REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
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Washington, D.C., 20433
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Abbreviations and Acronyms

AEZ	Agro-Ecological Zones
AI	Aridity Index
APR	Annual Project Report
AR5	Fifth Assessment Report
CA	Conservation Agriculture
CBD	Convention on Biological Diversity
CC	Climate Change
CCA	Climate Change Adaptation
CMIP5	Coupled Model Intercomparison Project – phase 5
CPIU	Consolidated Project Implementation Unit
CRCA	Climate Resilience Through Conservation Agriculture
DO	Dissolved Oxygen
DRR	Disaster Risk Reduction
ENRM	Environment and Natural Resource Management
ESA	Environmental and Social Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FAO	United National Food and Agricultural Organisation
FFS	Farmer Field Schools
GCM	Global Climate Model
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNI	Gross National Income
GoM	Government of Moldova
HDI	Human Development Index
IFAD	International Fund for Agricultural Development
IWRM	Integrated Water Resources Management
MARDE	Ministry of Agriculture, Regional Development and Environment
MDG	Millennium Development Goals
MTR	Mid-term Review
M&E	Monitoring and Evaluation
NHDR	National Human Development Report
NBM	National Bank of Moldova
NDS	National Development Strategy
NGO	Non-Governmental Organisations
NIE	National Implementing Entity
NSARD	National Strategy on Agriculture and Rural Development
PE	Potential Evaporation
POP	Persistent Organic Polluters
PPP	Per Capita
PPT	Precipitation
RCP	Representative Concentration Pathways
SCCF	Special Climate Change Fund
SECAP	Social Environmental and Climate Assessment Procedures
SWM	Sustainable Water Management
TART	Talent Retention for Rural Transformation
TART-Adapt	Talent Retention for Rural Transformation - Adapt
Tmax	Max Temperature
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I PROJECT INFORMATION

PROJECT CATEFORY:	**Regular**
COUNTRY:	**Moldova**
TITLE OF PROJECT:	**Talent Retention for Rural Transformation - Adapt (TART-Adapt)**
TYPE OF IMPLEMENTING ENTITY:	**Multilateral Implementing Entity**
IMPLEMENTING ENTITY:	**International Fund for Agricultural Development**
EXECUTING ENTITY:	**Ministry of Agriculture Rural Development and Environment**
AMOUNT OF FINANCING REQUESTED:	**6,035,421**

Background and Context.

A Geography

1. The Republic of Moldova, with a total area of 32,870 square kilometres, is a small, landlocked country between about 46^0 to 48^0 N latitude and 27^0 to 30^0 E longitude. The country shares borders with Ukraine to the north, east and south, and Romania to the west. The country is divided into 32 districts (raioane), 5 municipalities (muniten, which are cities with special status), and 2 autonomous territories - Găgăuzia and Transnistria - the latter being a region subject to political conflict, claiming for an unrecognized independent status. The capital of the country is Chisinau, with a population of about 786,000 people.

2. The topography of Moldova is predominantly an undulating hilly plain sloping from the northwest to the southeast and having an average elevation of around 147 m above the sea level. The highest elevation is represented by Hill Balanesti (429.5 m) in Nisporeni district, an area with a very fragmented landscape where hilly terrain and deep valleys alternate. The parent rocks are mainly represented by sedimentary materials, such as limestone, chalk, gypsum, sand, sandstone, bentonite, tripoli, and diatomite, which can be used in construction, cement and glass production, food processing, chemical and metallurgical industries, etc.

3. About 75% of Moldova is covered by black soil, also called chernozem. In the northern hills, more clay-textured soils are found. In the south, red-earth soil is predominant. The soil becomes less fertile toward the south but can still support grape and sunflower production. The hills have woodland soils. The lower reaches of the Prut and Dniester rivers and the southern river valleys are saline marshes.

4. About 60% of the country waters drain into the Nistru river (1,352 km, including 657 km within the borders of the country), approximately 34% into the Prut river (tributary of the Danube, that flows along 695 km in the border with Romania), and the rest into a series of small rivers that directly pour into the Black Sea. Moldova has about 60 natural lakes and 3,000 reservoirs. The largest reservoirs are Costesti-Stinca (678 million m^3) on the Prut river, jointly operated by Romania and Moldova, and Dubasari (235 million m3) on

the Nistru river. Reservoirs in the northern and central regions play the role of seasonal regulation of water, while in the south they mainly serve for inter-annual distribution due to the region's greater water deficit.

5. The main groundwater reserves are located in deep confined aquifers. There are approximately 7,000 boreholes for groundwater withdrawal. The natural recharge capacity of the confined aquifers is limited, and there is a risk of overexploitation. The total available water resources in the country amount to 5.6 km^3, including 4.3 km^3 of surface water and 1.3 km^3 of groundwater (including 0.7 km^3 that comply with the national standards for drinking water).

6. The natural vegetation, mainly forests, steppes, lakes and rivers, cover about 15% of the territory. Forests and other wooded land (OWL) in Moldova cover 13.7% of the territory (about 462,700 ha) in highly fragmented stands ranging from 5 to 1,500 ha. The steppes occupy 1.92% of the territory (about 65,000 ha) in fragments of 0.5-300 ha. The steppe flora is rich, with over 600 plant species, most of them belonging to the families Asteraceae, Fabaceae, Poaceae and Lamiaceae. Natural meadows remain only along the Prut and Nistru river basins, covering 3% of the territory (about 101,400 ha).

7. The status of flora in steppe ecosystems is unsatisfactory throughout the republic due to the excessive and unorganized grazing and the reduction of lands with steppe vegetation. For example, the steppe zones in the southern and south-eastern regions (lower Nistru river terraces and Bugeac plains) are strongly impacted by human activities, but are still rich in typical plant communities characterized by grasses as well as oak forest groves. Rivers, lakes and other wetlands cover 2,8% of the country (95,000 ha). There are 34 dominant species of aquatic vegetation, and 83 associations, of which 37 are endangered.

B Climate

8. Moldova is located in a temperate continental climate zone. The territory is characterized currently with dry or sub-humid climate ($0.50 \geq AI \leq 0.65$). Certain areas in the South-East have semi-arid climate with an Aridity Index (AI) of ≥ 0.48, and Northern zone and the areas with altitudes above 350-400 meters above sea level have sub-humid and humid climate ($AI \geq 0.65$). Annual mean temperature averages 9.3 ºC, ranging from 7.8 ºC in the north to 9.9 ºC in the south. Climatic seasons are a short and low-snow winter with the coldest month mean temperatures ranging from -2.8 ºC to -5.3 ºC – the coldest values can go down to -30 ºC -, and a long summer with temperatures averaging 20 ºC., temperatures can reach up to 30 ºC, and in some years to 38-41 ºC. Moldova has limited precipitation, ranging from around 600 mm in the northwest to 480 mm in the southeast. The heaviest rainfall occurs in early summer and again in October, often in the form of heavy showers and thunderstorms causing erosion and river silting. Long droughts are frequent for example between 1990 and 2007 alone the country experienced 9 droughts that typically occur in late summer. When combined with high temperatures and hot continental winds these events can severely stress crops and pastures during critical stages in their growth cycle, the record drought of 2007 affected 75-80% of the country area with severe consequences for the national economy.

9. Moldova can be divided into 3 major agro-climatic zones: (i) the Northern zone including the northern plateau along the Nistru river, the Transnistria highlands and the Balti rolling plain, with annual mean temperatures ranging from 6.3-9.7 ºC, and annual precipitation between 550-600 mm; (ii) the central zone covering the Condrii highlands, where hilly terrain and deep valleys alternate, with annual mean temperature between 7.5-10 ºC and annual precipitation from 500-550 mm, up to 60% falling during the crop vegetative period; and (iii) the southern zone including the hilly terrain interspersed with plains and large valleys of the Bugeac plain and the Tigech highlands, with annual mean temperature between 8.3-11.5 ºC and annual precipitation of 450-550 mm. In all cases around half of precipitation falls during the crop vegetative period.

C Economy

10. The Republic of Moldova is among the poorest countries in Europe. Geopolitically, the country has historical ties to the CIS, in particular the Russian Federation, in terms of trade and migration. However, EU accession and strengthening relations with Romania is the country's key foreign policy goal, with far-reaching ramifications for domestic policies and practices in terms of alignment with EU requirements. A milestone has been the entry into a Deep and Comprehensive Free Trade Area agreement with the EU.

This offers better access to the world's largest market but will progressively expose Moldovan producers to greater domestic competition.

