Ap-i-Canalizare-a-Republicii-Moldova-versiune-revizuit-2012-versiunea-1.pdf>
[28] State Hydrometeorological Service: I. Boian, 2010: Flood Risk in the Republic of Moldova, <http://old.meteo.md/pavodok2010/pavodok2010.htm>
[29] The Concept of Reforming the National System for Flood Management, Prevention and Reduction <https://gov.md/sites/default/files/document/attachments/intr12_147.pdf>
[30] Sîrodoev I.G., Knight C.G., 2007: Vulnerability to Water Scarcity in Moldova: Identification of the Regions, Moldova's Science Academy Report, Life Science, 3(303), p. 159-166.
[31] In winter, and especially in the transition months, the water quality will be most affected by the temperature increase. It is predicted that by 2020, the increase in water temperature in the Nistru River could exceed 65 percent in March (according to the IPCC SRES B2, CNT, 2013 scenario). Summer months (especially August) are the most vulnerable to dissolved oxygen (DO). Reduced level of DO, along with water temperatures increase, affects the composition of the ecosystem, allowing the invasion of new thermophilic species and dangerous bacteria.

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
intense strong rains	- Increased dilution of sediments, increased sediment volume due to heavy rains, floods; - High volume of nutrients, pathogens, and toxins transported with water; - Increased algal proliferation, the content of bacteria and fungi affecting human health, agriculture, ecosystems and water supply; - Increased costs on emergency situations and remedial action; - Increased costs in people's assistance, especially vulnerable groups (children, pregnant women, older women and men, etc.)	- Protection of wetlands areas, allowing restoration of underground water and reducing downstream discharges; - Ensure an adequate flood risk management; - Undertaking measures to combat drought / water shortage, etc.

Expected impact of climate change on the water resources sector. According to climate projections, water availability will fall below total demand during several decades and the southern region of the country may face a 1/3 - 2/3 reduction in water resources by the end of the 21st century[32]. Particularly vulnerable to the anticipated climate change are the more densely populated and economically more important regions, which are already facing water shortages (the South, the Centre and Chisinau municipality). Addressing water deficits in these regions will be crucial for the sustainable economic recovery.

The major risks of the water resource sector are: (i) changes in water demand (increase in population growth, economic development, and irrigation needs); (ii) changes in river flows, both in terms of increase and reduction; (iii) high risk of drought and water scarcity; (iv) increased irrigation needs; (v) reduction of water availability both from surface and groundwater sources; (vi) increasing frequency and intensity of floods; (vii) increased pollution with pesticides and fertilizers caused by higher soil washing.

Even in the absence of climate change, the projected increase in water demand means a considerable water deficit by 2040[33]. The value of unsatisfied demand is dominated by municipal and industrial consumption, estimated at about US $ 95 million[34].

Human Health sector: *Current impacts of climate change on the health sector.* Floods, droughts, storms, heat waves, cold waves as extreme weather events create direct health risks and collateral effects such as infectious diseases epidemics, food shortages, and mental stress among citizens of the Republic of Moldova[35], which increase the cost of health care for the population, especially vulnerable groups (children, pregnant women, older women and men, etc.).

The impact of *droughts* on health is associated with the probability of food insecurity with catastrophic effects on the national economy, for e.g. in the years 2007 and 2012, when the quality of life has diminished, with changes in lifestyle, which determined the migration of rural population to cities and out of the country and has increased the pressure on water resources associated with inadequate sewerage and the supply of low-quality drinking water.

Heat waves and periods of cold. Climate change is already felt by citizens of the Republic of Moldova through an increasing trend of high-temperature heat waves, usually associated with medium to severe droughts across the country. Climate change has increased the frequency and severity of heat waves, without providing any relief, which poses a special threat to children, older people and other vulnerable groups of people, especially in Chisinau city, the capital of Moldova. Daily exposure to excessive heat

[32] Third National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Environment, Chișinău, 2013, <http://www.clima.md/doc.php?l=ro&idc=81&id=3506>
[33] To estimate the impact of climate change and socio-economic change on global demand and water availability by 2040, the WEAP (Water Assessment and Planning System) model was used.
[34] World Bank. 2016. Moldova - Climate adaptation investment planning technical assistance (English). Washington, D.C.: World Bank Group, <http://documents.worldbank.org/curated/en/469311500273762091/Moldova-Climate-adaptation-investment-planning-technical-assistance>
[35] N.Opopol, R.Corobov and others, 2003: Climate change and the potential health impact of these extreme phenomena. Medical Journal, 2003.

generates direct effects, such as sunstrokes and reduced work productivity that interferes with daily domestic activities. Documented health data for Chisinau regarding the 2007 heat waves, which caused nearly 190-200 deaths in excess, showed an increase of nearly 6.5% in mortality[36]. The duration of the period with air temperatures of +30 °C, up to +40°C, in June-July 2012, was 38-46 days, which drastically affected the entire economy and human health[37].

The frosty periods. Tuberculosis represents for the Republic of Moldova both a serious concern for public health and a factual indicator of inadequate living conditions, including poor housing, overcrowding, late diagnosis, accessibility of treatment. Climate change may exacerbate the incidence of tuberculosis during cold periods or may hinder progressive eradication of the disease. The incidence of tuberculosis in Moldova has steadily increased to 180 cases / 100,000 inhabitants but stabilized to 67 in 2015.

The vulnerability of the Moldovan health sector associated with poverty, described in chapter 1.2.

The impact of climate change on rural communities in Moldova also interacts with several other major concerns, such as population aging, the availability of primary health services and other infrastructure, as well as corruption that undermines the effective reduction of social inequalities and outlines the gender specificity of the phenomenon, due to the vulnerability difference between women and men to some diseases. The main differences are the consequence of higher mortality for working-age men: caused by tumours – 2.2 times, circulatory system diseases – 4.2 times, respiratory diseases – 4.6 times, digestive diseases – 2.2 times, trauma and poisoning – 6 times. The main causes that generated these differences derive from the different behavioural patterns of women and men[38], which may become more acute due to climate change.

The high price of natural gas for heating homes is a problem for a substantial part of the population, as the cold and humid environment can facilitate the rapid increase of infectious diseases, including tuberculosis and respiratory diseases[39]. In addition, the high cost of heating services leaves very little for the family to spend on other services, including those in primary care and prevention. The bills for a family, expressed as a percentage of household income, spent to pay for gas, electricity, coal, and water, accounts for 20% of Moldova's family expenses[40]. The percentage of health care costs incurred by families is high, which is the biggest spending of Moldovan families and equals up to 50% of the services[41]. In this case, it is clear that climate change adaptation measures will overlap with sustainable country investment principles, not only in environmental protection and infrastructure but also in price and fiscal policies.

The climate impacts, the main vulnerabilities and the climate change adaptation options in the human health sector in the Republic of Moldova are presented in Table 1-3.

Table 1-3: *The climate impacts, the main vulnerabilities and the climate change adaptation options of the Republic of Moldova's health sector.*

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing Temperatures; Heat waves; Droughts	- Increased disease and death rate due to heat waves; - Aggravation of diseases of the circulatory, cardiovascular, respiratory and kidney systems; - Increased frequency of hyperthermia and sunstroke, especially among workers, athletes and older people;	- Ensuring functional cooperation between relevant sectors and institutions for a coordinated approach and efficient use of available resources;

[36]Nicolae Opopol and others: More deaths in Moldova in the unusually hot summer of 2007, <https://ibn.idsi.md/sites/default/files/imag_file/33.Decese%20suplimentare%20in%20Rm.pdf >
[37] FAO, 2012: Comprehensive assessment of the 2012 drought impact in Moldova, <http://www2.un.md/drought/2012/Moldova_drought_report_RO.pdf >
[38] <http://lex.justice.md/viewdoc.php?action=view&view=doc&id=370442&lang=1>
[39] Health Sector Climate Change Adaptation Strategy for the years 2018 - 2022 (under approval).
[40] NBS: Aspects regarding the population's standard of living, <http://www.statistica.md/pageview.php?l=ro&idc=263&id=2206>
[41] NBS: Health care in the Republic of Moldova, <http://www.statistica.md/pageview.php?l=ro&idc=350&id=2518>

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
	- Loss of labour capacity and productivity among vulnerable population; - Changes in phenological phases and high risk of allergic disease; - Survival, persistence, virulence and transmission of pathogens; - Changes in the geographical and seasonal distribution of diseases such as cholera, harmful algae; - Increased incidence of food- and waterborne diseases; - Accelerated breeding of parasites and increased number of biting off cases; - Extension of transmission periods; - The re-emergence of past dangerous infectious diseases; - Changes in the distribution and abundance of pathological vectors; - Decrease in the effectiveness of vectors control interventions; - Lower food production and lower access to food due to fewer deliveries and rising prices; - Affected food security and increasing the malnutrition and undernourishment occurrence; - Chronic effects among children, such as development stagnation and weight loss; - Increase the fire risk; - Increasing risk of injuries and premature death rate due to air pollution during fires, as well increasing number of deaths caused by fires; - Aggravated exposure to air pollutants in urban areas; - Increased number of depressions, other mental illness and behaviour cases due to stress.	- Informing and raising public awareness of climate change and extreme weather impact on health (taking into account social, gender and age aspects); - Development of effective prevention, early warning, management and control mechanisms of heat waves impact caused by climate change; - Reducing the effects of air pollution and cold periods on health; creating an integrated and effective system of prevention, management of early warnings and protection against increased levels of ultraviolet radiation; - Improving the prevention and control of climate change-related infectious diseases (taking into account social, gender and age aspects); - Creating a system for controlling and preventing pollen allergies caused in the context of climate change; - Creating a system of prevention, early warning, management and mitigation of floods and droughts caused by climate change; - Increasing the resilience of health institutions to climate change and developing “green” health services, etc.
Frost	- Increasing number of deaths caused by extreme low temperatures; - Increased frequency of diseases due to air pollution - Increased frequency risk of TB and respiratory disease, in particularly of vulnerable and disadvantaged groups.	
Floods; Heavy rain and hail storms	- Increased number of deaths and trauma caused by floods; - Increased frequency of waterborne diseases; - Accelerated development of microbial agents; - Endangered quality and availability of drinking water as a result of floods; - Increasing spread of infectious diseases; - The combined effect of malnutrition and infectious diseases.	

Expected impact of climate change on the health sector. Taking into account the scenarios RCP8.5, RCP4.5 and RCP2.6[42] of the climate projection, the anticipated health risks associated with climate change at regional and European level are also relevant for the Republic of Moldova: (i) health-related impact of the increase in the heat waves frequency; (ii) health-related impact of the cold weather, in particular, on vulnerable groups of the population; (iii) health-related impact of the floods; (iv) increased malnutrition; (v) changes of the clinical picture of food-induced diseases; (vi) changes in the distribution of infectious diseases to which contribute the establishment of tropical and subtropical species in Europe; (vii) increased frequency of respiratory diseases due to higher ozone concentrations in the urban environment and changes in pollen distribution, related to climate change[43,44].

[42]Fourth National Communication of the RM, the Ministry of Agriculture, Regional Development and Environment, Chișinău, 2018<http://www.clima.md/doc.php?l=ro&idc=81&id=4256>
[43] Health Protection in Europe against Climate Change, WHO Europe, 2008.
[44] Health Sector Climate Change Adaptation Strategy for the years 2018 - 2022 (under approval).

Forestry sector: In the Republic of Moldova, the areas covered with forests are 386.4 thousand ha in 2015 or approximately 11.4 per cent of the country's territory, which are insufficient to meet country's economic and socio-economic needs. Most of the land covered by forests (87.2%) is state-owned, the rest being owned by municipalities (12.2%) and only 0.6% - by private owners. How these owners manage forestry on Moldova's territory is of big concern. Apart from the forest fund, the Republic of Moldova has 50.1 thousand ha of forest vegetation consisting of 30.7 thousand ha of forest protection belts (for agricultural fields, roads, rivers, aquatic basins, etc.) and 19.42 thousand ha - other types of forest vegetation. The dispersion and fragmentation of forest resources, their uneven distribution across the country is a negative factor for exercising eco-protective influences that would be beneficial for the environment, creating comfortable living conditions for the population and providing wood and non-wood products[45].

In the last decade, the impact of climate change on Moldova's forests has become evident. The drought from 2007 has considerably damaged national forests on an area of about 19 thousand ha or 5.5% of the total area of the forest fund, especially in the southern and the central parts of the country. About 20 indigenous and non-native forest species have been affected, including common oak *(Quercus robur L.)*, sessile oak *(Quercus petraea (Matt) Liebl.)*, downy oak *(Quercus pubescens Willd)*, ash *(Fraxinus exelsior L.)*, maple *(Acer platanoides L.)*, sycamore maple *(Acer pseudoplatanus L.)*, acacia *(Robinia pseudoacacia L.)*, birch *(Betula verrucosa Ehrh.)*, pine *(Pinus sylvestris L.)*, Crimea black pine *(Pinus pallasiana (Lamb) Holmboe)*. The most affected were the acacia trees, representing 71.3% (13 thousand ha) of the total injured forests area. The drought in 2007 has long-lasting consequences, visible over many years. In 2009, according to air visual forestry-pathological monitoring, the total area of degraded and dried trees of different intensity was 17.9 thousand ha, and in 2010 – 13.1 thousand ha[46].

Moldova's forests are severely degraded, being a major factor contributing to climate change sectoral vulnerability. The main causes of forest degradation are: (i) increasing illicit deforestation due to high prices for wood and fuel; (ii) lack of effective control by local authorities; (iii) low level of knowledge and ecological culture; and (iv) excessive grazing and lack of adequate forest management[47].

Forest belts created for agricultural land protection are affected by illegal logging, abusive/ uncontrolled grazing, waste pollution or other destructive factors. There is practically no forestry control for forest protection belts (except for about 1000 ha)[48].

The climate impacts, main vulnerabilities and climate change adaptation options of the forestry sector of the Republic of Moldova are reflected in Table 1-4.

Table 1-4: *The climate impacts, main vulnerabilities and climate change adaptation options of the Republic of Moldova's forestry sector.*

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing temperatures	- Changes of the forest composition due to different sensitivity of species to temperatures [49]; - Changes in species competitiveness (including increased competition of species and organisms along with increased tree mortality);	- Protection and management of existing forest land; - Creating new forest areas adapted to the consequences of climate change and able to

[45] Fourth National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Agriculture, Regional Development of Environment, Chișinău, 2018, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>

[46] Forestry Sector Climate Change Adaptation Strategy's Draft.

[47] Fourth National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Agriculture, Regional Development of Environment, Chișinău, 2018, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>

[48] EU / UNDP project "Climate East Moldova: mitigating the effects and adaptation of ecosystems to climate change in Orhei National Park" in order to demonstrate to local communities the benefits of climate change adaptation measures. 2013, project document.

[49] Reduction of mesophilous forest areas (beech, sessile oak and oak trees) in favor of the thermophilous forests of sumac trees and xerophilous pastures (TNC, 2013).

	- Changes in the regeneration species features; - Increased frequency of *Limantria* and *Tortrix viridana* attacks on oaks and other trees; - Spreading of pathogens from other geographic regions that adapt to climate change; - Spreading of invasive, new or existing species.	efficiently capture carbon and produce wood biomass; - Monitoring of invasive species and phytosanitary regulations on imports or domestic products; - Facilitate forests ecological adaptation through the ecosystem approach; - Adapting forest regeneration practices to the needs of climate change; - Minimizing environmental climate change risks; - Adapting wood use to climate change; - Promoting awareness and good understanding of climate change and how the forestry sector can make a positive contribution; - Monitoring climate change adaptation and mitigation actions in the forest sector; - Collaboration with regulatory authorities in agriculture, forestry, local authorities, etc.
Water regime changes	- Changes in the structure of forest stands, including stand density; - Changes in biomass production[50].	
Extreme phenomena: - heat waves; - frost; - droughts; - floods; - winds, hailstorms	- Blown down trees caused by strong winds; - Vegetation massive drying phenomena; - Increased frequency of forest fires; - Increasing survival and fecundity capacity of game species that may affect forests; - Increased damages caused by fires, windstorms, floods and drought.	

Expected impact of climate change on Moldovan forestry sector. Moldovan forests are under multiple pressures and can suffer from a number of biotic and abiotic damage, common, also, for European forests. According to vulnerability assessments regarding the level of climatic risks probability, the most vulnerable regions in the Republic of Moldova will be: South (where, the lowest afforestation level is already, 7.7%) and partially the Centre (where, the most large area covered by forests is located, 209.4 thousand ha, or about 14.5% of the total of the geographical area). Researchers anticipate that temperature and rainfall changes can seriously affect the growth and survival of forests, especially ecosystem limitation characteristics of the many forest ecosystems in Moldova.

The impact of climate change on species at the individual level may be negative or positive depending on climate change conditions at the regional level. Hornbeam (*Carpinus*) and Ash (*Fraxinus*) are the most vulnerable species, the ash showing a 20-40% decrease in biomass accumulation.

Energy sector: The Moldovan energy sector faces many challenges, majorly depending on imports (especially of natural gas), which currently covers about 75% of demand. Domestically, heat and electricity are mainly generated by old, inefficient and expensive combined heat and power plants (CHP).

In 2012 Moldova produced 0.12 Mtoe from national resources (biofuels and waste, hydro, and crude oil) while net imports totalled 3.16 Mtoe. Electricity represented 18.5% of the total final consumption of energy, of which around 94% was generated from imported natural gas in 3 co-generation power plants (the remainder was mostly imported or generated by one hydroelectric power plant)[51]. Energy dependence of Moldova on imports was estimated in 2014 to be around 96%[52].

Electricity in Moldova is expensive, domestic electricity generation by CHP plants has a regulated price of US $ 115 / MWh compared to the European average of US $ 60 / MWh. If considering cheaper sources for the import of electricity, the average final electricity price is US $ 80 / MWh[53].

Most energy supply systems are particularly sensitive to flooding as a climate-related hazard; electricity grids are also sensitive to variations air temperature and storms. It is known that the electricity transmission

[50] White maple and common lime tree could accumulate more than 30% more biomass than normal volume by 2040, after which a further reduction of total biomass will occur as environmental change happen due to the reduction of populations. Also, the oak could accumulate 10-20% more biomass than the usual volume by 2040.
[51] International Energy Agency, 2012, <https://www.iea.org/>
[52] Energy Sector in the Republic of Moldova, Agency for Innovation and Technology Transfer (AITT), 2014
[53] World Bank. 2016. Moldova - Climate adaptation investment planning technical assistance (English). Washington, D.C.: World Bank Group, <http://documents.worldbank.org/curated/en/469311500273762091/Moldova-Climate-adaptation-investment-planning-technical-assistance>

lines were vulnerable to storms and floods (recent examples from 2008 and 2009, 2017), which caused disruptions of local supply sources.

Thus, the vulnerabilities of the energy sector, determined to a certain extent by the interaction of historical, geographic and political factors, can be observed both at the supply and demand sides, such as production capacity, energy efficiency and supply security, and are amplified by climate change and variability: increasing temperatures; changes in the precipitation regime; increasing frequency and severity of extreme weather events, including storms, floods, droughts and heat waves (extreme heat).

The climate impacts, the main vulnerabilities and the options for climate change adaptation in the Moldovan energy sector are presented in Table 1-5.

Table 1-5: *The climate impacts, the main vulnerabilities and the options for climate change adaptation of the Republic of Moldova's energy sector*

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing temperatures	- Increased demand for electricity due to higher summer temperatures and the need for indoor air conditioning and industrial processes cooling; - Increased natural gas consumption due to increased electricity demand; - High electricity losses due to increased air temperatures and extended lifetime of electrical equipment cooling systems; - Reduced heat demand due to higher annual average temperatures and shorter cold season; - Reduced electricity and heat generation capacities in power plants (CHPs) caused by insufficient heat loading; - Increased water losses caused by the decrease of heat condensation capacities of the MGRES cooling towers.	- Using renewable energy sources (e.g.: wind turbines and hydraulic installations, solar panels for heating and. hot water, photovoltaic solar systems, biomass heating systems, etc.); - Construction of storage facilities for the energy produced by wind and photovoltaic power units; - Decentralized generation of electricity (solar photovoltaic systems, hydraulic installations, micro-hydroelectric stations, etc.); - Promotion of energy efficiency (e.g.: use of modern energy generation and transport technologies, thermal insulation of buildings, construction of refrigerators near CHPs and producing steam cold for the preservation of fruits and vegetables, etc.); - Restoring electrical stations equipment of transport networks designed for defrost/ice melting or introduction of new defrosting technologies (such as PETD – Pulse electro-thermal de-icer); - Improving the robustness of electricity transmission and distribution infrastructure; - Construction of additional water supply systems at CHPs from alternative sources; - Establishment of free economic zones (FEZ) close to CHPs for economic production of the sectors that use steam or hot water in technological processes (greenhouses, absorption refrigeration systems, processing of agricultural raw materials, etc.).
Water regime changes	- Increased electricity demand for irrigation caused by lower soil moisture; - Lower electricity generation capacity of CHP caused by the decrease of water flow in Prut and Nistru rivers as a result of reduced precipitation volume.	
Extreme phenomena: - heat waves; - frost; - droughts; - floods; -winds, hailstorms, more frequent and intense strong rains	- Increased energy intensity caused by higher electricity consumption for air conditioning and irrigation. - Deteriorating environmental conditions for growing forest crops is a serious threat to the production of biomass energy; - Longer duration of unplanned interruptions in power supply increases the frequency of spontaneous fires and the need to protect airline lines; - Reduced biomass due to increased drought frequency; - Reducing the share of renewable energy in the electricity system that ensures stability due to reduced availability of balancing energy; - Reducing the growth capacity of crops will result in smaller produced quantities of liquid biofuels.	

Expected impact of climate change on the sector. According to climate prospects, changes in the annual rainfall regime will reduce the potential of the country (and eventual intent) to produce energy from the rivers. It is anticipated that river flows will generally decrease, and the amount of available water (surface and underground) required for various uses – drinking water, irrigation, ecosystems conservation, and electricity generation – is under the risk of a continuous decrease.

Expected temperature scenarios[54] also pose risks for generating electricity in CHP plants: (i) the temperature of the water for cooling from rivers or reservoirs may exceed technical limits; or (ii) hot water that is released in rivers, after the cooling process, may exceed legal limits of temperature, especially in the case of long-term heat waves.

Warmer and drier summers can be a real concern for biomass biofuels production. Fuel plant production is likely to become more expensive (for example, it would require additional irrigation) or even firewood may become more rare (in a more arid environment the vegetation may decrease).

Extreme events such as storms (with strong winds and / or discharges) and floods, the former lacking clear projections or the certainty that they will become more frequent or more severe in Moldova in the future, may threaten energy supply / distribution networks. Warmer summers, in general, but also heat waves in particular, combined with higher levels of water pressure and scarcity, pose a threat to the welfare of people, crops, animals and wildlife. Therefore, the demand for air cooling in buildings, trade and industry is likely to increase. This increase may result in increased use of commercial and industrial air-conditioning and refrigeration facilities. Thus, demand for energy will probably increase in the summer (especially electricity demand).

Climate change does not always bring negative impacts – positive effects, such as reduced need for heating in buildings because of warmer winters, and increased annual solar irradiance which can be beneficial to solar energy generation-may also arise and competitive advantages can accrue for those prepared to take advantage of the new conditions.

Transport sector: Moldova is a geographically landlocked, small country; therefore, a well-developed network of national and local roads is the optimal solution for the medium distances transportation of both goods and passengers within the country and international transportation. At present, 98.6% of passenger transport and 90.2% of freight transport represent the road transport[55].

Floods, droughts and extreme heat occurring on Moldova's territory can individually or in combination increase strain and fatigue to transport infrastructure over land, particularly roads and railways.

Temperature is a significant factor that affects the performance and lifespan of the asphalt flooring. During heat waves lasting several days with values above 40 °C, serious deformations (waves, pressure deformation) occur, which in turn diminish the uniformity of the pavement and consequently affect the safety of the traffic. This phenomenon already occurred in 2003 and 2007, 2012 when longer periods of high temperatures were recorded and repeats each time during summer extreme temperature. The most serious damages have been caused to the Chisinau-Balti road. Even on the renovated national roads (Chişinău-Leuşeni), large portions of the road were deformed due to this climatic hazard[56]. Transversally, the thermal comfort of passengers in vehicles is increasingly compromised with rising temperatures in the summer. Moldova experiences a greater demand for cooling systems in passenger vehicles and larger capacity for the transportation of refrigerated goods.

Indirect costs to users of transport systems and the economy as a whole are potentially significant. If transport services are disrupted, then there is a considerable cascade or indirect effects for other industrial

[54] Fourth National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Agriculture, Regional Development of Environment, Chișinău, 2018, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>
[55] NBS: Statistical Directory of the Republic of Moldova, 2017, <http://www.statistica.md/public/files/publicatii_electronice/Anuar_Statistic/2017/18_AS.pdf >
[56] UNDP: The National Human Development Report in Moldova (2009-2010). <http://www.md.undp.org/content/moldova/ro/home/library/human_development/nhdr-2009.html>

sectors, including movement of labour and materials[57]. This is particularly problematic for the overland transport of perishable agricultural products such as fruits, which are very relevant to the Moldovan economy.

Extreme heat and dry periods followed by intense local rainfalls accompanied by storm and hail put additional pressure on the roads, especially if they are subsequently exposed to floods, temporary water cover, erosion and asphalt washing. Because of the obsolete and inefficient drainage systems in urban communities (and of roads across the country), road flooding at their junctions are often observed in the capital during the storms and summer torrential rains, which in the last decades have been observed practically every year[58]. These portions of the road increase city's vulnerability during climate hazards.

Climate impacts, main vulnerabilities and climate change adaptation options of the transport sector of the Republic of Moldova are reflected in Table 1-6.

Table 1-6: *Climate impacts, main vulnerabilities and climate change adaptation options of the Republic of Moldova's transport sector*

Climate hazards	Climate Impact and sectoral vulnerability	Adaptation options
Increasing temperatures; Water regime changes;	- Damage of road cover; - Impact on technical staff's health (men and women) involved in road maintenance and repair; - Larger length of the airport runway and more fuel required due to less dense air; - Railway lines bending due to breakdowns and malfunctioning of railway and signal detectors; - Longer travel time due to speed restrictions; - Thermal expansion of bridges, traffic interruptions - Penetration of the concrete protection structure of the bridges and viaducts and accelerated rusting of metal reinforcements; - Bridges and viaducts closure during repairs; - Overheating of diesel engines; - Impassable navigation routes due to lower water levels.	- Assessing the adaptation capacity of the transport infrastructure; - Carrying out research on the design and development of advanced materials and technologies aimed at increasing the resistance of roads, railways, aerodromes, ports to the climate change risks; - Adjustment of urban and land-use planning to future climate change related risks for transport infrastructure (roads, bridges, railways, waterways, aerodromes); - Creating a research-analysis-assessment platform on climate change risk with impact on transport infrastructure, using insurance companies; - Training decision-makers managing the construction of transport infrastructure on climate risk conditions; - Carrying out a study regarding the planting of hydrophilic and thermophilus forest strips along roads, waterways, railway lines with increased climatic risks; - Identifying advanced / effective technologies to improve collection and disposal of rainwater from the road network - Identification and implementation of corporate management and advanced technological models for the management of transport infrastructure construction according to climate change; - Purchase of the necessary equipment for cleaning and widening the riverbed, and the development of a system for navigation monitoring, etc.
Extreme phenomena: - heat waves; - frost; - droughts; - floods; - winds, hailstorms, more frequent and intense strong rains	- Surface deformations caused by temperature, rain, snow variations; - Reducing the circulation of public transport and / or increasing costs that will primarily affect vulnerable groups (including older women, children, etc.); - Travel and timetable delays; - Damage to bridges and viaducts caused by heavy rainfall; - Increasing the frequency and effects of roads, railways, airport runways, piping systems, bicycle paths and sidewalks flooding; - Loss of visibility due to snow, loss of maneuverability, obstruction of pathways, chemical treatment for dispersion; - The population migration from adjacent communities to aquatic basins may hinder the further development of shipping (passenger and freight).	

[57] IEEP, Milieu, Ecologic Institute, GHK, Environment Agency Austria, 2012. Methodologies for Climate Proofing Investments and Measures Under Cohesion and Regional Policy and the Common Agricultural Policy <http://ec.europa.eu/clima/policies/adaptation/what/docs/climate_proofing_en.pdf>

[58] National Bureau of Statistics, Natural Resources and the Environment in the Republic of Moldova, <http://www.statistica.md/pageview.php?l=ro&idc=350&id=3242>

The anticipated impact of climate change on the transport sector. The occurrence of extreme climate phenomena[59] adds strain to roads, the most exposed of which may subsequently be subjected to flooding, flash floods, erosion and washout. Many roads may therefore be at risk of structural damage from extreme weather events brought about or intensified by the expected climate change. A particular case to be wary of, for its likely greater detrimental effects, will be hot and dry spells followed by heavy local rains associated with storms and hail. Due to outdated and ineffective storm drain systems in urban centres, flooding is common in some intersections and road segments, such as in Chisinau in 2005, 2008 and 2009. Overall, passenger and goods railway transport will be at risk of schedule disturbance (episodic or permanent) or significant delays and slowing down of average train speeds, especially on older lines and / or on lines in poor state.

The structural integrity of the national paved (asphalted) roads may be at an increasingly greater risk also from higher temperatures, particularly extreme heat. Heavy heat will require more engine power and cooling for passenger compartments, as well as for some types of freight transport, including perishable or other agricultural products, both of which directly lead to higher fuel costs.

Regarding the Chisinau International Airport, there is a risk that rising temperatures in summer will gradually cause a higher level of runway wear, similar to road thermic pressure. The hot air is less dense and requires increased portability and pressure from the airships, changing the relative terms the load weight and requiring longer runways.

At present, inland waterways have a modest role in passenger transport and a minor one in freight transport (about 0.05% and 0.4% respectively). In the future there is a risk that waterways may become impractical for shipping –passengers or freight –in the summer and autumn, or in particularly dry years. The accumulation of mire, the inadequate use of dams and the lack of dredging that is necessary for ensuring the adequate depth for vessels' traffic is already a problem which may be aggravated by future climate change.

This will prevent rural and urban communities, along river meadows, to diversify their local economies and increase the number of jobs. Respectively, social conflicts may increase due to reduced access to vital resources, affecting in particular older women and men, women who care for children and other dependents.

With the anticipated increase in the number and severity of floods and droughts that will affect the country, it is expected that they will also increase soil erosion, land movement (in extreme cases, landslides) and surface run-offs. Because winters will become warmer and wetter, many local roads may become impracticable due to dampness and mud. Thus, the need for funding to adequately maintain transport and vehicles infrastructure (for road, rail and water transport) will increase or will not be fully satisfied in today's climate projections.

1.1.3 Key emitter sectors and related mitigation challenges

In 2015, the Republic of Moldova emitted about 13.95 Mt of CO_2 equivalent (excluding LULUCF sector's contribution) and 11.11 Mt of CO2 equivalent (including LULUCF sector's contribution). Total and net per capita emissions were twice as low as the global average (3.5 tCO_2 equivalent per capita compared to 6.4 tCO_2 equivalent per capita, or 2.8 tCO_2 equivalent per capita compared to 6.8 tCO_2 equivalent per capita respectively). Also, the Republic of Moldova has a low historical emissions level recorded since 1990, below

[59] Fourth National Communication of the Republic of Moldova, developed within the framework of the United Nations Framework Convention on Climate Change, the Ministry of Agriculture, Regional Development of Environment, Chișinău, 2018, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>

0.05% of global emissions (excluding LULUCF's contribution) and below 0.04% of global emissions (including LULUCF's contribution)[60].

Between 1990 and 2015, total GHG emissions in the Republic of Moldova had a decreasing trend, so emissions from the Energy sector decreased by about 72.6%, those from the Industrial processes and use of products sector – by 49.7%, from the Agriculture sector – by 59.4%, from LULUCF sector – by 51.1%, and from Waste sector – by 22.2%.

The Energy sector is the most important source of total national GHG emissions, with a share varying between 79.8% and 68.1% over the period 1990-2015. Accordingly, the share of other sources of emissions and sequestration in the year 2015 was: "Agriculture" – 15.2%; "Waste" – 11%; "Industrial Processes and Use of Products" – 20.4%[61].

Moldova is a developing country, so it is expected that the country's further economic growth will probably be associated with greenhouse gas emissions increase. At the same time, it is important for the economic growth process to ensure the implementation of the most advanced low emission policies and technologies. Lately, the country's leadership has been able to follow this principle by adopting and implementing a whole set of normative acts aimed at energy efficiency, the use of renewable energy sources, soil conservation, sustainable waste management, etc. After signing of the Association Agreement with the EU in 2014, the Republic of Moldova committed to comply with the obligation to reduce greenhouse gases in the atmosphere. At the same time, in order to achieve the objectives of the NDC, the Low Emissions Development Strategy by 2030 and its implementation Action Plan[62] was approved in March 2017. According to the Second Biennial Report of the Republic of Moldova[63], starting with 2015, GHG emissions followed the evolution presented in Figure 1-5.

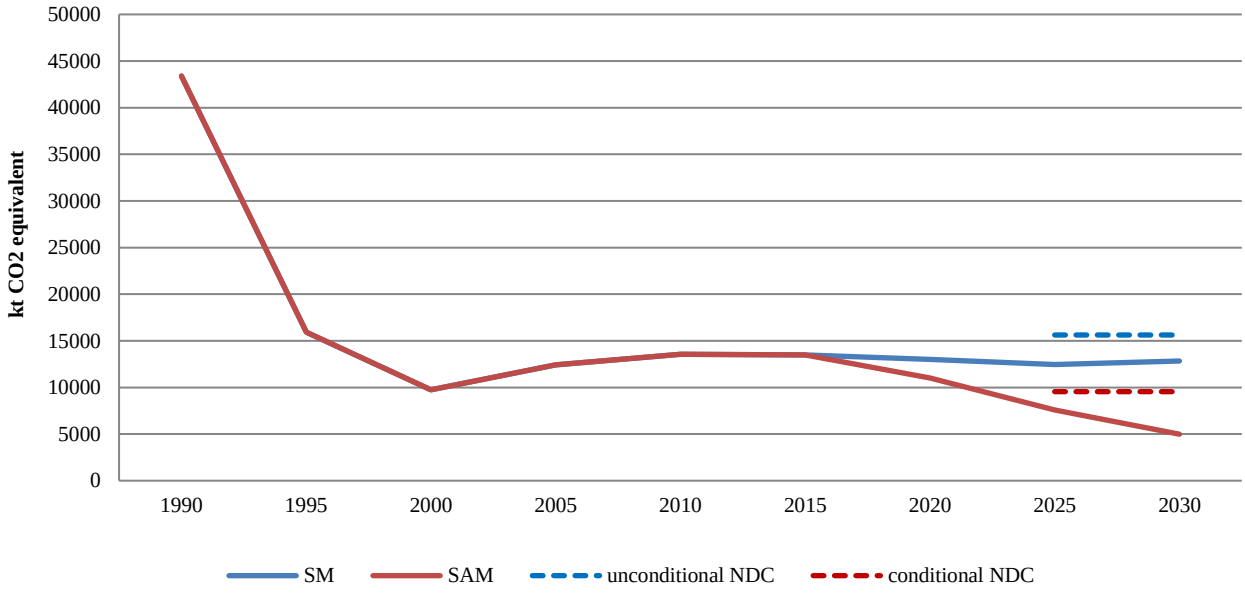

Figure 1-5: *Total net GHG emissions in the Republic of Moldova.*

[60] The Fourth National Communication of the Republic of Moldova, <http://www.clima.md/doc.php?l=ro&idc=81&id=4256>
[61] National Bureau of Statistics, Natural Resources and the Environment in the Republic of Moldova, <http://www.statistica.md/pageview.php?l=ro&idc=350&id=324>
[62] GD No. 1470 of 30.12.2016 regarding the approval of the Republic of Moldova's Low Emissions Development Strategy 2030 and its implementation Action Plan.
<http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=369528>
[63] Second Biennial Report of the Republic of Moldova (2018). <www.clima.md>

Net emissions in 2030 are expected to be lower than those recorded in 1990 by 70.5% in Scenario with Measures (SM) and 88.5% in Scenario with Additional Measures (SAM, compared to 64-67% according to unconditional NDC and 78%, respectively, to conditional NDC. That is, the country's developed and promoted policies over the last period of time are about to reach more ambitious performances than those established in the National Determined Contribution reported by the Republic of Moldova to the Paris 21st Conference of the Parties in December 2015 (COP 21).

1.2 Development profile

The Republic of Moldova has a unique land fund, which is distinguished by the predominance of chernozem soils, with high productivity potential; very high degree of land-use (> 75%); and uneven terrain: over 80% of agricultural land is located on the slopes[64]. The density of the hydrographic network on average per republic is 0.48 km/km2. The country does not have its own fossil fuel resources, which determines its total import from other countries.

The Republic of Moldova is a relatively new state. The country declared its independence on 27 August 1991 as a result of the USSR disintegration, where economic development was based on centralized planning principles. The new Constitution of the Sate implied that "Free market, economic initiative, fair competition are the basic factors of the economy"[65]. Changing the paradigm has, however, imposed significant efforts and shortcomings on society, and the still ongoing transition to a new system of society development has a significant impact on the living standards. With a GDP of about 5.698 thousand US dollars (PPP) per capita (2017) [66], the RM continues to stand out as a country with modest incomes.

With the beginning of the USSR dissolution process, the administrative-territorial unit on the left bank of the Nistru River has promoted a separatist policy towards the Central Public Administration. At present, this area is only partially monitored by the authorities of the Republic of Moldova.

The "National Development Strategy: 8 Solutions for Economic Growth and Poverty Reduction" approved in 2012 and amended in 2014 is the basic document that establishes the development priorities of the Republic of Moldova. According to the International Monetary Fund, at the time of approving this document, the Republic of Moldova was ranked as the penultimate country in countries region ranking of the GDP per capita to purchasing power parity[67]. The economic growth was based on consumption and remittances of citizens who left the country. In order to improve the created situation, the shift in the development paradigm was required. In this respect, the Government has identified the major issues, and their addressing would make a significant contribution to ensure economic growth and reduce poverty. As a result, the long-term strategic objectives of the National Development Strategy "Moldova 2020" have been identified, focusing on the following development priorities: (1) Aligning the education system to labour market needs in order to enhance labour productivity and increase employment in the economy; (2) Increasing public investment in the national and local road infrastructure, in order to reduce transportation costs and increase the speed of access; (3) Reducing financing costs by increasing competition in the financial sector and developing risk management tools; (4) Improving the business climate, promoting competition policies, streamlining the regulatory framework and applying information technologies in public services for businesses and citizens; (5) Reducing energy consumption by increasing energy efficiency and using renewable energy sources; (6) Ensuring the financial sustainability of the pension system in order to secure an appropriate rate of wage replacement; (7) Increasing the quality and

[64] Fourth National Communication (2017). <www.clima.md>
[65] The Constitution of the Republic of Moldova. Art. 9(3)
[66] <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locations=MD>
[67] The Official Gazette of the RM No. 245-247 of 30.11.2012, The Parliament of the RM. Law No. 166 of 11.07.2012 regarding the approval of the National Development Strategy "Moldova 2020"

efficiency of justice and fighting corruption in order to ensure equitable access to public goods for all citizens; (8) Increasing the competitiveness of agri-food products and sustainable rural development.

After the implementation of the outlined priorities, annual income per capita was to grow by the year 2020, on average by 12% compared to the baseline scenario and by 79% more than in 2011. Regarding the poverty rate, it would decrease to 12.7% by 2020 compared to 21.9% in 2010.

The analyses carried out in 2017 showed that SDS "Moldova 2020", together with other important country strategies, such as the Preliminary Poverty Reduction Strategy of 2000[68], the Economic Growth and Poverty Reduction Strategy (2004-2007) [69], the National Development Strategy (2008-2011)[70], did not have the expected impact. This confirms the correlation between the incidence of poverty at the national level and the subjective perceptions by the population regarding the level of incomes (Figure 1-6), as well as the evolution of GDP and the balance of social perceptions regarding the economic situation (Figure 1-7). Thus, if global poverty is calculated to be 9% in 2015, the subjective perception of this indicator by the population is 37%. At the same time, the discrepancy between the evolution of GDP and the social perception of the economic situation has increased during the years 2002-2016[71].