11. Moldova is a lower middle-income country with a gross domestic product (GDP) per capita (PPP) of USD 2,290. It ranks 112 out of 189 in the global Human Development Index (HDI), behind Paraguay and ahead of the Philippines with a score of 0.700. Its gross national income (GNI) PPP at USD 5,554 places it behind Myanmar and ahead of Tonga, also in 112th position.[1] Moldova is one of the poorest countries in the European neighbourhood region, but has also been one of the fastest growing. Remittances and record harvests contributed to economic growth of almost 10% in 2013 and 5% in 2014. Moldova's economy benefits from remittances that are estimated to be as high as 26.1% of GDP. The economy is dominated by the service sector, estimated at 63.2% of GDP in 2015, while the agricultural and industrial sectors represented 20.7% and 16.2% of GDP, respectively.[2]

12. In late 2014 Moldova was hit by a number of adverse internal and external shocks. A deterioration in the international environment led to reduced foreign exchange inflows from exports and remittances. The main shock however was the largescale and well-orchestrated fraud in the banking system caused by the opaque shareholder structures, bank governance failures, and weak supervision. As a consequence, three of the main banks closed at a cost of 10 percent of GDP, external concessional financing also had largely been frozen, international reserves fell by one-third, and monetary conditions tightened significantly. Domestic political turmoil, marked by three changes in government, as well as the sudden resignation of the Governor of the National Bank of Moldova (NBM) in September 2015 added to the crisis.[3]

13. In 2018 growth is expected to reach 4.8% benefitting from strong domestic demand and to moderate in the near future with the outlook subject to considerable downside risks stemming from low productivity levels, lower external assistance and inefficient public spending. Foreign and domestic investments could be constrained by political uncertainty and ongoing political polarization, leaving the economy vulnerable to chronic external risks. Extreme weather may affect agricultural output with consequences for overall growth.[4]

D Agriculture

14. Agriculture is a central pillar of the Moldovan national economy and the main source of livelihood in rural areas. It contributes close to 14 percent of the country's GDP (down from 20 percent in 2004), a figure that increases to 17 percent if the food processing industry is taken into account. Important crops are winter and spring grains, including wheat, barley and maize, as well as potatoes and other vegetables and horticultural crops and fruit. Approximately 75 percent of the population live in rural areas and depend on agriculture and related activities for their livelihoods. About 60 percent of the country's agricultural output is produced by individual farmers and household plots of 10 hectares or less.[5]

15. Agricultural output has been subject to high volatility and slow growth, driven by external weather-related factors and since 2000 agriculture has been showing much slower and unstable growth patterns than the rest of the economy. Climatic conditions have been the dominant factor with droughts becoming quite common in recent years. Crop production is particularly vulnerable to climate distress with the years of severe droughts in Moldova (2003, 2007, 2009 and 2012) have had a disastrous effect on general crop production.

E Water

16. Total water consumption in Moldova represents slightly more than 20 percent of the water used in the past. The decline is more evident in the cases of agriculture water use – especially for irrigation – and water consumption for production needs – mainly industrial. According to the estimates, 65-70 percent of water is currently used for industrial heating and cooling and hydro-energy production, 15-20 percent for

[1] UNDP (2018) Human development report. http://hdr.undp.org/en/2018-update

[2] European Union Joint Analysis (2016). Programming in the Republic of Moldova until 2020.

[3] IMF (2016) Country Report No. 16/343. https://www.imf.org/external/pubs/ft/scr/2016/cr16343.pdf

[4] World Bank (Nov 2018) Moldova Economic Update. http://www.worldbank.org/en/country/moldova/brief/moldova-economic-update

[5] FAO. Moldova and FAO partnering to achieve sustainable food systems. http://www.fao.org/3/a-az519e.pdf

drinking and domestic purposes, and 5-8 percent for irrigation. Compared to average figures for 1980s, the share of household consumption has doubled in the structure of water use, while irrigation use has fallen by a third. Water transportation losses, although higher over the past 20 years, still remain at an acceptable 8 percent.

17. In 2007 total water withdrawal was estimated at 1,065 million m³ of which 883 million m³ (83 percent) for industry, 146 million m³ (14 percent) for municipalities and 36 million m³ (3 percent) for agriculture. In 2013, total water withdrawal for agriculture was estimated at 38 million m³. Shallow groundwater is the main source of household water supply in rural areas. About 65 percent of the total population of the country, equal to 100 percent of the rural population and 30 percent of the urban population, uses groundwater as the main source of potable water supply. The remaining 35 percent of the population uses surface water as a source of potable water, including 32.0 percent from the Nistru river, 2.8 percent from the Prut river and 0.2 percent from other surface waters. Taking into consideration different sources of water and various usage restrictions (agreements on transboundary rivers, ecological water resources, etc.), the total economically available water resources in Moldova amount to 5.6 km3, including 4.3 km3 surface water and 1.3 km3 ground water.[6]

18. In the near future, it is predicted that about half of the country's territory, its population and economic potential will be exposed to the risks of water deficit.[7] Solid investments will be needed for the equal distribution of available water; otherwise human development in many regions will be threatened by excess water demand over water supply capacity. Examples of depleted aquifers from unregulated use already exist as in the south-eastern part of the country the unconfined aquifers in the villages are becoming depleted due to diminishing recharge capacity and overexploitation.

19. Future water availability will be aggravated by non-climate related events influencing water availability and quality, as well as have a significant impact on water demand for which population growth and economic development will play a dominant role. The water-intensive national economic development targets to ensure access to water for all water users will be threatened by a changing climate exacerbating available water supplies. It is expected surface water usage will be close to 100 percent by 2020, although after taking into consideration ground water availability, nationwide water scarcity will likely to become a real burden on economic development after 2030.

F Climate Change

20. Moldova ranks as the most climate vulnerable country in Europe[8]. Temperature and rainfall have increased in Moldova over the last century, and severe floods and droughts have been occurring with increasing regularity. During 1984-2006 period, Moldova's average annual economic losses due to natural disasters were about USD 61 million. This trend had changed significantly recently with the 2007 and 2012 droughts having caused losses estimated at about USD 1 billion[9] and USD 290 million respectively. Moldova has also been significantly impacted by floods that in 2008 cost the country around USD120 million and in 2010 around USD 42 million in damages.[10]

21. **Historical Trends.** The historical air temperature anomaly trends for the global and northern hemisphere baselines as well as for Moldova (figure 1) show that there has been an increase in temperature of more than 1 °C in Moldova over the past century, consistent with the global average. This trend is also reflected in the regional temperature charts that are displayed in figures 3, 6 and 9 below, for the three agro-climatic regions (north, central and south). Past temperature trends depict a scenario that corroborates the near-term forecasts (2016-2035), namely that consistent increases in temperature will continue. The recent droughts that have blighted Moldova are illustrations of the trends in figures 2, 5 and 8 that show a continuing decrease in annual rainfall across the three regions. Also noteworthy is the increased

[6] UNDP (2010) NHDR: Climate Change in Moldova.
[7] Sîrodoev I.G., Knight C.G., 2008: Vulnerability to Water Scarcity in Moldova: Likely Threats for Future Development. Present environment and sustainable development 2: 7-15
[8] According to the ND- GAIN1 vulnerability assessment methodology: https://germanwatch.org/en/cri
[9] World Bank (2016) Moldova Climate Adaptation Investment Planning Technical Assistance.
[10] Republic of Moldova 2020 Climate Change Strategy.

incidence of torrential rainfalls across all regions of Moldova since 1981. The frequency of heavy rainfall events has nearly doubled over the period, consistent with the increased incidence of major floods.

Figure 1 Anomalies to baseline on annual air temperatures[11][12]

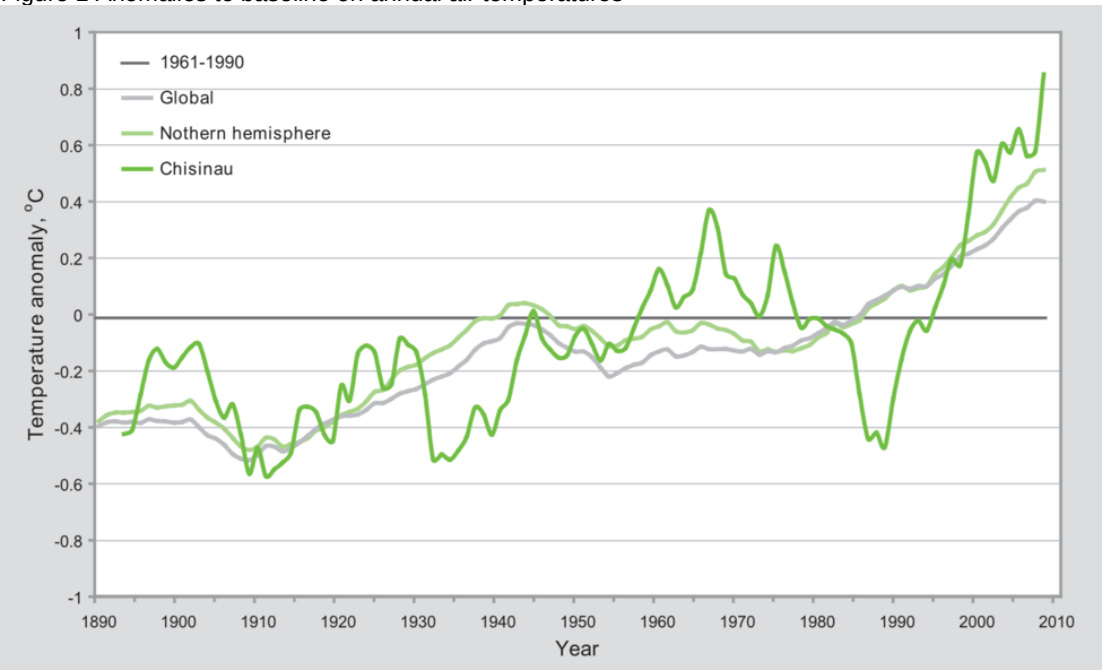


Figure 2 Annual rainfall 1981-2017 Balti (north)

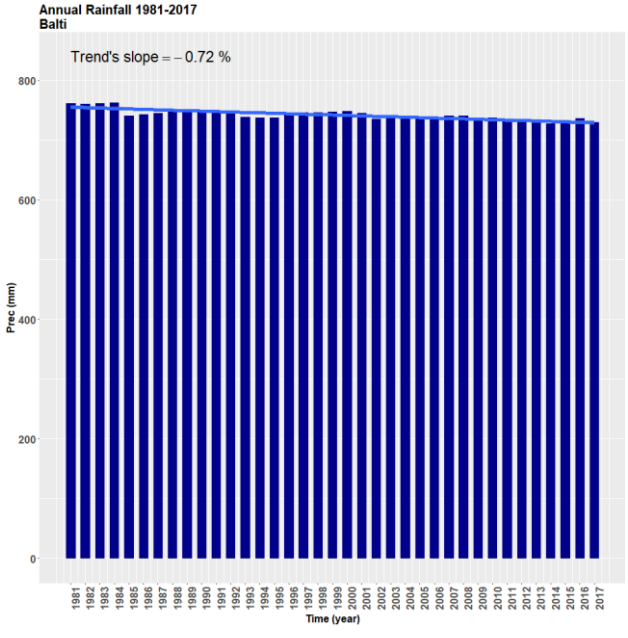
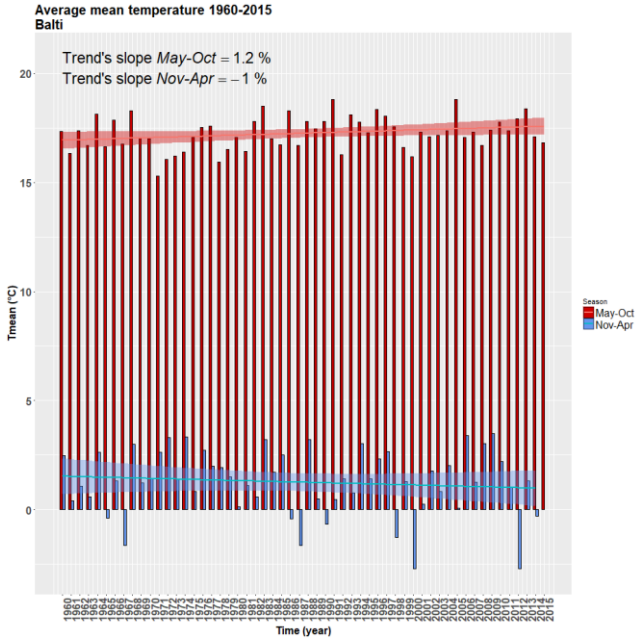


Figure 3 Average mean temp 1960-2015 Balti (north)



[11] Smoothed with 11-year average
[12] UNDP (2010) NHDR: Climate Change in Moldova.