Figure 1-6: *The correlation between the incidence of poverty at the national level and the subjective perceptions by the population regarding the level of income (Source:NBS, Barometer of Public Opinion, various editions).*

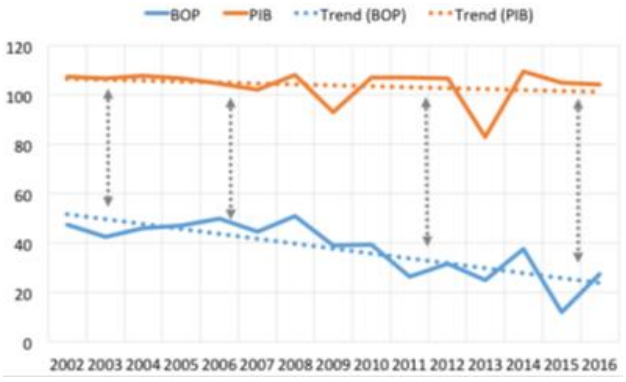

Figure 1-7: *Evolution of GDP and the balance of social perceptions of the economic situation (Source: NSB, Exper-Grup estimates and Barometer of Public Opinion, various editions).*

Within the global competitiveness ranking, Moldova ranked 89 out of 137[72] countries in 2017-2018, bypassed by most countries in the region and CIS countries. According to the same report, economic entrepreneurs have highlighted the following barriers to the business environment, in order of priority: (i) corruption; (ii) political instability; (iii) government instability; (iv) access to finance; (v) inefficient government bureaucracy, etc.

The degree of state intervention in economic activity is assessed on the basis of the Economic Freedom Index[73]. Moldova is ranked 87th from 186 countries.

[68] The Official Gazette of the RM No. 65 of 18.05.2002, Government Decision No. 524 of 24.04.2002 regarding the approval of the Preliminary Poverty Reduction Strategy of 2000
[69] The Official Gazette of the RM No. 203-206 of 31.12.2006, Government Decision No. 1433 of 19.12.2006 regarding the approval of the Economic Growth and Poverty Reduction Strategy (2004-2007).
[70] Concept Note on the National Development Strategy "Moldova 2030". <http://cancelaria.gov.md/ro/apc/nota-de-concept-privind-viziunea-strategiei-nationale-de-dezvoltare-moldova-2030>
[71] Concept Note on the National Development Strategy "Moldova 2030". <http://cancelaria.gov.md/ro/apc/nota-de-concept-privind-viziunea-strategiei-nationale-de-dezvoltare-moldova-2030>
[72] <http://www3.weforum.org/docs/GCR 2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>
[73] <http://www.heritage.org/international-economies/report/2017-index-economic-freedom-trade-and-prosperity-risk>

It is worth mentioning that the Republic of Moldova has advanced from the group of low-income countries to the group of middle-income countries. However, over the last few years, GDP growth has taken place against the backdrop of economic potential erosion[74]. In the period of 2010-2016, the economy grew on an annual average by 4.5%, its value remaining at the lowest level compared to other Eastern European countries. This was also due to various negative shocks, notably 2007, 2009, 2012 and 2015 droughts, the 2009 global financial crisis and the 2015 local banking crisis.

The Human Development Index (HDI) has evolved to improvement, rising from 0.679 in 2011 to 0.699 in 2015, with the country ranking 107th out of 188 countries.

Analysis of the resources of the GDP structure shows that the largest share is held by the "other services" category, which, together with trade and construction services, accounted for 59% of GDP in 2016. These are followed by net taxes on products and services, the share of which gradually decreased in the period 2010-2016 from 16.6% to 14.8% of GDP. Another vulnerability of the economic growth model is the low share of the industrial sector (14.1% in 2016). Although industry has grown slightly over the last few years, the low share of the sector reveals the limited ability of the economy to produce tradable goods. The agricultural sector, including about one third of the workforce, accounts for a disproportionately low share of GDP (12.2% in 2016), which indicates extremely low productivity and competitiveness in the sector.

Although during the years 2010-2016 there was a slight decrease in the GDP's share of household consumption (from 91.9% to 86.4%), along with a slight increase in exports (from 39.2% to 43.7%), the economic growth paradigm of the Republic of Moldova, has not changed, notably. Thus, the domestic demand is largely covered by imports. Although the share of imports declined from 78.5% to 71.5% in 2010-2016, it continues to be significant and systemically well above the level of exports, causing a trade deficit and persistent account deficit. At the same time, the role of investments continues to be minor, with a share of only 22.4% in 2016 and no major changes over the last years. This highlights the shortcomings of the country's business environment, which, in parallel with the low share of exports and the trade deficit, reveals low competitiveness - a systemic vulnerability of the country's economy[75]. This economic situation determines the massive exodus of the population towards finding a decent living standard. Over the past three years, at least 133,000 Moldovans (about 4.5% of the country's population) have left the country and have not returned, according to data provided by the border police[76]. At the same time, almost 45% of able-bodied citizens want to leave the country[77]. Emigration is the strongest signal that people are not satisfied with their lives and prospects in the Republic of Moldova.

It is also worth mentioning that although the average disposable income of the population increased twice during 2010-2015, the gap between those living in the city and those living in the village has increased. The urban/rural income gap has doubled from 23.6% in 2010 to nearly 42% in 2015. In the same context, the gap between urban and rural areas at the absolute poverty rate is considerable: 19% of people at risk of poverty in villages versus 5% in cities. The poorest people spend the most money on food and bills, which makes them vulnerable to economic shocks. In addition to monetary inequalities, the most vulnerable groups – women, people with disabilities, the elderly and young people – are exposed to social inequalities in the areas of education, health, access to quality services, participation[78].

[74] Concept Note on the National Development Strategy "Moldova 2030". <http://cancelaria.gov.md/ro/apc/nota-de-concept-privind-viziunea-strategiei-nationale-de-dezvoltare-moldova-2030>
[75] Concept Note on the National Development Strategy "Moldova 2030". <http://cancelaria.gov.md/ro/apc/nota-de-concept-privind-viziunea-strategiei-nationale-de-dezvoltare-moldova-2030>
[76] <http://independent.md/mouldova-ramane-fara-oameni-peste-133-de-mii-de-moldoveni-detinatori-de-pasapoarte-biometrice-au-parasit-tara-ultimii-3-ani/#.WpZllOhuaUl>
[77] <http://independent.md/republica-moldova-pragul-celui-de-al-doilea-exod-al-cetatenilor-circa-45-din-populatia-apta-de-munca-vrea-sa-plece-din-tara/#.WpZlGuhuaUk>
[78] UNDP. National Human Development Report 2015/2016.
<http://www.md.undp.org/content/moldova/ro/home/library/human_development/nhdr-2016.html>

Among the countries of Europe and Central Asia, Moldova recorded the second largest gap for PISA scores between urban and rural localities – a gap equivalent to two years of schooling. Moreover, the companies in the northern and southern regions of the Republic of Moldova are faced with a longer waiting time to connect to the electricity and water supply networks compared to the companies from Chisinau[79].

Women continue to earn on average 12% less than men. The largest gender pay gap was recorded in the sectors: information and communications (-23%), industry (-18.3%), art, recreation and leisure (-15.1%). The national legislative framework in equality between women and men is in line with the international gender standards. However, implementation is lagging behind, and women face discrimination and inequality in social, economic and political life, and lack effective opportunities to participate in decision-making in the public and private sectors. Women represent 20.79% of MPs, 20.6% of mayors, 30.04% of local counsellors, and 18.55% of district counsellors, well below international standards and country commitments with nationally and internationally agreed goals. The share of female entrepreneurs is 27.5%, and women who want to create their own business face many barriers[80].

Human development is not just about revenue, it also involves access to basic services. In rural areas, 8 out of 10 wells are polluted. Only 43% of the villagers have access to drinking water, compared to 90% of those in the urban area. Thus, the poorest of the population spends on average up to 15% of the disposable income to provide minimum standard drinking and sanitation services for which costs are too high. In the absence of economic growth felt by the inhabitants of the villages, only remittances are those that provide the consumption percentage[81].

Due to the high dependence of the economy and rural communities on the agricultural sector, Moldovan society is extremely vulnerable to climate change. Drought is the extreme climatic phenomenon that leaves the deepest economic and social impact. Over the last two decades, the incidence and impact of drought has grown significantly, corresponding to regional and global scale trends. Of the 38 seasonal drought episodes officially reported since 1945, 13 episodes have been post-2000, and 9 of these have had such a territorial coverage that they have been classified as catastrophic[82].

Increasing demand for water for irrigation purposes may increase competition for water resources both within the country and in relation to neighboring countries. According to World Bank water sector modelling for each region and river basin, rising water demand for irrigation purposes will cause water shortages in the coming decades, even in the absence of climate change.

The main macroeconomic indicators of the Republic of Moldova are presented in Table. 1-7[83].

Table 1-7: *The main macroeconomic indicators of the Republic of Moldova, in GDP percentage*

Indicators	2012	2013	2014	2015	2016	2017	2018p	2019p	2020p
Nominal GDP, billions MDL	88.2	100.5	112.1	122.6	135.6	150.9	163.9	178.0	193.4
Real GDP, % of growth	-0.7	9.4	4.8	-0.4	4.5	4.5	3.8	3.7	3.6
Consumption, % of growth	0.9	5.2	2.7	-1.9	2.8	4.0	3.5	3.2	3.1
GNI per capita, Atlas method (current USD)	2140	2470	2560	2230	2140	2180	n/a	n/a	n/a
Human Development Index (HDI)[84]	0.684	0.696	0.6961	0.693	0.697	0.7	n/a	n/a	n/a

[79] <https://openknowledge.worldbank.org/handle/10986/30393>
[80] PNUD. Raportul Național de Dezvoltare Umană 2015/2016.
<http://www.md.undp.org/content/moldova/ro/home/library/human_development/nhdr-2016.html>
[81] <https://openknowledge.worldbank.org/handle/10986/30393>
[82] Svetlana Starchenko, Agrometeorological Monitoring Center of the State Hydrometerological Service of the Republic of Moldova, "Agrometeorological Service of Moldova. Assessment of Droughts", presentation delivered on 24-28 of April 2017, Budapest, <http://www.met.hu/doc/rendezvenyek/WMO_EUMETSAT_2017/moldova.pdf.>
[83] <http://pubdocs.worldbank.org/en/528451526539069925/Moldova-Economic-Update-May-2018-ENG.pdf>
[84] <http://hdr.undp.org/en/composite/trends>

Indicators	2012	2013	2014	2015	2016	2017	2018p	2019p	2020p
Fixed Gross Investments, % of growth	0.4	3.8	10	-2.3	-2.8	5.3	6.1	5.2	5.5
Export, % of growth	2.3	9.6	1	2.9	9.3	12.7	5.1	4.3	4.7
Import, % of growth	2.5	4.4	0.4	-5.2	5.9	11.4	5.3	4.4	4.9
GDP deflator, % of growth	7.9	4.1	6.4	9.9	5.6	6.6	4.3	4.7	5.0
IPC, average %	4.6	4.6	5.1	9.7	6.4	6.6	3.8	4.9	5.0
Current account balance, % of GDP	-8.7	-6.5	-7.1	-6.4	-4.2	-7.6	-4.9	-5.1	-5.6
Remittances, % of growth, USD	12.7	9.6	0.4	-24.5	-5.0	13.2	4.5	4.3	4.1
Commercial terms, % of growth	0.8	-0.4	-1.2	3.8	0.9	-4.5	7.4	0.2	0.2
External debt, % of GDP	82.6	86.1	81.4	93.7	91.8	85.8	86.3	86.8	86.1
Budget revenue, % of GDP	38	36.7	37.9	35.6	33.9	35.5	34.3	33.8	33.5
Budget expenditures, % of GDP	40.1	38.5	39.6	37.9	35.8	36.3	37.3	36.3	35.8
Budget deficit, % of GDP	-2.1	-1.8	-1.7	-2.2	-1.8	-0.8	-3	-2.5	-2.2
Public debt and guarantees, % of GDP	33.2	31.8	32.5	35.2	43.8	38.9	39.2	38.7	38.1
Population growth[85], %	-0.013	-0.027	-0.061	-0.064	-0.061	-0.062	n/a	n/a	n/a

Source: Moldovan authorities, WB estimates

According to the Table 1-7 data, the country's macroeconomic status is relatively stable at the moment, with a GDP growth of about 4% in recent years and investment growth of about 5.3% in 2017, which provides assurance for further development. Inflation has decreased from 9.7% in 2015 to 6.4% in 2016 and 6.6% in 2017. Foreign currency reserves increased by 25.3% in 2016 compared to 2015, and in 2017 they increased by 27.3% compared to 2016. As for the state debt, as of 31st of December 2017, its balance amounted to 51,660.3 million lei, consisting of US $ 1,700.7 million (the equivalent of 29,081.8 million lei) of external debt and 22,578.5 million lei – domestic state debt, registering an increase of 874.5 million lei or by 1.7% compared to the end of 2016[86]. Accrued revenues to the national public budget in 2017 amounted to 35.5% of GDP. As compared to 2016, there was an increase of 1.6%. National public budget expenditures in 2017 was at 36.3% of GDP, by 0.5% more than in 2016. The deficit constituted -0.8% of GDP. This year's state stock was within sustainable limits despite the considerable cost of the banking crisis that took place in 2014. The share of government debt in GDP as of 31st of December 2017 was 38.9%, 4.9% lower compared to the end of 2016.

The new National Development Strategy “Moldova 2030” was approved in December 2018. The publication is scheduled for 2019. This document reflects a vision centered on people and their fundamental socio-economic rights. The vision of the new NDS implies that, by 2030, Moldova will become a country where people want to reside and live their dreams and aspirations, a country that parents will consider it a good place to live for their children. The strategy is aligned to the Sustainable Development Objectives. As it is known, in September 2015, the Republic of Moldova, together with another 192 UN member states, pledged to implement the Sustainable Development Agenda 2030 by adopting the Statement on Sustainable Development Summit held in New York.

The new Strategy of the Republic of Moldova is called upon to enhance and continue the progress made by the country in terms of the Millennium Development Goals, to contribute to the achievement of fundamental human social and economic rights and to ensure that all people have equal opportunities regardless of the various criteria that make people different. At the same time, the Strategy will reflect the

[85] <https://data.worldbank.org/country/moldova?view=chart>
[86] The Official Gazette of the RM, No. 27-30 of 08.02.2013, Government Decision of the RM, No. 102 of 05.02.2013 on National Development Strategy "Moldova 2030".

commitments of the country stipulated in the Association Agreement between the European Union and the Republic of Moldova, signed in 2014. The Agreement aims to modernize the Republic of Moldova through alignment with EU norms and standards in all areas, and these norms and standards correspond to the best international practices.

The concept of quality of life that includes 10 relevant dimensions is proposed to be applied for the NDS "Moldova 2030". This concept is used by Eurostat to measure the quality of life phenomenon. Accordingly, a higher quality of life means achieving sustainable and wide-ranging social progress in: (1) Income level; (2) Living conditions; (3) Working conditions; (4) Time use; (5) Level of education; (6) Health status; (7) The social climate; (8) Public safety and security; (9) Quality of government; (10) Environmental quality.

For the 10th dimension "Environmental quality", The Strategy 2030 provides the following: (1) In order to improve the quality of surface waters, the long-term vision consists in the elimination of the main sources of pollution by: (i) building waste water treatment plants of used water for all urban localities and for all economic agents operating on the territory of the Republic of Moldova; (ii) implementing measures for adequate solid waste management: collection and recycling of solid household waste; construction of solid waste disposal polygons; creation of the Center for hazardous waste management; (2) In order to increase the volume of water resources in the Republic of Moldova, it is necessary to implement the integrated water management principles stipulated in the legislation of the Republic of Moldova, including on the transboundary rivers - the Nistru River and the Prut River; (3) Increase the forest coverage, increasing the 11.2% share in 2015 to just over 16% in 2030.

The Strategy takes into account the major trends in the development of the Republic of Moldova, including family and children, population migration, depopulation and aging, population health, education, economy, technologies, climate change, governance, gender equality.

At the sectoral level, a legal framework for economic development is already available, and also undergoes an improvement process. For example, given the energy dependence of 74.6% on imported energy sources, in the energy sector, state policies are geared towards increasing energy security in two ways: at the level of energy production - by attracting renewable energy sources in the energy balance, and at the level of energy demand - by promoting energy efficiency. By 2020, 10% of energy demand is to be covered by its own renewable sources[87] and energy efficiency is to improve by 8.2%[88]. At the same time, in order to increase the electricity market's competitiveness, practically missing at the moment, the construction of the asynchronous interconnection with ENTSO-E is foreseen by 2023. The Moldovan Parliament ratified the respective Financing Contract in the amount of EUR 270 mil, in July 2018[89].The most important normative acts called upon to achieve the stated objectives are: The Energy Strategy of the Republic of Moldova until 2030[90], the Law on Promotion of the Renewable Energy Use[91], the Program for Promoting the Green Economy in the Republic of Moldova for 2018-2020 and the action Plan for its implementation[92],

[87] The Official Gazette of the RM No. 27-30 of 08.02.2013, Government Decision of the RM No. 102 of 05.02.2013 on the Energy Strategy of the Republic of Moldova until 2030.
[88]The Official Gazette of the RM No. 68-76 of 02.03.18, Government Decision of the RM No. 160 of 21.02.2018 regarding the Program for Promoting the Green Economy in the Republic of Moldova for 2018-2020 and the action Plan for its implementation.
[89] http://tribuna.md/2018/07/13/parlamentul-a-ratificat-contractul-de-finantare-dintre-republica-moldova-si-banca-europeana-de-investitii/
[90] <http://lex.justice.md/md/346670/>
[91]The Official Gazette of the RM No. 69-77/117 din 25.03.2016, Parliament of the Republic of Moldova Law no. 10 of 26.02.2016 on Promotion of the Renewable Energy Use.
[92] The Official Gazette of the RM No.68-76 of 02.03.2018. GD No. 160 of 21.02.2018 on the Program for Promoting the Green Economy in the Republic of Moldova for 2018-2020 and the action Plan for its implementation.

Energy Road Map for the period 2015-2030[93], Law on Energy Efficiency[94], Law on thermal energy and promotion of cogeneration[95], Creation of Energy Efficiency Fund[96], etc.

The achievement of objectives of the RM's development strategies requires major investments. In order to obtain them and capitalize them into concrete projects, the Government approved the National Strategy for Investment and Export Promotion for the years 2016-2020 and its Implementation Action Plan[97]. According to the Strategy, there are various incentives to support foreign direct investment. Certain investment incentives are applicable at the sector level, such as information and communications technology and agriculture. The whole incentive system for many businesses is, however, too complex and lacking clarity in the implementation. Therefore, this system is not perceived, by the companies, as a major determinant in the decision to invest in the Republic of Moldova. According to a survey conducted among foreign investors established in Moldova, the fiscal facilities granted to enterprises on the importance of investing[98], were appreciated by 0.2 points out of a maximum of 2.0 points. Moreover, competing countries in the region offer a similar or even a more attractive range of incentives than those offered by the Republic of Moldova.

In conclusion, the Republic of Moldova can offer a number of investment advantages to transnational companies interested in increasing their internationalization strategies efficiency. But some deficiencies within institutional and legislative policy framework prevents the attraction of more investment projects and intensified export promotion. As a result, the above-mentioned Strategy focuses on eliminating or mitigating critical deficiencies and enhance the country's strengths. By 2020, investments will become a key factor for economic growth and, respectively, for strengthening and diversifying Moldova's exports.

At the same time, attracting them is dependent on a number of local factors. In the Republic of Moldova bank credits are accessible with several banks. But their cost is quite high, which limits the investment activity in the country as the bank interest applied to economic agents, it constituted approximately 11.8% for the national currency and 12% for the foreign currency (USD, Euro) in 2018, the credit period being a maximum of 5 years, but provided the deposit availability at the bank. For the purchase of a real estate, the maximum credit period is 10 years, and for the construction of a house – 20 years[99]. The annual effective interest rate is 16.94%[100].

In terms of external loans or investments, they are exposed to risks because the country's long-term risk is rated B3, with the Risk Rate Premium (RRP) of 9.25%, according to Moody's rating[101]. For comparison, the countries with the highest foreign investment risk in the world are Greece, Mozambique and Ukraine, with RRP of 14.21% in January 2017.

The banking sector of the Republic of Moldova includes the National Bank and Commercial Banks (total 11[102]), the latter being all private. Non-bank financial institutions include: insurance companies, pension funds, savings and loan associations, microfinance institutions, construction companies (UK), credit unions, pawnbrokers, currency exchange offices and others.

[93] The Official Gazette of the RM No. 177-184 of 10.07.2015. GD No. 409 of 16.06.2015 Energy Road Map for the period 2015-2030.
[94] The Official Gazette of the RM No. 155-158 of 03.09.2010, Parliament of the Republic of Moldova. Law No. 142 of 02.07.2010 on Energy Efficiency.
[95] Law No. 92 of 29.05.2014 on thermal energy and promotion of cogeneration. Published on 11.07.2014 in The Official Gazette No. 178-184. <http://lex.justice.md/viewdoc.php?action=view&view=doc&id=353698&lang=1>
[96] GD No. 401 of 12.06.2012 on Energy Efficiency Fund. Published on 22.06.2012 in The Official Gazette No. 126-129. <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=343683>
[97] GD No. 511 of 25.04.2016 on the National Strategy for Investment and Export Promotion for the years 2016-2020 and its Implementation Action Plan <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=364547>
[98] The actual annual interest rate was calculated for a loan amounting to MDL 150,000 lei for a period of 60 months.
[99] Victoriabank. <http://www.victoriabank.md/ro/list-retail-credit#retail-credit-consumption>
[100] The actual annual interest rate was calculated for a loan amounting to MDL 150,000 lei for a period of 60 months.
[101] <http://pages.stern.nyu.edu/~adamodar/>
[102] <http://www.bnm.md/ro/content/bancile-licentiate-din-republica-moldova>

The priority investment sectors identified by the National Investment and Export Promotion Strategy for the years 2016-2020[103] are the following: Information and communications; Manufacture of cars and equipment; Administrative service activities and support service activities; Manufacture of machinery and parts; Manufacture of textiles; Manufacture of wearing apparel and footwear; Electric devices; Food industry and agriculture. According to the Constitution of the country, as mentioned above, "Free market, economic initiative, loyal competition are the basic factors of the economy"[104]. Thus, the private sector is considered to be the engine of the development of the national economy.

1.3 Climate change response

1.3.1 National framework

National initiatives under the UNFCCC. In order to achieve greenhouse gas emissions mitigation targets and to combat climate change impact, Republic of Moldova has adopted a number of development policies reflected in a relatively well-developed legal framework which is constantly updated along with the state policies. At the current country development stage, the main approach to climate change is seen examined at the sector level, reflecting the stipulations of CCAS and LEDS. At the same time, as the implementation of climate change adaptation measures and the mitigation of GHG moves forward, the cross-sectoral and sub-sectoral approach is applied.

Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action Plan (2017)[105]*.* The overall objective of the LEDS corresponds to objective set out in the "The Intended National Determined Contributions" (INDC) of the Paris Agreement. By country Law no. 78 of 04.05.2017, The Paris Agreement was ratified, and INDC became the National Determined Contribution (NDC). According to the latter, the Republic of Moldova is committed, by 2030, to reach the unconditional 64-67% of GHG emissions reduction compared to the reference year level (1990). The commitment to reduce greenhouse gas emissions could rise to conditional 78% if low-cost financial resources, technology transfer and multilateral technical cooperation are provided, access to which is crucial to deal with the global climate change challenges.

The overall target is supported by intermediate sectoral targets set for 2020 and 2025. Intermediate targets and those for 2030 for each sector are presented in Table 1-8.

Table 1-8: *GHG reduction targets by sectors, %*

Sectors	Target % until 2020		Target % until 2025		Target % until 2030	
	unconditional	conditional	unconditional	conditional	unconditional	conditional
Energy	78	82	76	82	71-74	82
Transports	49	56	41	48	30	40
Buildings	78	79	79	81	77	80
Industry	58	62	51	59	45	56
Agriculture	48	50	43	45	37	41
LULUCF	12	18	43	54	62	76
Waste	23	26	46	51	38	47
TOTAL	65	71	69	76	64-67	78

The LEDS will enable the Republic of Moldova to adjust its development path towards a low-carbon economy and achieve green sustainable development, based on the socio-economic and development priorities of the country.

[103] The actual annual interest rate was calculated for a loan amounting to MDL 150,000 lei for a period of 60 months.
[104] The Constitution of the Republic of Moldova. Art. 9(3)
[105] Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action Plan GD no. 1470 of 30th of December 2016. Official Gazette 2017, no. 85-91.

According to the LEDS, the achievement of the unconditional goal of the NDC is foreseen through the implementation of 44 NAMAs, and the conditional one - through 22 NAMAs, 12 of which are registered in UNFCCC NAMA Register[106]. The latter 12 NAMAs provide coverage of 68% of the NDC's conditional objective. The NAMAs Seeking Support for Implementation list, registered in the NAMA Register of UNFCCC, is presented in Annex 1. The largest contribution to achieve the NDC's conditional objective is expected to be got through financial mechanisms of Paris Agreement, including Green Climate Fund (GCF). In an aggregated format, the measures identified to achieve NDC's objectives are presented in Annex 2 of the BUR2[107], set out in the format specified in Annex III of the Durban Convention Conference Decision 2 / CP.17.

In order to achieve the NDC objectives, reflected in the LEDS, financial means are needed of the amount and in the timeframe presented in Table 1-9.

Table 1-9: *Financial means needed to achieve NDC's objectives, US billion dollars*

Objective	Total for period 2016-2030		2016-2020	Total for the period 2021-2030	
	with electricity import	without electricity import		with electricity import	without electricity import
Unconditional	3.741	4.627	1.328	2.413	3.299
Conditional	4.901	5.106	2.651	2.250	2.455
TOTAL	8.642	9.733	3.979	4.663	5.754

Given that the country is dependent on the import of electricity and power production in the country has a pronounced influence on the quantity of greenhouse gas emissions, the volume of the financial resources needed to reach the NDC's targets depends on the amount of imported electricity. As a result, in order to achieve the unconditional objective of NDC, i.e. through own financial means only, US $ 3.741 billion is required for the period 2016-2030 if the import of electricity persists, and US $ 4.627 billion if no electricity is imported[108].

NDC also contains a well-built adaptation component, based on the NAP process, in particular NAP-1, to communicate about the development of adaptation objectives and how they will be implemented. Linking the NAP development process to NDC's objectives will contribute to build a constructive feedback loops in making national and international decisions regarding climate change to better match the implementation of the Paris Agreement, Sendai Framework[109] and 2030/SDG Agenda[110].

Moldova's 2020 Climate Change Adaptation Strategy and its implementation Action Plan (CCAS, 2014)[111], provides an integrated vision of Moldova's development opportunities and the ability to respond in a resilient way to the impact of climate change, and is supported by an in-depth study of future climate risks and impacts of climate change on vulnerable sectors. The CCAS and its implementation Action Plan[112] serve as an umbrella strategy that creates an enabling environment for Central and Local Public Authorities to integrate climate change adaptation and risk management into existing and future strategies through a range of sectoral and local actions supported by a long-term funding strategy that would include national resources and international support to prevent the adverse effects of climate change and make the most of their opportunities.

[106] <http://www4.unfccc.int/sites/nama/SitePages/NamaImplementation.aspx>
[107] Biennial Report of the Republic of Moldova (2019). <www.clima.md>
[108] Detailed information, including the required financial means to achieve the 44 unconditional NAMAs as well as the 22 conditional NAMAs, are reflected in Table 4-1 and Appendix 2 of the LEDS.
[109] Sendai Framework for Disaster Risk Reduction, <https://www.unisdr.org/we/coordinate/sendai-framework>
[110] UN Sustainable Development Goals – SDGs, The UN 2030 Agenda, <https://sustainabledevelopment.un.org>
[111] GD no. 1009 of 10.12.2014 regarding the Moldova's 2020 Climate Change Adaptation Strategy and its implementation Action Plan, Official Gazette no. 372-384 of 19.12.2014.
[112] The implementation Action Plan for the Moldova's 2020 Climate Change Adaptation Strategy is considered as the 1st National Action Plan (NAP 1).

The sectoral approach in climate change adaptation in the Republic of Moldova is dominant at the current stage of the country's development, but cross-sectoral and sub-national approaches are becoming increasingly important. Some sectors are already implementing adaptation actions, while others need more support in adaptation planning and implementation.

Assessment of technological needs, 2011-2013[113]. As a result of the project's implementation, three project ideas were developed in climate change adaptation, and three project ideas were oriented on GHG emissions reduction in the Republic of Moldova. The results and the gained experience served as a guide for the development of 12 NAMAs, of which four, in a detailed format within the LECBP[114], all registered in the UNFCCC NAMA Register and oriented towards the achievement of the country's NDC's objectives.

National Adaptation Plan. The development of the National Adaptation Plan (NAP1), based on existing development planning strategies and processes and in accordance with the UNFCCC guidelines, was carried out within the Project "Supporting Moldova's National Climate Change Adaptation Planning Process", supported by Government of Austria and implemented in partnership with UNDP. The NAP concept for the Republic of Moldova addresses the National Adaptation Plan as a framework supported by periodic implementation tools, called National Adaptation Plans (NAPs) and Sectoral Adaptation Plans (SAPs). The NAP has been developed according to UNFCCC Guidance[115] and set up as a continuous, progressive and iterative process that allows the country to identify medium- and long-term adaptation needs and to develop strategies and programs to meet these needs. The NAP concept sets out the key principles, NAP1 roadmap, and the core components of the NAP1.

The main NAP1 components for the Republic of Moldova were: (1) CCA integration into sectoral planning development; (2) institutionalization and strengthening of the cross-sectorial Coordination Mechanism with regard to CCA; (3) development of adaptation capacities and stakeholder cooperation in the adaptation process; (4) implementation of adaptation pilot projects and the development of their upscaling strategies; (5) mainstreaming of gender dimension in the developed strategic documents and adopting a gender-responsive approach of adaptation planning and implementation; (6) development of the Monitoring and Evaluation component of CCA; (7) development of NAP Communication Strategy and its implementation actions, other components.

According to Moldova's NAP concept, line ministries have the task of developing an enabling environment to implement adaptation actions in the afferent sector every four years through newly-developed sector-specific adaptation policies or to integrate the adaptation into already exisiting sectors sustainable development planning. Both approaches lead to the development of Sectoral Adaptation Plans (SAPs). Within the SAP, adaptation targets and objectives are set for the respective cycle, achieved through cross-sectoral, sectoral and sub-sectoral actions. The set of adaptation actions encompassed in each SAP is the outcome of stakeholder consultation, including the prioritization process of identified adaptation options. SAP actions are oriented towards achieving overarching adaptation goals and objectives set for each NAP. The budgeting of adaptation measures comes from the sector budget, but also through the support of the private sector as well as from the external donors and the development partners. During the development of SAPs and NAPs, the gender-responsiveness in both planning and implementing actions is to be set as one of the most prominent elements.

The NAP1 has developed the concept of the multi-stakeholder Inter-Sectoral Coordination Mechanism and its Monitoring and Evaluation (M&E) framework that interconnects the sectors during the planning and

[113] <http://www.tech-action.org/Participating-Countries/Phase-1-Asia-and-CIS/Republic-of-Moldova>
[114] UNDP. Project Document. Low-Emission Capacity Building Project – Republic of Moldova. 2014-2016.
[115] UNFCCC 2012. National Adaptation Plans - Technical guidelines for the national adaptation plan process. LDC Expert Group. UNFCCC: Bonn, Germany

implementation of adaptation actions, providing opportunities to address the synergy between adaptation and mitigation dimensions.

CDM Projects. So far, several CDM projects have been initiated in Moldova. As a result of their implementation, they are expected to achieve greenhouse gas emission reductions, equivalent to about 1.5 million tons of CO2 annually. The total quantity of certified emission reduction (CERs), registered in the RM, until 01.02.2017 in the CDM projects, issued by the CDM Executive Council represents 1 304 779 tCO2 equivalent[116].

Moldova's subscription to 18 international conventions and 4 international protocols, along with its own relatively comprehensive political framework, significantly contribute toward country's sustainable development. Moldova ratified the *United Nations Framework Convention on Climate Change (UNFCCC)* in 1995, the *Kyoto Protocol* in 2003, the *Paris Agreement* in 2017, and has submitted the Fourth National Communication on Climate Change in 2018 and the Second Biennial Report to UNFCCC in 2018. Moldova also ratified the *United Nation Convention to Combat Desertification (UNCCD)* in 1998 and the *Convention on Biological Diversity (CBD)* in 1995 and has participated so far at all Parties conferences.

Snapshot of other climate-related initiatives developed at the national, sub-national and local level. In addition to initiatives directly related to UNFCCC, a number of other initiatives oriented towards GHG emissions mitigation and climate change adaptation have been approved and are under implementation process, including:

The Association Agreement between the European Community and the Republic of Moldova[117]. The chapter on climate change focuses on actions in six areas: (i) mitigation; (ii) adaptation; (iii) carbon emission trading; (iv) research, development, implementation and other related issues; (v) integrating climate aspects into sectoral policies and (vi) awareness raising, education and training. The Association Agreement is accompanied by an implementation Program of Action for European Integration: Freedom, Democracy, Welfare[118], which addresses adaptation to climate change and sets the framework for the congruence of Moldovan policies with European ones. The National Action Plan for the implementation of Moldova-EU Association Agreement between 2017-2019[119] was approved through the GD no 1472 of 30.12.2016, modified in 2018. The status of action implementation in abovementioned six climate change areas is presented in the Table 1-10.

Table 1-10: *Climate change status of actions according to R. Moldova-EU Association Agreement*

Climate Change areas	Action	Deadline for implementation	Status of implementation
i) Mitigation	Implementation of three actions from LEDS	QIV, 2019	To be implemented
	Ratification of Paris Agreement	QII, 2017	Implemented
	4 MAMAS developed and promoted for financing	QIV, 2019	12 NAMAs developed and registered to UNFCC NAMA Registry
	Government Decision on approving the Regulation on the mechanism for coordinating NAMAs at national level	QI, 2018	Draft is developed, approval pending
	Approval of the GD on the Regulation of the organization and operation of the	QI, 2018	National system on monitoring and reporting of greenhouse gas emissions

[116] <https://cdm.unfccc.int/Projects/projsearch.html> (click "Database for PAs and PoAs").
[117] Association Agreement between the Republic of Moldova on one hand and the European Union and the European Atomic Energy Community and their Member States on the other, <http://www.parlament.md/LinkClick.aspx?fileticket=gXkOTU94I6Q%3D&tabid=203&language=ro-RO>
[118] Program of Action for European Integration: Freedom, Democracy, Welfare 2011-2014, GD no. 289 of 07.05.2012, <https://gov.md/sites/default/files/document/attachments/program_guvern-ro.pdf>
[119] National Action Plan for Implementation of the Moldova-EU Association Agreement between 2017-2019. GD no 1472 from 30.12.2016. <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=369730>

	National System for Monitoring and Reporting of Greenhouse Gas Emissions		and other relevant information on climate change was approved by the GD no 1277 of 26.12.2018.
	The implementation of the Government Programme for phase-out of HCFCs for 2016-2040 and Action Plan for its implementation during the period 2016-2020 (GD No. 856 dated 13 July 2016)	10% - 2015 35% - 2020	The Action Plan for the period 2016-2020 is under implementation. 35% from the base-level consumption in 2020 will be phased-out.
	The development of the List of Installations subject of environmental authorization	QIII, 2017	Implemented
	GD on approving the Regulation on fluorinated greenhouse gases	QIII, 2018	The MARDE planned to ratify the Kigali Amendment in 2019.
	GD on approving the Program on training and certification requirements for relevant companies and operational staff involved in the maintenance and service works of the equipment which contains fluorinated gases, or gas recovery	QIII, 2018	The Government Decision on certification of RAC technicians was submitted for Government approval.
ii) Adaptation	Elaboration of green certificates circulation system for environmental pollution mitigation	QIV, 2019	To be implemented
	Implementation of the Action Plan of Strategy for adaptation to climate change of the Republic of Moldova up to 2020	15% – 2017; 13% – 2018; 4% – 2019	The status of implementation of Adaptation Strategy is provided in the Annex 2.
	Amending the Law no. 852-XV of February 14, 2002 on the approval of the regulation on the commercial regime and the regulation of the use of halogenated hydrocarbons destroying the ozone layer	QIII, 2019	Under preparation
iii) Carbon emission trading	Assess Moldova's capacity to implement the EU emissions trading system and develop a study in this regard		A feasibility study was carried out in 2012 to assess the possibility of creating carbon market in RM[120]. The study has identified that the implementation of the EU emissions trading scheme is conditioned by the date of Moldova's accession to the EU. Until then, Moldova has to establish and introduce requirements for authorizing, monitoring, reporting and verifying the greenhouse gas emissions [121].
iv) research, development, implementation and other related issues	No specific actions are established	Throughout the duration of the Agreement	National academic institutions are involved in climate change researches and their outcome implementation through annually approved budget financing.
v) integrating climate aspects into sectoral policies	Development of strategies for adaptation to climate change in forestry and health sectors	QIV, 2017	Partially implemented for forestry, health, agriculture, water sectors, while for energy and transport sectors the

[120] <http://www.undp.org/content/dam/moldova/docs/Publications/ETS_Feasibility_Study_UNDP.pdf>
[121] <http://www.mfa.gov.md/img/docs/Annex_6_to_Progress_Report.pdf>

			approval of adaptation measures is to be completed.
vi) awareness raising, education and training	No specific actions are established	Throughout the duration of the Agreement	In the frame of many climate change projects, awareness raising, education and training have been promoted through dedicated publications, organized workshops and training TV and radio broadcasting, web-based activities, online communication, omass-media channels [122,123].

Promoting the "green'' economy program in the Republic of Moldova for the years 2018-2020 and its implementation Action Plan (2018). The implementation of the Program will ensure the development of the necessary capacities of all those involved in the planned activities in order to achieve the following specific targets by 2020: 17% of gross final energy consumption from renewable sources and improvement of energy efficiency by 8.2%; promoting organic farming by implementing green economy principles and expanding the area of agricultural land used for organic farming by about 20%; reducing air pollution by 30% by developing sustainable transport, etc.

The Biological Diversity Strategy for the years 2015-2020[124] addresses the causes of biodiversity loss through the incorporation of requirements such as halting the biodiversity loss process starting with the government and ending with the whole of society.

The Environmental Strategy for 2014-2023 and the its implementation Action Plan[125] ensures the coherence of the long-term strategic planning with the EU rules and has a context for the development and approval of climate change adaptation strategies, but it does not have the institutional framework that would support the development strategies in a participatory manner.

The National Strategy on Ensuring Equality between women and men (2017-2021) in the Republic of Moldova and its implementation Action Plan[126] aims to strengthen the reduction of gender gaps due to the social, economic and environmental vulnerabilities exacerbated by climate change. The strategy includes the area of intervention 2.6. "Climate change", stating as Specific Objective 1.10: Adjustment of sectoral adaptation strategies to climate change by including gender equality[127].

Among other normative acts with significant impact on the achievement of CDM objectives are:

- *The Energy Strategy of the Republic of Moldova until 2030*[128]. For the component "Environmental sustainability and climate change", it is intended to increase energy efficiency and increase the use of

[122] - GCF Readiness Project "Support to Republic of Moldova in establishment and strengthening the NDA, development of strategic framework, and preparation of country programme" 2016-2019;
- UNEP Project "Republic of Moldova: Enabling Activities for the Preparation of the Second Biennial Update Report under the United Nations Framework Convention on Climate Change", 2017-2019;
- UNEP Project "Republic of Moldova: Preparation of the Fourth National Communication and First Biennial Update Report under the UNFCCC", 2014-2017;
- ADA/UNDP Project "Supporting Moldova's National Climate Change Adaptation Planning Process". 2013-2017;
- UNDP Project "Low-Emission Capacity Building Project – Republic of Moldova", 2014-2016;
- UNEP Project "Republic of Moldova: Preparation of Intended Nationally Determined Contribution (INDC) to the 2015 Agreement under the United Nations Framework Convention on Climate Change (UNFCCC)", 2014-2015

[123] http://ecofm.md/intre-da-si-nu-18-12-2018/

[124] The Biological Diversity Strategy for the years 2015-2020 of the Republic of Moldova and its implementation Action Plan, GD no.274 of 18.05.2015, <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=358781>

[125] Government Decision No. 301 of 24.04.2014 regarding the approval of the Environmental Strategy for the years 2014-2023 and its implementation action plan. The Official Gazette no. 104-109. <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=352740>

[126] The National Strategy on Ensuring Equality between women and men (2017-2021)in the Republic of Moldova and its implementation Action Plan, GD no. 259 of 28.04.2017, <http://lex.justice.md/viewdoc.php?action=view&view=doc&id=370442&lang=1>

[127] http://lex.justice.md/viewdoc.php?action=view&view=doc&id=370442&lang=1>

[128] <Official Gazette of RM No. 27-30 of 08.02.2013, RM's Government Decision No. 102 of 05.02.2013 regarding The Energy Strategy of the Republic of Moldova until 2030.

renewable energy sources – by creating a modern regulatory framework. The main 2020 targets outlined in the document are: 20% reduction in energy intensity; reducing energy consumption in buildings by 20%; ensuring the share of annual electricity production from renewable energy sources of 10%; ensuring the share of biofuels in total fuels of 10%.