Figure 4 Heavy rainfall events Balti (north) 1981 - 2017

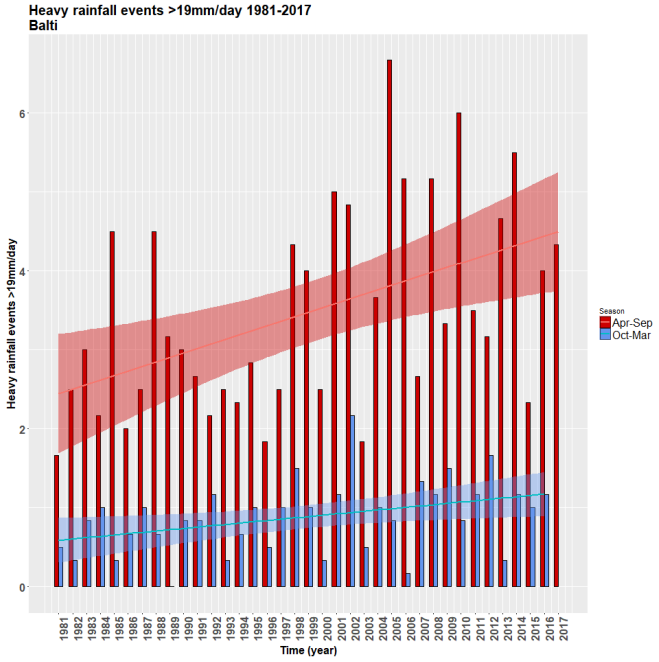


Figure 5 Annual rainfall Chisinau (central) 1981-2017

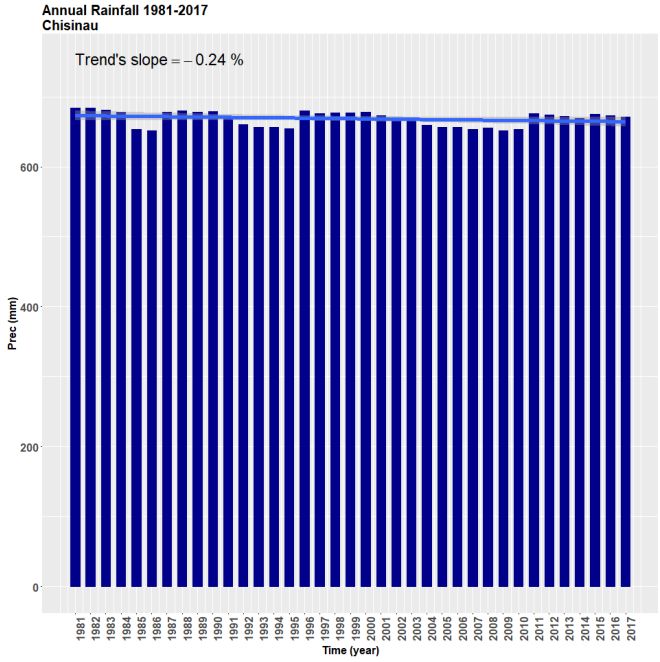


Figure 6 Average mean temp Chisinau (central) 1960-2015

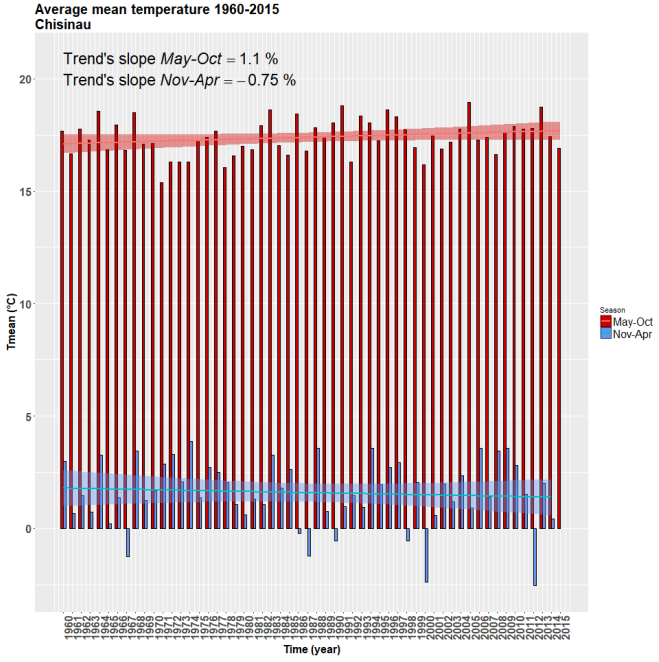


Figure 7 Heavy rainfall Chisinau (central) 1981-2017

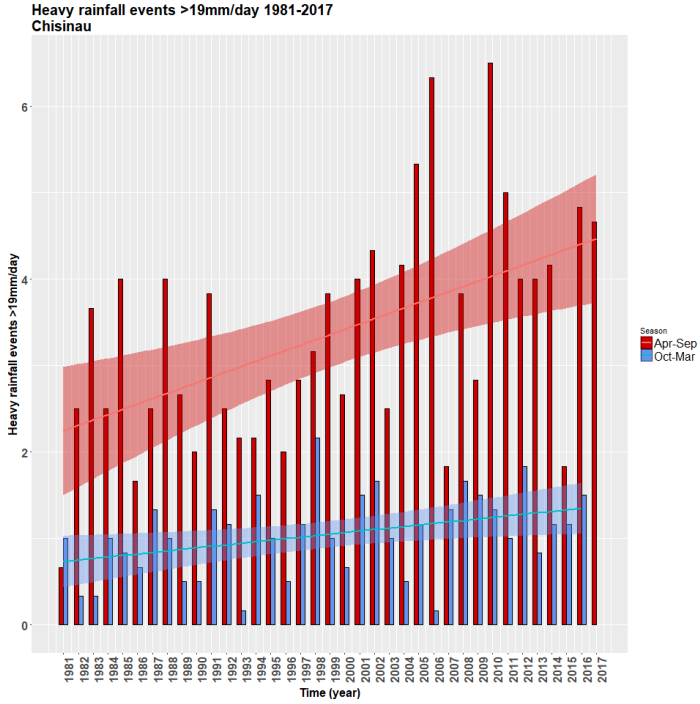


Figure 8 Annual rainfall Gagauzia (south) 1981-2017

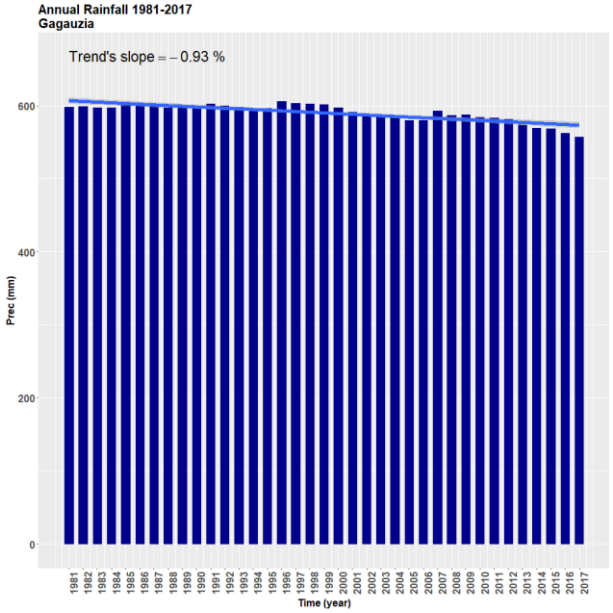


Figure 9 Average mean temp. Gagauzia (south) 1960-2015

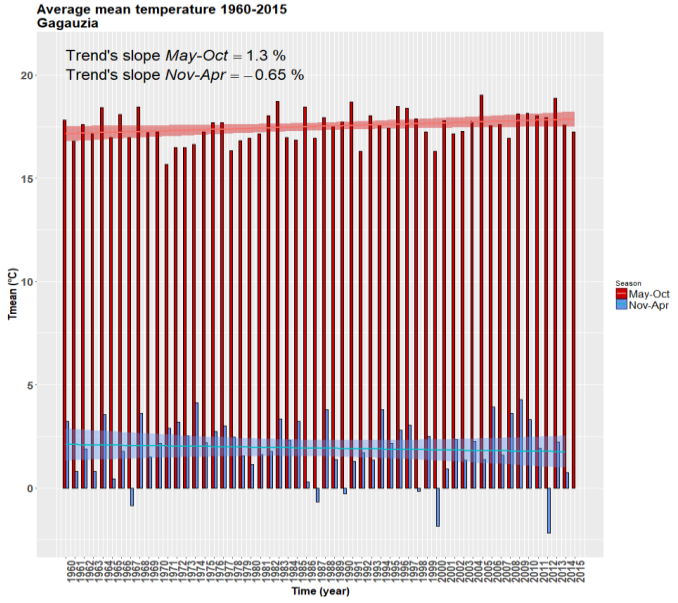
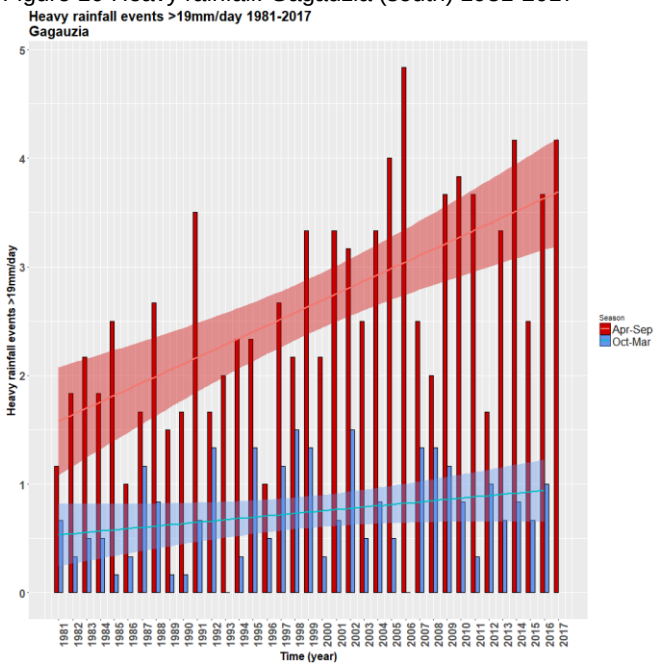


Figure 10 Heavy rainfall. Gagauzia (south) 1981-2017



22. **Temperature climate model predictions** have been made for the 2016-2035, 2046-2065 and 2081-2100 periods of the Representative Concentration Pathways (RCP). The RCP is a greenhouse gas concentration trajectory adopted by the IPCC for its Fifth Assessment Report (AR5). The AR5 depicts four pathways (of which three are represented in this analysis) that have been selected for climate modelling and research. They describe different climate futures, all of which are considered possible depending on the extent of GHG emissions in the coming years. The RCPs are labelled after a possible range of radiative forcing values in the year 2100 relative to pre-industrial values (RCP +2.6, +4.5, +6.0, and +8.5 W/m2). The three selected RCPs project similar mean annual air temperature increases in the short-term of between +0.9 and 1.1°C, significant changes begin to emerge from 2050 onwards. By the

2080's it is predicted that the rate of warming will be higher with an average +4.6°C under RCP8.5, +2.4°C under RCP4.5, and +1.3°C for the RCP2.6 scenario (see figures 11-13 below[13]).

23. **Winter temperatures** in 2100 are expected to increase across the board when compared to the 1986-2005 baseline with the greatest increases expected in the north and central areas of the country. The warming is expected to be higher during winter by up to +4.6°C in the northern agro-ecological zones (AEZs), compared to +4.2 in central and southern AEZs according to the RCP8.5 scenario. The RCP4.5 scenario predicts warming to be a uniform +2.5-2.6°C, while the RCP2.6 scenario ranging from +1.2 to +1.4°C.

24. **Summer temperature** increases are expected to be higher even than in winter, albeit with different spatial distribution patterns, with the highest rises occurring over the southern and central AEZs. The RCP8.5 scenario estimates that the most significant warming during summer will range from +5.9 in northern AEZs and +6.1°C over southern zones by 2100. The pattern of change derived from the RCP2.6 scenario is quite similar, but the magnitude of change is lower from +1.3 to +1.5°C. The corresponding results from the RCP4.5 scenario show medium intensity differences in temperature increase. Estimates of simulations from the RCP4.5 ensembles predict quite uniform levels of warming of up to +2.9°C, over all AEZs.

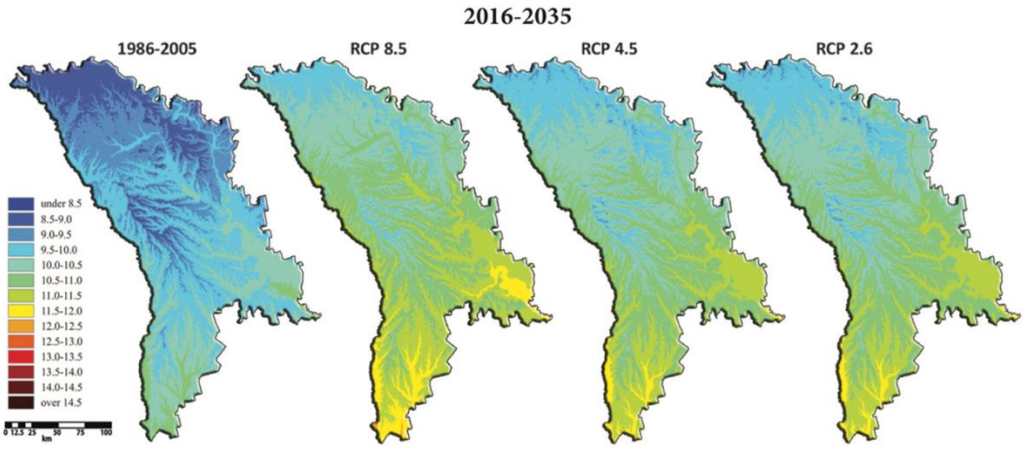


Figure 11 Projected CMIP5 GCMs Mean Annual Air Temperature °C 2016-2035

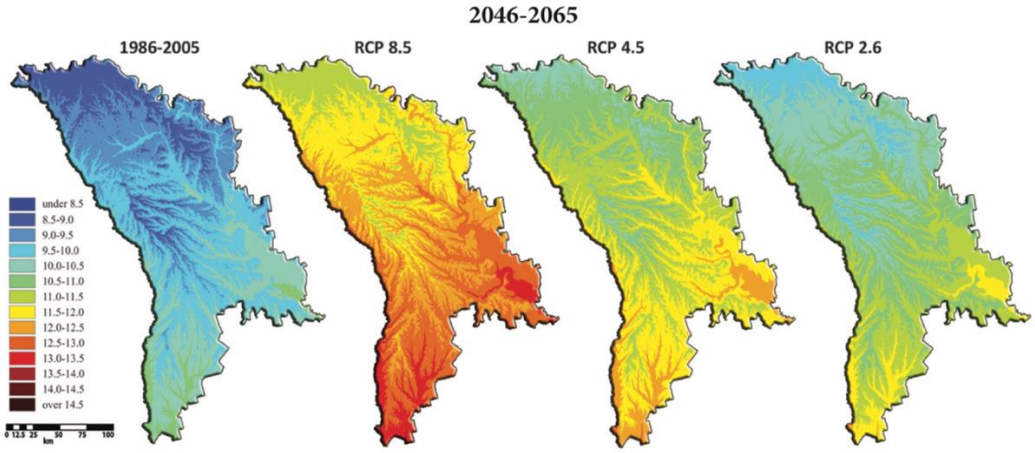


Figure 12 Projected CMIP5 GCMs Mean Annual Air Temperature °C 2046-2065

[13] Source: Moldova Fourth National Communication to UNFCCC

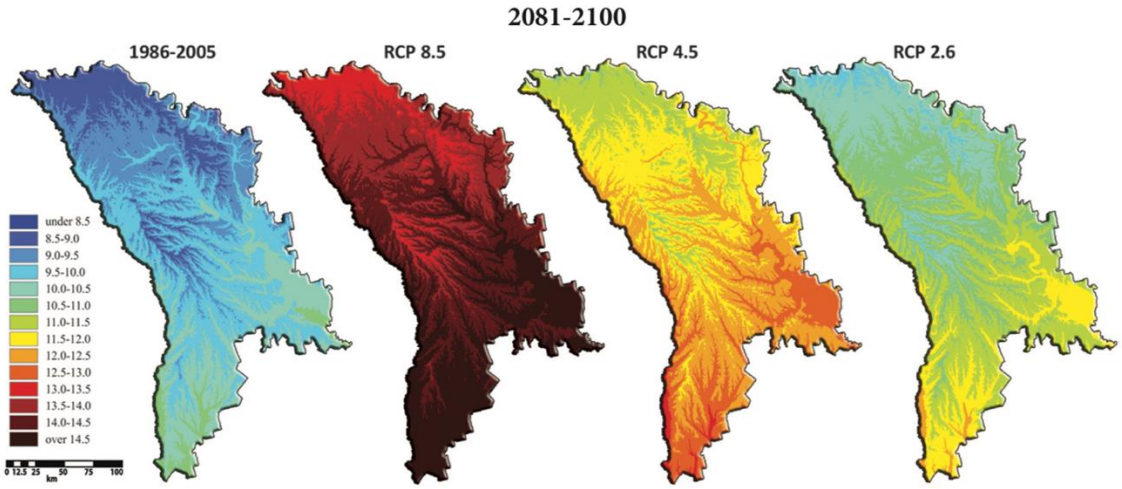


Figure 13 Projected CMIP5 GCMs Mean Annual Air Temperature °C 2081-2100

25. **Annualised precipitation climate models** paint a mixed picture, that may depart from past trends, with RCP8.5 and 2.6 scenarios seeing uniform increases of 0.6-2% in the near future, while scenario RCP4.5 shows there could be slight reductions in rainfall with changes ranging from -1.5 to 2%. By the end of the century Moldova model predictions from the RCP8.5 scenario show general annual decreases in summer precipitation by 9.9% in the northern AEZs to 13.4% in the southern AEZs. Conversely, according to RCP2.6 scenario moderate increases in precipitation are forecast from 3.1% in the north to 5.1% in the south by 2100. The corresponding results from the RCP4.5 scenario show a moderate increase in precipitation from 1.6% to 3.6% only in central and northern zones by 2100, relative to the reference time period 1986-2005 (see figures 14 -16 below[14]).

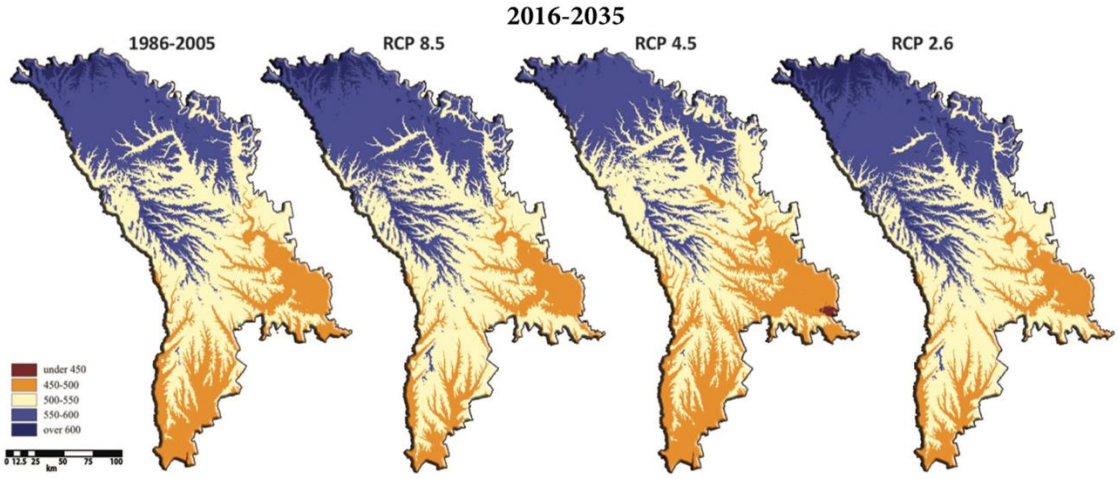


Figure 14 Projected CMIP5 21 GCMs Annual Precipitation, (mm) 2016-2035

[14] Source: Moldova Fourth National Communication to UNFCCC

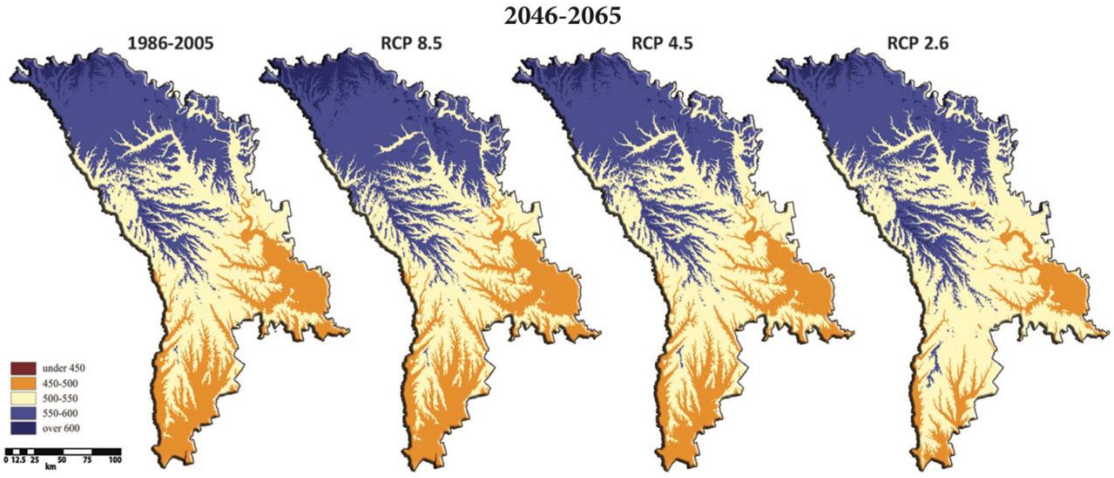


Figure 15 Projected CMIP5 21 GCMs Annual Precipitation, (mm) 2046-2035

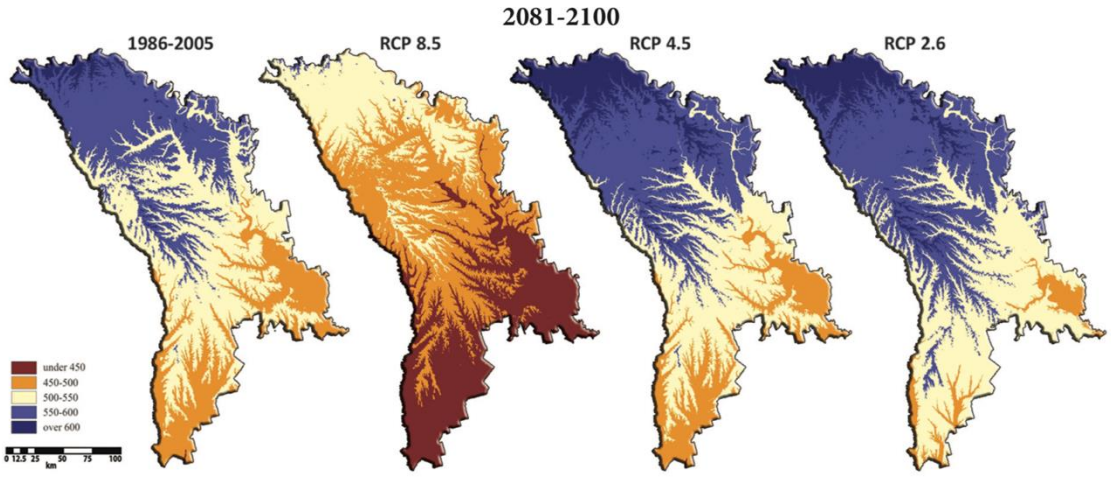


Figure 16 Projected CMIP5 21 GCMs Annual Precipitation, (mm) 2081-2100

26. **Winter precipitation climate models** for RCP8.5,4.5 and 2.6 scenarios show a general increase in rainfall during winter and spring months with the increase becoming more intense in the south during the 2016-2035 period. Multi-model projections from the RCP8.5 scenario show that Moldova would exhibit a moderate winter increase in precipitation varying from 2.0% (RCP2.6) to 5.9% (RCP2.6) over northern and from 2.2% (RCP2.6) to 6.3% (RCP8.5) in southern areas. Conversely, in spring, increase in precipitation is projected to be more intense from 4.9% (RCP8.5) to 7.1% (RCP2.6) across northern and less intense from 2.8% (RCP8.5) to 4.4% (RCP2.6) across southern areas. Winters are estimated to be wetter by the end of the 21st century with projections showing the largest increases in precipitation from 4.0% (RCP2.6) to 11.8% (RCP8.5) in winter over northern areas and the lowest from 3.0% (RCP2.6) to 7.4% (RCP8.5) in the central parts of the country by 2100.

27. **Summer precipitation.** The averages for the three RCP scenarios agree that the precipitation reduction will be much greater during summer and autumn, with all regions expected to experience increased levels of drought conditions. The RCP8.5 scenario predict the greatest summer rainfall reduction of up to 25.1% in central AEZs and 18.1% in northern AEZs. The pattern for the RCP4.5 scenario is quite similar but the magnitude of change is lower, decreasing from 13.2% to 7.4% with greatest differences seen again over the central AEZs and the lowest one over northern ones by the 2081-2100, relative to the 1986-2005 baseline.

28. **Aridity index.** In order to represent the humidity conditions, which are particularly critical for the agricultural sector, Potential Evaporation (PE) and Aridity Index (AI) are included. Projections of future changes in AI and PE place Moldova moving towards a dryer climate, from dry or sub-humid climate to dry sub-humid and semi-arid climate. For all three RCPs scenarios worsening of the humidity conditions throughout the territory is expected. Reduced rainfall in the summer and autumn period (not compensated by a slight increase in winter and spring precipitation) against a backdrop of rising temperatures will cause a strong moisture deficit and a sequential increase of the potential evaporation over the coming century. Potential evaporation is likely to increase by 7-11 percent during the growing season over the 2016-2035 period, and run up to 42-47 percent by the 2081-2100 period.