- The Law on Energy Efficiency[129].
- The Law on Promotion of the Use of Renewable Energy[130].
- Creation of Energy Efficiency Fund[131].
- National State Program on Regeneration and Afforestation of Forest Land for the period 2003-2020[132].
- Project: Climate Change Adaptation of Forestry sector for the years 2017-2025 and Action Plan[133].
- Inclusive Rural Economic and Climate Resilience Program (IFAD VI): conservative agriculture and value chains for 2014-2020[134], Inclusive Rural Financing for the period 2014-2020[135], for SMEs for the period 2014-2020[136], infrastructure for the period 2014-2020[137].
- The waste management Strategy in the Republic of Moldova for the years 2013-2027[138], The Law on Payment for Environmental Pollution[139], etc.

Snapshot of key national institutional partners active in climate change. The Ministry of Agriculture, Regional Development and Environment (MARDE), including the Climate Change Office, is the most important contributor to promoting the country's climate change policies. In addition, the Ministry of Health, Labour and Social Protection and the Energy Efficiency Agency are making significant efforts to implement climate change adaptation policies and GHG Emission Reduction Policies, respectively.

MARDE is the state authority responsible for the following areas: (1) agriculture; (2) food production; (3) food safety; (4) regional and rural development; (5) spatial planning; (6) environmental protection and climate change; (7) natural resources.

The main functions of the Ministry are: (i) development of policy documents, drafting of normative acts within its competence; (ii) collaborating, in accordance with national legislation, with international institutions in the areas of competence; (iii) the implementation of the normative acts and the implementation of the international treaties of the Republic of Moldova in the competence related areas, submitting reports on their execution; (iv) review and approve draft normative acts prepared by other public administration authorities and submitted for review; (v) preparing and presenting budget proposals in the areas of competence, drawing up the annual work plan, and annual monitoring of the degree of plan

[129] The Law on Energy Efficiency, no. 142 of 02.07.2010. Official Gazette no.155-158/545 of 03.09.2010.
[130] The Law on Promotion of the Use of Renewable Energy, no. 10 of 26.02.2016. Official Gazette no. 69-77/117 of 25.03.2016.
[131] Official Gazette of the RM No. 126-129 of 22.06.2012, the RM's Government Decision No. 401 of 12.06.2012 regarding the Energy Efficiency Fund.
[132] Official Gazette of the RM No. 132-133 of 01.07.2003, the RM's Government Decision No. 737 of 17.06.2003 regarding the National State Program on Regeneration and Afforestation of Forest Land for the period 2003-2020
[133] <http://adapt.clima.md/public/files/publication/STRATEGIA_SECTORIALA_FORESTIER.pdf>
[134] Inclusive Rural Economic and Climate Resilience Programme (IFAD VI): conservative agriculture and value chains for 2014-2020 <http://aipa.gov.md/ro/content/programul-rural-de-rezilien%C8%9B%C4%83-economico-%E2%80%93-climatic%C4%83-incluziv%C4%83-ifad-vi-agricultura>
[135] Inclusive Rural Economic and Climate Resilience Programme (IFAD VI) - Inclusive Rural Financing for the period 2014-2020. <http://aipa.gov.md/ro/content/programul-rural-de-rezilien%C8%9B%C4%83-economico-%E2%80%93-climatic%C4%83-incluziv%C4%83-ifad-vi-finan%C8%9Bare-rural%C4%83>
[136] Inclusive Rural Economic and Climate Resilience Programme (IFAD VI) - for SMEs for the period 2014-2020. <http://aipa.gov.md/ro/content/programul-rural-de-rezilien%C8%9B%C4%83-economico-%E2%80%93-climatic%C4%83-incluziv%C4%83-ifad-vi-pentru-imm>
[137] Inclusive Rural Economic and Climate Resilience Programme (IFAD VI) - infrastructure for the period 2014-2020. <http://aipa.gov.md/ro/content/programul-rural-de-rezilien%C8%9B%C4%83-economico-%E2%80%93-climatic%C4%83-incluziv%C4%83-ifad-vi-infrastructur%C4%83>
[138] Official Gazette of the RM No. 82 of 12.04.2013, the RM's Government Decision No. 248 of 10.04.2013 regarding the Waste Management Strategy in the Republic of Moldova for the years 2013-2027.
[139] Official Gazette of the RM no. 54-55 of 18.06.1998, the RM's Parliament, Law no. 1540 of 25.02.1998 on Payment for Environmental Pollution.

implementation by elaborating and publishing the respective reports; (vi) organization the planning, execution, accounting and budget reporting systems within the Ministry and, where appropriate, within the subordinated budget authorities / institutions; (vii) coordination and monitoring, of the activity of subordinated administrative authorities and decentralized public services and of the public institutions in which it is the founder; (viii) other specific functions. On behalf of the Government of the Republic of Moldova, the Ministry is responsible for implementing the international environmental treaties to which the Republic of Moldova is a Party. Ministerial representatives also have the function of the Focal Point of the United Nations Framework Convention on Climate Change and represent the National Designated Authority for GCF.

By the Government Decision no. 1574 of December 26, 2003, the *"National Commission for the implementation and achievement of the provisions of the United Nations Framework Convention on Climate Change as well as the provisions and mechanisms of the Kyoto Protocol"* (NCKP) was created in the Republic of Moldova. According to Article 2 of the Activity Regulation, the *"National Commission"* is the supreme authority in the Republic of Moldova, responsible for the implementation and achievement of the UNFCCC provisions as well as the mechanisms and provisions of the Kyoto Protocol. The Secretary of the Commission, fulfilled by the Climate Change Office, within the "Environment Projects Implementation Unit", Ministry of Agriculture, Regional Development and Environment, provides technical support to the activity of the National Commission.

The "Climate Change" Office was established by order no. 21 of 11 February 2004 of the Ministry of Ecology, Constructions and Territorial Development of the Republic of Moldova, now, the Ministry of Agriculture, Regional Development and Environment, by Government Decision of the RM No. 1249 of 2018.

The main tasks of the "Climate Change" Office are: (a) providing assistance to central and local public authority institutions, non-governmental and academic organizations, in the activities implemented and promoted by the Republic of Moldova under the United Nations Framework Convention on Climate Change and the Kyoto Protocol; (b)implementing Climate Change projects and programs, which include activities such as: greenhouse gas emission assessment and preparation of national inventory reports for greenhouse gas emissions and sequestration; development and implementation of GHG mitigation activities; developing and implementing measures and projects in climate change adaptation; assessment of the climate change impact on the biological and socio-economic components of the country; cooperation, promotion and implementation of activities and projects under the Kyoto Protocol's Clean Development Mechanism; implementation and facilitation of awareness and information activities for civil society, recruiting relevant specialists and decision-makers on climate change issues, etc.

The role of the "Climate Change" Office is also specified in the Government Decision no. 141 of 24.02.2014 regarding the establishment of the energy statistics system. Thus, chapter 2.1 (3 (h)) specifies that the Climate Change Office is responsible for the preparation of national inventories of direct greenhouse gases (CO_2, CH_4, N_2O, HFC, PFC and SF_6) and indirect (NOx, CO, NMVOC and SO_2) from six sectors (energy, industrial processes, solvents and other uses of products, agriculture, land use, land use change and forestry, and waste). From its beginning and until now, the Climate Change Office has been fully responsible for the activities associated with the preparation of National Communications and since 2014, of the Updated Biennial Reports.

There are three working groups within Climate Change Office: "Greenhouse Gas Inventory", "Climate Change Mitigation Assessment, Monitoring, Reporting and Verification of Climate Change Mitigation Activities" and "Climate modelling, vulnerability assessment and climate change adaptation".

The Climate Change Office is also an active actor in attracting sources from international funds through the development and implementation of climate change adaptation or GHG emission mitigation proposals (the Green Climate Fund, Austrian Development Agency, the Adaptation Fund, the Global Environmental Fund,

etc.) The developed project proposals are oriented both to strengthen the institutional capacities and implement climate action in the priority areas of the country.

It should be noted that NCKP is to be reorganized into the National Commission for Climate Change (NCCC) with functions and responsibilities described in chapter 2.1 The Government Decision is to be approved soon.

Among the national institutional partners involved in the promotion of climate change adaptation and GHG mitigation measures are the investment funds described in chapter 1.3.3, created in the country and focusing on climate change as well.

Snapshot of existing monitoring systems and predictive climate tools. At present, the Republic of Moldova has developed (end of 2015) the Report on the National Inventory System, using as a starting point, six templates elaborated by the United States Environmental Protection Agency, in order to improve the transparency, stability, comparability, completeness and accuracy of the national inventory of greenhouse gas emissions from sources and sequestration of carbon dioxide not controlled by the Montreal Protocol.

As part of the ongoing effort to produce a qualitative, transparent and credible inventory, in 2005 the Republic of Moldova developed, and periodically updates its "Quality Assurance and Quality Control Plan". The key features of the "QA/QC Plan" include detailed specific procedures and typical quality control and verification forms according to Tier 1 (general procedures) and Tier 2 methodologies (specific procedures for individual categories) to standardize the process of implementing Quality Assurance (QA) and Quality Control (QC) activities for the national inventory; also the external technical reviews (audits) carried out by the staff not directly involved in the national inventory drafting and development (both by national and international consultants included in the UNFCCC roster of experts); checking the quality of activity data, including by comparing sets of data obtained from different sources; planning and coordinating the inventory process at inter-institutional level; as well as continuous documentation of the national inventory development process.

The Carbon Finance Office[140] was created to develop, coordinate and/or implement the Clean Development Mechanism projects. The Office's main tasks are: to prepare a Plan for monitoring projects supported by the World Bank and the Community Development Carbon Fund regarding the Clean Development Mechanism: "Energy conservation and reduction of greenhouse gas emissions associated with the Energy-II project" and "District heating by burning biomass in the rural communities of the Republic of Moldova"; evaluation and monitoring of their implementation, and the development of new MDN / CDM projects. According to the Government Decision of the RM No. 1249 of 2018 the Carbon Finance Office finished its functioning.

For monitoring the progress in vulnerability reduction, the vulnerability profile of the country was developed by applying climate vulnerability indexes at the national and sub-national levels. Climate Vulnerability Index of Moldova (CVIM) was developed based on the Vulnerability and Resilience Indicators Model (VRIM)[141,142,143]. The applied methodology allowed concurrent analysis of several sectors, obtaining the Climate Vulnerability Index of Moldova, and also highlighted the adaptive capacity of the country, which shows a development potential.

Vulnerability assessment at district level was performed on the basis of the Livelihood Vulnerability Index (LVI), calculated according to the methods described by Hahn et al. (2009); Sullivan et al. (2005). For the

[140] <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=305384>
[141] Moss, R.H., Brenkert, A.L., Malone, E.L. (2001), Vulnerability to Climate Change: A Quantitative Approach. PNNLSA-33642, Pacific Northwest National Laboratory, Washington, DC.
[142] Brenkert, A. & Malone, E. (2005), Modelling vulnerability and resilience to climate change: A case study of India and Indian States. Climatic Change, 72, 57–102. P. 37.
[143] Malone, E.L., Brenkert A.L. (2008), Uncertainty in resilience to climate change in India and Indian states. Climatic Change. 91: 451-476 pp.

establishment of LVI, a set of indicators was used to assess exposure to climate variability, social and economic characteristics of existence. Thus, the calculated LVI includes four major components: demographic, climatic, agricultural and occupational, and each major component is made up of several indicators that have their significance as contributors to LVI estimation.

On the basis of the obtained results, using the GIS technologies, the distribution map of the average value of the LVI per administrative-territorial units of the Republic of Moldova was prepared, for the period study: 2006-2011 (Figure 1-8). The mapping technique has allowed to integrate information on the vulnerability aspects of the country's administrative-territorial units as well as to visualize the vulnerability distribution and identify the increased vulnerability areas and areas with better adaptation potential. Generated maps provide useful information for the population of districts and communities, for local public authorities and decision-makers at all levels.

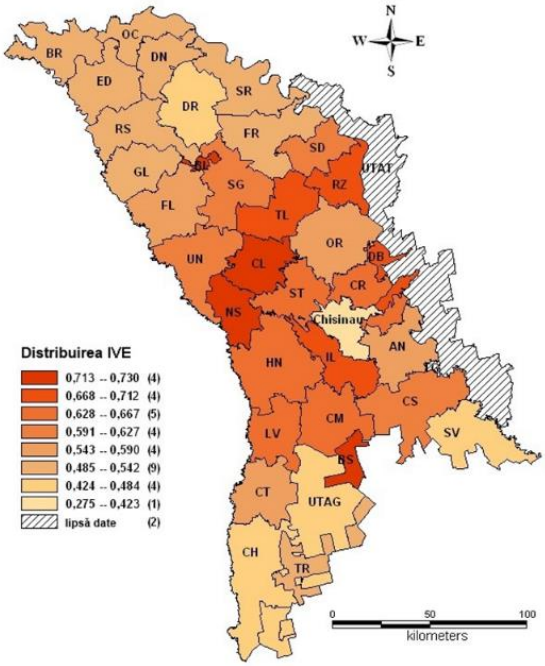

Figure 1-8: *Vulnerability index mapping at the district/administrative-territorial units level based on LVI value for the period 2006-2011*.

Vulnerability assessments were carried out for each sector during the development of adaptation policy documents of forestry, health, transport and energy sectors and during the mainstreaming of adaptation measures into district level socio-economic planning documents.

The Monitoring and Evaluation (M&E) concept of Climate Change Adaptation was developed and tailored to specific circumstances of Moldova's adaptation planning and implementation. The proposed framework addresses the issues of monitoring, reporting and evaluation of adaptation, overcoming the barriers and constraints with respect to the development of adaptation indicators. The M&E system has the purpose to assess and track progress under the successive NAPs/SAPs. The system serves as a basis to plan future iterations of each plan based on a sectoral approach and the institutional set-up for coordinating adaptation planning, to ensure that actions are geared towards a common adaptation goal established for each NAP and monitored through the M&E system. The M&E system at sectorial and national levels is aligned with national priorities and catalyzes national level learning for further planning and is gender-sensitive in its composition and activities.

The M&E system for Moldova's adaptation component will serve the following purposes:

- create a set of overarching adaptation goals to which each sector will contribute;
- track and monitor individual sectoral objectives and indicators;
- allow for iterative planning and continuous, evidence-based adaptation planning;
- enforce the gradual integration of adaptation priorities in regular development planning;
- ensure transparency of adaptation process and data collection;
- measure and monitor the outcomes and impacts of adaptation activities, investments, programs on women and men's resilience to climate change from a gender-responsive perspective.

The monitoring and evaluation of the adaptation process are carried out on the basis of indicators, which measure and reflect progress at national, sectoral, geographic, administrative levels and determine whether Moldova is less vulnerable to the impact of climate change as a result of its successive plans.

The indicator-based monitoring system is operated through the Climate Change Adaptation Information System with a web-based portal[144], designed to present public information on adaptation of economy sectors and a platform of monitoring, reporting and evaluation based on developed indicators.

Also, as part of the M&E system, the Climate Budget Tagging process (CBT) is being implemented in the Republic of Moldova, focusing to improve the understanding of the financing and the amount of funds spent for national responses to climate change, through which programs, climate funds are spent and which of these include climate change objectives (or co-benefits). The CBT process has been tested at budget execution level of 2017 y.

The M&E system also includes the knowledge management and communication component that helps to raise public awareness and disseminate public information about the most effective adaptation strategies and the methods to integrate climate change issues into development plans, other knowledge information.

1.3.2 Regional engagement

As mentioned above, the Republic of Moldova signed the Association Agreement with the European Union in 2014, whereby the country also committed to aligning with the EU climate change policy. Through the Association Agreement, Moldova has made a large number of commitments. This document contains 395 directives and regulations, which, once implemented in the national legislation, will make Moldova a country with an integrated EU Community Acquis. The Association Agreement shall contribute to the political and socio-economic development of the Republic of Moldova through the widest possible cooperation in a wide range of common interest areas, including in the areas of good governance, justice, freedom and security, trade integration and economic cooperation growth, employment and social policy, financial management, public administration and public service reform, civil society participation, institutional development, poverty reduction and sustainable development. The agreement contains binding provisions, regulatory rules and wider cooperation arrangements in all sectors of interest, including those related to GHG emissions reduction and adaptation to climate change.

On 17th of March 2010, Moldova signed the protocol regarding the accession of the Republic of Moldova to the European Energy Community (EEC), which allows the country to be an active member of the regional and European energy market, obliging the state to align the national energy legislation with a community acquis. In addition to the EU Member States, all non-member states in the Balkan Peninsula, as well as Moldova and Ukraine, are also part of the EEC. The main objectives of the Community are: creating a stable, investment-friendly legal and commercial framework in order to enable a solid and permanent supply of energy; creating a single regulatory space for network exchanges; improving security of energy supply and developing relations with neighboring countries; improving energy efficiency and environmental status related to network energy; development of renewable energies; development of competition in the

[144] <http://portal.clima.md/>

network energy markets[145]. The key priority for 2019 is the adoption of goals by 2030 in the area of renewable energy, energy efficiency and reducing greenhouse gas emissions in the Energy Community by transposing the recent EU clean energy package for members of the Energy Community.

The Republic of Moldova participates in the Danube Transnational Program, whose main objective is to stimulate innovation and entrepreneurship, to preserve the natural and cultural heritage of the Danube region, to improve connectivity and to support the transition to a low-carbon economy. The Transnational Danube Program finances transnational cooperation projects in line with the priorities of the EU Strategy for the Danube Region (EUSDR)[146].

The geographical concentration of the program corresponds to the area covered by the EU Strategy for the Danube Region and includes regions from nine Member States (Austria, Bulgaria, Croatia, Czech Republic, Hungary, Germany - the Länder of Bavaria and Baden Wurttemberg, Romania, Slovakia and Slovenia) financed by the Regional Development European Fund, three candidate countries (Bosnia and Herzegovina, Serbia and Montenegro) financed by the Instrument for Pre-Accession Assistance and two third countries (the Republic of Moldova and Ukraine participating with 4 program areas) financed by the European Neighbourhood Instrument.

The Ministry of Agriculture, Regional Development and Environment fulfills the role of National Authority and National Contact Point for this program. The Managing Authority and the Joint Secretariat are located in Budapest, Hungary, within the Ministry of National Economy. The eligible beneficiaries are: local/regional/ national authorities, public law bodies, European territorial cooperation groups, international organizations and private bodies, including SMEs from all districts of the country.

1.3.3 Access to finance

In overcoming the phenomenon of climate change, Moldova has contributed through human capacities, own resources and co-financing of international efforts. Over the past few years, efforts have been made for the country to strengthen its capacity to implement large projects and to absorb external resources in accelerating the course of development through a low carbon emission policy and climate change resilience.

At the same time, through the development of the Country Program within the GCF project, Moldova makes an effort to move from the punctual and fragmented orientation through one-time projects towards a programmatic and coherent approach aligned with the objectives of sustainable development and climate change resilience.

This effort is in response to the country's policies towards the challenges of climate change, expressed in the country's key strategies such as The R. of Moldova's Climate Change Adaptation Strategy until 2020 and the Low-emission development strategy of the Republic of Moldova until 2030, each of these Strategies having the Action Plan for its implementation[147,148]. Until their approval, the country authorities' actions regarding climate change reflected a set of rules laid down in a multitude of normative acts. The issue of climate change was tangentially expressed in these acts, mostly with a focus on sustainable development, which also promoted the reduction of greenhouse gases emissions, in particular through energy efficiency, the development of renewable energy sources and conservative agriculture, etc.

[145] Energy Community Treaty, <http://europa.eu/legislation_summaries/enlargement/western_balkans/l27074_ro.htm>
[146] <http://www.mdrap.ro/comunicare/presa/comunicate/22-de-proiecte-transnationale-selectate-de-catre-comitetul-de-monitorizare-al-programului-transnational-dunarea-7932>
[147] GD no. 1009 of 10.12.2014 regarding the Moldova's 2020 Climate Change Adaptation Strategy and its implementation Action Plan, Official Gazette no. 372-384 of 19.12.2014.
[148] Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action Plan GD no. 1470 of 30th of December 2016. Official Gazette 2017, no. 85-91.

In this direction major investments were made[149], however, in the adaptation area, the results are relatively modest. For example, from the external funds of about 2.55 billion Euros, only about 2.6% of them were devoted to environmental protection and climate change, mostly to climate change adaptation actions, during the period 2009-01.10.2018. This share is expected to increase through the contribution of the GCF, but also through other existing funds at the moment.

Moldova's available funds for climate change adaptation and mitigation of greenhouse gas emissions come from two sources: external and internal.

Internal sources. Among the investment funds created in the country, oriented towards climate change, are the following:

The National Ecological Fund (NEF)[150]: In the Republic of Moldova, access to financing from national funds is possible through a two-tier system of ecological funds, which includes *the National Ecological Fund (NEF)* and *36 local ecological funds*. NEF is under the direct authority of MARDE. The general mandate of the NEF is to provide grants to support environmental protection projects and environmental research and to support the functioning environmental NGOs. The NEF resources can only be used for activities to implement action plans and programs in environmental protection, among them there are several areas referring to climate change: restoration and creation of forests and green areas, prevention of landslides and soil erosion, reconstruction and protection of natural ecosystems, conservation of biological diversity, prevention or liquidation of consequences of natural disasters, population's ecological awareness. The legal framework of NEF doesn't specify any provisions on its right to enter in a co-financing activity. Grants can be awarded to local government bodies, institutions, enterprises, civil society organizations in Moldova. Organizations that already benefit from a grant from the National Ecological Fund and are in the process of project implementation are not eligible. The financial contribution must be at least 30% of the total cost of the project and can be provided both by the grant applicant and other donors: district councils, companies, town halls, communities, other funds, etc.

The National Fund for Regional Development (NFRD)[151]: NFRD became operational from 2011 and has a budget of 150-200 million lei annually (US $ 9-12 million). It is the largest internal source of funding regional development projects. The fund is managed by the MARDE. From 2013, NFRD is also involved in energy efficiency projects. The three regional development agencies (Centre, North and South) are responsible for project implementation and report to MARDE. The legal framework of NFRD doesn't specify any provisions on its right to enter in a co-financing activity. Priority areas include rehabilitation of physical infrastructure, including water supply and sewerage networks; environment protection; solid waste management. The fund provides grants and projects are selected by an inter-ministerial commission. Local government, public and private organizations are eligible beneficiaries.

The Energy Efficiency Fund (EEF)[152]: contributes significantly to the mitigation of GHG emissions. The objective of the Fund is to attract and manage financial resources to fund and implement energy efficiency projects and to enhance renewable energy sources in accordance with the strategies and programs developed by the Government of the Republic of Moldova. The legal framework of EEF doesn't specify any provisions on its right to enter in a co-financing activity.

The evolution of funds approved by NEF, NFRD and EEF for financing environmental-related projects during the years 2014-2018 is shown in Figure 1-9. Total investment from these three funds during this time period

[149] For example, through the EBRD MoSEFF (42 million Euro) and MoREEFF (35 million Euro) projects, through the EU Energy and Biomass projects (about 15 mil Euro), EEF through the energy efficiency projects submitted by the local public authorities (about 25 mil Euro), etc.
[150] <http://madrm.gov.md/ro/content/fondul-ecologic-na%C8%9Bional>
[151] <http://www.serviciilocale.md/pageview.php?l=ro&idc=94&id=150&t=/Cadrul-legal-si-institutional/Dezvoltare-regionala/Fondul-National-pentru-Dezvoltare-Regionala/>
[152] Energy Efficiency Fund of the Republic of Moldova <http://www.fee.md/index.php?l=ro>

amounts 160.2 million Euros. The biggest contribution comes from NEF (54.5%), followed by NFRD (25.5%) and EFF (20%). NEF started to provide climate-related financing only lately, EFF – mitigation projects and NFRD – can finance both adaptation and mitigation actions. The amount of investments in climate related actions is not specified, but it is assumed 87.4 mil Euros refer to adaptation projects, 32 mil Euros - to mitigation ones and 40.9 mil Euros to both, during the last five years time period.

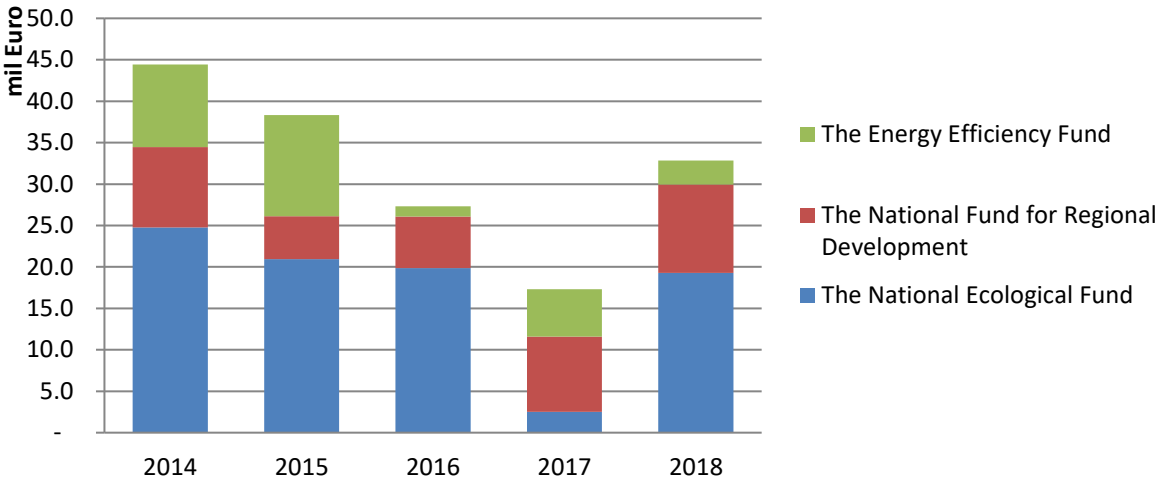

Figure 1-9: *The evolution of internal financing approved in 2014-2018 for environmentally-related projects in the R. of Moldova that have adaptation and mitigation co-benefits.*

The exercise on climate tagging of the public budget, by applying the methodology using the budget classification by programs and activity level, allows for identification of the share of adaptation and mitigation measures form the climate expenditure. The activity was implemented by the representatives of the central public authority (line Ministries), sector-level budget executors after the relevant training provided. Thus, the executed amounts of the state budget for the year 2017 have been established as a basis for calculation. The share of climate (direct and indirect) expenditures of the total budget was 13.5% (11.5% for adaptation measures and 2 % for mitigation measures). Climate expenditure tracking exercise was performed for the first time on the purpose of testing the methodology, get the feedback from the executors and promote it as part of the mandatory reporting activity at sector level. Further on application of this methodology will help technical planners systematically identify and prioritize climate-related programs, activities and projects in its sectoral budget proposals along with executed yearly budget. The tagging of climate expenditures supports the ability of the Ministry of Finance (MoF) and the Ministry of Agriculture, Regional Development and Environment to track climate expenditures in sectoral budgets and improves their ability to monitor progress on climate change `*vis-à-vis*` Moldova's national development goals and international commitments. This process also supports the development of the financial records required to help build a climate-financing framework.

Considering the abovementioned information on scarce climate-related finances, the Republic of Moldova counts on the support from the Green Climate Fund to strengthen its institutional capacities, especially through the investments oriented to the implementation of adaptation and mitigation actions in order to push the country towards a low-emission development path and climate change resilience.

External sources. While internal domestic sources supporting climate action come mostly from the public sector, the decision-makers face a growing challenge in committing to large scale transformational mitigation and adaptation action perceived as an additional element to the sustainable development. Due to domestic budget constraints, the external support received by the Republic of Moldova to address

climate change plays an important role in planning and implementing climate action at the national and sub-national levels.

The Government of the Republic of Moldova accesses money from the international funds on preferential terms through credit schemes, grants or subsidies. Interest rates on these preferential funding, are lower, or, they are not applied under the grants and subsidies. Also, the repayment period of loans is several times longer than on commercial loans, many of them also providing grace periods.

Among the external assistance funds that can contribute to the climate change issues are[153]: Global Environment Fund; Austrian Development Agency the International Cooperation Agency of Germany; the Swedish International Cooperation and Development Agency; European Bank for Reconstruction and Development (Sustainable Energy Financing in Moldova, Energy Efficiency Finance for Moldova's Residential Sector); World Bank. The Republic of Moldova is eligible for these funds and efforts are being made to increase internal capacities to access and assimilate them with the opportunity to streamline these funds towards climate change mitigation and adaptation.

The overall Official Development Assistance (ODA) portfolio addresses general climate change concerns, with some dedicated interventions to mitigation, while adaptation is mainstreamed within ongoing development co-operation activities that are at risk to climate change, and few projects targeted dedicated adaptation planning and implementation. However, at the current stage of adaptation implementation in the country both adaptation - dedicated and adaptation - relevant financing directions are important.

The Government of the Republic of Moldova has elaborated the policy and development objectives that ensure better coordination and synergy in the process of programming, implementation, monitoring and evaluation of external assistance by establishing a broad consultative process and dialogue between the Government, the private sector and civil society. Received support is monitored through the External Assistance Management Platform (AMP) with the aim of increasing transparency in the use of external assistance, accountability in management and capitalization of financial resources that the Republic of Moldova benefits, as well as to secure one more good information of society as to how it is spent. Moldova uses also thematic Donor Coordinating Councils to harness mitigation and adaptation support and align it with NDCs priorities.

The share of climate-related finance for both adaptation and mitigation in the bellow presented data is an estimative one, as the implemented interventions had not well-stated climate rationale, climate objectives and targets, however, by their effect, they produced co-benefits for adaptation and mitigation, therefore, we consider them as climate-related development finance.

According to OECD statistics[154], gross Official Development Assistance (ODA) for Republic of Moldova reached $370.7 million in 2015, with the two largest donors being institutions of the European Union at $134.8 million, and the United States at $108.6 million. About 80% of climate-related development finance flow was committed through multilateral channels: the European Bank for Reconstruction and Development, the European Investment Bank, and the World Bank Group using mainly loans, while the remainder was committed by bilateral sources (e.g. the European Union, Germany and Japan), mainly in the form of grants. The AMP platform states that the ODA value in 2015 decreased by 26.7% compared to 2014, the main reason being the reduced financing from the EU and World Bank budget support programs.

Unfortunately, due to the degradation of the democratic principles in the country, climate-related external development finance to R. of Moldova during the years, 2014-2018 has had a decreasing trend, starting

[153] Analysis of the financial instruments market to facilitate green technologies. This study was carried out by Fast Training Consulting LTD within the GEF-UNDP project "Strengthening the implementation capacities of environmental tax reform to achieve national and global environmental priorities" implemented by the United Nations Development Program (UNDP) in the Republic of Moldova and the Ministry of Environment of the Republic of Moldova, with the financial support of the Global Environment Facility (GEF).
[154] http://www.oecd.org/dac/stats/aid-at-a-glance.htm

with 160.9 million € in 2014 and ending with 1.05 million € in 2018. According to AMP, the external development finance during this time period amounted 232.05 million €, of which 58.2% was committed to mitigation (only) projects, 40.8% to adaptation only and 1% to cross-cutting projects (both mitigation and adaptation) (Figure 1-10). The political coalition created in 2019 has proclaimed to put in effect a paradigm shift from captured and oligarchized state to one based on democracy and freedom.

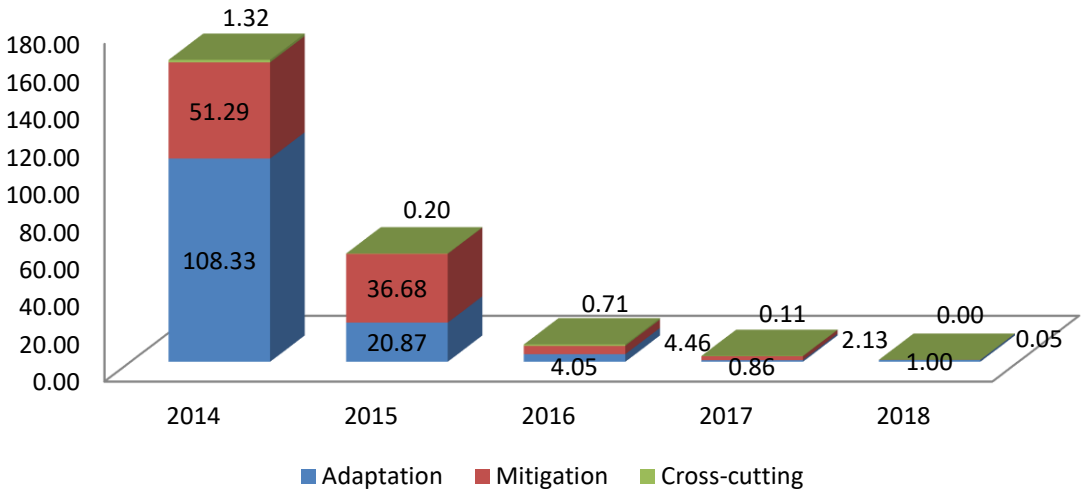

Figure 1-10: *Climate-related development finance flows in 2014-2018, mil € (Source: based on input data of External Assistance Management Platform (AMP)[155])*

The largest amounts of climate-related development finance during 2014-2018 were committed to the water supply and sanitation, transport and energy generation and supply (Figure 1-11). Lack of appropriate water supply and sanitation system in the rural sector motivated the authorities to declare this activity as one of the top priorities, reflecting mostly adaptation to climate change. More than 40 different projects in the water and sanitation sector (about 17 million Euro per year), supported by 10 institutions and donors, reflect the importance of this sector in the country both for adaptation and mitigation.

A relatively large amount of climate-related development finance (around 10 million Euro per year) was also committed to the energy generation and supply sector, targeting renewable and non-renewable energy generators, and improvement of heat distribution networks and energy-related policy reforms. The biggest contribution in this domain belongs to EU through its project "Energy and Biomass in Moldova" (2011-2018, 23.4 mil Euro).

The transport sector also received a substantial amount of climate-related development finance (10 million Euro per year), which reflect a strong increase in energy use in the sector in the past decade (35% increase in 2016 vs 2005). Nonetheless, this amount is attributed to a large rail transport project supported by the EBRD (52.5 million Euro concessional loan in 2014) and considered climate expenditures due to its contribution to infrastructure improvement.

[155] <http://amp.gov.md/portal/>

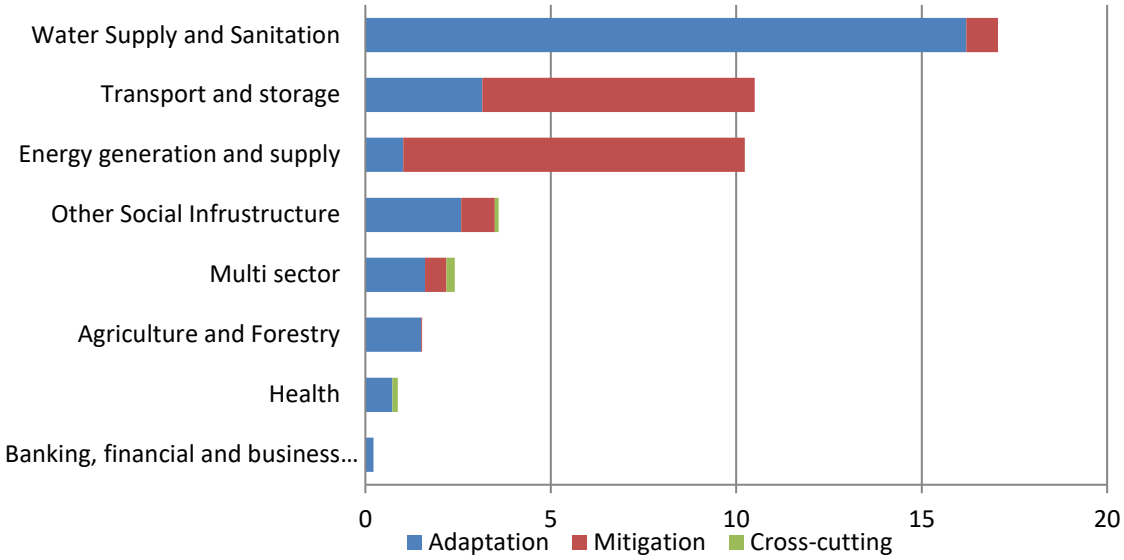

Figure 1-11: *Climate-related development finance by sectors in 2014-2018 (million Euro per year: 2014-2018 average) (Source: based on input data of External Assistance Management Platform (AMP))*

Multilateral development banks (MDBs), bilateral DAC-member donors and international climate funds committed climate-related development finance to support Moldova, using various financial instruments (Figure 1-12). Finance channelled through MDBs accounted for about 69% while bilateral support stood at 30% in 2014-2018. Most of the MDB's financing use concessional and non-concessional loans, while DAC member's finance mostly grants. Regarding climate funds, the Global Environment Facility (GEF) is the main entity that provides loans and grants (75%).

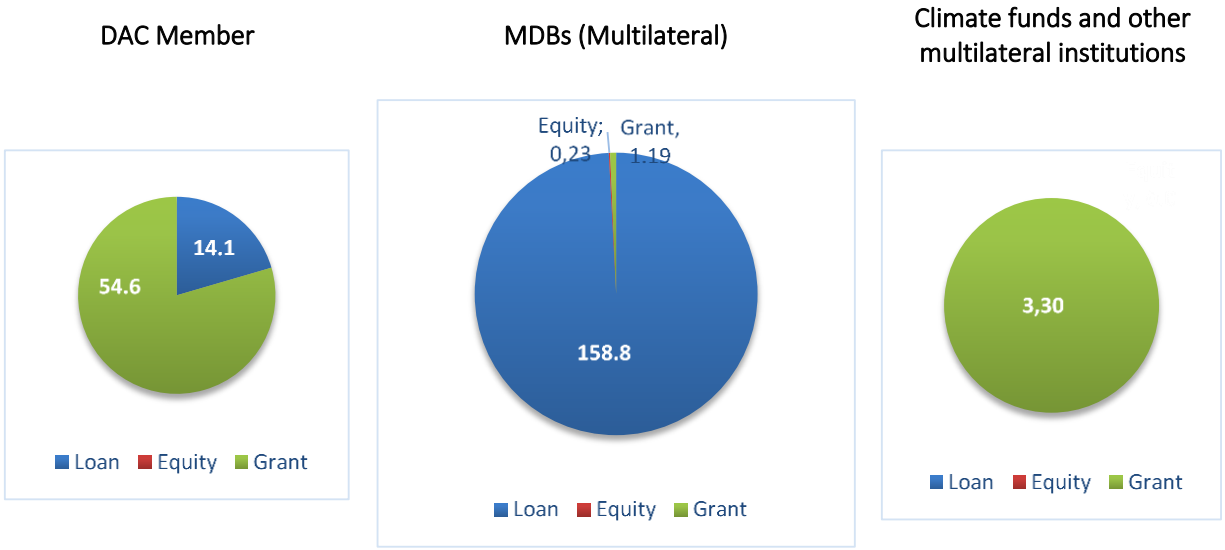

Figure 1-12: *Channels and financial instruments used to deliver climate-related development finance, total mil Euro 2014-2018 (Source: based on input data of External Assistance Management Platform (AMP)).*

The EBRD, World Bank and the European Investment Bank (EIB) committed the largest amounts of development finance in Moldova in 2014-2018 (Figure 1-13), that part can be attributed to climate. The European Union (EU) also committed a large amount of finance. The EU's commitment was made to the "Eastern Partnership Integration and Cooperation' (EaPIC) programme" whereby the projects on biomass

energy and energy sector reform have been implemented during 2011-2018 in two phases, 2011-2014 and 2015-2018. Austria Government has committed to supporting a number of projects mainly with adaptation co-benefits, including water and sanitation, health, municipal infrastructure and services but also financing adaptation planning in Moldova, specifically the NAP1. Germany's commitment was mostly attributed to support for development of water and sanitation sector and energy generation and supply, with benefits attributed to both mitigation and adaptation. Romania commitment was focused on rehabilitation of social building, population health, energy production and supply, water and sanitation sectors, investments targeting direct climate benefits are currently under consideration.