G Climate Change Impact.

29. **Extreme weather events:** (i) Heat weaves: Projections suggest that what were considered as extreme rare events for absolute maximum temperatures under the baseline climate will possibly become mean maximum summer temperatures; the frequency of hot days with temperatures above 30°C simulated by the HIRHAM4 model[15] for the period 2071–2100 in Moldova, may reach 60 to 90 days a year, compared to 10 to 30 before the 1980s. (ii) Heavy rainfall and damage from hail storms: on average, it will become (with 66% probability) more frequent, either in absolute terms or as a proportion of total precipitation – less number of rainy days with a higher proportion of heavy rain events. In summer, the frequency of wet days is projected to decrease, but the intensity of extreme events is projected to increase. These changes in heavy rainfall events have implications for crop damage through flash flooding, hail storms, urban drainage, water management, erosion, slope stability and ground water recharge. (iii) Drought: The combination of higher temperatures and reduced mean summer precipitation is expected to increase the frequency and intensity of droughts, with increases in the number of consecutive dry days defined as those with precipitation below 1 mm. In southern European countries like Moldova, where the maximum number of dry days is likely to increase most substantially, the longest dry period within a year may be prolonged by one month by the end of the century. The National Hydro-meteorological Centre concluded that, based on records from 1834-2000, the probability of catastrophic droughts (less than 50% of mean rainfall) has increased significantly, from one event every nine years to almost one event every two years.

30. **The economy** is particularly vulnerable because of the limited capacity of its social and productive structures, and its heavy dependency on climate-sensitive sectors such as agriculture. Historical records show increasing temperature trends with 7 among the 10 warmest years in recorded history in Moldova have occurred in last 2 decades. Farmers are not properly prepared for the changes that are presented in the climate models, and the agricultural sector is particularly vulnerable to climate shocks. Past drought events have had a severe impact on agriculture in Moldova with the event of 2006/7 seeing yields of major crops like wheat, maize, and sunflowers being reduced by up to 50–75 percent. Droughts vary in duration from a few days to several months, however in the years (1990, 1992, 2003) the events have extended throughout the active growing season (April - September) causing particular negative agricultural impacts.

31. The economy of Moldova already bears significant costs from climate extremes and foregoes potential benefits and these real and opportunity costs will continue to grow with a future changing climate. Potential savings from better protection against current harmful climate impacts are estimated to be substantial, amounting to more than USD 100 million per annum in total. These are mostly due to damages caused by flooding and a variety of weather impacts on agriculture, as well as the cost of climate-related health impacts (extreme heat mortality and food-borne disease). The present total cost of inaction on climate adaptation is estimated at around USD 600 million, equivalent to 6.5% of GDP. This value is expected to more than double in real terms by 2050 to around USD 1.3 billion.[16]

32. **Water.** The most recent projections of climate change impacts on the water resource of Moldova are quite pessimistic, indicating that the 2 major basins of the country (Nistru and Prut) will experience 15.9%, 36% and 57.7% decline in available surface water resources for the 2020s, 2050s and 2080s

[15] The high resolution Hamburg regional climate model (HIRHAM4) estimates changes in maximum temperatures averaged over June– July–August (hereafter referred to as summer Tmax) for Central and South-East Europe of +4-6 °C in their mean values and of +6-8 °C – in their 99% quintiles.

[16] World Bank (2016) Moldova Climate Adaptation Investment Planning Technical Assistance.

respectively. Significant shifts in water demand and increased competition for water are likely to occur across all economic sectors in the coming decades. According to the water intensive target of national economic development, secure supply of surface waters for all water users will be threatened already in the 2020s, and groundwater supply as well by the 2030s.

33. Climate change will lead to an increase in the instability of annual flow and an increase in spring and early summer flash floods. Winter and especially transitional months will be the most affected by water temperature increases diminishing dissolved oxygen (DO) levels. Already by 2020s, water temperature increase in the Nistru river could exceed 65% in March, and the DO level could decrease by about 10% by the 2020s in the summer months. Such a change will lead to ecological changes and the degradation of the ecosystem services meaning that the agricultural sector needs to improve adaptive techniques such as mainstreaming CA and introducing climate smart water efficient technologies, both at the beneficiary but also at institutional levels.

H Target Groups and Project Area.

34. The aim of the project is to build climate resilience into the agricultural value chain, while at the same time improve productivity, product quality, food security and reduce poverty. It will do this through the promotion of climate resilient agricultural techniques, water-efficient climate smart irrigation technologies, DRR approaches to mitigate against hail storms, capacity building, awareness raising and improving governance through policies, strategies, laws and legislation that will benefit CA and sustainable water management (SWM). The Talent Retention for Rural Transformation Adaptation Component TART-Adapt will be fully integrated into the USD 27 M IFAD Talent Retention for Rural Transformation (TART) project, for which there will be a combined full-project design mission in April 2019. The targeting strategy of TART-Adapt will be fully aligned to that of TART, the target groups and targeting criteria will be further developed during the TART design mission and presented in the full TART-Adapt project proposal. At the concept stage however, preliminary analyses have been carried out and criteria determined as detailed below.

35. **Target group analysis.** Rural population involved in agriculture practices in Moldova can be divided in three categories: (i) Smallholder poor farmers with small land properties, who crop their land and own livestock, with limited access to loans; (ii) Small and medium rural entrepreneurs “leaders” that consolidated the land into large plots by renting part of the land to rural residents, sometimes financially backed by investors; they are the major economic driving force in rural areas accounting for a significant portion of employment (permanent and seasonal) and investments; (iii) Rural residents that rent the whole or most of their land to “leaders” account for about 70% of the rural residents, and are not engaged in farming (apart from home garden and poultry); leasing agreements with farming “leaders” are often verbal and fees are in-kind through the provision of agreed quantities of crop production (about 15-20% of average harvest yields).

36. **Target Group.** Project targeting will be fully aligned with TART. For component one, over the four-year project cycle it will target 14,000 productive poor smallholder households working on climate vulnerable land. The Adaptation Fund grants targeting these smallholders will be part of a package and will complement the TART package of credit and matching grants to overcome challenges of limited assets and short credit histories. Of the total TART financing package, the grant element will constitute 40 percent whereas the credit element 60 percent. The groups of smallholders will be climate vulnerable small holders owning between 1 ha and 10 ha of land with a participatory selection process and quotas for women and youth set at 30 and 40 percent respectively. The targeting strategy for the first component will also include water user associations and the training of trainers and extension workers. In component two the project will mainly target ministry and institutional staff for capacity building and improved governance for CA and SWM mainstreaming and upscaling. Capacity building for civil society in policy, strategy, legislation and the designing of laws to benefit CA and SWM, will also be extended to Non-Governmental Organisations (NGOs), water user associations and research institutions.

37. **Geographical Targeting.** The project will identify candidate areas in the 3 agro-climatic zones of Moldova, as all of them are highly vulnerable to soil degradation and climate change impacts. The geographical targeting will take into account: (a) social, poverty and demographic indicators, (b) sites where environmental stressors are more severe and are affecting the ability of the ecosystem, the cropland productivity, and the rural households to be resilient to climate change, and (c)

complementarities with relevant ongoing and planned IFAD and UNDP initiatives. The three agro-climatic zones are described as follows:

38. **South agro-climatic zone:** According to the climate change scenarios for Moldova, predictions indicate that some parts of this agro-climatic zone will experience a new bio-climate ("semi-arid") that will gradually become predominant by the end of the century, while the water deficit will be exacerbated. Surface erosion and ravines highly affect the western part of this agro-climatic zone. This zone has the higher poverty percentage, and small households are very much dependent on livestock and grazing, which are severely affected by the more frequent and intense drought periods.

39. **Central agro-climatic zone:** CC predictions conclude that the southern agro-climatic zone dry sub-humid conditions will shift into most parts of the central zone (except for the highlands of the sub-zone, where insufficient wet conditions will shift to wet sub-humid); it is likely that semi-arid conditions will reach the south-eastern part of the zone in the Anenii Noi district, near Chisinau. This means that the chronic problems of water deficit from the southern region will spread into the central zone. Very high surface erosion and the risk of landslides already affect significant parts of this agro-climatic zone, and will be aggravated by the expected concentration of the annual rainfall in short events of heavy rain.

40. **North agro-climatic zone:** CC predictions for the project point out that the southern agro-climatic zone dry sub-humid conditions will shift into the sub-zone and the southern half of sub-zone; this will represent a major shift of bio-climate conditions with potential dramatic effects in terms of water deficit. In the northern extreme, insufficient wet bio-climate conditions will shift to wet sub-humid. High surface erosion and ravine formation already occur in the southern parts of the sub-zone, although laminar erosion affecting the humus horizon is widely spread in the whole agro-climatic zone.

Project Objectives

41. The integrated water resources management (IWRM) approach of the project ensures improved water management and soil conservation and regeneration. This will result from improved capacities in the design and implementation of conservation agriculture strategies, policies, laws and legislation. The project will disseminate climate-resilient water-efficient and soil conservation agricultural technologies for 14,000 climate vulnerable productive-poor smallholders. It builds upon lessons learned and best practices in the Moldovan context with proven substantial increases in crop yields, quality of produce, minimal water consumption and reduced labour costs in time and money.