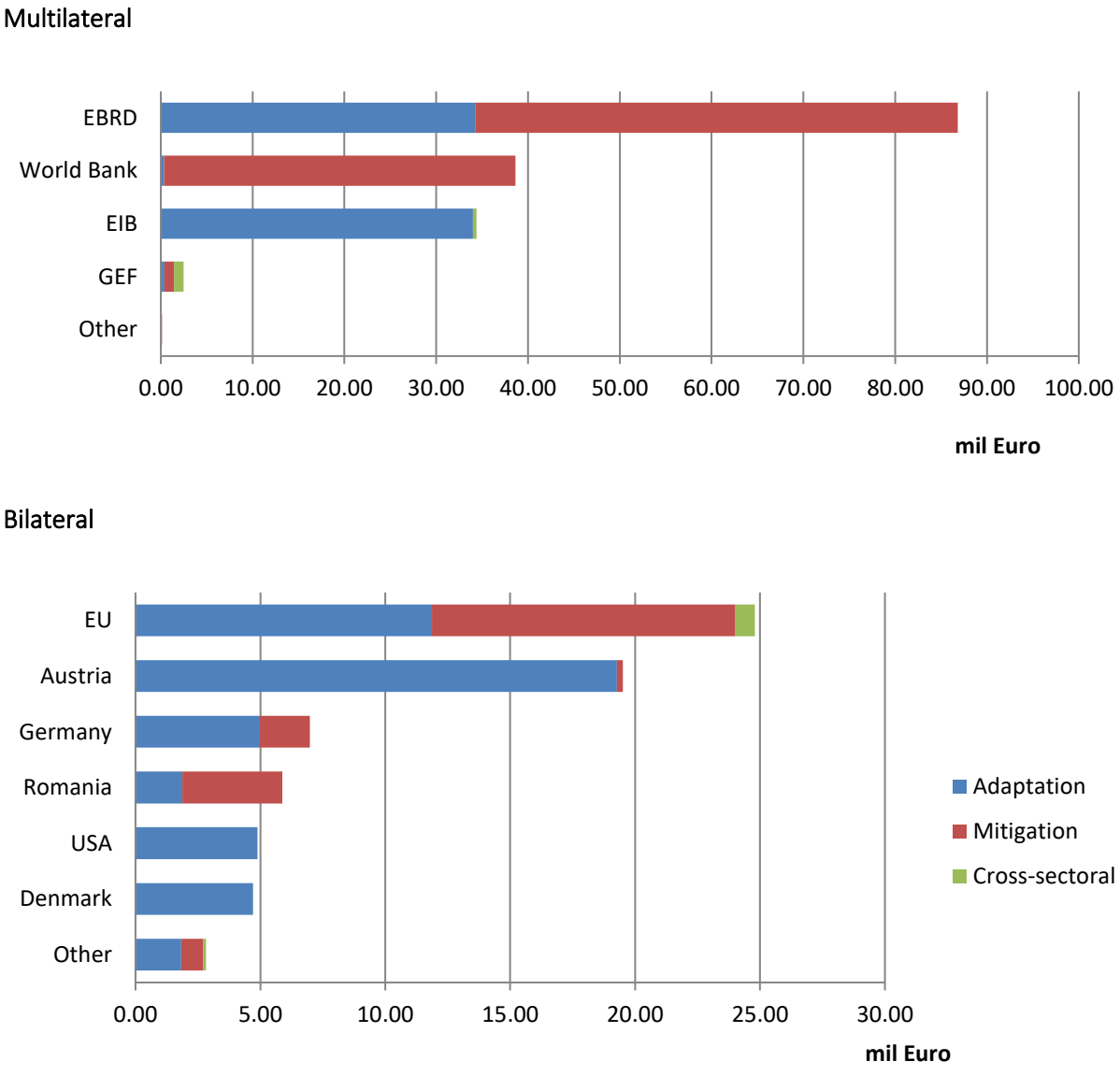

Figure 1-13: *Major providers of climate-related development finance to the R. of Moldova in 2014-2018, mil euro (Source: based on input data of External Assistance Management Platform (AMP)).*

Detailed information on climate-dedicated projects financed from external sources is provided in the Annex 15.

As it was mentioned above, starting with 2019 R. of Moldova expects to have a significant increase of donors' financial support in its economy, including for the development of climate-related projects. In this line, it should be activated first of all the agreements reached during the last years which have been frozen because of avoiding democratic values by the former country leadership. For medium terms these agreements along with others found at the final stage of negotiations are presented in the Table 1-11.

Table 1-11: *Project budget, including co-financing for implementation of climate-related projects in medium terms*

Donor	Project/Programme	Amount	Implementation Timeframe
EIB EBRD	Rehabilitation of national roads[156]	59.4 mil € 32.4 mil €	2019-2022
EBRD EIB EU NIP (grant component – in process of negotiation)	Improving the energy efficiency of public and residential buildings in the Republic of Moldova[157]	80 mil €	2019-2023
Japan International Cooperation Agency (JICA)	Development of the capacities of local energy managers with a view of good implementation of state energy efficiency policies at local level[158]	5 mil US$	2019-2021
USAID	Clean Technology Innovation Programme for SMEs and Start-ups in the Republic of Moldova[159];	2.25 mil US$	2019-2021
	Farmer to Farmer Program in Moldova[160]	1,313,140 US$	2018-2021
CPIU-IFAD	Inclusive Rural Economic and Climate Resilience Programme (IFAD VI)[161] and Rural Resilience Project (IFAD VII)[162].	26.08 mil US$ 23.7 mil US$	2014-2020 2017-2022
ADA/UNDP	Promotion of climate change and disaster risk reduction solution in the water and civil protection sectors for enhanced rural resilience[163]	1,294,686 US$	2019-2021
European Union/UNDP	EU4Climate[164]	1,080,700 US$	2019-2022
Government of Romania	Elimination of the groundwater direct pollution sources through the preservation or liquidation of the abandoned or damaged deep water wells on the territory of the Republic of Moldova.	2,650,000 €	2016-2019
	Restoration and maintenance of the lacustrine ecosystems from the Lower Prutul meadow (Manta, Beleu), part of the RAMSAR wetlands	1,500,000 €	2016-2019
	Solutions for climate change adaptation of the Bâc river basin.	10,000,000 €	2016-2019
	Reducing GHG emissions by improving the management of hazardous waste in the Republic of Moldova	850,000 €	2016-2019

Despite the fact that the support provided by the Official Development Assistance (ODA) is considered a good one, the planning, along with the implementation of adaptation and mitigation actions in the Republic of Moldova are to be adjusted to the current situation, given the likely impact of climate change and identified needs and under the quantification of the climate investments are to be considered those with

[156] https://mei.gov.md/sites/default/files/matricea_proiectelor_de_asistenta_externa_pe_domeniul_economic_2019_ro.docx
[157] Ibid.
[158] Ibid.
[159] Ibid.
[160] http://amp.gov.md/aim/viewActivityPreview.do~public=true~pageId=2~activityId=12217~language=ro
[161] https://www.ucipifad.md/en/programe/programe-in-derulare/proiectul-de-rezilienta-rurala-ifad-vii/
[162] https://www.ucipifad.md/en/programe/programe-in-derulare/programul-rural-de-rezilienta-economico-climatica-incluziva-ifad-vi/
[163] https://www.md.undp.org/content/moldova/en/home/projects/Promotion-of-climate-change-disaster-risk-reduction.html
[164] https://www.md.undp.org/content/moldova/en/home/projects/eu-4-climate.html

clear climate rationale and direct mitigation and adaptation impacts. According to the World Bank estimates[165], there must be a total adaptation investment of US $ 4.22 billion to mitigate the impact of climate change, with about US $ 1.85 billion being considered as a relatively high priority for the near future. The WB estimates the total cost of climate change adaptation inaction at about US $ 600 million, equivalent to 6.5 percent of the GDP, and predicts that this value will exceed its double in real terms by 2050 and will amount to about US $ 1.3 billion.

It is worth mentioning that the Government of the Republic of Moldova simplified the legislation and the administrative regime to help SMEs to improve. EU4business[166] programs complement these efforts by improving access to finance, helping SMEs to enter foreign markets and providing entrepreneurial skills training. SMEs in the Republic of Moldova have at their disposal specific technical assistance in order to make full use of the free trade agreement concluded by the country with the EU.

Considering the above, the Republic of Moldova hopes and counts a lot on the support from the Green Climate Fund to strengthen its institutional capacities, especially through the investments oriented to the implementation of adaptation and mitigation actions in order to push the country towards a low-emission development path and climate change resilience.

1.3.4 Additionality of GCF funds

GCF investments through implemented projects are expected to promote paradigm shift towards low-emission and climate-resilient development pathway[167], therefore, GCF funding should be additional to existing official development assistance (ODA) of the Republic of Moldova. The additionality is important also to know in order to avoid the diversion of funding for development needs to climate change action.

It should be mentioned that the unresolved debate on the definition of additional finance is indicative of a persistent overlap between climate and Official Development Assistance (ODA) streams, even the Paris Agreement makes no reference to the phrase “new and additional”[168], suggesting that the ambiguity has been accepted.[169]

As a country-driven, government-led process, the engagement with GCF is to be maintained highly transparent, as one of the main factors in evaluating and judging GCF projects additionality. Described in chapter 2.1. Climate Change Coordination Mechanism (CCCM) of the Republic of Moldova has the purpose to coordinate and oversight climate change external and internal flows of funding in a highly transparent manner. Upon approval of the dedicated GD, the CCCM is to be operationalized and the coordination will take place at all stages of policy formulation, programming and implementation of climate action.

In order to fulfil its NDCs obligation for both mitigation and adaptation components, Moldova needs a sustained flow of climate finances through a multi-year medium-term funding cycle, therefore, development of the CP of the engagement with GCF is seen as an opportunity to allow for adequate investment programming for scaling up existing efforts and promote new innovative climate approaches that help to mitigate and adapt to climate change. Considering that GCF modality in dealing with countries from the donor-recipient perspectives promotes equitable representation in the governance of provided funds, the NDA has to administer oversight of the design and implementation of funding proposals to correspond to countries climate change priorities, at the same time, complying with GCF additionality

[165] World Bank. 2016. Moldova - Climate adaptation investment planning technical assistance (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/469311500273762091/Moldova-Climate-adaptation-investment-planning-technical-assistance>
[166] <http://www.eu4business.eu/mo/moldova>
[167] Governing instrument for the Green Climate fund http://gcfund.net/fileadmin/00_customer/documents/pdf/GCF---governing_instrument---120521---block---LY.pdf
[168] The 2009 Copenhagen Accord provided a basis for future climate finance discussions by indicating that „scale dup, new and additional, predictable, and adequate funding” should be provided to developing countries to address climate challenges (UNFCCC 2009).
[169] <http://pure.diis.dk/ws/files/2447789/DIIS_Working_Paper_2018_3_Coordination_challenges_in_climate_finance_FINAL.pdf>

principles of GCF Board Decision GCF/B.23/19 of 28 June 2019[170]. The structure of the CCCM that will be used by Moldova's NDA in climate finance management ensures inclusion of diverse groups of stakeholders (government, private sector, academia, civil society, women organizations, vulnerable groups and LPAs) that will provide funds management and decision making, along with funds disbursement in order to determine the effectiveness and efficiency of GCF funds use and ensuring that they benefit most in need and being gender equitable.

The CCCM has to ensure also the complementarity and coherence among all climate finance delivery channels at the national level, as in the absence of global-level allocation criteria and the multiplicity of factors that lead to funding flowing to certain countries, purposes, and population rather than others, the R. Moldova may attract climate change investments from any climate donor. In these conditions, it is important to ensure the synergy of all climate finance towards reaching the paradigm shift at the country level. Enhanced complementarity is to be applied not only at the project level, but at the activity level as well.

As mentioned in chapter 1, attracting climate investments is dependent on a number of local factors, among which the general investment environment is very important. The banking sector of Moldova remains underdeveloped from the perspective of product offering, reliance on collateral-based lending, with weak risk management practices. Enforcement of collateral is subject to lengthy and unpredictable court proceedings, which may feed into a higher cost of borrowing for private companies. Alternative sources of finance are scarce.

The weak balance sheet of the banking system poses risks for the rest of the private sector. While banks' reported capitalization is adequate (according to the NBM, CAR of approximately 30 per cent as of December 2016 vs. 16 per cent regulatory minimum), it may be under pressure due to asset quality deterioration, unrealized bad exposures, likely under-provisioning and related partly lending. The definition and aggregation criterion of related parties has been tightened, but the ability to unwind related party lending under the new framework is untested[171].

Certainly, the presence of GCF financing with its advanced investment instruments and resource management will speed up the process of improvement of the investment environment in the country. GCF additionality is to be clearly set and promoted throughout the development of a project proposal or whole programme, starting with the identification of a project idea. The additionality and complementarity of GCF funds vis-à-vis to existing in the country climate finance environment should be considered in the frame of GCF Board decision B.05/07, which adopted the additionality principles and factors for determining the terms and conditions of the GCF financial instruments for both public and private sector operations. Following these principles, each approved by the GCF project, by its structure and scope will represent an investment that has climate additionality, while the country has to promote coordination and oversight on how the investment will be deployed in relation to other domestic and international investments in order to respond to particular need.

As mentioned in section 3, funding priorities of Moldova are to be updated depending on influencing factors and circumstances and consulted with a wide number of relevant stakeholders. Considering that GCF funding contribution is predicted to be a significant one and the situation in the country is expected to evolve, the programing framework is to be set in a flexible manner and the CP to be maintained as a living document and updated iteratively.

[170] Decision GCF/B.23/19 of 28 June 2019. Review of the initial investment framework Matters related to incremental and full cost calculation methodology and policies on co-financing and concessionality
[171] https://www.ebrd.com/documents/strategy-and-policy-coordination/moldova-diagnostic.pdf

In order to efficiently and effectively attract and manage the needed flow of climate funds disbursed through the GCF projects, Moldova has to have enough capacities, therefore, concurrently with attracting investments, it has to build institutional and individual capacities through the offered opportunities of the Readiness Programme. Currently the existing capacities at the NDA are not sufficient to set up an effective climate finance landscape that would respond to existing needs and be geared towards reaching established in the NDCs goals and targets. Therefore, the Readiness Programme pipe-line would be the major support in building these capacities. The complementarity principles would be applied to capacity building activities as well as to ensure the synergy of the donors to address existing in the country systemic gaps, barriers and inefficiency in managing and implementing climate investments.

1.3.5 To foster private sector engagement for climate actions

Even with the efforts dedicated and tangible progress made in raising awareness of climate change impact of public institutions of Moldova in the recent years, there is still much work to be done to emphasise the negative impact of climate change and its implications, alongside the benefits of climate-related investments for the private sector. Lack of awareness of risks and opportunities, and inability to incorporate them into climate investments persist in all climate-related sectors of economy and this is one of the main barriers the private sector of Moldova is poorly involved in climate-related projects.

From the other side, despite that a number of NAMAs have been produced proving the feasibility of proposed investment ideas, local investors did not show interest in investing in these NAMAs. The same applies to adaptation component, as during the NAP1 adaptation measures have been prioritised for forestry, transport and energy sectors and their cost-benefit analysis provided to establish cost-benefit ratio of the investment, these measures did not receive enough attention from the private sector. This inaction might be explained not only by the low climate-related awareness and lack of relevant knowledge in private sector, but due to low democratisation of the market with the expressed tendency of oligarchizing the whole economy, which is not a climate-specific barrier, but a common one. A number of other common barriers impeded effective investments in Moldova's economic sectors, such as policy and regulatory barriers, financial barriers, access to new climate technologies and innovations, as well as capacity-based barriers hindering climate-related investments.

In numerous occasions, the investment community stated that Moldova's political uncertainty is a major barrier that impedes both national and foreign investments. After the 2019 changes in the Government and promotion of democratic values in social and economic spheres, including economy market, the situation in the whole is expected to change in a rapid and positive way. The NBS data show [172]that in January-June 2019, compared to the same period of the previous year, the volume of investments in engineering constructions increased by 40.8%, in non-residential buildings by 30.7%, in means of transport by 24.9%, in residential buildings with 20.3%, in cars, machines, transmission systems with 20.0%. Of the total volume of investments made in January-June 2019, the largest share comes from investments in cars, machines, transmission systems, which constituted 33.5%. As for the financing of investments, then the NBS data show that this was mainly done on behalf of the investor's own means. Thus, from these sources, investments of 5.91 billion lei (64.6% of the total) were made, with 17.2% more, compared to January-June 2018. The data eloquently show that the business still prefers to be more on its own than to resort to banks or the state.

A number of barriers still persist and are to be overcome to increase affordability and get access to new and innovative technologies, in particular, for the RES sector. As an underdevelopment country, R.

[172] http://statistica.gov.md/newsview.php?l=ro&idc=168&id=6447&parent=0

Moldova's population has low incomes/capacity to pay and that limits the promotion of climate change projects leading to increase in the prices and tariffs for commodities. High individual transaction costs limit the improvement of energy efficiency in municipal public buildings.

The support provided by the GCF in this type of projects is a crucial one, as the initial investment costs in new climate technologies are high while applying suitable financial instruments, may increase attractiveness of projects for the local private sector. Through this type of GCF projects in the deployment of RES technologies could be involved not only the big private companies, but also SMEs, which will increase the benefit for low-income population and make renewable energy projects more affordable to low-income populations of the country, as long as the initial capital investment is available with proper public sector partnership.

Access to affordable financing is a long-lasting obstacle for private firms to implement climate projects and a fundamental constraint for the country's development in the whole. R. of Moldova's banking sector remains highly problematic and vulnerable, being a major constraint on private sector development. Moldova has a relatively small and underdeveloped banking sector (11 banks, €4.1 billion of assets as of YE 2018, circa 43 per cent of GDP), with the lowest credit penetration (19 per cent of GDP in 2018, down from 31 per cent of GDP in 2015) among regional peers[173]. Country's banks do not fully exercise their duties on resources accumulation and their allocation for financing productive investments.

Lack of funding is particularly problematic for small and medium-sized enterprises, which typically face interest rates of around 10 per cent for local currency loans, along with onerous collateral requirements. Due to their financial constraints, they have to rely on commercial bank financing with very high interest in Moldova. Therefore, instead of taking bank credits, these companies put efforts to increase their own savings or apply for financing to microfinance institutions[174].Besides unattractive interest rates, the population does not have enough confidence to invest significant amounts over longer periods of time due to resources limitation.

The banking system of Moldova is characterized by high liquidity, but not channelled into investment in climate technologies or their development due to a combination of risk -aversion and fundamental problem of pricing under uncertainty. Local financial institutions' lack of capacity to promote climate-related investments and evaluate climate-related project proposals from local developers to assess the associated credit risks.

According to the new Budget Law for 2019[175], constant budget deficit predicted is to reach 2.9% of GDP in 2019, requires more loans from banks, further depriving the real sector of bank loan resources. Moreover, in order to cope with fiscal imbalances, the new government resorts to higher taxes and major optimisations in the public sector that may have a negative impact on economic growth. In the Republic of Moldova bank credits are accessible with several banks: Moldova-Agroindbank, Mobiasbanca, Moldincombank, Victoriabank, other, however, their cost is quite high, which limits the investment activity in the country, as the bank interest rate applied to economic agents is around 11.8% for the national currency and 12% for the foreign currency (USD, Euro) (in 2018), the crediting period being of a maximum of 5 years, but provided the borrower has a deposit available at the bank. The annual effective interest rate is 16.94%.

Following from described above in-country banking environment, GCF involvement would be crucial and needed to "unlock banking sector" to support private sector engagement in climate mitigation and adaptation projects.

[173] https://www.bnm.md/ro/content/situatia-financiara-sectorului-bancar-pentru-anul-2018
[174] https://www.get-moldau.de/wordpress/wp-content/uploads/2014/11/PP_05_2014_ro.pdf
[175] https://agora.md/stiri/59981/ministerul-finantelor-a-rectificat-bugetul-pentru-2019--unde-merg-cei-mai-multi-bani

In order to overcome financial barriers for the private sector, among other solutions, the most appropriate financial instruments should be identified and applied. As it is known, there are four basic instruments that can be used through different modalities and at various stages of the financing cycle: grants, concessional loans, guarantees and equity investments. Such instruments may be supplied through either simple or more complex and sophisticated modalities or structures for projects and/or (policy-based) programmes and in the context of sector-wide approaches. Provision of financing may involve debt swaps, advanced market commitments, performance-based payments, public-private partnerships and a range of other innovative arrangements involving co-financing and leveraging resources on capital markets[176]. In this range innovative climate finance solutions such as Green Bonds, Green banks or Green credit lines, REDD+, targeted blending facilities, etc. are also in line.

International experience shows that the mentioned banking tools can lead to affordable cost of capital and provide risk-sharing tools for climate change mitigation and adaptation projects.

Based on the results of the planned study under the proposed Readiness project "*Identification of the most relevant and efficient financial instruments to be applied by the financial institutions of Moldova when promoting and implementing climate investments",* the conclusions and recommendations will be made to identify the most relevant and efficient financial instruments to be applied by the financial institutions of Moldova when promoting and implementing climate investments. The study is to be conducted with active participation and leadership of the National Bank of Moldova.

Considering the above-mentioned gaps and barriers in engaging private sector of Moldova in climate investments a set of measures are to be developed to provide capacity building and technical assistance for the private sector of Moldova through Readiness Programme. Once policy-regulatory barriers are identified, they will be addressed through additional technical support.

From the investment projects pipeline of the present document, most of the projects are foreseen to be implemented in a public-private partnership, which assumes to be multi-stakeholder projects, where both public and private institutions will be involved with clear responsibilities and delivered outputs set for each project actor.

1.4 Gaps and opportunities

From the previous chapters, we can see that the country's leadership has so far undertaken a wide range of measures to address the issues of climate change, both in terms of adaptation and mitigation. The country's willingness to further contribute to this process can be seen through a number of new related normative acts that are in the preparatory phase or under approval. These acts are called upon to tackle some of the existing barriers, to which additional interventions are made by the authorities. The remaining barriers and gaps (political, normative, institutional, technical, financial, business, social and cultural) are both in the area of climate change adaptation and greenhouse gas emission mitigation

1.4.1 Adaptation component

Despite the efforts of setting up of the inter-Sectoral Coordination Mechanism led by the National Commission on Climate Change, including the CCA Monitoring and Evaluation component, along with the National Adaptation Planning Process as the first high-level national strategic initiatives specifically addressing climate change, up to now, the efforts to address climate change impact still remain ad hoc, therefore with gaps and impediments.

[176] https://www.greenclimate.fund/documents/20182/24934/GCF_B.04_06_-_Business_Model_Framework__Financial_Instruments.pdf/7b8e96dd-4e06-46fd-b986-1b8743efa15b

The main systemic impediments for an increased political commitment in addressing climate change adaptation include: (i) insufficient prioritization of climate change adaptation in national political agenda, with the focus of politicians on the immediate needs for economic growth; (ii) insufficient knowledge of high-level decision makers on the magnitude of the climate change impacts and the threat to economic growth and ecosystem services; (iii) insufficient statistical data and climate impact studies on health and wellbeing through a gender perspective.

The national governments and actors, benefiting from the engagement and the participation in the climate change global agenda, have a limited awareness and knowledge of trends and opportunities presented by the climate change global agenda, particularly regarding the opportunities for a range of information, tools, technical assistance, and project funding.

Legislation and policy papers have the following weaknesses: (i) climate impacts are addressed insufficiently in sectoral legislation and policies, even in climate-sensitive sectors such as agriculture; (ii) the lack of a specific reference to climate change in many laws hinders the development of sectoral adaptation programs, because ministries and agencies cannot request funding for adaptation-related activities without explicit powers in the area of adaptation to climate change; (iii) strategies do not take into account or include climate change adaptation considerations in proposed sectoral measures and objectives, even when these objectives are directly affected by climate variability and climate change.

The government offers clear lines of communication and skills within individual institutions and agencies, while cross-sectoral coordination of information and strategies is not well-developed. These impediments are a major constraint on the national government's ability to link environmental and development strategies to the impact of climate change. Efforts are being made to move towards a more coordinated and integrated approach to climate change adaptation. The inter-sectoral Coordination Mechanism led by the National Commission on Climate Change, including the M&E component (under approval), combined with the National Adaptation Planning process, is expected to be high-impact national strategic initiative specifically addressing climate change.

The number of climate-induced disasters in Moldova is increasing[177], for this reason, additional efforts are required, first of all, to: (i) strengthen the forecasting capacities of severe weather conditions; (ii) to increase disaster preparedness and emergency response; (iii) implement adaptation measures in agriculture and other highly-exposed sectors[178]. Currently, there is a political separation between disaster risk reduction and climate change adaptation planning. This situation needs to be overcome in order to allow adequate response to dangers and other challenges of the evolving climate.

The constraints and impediments on institutional capacities faced by the Republic of Moldova do not allow to respond effectively to the impacts of climate change. These are presented in Annex 3.

The *Capacity Development Program (CDP) up to 2025* was developed based on the identified gaps, barriers, institutional impediments and vulnerability factors in the institutional capacity assessment of seven key sectors (water, agriculture, energy, health, transport, forestry and regional development) of the Republic of Moldova undertaken during the NAP1. It reflects the sectoral and cross-sectoral needs of the country and the priority capacity building actions to be pursued. When the Government's decision on the Climate Change Coordination Mechanism and the M&E framework will be in force, the National Commission for Climate Change will take over the surveillance of adaption activities.

Annex 4 presents the urgent measures to be taken, in order to strengthen institutional capacity with regard to climate adaptation planning and implementation. Each recommendation is considered as a priority to

[177] <http://dse.md/sites/default/files/pdf/Indicii%20statistici%2010%20ani%202008-2017.pdf>
[178]<http://www.old.meteo.md/bm20102013.htm>

support the capacity of the sectoral climate change adaptation and to create a strong basis for further adaptation activities.

Financing needs for adaptation. In 2016, the World Bank carried out an economic analysis of medium- and long-term investment needs of key sectors of the Republic of Moldova. The study applied a quantitative assessment of adaptation investment opportunities and returns across the target sectors, evaluating the cost of inaction in each sector, i.e., the expected annual opportunity cost of not being better adapted to prevailing climate conditions. According to the WB report on Economic Assessment of Investment Needs in Climate Change Adaptation (2016) the total cost of climate change adaptation failure is estimated at about US $ 600 million, equivalent to 6.5 percent of GDP. It is expected that this value will exceed its double in real terms by 2050 and will amount to about US $ 1.3 billion. However, given the predicted economic growth rates used in the analysis, these subsequent costs represent a small fraction of GDP in the future.

A summary of indicative economic incomes, relative uncertainties of benefit and cost calculations, and qualitative implications regarding poverty and gender are outlined in Annex 5 with more details on sector-specific needs for climate change adaptation planning and implementation presented in Annex 6.

The report "Moldova – Climate adaptation investment planning technical assistance"[179] states that a total amount of US $ 4.22 billion is needed to mitigate the climate change impact, of which, about US $ 1.85 billion being considered as a relatively high priority need in the near future. The priorities were identified based on estimated economic returns, the size of potential investments, and qualitative assessments of the impact on gender and poverty. These consist of:

Agriculture sector: The biggest challenges and investment opportunities are in the agriculture sector. Rehabilitation/modernization of centralized irrigation systems and drainage infrastructure will make a major contribution to increasing current productivity and mitigating future climate impacts. These are expected to have good rates of return as long as they can be combined with successful institutional capacity-building for management of irrigation systems. Other options include small-scale on-farm irrigation systems, soil management and climate risk management technologies (e.g., anti-hail nets), and the potential for changes in crop mix towards perennial crops (i.e., grapes and fruit trees), which will be more resilient to climate change. The WB estimated the preliminary value of the average annual losses caused by extreme meteorological phenomena (drought, flood, hail, heavy rainfall, wind, frost, landslide) to US $ 34 million per year, and the medium-term investment amount (by 2040) needed to address the current productivity gap in Moldovan agriculture and at the same time to increase the climate change resilience is US $ 2.409 billion.

Forest sector: Ecological rehabilitation and expansion of forests and forest belts are expected to have high returns on suitable land, and to have a high poverty and gender impact. Restoration of degraded forests and pasturelands also promote agricultural productivity through improved watershed function and protection from harsh weather. Future climate change will affect both the tree growth, causing changes in species distribution and tree structure, and the frequency and magnitude of damage caused by disease, droughts, and fires.

The current annual climate-related damages are estimated at US $ 414 thousand (of which: US $ 18,000 due to fires, US $ 177,000 due to pests and US $ 219,000 due to drought droughts as a result of droughts). In addition, about US $ 300,000 are spent annually for pest treatment remedies. By 2050, it is expected that these costs will increase to about US $ 12 million[180].

Human Health sector: Although there is an uncertainty around the scale of climate-related health impacts, it is anticipated that the effects of several diseases could be exacerbated by climate change (for example,

[179] WB Report "Moldova - Climate Adaptation Investment Planning Technical Assistance", 2016, 88p.
[180] Idem

physiological stress caused by low or extremely high temperatures, prevalence of most disease-causing vectors influenced by climate conditions, the range of acute health risks and physical and mental well-being influenced by extreme weather phenomena, etc.). According to WB estimates (2016), the current cost of climate-dependent health risks (namely, heat-related mortality and food poisoning) is about US $ 20 million.

According to the *Climate Change Adaptation Strategy* (2014)[181] and undertaken studies during the NAP1 of Moldova, considerable investment is needed to: provide health care in isolated communities to populations particularly vulnerable to the effects of climate change (the elderly and disabled people); equipping emergency departments for cardiovascular diseases as required by the WHO; modifying hospital infrastructure for operationalization to "green" standards; developing the national information system for the collection and processing of data on the effects of climate risks on public health, the emergence and incidence of new diseases related to climate change; prevention, early warning, management and overcoming the impact of extreme weather events due to climate change (heat, cold, flood); eradicating malnutrition and ensuring access to safe, nutritious and sufficient food for particularly vulnerable population groups; the protection of human health and consumers' interests with regard to food safety; the development of continuous air quality monitoring stations, etc.

Water sector: Improvement in municipal supply systems to reduce losses, and building a small-scale storage reservoir on the lower Nistru River, present immediate, modest investment opportunities with high returns. In the coming decades, larger-scale storage infrastructure will be needed. The ideal size and timing of these require more analysis and the institutional capacity to effectively manage a variety of water investments would also need to be strengthened.

According to the WB, the provisions for water demand will increase considerably by 2040, which will be amplified by climate change. The unsatisfied demand, dominated by municipal and industrial consumption, is estimated at about US $ 95 million, and the total cost of climate change inaction in the water sector is estimated at about US $ 205 million per year. Investments in water supply infrastructure in rural areas could be an adaptation option for improving water supply in the agriculture sector and for the rural population. The cost-benefit analysis of small-scale water supply shows a benefit-cost ratio of 2.5 to 21.3 in the pan-European region, which includes Moldova (UNECE and WHO, 2011). However, due to lack of data, a detailed estimate of these investments was not carried out.

Substantial economic benefits to reducing damage and losses will be provided through investments for structural flood prevention measures and for non-structural flood prevention measures, worth € 325 million and € 120 million respectively[182]. These measures include: rehabilitation/construction of dams, dikes, small scale storage tanks, bank consolidation, wetlands, warning systems and their maintenance, informing/educating the population on flood risk and how to act in emergency situations. Other important investment opportunities for the water resources sector are: improving the quality of drinking water; improving sewage and domestic water treatment; increasing water recycling for industrial needs; protection of wastewater infrastructure against floods; water management by capturing surface water; land improvements to increase the probability of precipitation; technology implementation of groundwater layers recharge, etc.

Energy sector: As mentioned in chapter 1.2.2, the Moldovan energy sector faces several challenges, with the main dependence on imports (especially natural gas). The investments needed to implement the scenario recommended by the ESMAP[183] study (connection to the Romanian transmission network for the

[181] GD no. 1009 of 10.12.2014 regarding the Moldova's 2020 Climate Change Adaptation Strategy and its implementation Action Plan, Official Gazette no. 372-384 of 19.12.2014.
[182] EIB "Support for technical assistance and management to protect the territory of the Republic of Moldova from floods", 2016.
[183] Energy Sector Management Assistance Program (ESMAP), 2016.

diversification of the country's external energy sources) are estimated in the range of 421-441 million US dollars for the period 2017-2019.

Renewable energy sources are most sensitive to extreme weather phenomena. The value of the current production of renewable energy related to the climate is estimated at only US $ 286 thousand annually (in the form of hydroelectric power), while the lost energy production is estimated to about US $ 150 million annually. The cost of wind technology may decrease over time, but now, wind power generation may be economically viable. The total investment potential is estimated at about US $ 235 million.

Lost heat production due to the current water supply deficit on Nistru river is estimated at US $ 4.6 million per year, based on the current import price and the assumption that energy production is affected proportionally by the water supply shortage.

The investments proposed in the measures of the *Energy Strategy of the Republic of Moldova until 2030*, Article 104 to promote energy efficiency related to the education and training of staff in the efficient use of energy, and the development of a series of educational programs to raise public awareness, organizing competitions and demonstrations of the achievements in this area will contribute to the viability of the entire energy sector against the risks of climate change.

Studies show that the total cost of renovating the private and public buildings in Moldova for heating and cooling efficiency could be hundreds of millions of US dollars per year over two decades[184].

The transport and road infrastructure sector: According to the WB Report (2016) the expected annual cost of climate change for infrastructure in Moldova by 2050 is around USD35 million, from which roughly USD8 million and USD27 million for roads and buildings, respectively.

It is expected that the following investments will increase the resilience of the sector, provide essential gains for public security as well as substantial economic revenues: renewal of road drainage systems and implementation of advanced technologies in storage and removal of rainwater from the road network; adoption of base asphalt binders with higher softening points (including polymer modification) for surface seals and asphalt; construction and rehabilitation of roads, bridges and viaducts using anti-thermal technologies and materials based on climate standards; ensuring the access of rural population to the appropriate road system throughout the year; straighten and deepen the waterways of the main rivers (Nistru and Prut) and develop a system for monitoring their status and airworthiness; creating the needed urban infrastructure to promote alternative transport, such as cycling; cover climate change-related risks with impact on transport infrastructure, etc.

The figures presented in the above-collated materials indicate the need for enormous investments in the physical infrastructure, but also for associated measures, such as institution and policy change, capacity building and development of strategic documents for the Republic of Moldova to adapt and build resilience to climate change. Taking into account the carried-out analysis, it may be concluded that the current opportunities for supporting low-carbon development and climate resilience measures in Moldova are visible, but the needs largely exceed the availability and accessibility of resources.

1.4.2 Mitigation component

As described in the previous chapters, the Republic of Moldova has managed to develop a rigorous policy framework to reduce greenhouse gas emissions. The country also has an institutional framework required to promote the measures to reduce the GHG emissions. However, there are still a number of barriers and

[184] Cohen, F., Glachant, M and Söderberg, M. (2016), "Adapting the US Residential Sector to Global Warming". Working paper presented in 7th Atlantic Workshop on Energy and Environmental Economics, A Toxa (Spain), 27-28 June 2016.

gaps that have to be overcome in order to achieve the objectives set by the *Low Emission Development Strategy of the Republic of Moldova*, analyzed below:

Energy sector: In the absence of its own conventional sources of energy and fuel, ensuring the country's energy security is possible by promoting renewable energy sources and energy efficiency, as well as diversification of energy import sources. In this context, in order to achieve the objectives, set by the LEDS for this sector (Table 1-8), approximately US $ 1.7 billion is needed until 2030. This investment should be recovered through increasing energy tariffs; however, the consumer payment capacity is much below the level to bear this increase. For this reason, it is important to have an affordable cost of capital for the country's population. As shown in chapter 1, the domestic banking system cannot satisfy such a demand.

Apparently, a favourable legal framework for the development of renewable energy sources (RES) is now in place. Its latest modifications (2018) provide the engagement of investors through tenders, for the development of RES at the pre-established capacity by the authorities. The energy produced will be sold at the lowest price established during the tender. Lack of own conventional electricity sources (82% of electricity consumed is imported) makes it problematic to balance energy demand over time as a result of intermittent renewable energy production (solar and wind). These circumstances delay the development and the promotion of energy production from renewable sources. It is required to develop additional traditional sources in order to meet energy demand during wind and photovoltaic power shortages.

Transport sector: For this sector, about US $ 3 billion is needed in order to rehabilitate roads, railways, promote biofuel use in transport, and change the obsolete vehicle fleet. In order to build roads and promote public transport, annually, the Government allocates significant amounts in investments, however, they are low in comparison to the amounts the sector needs. At the same time, the lack of clear regulatory rules, such as vehicle efficiency standards, hampers the use of efficient vehicle technologies, and the pre-operational costs for electric and hybrid vehicles are high. The lack of infrastructure for charging electric vehicles is also a barrier.

A major challenge faced by public transport infrastructure projects is associated with high pre-operative capital costs and overcoming it can be done through an attractive availability of credits, mostly missing in the Republic of Moldova.

Unsatisfactory urban planning and inadequate institutional mechanisms for managing transport demand in urban areas represent also a gap in this sector.

Building sector: Taking into account the high energy savings potential of buildings, the country's authorities have approved a number of normative acts aimed at reducing energy consumption in the sector[185]. Throughout the years until 2030, according to the LEDS, about US $ 420 million is required for the planned GHG reduction. However, the achievement of this objective encounters the following constraints: the population is not sufficiently informed and aware; motivation is not outlined; accessibility to finance is limited considering that the initial investment is important. In this context, the development of a Roadmap that sets out the steps toward achieving the objectives would facilitate the whole process of establishing energy efficiency of the building sector. Considering the positive experience gained during the implementation of the Moldovan Residential Energy Efficiency Financing Facilities[186] project launched by the EBRD and the Energy Efficiency Fund with the objective to increase the energy efficiency of buildings would be beneficial for the country to replicate this experience. For urban buildings, the reduction in heat consumption also collides with two other barriers: (a) the heat supply mainly takes place from the CHPs, while the demand reduction due to the insulation of the buildings decreases the already low efficiency of

[185] Law on Buildings energy performance no. 128/2014; Law on thermal energy and promotion of cogeneration no. 92/2014; The Programme for promoting the ‚green' economy in the Republic of Moldova for the years 2018-2020 and Action Plan, HG no.160/2018, etc.
[186] http://www.econsulting.md/pages_projects/MoReeFF

these plants; (b) the heat supply grid of the buildings is "in series", not "in parallel" type, which prevents consumers from adjusting energy supply in apartments.

Industry sector: The most important GHG reductions in the industry sector are to be expected from replacing clinker in cement production and energy efficiency, given that existing machinery and equipment in the enterprises have an increased wear and tear and obsolescence degree, while the state has limited possibilities to financially support the process of restructuring and retrofitting of industrial enterprises. LEDS anticipates the amount of about US$22 million in order to achieve the NDC's conditional objective set for this sector. At the same time, for achieving this objective a number of issues are to be addressed, such as: lack of a favourable business environment in support to technology transfer; limited capacities of small and medium enterprises to access and absorb information on the best technologies; limited technical resources of all type of enterprises to interpret and process the available information on the subject.

The modest development of industrial parks and poor financial resources for them is a major barrier to promote innovation and know-how in the industry.

Agriculture sector: The proposed in the LEDS measures to address these issues are focused on the conservative soil processing system, the planned storage of manure, the taurine progressive feeding technologies and their implementation will result in the reduction of the predetermined in the NDCs GHG emissions for the agriculture sector. The implementation of these mitigation measures will require the donors to invest around US $ 238 million by 2030 and will be preconditioned by a strengthened enabling environment and capacity building activities that currently are considered barriers for the absorption of such investments. Thus, the multitude of strategies, programs, activity plans, as well as the lack of a dedicated soil legal framework determines the fragmentation of attributions of the responsible authorities in the area of land use with agricultural destination, with a lack of integrated management. The authorities responsible for managing the land fund do not have sufficient procedures and levers to reduce the degradation and the negative impact of its pollution and erosion, as well as mechanisms for removing environmental threats, so in this context, additional activities and tools of good agricultural and environmentally friendly practices are to be developed and applied.

The animal breeding industry faces constraints referring to the internal resources as well as harsh market pressures caused by cheaper imports of livestock and livestock products, mainly imported from EU and CIS countries, as a result of relatively high local production costs, low productivity and uncompetitive breeds. These factors, in addition to the unstable operation of the livestock breeding support system, prevent considerably the increase in the production level and creates difficult conditions to compete with subsidized cheaper meat/dairy products of foreign origin. As a result, in recent years, Moldova became a net importer of animal products.

Forest sector: In order to increase forest cover, from 11.2% in 2015 to 16% in 2030, the LEDS adopts a programmatic approach in afforestation of river bands and water basins through protection zones and belts, planting energy crops, other relevant actions. In this context, it is planned to attract about US $ 92 million from donors by 2030, money that has to be used towards continuous restoration of the forest ecosystems, improvement of soil quality of forest stations, application of sufficient ecological regeneration and reconstruction works for improvement of ecosystem composition through promotion of more resistant to climate change biotypes, replacement of failed introduced species, restoration of phytocenoses; replication of currently used methods and techniques in tree care and management. Concurrently, the authorities have to implement monitoring and sanctioning actions of responsible entities[187] for failing the application of land allocation mechanism, a situation very common at the moment.