42. **Objective.** The overall objective of the project is to enhance climate change adaptation and food security through facilitating access to climate resilient technologies and enhancing policy and decision-making capacities.

43. The project will achieve the stated goal and objective through two outcomes:

> **Outcome 1.1:** Water conservation, climate smart water efficient technologies, techniques and DRR solutions promoted and implemented.
>
> **Outcome 2.1:** Enabling environment strengthened for CA and sustainable water management mainstreaming and upscaling.

Project Components and Financing

Table 1 Project components and financing

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Mainstreaming climate change adaptation into water and landscape management.	1.1.1 Stakeholder mapping, needs assessments and workshops delivered to determine regional priorities and appropriate water efficient technologies and DRR options in central and southern regions.	Knowledge improved through a baseline assessment, the identification of water saving technologies and DRR solutions as well as the production of a final report.	80,000
	1.1.2 Awareness raised through the production of leaflets, posters, radio, TV and internet campaigns.	Awareness raising on CC, CCA, CA, and the importance of water conservation.	100,000
	1.1.3 Training programmes designed and trainers of trainers trained for TART FFS programme.	Capacity build and awareness raised at beneficiary and policy level on climate change and water scarcity.	100,000
	1.1.4 Beneficiaries identified and grant equivalent assets disbursed for innovative water saving technologies.	Improvements in water efficiency and agricultural productivity, providing additional food security and DRR in case of a climate event.	4,000,000
2. Strengthen the enabling environment to support conservation agriculture and SWM mainstreaming.	2.1.1 Needs and knowledge gap assessment delivered.	Improved knowledge and capacity through training programmes designed for all levels (ministerial, research and farmer associations).	50,000
	2.1.2 Training programmes designed and implemented through online courses, classroom courses, internationally accredited diploma / masters and exchange programmes	Improved participant capacity in all areas necessary to mainstream CA and SWM nationwide.	500,000

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
	2.1.3 Relevant CA/SLM/CCA legislation, laws, bylaws, policies reviewed through workshops and key stakeholder interviews at local, regional and national levels.	Improved understanding of the current landscape through a report detailing relevant policies, strategies, laws and legislation.	150,000
	2.1.4 Verification and confirmation of 2.1.3 review findings through multi-stakeholder workshop.	An informed, participatory and consultative assessment of output 2.1.3 producing possible relevant CA/SLM/CCA legislation, laws, bylaws, policies for implementation.	20,000
	2.1.5 A governance expert hired to assist, guide and help formulate CA/SWM policy, strategies, laws and legislation.	two existing CA/SWM sector policies and CA/SWM strategies; at least one law or legislation modified or introduced to benefit CA/SWM.	80,000
6. Project/Programme Execution cost (9.5%)			482,600
7. Total Project/Programme Cost			5,562,600
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (8.5%)			472,821
Amount of Financing Requested			**6,035,421**

Projected Calendar:

Table 2 Project milestones

Milestones	Expected Dates
Start of Project/Programme Implementation	2020
Mid-term Review	2022
Project/Programme Closing	2024
Terminal Evaluation	2024

PART II: PROJECT JUSTIFICATION

Project Components.

44. The promotion of sustainable water management and of conservation agriculture are at the core of TART-Adapt and together form the IWRM approach of this project. This approach addresses the need of CA and climate smart, water efficient agricultural technologies for adoption by smallholder farmers. In view of the outlined climate change scenario facing Moldova, better environment and natural resource management (ENRM) is needed to reduce the effects of water scarcity and improve DRR. To better achieve this, TART-Adapt builds upon two pilot projects in Moldova namely on climate smart water efficient agricultural technologies[17] and CA by FAO and IFAD/Global Environment Facility (GEF) respectively. Through this approach the Adaptation Fund benefits from the lessons learned and best practices of the FAO project, but also from the ongoing CRCA project as preliminary results specifically identify a lack of decision making capacity in formulating CA and SWM policies, strategies, laws and legislation.

Component 1: Mainstreaming climate change adaptation into water and landscape management (USD 4,280,000).

45. Water is crucial for agriculture and food production. It is required to meet personal and household needs, for energy and industrial production, and to maintain important water-dependent ecosystems and ecosystem services. Moldova is located in an insufficient wet zone which results in a high frequency of droughts, particularly in summer. Low amounts of precipitation constitute the main natural factor which contributes to insufficient humidity levels. The extent of the impact that droughts can exert on the agriculture of Moldova was demonstrated in 2000, 2003 and most severely in 2007. The only solution for offsetting insufficient rainfall is artificial land irrigation, but it is not universally applicable in the whole country.

46. During the Soviet period, there were about 100 centralised irrigation systems that were used to irrigate 310,000 hectares of land, but in the 1990s the irrigation system gradually went out of use. Out of the 145,000 hectares of land with irrigation potential on the right-bank of the Dniester, only 4,000 hectares were irrigated in 2001. The drought of 2007 had a significant impact on farmers' and the government's approach to irrigation, it was realised then that high-performance agriculture in Moldova is impossible without irrigation.

47. The most widespread irrigation systems in Moldova are irrigation by canals, by sprinkler and drip irrigation, that are used for field crops, vegetables, orchards and vineyards on large farms. Drip irrigation has introduced to modern agriculture the concept of combining fertilisation with irrigation, using the irrigation water to distribute the fertiliser. Although considered the most efficient system for orchards and vegetable plantations, drip irrigation is not widespread among smallholders in Moldova.

48. In order to ensure food security and a stable harvest of the main crops it is necessary to irrigate a total of 300,000 hectares of land, and national efforts funded by a grant from the European Commission have been underway to renovate efficient irrigation networks and build new irrigation systems. Despite this, enlarging the irrigated areas may ultimately be unfeasible in the long run if climate projections for increased water scarcity materialise.

49. Greater importance therefore needs to be placed on examining how to increase the efficiency of irrigation networks through improving water efficiency in the agricultural sector. Improving water efficiency on the farm can take many forms, all of which are unique to the business needs of each individual smallholder. The grants made available to the farmers in the form of assets together with the larger TART financing mechanism, will help farmers meet these needs. As the FAO pilot, summarised in annex 2 has demonstrated, the required technologies can vary. The April 2019 IFAD, design mission will help narrow down the specific targeted value chains or targeted enterprises. Preliminary assessments however by the concept design team, identified potential areas of support as being closed water greenhouse systems, for water recycling and minimising waste; capacity building and awareness raising on arid landscape agricultural practices such as in situ water

[17] See annex 2 for more information.

harvesting techniques to collect, concentrate and store water at the crop root zones (tied ridging and moon ridges); as well as soil conservation methods that control erosion (mulching, terracing); and drip irrigation.

50. Experts emphasise that drip irrigation would be the most efficient approach and could generate high revenues for farmers if used in orchards, vineyards, and in vegetable growing with investments recoverable in one year. The outcome of drip irrigation however varies according to the agropedoclimatic zone of the country. In the north, irrigation may contribute to 30 to 40 per cent increase in harvest yields; in the centre by 1.4-1.8 times and in the south by 1.8 to 2.5 times. Irrigation provides the greatest benefits in zones already experiencing water scarcity and which are expected to face more severe deficits under conditions of climate change.[18]

51. Storms has also historically caused significant damage to crops. In 2008 and 2010 alone storms have accounted for over USD 160 M worth of damages. The main cause has been one of floods, however damage to crops from hail storms are increasing in frequency and intensity due to climate change. To address and mitigate this, the project will promote a disaster risk reduction (DRR) approach to support those farmers interested to install hail nets. Hail nets are multi-purpose and can also be used by the farmers against pest invasions, a phenomenon that is also associated with increasingly variable climates.

Outcome 1.1: Water conservation, climate smart water efficient technologies, techniques and DRR solutions promoted and implemented

1.1.1 Stakeholder mapping, needs assessments and workshops delivered to determine regional priorities and appropriate water efficient technologies and DRR options in Central and Southern regions.

1.1.2 Awareness raised on CC, CCA, CA, and the importance of water conservation through the production of leaflets, posters, radio, TV and internet campaigns.

1.1.3 Training programmes designed, trainers of trainers and beneficiaries trained.

1.1.4 Beneficiaries identified and grant equivalent assets distributed for innovative water saving technologies.

52. Water conservation practices will help the productive poor climate vulnerable smallholder farmers store and make use of water more efficiently. Research on technologies required to adapt to future changing water availability, has shown to produce results that differ depending on geographical location and target group in Moldova. The project will therefore carry out a needs assessment to assess the appropriate techniques and approaches relevant to each geographical area and agricultural sector. This will be facilitated through multi-sectoral workshops including with international development partners; government agencies; research institutions; and business, farmer and water user associations. A report will be produced and recommendations made that will help design training programmes and will be implemented through farmer field schools (FFS) and ministry field extension services. They will promote the wide dissemination and adoption of best practices and contribute to the sustainable management of water resources in the context of climate change.

53. The Adaptation Fund will support 14,000 productive poor, climate vulnerable smallholder farmers with USD 4 M in grants targeted at promoting the use of innovative efficient water collection, storage and distribution technologies and approaches. The Adaptation Fund grants will complement the TART financing mechanism where the package of credit and matching grants aim to help overcome challenges of limited assets and a short credit histories. Of the total TART financing package, the grant element will constitute 40 percent whereas the credit element 60 percent. The mechanism of implementation, the setting of beneficiary eligibility criteria and grant distribution will be further developed by the IFAD TART and TART-Adapt project design mission in collaboration with the Government of Moldova (GoM) in April 2019.