[187] Law no. 1041 of 15.06.2000 of rehabilitation through afforestation of degraded land, Government Decision no. 1186 of 28.10.2016 regarding the approval of the Regulation on the afforestation of the degraded lands of the administrative-territorial units' public property and of the degraded private property.

The RM does not have a National Forestry Inventory, and the data collection process does not exactly meet international requirements.

Waste sector: By 2030, the waste sector should provide a reduction level of GHG emissions of 38% and 47% in comparison with 1990, these contributions being part of unconditional and conditional NDCs. According to LEDS, these targets will be achieved by constructing solid waste landfills and transfer stations in eight regions of the country, as well as sludge treatment at the sewage treatment plants in the Chisinau and Balti municipalities, with respective investments of US $ 443 and US $ 18 million for the entire period until 2030.

The area of waste management in the Republic of Moldova is still underdeveloped as a waste collection and disposal infrastructure. At the same time, in the last years, the legal framework has been substantially improved by the approval of the Waste Law no. 209 of 29.07.2016 and the subsequent normative framework. Currently, an Environmental Agency is under establishment process, which will serve as the institutional framework for law enforcement and the regulation of waste management activities.

At the same time, efforts are required to align existing legal framework with EU standards, in particular, the mechanism for planning, design, construction, expertise, control and operation of water and sewage infrastructure. Existing design standards include the same provisions for urban and rural areas, which lead to over-sized rural systems. Some modern wastewater treatment/purification technologies are not covered by the existing rules, creating an obstacle to their implementation, such as wetland sewage treatment plants, Ecosan type toilets, etc.

To sum up the above-mentioned needs and investment opportunities, in order to ensure the objectives of reducing greenhouse gas emissions in the context of low-carbon development, two categories of funding are required: (a) the need to reach an adequate capacity level in greenhouse gas mitigation, and (b) to implement the measures and technologies that contribute to the proposed GHG reductions.

The detailed financial needs are reflected in Annex 8, where the required investments for the realization of NAMAs correspond to those aimed at achieving the country's conditional objectives of the NDCs.

The technical and capacity development needs of the Republic of Moldova for climate change mitigation at the moment are valued at US $ 679 thousand, those related to technology transfer totaling US $ 375 thousand and for the implementation of NAMAs aimed at reaching the conditional national determined contribution – US $ 4.9 billion.

The investments needed for the implementation of measures and technologies that lead to the reduction of GHG emissions and which will ensure the sustainability of the development of the national economy with its own forces (but also with the donors' contribution) are described in details in the NatCom 4 to UNFCCC, in an updated version compared to LEDS.

The technical assistance to Moldova, including in climate change, plays an important role in the transfer of good practices and technologies in the area. The promotion of technical assistance in Moldova is regulated by the GD no. 377 of 25.04.2018 on the regulation of the institutional framework and the coordination mechanism and management of external assistance. The document sets out the principles and procedures that define: (a) the institutional framework for external assistance, and (b) the mechanism for the coordination and management of external assistance.

The activities related to the transfer of technologies to mitigate climate change are described in chapter 7.2 of the RM's BUR2[188].

[188] The Second Biennial Updated Report of the RM < www.clima.md>

It is expected that private sector will play an active role in overcoming country's climate change challenges and be a key player in accessing the financial resources available for adaptation of climate change and mitigation of GHG emissions. However, during the organized by the Readiness project roundtables and workshops with participation of private sector representatives, the last showed more interest in increasing their competitiveness, reducing the investment costs and exposure to risks, rather than providing environmental benefits. The expression of interest was higher for the sectors and areas where a clear business case could be seen with the potential for good rates of returns. Insufficient returns on investments is a current concern in the areas of RES. A relevant example is a feed-in tariff approved by the ANRE (national Regulator) for renewable energy that equals to payback period of more than 10 years, which is not in compliance with country's long-term risk. Risk Rate Premium is equal to 9.25%, according to Moody's rating[189]. Nevertheless, there is sufficient experience in implementing pilot and demo projects in renewable energy and energy efficiency to be scaled up at the country level.

In Moldova's circumstances, when private sector shows low engagement in climate action, it is important to identify policy measures and incentives to increase its engagement. GCF has already issued Recommendations of the Private Sector Advisory Group on opportunities to engage the private sector in adaptation[190].

One of the limitations for the private sector engagement in climate change projects is the lack of capacity of financial institutions to evaluate projects in both public and private sectors. This lack of understanding of specific types of climate change investments and their risk profiles means that banks often find it difficult to develop and structure appropriate financial products. Most of the commercial banks in the R. of Moldova rely on short term deposits. The asset-liability mismatch also limits their ability and willingness to structure financial products with the longer tenure that is typically needed for climate change investments. Commercial financial institutions, driven by prudence, tend to want to achieve high returns quickly from investment and tend to finance for relatively short periods.

Another factor that came across in stakeholder discussions was whether the responsibility of addressing climate change in the country is the public or private sector responsibility for climate change action and also the approach of having equal responsibilities and get more involved in climate action out of Corporate Social Responsibility objectives. The missing link remains a focus on the profit motive.

The private companies involved in the discussion on climate change initiatives highlighted several areas that need to be addressed:

- to overcome information gaps. Broad-based information dissemination needs to be supplemented by a more targeted approach (consulting, technical assistance, etc.);
- regional and Global Success Stories should be available for consultation and experience sharing. This is an important potential tool to motivate the private sector to be more aware of successful and commercially viable investments and initiatives by other corporates in the region and globally;
- economics of Climate Change Investments should be improved. One of the key messages to get across to both policymakers and corporates is that the resources and strategies adopted to tackle climate change in both mitigation and adaptation can be a source of national and company level competitiveness;
- it is important to make business cases form climate adaptation and mitigation measures the private sector to be actively engaged in tackling climate effects. As the country's small business faces several barriers in adopting environmentally friendly practices, including the lack of capacity and

[189] <http://pages.stern.nyu.edu/~adamodar/>
[190] <https://www.greenclimate.fund/documents/20182/1087995/GCF_B.20_12_-_Recommendations_of_the_Private_Sector_Advisory_Group_on_opportunities_to_engage_the_private_sector_in_adaptation.pdf/33c86298-ab73-39f6-37ac-a8a487a6e3d2>

access to tools needed to 'green' their businesses, poor access to finance for greener technologies, and inadequate awareness of the business case for increasing efficiency and improving resilience.

Implementation of climate action in many cases depends on the investment in the development and adoption of new technologies. The inability of private sector to appropriate new knowledge means that the private rates of return in innovation are lower than general market rates of return, leading to inadequate investments in the development and adoption of new climate technologies. This aspect is particularly low in Moldova and along with other financial constraints mentioned above, makes climate technology transfer inefficient, with low contribution to paradigm shift.

Another feedback message that came out from the private sector stakeholder meetings, was the concern from enterprises that if climate change funding was administered by a government ministry, then the bureaucratic procedures would make the operation of funds and the process of obtaining either loans or grants unwieldy. This feedback is to be considered during the operation of various national funds that deal with climate-related financing.

2 COUNTRY'S AGENDA AND THE ENGAGEMENT WITH GCF

2.1 Institutional arrangements

The designation of the National Designated Authority (NDA) is one of the first steps in the country's engagement with GCF. In the Republic of Moldova, the National Designated Authority is the Ministry of Agriculture, Regional Development and the Environment. The main objective of the NDA in to facilitate country's engagement with GCF to access Fund's resources in order to finance climate change programs/projects aligned with the national priorities set out in the strategies and programs developed by the Government of the Republic of Moldova. During its operation, the NDA will be fully supported by the National Climate Change Commission (NCCC), leading the Climate Change Coordination Mechanism to be used in communicating the no objection for the GCF funding project proposals. The purpose of the multi-stakeholder Climate Change Coordination Mechanism in Moldova is to foster dialogue, coordination, collaboration and coherence among sectors, leverage, and report on planning and actions by all stakeholders related to climate change in the country. The established multi-stakeholder partnerships are foreseen to contribute to the development of common understanding in climate panning, improved rationality, and effectiveness of policy making, facilitate the implementation of climate action, have a contribution in the sustainability of governance. Cross-sectoral coordination will enhance also transparency in the implementation of prioritized adaptation and mitigation measures.

The NCCC is seen as a permanent formalized body with the highest representation of key stakeholders: sectoral ministries, NGOs, academia, research, private sectors, taking into consideration gender dimension through including representatives of women associations and considering gender equality in all supervising activities of NCCC. Such organizational structure of NCCC comprises actors of horizontal, inter-sectorial planning and of vertical integration, with the representation of below sectoral/ national level, thus ensuring a multi-level framework with interactions between government and civil society representatives. The NCCC has a Secretariat as a technical executive body and at this stage, the Climate Change Office (CCO) under the Ministry of Agriculture, Regional Development and Environment is seen as the most appropriate and credible body that will provide the staff of sufficient professionalism in the area. At the sector level, the NCC Commission will be supported by the sectoral administration in charge with the development of sector-specific climate change enabling environment and reporting on climate action forming working groups or nominating focal points. Technical Committees on specific thematic areas will be formed ad hock when the need in advanced thematic expertise, in particular during the consideration of GCF project proposals, will be required through recruitment of mitigation or adaptation experts. The Commission will

coordinate also the actions previously initiated but not completed under the Kyoto Protocol. Through the proposed structure of the CM, the Republic of Moldova overcomes the issue of limited integrations and connectivity between levels, which is an impediment to the effective decision-making process in adaptation and mitigation.

As the NCCC coordinates all 3 components referring to climate change: GHG emissions, mitigation, and adaptation, the roles and responsibilities of the NCCC have been developed and formalized as a dedicated Government Decision that will enact cross-cutting coordination (under approval). The NDA/MARDE will apply the CM in endorsing funding proposals concept notes; evaluating the proposed for submission funding proposals based on the developed criteria aligned with national investment priorities established under the Country Programme. Based on the screening results of the CM, the NDA will have the full responsibility to communicate or not the no objection to Accredited Entities with regard to submitted funding proposals. The *NDA Operational Manual* was developed that stipulates the roles, responsibilities of the NDA, along with its cooperation with NCCC.

The use of CCCM in the approval process and communication of the no-objection is reflected in Figure 2-1.

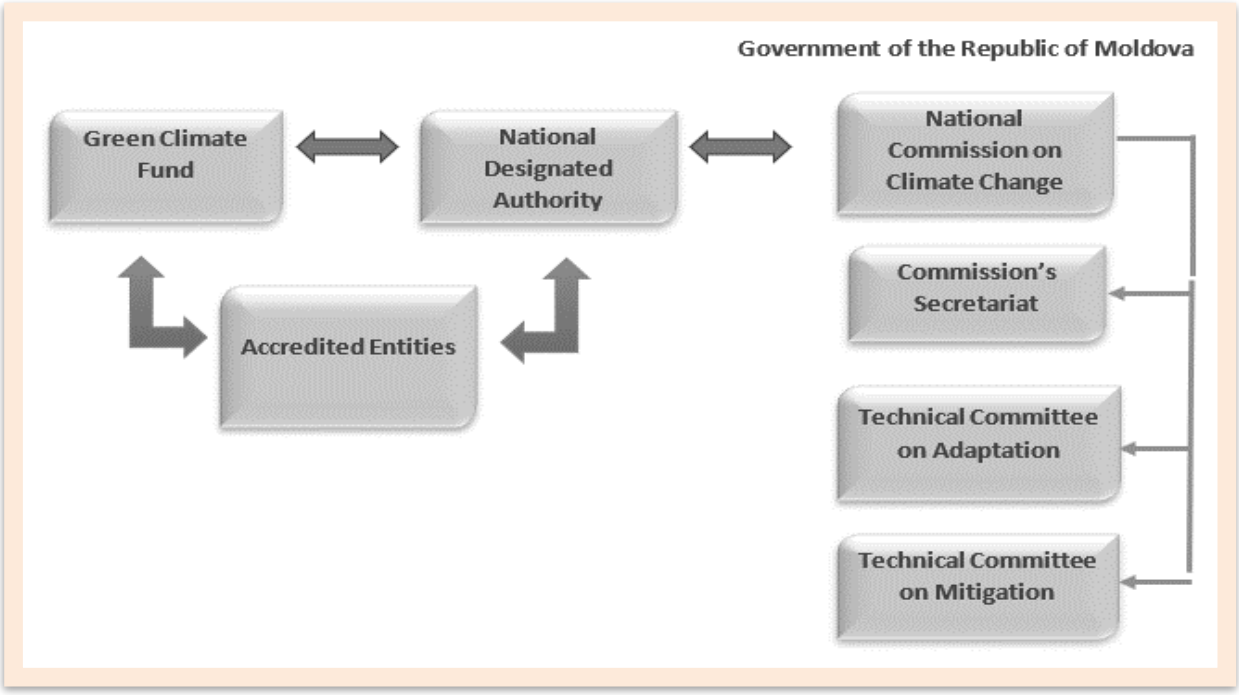

Figure 2-1: *The use of coordination mechanism in the approval process and communication of the no-objection to the GCF funding proposals.*

2.2 Existing engagement with GCF

The R. of Moldova has started the official relations with GCF by signing the Grant Agreement on 28 April, 2017 on implementing Readiness Programme based on commonly agreed standards policies, conditions and terms. Based on this Agreement the GCF support was provided to the Climate Change Office, Ministry of Agriculture, Regional Development and Environment of Moldova (MoARDE) to implement the activities under the Project Support to Republic of Moldova in establishment and strengthening the NDA, development of strategic framework, and preparation of country programme.

The Readiness and preparatory support will help to establish and mandate the National Designated Authority (NDA) to engage with GCF, build the knowledge and capacities of the MoARDE team to efficiently manage GCF operational process, to efficiently communicate with Fund's board and secretariat, to access the Fund's resources and carry out the necessary due diligence. Having the strengthened NDA will help Moldova to successfully utilise direct access to GCF climate finance. The Readiness resources will be used for the buy-in of stakeholders and strengthen the cooperation among institutions, civil society, non-profit entities, women associations and academia to develop a clear sense of climate change priorities that GCF can support.

Through defining the GCF specific strategic framework, the conditions will be created to move from project-based support to programmatic and strategic approaches to support from the Fund, consistent with national sustainable development plans.

At this stage, there are two regional projects approved by GCF[191] which make R. of Moldova not directly engaged with GCF:

1. Green City Program launched for nine countries, including R. of Moldova, with a total investment of US$603.4 million.
2. GCF-EBRD Sustainable Energy Financing Facilities for the same nine countries, including the R. of Moldova, with a total investment of US$1.4 billion.

Accredited by GCF entity for both projects is EBRD. Up to now no information is available on concrete mitigation and adaptation actions, and investments will be promoted in R. of Moldova.

Table 2-1 presents more details on relationships between existing accredited entities and relevant partners engaged with GCF.

Table 2-1: *Relationships between GCF accredited entities and relevant partners*

Entity/Partner Name	Area/s of focus	Engagement in country	Efforts to strengthen engagement with GCF
EBRD	Energy generation and access; Buildings, cities, industries, and appliances; Transport; Health, food and water security; Infrastructure and built environment; Energy generation and access; Buildings, cities, industries and appliances; Health, food and water security; Infrastructure and built environment.	The AE has long-term experience working in Moldova. Currently is the only AE that implements investment projects in Moldova. Republic of Moldova is part of two multi-country projects - Green City (GC) Program - Sustainable Energy Financing Facilities	The NDA is engaged with AE in activities implementation. Further stronger engagement with AE will help monitor the outputs and the impact of the project in the country.
Climate Change Office	Readiness and Preparatory Programme for the engagement with GCF	CCO, MARDE has expertise and experience in implementing climate change projects referring to capacity building, development of climate-related strategic documents, implementation of NAP, undertaking GHG emissions inventory, development of Republic of Moldova's Communications to UNFCCC,	CCO is a Moldova's delivery partner for Readiness projects and closely interacts with GCF.

[191] https://www.greenclimate.fund/countries/moldova

Entity/Partner Name	Area/s of focus	Engagement in country	Efforts to strengthen engagement with GCF
		implementation of climate action small size projects.	
FAO	Agriculture and food security, forestry and water resources , climate change	Strong presence in the country; promotes programs and projects in conservation agriculture, food security, climate change, sustainable management of natural resources, capacity building in the sectors.	The NDA is engaged with FAO and the intention is to strengthen the engagement
ADA	Climate change adaptation planning, rural development, water and sanitation environmental protection, infrastructure ,	Strong presence in the country, promotes projects in climate change adaptation planning, DRR, water management with EbA	NDA is engaged with ADA in various climate-related interventions and intends accessing GCF investment funds.
UNDP	Sustainable development, renewable energy, energy efficiency, adaptation planning, natural resources sustainable management	Strong presence in the country; experience in implementing climate-related projects, implementation of NAP 1, implementation of natural resources management projects.	UNDP is an AE to GCF with a strong corporate strategy regarding the engagement with GCF. NDA intends to engage with UNDP in accessing GCF investment funds.
IFAD	Agriculture business, conservation agriculture, food security	Strong presence in the country, promotion of agriculture credits for SMEs, business oriented agricultural projects, water management.	NDA intends to engage with IFAD in accessing GCF investment funds.
GIZ		Strong in-country presence. Experience and expertise in implementing development projects with climate-related benefits.	NDA intends to engage with GIZ in accessing GCF investment funds.
EIB		Strong presence in the country; implementation of energy security projects, infrastructure and business oriented projects.	The NDA is engaged with EIB and the intention is to strengthen the engagement

2.3 Roles and contribution of key stakeholders

A wide consultation process with the engagement of various stakeholders was applied for consulting *Republic of Moldova's Country Programme for the engagement with GCF.* During the consultation process of the CP was followed the principle of multi-stakeholder engagement, involving a big number of relevant stakeholders from various sectors and groups, having different perceptions, experience and interest of the addressed topics. The workgroups formed in the first phase of the consultation process (ministerial/CPAs, the private sector and LPAs) were maintained throughout the process, this way continuity and consistency in the consultation of developed drafts of the document were achieved, along with a contribution to increased ownership. At the same time, during the consultation process of national priorities, were taken into consideration both national development priorities and the country's climate-related objectives and targets. Almost all implemented activities and organized events were highly participatory, with the representation of both women and men, therefore, an important source of information on the discussed topics, but also contributing to the establishment of the basis of future collaboration and partnerships for the GCF projects.

The consultation process of the CP document has contributed also to building national capacities both at the NDA level and among relevant stakeholders. The approaches used in the consultation of the developed document were: brainstorming, discussions, and interactions with participants during the events along with given time for consultation with colleagues from the departments and come back with additional inputs, later addressed by the consultants and incorporated into the updated versions of the consulted strategic

document. The stakeholders were engaged in the discussion of the structure and the content of the CP document as a strategic framework of Moldova's engagement with GCF built upon existing in the country strategies and plans. It was emphasized also the need for developing a programmatic approach in tackling climate change through a pipeline of prioritized mitigation and adaptation funding proposals in a coherent approach.

The organized events with the participation of various groups of stakeholders were used also as awareness-raising events on the need to prepare and submit concept notes and project proposals according to the country's investment priorities. During the consultation process, all climate-relevant stakeholders had the opportunities to participate equitably and effectively including both men and women. Relevant information with regard to discussed topics was publicly accessible and disseminated to all stakeholders using communication platform websites, e-mails, networking.

To generate stakeholders' interest, provide support and build understanding, the national consultants developed and continuously updated *Information Factsheets* on related topics. The materials have been distributed through the communication platform of www.portal.clima.md; www.adapt.clima.md; www.madrm.gov.md; www.clima.md; Facebook page, # *schimbarile climatice in Republica Moldova.*

In developing the CP document, the GCF guidelines were followed and the document formulated according to the CP template. The first draft of integrated CP was uploaded on www.portal.clima.md website on 19.06.18 for stakeholder consultation and continued till 31.12.18. During the consultation process, stakeholders came with comments and recommendations that were incorporated into updated versions of the document. The consultation process ended 31 December 2018 after which, the version of the CP document with integrated comments was produced.

A detailed list of stakeholders is presented in Annex 9, and Annex 10 describes their role and contribution in developing the Country Programme and in preparing the conceptual notes of the program/project proposals.

The description of the events organized in the context of the CP elaboration, as well as the results of the discussions and debates that took place, are reflected in Table 2-2. Annex 11 presents the list of participants in the events regarding Moldova's engagement with GCF.

The Ministry of Agriculture, Regional Development and Environment (MARDE), including the Climate Change Office provided the most important contribution to the development and promotion of the Country Program.

Table 2-2: *Overview of consultation processes.*

Stakeholders' consultation events	Date of consultation	Type or objective of consultation	Outcome
Interministerial Meeting: Inter-ministerial consultations on the objectives of the Green Climate Fund and funding priorities.	30th of March 2018	Capacity building of the MARDE /NDA regarding the cooperation with GCF; Elaboration of the RM's strategic framework that will facilitate access to the Fund's financial resources.	National adaptation and mitigation priorities will continue to be discussed with stakeholders in order to be incorporated into the final version of Moldova's Country Program.
Workshop on the Republic of Moldova's engagement with Green Climate Fund and identification of national priorities for adaptation and mitigation to be financed	4th of May 2018	Stakeholders' awareness on: The purpose and objectives of the Project; Opportunities offered by the GCF and how to cooperate with it; The Country Programme for the engagement with FVC and the national investment priorities of the RM in climate change mitigation; Institutional arrangement and	Stakeholders' awareness of the opportunities offered by the GCF and the engagement with the Fund.

Stakeholders' consultation events	Date of consultation	Type or objective of consultation	Outcome
		intersectoral coordination in the process of the RM's engagement with GCF; the establishment of the non-objection procedure for GCF projects, the role and functions of the NDA; The importance of communication in the engagement of NDA with GCF, as well as the cooperation with accredited agencies and stakeholders; Gender Equality Policy in Implementing GCF Projects.	
Workshop: Consultation with Local Public Authorities of climate change national investment priorities in the framework of Republic of Moldova's engagement with Green Climate Fund.	28th of June 2018	Informing participants about: Engagement with GCF and its funding opportunities offered to the RM; The Country Programme for the engagement with GCF and the promotion procedure of project proposals; National investment priorities for adaptation and mitigation in "Agriculture" sector; Presentation of the Project Concept Note and its preparation requirements; Requirements and Principles of Gender Mainstreaming in GCF Project Proposals; Communication and organizing the process of Project proposals elaboration.	Identified national adaptation and mitigation priorities for the Agriculture sector; Training the participants on the preparation of the Concept Note; Informing stakeholders about GCF requirements on gender equality and how to communicate in the process of project proposals elaboration.
CCO meeting	2nd of July 2018	Country Programme content consultation	Guidelines in CP's elaboration
GCF on-line training on direct access accreditation of national entities	11th of July 2018	GCF has conducted on-line training of NDA members and project consultants on direct access accreditation of national entities. The major aspects of the rules and procedures for national entities accreditation have been highlighted.	Better understanding by NDA members and project consultants, the process of national entities accreditation with GCF.
Interministerial Meeting regarding the Coordination Mechanism and the Non-Objection Procedure	20th of July 2018	Stakeholder consultations on: Institutional arrangement and intersectoral coordination in the process of the RM's engagement with GCF; The Role and Functions of the NDA, the establishment of the non-objection procedure for the GCF projects.	Better understanding the coordination of the promotion procedure of project proposals.
Round Table with the private sector	5th of October, 2018	Opportunities for the private sector in the engagement process of the Republic of Moldova with the Green Climate Fund for mitigation and adaptation to climate change.	The representatives of the banking institutions, learned how could they apply for GCF funding in order to carry out climate change adaptation projects to increase resilience in health, water and food security, and greenhouse gas emission reduction projects by producing and accessing electricity and heat, efficient use of forests and land, promotion of renewable energy, etc.
Workshop: Training the Central Public Authorities in identifying and planning the	1st -2nd of November, 2018	Identifying the necessary expenditures on the priority sectors of the national	The representatives of the central public authorities and members of the working groups involved in the

Stakeholders' consultation events	Date of consultation	Type or objective of consultation	Outcome
climate-related expenditures of the national public budget		economy and planning climate-related expenditures in the national public budget.	planning and budgeting process were informed about the significance of the national public budget climate tagging in order to identify the country's needs for climate change mitigation and adaptation.
Interministerial Meeting: Ministerial consultations regarding the Operational Manual and Country Program.	26th of November, 2018	Presentation of NDA Operational Manual and Country Program. The purpose of developing these documents is to increase the country's chances of benefiting from projects funded by this Fund, being considered as the world's largest fund to support developing countries in climate change adaptation and mitigation practices.	Analyses of CP's and OM content Discussing the proposed investment priorities for the adaptation and mitigation components, the priority sectors in which our country needs investment to strengthen climate resilience, the vulnerability and the challenges in these sectors, analyzed the available sources of funding and nominated the country's agenda for the Green Fund Climate.
Workshop: Consultation with the stakeholders regarding the Country Programme of the Republic of Moldova's engagement with the Green Climate Fund and the National Designated Authority Operational Manual	13th of December 2018	Presentation of strategic documents (CP and OM) for the Country's engagement with GCF Importance of intersectoral coordination mechanism development to approve climate change investments Presentation of NDA roles, functions and responsibilities in the process of examining the project proposals and issuing the "No-objection letter".	Adaptation and mitigation components of the Country Program were presented, focusing on the aspect of the country's ownership, the eligibility criteria of the conceptual notes and project proposals, the country's investment priorities, and the project ideas to be taken over by the GCF's Accredited Entities Draft Operational Manual was presented and discussed.
Workshop of the Government Communicators' Council: Interinstitutional Communication Platform in Promoting the Country Program for Engagement with the Green Climate Fund	15th of December 2018	The main objective of the workshop was to strengthen the interinstitutional communication platform in promoting the Country Program on the engagement with the Green Climate Fund and to know and consult the priority actions in the process of mitigation and adaptation of the country to climate change.	Information received by government communicators regarding the promotion of Country Programme on the engagement with the GCF and the opportunities offered by the Fund on climate change adaptation and mitigation projects.

2.4 Identification of country priorities for GCF

2.4.1 Adaptation component

In the Republic of Moldova, the prioritization process (through stakeholder consultation process) related to climate change adaptation has previously been carried out for various purposes: the sectoral prioritization to identify the key sectors for climate change adaptation considerations under the *Climate Change Adaptation Strategy*; prioritization of the adaptation measures during the development of sectoral strategic documents or their mainstreaming into development policies; prioritization of adaptation technologies during the development of technology action plans (TAP) for adaptation technologies; prioritization of adaptation measures to be incorporated into socio-economic development strategies at

the district level, etc. A number of climate-related assessments have been undertaking prior to the prioritisation process: climate vulnerability and risks assessments; development of vulnerability indexes; sectoral and institution capacity assessments; gender assessments in relation to climate change; institutional capacity surveys, other types of supporting work that contributed to an informed decision during the prioritisation process. Based on different monetary, social and environmental criteria, priorities have been identified through assessments for a certain timeframe, depending on available resources. Alternative options have been examined each time to achieve specific adaptation targets.

In the process of identifying adaptation investment priorities for the engagement of the Republic of Moldova with the Green Climate Fund, the Multi-Criteria Analysis (MCA) was applied[192].

During the prioritization of GCF investment thematic areas, the list of adaptation options for each of the key sectors (agriculture, water resources, human health, forestry, energy, and transport) was produced. The options have been identified and selected based on the review of national and sectoral development and adaptation policies and documents related to climate adaptation and sustainable development, studies on climate impacts, risks and vulnerabilities, needs and opportunities for sector adaptation, development partners reports. For adaptation component, the consultation process was an extensive one to ensure a wide representation of stakeholders in the consultation process through the involvement of multiple stakeholders' approach, experts experience and perspectives, generating a sharing understanding, allowing negotiation within participants, and supporting a participatory decision-making process. Involved stakeholders account for different types of knowledge in the area of climate change adaptation, ensure transparency of each step of the appraisal process, have a strong element of stakeholders' engagement. The consultation events were used also as an occasion the stakeholders to share their experience, exchange knowledge on climate change planning and implementation and provide useful insights on how to improve country's capacities to access GCF funds and correct formulation of a strategic framework for engaging with GCF.

In defining the criteria for prioritizing investment options, their further application for the concept notes and funding proposals assessments was considered, therefore, aligned with GCF requirements, i.e.: (i) alignment with national policies and strategies and contribution to climate change transformative adaptation and sustainable development; (ii) to fit into the four GCF impact/ results in areas of adaptation ((1) enhanced livelihoods of the most vulnerable people, communities and regions; (2) increased health and well-being, and food and water security; (3) resilient infrastructure and built environment to climate change threats (4) resilient ecosystems and ecosystem services) and also fit into mitigation result areas; (iii) satisfy the 6 investment criteria of the GCF ((1) the impact potential, (2) the potential of the paradigm shift, (3) the sustainable development potential, (4) the beneficiary's needs, (5) the country's ownership, (6) efficiency and effectiveness). Likewise, the additionality criterion was pursued.

Thus, 7 criteria which correspond to national interests and are adjusted to the requirements of the GCF, have been defined,: *(i) alignment with the country's climate change adaptation strategies and plans as well as with the country's legislation; (ii) contribution to vulnerability reduction at the national level and increase in climate resilient sustainable development; (iii) the total number of direct and indirect beneficiaries; (iv) contribution to transformational adaptation; (v) contribution to improved economic performance with high level of environmental, social, and gender co-benefits; (vi) financing needs of vulnerable groups, target population, sectors, development regions, country; (vii) financial and economic feasibility,* assigning scores to the range of a qualitative scale from 1 to 10.

[192]Dodgson, JS, Spackman, M, Pearman, A and Phillips, LD (2009). Multi-criteria analysis: A manual. Department for Communities and Local Government: London

The identified criteria have passed stakeholder validation, through the MCA, within which weight was assigned to each criterion depending on its relevance for reaching adaptation objectives and final matrix produced (Annex 14), based on which sectoral investment options have been prioritized (Table 2-3).

Table 2-3: *Priority investment options on Moldova's adaptation component in the country's engagement with the Green Climate Fund*

Priority Sectors	The investment priorities of the Republic of Moldova (adaptation component)		Focus of GCF interventions	GCF financial tools[193]
Agriculture	Strengthen the climate resilience of the agricultural sector by:	Sustainable soil management (conservative, precision, ecological agriculture, etc.)	public-private	grants, loans
		Promoting efficient irrigation systems	public-private	grants, loans
		Promoting the diversity and resilience of agricultural crops	public-private	grants, loans
		Increased food security	public-private	grants, loans
		Promoting integrated food, water, and energy systems in a smart and resilient agriculture climate change	public-private	grants, loans
Water resources	Promoting sustainable water climate management through:	Resources evaluation, increasing supply and efficient management of water demand, taking into account social and gender issues	public-private	grants, loans
		Management of extreme events (floods, droughts)	public	Grants
		Effective water treatment and reuse	public-private	grants, loans
Forestry	Promoting the sustainable management of natural resources by:	Afforestation / reforestation, promoting the ecosystem approach	public	Grants
		Sustainable management of forests and ecosystem services	public	grants, loans
		Organic restoration of degraded pastures	public	Grants
Health	Increasing the climate resilience of the health system to identify, monitor, prepare and respond to health changes and diseases related to climate for men and women (of different ages, abilities, social status, place of residence) through:	Improving health services for vulnerable groups of the population	public	Grants
		The infrastructure of hospitals for operationalization to "green" standards	public	Grants
		Prevention, early warning, management and overcoming the impact of extreme weather events (heat and cold waves, floods)	public	Grants
Transports	Promoting environmentally friendly and efficient transport in the country through:	Resilient urban infrastructure to reduce exposure to climate risks	public	grants, loans
		Increasing the climate resistance of the transport infrastructure (roads, bridges, viaducts, railways, tracks)	public	grants, loans
		Adoption of climate resilience codes and standards	public	Grants
		Access of rural population to a climate-resilient road system that takes into account social, age and gender aspects	public	grants, loans
Energy	Ensuring the country's energy security by:	Promoting water-energy-land interaction with renewable energy sources	public-private	grants, loans, equity

[193] The financial instruments to the private and public sector will be established on a case-by-case basis, specified for each individual project.

Priority Sectors	The investment priorities of the Republic of Moldova (adaptation component)		Focus of GCF interventions	GCF financial tools[193]
		Climate protection of the energy system infrastructure	public-private	grants, loans, equity
		Ensure the operation of energy infrastructure in any climatic conditions	public-private	grants, loans, equity
Intersectorial priorities	Improving the resilience of Moldovan communities to the adverse effects of climate change, taking into account social and gender issues		public-private	grants, loans

This list of investment priorities will be updated annually or as necessary, with stakeholder participation and using relevant prioritization approaches.

2.4.2 Mitigation component

As mentioned in chapter 1, in order to meet the country's NDCs engagement, the *Low Emissions Development Strategy* foresees the implementation of 44 NAMAs to achieve the unconditional NDCs objective and 22 NAMAs to achieve the conditional one. However, not all of the measures under consideration, fall within the priority areas of the GCF. Moreover, from the range of those that correspond to the result areas of the GCF, only those categorized below are eligible for GCF funding[194]:

- measures undertaken to achieve the NDC's conditional objective, i.e. a 78% reduction in net GHG emissions by 2030 compared to 1990;
- measures that comply with the GCF funding criteria (impact potential, paradigm shift potential, sustainable development potential, beneficiary needs, country ownership as well as efficiency and effectiveness) and which also include the gender equality dimension;
- measures that comply with criteria of additionality.

Taking into account the above-mentioned requirements, Annex 12 and Annex 13 show the respective measures selected in accordance with the GCF results areas, investment criteria and criteria of additionality. For each of these, appropriate arguments are provided which justify their inclusion in the range of national mitigation priorities within the GCF results areas. Of the total 12 NAMAs registered in the NAMA Register of UNFCCC, 7 were selected. The other NAMAs were attributed to the Agriculture sector (which do not fall within the GCF mitigation results areas) or excluded for the reasons of additionality.

Mentioned above NAMAs were identified as a result of a rigorous selection process during the implementation of three projects funded by related field donors: (a) “Technology Needs Assessment” funded by GEF and UNEP; (b) “Republic of Moldova. Reduced Emission Capacity Enhancement Program”, funded by UNDP; and (c) “Developing the Fourth National Communication and the First Biennial Report (BUR1)” funded by GEF. In this respect, 12 national and 2 international experts were employed to identify 12 out of 136 priority NAMAs. These 12 NAMAs were chosen following the application of MCA tool, and the stakeholder engagement, including for scoring each of the MCA criteria. After selecting the 12 NAMAs, they went through the registration process in the NAMA Register of UNFCCC and were registered under the category of Seeking Support for Implementation in the Republic of Moldova.

Table 2-4 presents the performance indicators of mentioned 7 NAMAs, and Table 2-5 presents the performance indicators for other LEDS activities aiming to achieve the NDC's conditional objective and falling within the GCF results areas and criteria of additionality. As can be seen from Tab. 2-4, the implementation of the respective NAMAs can cover 47% of the conditional emission reduction commitment specified in the NDC and 19% by the implementation of non-registered NAMA activities (see Table 2-5), totaling 66% of Moldova's NDC's conditional commitment. It is worth mentioning that the

[194] Further Development of the Initial Investment Framework: Sub-Criteria and Methodology. GCF/B.09/07 23 February 2015.

NAMAs: 3, 5 and 7 from the Table 2-4 are developed in a detailed format, according to the UNDP template, which discloses all aspects of the opportunities to implement the action, including: cash flow, applied methodology for determining GHG reductions, investment portfolio, institutional implementation framework, risks, potential for project scale-up, etc. The other NAMAs are developed in the NAMA application format for the NAMA Registry of UNFCCC. At the same time, they are supported by relevant study reports.

Table 2-4: *Identified NAMA performance indicators to achieve Moldova's conditional objective*

no.	NAMA	Emission Reduction by 2030, $ktCO_2$ / year	The required investment, mil US$	GEF Funding (Concessional loan + Grant), mil US$	The specific investment, $ / tCO_2e accumulated
1	Promotion wind power plant in Moldova	609	640	Up to 512	53
2	Promotion heat pumps in the RM	148	180.1	143.8	108
3	Waste to Energy (WTE) NAMA in Moldova	109	15.0	8.3	4
4	Hybrid and electric buses and minibuses in the city of Chisinau	17.2	344.3	80.7	2006
5	Promoting energy efficient lighting in Moldova	327	236.3	90.6	52
6	Clinker substitution at cement production	301	100.2	72.8	92
7	Afforestation of degraded land, riverside areas and protection belts in the RM	284	144	85.5	10
	TOTAL	2203	2379	Up to 993.7	
Commitment level of conditional NDC		47%			

Table 2-5: *Identified performance indicators of LEDS actions, other than registered NAMAs, in order to achieve RM's conditional objective*

no.	Action	Emission Reduction by 2030, $ktCO_2$ / year	The required investment, million US dollars	The specific investment, $ / tCO_2e accumulated
1	Reducing losses in the heat transmission and distribution system and thermal energy production	32	446	349
2	Promotion and construction of photovoltaic power plants connected to the grid	241	559	116
3	Use of biogas gensets for the electric and thermal energy production	54	37	28
4	Construction of good and very good roads	197	2796	945
5	Promoting energy efficiency in rail transport	15	0.4	1
6	Increasing the thermal resistance of the building envelope	98	232	59
7	Use of second-generation biofuels for thermal energy production	26	7	13
8	Promoting energy efficiency in the industrial sector	61	12	13
TOTAL		838	4473	
Commitment level of conditional NDC		19%		

The above-mentioned mitigation measures contribute not only to the reduction of GHG emissions they are important to the achievement of the sustainable development objectives set in Moldova 2030

Development Strategy, leading, through their implementation, to the country's development paradigm shift. The description of the respective performances for each NAMA is presented in Annex 13.

Analysing all the above-listed actions that cover 66% of the NDC's conditional objective and following and applying the methodology for identifying the national priorities included in the GCF results areas, set out in Annex 14, three priorities with a focus on greenhouse gas emissions mitigation are relevant for the Country Program:

a) Promoting energy efficiency
b) Promoting renewable energy sources
c) Land use and afforestation

These priorities fall within the areas of the GCF results and can therefore be considered in alignment with the objectives of the Fund. Below, in Table 2-6, abovementioned NAMAs are structured in the frame of country priorities identified.

Table 2-6: *Priority investment options on Moldova's mitigation component in the country's engagement with the Green Climate Fund*

Priority Sectors	The investment priorities of the Republic of Moldova (mitigation component)
Promoting energy efficiency	- Hybrid and electric buses and minibuses in the city of Chisinau - Promoting energy efficient lighting in Moldova - Clinker substitution at cement production - Reducing losses in the heat transmission and distribution system and thermal energy production - Construction of good and very good roads - Promoting energy efficiency in rail transport - Increasing the thermal resistance of the building envelope - Promoting energy efficiency in the industrial sector
Promoting renewable energy sources	- Promotion wind power plant in Moldova - Promotion heat pumps in the RM - Waste to Energy (WTE) NAMA in Moldova - Use of biogas gensets for the electric and thermal energy production - Use of second-generation biofuels for thermal energy production
Land use and afforestation	- Afforestation of degraded land, riverside areas and protection belts in the RM

2.5 Country portfolio

The process for the engagement of the Republic of Moldova with the GCF started in 2015, when EBRD, an entity accredited by the GCF, came with the initiative to launch the regional project *"The Green City Program",* which included Moldova among the 20 countries involved in the project. In 2016, the GCF approved another multi-country project for 10 countries, including Moldova, also implemented by the EBRD "*GCF-EBRD: Sustainable Energy Financing Facilities"*.

In order to create a more in-depth engaging framework with GCF, in 2017 Moldova's NDA has applied with its first Readiness project"Support *to the Republic of Moldova in the establishment and strengthening the NDA, development of the strategic framework, and preparation of country programme*". Under the Readiness Programme, two GCF AEs helped Moldova to address its second NAP through UNDP submitted project proposal "*NAP-2: Advancing Moldova's National Climate Change Adaptation Planning Process"* and FAO project proposal "*Mainstreaming adaptation into planning processes to reduce vulnerability to climate change at local and central levels in Moldova's Agriculture Sector"* that represents agriculture sector adaptation plan (Ag. SAP).

Through the above-mentioned GCF projects, AEs committed themselves to contribute to international efforts to honour the Paris Agreement's third objective "finance flows consistent with a pathway towards

lower greenhouse gas emissions and climate resilient development". Collaborating with Moldova from the very beginning of its engagement with GCF, will give to these AEs a competitive advantage, and make a valuable contribution to the country's development as a whole. This proactive involvement is much appreciated, at the same time, the Accredited Entities working in Moldova has to commit not only to the one-off project but build their entity programme and become a permanent partner of Moldovan Government in addressing both climate change mitigation and adaptation. The NDA will provide help to bridge the gaps between in-need sectors, sub-sectors, vulnerable groups, and GCF AEs to make clear prioritized needs through updating its GCF Country Programme investment priorities.

At this stage of the country's development, it is difficult to make a precise judgment about climate risks and related investment opportunities, in particular regarding the adaptation component. However, in chapter 1.4 it was made an attempt to show to potential GCF projects partners and investors country's needs and investment opportunities for key sectors. For climate mitigation, Moldova has a meaningful analysis of GHG emissions and quite precise data on the investments needed. To some degree, the balance of investments risks and opportunities could be judged based on developed country level climate change scenario presented in detail in Moldova's NatCom 4 and BUR2 to UNFCCC sure, in conjunction with policy decision and economic planning. To be mentioned one more time, already developed NAMAs covering country-level strategic scale should be good supporting guidance for investors.

For climate change adaptation, as it is well known, the situation is more complex, as complex the climate risks and vulnerabilities may be, however, as mentioned in chapter 1.4, they represent vast investment opportunities and we trust that GCF AEs are increasingly keen to address financial aspects of climate change adaptation in Moldova. At the same time, the more we advance with climate action, the clearer are the climate action gaps and more evident are the needs. Therefore, we strongly encourage AEs to address climate-related risks and opportunities of Moldova and, in their turn, help developing new investment routes for climate change adaptation and mitigation.

Considering the above-mentioned, the following tables present the currently existing portfolio of under implementation projects, along with identified project ideas and concept notes proposed by the NDA to be financed through GCF investment projects, along with those of Readiness Windows. All of them comply both with GCF investment priorities, criteria of additionality and with the national investment priorities listed in chapter 2.4.

Table 2-7 presents the approved by GCF projects, Table 2-8 shows the most relevant actions of LEDS and CCAS proposed to accredited entities in order to be developed by them in Concept Notes or projects partially, financed by GCF, and Table 2-9 presents the Engagement Framework with GCF.

The structure of investments in the actions presented in these tables was identified based on GCF Board Decision GCF/B.23/19 of 28 June 2019, which prescribes that activities dedicated solely to addressing climate change, including capacity-building, barrier-removal to address climate change or projects where the costs of a baseline scenario are zero, are eligible for agreed full costs.

Table 2-7: *Republic of Moldova's funded projects currently under implementation*

Project Title	Description	Accredited Entity	Submission timeframe
Green City Programme (GC)[195]	Researches indicate that cities already account for up to 70 per cent of energy use and 80 per cent of greenhouse gas emissions, figures which are set to rise over time. EBRD nations	EBRD	2016
Fund level strategic impacts		**Total financing: US $ 603.4 million**	**Status**

[195] <https://www.greenclimate.fund/countries/moldova>

Project Title	Description	Accredited Entity		Submission timeframe
2, 3	are characterized by inefficient use of energy and high carbon intensity (tCO2eq/GDP), with some countries almost eight times that of the global average. In addition, recycling of waste in these countries urban areas is negligible compared to an EU average of 39 per cent (European Environment Agency, 2015) and an EU target of 50 per cent of municipal solid waste (MSW) recycling by 2020. The GC Program has several interdependent objectives: 1. Facilitate and stimulate sovereign and sub-sovereign finance for climate change mitigation and resilience investments in priority sectors including: a. Public building energy efficiency; b. Urban Renewable Energy; c. Water and wastewater; d. Urban public transport; e. Urban roads and lighting; f. Solid waste management; g. District heating modernization. 2. Capacity building of city administrators and key stakeholders through targeted technical assistance aimed at developing skills in: a. Systematic, comprehensive Green City strategic planning; b. Establishing and managing environmental/social safeguards; c. Delivering outcomes that promote gender equality. 3. Deliver policy support for: a. Preparation and implementation of green strategy documents; b. Development of legislative/regulatory amendments as required.	GCF: US $ 25 mil (grant) US $ 73.9mil (loan)	Other: US $ 636 million	Approved October 2018

Action	Lead	Timeline
Financing approved	EBRD, Multi-country	2018

Project Title	Description	Accredited Entity		Submission timeframe
GCF-EBRD Sustainable Energy Financing Facilities[195]	Scaling up private sector climate finance is an urgent priority to rapidly put the world on a mitigation path leading to a 1.5°C outcome and enable vulnerable countries to move to a climate resilient pathway. The EBRD-GCF program was developed to provide innovative solutions based on a decade of experience and an existing $ 3.5 billion climate change financing portfolio mobilized via Partner Financial Institutions ("PFIs") in the EBRD countries. The program aims to achieve a paradigm shift by creating new markets for sustainable commercial energy, energy efficiency and climate resilience funding. This will help achieve the goal set out in the Paris Agreement	EBRD		2016
Fund level strategic impacts		**Total financing: US $ 1.4 billion**		**Status**
1, 2, 3		GCF: US $ 34 million (grant) US $ 344 million (loan)	Other: BERD: US $ 1007 million	Approved by GCF

Project Title	Description	Accredited Entity		Submission timeframe
	of "making financial flows consistent with a pathway to low greenhouse gas emissions" through an innovative combination of financial support, capacity building and technology transfer, supported by a high level of country's ownership. This programme will deliver climate finance at scale via Partner Financial Institutions (PFIs) in developing countries, which will fund over 20,000 scalable and replicable projects across industrial, commercial, residential, transport and agricultural sectors in the Middle East and North Africa, West, Central and South Asia and Eastern Europe. It will address several barriers that occurs along the technology supply chains and will unlock private sector funding.			

Action	Lead	Timeline
Financing approval	EBRD	Approved October 2016

Table 2-8: *Country Project preparation pipeline*

Project Title	Description	Accredited Entity		Submission timeframe
The promotion of Wind Farms	The overall objective is this NAMA is to widespread deployment by 2030 of wind power plants with a total capacity of around 400 MW. RM is dependent on imported electricity at a rate of about 82%. The country's strategic documents foresee that this situation will be overcome by increasing the number of renewable energy sources (RES) in the energy balance, including wind power. The total RES capacity planned to be built by 2030 is around 800 MW, of which 400 MW will operate on the free market. In order to make their implementation feasible from a financial point of view, the price of energy produced by these sources should be less than or equal to the lowest price on the electricity market. In order to allow lower energy prices and to make the produced energy, competitive on the market, donor funds are needed in the form of grant and concessional loan. The project implementation will increase country energy security and reduce GHG emissions by 609 $ktCO_{2eq}$ per year	The Accredited Entity is to be identified		2022-2024
Fund level strategic impacts		**Total financing: 640 mil Euro**		**Status**
1 Private project		GCF: 219 mil € (grant); 293 mil € (concessional loan)	Other: 128 mil €	In the process of AE identification

Action	Lead	Timeline
Carried-out Assessment Study		2017
Presentation of Concept Note		2019-2020

Project Title	Description	Accredited Entity	Submission timeframe
The promotion of heat pumps	The objective of this NAMA is to implement small, medium and large capacity heat pumps that will meet about 4 % of heating and hot water supply demand in the Republic of Moldova. It is expected	The Accredited Entity is to be identified	2020-202
Fund level strategic impacts		**Total financing: US $ 180.1 million**	**Status**

Project Title	Description	Accredited Entity		Submission timeframe
1, 3 Private project	to install about 13160 heat pumps of different capacities in residential detached buildings, industrial and commercial enterprises, schools, hotels, restaurants and other premises. Implementation of heat pumps will result in annual production of about 1.743 PJ of heat. The produced heat will substitute the heat produced by natural gas and coal fired boilers. The implementation of this NAMA project has a timeline of 12 years with approximately 37% reduction in annual fuel consumption compared to baseline scenario, and greenhouse gas (GHG) emissions reduction of at least 66.7 kt CO_2 eq per year.	GCF: US $ 89.92 million (grant); US $ 53.9 million (concessional loan)	Other: US $ 36.18 million	In the process of AE identification

Action	Lead	Timeline
Carried-out Prefeasibility Study		2017
Presentation of Concept Note		2019-2020

Project Title	Description	Accredited Entity		Submission timeframe
Waste to Energy (WTE) NAMA in The Republic of Moldova	The WTE facilities will be installed at the solid waste disposal sites (SWDS), though the scope of the NAMA does not include improvement of waste management public services per se. The project foresees: Collection of landfill gas (LFG) and destruction of the methane contained in it; and Use of the collected LFG for renewable electricity generation without reliance on fossil fuel. Total generation capacity installed, working on LFG, is equal to 4 MW.	The Accredited Entity is to be identified		2024
Fund level strategic impacts		**Total financing: US $ 15 million**		**Status**
1 Private-public project		GCF: US $ 0.9 million (grant) US $ 7.4 million (concessional loan)	Other: US $ 6.7 million	In the process of AE identification

Action	Lead	Timeline
Carried-out prefeasibility Study		2016
Presentation of Concept Note		2019-2020

Project Title	Description	Accredited Entity		Submission timeframe
Hybrid and electric buses and minibuses in the city of Chisinau	The implementation of hybrid and electric buses and minibuses is spreading worldwide[196]. This NAMA allows to reduce expenditures on fossil fuels, GHG emissions and provide health benefits. This NAMA is intended to be implemented in the city of Chisinau, with results in: reducing the dependence on imported fuels, creation of new skilled jobs; new ways of clean technologies transfer and opening opportunities for collaboration, knowledge transfer and development of local clean industries. The GHG reduction from NAMA implementation will amount to 17.2 kt CO_2eq per year.	The Accredited Entity is to be identified		2020-2022
Fund level strategic impacts		**Total financing: US $ 344.3 million**		**Status**
2 Private-public project		GCF: US $ 80.7 million (grant)	Other: US $ 263.6 million	In the process of AE identification

Action	Lead	Timeline
Carried-out Prefeasibility Study		2017

[196] https://www.intelligenttransport.com/transport-news/21656/europe-electric-buses-report/

Project Title	Description	Accredited Entity		Submission timeframe
Presentation of Concept Note		2019-2020		
Project Title	**Description**	**Accredited Entity**		**Submission timeframe**
Promoting Energy Efficient Lighting in the Republic of Moldova	The overall objective of the NAMA on Promoting Energy Efficient Lighting in the Republic of Moldova is to convert all non-LED lighting systems to LED-based systems in the street lighting, public buildings and residential buildings sectors. At present, the dominant lighting technologies that are currently in use in the country include: different high-pressure mercury lamps in the street lighting sector, as well as incandescent light bulbs, fluorescent and compact fluorescent lamps in the public buildings and residential building sectors. Most of the Moldovan lighting infrastructure is outdated and will have to be re-placed in coming years. Therefore, a transition to LED lighting is considered as the best option since LEDs are currently the most energy-efficient and durable lighting technology available on the market. Achievement of this NAMA will reduce annual national electricity consumption by 503 MWh, resulting in savings of up to 64 million €. Moreover, national GHG emissions would be reduced by 327 t CO_2 per year.	The Accredited Entity is to be identified		2020-2021
Fund level strategic impacts		**Total financing: 192 mil €**		**Status**
3 Private-public project		GCF: € 10.6 million (grant) € 80 million (concessional loan)	Other: € 101.4 million	In the process of AE identification
Action		**Lead**	**Timeline**	
Carried-out Prefeasibility Study			2016	
Presentation of Concept Note			2019-2020	
Project Title	**Description**	**Accredited Entity**		**Submission timeframe**
Clinker substitution at cement production	The overall objective of the NAMA on Clinker Substitution at Cement Production in the Republic of Moldova is to replace the conventional cement production technology (Ordinary Portland Cement – OPC) with a new cement production technology called "Solidia technology". Currently the OPC technology is used in the country and the share of clinker in total cement production is 81% on average. Clinker production is a high energy-intensive technology leading to around 830 kg CO_2 emissions per tonne of produced cement, including 530 kg CO_2 / tonne of clinker in the process of calcination. This new technology will be implemented in 2 cement production plants from the country. Switching from the OPC technology to "Solidia Technology" will allow to emit 30% less of CO_2, use 30% less energy and the CO_2 footprint associated with manufacturing and use of cement can be reduced by up to 70%. Preliminary estimates indicate that replacing the OPC with "Solidia Technology" by 2030 will lead to 300 kt CO_2 emissions reduction due to calcinations process and 176 kt CO_2 due to fuel savings. In addition, the new technology will act as CO_2 absorber and will reduce water consumption by 80%. Moreover, fuel	The Accredited Entity is to be identified		2023
Fund level strategic impacts		**Total financing: € 81.4 million**		**Status**
3 Private		GCF: € 40.4 million (grant); € 32.4 million (concessional loan)	Other: € 8.6 million	In the process of AE identification

Project Title	Description	Accredited Entity		Submission timeframe
	consumption will reduce by 30% and the cement curing time will reduce from 28 days to one day, resulting in time, money and inventory space savings for cement and concrete producers.			

Action	Lead	Timeline
Carried-out Prefeasibility Study		2017
Presentation of Concept Note		2019-2020

Project Title	Description	Accredited Entity		Submission timeframe
Afforestation of degraded land, riverside areas and protection belts in the Republic of Moldova	The project aims at enhancing forestry sector capacities to address climate change through the expansion of forest area with mitigation benefits via sequestration of carbon and contributing to reaching the country's NDCs targets for GHG reductions. By applying an effective ecosystem-based adaptation approach through biodiversity conservation practices and ecological restoration that promotes a multi-story planting for an enhanced resilience to climate change, the project will deliver important adaptation benefits, including enhanced soil productivity, protecting soil from erratic weather events such as droughts and flooding, regulating hydrological cycles and micro-climates, while maintaining ecosystem services, crucial for addressing the challenge of climate change. In particular, the project activities will support a paradigm shift in the forestry management practices and will help strengthen capacities of local communities to sustainably manage their forests and pastures through the engagement of forest-based small and medium enterprises (SME) with potential for increased employment, efficient service delivery and revenue generation. Involvement of both Local Public Authorities and private sector in forest management will foster community ownership, improve livelihood and empower women in local communities in the decision-making processes related to the forestry sector.	The Accredited Entity is to be identified		2020
Fund level strategic impacts		**Total financing: € 116.7 million**		**Status**
4 Private-public project		GCF: € 85.5 million (grant)	Other: € 31.2 million	In the process of AE identification

Action	Lead	Timeline
Carried-out Prefeasibility Study		2016
Presentation of Concept Note		2019-2020

Project Title	Description	Accredited Entity	Submission timeframe
Sustainable soil management and climate resilient agriculture in the Republic of Moldova	The project aims at replacing the dominating industrial model of agricultural intensification by a new, more sustainable agricultural system, less dependent from industrial inputs (mineral fertilizers, pesticides, fuel for mechanical soil tillage, irrigation, etc.) and more climate resilient. Implementation of the new model of agricultural intensification will increase economic	The Accredited Entity is to be identified	2021-2022
Fund level strategic impacts		**Total financing: US $ 136.5 million**	**Status**

Project Title	Description	Accredited Entity		Submission timeframe
4, 5, 6, 7, 8	competitiveness of farmers with significant benefits on improvement of the environment and social stability of rural communities. Holistic approach to farm organization and management at the landscape level will be implemented in model farms from different districts of Moldova.	GCF: US $ 100 million (grant)	Co-financing: US $ 36.5 million	CN and PPF submission under development

Action	Lead	Timeline
Carried-out Prefeasibility Study		2019
Presentation of Concept Note		

Project Title	Description	Accredited Entity		Submission timeframe
Sustainable and climate smart Management of Chernozems in the Republic of Moldova	The main purpose of the project is to provide sustainable management of soil fertility to obtain stable and qualitative crop yields under global warming conditions. The main objectives of the project are: - Development of agricultural systems with sustainable soil fertility management and resilience to climate change for different areas of the Republic of Moldova (north, centre, south). - The practical implementation of sustainable and climate-resilient systems in agriculture for different areas of the Republic of Moldova. The size of a household will be 150-200 ha in each pedoclimatic area. - Establishment of economic, ecological and social agro-environmental criteria for assessing sustainable and smart soil management in agricultural households in order to stimulate the transition to a sustainable, including organic, farming system.	The Accredited Entity is to be identified		2022-2023
Fund level strategic impacts		**Total financing: US $250 million**		**Status**
4, 5, 6, 7, 8		GCF:	Co-financing:	CN and PPF submission under development

Action	Lead	Timeline
Carried-out Prefeasibility Study		
Presentation of Concept Note		2019

Project Title	Description	Accredited Entity		Submission timeframe
Engaging the private sector in the upscaling of PV systems in the Republic of Moldova.	The project idea aims at increasing Moldova's energy autonomy and derives from the experience of implemented renewable energy pilot projects through PV system at the community and household levels. Developed upscaling strategy analyses the existing favourable conditions, in particular, the enabling environment along with barriers for implementing renewable technologies in Moldova and proposes solutions to overcome the barriers. The up-scaling concept relies on private sector involvement and necessary Government support. A thorough analysis of sites for implementation of PV systems is given considering economic, social, and technological aspects. A number of alternative ways of implementing renewable PV technology are given considering the involvement of residential, public, and entrepreneurial sectors of	The Accredited Entities is to be identified		2021-2022
Fund level strategic impacts		**Total financing: US $ 52 million**		**Status**
1, 6, 7		GCF: US $ 38 million (concessionall credits)	Co-financing: US $ 14 million	CN and PPF submission under development

Project Title	Description	Accredited Entity		Submission timeframe
	Moldova's in districts. A phased approach to implementation activities with all relevant details and characteristics is given along with a description of actions to build capacities at the district level for implementing proposed activities. A special emphasis is given to the horizontal and vertical implementation of proposed activities, analysing up-scaling factors, in particular, marketing conditions for renewable energy technologies.			

Action	Lead	Timeline
Elaboration of Prefeasibility Study		
Presentation of Concept Note		

Project Title	Description	Accredited Entity		Submission timeframe
Increasing resilience to climate change to protect human health through the development of "green health services" in Republic of Moldova.	In Moldova were identified five factors with a high degree of risk to human health associated with climate change: - an increase in mortality rate due to heat waves; - an increase in the number of diseases caused by air pollution in association with heat waves; - higher risk for allergic diseases; - higher risk of food shortages caused by drought and water shortages; - higher incidence of water and food related diseases. Health infrastructure in Moldova is beyond its capacity to supply efficient health protection. Unless adaptation mechanisms are implemented, climate change is likely to result in further demands on health services, and an increasing burden of chronic and infectious disease, including vector-borne. Health sector and medical staff is mainly concentrated on responses that deal reactively with climate-sensitive diseases, through curative treatment but not on proactive preventive measures. Existing infrastructure of health institutions is energy costly, exists large problems on managing medical wastes. The future project will be focused on building a more resilient health system capable to implement measures that will decrease health vulnerability to current climate variability and future climate change. Main project outcomes: Outcome 1: Four national and one regional resilient "green" health institutions with modernised infrastructure, capable to implement preventive measures to minimize adverse health impacts of climate change in a cost-effective manner and to address current health problems and to replicate their experience to the whole health system; Outcome 2: Increased skills and knowledge of health professionals to cope with climate sensitive diseases and awareness of the population to take	The Accredited Entity is to be identified		2020-2021
Fund level strategic impacts		**Total financing: US $ 45 million**		**Status**
5, 7		GCF: US $ 45 million (grant)	Co-financing:	CN and PPF submission under development

Project Title	Description	Accredited Entity		Submission timeframe
	self-preventing measures for climate-induced diseases; Outcome 3: An early warning system that provides reliable information on likely incidence of climate sensitive health risks established; Outcome 4: Strengthened public health services for ensuring monitoring, evaluation of national adaptation policies and implementation of effective public health interventions for reducing health vulnerabilities.			

Action	Lead	Timeline
Elaboration of Prefeasibility Study		
Presentation of Concept Note		

Project Title	Description	Accredited Entity		Submission timeframe
Promoting efficient irrigation in the Republic of Moldova through low-flow, low-pressure and water serving drip Irrigation technologies.	For Moldova it is important to implement the approaches that increasing the efficiency of irrigation systems than simply expanding them. The project involves the installation of modern drip irrigation systems on an area of 133.5 thousand ha planted with orchards and 135.3 thousand ha of vineyards. The expansion of low-flow, low-pressure and water-serving drip irrigation technologies will contribute to the efficient use of water for agriculture, reduce the risk of growing and cultivating value-added crops; will increase the incomes of the rural population and the welfare of the communities. Implementing new irrigation technologies will promote high irrigation uniformity, optimal soil moisture; more than 50% reduced consumption of irrigation water and reduced water losses to evaporation from the soil surface. Investments in this kind of irrigation systems can be recovered in a short time. Drip irrigation will also be used for the optimal distribution of fertilizers. Nutrient applications can be better timed to meet plants' needs. Extending the implementation of the project will depend on the agro-climatic areas of the country; landscape factors; type of soil; groundwater level; water quality, etc. Economic, social, environmental benefits: reduced costs for fertilizers due to their localized application to each plant by dissolving them in the water; irrigation efficiency due to strictly targeted application (at each row and plant); maintaining soil moisture at field capacity strictly in the root zone; low weed growth due to dry soil between plant rows.	The Accredited Entity is to be identified		2022-2023
Fund level strategic impacts		**Total financing: US $ 161 million**		**Status**
5, 6, 7, 8		GCF: US $ 129 million (grant)	Co-financing: US $ 32 million	CN and PPF submission under development

Action	Lead	Timeline
Preparation of Prefeasibility Study		2019
Presentation of Concept Note		

Project Title	Description	Accredited Entity	Submission timeframe

Project Title	Description	Accredited Entity		Submission timeframe
Promoting community resilience through improved surface water management	The goal of the Project is to upscale existing experience in building resilience and adaptive capacities of farming communities to climate variability and extreme events through management of groundwater resources. The specific objectives of the project are to increase climate resilience of small-scale water storage and irrigation infrastructure by developing and strengthening the technical and institutional capacities needed to undertake strategic water infrastructure investments to improve irrigation options, facilitate surface water based irrigation, reduce on-farm energy costs, increase water efficiency and agricultural productivity, and build long-term climate resilience along with promoting effective community involvement in water governance and improved awareness of climate resilience issues among end users of water services. The implementation of the project will cover the need of 860 communities of Moldova bringing high value agricultural development; impacts on water supply; increased water security; support to sustainable development.	The Accredited Entity is to be identified		2021-2022
Fund level strategic impacts		**Total financing: US $ 200 million**		**Status**
5, 6, 7, 8		GCF: US $ 160 million (grant)	Co-financing: US $ 40 million	CN and PPF submission under development

Action	Lead	Timeline
Preparation of Prefeasibility Study		2019
Presentation of Concept Note		

The other 7 actions reflected in Table 2-5 are measures that could be developed in the form of Concept Notes to be submitted by NDA.

Table 2-9: *Country Readiness Programme projects pipeline*

Project proposals submitted to GCF			
Project Title	**Description**	**Accredited Entity**	**Submission timeframe**
Support to the Republic of Moldova in the establishment and strengthening the NDA, development of the strategic framework, and preparation of country programme.	The Readiness and preparatory support will help to establish and mandate the National Designated Authority (NDA) to engage with GCF, build the knowledge and capacities of the MARDE team to efficiently manage GCF operational process, to efficiently communicate with Fund's board and secretariat, to access the Fund's resources and carry out the necessary due diligence. Through defining of GCF specific strategic framework, the conditions will be created to move from project-based approach to programmatic and strategic approaches with support from the Fund, consistent with national sustainable development plans. Establishing a country-driven, gender-sensitive and participatory Coordination Mechanism (CM) for GCF-related activities to implement Moldova's programming priorities aligned with SDGs, LEDS, NAP goals will enable the NDA for prepare capacities of stakeholders, in particular potential accredited agencies for GCF project	MARDE	2017
		Total financing:	**Status**
		US $ 300,000	Under implementation

Project proposals submitted to GCF			
Project Title	**Description**	**Accredited Entity**	**Submission timeframe**
	proposals development and implementation. The NDA will enhance the understanding of Fund's accreditation and project requirements and the degree to which national entities met the requirements. Potential nominated agencies will receive support in developing funding proposals through enhanced direct access modality. The Monitoring and Evaluation (M&E) component established as part of CM and operationalized in a transparent manner will help the NDA to undertake oversight and to adjust activities to secure project outcomes and manage risks.		
Action	**Lead**	**Timeline**	
Carrying out the Project	NDA, Climate Change Office	2018-2019	
Presentation the Country Programme	AND	2019	
Project Title	**Description**	**Accredited Entity**	**Submission timeframe**
NAP-2: Advancing the Climate Change Adaptation Planning Process at National Level	The NAP-2 project is designed to help the Government of Moldova continue to strengthen its capacity in order to address the country's medium and long-term vulnerabilities of national priority sectors to climate change. The proposal extends and deepens the national approach developed during NAP-1 and strengthens institutional synergies both vertically and horizontally to integrate CCA responses into development planning. It aims to achieve the following: - Strengthen and operationalize the National Coordination Mechanism for CCA; - Improving the long-term capacity to plan and implement adaptation actions through technologies; -Improving climate change adaptation mainstreaming by aligning national development priorities to priority sectors.	UNDP/MARDE	2018
		Total financing:	**Status**
		US $ 2,314,175	The proposal was submitted to GCF
Action	**Lead**	**Timeline**	
Carrying out the Project	UNDP Moldova/ CCO	2019-2022	
Presentation the Country Programme	NDA	2018	
Project Title	**Description**	**Accredited Entity**	**Submission timeframe**
Mainstreaming adaptation into planning processes to reduce vulnerability to climate change at local and central levels in	This proposal for Agriculture Sector Adaptation Planning is developed in the context of important reforms in Moldova's public administration at different levels which require improved capacities to ensure achievement of the country's development goals following a low-emissions and climate resilient pathway, consistent with the commitments included in Moldova's NDC. The agriculture sector is the	FAO/MARDE	2019
		Total financing:	**Status**
		US $ 685,000	The proposal was submitted to GCF

Project proposals submitted to GCF			
Project Title	**Description**	**Accredited Entity**	**Submission timeframe**
Moldova's Agriculture Sector (Ag. SAP)	largest sector in the country, and one of the country's most vulnerable economic sectors, receiving already the largest share of adaptation-related aid[197], the lack of a coherent vision and a comprehensive framework for climate change adaptation hinders the efficient use of these funds and the overall resilience of the sector. The main objective of the proposal is to support the MARDE to conduct comprehensive work in order to ensure that climate change adaptation is mainstreamed into planning processes in the agriculture sector, based on a gender sensitive approach and the participation of all vulnerable groups. Additionally, the project will have the following specific objectives: - Support the definition of sector specific institutional arrangements and relevant coordination with existing mechanisms to define a clear vision of adaptation for the sector; - Ensure systematic information and knowledge development, management and dissemination among stakeholders to ensure concrete adaptation solutions are available; - Facilitate the development and discussion of enhanced policy and strategic framework for adaptation planning and budgeting in the Agriculture Sector, including an Investment Plan reflecting specific mid and long-term priority for the sector.		
Action	**Lead**	**Timeline**	
Carrying out the Project	FAO/ MARDE	36 months	
Presentation the Country Programme	NDA	2018	

2.6 Accreditation of national entities

Table 2-10: *Accreditation pipeline of national entities to be accredited through GCF direct modality*

Entity Name	Type	Action	Lead	Timeline
Mobiasbanca	Private	The accreditation submission process has started	Mobiasbanka	The application will be finalized in 2020
Victoriabank	Private	The Bank is considering its participation in the accreditation process	Victoriabank	
ProCredit Bank S.A.	Private	The Bank expressed the interest to pursue with accreditation process	ProCredit Bank	

[197] Aid Management Platform, public portal of the Government of Moldova (http://amp.gov.md)

Moldova AgroIndBank	Private	The Bank is considering its participation in the accreditation process	MAIB	
Termoelectrica S.A.	Joint venture	More capacity building is needed to proceed to the accreditation	Termoelectrica S.A.	

3 MONITORING AND EVALUATION OF THE IMPLEMENTATION OF THE COUNTRY PROGRAM

As a living document, that sets out country's climate change priorities and engagement strategy with GCF, the Country Programme (CP) of the Republic of Moldova incorporates also country's ownership through a country-driven process led by the NDA, the MARDE. The current version of the CP is intended to provide the strategic basis for short, medium and long-term engagement with GCF, reflected in the analysis of current policy framework with regard to climate change, economic circumstances, mitigation and adaptation needs and investment opportunities, prioritized thematic areas for both adaptation and mitigation components, the pipeline of submitted project proposals, along with identified project ideas and concept notes, other aspects.

With the evolution of country's climate-related policy framework, economic developments, needs, opportunities, priorities, adaptation and mitigation objectives, information on reviewed NDCs, the viability or costs of various measures of adaptation and mitigation, the social and gender challenges and the engagement actions with GCF, other circumstances, the Country Program will be reviewed and updated. The adjustments and updating of the CP document will be led by the NDA through the consultation process with relevant stakeholders (NCCC, AEs, current and potential beneficiaries of the projects, other stakeholders) and after its validation, will be communicated to GCF as part of the structured dialogue.

According to the developed *Operational Manual of GCF NDA*, the review and updating of the CP will be done as needed, depending on circumstances mentioned above, but not less than once per year. The project pipe-line of the CP will be the subject of most frequent updating, as it is assumed that new concept notes, project proposals will be submitted to GCF and will require the coordination and endorsement from the NDA.

As mentioned in chapter 2.1, meeting cross-sectoral coordination needs and requirements and addressing future climate challenges in a systematic way, the Climate Change Coordination Mechanism (CCCM), chaired by the National Commission on Climate Change (NCCC) will be applied. The NCCC has the mandate to coordinate adaptation and mitigation planning and action among all government entities, to monitor progress on adaptation and mitigation, to facilitate the implementation of enabling activities for capacity development and to oversee the distribution of resources for both mitigation and adaptation action.

The draft of GD on CCCM, also sets up the frequency of its application by the National Commission on Climate Change (in the case of GCF-related matters led by the NDA) as needed, but not less than once per year. The updating of the priority thematic areas for both mitigation and adaptation will be subject of annual review, as new policy documents.

The monitoring and evaluation of the implementation of the Country Programme projects will be adjusted to the existing in the country MRV system of mitigation component and M&E system of adaptation component.

Monitoring of adaptation component of CP. The Republic of Moldova in its efforts to establish an integrated National Adaptation Planning (NAP) process at the national level, and Sectoral Adaptation Planning process (SAP) at the sectoral level, has aligned the functionality of the CCCM to the planning

cycle of NAPs and SAPs. GCF projects, both Readiness and investment types, being instrumental in the transformational adaptation of the country, will contribute to advancing with NAPs/SAPs development and implementation. Moldova's NDA is to play the leading role in this process either during the planning or implementation of GCF funded projects. Another important tool the NDA has to continuously make use, is the CCCM during the appraising of project proposals for iteratively updating the CP projects pipeline on a regular annual basis.

Though the NAP process in Moldova is not completely formalized, the Monitoring & Evaluation system to assess and track progress under the successive NAPs/SAPs has advanced, setting as the ultimate goal to ensure the measurability of progress across geographic scales, time and sectors, and to be able to determine whether, as a result of its successive plans, Moldova is less vulnerable to the impacts of climate change. The M&E framework is based on the need to monitor progress towards achieving resilient economic growth. Using a sectoral planning approach aligned to the NAP approach to adaptation requires monitoring of sector-based activity as well as their aggregate impact on the overall country economy and further communication of adaptation set at sector and national levels. The NDA, as a member of the NCCC, is to actively participate in the oversight of GCF implemented projects, using the M&E system. The developed indicator-based monitoring system (including GCF type of indicators) operated through the *Climate Change Adaptation Information System* is to be applied to identify GCF projects contribution toward set SAPs and NAPs goals and targets. The reporting to NCCC, through the M&E system will be mandatory for implemented GCF projects and stipulated in the No Objection Letter issued by the NDA for GCF funding proposals. The frequency of reporting will depend on the type of indicators to be applied for specific activities of GCF projects, most of them being biannual, but also could be annual, while for the objective-type of indicators once per 4 years. Additional reporting format could be required from the GCF PIU (reports, questionnaires, data, other types) at the demand of the NDA or NCCC.

Thus, the monitoring of the adaptation component of the CP will be part of overall CP monitoring that will be done not less than once per year, along with indicator-based monitoring of implemented GCF projects.

Mitigation component MRV system. The GHG reduction targets set out in the NDC is to be achieved by the Republic of Moldova by implementing NAMAs (unconditional and conditional ones) set forth in the LEDS, but also other NAMAs initiated by stakeholders, all reflected in CP. NCCC will ensure the coordination of the institutional framework for monitoring, reporting and verification (MRV) of the GHG emissions reductions and facilitate streamlining the climate change issues into national and sectoral planning documents. The NCCC also aims to coordinate the NAMA projects development, their assessment and approval process. The NAMA coordination mechanism is described in a separate Regulation, an integral part of the above-mentioned Government Decision. The document establishes the responsibilities of the participants in the NAMA development, evaluation and approval cycle, as well as the MRV process.

The MRV Mechanism set out in the Draft Government Decision aims at tracking the overall performance of NAMAs and includes the following activities: (1) measuring the GHG emissions reduction; (2) reporting information; (3) verification of reported information. The MRV procedure shall be applied both at the implementation stage and after the project is completed.

The reporting periods of NAMA's Beneficiary to the NCCC are specified in the Operational Manual of the NAMA Coordination Mechanism. While reporting, the Beneficiary shall comply with the requirements of the monitoring, reporting and verification system approved within the project documentation. The reports shall contain data on the results of GHG emissions reduction monitoring, the support provided by donors (financial flows, technology transfer, capacity building, and related impact, etc.), and sustainable development indicators. These are presented based on monitoring indicators established in the Information System and Operations Manual.

Authorities and institutions implementing unconditional NAMA projects shall use a simplified MRV system. Once a year they shall report to the NCCC Secretariat on actions undertaken and results obtained under the projects. The reporting format and reporting deadlines are set out in the Operational Manual of the NAMA Coordination Mechanism.

Annual monitoring reports developed during the monitoring process shall include information on the implementation of indicators for each NAMA, and every four years, or after the terms established by Paris Agreement's periodic ambition reviews, progress and evaluation reports will be produced to assess the impact of the activities carried out during the period under review, and the level of progress toward achievement of set objectives. Based on the above-mentioned reports, the GCF Country Programme, along with the Action Plan for the LEDS will be updated.

Along with annual updating of NAMAs pipeline reflected in the CP, subject for annual updating are also all chapters in section 1 and 2, including all the information which do not reflect more their status on date the updating is done. During this process a close cooperation will be maintained with entities/persons responsible for monitoring and reporting on climate change established by GD no. 1277 of 26.12.2018[198], the updating being done in compliance with mutual agreed agreements. The CP reports will contain also the information on how CP contributes to reach NDC, LEDS and NAP targets. Moreover, new readiness support needed will be identified and incorporated in the CP pipeline at the stage of updating, i.e. annually and each four years or other terms established by Paris Agreement's periodic ambition reviews.

As part of the M&E and MRV system, in Moldova, under implementation is the climate budget tagging (CBT) process that aims at improving the understanding of how and how much is being spent on national climate change responses, through which programs funds are being spent, and which programs include climate change objectives (or co-benefits). This process supports the ability of the NDA in conjunction with the Ministry of Finance to track climate expenditures and improves their ability to ensure progress on climate change vis-à-vis Moldova's national development goals and international commitments. The CBT data will be communicated to the NDA and included in the updated version of the CP document.

[198] GD no. 1277 of 26.12.2018 (in force 08.02.2019) on the establishment and operating of the National System on monitoring and reporting of greenhouse gas emissions and other information relevant to climate change.

4 ANNEXES

Annex 1: List of NAMAs Seeking Support for Implementation in the Republic of Moldova, as registered in the UNFCCC NAMA Registry

Note: All NAMAs Seeking Support for Implementation in the Republic of Moldova are available for being downloaded on the website of Climate Change Office of the Ministry of Agriculture, Regional Development and Environment: <http://clima. md/lib.php?l=en&idc=278>, respectively on the UNFCCC NAMA Registry website: <http://www4.unfccc.int/sites/nama/ SitePages/NamaImplementation.aspx>:

NS-274 Promotion of small-scale CHPs in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=185&viewOnly=1>.

NS-275 Promotion of heat pumps in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=186&viewOnly=1>.

NS-276 Promotion of wind power plants (WPP) in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=187&viewOnly=1>.

NS-277 Use of solar energy for domestic hot water production in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=188&viewOnly=1>.

NS-278 Promoting Energy Efficient Lighting in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=189&viewOnly=1>.

NS-279 Hybrid and electric buses and minibuses in the city of Chisinau
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=190&viewOnly=1>.

NS-280 Clinker substitution at cement production
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=191&viewOnly=1>.

NS-281 Reducing GHG emissions from Enteric Fermentation by including dried grape marc in cattle ratios
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=192&viewOnly=1>.

NS-282 Implementation of soil conservation tillage system in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=193&viewOnly=1>.

NS-283 Afforestation of degraded land, riverside areas and protection belts in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=194&viewOnly=1>.

NS-284 Use of energy willow for heat generation in the Republic of Moldova
<http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=195&viewOnly=1>.

NS-285 Waste to Energy (WTE) NAMA in the Republic of Moldova <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=196&viewOnly=1>

Annex 2: Progress on the Action Plan for the implementation of the Republic of Moldova's Climate Change Adaptation Strategy by 2020

No.	Planned activities	Achievement	Performed Activities
Specific Objective 1: Create by 2018 the institutional framework on climate change that would assure the efficient implementation of adaptation measures at the national, sector and local levels.			
Course of action no. 1. Develop the institutional framework on climate change adaptation			
1.1.3	Develop the draft Government Decision through the amendment of the Government Decision no. 1574 of 26 December 2003 on setting up the National Commission for the Implementation of the UNFCCC, and of mechanisms and provisions of the Kyoto Protocol, in order to assure higher representation of key ministries that will implement the climate change adaptation policy.	2015-2018	- The concept of the *Coordination Mechanism for Adaptation to Climate Change* was developed on an intersectoral, inclusive and gender sensitive platform, with vertical integration. - The Regulation draft on the establishment of the Coordination Mechanism of the climate change activities and of the National Commission for climate change was coordinated with the ministries and submitted to the Government of the R.M for approval, in a national draft format of the Government Decision (GD).
1.1.7	Develop and implement a training program on capacity building for mainstreaming climate and disaster risks into sectoral policies and sustainable practices related to climate change adaptation methods.	2016-2018	Institutional capacity for climate change adaptation planning of line ministries and agencies of the Republic of Moldova was enhanced via CCA thematic workshops, roundtables and meetings organized for key sectoral stakeholders with special focus on Ministry level decision makers and technical planners of Ministry of Health, Ministry of Transport and Road Infrastructure, Ministry of Environment, Ministry of Regional Development and Construction, Ministry of Agriculture and Food Industry, Civil Protection and Emergency Service. Dedicated events were organized in order to strengthen the leadership within key Ministries on the importance of medium- to long-term planning for adaptation. The roundtable *"Enhance the national vision and mandate for the NAP process"* had the objective to increase knowledge of stakeholders on NAP process, mandate and vision of national adaptation planning process, the need of comprehensively and iteratively assessing development needs and climate vulnerabilities, and institutional functions in adaptation. A number of short-term training were conducted for sectoral planners on the use of the tools and approaches to advance medium- to long-term adaptation planning, budgeting and implementation, each training being supported with guiding materials produced for participants' use and for their wider dissemination.
Course of action 2. Mainstream climate change adaptation in the sectoral policies of national economy.			
1.2.1	Assess the key sectoral policies and strategies and identify the climate change vulnerable sectors, as well as the documents and main modification/intervention issues that may be proposed for amendment.	2015-2017	- Within Institutional Capacity Assessment, the analysis of policies and policy practices regarding climate change adaptation, at the national and sector level, was carried out with the aim to identify the level of consideration to address climate-related issues and provide recommendations for further mainstreaming of CCA into national and sectoral political framework. In the Republic of Moldova, climate lens was applied to sectoral policy framework of transport, energy, health, forestry sectors and entry points identified to mainstream climate change adaptation for each sector.

			- The concept of *the Information System (Climate Change Registry) for the Monitoring and Evaluation of vulnerability, impact of climate change and the adaptation actions* was elaborated, as part of the Environmental Register managed by MARDE.
1.2.2	Develop climate change adaptation Strategies and/or Action Plans for sectors with a high level of vulnerability.	2015-2016	- The Strategy of the forestry sector of the Republic of Moldova on adaptation to climate change and the Action Plan has been developed. - The Sectoral Strategy for Health System Climate change adaptation and Action Plan was developed. The set of adaptation measures of the energy and forestry sector has been developed in order to be incorporated into sectoral planning.
1.2.5	Assess relevant legislative/regulatory acts, review and amend them in order to assure the climate resilience by reducing the risks and advocating for climate change adaptation at national and sectoral levels.	2015-2016	Please, se the p.1.2.1 - The process of mainstreaming CCA measures into socio-economic development strategies at the district level was completed, as well as the implementation of the performance budget for 6 vulnerable districts to climate change in the Republic of Moldova. Mainstreaming the gender dimension in the adaptation measures into district development strategies was completed. - The climate change adaptation component as a separate chapter has been integrated in the *Strategy for ensuring equality between women and men in the Republic of Moldova for the years 2016-2020.*
Course of action 3. Develop the communication and the institutional cooperation in view of implementing adaptation policies.			
1.3.1	Develop a climate change communication strategy.	2015-2016	The communication strategy and action plan for NAP1 were developed based on which awareness activities, communication, experience sharing, lessons learned were implemented. Modern communication tools, media channels, online communication were used for communication with stakeholders.
1.3.4	Change the national system of early warning on natural disasters, including climate disasters, to the regional system of early warning on climate-related natural disasters.	2016-2017	-The State Hydrometeorological Service of Moldova (SHSM) roadmap was implemented, thus SHSM became a member of the EUMetNet European network. SHSM operates the platform for climatic phenomena warning: www.meteoalarm.eu in baza standardelor europene
1.3.5	Develop international cooperation with donor agencies to provide the needed support in the implementation of adaptation measures.	2017-2019	The Government of Moldova has developed a collaboration with international donors that are active on Moldova's territory, such as: GCF, FAO, ADA, WB, Jaika, USAID, GIZ, IFAD on implementing adaptation measures in key sectors of the economy.
Specific Objective 2: Creation, by 2020, of a mechanism for monitoring climate change impact, related social and economic vulnerability, and managing /disseminating the information on climate risks and disasters.			
Course of action 1. On-going monitoring and research of climate change impacts, related social and economic vulnerability, and regular updating of climate scenarios.			
2.1.3	Develop mid- and long-term regional climate scenarios for the Republic of Moldova, based on global circulation patterns and general regional climate models.	2016-2017	Climatic scenarios for the Republic of Moldova have been developed for the medium and long term, based on the general patterns of global circulation and regional climate models. They were presented in the Fourth National Communication of the Republic of Moldova elaborated within the United Nations framework convention on climate change,
2.1.4	Develop and disseminate high-resolution maps for future climate scenarios in the Republic of Moldova, taking into account various emission scenarios: A2	2016-2017	The maps were developed and presented in the Fourth National Communication of the Republic of Moldova within the United Nations framework convention on climate change, and

	(high emissions), A1B (average emissions), B1 (low emissions).		in the brochure Climate change in the Republic of Moldova: observations and prospects. [199].
Course of action 2. Creation of a climate change database.			
2.2.3	Create national climate change databases containing periodic hydro-meteorological and climatic information, information on current climate change adaptation projects and activities.	2017	Actions have been taken within the framework of the mutual cooperation between the National Bureau of Statistics and the Ministry of Agriculture, Regional Development and Environment on improving the national system of statistical indicators and the way of collecting environmental reports, according to the recommendations of the UN Economic Commission on the use of national indicators. environment in the countries of Eastern Europe, the Caucasus and Central Asia, taking into account the requirements of national legislation and the information users' needs. The reporting forms regarding the environment and their collection system are approved annually by the MARDE and the NBS by common order which allows to improve the information flow in the field. *The Monitoring and Evaluation System (M&E*), on planning and implementation of the adaptation actions with subcomponents support, was developed.
Course of action 3. Raise the awareness of all stakeholders, especially of vulnerable population, on climate change risks and adaptation measures.			
2.3.5	Create an early warning system on natural hazards of climatic origin, providing public access to data and the needed information to assess climate risks and impacts.	2015-2017	- SHSM increased its capacity on EWS within the partnership with ZAMG based on improved knowledge and skills, improved quality of provided services and connection to EU warning system www.meteolaram.eu - The SHSM web page has been modernized with unique synchronization and formatting activities for presenting climate data of SHSM departments according to EUMetNet standards.
Specific Objective 3: Assure the development of climate resilience by reducing at least by 50% the climate change risks and facilitate climate change adaptation in six priority sectors by 2020.			
Course of action no. 1. Risk reduction and climate change adaptation in the Agriculture Sector.			
3.1.2	Develop a program of measures to conserve soil water and adjustment periods for conducting agricultural activities on climate change.	2016	Projects, with the general objective of increasing the resilience of farms to climate risk factors (drought) by using the conservative soil tillage system and precision machinery, were implemented[200].
Course of action no. 2. Risk reduction and climate change adaptation in the Water Resources Sector.			
3.2.1	Conduct studies to assess the available water resources, determine their vulnerability to climate change, water requirements and needs for the main categories of consumers.	2016-2017	The feasibility study "Improving the resilience to the climate changes of the rural communities by ensuring water management and small reservoirs" was carried out.
3.2.2	Assure availability of surface water through the development and transformation of the infrastructure water resources into socio-economic ones.	2016	Projects with the general objective of contributing to the development of the agricultural households' resilience to climate risk factors (drought) by reconstructing (extending) the rainwater and groundwater reservoirs, have been implemented.[201]
Course of action no. 3. Risk reduction and climate change adaptation in the Health Sector.			

[199] Climate change in the Republic of Moldova: observations and prospects, Climate Change Office, Ministry of Agriculture, Regional Development and Environment of the Republic of Moldova, Chisinau, 2017, 16 p. http://www.clima.md/doc.php?l=ro&idc=263&id=4199
[200] Beneficiaries of the projects: "Abilitate-Agro" LTD, Falesti district, Călugăr village; "Sadac Agro" LTD, the Basarabeasca river, the village of Sadaclia; "Vasile Baciu" Household, Basarabeasca district, Sadaclia village https://www.adaptation-undp.org/cultivating-climate-resilience-moldova
[201] Beneficiaries of the projects: „Agapie Radu" Household, Calarasi district, Buda village; "Burcovschi-Grup" LTD, Singerei district, Alexandreni, Ţîpleşti village.

3.3.1	Evaluate and identify health risks related to climate change.	2016	Under the auspices of WHO and MoH of RM, sectoral assessment was undertaken and climate impact health risks based on the developed adaptation measures for health sector were identified. Informative materials were developed, distributed to medical workers and published on the website of the National Center for Public Health in order to prevent health risks; press releases were issued and published for the population during heat waves. Staff of medical institutions were trained to provide medical care to patients during heat waves.
Course of action no. 5. Risk reduction and climate change adaptation in the Energy Sector.			
3.5.1	Promote renewable energy sources based on environment-friendly technologies	2016-2018	In order to promote EE and RES, projects regarding capacity building in EE and SER were financed and implemented: - Strengthening local capacities in the production of solar collectors in the Republic of Moldova in order to promote the use of renewable energy in the country and the create jobs by installing a production line of solar collectors equipped with advanced technologies. [202] - Bilateral cooperation for the introduction of technologies using renewable energy resources in Moldova. The main objective of the project: the development, implementation, monitoring and evaluation of the functionality of a photovoltaic installation[203]. - Implementation of trainings on energy efficiency and certification standards. The main objective of the project: the transfer of knowledge through the dissemination of internationally recognized techniques and methods and strengthening the training system in the Republic of Moldova in energy efficiency and renewable energy. -The following RES capacities were installed: photovoltaic installations - 2.8 MW; wind power plants - 9.2 MW; biogas plants - 5.7 MW; hydro installations - 16.25 MW. - Annually, the Energy Efficiency Agency organizes the National Competition "Moldova Eco Energy" and awards the best projects, technologies and ideas in EE and RES.
Course of action no. 6. Risk reduction and climate change adaptation in the Transport Sector.			
3.6.3	Assure the sustainability of transport infrastructure using materials resistant to temperature fluctuations, floods.	2017	The following documents have been approved by the Ministry of Economy and Infrastructure which have an impact on the sustainability of transport infrastructure: - Order no. 29 of March 7, 2017 regarding the approval of the normative document NCMA.07.06: 2016 "Composition and content of the section " Environmental Protection "in the project documentation"; - Order no. 38 of March 21, 2018 regarding the approval of the List of standards related to construction products used in the transition period to harmonized standards; - Order no. 179/193 of June 19, 2017 regarding the provisional limitation of the movement of high tonnage means of transport on the roads of the Republic of Moldova.

Annex 3: Summary on Cross-cutting Gap Analysis (Source: NC4, 2018)

Policies	Capacity level Gap Analysis		
	Systemic	Organizational	Individual

[202] The project was funded by the Republic of Poland, the total budget of the project was 273,620 euros.
[203] The project was financed by the Republic of Lithuania, the total budget of the project was 228,690 euros.

National Development Policies	Climate change and adaptation are poorly mainstreamed into national development strategies.	Reporting on climate-related issues is not consolidated. The adaptation-related "portfolio" is not seen from a holistic approach.	Decision-makers are unaware of adaptation issues or do not perceive adaptation as a development issue.
Economic and Sectoral Development Policies	Laws in climate-sensitive sectors do not address climate change and adaptation as an integral aspect of the sector.	Ministries and other agencies in climate-sensitive sectors do not have a legal mandate to conduct work on adaptation.	Decision-makers are unaware of adaptation issues or do not perceive adaptation as a development issue.
Environment Policies	Climate related strategies are in their early stages and are not yet reflected in sectoral policies; and are not integrated in the NDS.	Restructuring and shifts in program mandates often lead to low availability of program-related information. Need to prepare compelling budget requests that explain the development linkages of environmental programs.	Decision-makers and staff lack specialized knowledge to design and implement climate change adaptation programs.
Public Admin/Public Management	Institutional reorganizations lead to lack of continuity; loss of data, reports, and institutional memory. Climate change adaptation portfolio (and climate change in general) is not evaluated or monitored. Lack of ongoing support for adaptation initiatives leads to continuity gaps.	Government agencies may report on program implementation but not necessarily incorporate lessons learn into program design. Unclear alignment between agency budgeting and policy priorities.	Sectoral agencies may lack the skills to analyse the data they collect and utilize the findings from adaptation-related projects. Staff often lack specialized training or mentoring
Gender and Vulnerable Groups	Climate change and climate change adaptation are not mainstreamed into legislation on human health and related social services	Limited coordination between sectors and the National Bureau of Statistics hinders the development and promotion of gender integrated policies. Limited understanding within government and lead agencies on the need for integrating gender and other social considerations into policies and programmes	Low level of awareness about climate adaptation and related practices hinder development of community resilience
Disaster Risk Reduction	Climate change and climate change adaptation are not mainstreamed into legislation on disaster preparedness	The Commission for Emergency Situations does not have a mandate to work directly on climate change and climate change adaptation issues	Low level of awareness about disaster risk reduction practices that may improve adaptive capacity
Communication and Public Awareness	Absence of guiding policies and/or strategies on communication and awareness raising	Limited understanding within government and lead agencies on the need for communication and awareness raising	Low level of awareness about communication practices that may improve community resilience
Knowledge Management	Absence of guiding policies and/or strategies on knowledge management	Limited understanding within government and lead agencies on knowledge management	Low level of awareness about climate change, its impacts, as well as their use in the daily agenda of civil servants.

Annex 4: Sector Specific Capacity Development Opportunities in Support of Improving the Enabling Environment (Source: NC4, 2018)

Institutional and Legal Framework	Rationalization of Organizational Structure
Regional Development sector	
– Increase linkage between central, regional and local government actions on climate change – Local level tailored policies and legislation – Contribute to the process of development of guidelines for integration of climate change in sector plans and budgets and in regional and local development plans – Develop climate risk management strategies for the different regions – Development of baseline and targets for climate change adaptation in the 3 development regions	
Water sector	
– Complete appropriate sectoral legislation, especially the harmonization of the legal and institutional framework with European requirements – Review and update regulations, codes and technical standards of design, construction, modernization, and rehabilitation of hydro facilities to address and include climate considerations – Develop a mechanism for compulsory insurance and compensation mechanism for climate and disaster risks – Include environmental and climate considerations in the development process of policy documents and regulatory legal framework – Develop and implement (regional and inter-local) national infrastructure development and water service plans. – Update the water sector National Development Plan to include risk reduction (floods, droughts, landslides, etc.), and include (i) risk assessment; (ii) definition and risk management; (iii) investment planning and water recovery – Improve prioritization of issues (and policy-based budgeting) and program oversight – Increase linkage between policy, functional programming and budgeting	– Streamline and clarify policies, agencies, jurisdiction and functions between water sector agencies to reduce duplication of mandates and activities – Develop a clearly defined sectoral coordination mechanism and a coordinated system for monitoring the sector, its inventories, related risks, data collection activities and infrastructure investments – Developing sector-based methodology for inventory and assessment of construction and hydro facilities, the implementation of these activities and effective models for managing them in the context of climate change – Development of a clearly defined process and streamlining of organizational function regarding data collection, forecasting and monitoring of hydrometeorological data
Agriculture sector	
– Promoting seed production and indigenous seedlings in cultivation and genetic material for animal husbandry – Develop national food security strategy for changing climate conditions – Promote and implement Soil Law – Develop an agricultural subsidy system that is also based on farm compliance with integrated environmental management – Creating a state extension service to promote sustainable and organic agriculture	– Efficiency of policies, agencies, competences and functions between sectoral agencies

Institutional and Legal Framework	Rationalization of Organizational Structure
Human Health sector	
– Improve ability to expand service network in the rural areas – Development (and ongoing assessment) of health and emergency management measures for reducing the impact of extreme events on health – Prepare a communication plan for all stakeholders containing relevant information (what, who and when) to address extreme climate events, health hazards and related operational and service needs – Develop a plan to address care for vulnerable population groups (elderly people, isolated people, people without a place to live, etc.) in case of health and climate emergencies – Develop plan to provide safe drinking water that also addresses expected changes in climate conditions – Strengthen primary health care (including primary prevention) services to support capacity of local communities to become resilient to climate-related health risks – Provide functional early warning systems related to the health consequences of climate change and climate variability	– Improve implementation mechanisms, monitoring, and inter-sectoral coordination especially in the case of early warning systems for extreme climatic events
Energy sector	
– Integrate adaptation measures and targets in the development plans of enterprises, national and sectoral plans – Increase training of additional reserve maintenance teams and ensure viability of their full repair kits and other equipment	– Improve ability to organize and create the necessary material reserves to maintain the operations during the climatic events – Improve electrical network backup capabilities
Transportation sector	
– Review and amend sectoral policy documents (strategies, plans, programs) to address climate change risks and identify highly vulnerable assets – Develop and implement technical regulations and standards to match the requirements of international commitments and standards – Develop process and mandate for channelling funds from the Road Fund towards sector-based climate change risk research, impact assessment, capacity building, planning, etc.	– Improved management capacity of the public road maintenance system will allow it to address the needs created by climate change
Forestry sector	
– Updating national legislation related to the forestry sector, including in the context of harmonization with EU legislation, international conventions and agreements – Develop and adopt the concept of forestry policy document – Develop national forest management programs in the context of their climate change adaptation – Ensure implementation of the national plan for expanding forestry areas – Develop assessment process for monitoring forest plantations along water courses	– Strengthening capacity to develop and streamline forestry policies to climate change adaptation.

Institutional and Legal Framework	Rationalization of Organizational Structure
– Develop and implement river basin level management plans for water resources that include climate considerations	

Annex 5: High Priority Investments in Moldova economy sectors through 2040 assessed by the World Bank (million US $)

Sector	Investment	Investment period	Cost	Indicated Rate of Return	Uncertainty of C&B[204]	Poverty impact	Gender impact
Agriculture Water Management	Rehabilitate/modernize centralized irrigation systems	2017 to 2040	975.0	IRR: 8% to 15%	Medium	Medium	Medium
	Rehabilitation/modernization of drainage infrastructure in irrigated areas	2017 to 2026	120.0	IRR: 8% to 15%	Medium	Medium	Medium
	Institutional reforms/capacity building	2017 to 2024	140.0	n/a	Medium	High	High
Forestry	Ecological reconstruction of forests	2020 to 2029	91.3	IRR: 3% to 14%	Medium	High	High
	Ecological reconstruction of forest belts	2020 to 2029	4.9	IRR: 4% to 15%	Medium	High	High
Health	Heat health warning system	2017+	0.4[205]	BCR: 3.1-170	High	Medium	Medium
Water Supply	Improving municipal & industrial water system efficiency by 10% reduction in losses	2017+	2.8-5.5	BCR: 61-70	Low	Medium	Medium
	Water storage in Lower Nistru (100 MCM)	2030+?	18.4	BCR: 2.6-6.4	Low	Medium	Medium
	Water storage in Reut (1 MCM)	2020	0.3	BCR: 20-59	Low	Low	Medium
Flood Prevention	Structural measures	2020-2040	360.8	BCR: 2.1	Medium	Unknown	Unknown
	Non-Structural measures	2020-2040	136.6	BCR: 5.6	Medium	Unknown	Unknown
WSS	Rehabilitation of existing and construction of new WSS infrastructure	2020-2040	409 [350-439]	BCR: 2.5-3.2	Medium	High	Medium
Disaster Response Management	Improved training facilities; Create N&S Emergency Command Centres; Improved emergency response capabilities	2020	11	BCR: 2.1-4.1	Medium	Medium	Medium

Annex 6: Summary of sector-specific needs for climate change adaptation in the Republic of Moldova (Sources: CCAS, 2014; MARDE and WB Report[206])

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
Water Resources Sector			
Review and update regulations, codes and technical standards of design, construction, modernization, construction and rehabilitation of hydro facilities to address and include climate considerations	Updated regulations and technical standards	MARDE, MEI	35,000
Conduct studies to assess the available water resources, determine their	Studies and research conducted	MARDE, ASM	70,000

[204] Ratings are given here for the significance of uncertainty of benefits for each investment, Red = high uncertainty, amber = medium uncertainty, and green= low uncertainty.
[205] Costs incurred in years of a heatwave.
[206] MARDE and WB: Climate Change Adaptation Investment Planning Status Report to the International Development Association.

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
vulnerability to climate change, water requirements and needs for the main categories of consumers. Support foundational capacity building and targeted research needs for joint, ecosystem-based management of trans-boundary water systems			
Assure availability of water at source through the development of the infrastructure for transforming water resources into socio-economic ones	New accumulation lakes created, infrastructure for collecting rain water created, wetlands developed	MARDE	140,000
Ensure the integrated water management based on river basin principle	Water quality criteria established, wastewater treatment process improved, regulations on the limitation of emissions of hazardous substances into water established	Moldsilva Agency	360,000
Adopt ecosystem-based approach to manage water resources	Ecosystem based approach embedded into sectoral planning process	Apele Moldovei Agency	35,000
Update the water sector National Development Plan to include risk reduction (floods, droughts, landslides, etc.), and include (1) risk assessment; (2) definition and risk management; (3) investment planning and water recovery	National Development plan updated based on the assessments undertaken	GoM	120,000
Undertake measures to combat drought/water scarcity	Monitoring and warning services provided, leakages in water networks reduced, mapping and drought thresholds established, water storage capacity created	MARDE	20,000,000
Innovative solution implemented for improved water efficiency Improve prioritization of issues (and policy-based budgeting) and program oversight	Water management innovative solutions implemented	MARDE	9,000,000
Ensure proper management of flood risks	km of protective dams re-constructed / constructed, flood forecasting, information and alert systems created	MARDE	100,000,000
Agriculture Sector			
Identification of vulnerable areas and sectors and assessment of needs and opportunities of alternative crops and varieties more resistant to change in response to climate change	Study developed areas identified needs and opportunities	MARDE, ASM	140,000
Promote and implement Soil Law	Soil Law adopted by the GoM	MARDE	35,000
Support to adaptation and mitigation of climate changes effects on agricultural production	Risk management tools including agricultural insurance should be supported in order to mitigate the negative consequences of climate risks and the negative effects of natural disasters on agricultural production and competitiveness of farming	MARDE	150,000
Develop an agricultural subsidy system that based on farm compliance with integrated environmental management	Subsidy system operational	MARDE	5,000,000

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
Develop a program of measures to conserve water in the soil and adjustment periods for conducting agricultural activities on climate change	Programme of measures to be developed, activities performed	MARDE	140,000
Capacity building for adaptation to climate change through awareness of stakeholders using the FAS and supply essential information on farm management	Information campaigns organized, Advice, information published	MARDE	430,000
Implement crop breeding programs based both on traditional techniques and modern biotechnology to identify strains with traits better suited to the new climate conditions	Funds identified, program in place applying both modern and traditional techniques	MARDE	720,000
Strengthening the scientific studies and researches in the field of irrigation of agricultural lands using modern innovative irrigation technics	Scientific studied in the field of irrigation carried out.	AS RM	70,0000
Developing irrigation plans based on an assessment of their impact, future water availability and water needs, taking into account supply - demand balance	Plans developed and approved	MARDE	100,000
Extending the rehabilitation of centralized irrigation systems	Irrigation systems rehabilitated	MARDE	100,000,000
Creating tools for risk management and crisis to cope with the economic consequences of events due to climate	Risk management tool created	MARDE	360,000
Human Health Sector			
Implement an efficient Health Information System (HIS) for decision making and public access to environmental health data	Working group established, approved procedures	MHLSP	200,000
Ensure an efficient mechanism for prevention, early warning, management and control of extreme weather events effects	Mechanism for early warning, management and control of extreme weather events effects.	MHLSP	800,000
Reduce the effects from air pollution and cold waves on population health	Measures to reduce air pollution and cold waves on population health applied	MHLSP, MARDE	100,000
The establishment of an integrated and efficient system for prevention, early warning, management and protection against ultraviolet radiation increased levels	Early warning system operational	MHLSP, SHS	50,000
Provide increased access for isolated communities and vulnerable populations to health care	Mechanisms to provide access to vulnerable populations created, established	MHLSP	3,000,0000
Evaluate existing disease monitoring systems and strengthen them by including certain consequences of climate change	Disease monitoring systems improved and strengthened	MHLSP	12,000,000
Evaluate the existing disease surveillance systems and strengthen them by including certain climate-caused consequences	Disease surveillance systems improved and consolidated	MHLSP	140,000

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
Increase public information and raising awareness about climate change and extreme weather on health;	Constantly operational information system in place.	MHLSP	100,000
Develop a plan to address care for vulnerable population groups (elderly people, isolated people, people without a place to live, etc.) in case of health and climate emergencies	Plan developed	MHLSP	50,000
Strengthen primary health care (including primary prevention) services to support capacity of local communities to become resilient to climate-related health risks	Primary health care service support resilient to climate changes	MHLSP	100,000,000
Create the national database for collecting and processing data and information of effects of climate change risks onto public health	Database established and accessible for use	MHLSP	100,000
Energy Sector			
Promote renewable energy sources that operated based on environment-friendly technologies	Photovoltaic generators, wind facilities, biomass heated facilities used	MEI, MARDE, EEA	80,000,000
Promote the gradual transition from the use of traditional fuel sources to biofuel use	15% of the used fuel will be biofuel, Standards and technical regulations implemented	MEI, MARDE, EEA	140,000
Promote the efficient energy use and promote high energy efficient products	Energy intensity reduced by 10% 2% of energy efficiency assured every year	MEI; EEA	34,000,000
Improve the sustainability of energy transmission and distribution infrastructure	Inspection of vulnerable infrastructure, of electrical cables buried, re-rated	MEI	7,200,000
Increase training of additional reserve maintenance teams and ensure viability of their full repair kits and other equipment	Training provided to maintenance team	MEI	35,000
Adaptation measures implemented through mainstreaming into sector development strategy	CCA measures implemented through mainstreaming into development plans	MEI	117,520
Transport Sector			
Ensure the design of road infrastructure taking into account the need to adapt to climate change	Regulations, standards approved	MEI	105,000
Ensure the planning of urban transportation system in view of creating the needed infrastructure to promote the alternative transportation such as cycling	Infrastructure created for cyclists in urban area	MEI	4,000,000
Review and amend sectoral policy documents (strategies, plans, programs) to address climate change risks and identify highly vulnerable assets	Policy reviewed, vulnerable assets identified	MEI	35,000
Ensure the sustainability of transport infrastructure through the use of materials resistant to temperature fluctuations, floods	Regulations, standards approved	MEI	350,000
Develop process and mandate for channeling funds from the Road Fund towards sector-based climate change risk	Process and mandate developed	MEI	40,000

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
research, impact assessment, capacity building, planning			
Adaptation measures to be implemented through mainstreaming into sectoral development Strategy	CCA measures implemented through mainstreaming into development plans	MEI	14,500,000
Forestry Sector			
Enhance the process of scaling-up territories covered with forest vegetation and ecological restoration of forests, create interconnection corridors between forests	130,000 ha of woodland, green islands created	Moldsilva Agency; MARDE	720,000,000
Establishment of national forestry monitoring system	Monitoring system developed and in place	Moldsilva Agency; MARDE	35,000
Creation of new forests adapted to the consequences of climate change and able to effectively capture carbon and produce wood biomass	New forests planted and level of adaptation measured based on specific indicators.	Moldsilva Agency	1,500,000
Develop assessment process for monitoring forest plantations along water courses	Assessment methodology developed and applied in practice	Moldsilva Agency	35,000
Develop and implement river basin level management plans for water resources that include climate considerations	River basin management plan developed and implemented	Apele Moldovei Agency, MARDE, SHS	1,500,000
Adapting forest regeneration practices to the needs brought by climate change	Regeneration practices in places	Moldsilva Agency	40,000
Ensure the protection and conservation of biological diversity	Protection and conservation measures implemented. Developed indicators that to monitor adaptation state of the ecosystems developed	MARDE	700,000
Promoting awareness and good understanding on climate change and on how the forestry sector can make a positive contribution	Awareness raising campaign and training provided	Moldsilva Agency	25,000
Regional Development Sector			
Develop the guidelines for mainstreaming of climate change adaptation in sector plans and budgets and in regional and local development plans	The guidelines developed and used in CCA mainstreaming in plans and budgets	MEI	5,000
Develop of the baseline and targets for climate change adaptation in the three development regions	Targets and baseline for 3 development regions	MEI	20,000
Increase linkage between central, regional and local government actions on climate change	Coordination mechanism between central, regional and local government actions setup	G of the RM	10,000
Develop a resources platform and a network of experts in "climate change" (independent experts, NGOs, scientific institutions, financial institutions), which could provide climate change adaptation services to local public authorities	Operational resource platform and experts platform	MEI	35,000
Develop local level tailored policies and legislation	Local level tailored policies and legislation developed	MEI, MARDE	50,000

Identified need	Indicators	Responsible Lead Agency	Estimated Resources Required (USD)
Develop climate risk management strategies for three development regions	Climate risk management strategies developed	MEI, MARDE	15,000

Annex 7: Identified cross-cutting capacity development sectoral needs

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
Capacity Development at Enabling Environment Level					
Leadership and coordination mechanism	Establish an effective coordination mechanism for climate adaptation	Effective coordination mechanism, with regularly convened progress review meetings	Operational coordination mechanism with clear roles and responsibilities established as part of National Adaptation Planning Process	MARDE	300,000
		Establish a coordinated M&E system			
		Identification of the authority responsible for climate policy coordination as well as monitoring, evaluating and reporting on the climate change adaptation measures	Publication and sharing of annual progress report(s) on climate resilience and adaptation activities Improved cross sectoral coordination	MARDE	200,000
Institutional and legal framework	Formulate strategy to lobby high-level decision makers to address climate integration at national level	Prioritization and integration of climate considerations in the policy documents that set out the objectives of implementation the country for the programming period up to 2020	Relevant national documents completed or updated	MARDE and relevant ministries	n/a
	Review and strengthen legislation, policies, action plans and development plans to improve the integration of climate adaptation in national development strategies, plans and programs	Incorporate climate adaptation into relevant sectoral policies	Relevant national and sectoral documents completed or updated	All ministries and sectors	To be identified depending on the number of reviewed policies, development plans

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
	Review and strengthen MARDE climate related capacities, including CCO mandate and capacities	Improved and expanded MARDE climate related capacities	MARDE need and capacity assessment completed and operational requirements determined CCO budget and staffing integrated into ministry budget requirements	MARDE	To be determined by MARDE following evaluation of needs and requirements
Budget mainstreaming	Develop options for climate resilience and how to best formulate budget lines for climate resilience in the national plans and annual Ministerial Strategies	Climate considerations integrated in budget for ministries and sectors and through financial strategy for national adaptation plan	Climate considerations integrated in budgets of all government institutions with specific	MoF with support from MARDE	100,000
		Climate change indicators incorporated into planning and budgeting frameworks to ensure accountability	Climate change indicators for planning and budgeting frameworks developed Climate change indicators incorporated into policy and budget reviews	MoF and MARDE	100,000
		Incorporate contingency budgets in each sector for specific adaptation interventions as the need arises	Contingency budget in each sector for specific adaptation interventions	MoF	100,000
Risk management information and technologies	Develop a climate related knowledge management strategy	Knowledge management strategy in place with a clear role for ICT focused on improving community resilience	Relevant document completed	MARDE with support from technology office	100,000

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
	Systemic inventory of existing and *ad hoc* DRR and climate information, tools and technologies, as well as agency functions and responsibilities Transposition of DRA EU Guidelines into legislative framework: HIGH Hazard and risk mapping	Mapping and systemic inventory of existing and *ad hoc* DRR and climate information, tools and technologies, as well as agency functions and responsibilities Modification of current legal framework	Low-cost, user driven ICT systems in place. Climate data widely available and updated regularly by responsible institutions Establish a multi-stakeholder working group on DRA legal and institutional framework Further elaboration of the methodology for hazard assessment contained in the *"Recommendation"* in order to be fully in line with DRA EU Guidelines and MSs good practices.	MARDE with support from technology office CPESS (coordinator working group) Working Group on Disaster Hazard and Risk Mapping	200,000
	Evaluation of current data collection and dissemination practices and experiences	Evaluation and documentation of lessons and best practices related to current practices and experiences	Lessons learnt document that collates and disseminates climate related information requirements	MARDE with support from technology office	20,000
	A demand-based climate and disaster technology and tool in place to guide investment in and use of new tools and technologies.	Establishment of low-cost, user driven ICT systems in place. All systems are open source and publicly accessible and a monitoring and yearly usability check process established	Operational ICT system whose use has been integrated into all sectors	To be determined by the climate related knowledge management strategy	300,000
Climate awareness	Develop a five-year communication strategy to generate and increase awareness	Communications package on national policies and strategies for use during community consultations and awareness raising programs	Increased climate awareness measured against baseline survey	MARDE	200,000
	Increased sectoral climate awareness	Develop sector-based guidelines on mainstreaming climate change	Sector-based guidelines on mainstreaming climate change developed and distributed	MARDE	10,000 per sector
Capacity Development at Organizational Level					

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
Mainstreaming	Incorporate climate adaptation into environmental impact assessments guidelines	EIA process guidelines	Completed integration of climate considerations into EIA process guidelines (currently under development)	MARDE	15,000
	Analytical process to examine policies, plans or program from a climate perspective for each sector	Sector-specific climate screening tools to identify projects at risk criteria for selecting projects for implementation and financing	Climate screening tools to identify projects at risk Number of projects that incorporate climate considerations Prioritized (annual) list of climate related resource requirements	MARDE	30,000
	Priorities and approaches for climate related sectoral development planning	Sector based approaches for integration of climate issues into sectoral development plans	Sectoral climate priorities established Relevant documents completed	MARDE with relevant line ministries	30,000 per sector
Climate awareness and mainstreaming	Key messages for the different groups/sectors about climate resilience	Formulate a set of key messages for the different groups/sectors about climate resilience and the specific actions that can be taken immediately	Relevant documents completed and programs initialized	MARDE with relevant line ministries	15,000 per sector
		Climate related sectoral risk profiles	Climate related sectoral risk profiles completed and programs initialized	MARDE with relevant line ministries	20,000 per sector
		Sector based adaptation plans in place	Sector based adaptation plans completed and programs initialized	Relevant ministries with support from MARDE	30,000 per sector
Climate knowledge and training	Sectoral training institutions mapped and climate related training programs developed	Map and identify sectoral training institutions and develop climate related training programs	Number of sectoral education programs that can incorporate climate change identified List of needed resources for development of CCA education programs	MARDE in conjunction of Ministry of Education	60,000
		Climate considerations integrated in sectoral education curricula	Number of sectoral education programs that integrate climate into curricula	MARDE in conjunction of MECR	80,000 per program curricula

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
	Training for staff on leadership, coordination, mainstreaming, communication and project management	Identify/designate mentors and coaches among officials/staff	Established roster of trained climate mentors and coaches for each sector to provide training and advisory support	MARDE based on discussions with relevant ministries and sectors	100,000
		Train identified mentors and coaches on climate issues	Number of participants in mentors and coaches' trainings	Initially to be conducted by MARDE	60,000 per training session
	Develop climate training modules	Develop climate training modules	Training modules developed and used	MARDE	40,000 per module
	Training on leadership and mainstreaming for officials and policy makers	Training on leadership and mainstreaming for officials and policy makers	Number of policy makers and sectors participating in trainings	MARDE	50,000 per session
	Training on change, climate risks and vulnerability with the Academy of Public Administration	Training for civil servants on climate policy and climate considerations	Number of civil servants participating in trainings	MARDE	10,000 per person
		Training for local governments on opportunities for making use of climate policy and conducting vulnerability assessment activities	Number of local governments that participated in trainings	MARDE	50,000 per class/session series
Spatial planning	Mapping settlements vulnerable to flooding, landslides and other hazards	Mapping of vulnerable settlements MRDC initiates integrated planning around geographically vulnerable areas to produce high-quality development plans for disaster-prone areas	Settlement vulnerability maps available to all sectors for incorporation into sectoral action plans Map of vulnerable settlements	MARDE in conjunction with MEI	150,000
	Review, update and develop urban and spatial plans of localities	Updated urban and spatial plans of localities	Updated urban and spatial plans of localities	MARDE in conjunction with MEI	40,000 per locality
	Develop codes and regulations for limiting of residential and commercial facilities and homes in areas vulnerable to hazards	Codes and regulations for residential and commercial facilities and homes in areas vulnerable to hazards	Codes and regulations for residential and commercial facilities and homes in areas vulnerable to hazards	MARDE in conjunction with MEI	40,000 per locality

Capacity	Identified need	Intervention needed	Indicators	Responsible Lead Agency	Estimated resources required (in USD)
	Develop urban and rural post-disaster redevelopment plans	Post-disaster redevelopment plans		MARDE with support from relevant line ministries	40,000 per locality

Annex 8: Financings needs in the context of ensuring Moldova's low-emission development

No.	Actions	State (in process, planned, accomplished)	Required support	Already received support	Additional needed support
Technical and capacity development needs, US$ thousand					
	TOTAL including:		1404.5	725.5	679
1	Supporting the country's capacity to develop capability and strengthen the national inventory system	In process	290	258	32
2	Strengthen the national GHG inventory development capability for the LULUCF sector, including the development of the land use matrix and completing the transition to the 2006 IPCC Guidelines for LULUCF	Planned	30	0	30
3	Strengthen the capacity of the national network of research institutions to conduct studies, research and assessments to identify additional mitigation opportunities, that include financial and organizational justification in terms of social, technical and economic impacts	Planned	169	0	169
4	Enhance the national capacity to prepare viable NAMA projects proposals in the transport, industry and agriculture sectors, to attract investment	In process	350	302	48
5	Strengthen the Forestry sector policies, legal framework and forest management of the Republic of Moldova	Planned	50	0	50
6	Strengthen the stakeholder's capacity in the Waste sector to implement EU directives and regulations	Planned	40	0	40
7	Enhancing the negotiating capacity of international mitigation and adaptation projects to attract funding	Planned	22	0	22
8	Develop capacity to formulate and implement climate strategies and policies	Planned	24	0	24
9	Facilitate the dialogue towards knowledge transfer and lessons learned, as well as training relevant stakeholders and experts from the administrative structures of the Republic of Moldova for successful implementation of the national MRV system, with special emphasis on MRV of LEDS and NAMA	In process	205	165	40
10	Stakeholders training and promoting workshops on afforestation, land reclamation, forestry and sustainable pasture management	Planned	32	0	32

No.	Actions	State (in process, planned, accomplished)	Required support	Already received support	Additional needed support
11	Stakeholders training, including through workshops on renewable energy and energy efficiency, as well as developing the respective technical and financial demonstration tools (in the context of NAMA on renewable energy and energy efficiency)	Planned	192	0	192
Financial needs, US$ million					
	TOTAL including:		4961		
1	Promotion of small-scale CHPs in the Republic of Moldova	Planned	23		
2	Promotion of heat pumps in the Republic of Moldova	Planned	180		
3	Promotion of wind sources in the Republic of Moldova	Planned	640		
4	Use of solar energy for domestic hot water production in the Republic of Moldova	Planned	606		
5	Promoting efficient lighting in the Republic of Moldova	Planned	236		
6	Hybrid and electric buses and minibuses in Chisinau municipality	Planned	344		
7	Clinker replacement in cement production	Planned	100		
8	Reducing GHG emissions in enteric fermentation by including dried grape marc in rabbit ratios	Planned	228		
9	Implementation of conservative soil tillage system in the Republic of Moldova	Planned	5		
10	Afforestation of degraded lands, riparian areas and protection belts in the Republic of Moldova	Planned	144		
11	Use of energy willow for heat production in the Republic of Moldova	Planned	89		
12	Promoting waste to energy in the Republic of Moldova	Planned	15		
13	Other NAMAs conditioned by LEDS	Planned	2271		
Technology transfer needs, US$ thousand					
	TOTAL including:		375		
1	Institutional Assistance in Promoting Advanced Technologies	Planned	250		
2	Internship programs for learning advanced technologies in operation	Planned	125		

Annex 9: Detailed list of stakeholders

Actors	Stakeholders
Government institutions / Ministries	Ministry of Agriculture, Regional Development and Environment (MARDE)
	Ministry of Economy and Infrastructure (MEI)
	Ministry of Health, Labour and Social Protection (MHLSP)
	Ministry of Education, Culture and Research (MECR)
	Ministry of Finance (MoF)
	Ministry of Foreign Affairs and European Integration (MFAEI)
National subordinated institutions, local authorities	"Climate Change" Office
	"Moldsilva" Agency
	Apele Moldovei Agency

Actors	Stakeholders
	Energy Efficiency Agency
	Institute of Forest Research and Development (ICAS)
	National Institute for Sustainable Energy
	Institute of Ecology and Geography
	State Agrarian University of Moldova
	Technical University of Moldova
	State University of Moldova
	Academy of Science of Moldova
	Civil Protection and Emergency Situation Service (SPCSE)
	Chișinău Municipality
	Bălți Municipality
	Comrat Municipality
	Congress of Local Authorities of Moldova (CALM)
	National Ecology Fund
	Fond for Energy Efficiency
Private Sector	Mobiasbanca
	Victoriabank
	Eurocreditbank
	Moldova Agroindbank
	BCR Chișinău
	Moldinconbank
Civil Society and Community Organizations	Convention of Mayors for Climate and Energy
Accredited entities / International actors	UNDP Moldova
	FAO
	UN Environment
	EBRD
	WB
	BEI
	WMO
	ADA
Beneficiaries of funded activities	

Annex 10: The role and contribution of stakeholders in the development of the Country Program

Stakeholders	Involvement of Stakeholders' in the development of CP	Contribution of Stakeholders' in the development of CP	Stakeholders' intended role in supporting the CP implementation
Government institutions / Ministries			
Ministry of Agriculture, Regional Development and Environment (MARDE)	Coordination and promotion; involvement of stakeholders in identifying investment priorities	Approval of national priorities and the Country Program	Supporting the process of: obtaining the GCF's support; institutionalizing the implementation of adaptation actions; the Coordination Mechanism and the M & E process; developing and approving the regulatory framework
Ministry of Economy and Infrastructure (MEI)	Involvement of stakeholders in identifying investment priorities	Contribution to identifying national priorities for the engagement with GCF, developing project Concept Notes, participation in the NDA Coordination Mechanism	Approval of the Government Decisions on the subject; institutionalizing the

			implementation of adaptation actions
Ministry of Health, Labour and Social Protection (MHLSP)	Involvement of stakeholders in identifying investment priorities	Contribution to identifying national priorities for the engagement with GCF, developing project Concept Notes, participation in the NDA Coordination Mechanism	Approval of the Government Decisions on the subject; institutionalizing the implementation of adaptation actions
Ministry of Finance (MoF)	Expression on the budgetary participation capacity in the implementation of climate change adaptation actions	Determining the specific budget investment amount per action, contribution to identifying national priorities for the engagement with GCF, developing project Concept Notes, participation in the NDA Coordination Mechanism	Planning, approval and releasing budget funds to implement climate change adaptation actions
Ministry of Foreign Affairs and European Integration (MFAEI)	Facilitate the process of promoting the programme internationally	Assistance in negotiating the formalisation of GCF agreement documents, contributing to the signing of the country agreement between Moldova and GCF, contributing to the identification of national priorities for the engagement with GCF, developing project Concept Notes, participation in the NDA Coordination Mechanism	Supporting beneficiaries in the collaboration with GCF
Members of the NCCC and of CM Technical Committees	Coordination, evaluation, promotion	Participation in the NDA Coordination Mechanism	Technical evaluation of projects; promoting projects to be finance by GCF; monitoring, reporting, and evaluating the results of GCF-funded projects
National subordinated institutions, local authorities			
Climate Change Office	Development of CP draft	Employing experts, coordinating the CP development, organizing public debates, completing the CP	Consultations on the relevant subjects
"Moldsilva" Agency	Identification of investment priorities	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals with new activities	Participation in the CP implementation
"Apele Moldovei" Agency	Identification of investment priorities	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals	Participation in the CP implementation
Energy Efficiency Agency	Identification of investment priorities	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals	Participation in the CP implementation
Relevant Research Institutes, Academy of Science of Moldova	Improvement ideas and proposals	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals	Participation in the CP implementation
Chișinău Municipality	Identification of investment priorities; improvement ideas and proposals	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals	Allocation of space and funds resources

Bălți Municipality	Identification of investment priorities; improvement ideas and proposals	Contribution by participating in the prioritization of the priorities as part of the CP process, the development of Concept Notes for new project proposals	Allocation of space and funds resources
Comrat Municipality	Identification of investment priorities; improvement ideas and proposals	Proposals on types of public-private activities	Allocation of space and funds resources
Private sector/ Banking institutions			
Mobiasbanca	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
Victoriabank	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
ProCredit Bank	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
Moldova Agroindbank	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
Moldinconbank	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
BCR Chișinău	Potential Accredited Entity	Expression of interest for accreditation with GCF	Apply for GCF financing
Civil Society and Community Organizations			
Convention of Mayors for Climate and Energy	Participation in public consultations and debates	Ideas proposal, implementation actions	Dissemination of information among community mayors
Accredited Entities/ International Actors			
Worl Bank	Financing intentions	Expression on the investment in the program. Support to Moldovan stakeholders in promoting project ideas, concept notes, project proposals according to national priorities	Cofinancing
EBRD	Financing intentions	Expression on the investment in the program. Support to Moldovan stakeholders in promoting project ideas, concept notes, project proposals according to national priorities	Cofinancing
EIB	Financing intentions	Expression on the investment in the program. Support to Moldovan stakeholders in promoting project ideas, concept notes, project proposals according to national priorities	Cofinancing
FAO	Financing intentions	Expression on the investment in the program. Support to Moldovan stakeholders in promoting project ideas, concept notes, project proposals according to national priorities	Cofinancing
ADA	Financing intentions	Expression on the investment in the program. Support to Moldovan stakeholders in promoting project ideas, concept notes, project proposals according to national priorities	Cofinancing
Beneficiaries of financed activity			

Annex 11: List of participants to the events organized for the engagement with GCF

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Annex 12: Summary of national priorities regarding the GCF results area

Priorities identified in National Strategies	Green Climate Fund result areas			
	Mitigation			
	• Tonnes of CO_2eq until 2030: 3813 kt CO_2eq • Cost of GHG reduction between 2018-2030, total: US $ 5 billion • Committed GCF funding: US $ 2.458 billion for 10 NAMAs			
	Energy production and access	Transport	Buildings, cities, industries and appliances	Forests and Land use
NAMA1	Promotion wind power plant in Moldova[207]			
NAMA2	Promotion small scale CHPs in the RM[208]			
NAMA3	Promotion heat pumps in the RM[209]			
NAMA4	Use of solar energy for domestic hot water production in the RM[210]			

[207] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=187&viewOnly=1>
[208] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=186&viewOnly=1>
[209] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=187&viewOnly=1>
[210] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=188&viewOnly=1>

NAMA5	Use of energy willow for heat production in Moldova[211]			
NAMA6	Waste to Energy (WTE) NAMA in Moldova[212]			
NAMA7		Hybrid and electric buses and minibuses in the city of Chisinau[213]		
NAMA8			Promoting energy efficient lighting in Moldova[214]	
NAMA9			Clinker substitution at cement production[215]	
NAMA10				Afforestation of degraded land, riverside areas and protection belts in the RM[216]

[211] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=195&viewOnly=1>
[212] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=196&viewOnly=1>
[213] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=190&viewOnly=1>
[214] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=189&viewOnly=1>
[215] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=191&viewOnly=1>
[216] <http://www4.unfccc.int/sites/nama/_layouts/un/fccc/nama/NamaSeekingSupportForImplementation.aspx?ID=194&viewOnly=1>

Annex 13: National mitigation priorities in the context of the Green Climate Fund investment criteria

National mitigation priorities	GCF Investment criteria					
	Impact potential	Paradigm shift potential	Sustainable development potential	Country ownership	Efficiency and effectiveness	Needs of the recipient
	Programme/project potential to contribute to the achievement of the Fund's objectives and its results areas	The level of which the proposed activity can catalyse the impact outside an investment project or program	Wider benefits and priorities	The country's ownership as beneficiary and the capacity to implement a funded project or programme (climate policies, strategies and institutions)	Economic and, where appropriate, financial stability of the programme / project	Vulnerability and financing needs of the recipient country and population
NAMA1: Promotion wind power plant in Moldova	Reducing GHG emissions by 609 kt CO_{2eq} per year or reaching the NDC conditional objective of 16%	The RM is dependent on imported electricity at a rate of about 82%. The project reduces this dependence by 16%, acting as catalyst to further increase energy security of the RM, through the 400MW of WPP.	The respective NAMA will: - increase access to clean technologies; - encourage the creation of small and medium-sized enterprises and new jobs; - create new capacities to promote RES; - attract local investment in economic activity.	- The country has the needed regulatory framework for promoting RES, in line with the EU Directive 2009/28 / EC[217],[218]. - A map of wind resources potential is available[219]. - The country has some experience: 7,8 MW WPP has already been built. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action Plan	In order to overcome poverty, the country implements reforms set out in the EU Association Agreement, which will lead to increased demand for energy. The energy produced by the WPP can be effectively used, making this NAMA feasible	The cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. At the same time, the consumer's electricity capacity is limited. Therefore, without the GCF funding, NAMA's implementation is problematic.
NAMA2: The promotion of small-scale CHPs in Moldova	Reducing GHG emissions by 41 kt CO_{2eq} per year or reaching the NDC conditional objective of 1,1%	The NAMA covers the country's energy and power deficit by 3%. Through the 40 small CHPs to be implemented, the	This NAMA leads to: - 32% reduction of fossil fuel consumption (US $ 4.4 million); - increasing access to efficient technologies;	- The country has the needed regulatory framework to promote CHPs, in line with the EU Directive 2012/27 / EU. - Two small CHPs are built in the country, but no operation data are available, however there is a rich	Most of the CHPs will be built at hospitals, hotels, residential living blocks, industrial enterprises, etc., which makes the project feasible given the country's	The cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. At the same time, the

[217] Law on the promotion of the use of energy from renewable sources No. 10 of 26.02.2016. <http://lex.justice.md/md/363886/>
[218] Law on electricity No. 107 of 27.05.2016. <http://lex.justice.md/md/365659%20/>
[219] <https://moldova.awstruepower.com/>

		project will contribute to increase the energy security of the country, by multiplying the number of new CHPs	- encouraging the creation of small and medium-sized enterprises and new jobs; - creating new capacities to promote small CHPs; - attracting local investments in economic activity.	experience of operating large CHPs. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action	predictable economic growth.	investment in small CHPs is relatively high. Therefore, without the GCF funding, the project's implementation is problematic.
NAMA3: The promotion of heat pumps in the RM	Reducing GHG emissions by 67 kt CO_{2eq} per year or reaching the NDC conditional objective of 1,8%	The RM imports 86.2% of the necessary energy resources. The project will cover about 4 % of heating and hot water supply demand in the country. Through the implementation of 13160 heat pumps and its potential multiplication, the project will contribute to increase the energy security of the country.	The NAMA implementation will: - substitute boilers using natural gas and coal, reducing the consumption of fossil fuel by 37%; - create better living and working conditions, as this technology does not use open fire; - encourage the creation of small and medium-sized enterprises and new jobs; - creating new capacities to promote heat pumps; - attracting local investments in economic activity.	- The country has the needed regulatory framework to promote heat pumps, in line with the EU Directive 2006/32/CE [220]. - Several heat pumps reflecting a positive experience are built in the country, within the MoSEFF project, funded by the EBRD. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	Most of the heat pumps will be built at hospitals, hotels, residential living blocks, industrial enterprises, etc., which makes the project feasible given the country's predictable economic growth.	The cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. At the same time, the investment in heat pumps implementation is relatively high. Therefore, without the GCF funding, the project's implementation is problematic.
NAMA4: Use of solar energy for domestic hot	Reducing GHG emissions by 116 kt CO_{2eq} per year or reaching the NDC	The thermal energy produced by 316 thousand collectors built in the project will contribute to	The implementation of the project will: - substitute 53.5% of primary energy used by natural gas boilers and	- The country has the needed regulatory framework to promote solar collectors, in line with the EU Directive 2009/28/CE [221].	Solar collectors will be built at hospitals, hotels, residential living blocks, industrial enterprises, etc., which makes the project	The cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for

[220] Law on energy efficiency No. 142 of 02.07.2010. < http://lex.justice.md/md/335818/>
[221] Law on the promotion of the use of energy from renewable sources No. 10 of 26.02.2016. <http://lex.justice.md/md/363886/>

water production	conditional objective of 3%.	the advanced expansion of solar collectors in the country, thus increasing the energy security of the country.	46.5% of primary energy for electric boilers; create better living and working conditions, as this technology does not use open fire; - encourage the creation of small and medium-sized enterprises and new jobs; - creating new capacities to promote solar energy collectors; - attracting local investments in economic activity.	- Solar collectors reflecting a positive experience are built in the country, within the MoSEFF project, funded by the EBRD. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	feasible given the country's predictable economic growth.	loans in national currency. At the same time, the investment in solar collectors is relatively high. Therefore, without the GCF funding, the project's implementation is problematic.
NAMA5: Use of energy willow for heat generation in the Republic of Moldova	Reducing GHG emissions by 250 kt CO_{2eq} per year or reaching the NDC conditional objective of 6,6%.	The thermal energy produced by 20 thousand ha of energy willow and processed into pellets will contribute to the advanced expansion of biomass in the country, thus increasing the energy security of the country.	The NAMA implementation will: - Reduce the demand for imported fossil fuel by 3.55%; - bring socio-economic benefits: new jobs in the rural sector, including for women; improve access to heating services. The willow energy as fuel is cheaper than natural gas and therefore more accessible to poor populations; attract local investment in economic activity.	- The country has the needed regulatory framework to promote energy willow, in line with the EU Directive 2009/28/CE[222]. - There are about 50 hectares of energy willow plantations in the country, but their expansion is experiencing financial difficulties This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	Promoting the use of biomass for the purpose of producing heat is widely supported by the country's governance, while also having the EU support through the Energy and Biomass Project[223] , provides facilities for the acquisition of biomass boilers. Thus, the pellets produced through this NAMA will find their way into the market and will make the project feasible.	Project recovery period exceeds 7-9 years, unattractive for local investors considering that the cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. At the same time, the initial investment is relatively high. Therefore, without the GCF funding, the project's implementation is limited.
NAMA6: Waste to	Reducing GHG emissions by 95 kt	The collection of landfill gas (LGF) for	The implementation of the project will:	- The country has the needed regulatory framework to promote	The Regulatory Body, NERA, will set the price for	The investment required to implement this NAMA is

[222] Law on the promotion of the use of energy from renewable sources No. 10 of 26.02.2016. <http://lex.justice.md/md/363886/>.
[223] Energy and biomass Project: <http://biomasa.md/.>

Energy (WTE) NAMA in The Republic of Moldova	CO_{2eq} per year or reaching the NDC conditional objective of 2,5%	the production of electricity at 4 MW power plants will contribute to the creation of a clean environment in the RM with relevant impacts on the people health from the region, much affected at the moment.	- contribute to increase the level of energy security; - create clean air in the landfill area; - creating new jobs; - attracting local investments in economic activity.	LGF energy, in line with the EU Directive 2009/28/CE. - 8 centralized waste landfills will be created in the country, according to the studies and projects carried out [224]. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	provided network electricity provided, price, which ensures the recovery of the respective investments, according to the respective tariff methodology[225]. Such a practice already exists for the biogas plant at the waste landfill in Ţînţăreni, Chişinău	about US $ 17 million, which exceeds by far the capacities of local investors. Taking into account that the cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency, the implementation of the project cannot take place without the GCF support.
NAMA7: Hybrid and electric buses and minibuses in the city of Chisinau	Reducing GHG emissions by 24 kt CO_{2eq} per year or reaching the NDC conditional objective of 0,6%.	This project is to be implemented in the city of Chisinau by replacing 130 diesel buses and 1842 minibuses with electric buses and hybrid minibuses, thus helping to create a much cleaner air in the city. Its success will spread electric and hybrid vehicles implementation to	This NAMA will contribute to: - reduce dependence on imported fuels; - creation of new skilled jobs; - new ways of clean technologies transfer; - improvement of air quality and capacity development.	- The country has the needed regulatory framework to promote energy efficiency transport, in line with the EU Directive 2006/32/CE[226]. - In 2016, the Government launched an action programme that also provides the creation of an efficient and clean transport network in the country[227], with the support of OECD through the GREEN Action Programme. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development	The project involves a total cost of US $ 344.3 million, and the fuel reduction from this NAMA implementation reaches 30%. The recovery of investments is provided through travel fees. However, the limited population's payment ability, requires a grant and concessional loan for the feasibility of this NAMA.	The investment required to implement this project is high and exceeds by far the capacities of local investors. Taking into account that the cost of credit in the Republic of Moldova is high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency, the implementation of the project cannot take place without the GCF support.

[224] The effort to improve the country's waste management system was supported by international agencies: GIZ, the European Investment Bank and the Czech Development Agency, which funded feasibility studies for the eight Waste Management Regions in the country. NAMA does not include the improvement of public waste management services, but is only geared towards the collection of LGF and the production of electricity from it.
[225] The methodology for determining fixed tariffs and electricity prices produced from renewable energy sources by eligible producers, no. 375 /2017 of 28.09.2017. <http://lex.justice.md/UserFiles/File/2017/mo393-395md/Metodologia.docx>.
[226] Law on energy efficiency No. 142 of 02.07.2010. < http://lex.justice.md/md/335818/>
[227] <http://www.gov.md/sites/default/files/document/attachments/government_of_republic_of_moldova_-_action_programme_of_the_government_of_republic_of_moldova_for_2016-2018.pdf>, <https://issuu.com/oecd.publishing/docs/moldova_financing_climate_action.no>

		other cities in the country.		Strategy by 2030 of the Republic of Moldova and its implementation Action.		
NAMA8: Promoting Energy Efficient Lighting in the Republic of Moldova	Reducing GHG emissions by 327 kt CO_{2eq} per year or reaching the NDC conditional objective of 8,6%.	Replacing inefficient lighting with LED-based lighting systems will contribute to excluding the outdated lighting infrastructure in all sectors, which is 5-10 times higher in energy consumption than the efficient LED lighting.	This NAMA will contribute to: - create 4,000 new jobs; - exclude future mercury lamps waste, which is harmful to the environment and animals; -increase road traffic and people's safety; - reduce electricity consumption by 58% for street lighting, 59% in public buildings and 65% in residential buildings.	- The country has the needed regulatory framework to promote efficient lighting, in line with the EU Directive 2006/32/CE[228]. - Several projects on the implementation of energy-efficient lighting have already been carried out in the country[229]. However, the pace of implementation remains insufficient This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	The recovery period for this NAMA investment is about 5 years, due to lower costs for lighting electricity consumed. Considering the upward trend in electricity prices, we can certainly expect revenue stability to cover the investments made.	The total investment of about US $ 236 million in this NAMA is high, while the cost of credit in the Republic of Moldova is also high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. Therefore, the implementation of the project is in need of the GCF contribution.
NAMA9: Clinker substitution at cement production	Reducing GHG emissions by 90 kt CO_{2eq} per year or reaching the NDC conditional objective of 2,4%.	Given the continuous high demand for cement in the country, replacing the conventional cement production technology (Ordinary Portland Cement – OPC) with a new cement production technology called	The project implementation will contribute to: - a 30% reduction in fuel consumption and 80% of the amount of water used; - a 28-times reduction in the cement curing period, with savings in time and financial resources; - reducing the storage space for cement and concrete producers, reducing the used calcium, etc.	The two private cement companies in the country are part of the world-known companies: Lafarge, a French company, and a Russian company - both with capabilities to implement the new cement production technology. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	The planned investment is recovered by saving fuel, water and other costs. Taking into account the increasing demand for cement in the country's economy, its sale will keep rising until 2030, which indicates the feasibility of the project	The total investment is about US $ 100 million, while the cost of credit in the Republic of Moldova is also high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. Therefore, the implementation of the project is in need of the GCF contribution.

[228] Law on energy efficiency No. 142 of 02.07.2010. <http://lex.justice.md/md/335818/>
[229] <https://monitorul.fisc.md/editorial/in_8_localitati_vor_fi_implementate_proiecte_de_iluminat_stradal.html>

		"Solidia technology will save up to 80% of consumed water and 30% of fossil fuel. Both of these components are strategic for the country: water availability is becoming a problem, and fossil fuel import is at 86.2%.	- creating new jobs; - higher performance, including greater durability, ensuring increased building reliability of concrete produced from the new type of cement.			
NAMA10: Afforestation of degraded land, riverside areas and protection belts in the Republic of Moldova	Sequestration of GHG emissions of 284 kt CO_{2eq} per year or reaching the NDC conditional objective of 7,4%.	Unlike other European countries, the RM is distinguished by a low degree of forests in the country, only of 11.2%, compared to at least 15 % required. The implementation of this NAMA will contribute to reaching this goal.	The implementation of this NAMA will: - increase soil productivity and protect soils from adverse weather events (droughts, floods); - regulate hydrological cycles and microclimate; - create new jobs for the local population; - increases the supply of forest products for the rural population; - significantly contribute to achieving 8 out of the 17 sustainable development objectives from the Agenda 2030.	- The country has the necessary regulatory and institutional framework to carry out afforestation of new land. - "Moldsilva" Agency has a rich experience not only in afforestation but also in MRV of CDM projects [230]. This NAMA is registered in the NAMA Register of UNFCCC and is part of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.	The efficiency and effectiveness of afforestation of degraded land, riparian areas and protection belts in the Republic of Moldova corresponds to the registered objectives in other countries. Direct income from the exploitation of forests is not sufficient to cover the costs associated with their plantation. The highest income from forests is the indirect one and undoubtedly justifies the investment in the sector.	The total investment is about US $ 144 million, while the cost of credit in the Republic of Moldova is also high, with an interest rate of 4.6 - 5.1% for foreign currency and 8.8-10.8% for loans in national currency. Therefore, the implementation of the project is in need of the GCF contribution.

[230] CDM Projects: 1) The afforestation / reforestation project of the Republic of Moldova (2009, ongoing); 2) Soil Conservation in the Republic of Moldova (2004, ongoing).

Annex 14: Methodology used to identify national priorities in the GCF results areas

Mitigation Component

The identification of the national priorities relevant to the GCF results areas was carried out through the following steps:

(i) Identify national priorities outlined in national strategies and laws, selecting those within the GCF results areas;

(ii) Identify and develop NAMAs to meet the national and conditional NDC priority objectives, and introduce them in the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action[231];

(iii) Screening on additionality the NAMAs identified in p. 2 and select ones for further examination in terms of eligibility to GCF funds;

(iv) Setting out the national priority for each NAMA, selected in p. 3, for which the NAMA in question would have to achieve its objectives;

(v) Analysis of the national priorities in p. 3 in order to generalize them and establish the ones to be included in the Country Programme

A14.1. Identification of national priorities outlined in national strategies, selecting those within the GCF results areas;

Moldova's national priorities are set out in several country development strategies, including the:

a) The National Development Strategy: 8 solutions for economy growth and poverty reduction[232]. The only priority in this strategy, relevant to the GCF priorities, is: "ENERGY: Securely provided, effectively used". The specific objectives for this priority are:

Table A14-1: The strategic objectives of the RM in energy sector

Monitoring indicators	2015	2020
Energy Security		
Energy interconnections • Electricity lines, km • Natural gas pipelines, km		 139 40
Stimulating the use of energy produced from renewable energy sources in the total domestic consumption, %	10	20
Ensuring the share of bio-fuels in the total of fuels used, %	4	10
Increasing the domestic production capacity for electricity, MW		800
Ensuring the share of annual electricity production from renewable energy sources, %		10
Energy Efficiency		
Reducing energy intensity, %		10
Reducing electricity losses in transport and distribution networks, %	13	11
Reducing natural gas losses in transport and distribution networks, %	20	39
Reducing heating losses in transport and distribution networks, %	2	5
Reducing greenhouse gas emissions (compared to 1990), %		25
Reducing energy consumption in buildings, %		10
Share of renovated public buildings, %		10

[231] Official Gazette of the RM no. 85-91 of 24.03.2017. Government Decision no. 1470 of 30.12.2016 regarding the approval of the Low Emissions Development Strategy by 2030 of the Republic of Moldova and its implementation Action.
[232] Official Gazette of the RM No. 293-296 of 03.10.2014, Parliament of the RM. Law No. 121 of 03.07.2014 in regards to the amendment of the annex of Law no. 166 of July 11, 2012 regarding the approval of the National Development Strategy "Moldova 2020"

In order to achieve the objectives of the priority "ENERGY: Securely provided, effectively used", set out in the National Development Strategy „Moldova 2020", several normative acts were issued, including:

- The Programme to promote „green" economy in the Republic of Moldova for the years 2018-2020 and Action Plan, GD No. 160/2018;
- Energy Roadmap for the period 2015-2030, GD No. 409/2015;
- Law on promoting the use of renewable energy, no. 10/2016, updated in March 2018;
- Law on energy efficiency, No.142/2010;
- National Energy Efficiency Programme for the period 2011-2020, GD No. 833/201;
- Energy Strategy of the RM until 2030, GD No. 102/2013;
- National Action Plan for Renewable Energy for the period 2013-2020, GD N0. 1073/2013;
- Law on thermal energy and promotion of cogeneration, No. 92/2014;
- Law on the Energy Performance of Buildings, No. 128/2014;
- Law on labelling energy-related products, No. 44/2014;
- Creation of Energy Efficiency Fund, GD No. 401/2012;
- Environment Strategy for the period 2014-2023 and Action Plan, GD No. 301/2014.

b) National biological diversity conservation Strategy and Action Plan, Parliament Decision no.112/2001, amended in 2007.

The main purpose of the National biological diversity conservation Strategy and Action Plan is the conservation, rehabilitation, reconstruction and rational use of biological and landscape diversity, including the extension of the forest fund to up to 15% by afforestation of rivers and water basins protection areas and degraded land and by creation of ecological connection corridors, etc. The objectives of the Strategy have been reflected in several normative acts, including:

- The State Programme of regeneration and afforestation of forest fund land for the years 2003-2020, GD No. 737/2003;
- The National Plan for the extension of wooded areas for the years 2014-2018, GD Nr. 101/2014.

A14.2. Identifying NAMA, developed to reach the national priorities and conditional NDC objectives and setting out the national priority for each NAMA, for which the NAMA in question would have to achieve its objectives;

The developed NAMAs to reach the national priorities and conditional NDC objectives are presented in Table A14-2, are being identified from the Low Emissions Development Strategy and Action Plan and their titles are being partly rephrased. Also, in the same table, the national priorities are set out for each NAMA, for which the NAMA in question would have to achieve its objectives;

It is important to mention that all NAMAs in Tab. A5-2 were identified as a result of a long selection process during the implementation of three projects funded by related area donors: a) "Technology Needs Assessment" funded by GEF and UNEP; b) "The Low Emission Capacity Building Programme", funded by UNDP; and c) "Developing the Fourth National Communication and the Biennial First Report (BUR1)" funded by GEF. In this context, 12 national and 2 international experts were employed to identify priority NAMAs out of 136 formulated by experts. These 12 NAMAs were chosen following the application of MCDA (Multi-criteria Decision Analysis) tool, and the stakeholder engagement, including for scoring each of the MCDA criteria.

Table A14-2: Identified national priority NAMAs to achieve Moldova's conditional objective and that fall within the GCF results areas

No.	NAMA	National Priority NAMA
1	Promotion wind power plant in Moldova	RES

2	Promotion small scale CHPs in the RM	Energy Efficiency
3	Promotion heat pumps in the RM	Energy Efficiency
4	Use of solar energy for domestic hot water production in the RM	RES
5	Use of energy willow for heat production in Moldova	RES
6	Waste to Energy (WTE) NAMA in Moldova	RES
7	Hybrid and electric buses and minibuses in the city of Chisinau	Energy Efficiency
8	Promoting energy efficient lighting in Moldova	Energy Efficiency
9	Clinker substitution at cement production	Energy Efficiency
10	Afforestation of degraded land, riverside areas and protection belts in the RM	Land Afforestation
11	Reducing losses in the heat transmission and distribution system and thermal energy production	Energy Efficiency
12	Promotion and construction of photovoltaic power plants connected to the grid	RES
13	Use of biogas gensets for the electric and thermal energy production	RES
14	Construction of good and very good roads	Energy Efficiency
15	Promoting energy efficiency in rail transport	Energy Efficiency
16	Increasing the thermal resistance of the building envelope	Energy Efficiency
17	Use of biomass for energy purposes	RES
18	Use of second-generation biofuels for thermal energy production	RES
19	Promoting energy efficiency in the industrial sector	Energy Efficiency

A14.3. Screening on additionality the NAMAs identified in p. 2 and select ones for further examination in terms of eligibility to GCF funds

In the Table A14-3, a screening on additionality for the NAMAs exposed in Table A14-2 is provided. Additionality criteria correspond to those developed in /[233]/ plus one corresponding to additionality on reduction of GHG emissions vs Baseline scenario. Since these NAMAs correspond to those called to implement country conditional NDC, their implementation is seen mostly through private sector, except NAMA 10, NAMA 15, partly NAMA 8 and 16, and in an open market. Thus, the actions should be considered in the frame of barriers the private sector meets within in the country business environment examined in chapter 1.3 and 1.4. In this exercise the same additionality criteria have been applied to all NAMAs presented in the Table A14-2. As it can be seen from Table A14-3 the following NAMAs have been found not corresponding to the criteria of additionality:

NAMA5 “Use of energy willow for heat production in Moldova” and NAMA17 “Use of biomass for energy purposes”. These NAMAs are excluded from further examination.

A14.3. Analysis of the national priorities and establish the ones to be included in the Country Programme

After the result analysis from Tab. A4-2, three strategic national priorities are relevant for the Country Program:

d) Promoting energy efficiency
e) Promoting renewable energy sources
f) Land afforestation

[233] Melina Heinrich. DEMONSTRATING ADDITIONALITY IN PRIVATE SECTOR DEVELOPMENT INITIATIVES. A Practical Exploration of Good Practice for Challenge Funds and other Cost-Sharing Mechanisms. The Donor Committee for Enterprise Development (DCED), 2014.

These priorities fall within the areas of the GCF results and can therefore be considered in alignment with the objectives of the Fund.

1. Energy generation and access
2. Transport
3. Buildings, cities, industries and appliances
4. Forest and land use

Table A14-3: NAMAs screening on additionality

No.	NAMAs	Criteria of additionality								
		The company has insufficient funds to selffinance the project (within a reasonable time frame)	The company lacks the knowledge or competencies to design and/or implement a business model in a way that maximises poverty-reducing or other development impacts.	Without the public subsidy, the company would be unwilling to implement the proposed business model and/or changes in operational standards because of a perceived negative balance of costs/risks and benefits.	The company cannot access the services offered by the publicly-funded agency on a commercial basis – whether commercial bank funding or advisory support of similar quality.	The cost-shared project does not displace other companies already operating in the market, or that are ready to undertake the same project without public support.	The cost-shared contribution does not duplicate other donor-funded support – whether grant, in-kind advice, loan or equity.	Public support leverages investment by other entities that would otherwise not be forthcoming.	Conditions attached to the cost-sharing project, or agency activities complementing it, are expected to have a positive influence on wider business operations, the business environment or other institutional factors	Le er Ba sc
1	Promotion wind power plant in Moldova	Y	N	Y	Y	Y	Y	n/a	Y	
2	Promotion small scale CHPs in the RM	Y	N	Y	Y	Y	Y	Y	Y	
3	Promotion heat pumps in the RM	Y	Y	N	Y	Y	Y	Y	Y	
4	Use of solar energy for domestic hot water production in the RM	Y	N	Y	N	Y	N	Y	Y	
5	Use of energy willow for heat production in Moldova	N	N	N	Y	Y	Y	Y	Y	
6	Waste to Energy (WTE) NAMA in Moldova	Y	Y	Y	Y	Y	Y	N	Y	
7	Hybrid and electric buses and minibuses in the city of Chisinau	Y	Y	Y	Y	Y	N	Y	Y	
8	Promoting energy efficient lighting in Moldova	Y	N	Y	N	Y	N	Y	Y	
9	Clinker substitution at cement production	Y	N	N	Y	Y	Y	N	Y	
10	Afforestation of degraded land, riverside areas and protection belts in the RM	Y	N	Y	Y	Y	Y	Y	Y	

11	Reducing losses in the heat transmission and distribution system and thermal energy production	Y	N	Y	Y	Y	N	N	Y	
12	Promotion and construction of photovoltaic power plants connected to the grid	Y	N	Y	N	Y	N	Y	Y	
13	Use of biogas gensets for the electric and thermal energy production	Y	Y	Y	Y	Y	Y	Y	Y	
14	Construction of good and very good roads	Y	N	Y	Y	Y	N	N	Y	
15	Promoting energy efficiency in rail transport	Y	Y	N	Y	Y	Y	N	Y	
16	Increasing the thermal resistance of the building envelope	Y	N	Y	N	Y	N	Y	Y	
17	Use of biomass for energy purposes	N	N	N	N	Y	N	Y	Y	
18	Use of second-generation biofuels for thermal energy production	Y	Y	Y	Y	Y	Y	Y	Y	
19	Promoting energy efficiency in the industrial sector	Y	Y	N	Y	Y	N	Y	Y	

Adaptation Component

Table A14-4. Investment Areas Prioritization (Matrix) according to GCF's Criteria

Evaluation Scale: 1-2 – very low contribution; 3-4 - low contribution; 5-6 – moderate contribution; 7-8 – high contribution; 9-10 – extremely high contribution

Sectoral investment areas	Alignment to country strategies and climate change adaptation plans as well as to country legislation	Contribution to reducing vulnerability at national level and increased climate-resilient sustainable development	The total number of beneficiaries (direct and indirect), (more than 5000 people)	Contribution to transformational adaptation (Paradigm shift potential)	Contribution to improve economic performance and high level of co-benefits (environmental, social, gender)	The financing needs of vulnerable groups, target population, sectors, development regions and of the country	Financial and economic feasibility	Total Score
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
AGRICULTURE SECTOR								
Rehabilitation and development of efficient irrigation systems and drainage infrastructure in irrigation areas								
Sustainable Soil Management (conservative, precision, ecological agriculture etc.)								
Managing the risks related to extreme phenomena (anti-hail nets, vegetable production in protected areas, timely weather information for farmers, etc.)								
Food security in terms of climate changing conditions								
Ensuring risks related to climate change with impact on agricultural production								

and on the competitiveness of agriculture								
Integrated disease control and pest management								
Adjusting the spectrum of cultures by implementing varieties with high adaptive potential and distribution at all cultivation levels: national, regional, household								
Management of livestock and grazing lands in terms of climate changing conditions (including: new breeds, diet, improving living conditions, grazing, landscaping management by sheltering the animal, etc.)								
OTHER SECTORS INVESTMENT AREAS								
WATER RESOURCES SECTOR	HUMAN HEALTH SECTOR	FORESTRY SECTOR	ENERGY SECTOR	TRANSPORT SECTOR	CROSS-SECTORAL			
Rehabilitation / construction of the water supply and sewerage infrastructure	National information system for the collection and processing of data on the effects of climate risks on public health, the emergence and incidence of new diseases related to climate change	Ecological restoration and extension of forests and forest belts	Use of renewable energy sources (e.g. wind turbines and hydraulic installations, solar panels for heating and hot water, photovoltaic solar systems, biomass heating systems, etc.)	Construction and rehabilitation of roads, bridges and viaducts with the use of anti-aquatic and anti-thermal materials and technologies based on climatic standards	Creating networks of forest shelterbelts along roads, waterways, high-risk railway lines			
Water quality	Eradicate malnutrition and	Restoring the flow of ecosystem	Construction of the storage plant for the	Renewal of road drainage systems and	Setting operational Emergency Situation			

	ensure access to safe, nutritious and sufficient food for particularly vulnerable population groups	services of the forest (developing the network of valuable habitats)	energy excess produced by wind farms and photovoltaic power plants	implementation of advanced technologies in collecting and discharging rainwater from the road network	Command Centres (ESCCs) in the North and South of the country and strengthen general Emergency Response Systems (e.g. upgrade equipment to expand the geographical range of Emergency Response and Emergency Services)			
Use of surface water resources according to the principle of integrated water resource management	Human health and consumers interests' protection with regard to food safety	Ecological restoration of degraded pastures	Decentralized generation of electricity (solar photovoltaic systems, hydraulic installations, micro-hydropower stations, etc.)	Ensure rural population access to the appropriate road system, throughout the year	Climate resilient housing			
Collecting rainwater and using it for irrigation and other purposes (industrial, domestic)	Development of continuous air quality monitoring stations	Establishing basic protected areas and buffer zones for the sustainable use of biodiversity and aquatic resources	Energy efficiency (e.g. use of modern energy generating and transport technologies, thermal insulation of buildings, construction of refrigerators in the vicinity of CHPs for the preservation of fruits and vegetables, producing steam cold, etc.)	Cleaning the riverbed, straighten and deepen the waterways of the main rivers (Nistru and Prut) and develop a system of status monitorization and navigability	Increase communities' resilience and improve subsistence of the population			
Improving the municipal and industrial water supply system (implementation of low water consumption technologies)	Affordable healthcare for isolated communities and populations particularly	Creating new forests adapted to the consequences of climate change and capable of efficiently	Improving the robustness of the power transmission and distribution infrastructure	Ensuring the risks related to climate change with impact on transport infrastructure				

	vulnerable to the effects of climate change (elderly, obese and disabled people)	capturing carbon and producing biomass						
Flood control: structural and non-structural measures (rehabilitation / construction of dams, embankments, small-scale storage reservoirs, bank, wetlands consolidation etc. and warning / alarming systems, informing / educating the population on flood risk and how to act in emergency situations, etc.)	Emergency departments for cardiovascular diseases equipped according to WHO requirements	Forest fires management	Restoration of transmission network equipment, frost / ice melting equipment, or introduction of new de-icing technologies (such as PETD (pulse electro-thermal de-icing equipment)	Creating the necessary urban infrastructure in order to promote alternative transport, such as cycling				
Improving treatment and reuse of wastewater from industrial and domestic systems	Changing hospital infrastructure for operationalization to "green" standards	Management of pests / diseases epidemics	The creation of free economic zones (FEZ) in the vicinity of CHPs, for economic production activities in sectors using steam or hot water in technological processes (greenhouses, absorbing refrigeration equipment, processing of agricultural raw materials, etc.)					
Alternative wastewater collection measures in small localities where it is unreasonable to construct /	Prevention, early warning, management and overcoming the	Combating the instability of the slopes in areas	Constructing of additional water supply systems from					

maintain a sewage treatment plant	impact of extreme weather events due to climate change (heat, cold, floods)	sensitive to landslides	alternative sources at CHPs					
Protection of waste water infrastructure against floods								
Land improvements to increase the probability of precipitation								
Implementation of aquifer recovery technologies								
Increasing the degree of water recycling for industrial needs								

The entity that rated (prioritized) the investment areas: _____

Annex 15: *Most important climate-related projects financed from external sources*

The financing programs launched in the R. of Moldova include the greenhouse gas emissions mitigation programs, as well as those oriented towards adaptation to climate change, including the Project "Energy and Biomass in Moldova" (PCCF / PEBM-UNDP), the Agriculture Project (MAC-P): "Improving Soil Productivity through Sustainable Land Management (SLM)", Rural Inclusive Economic and Climate Resilience Program (IFAD VI)[234] – Conservative Agriculture and Value Chains, Public-Private Partnerships Program, The project on the competitiveness of agriculture in Moldova, conservative practices, etc. The following projects with impact on climate change adaptation deserve special consideration:

The largest development project, supported by development partners, was the Transition to high-value agriculture Project, which was part of the non-reimbursable US $ 262 million grant financed by the US, under the Moldova Millennium Challenge Program (MCC Moldova)[235]. The project has encouraged the transition to high-value agriculture by rebuilding irrigation systems, reforming the irrigation sector, facilitating access to finance in agriculture and increasing high-value sales. In 2015 and 2016, the World Bank granted additional funding tranches (totalling US $ 22 million) for the Moldova's Agricultural Competitiveness Project, aiming to increase the competitiveness of the agro-food sector by supporting the modernization of the food safety management system, facilitating farmers' access to the market and the integration of agro-environmental and sustainable land management practices.

For the Forest Sector, the World Bank has funded investments to improve grazing and land management practices, including planting windbreaks, connecting forest belts and other complementary actions. The EU has supported demonstration projects (€ 535,000 in 2013-2016) under the Clima East project in Orhei National Park[236], including the afforestation of 150 acres of degraded land and the rehabilitation of 500 hectares of grassland. Benefits relate not only to soil and water protection but also to the economic and social wellbeing of local communities.

The water sector has received relatively high technical assistance from development partners for its thematic trans-sectoral areas to improve water supply, wastewater management and water resource management. The results of the projects have had a positive impact on the health of the population and the means of living. The European Investment Bank provided technical assistance of EUR 2 million between 2012 and 2015 and included seven tasks that led to the development of a Global Flood Risk Management Plan based on the preliminary assessment of these risks, preparing flood risk maps, assessing flood risks, identifying flood risk management objectives and strategies, identifying flood risk mitigation measures, developing a Phased Investment Scheme and short-term investment program.

The efforts of the Republic of Moldova towards a planned approach to climate change adaptation were supported by the Austrian Development Agency, through the financing of the ADA / UNDP project, totalling € 940,000: "Supporting Moldova's National Climate Change Adaptation Planning Process". The project contributed to the creation of an iterative adaptation planning of adaptation within the National Adaptation

[234] The project was launched for the period 2014-2020. The project has a national character and is implemented in all localities of the Republic of Moldova (with the exception of Chisinau, Balti and Administrative-Territorial Units on the Nistru River). The budget of the program will be US $ 26.08 million, of which 16.1 million is the IFAD loan; 0.5 mil - IFAD grant; 5.22 mil - DANIDA grant and 4.26 mil - GEF grant. The objective of the program is to allow rural poor entrepreneurs to increase their income and strengthen their resilience by: improving farmers' capacity to adapt to climate change; increasing rural access to credit, suitable and affordable financial products; increasing productivity and competitiveness; increasing investment and ensuring market access. The Rural Resilience Project, launched by IFAD again, in 2017, has a 6-year implementation period. The Project Budget is US $ 23.7 million. The project provides grants to finance: infrastructure projects; measures to adapt agricultural production systems to climate change; rehabilitation / establishment of agro-forest plantations, forest protection strips around agricultural land and water basins; setting up and rehabilitation of herb covers.

[235]The Transition to high value agriculture is one of the two projects of the Compact Assistance Program offered to the Republic of Moldova by the US Government through the Millennium Challenge Corporation for the period 2010-2015. <http://mca.gov.md/ro/aim_and_objectives_Tr.html>

[236] Clima East Moldova: Impact mitigation and adaption of ecosystems to climate change in the Orhei National Park, <http://www.md.undp.org/content/moldova/ro/home/operations/projects/climate_environment_energy/proiecte-finalizate/clima-east--ecosystem-based-adaptation-and-mitigation-of-climate.html>

Plans (NAPs) as well as the Sectoral Adaptation Plans (SAP). The project has helped to create an effective policy framework and institutional arrangements on several levels and areas, to strengthen capacities of national, sectoral and district institutions to plan and implement adaptation at these levels, promote cooperative actions in adaptation between stakeholders, make adaptation decisions by improving climate information services and enhancing understanding of climate knowledge at national and sectoral level, integrating gender perspectives. The project supported the implementation of adaptation through pilot project initiatives and further development of strategies.