54. The component will also have a knowledge management output with the production and distribution of climate change awareness material, including on the importance of water conservation, water harvesting and general efficient water utilisation. This will be done through the production and distribution of leaflets posters, television and radio programmes and a website. CCA and water

[18] UNDP 2009/10 HDR Moldova – Climate Change in Moldova. Socio Economic Impact and Policy Options.

conservation awareness training will also be carried out alongside the nationwide TART value chain platforms where the knowledge material will be widely distributed.

Component 2: Strengthening the enabling environment to support conservation agriculture and SWM mainstreaming (USD 800,000).

55. Conservation agriculture (CA) is an application of modern agricultural technologies to improve production while simultaneously protecting and enhancing the land resources on which production depends. The application of CA promotes the concept of optimising yields and profits while ensuring provision of local and global environmental benefits and services. CA is based on the principles of rebuilding the soil, optimising crop production inputs, including labour, and optimising profits. In deference to other approaches, conservation agriculture promotes a series of principles to achieve conservation objectives, rather than a particular technology. Through CA, farming communities become providers of more healthy living environments for the wider community through reduced use of fossil fuels, pesticides, and other pollutants, and through the conservation of environmental integrity and services.

56. CA promotes minimal disturbance of the soil by tillage (zero tillage and direct sowing), balanced application of chemical inputs, and careful management of residues and wastes. This reduces land and water pollution and soil erosion, reduces long-term dependency on external inputs, enhances environmental management, improves water quality and water use efficiency as well as the reduction of GHG emissions. CA provides good results at small and large-scale farming and it is adaptable to climate change related problems such as reduced rainfalls. CA allows for increasing soil productivity while requiring less labour than traditional methods. Higher outputs provide higher income; even if market access conditions or crop prices remain unvaried.[19]

57. Since smallholders are among the poorest in Moldova they stand to benefit from CA. CA has in fact been recommended by the UNDP Mpldova National Human Development Report (HDR) of 2009/10 as a means of climate adaptation in agriculture. It formed one of the 10 strategic priorities of the former Ministry of Agriculture Food and Industry (MAFI) at least since the 2011-15 strategy and remains so in the current 2014-2020 National Strategy for Agricultural Development. CA in Moldova has recently been introduced by FAO and also IFAD with a USD 4.2 M GEF Special Climate Change Fund (SCCF) support in the form of the Climate Resilience Through Conservation Agriculture (CRCA) project. The project complements and builds climate change resilience into the larger USD 13.8m IFAD programme for Inclusive Economic and Climate Resilience with concrete awareness raising and farming activities. One of the outcomes of the project will be to develop a roadmap for the scaling up of CA beyond the project intervention which is due to for completion in 2020.

58. CA is still a new concept in Moldova despite having been around for a long time and, as elsewhere, farmers and policy makers have been cautious with the introduction of innovative and unfamiliar agricultural practices. One of the preliminary lessons learned from the CRCA project has been the identification of bottlenecks both at the smallholder farmer but also at ministerial, research and civil society levels more generally in accepting CA and devising national strategies and policies to promote CA. It has already been identified that for CA to be more broadly accepted and implemented, a concerted effort needs to be made to raise awareness about climate change, the impact of climate change on the agricultural sector in Moldova, but also on CA as a form of CCA that will provide benefits to farmers as well as the environment and functions as a form of DRR.

59. The rationale for this component is based on the recognition that national coherent policy frameworks and the mainstreaming of CA in sectoral national policy planning are fundamental to creating an enabling environment to support CA in Moldova. Following dialogue between IFAD and the GoM for this concept design, a clear expression of interest on part of the government was made for support in CA policy development for the promotion of CA as a means of combating water scarcity. Political will for CA mainstreaming and upscaling is essential for project success and is consistent with the National Strategy on Agriculture and Rural Development (NSARD). This component therefore aims to enhance policy, legal and institutional frameworks in support of CA and in doing so increases the advantages farmers can get from the use of CA techniques in their production systems.

60. Government must have the capacity to articulate its vision, set strategic objectives, define outcomes, identify trade-offs, formulate action plans, and negotiate and agree individual contributions to the

[19] Dumanski, Julian & Peiretti, R.A. & Benetis, J & McGarry, D & Pieri, Christian. (2006). The paradigm of conservation tillage. Proceedings of the World Association of Soil and Water Conservation. 58-64.

fulfilment of these plans. While individual smallholders may adopt CA practices, the adoption of CA across the landscape depends on a coordinated response guided by a strategic vision integrating productivity, connectivity, conservation, and CCA goals. The meetings held as part of the design of this concept have identified knowledge and capacity gaps not only in terms of CCA and CA at ministerial levels that hinder the scope of future upscaling, but also in the capacity to formulate policies and design and implement strategies at decision-making levels. The second component of this project will hence focus on carrying out capacity assessments and strengthening the identified knowledge gaps in CA but also sustainable water management (SWM) through awareness raising and training activities at beneficiary, civil society, research, and ministerial levels. The activities will be as follows:

Outcome 2.1: Enabling environment strengthened for CA and sustainable water management mainstreaming and upscaling.

2.1.1 Needs and knowledge gap assessment carried out for CA policy and strategy development training.

2.1.2 Training programmes developed and exchange visits arranged.

2.1.3 Relevant CA/SLM/CCA legislation, laws, bylaws, policies reviewed through workshops and key stakeholder interviews at local, regional and national levels.

2.1.4 Verification and confirmation of output 2.1.3 findings through multi-stakeholder workshop.

2.1.5 An existing CA sector policy, a CA strategy and at least one law or pieces of legislation modified or introduced to benefit CA.

61. The adoption of new and unfamiliar agricultural practices is typically a challenging process as non-leader smallholder farmers tend to hesitate to take risks and break with generations of traditional approaches. In view of overwhelming scientific research on CC and on CA as a means of CCA - hereby ensuring future food security and sustainable environmental management - IFAD with GEF SCCF financing is currently supporting the implementation of the GoM national CCA and agriculture strategies by working with farmers to raise awareness and build capacity in CA through its CRCA project. It is supporting the creation of platforms for value chain actors, researchers, individual farmers, agriculture companies, forest managers, providers of extension services, governmental staff, educators and NGOs to help build awareness about CC and capacity in CA as a form of CCA. It is also in the process of conducting research to better inform future upscaling of CA in Moldova that been confirmed by the findings and meetings carried out by the concept design team.

62. Hesitation towards CA is not only limited to smallholders but is also present at ministerial levels. Knowledge gaps and capacity building opportunities at ministerial levels have also been identified in the ability to design and implement sector strategies, and the design and implementation of national policies and legislation. Ministerial support is necessary to mainstream CA at national level to develop and implement national strategies, policies and legislation supporting CA. In order to achieve this the project will conduct a multi-stakeholder and cross-sectoral inception workshop to help generate awareness and provide context and direction. It will also carry out a review of all relevant SLM and CA legislation, bylaws, policies and enforcement mechanisms at the local and regional levels. This will initially be achieved through the designing of surveys and questionnaires for key stakeholder interviews and consultations. Participatory workshops in the project areas will also be held in order to identify regional legislative and policy landscapes, gaps, challenges and identify priorities.

63. At the civil society, regional and ministerial levels, the component will carry out needs and training assessments. Trainings will be held on CA, CC, CCA and SLM more generally, but also on how to develop and implement sector strategies, policies, laws and legislation. Training will be a combination of web-based online training, classroom-style training as well as internationally accredited diploma and/or masters courses and exchange visits to witness best practices in other countries. This component will ultimately produce or revise two existing agriculture policies and at least one law or legislation will be modified or introduced to benefit CA.

Economic, Social and Environmental Benefits.

A Environmental Benefits

64. Climate adaptive and environmental benefits are at the basis of both components of TART-Adapt, made possible through Adaptation Fund support that help mitigate the identified adverse

environmental and climate risks from a changing climate - in terms of future water scarcity the impact this will have on agricultural production and food security. Through a participatory approach the project will ensure that appropriate and innovative water saving measures will be identified and adopted by climate vulnerable smallholders. Based on research carried out for the concept, tentative activities will include drip irrigation - that has been recognised by experts as the most efficient approach for use in orchards, vineyards, and in vegetable growing; rainwater harvesting tanks; closed water greenhouse systems; and other innovative technologies that will be proposed as a result of the participatory consultative workshops. Awareness will be further raised at every value chain platform organised by the TART project, this will be a cost-effective opportunity for TART-Adapt to distribute leaflets and knowledge material about climate change and the benefits of water conservation.

65. In CA the combination of no-till, mulching, intermediate crops, and crop rotation significantly increases the resilience of rainfed agriculture to drought, improves soil conditions through lowering of soil temperatures, increasing soil humidity and crop yields in comparison with traditional ploughing practices. CA also contributes a number of other environmental co-benefits from the local to global levels. Notably, reduced/no till, agriculture residues as mulching and crop rotation will significantly improve soil carbon stocks and reduce CO^2 emissions into the atmosphere. This will furthermore protect biodiversity in agro-forestry ecosystems, and reduce the risk of desertification. Component 2 will facilitate future upscaling and mainstreaming of CA and associated benefits at the national level through the modification of existing and/or the introduction of two new CA sector policies and strategies. At least one law or legislation will also be modified or introduced, as well as supporting knowledge management and capacity building in CA.

B Social Benefits

66. The social benefits of TART-Adapt are multiple and are both direct and indirect. The direct social benefits will result from the improved water management practices that will produce tangible results. Irrigation alone consumes 8-10% of water in Moldova nationally, although due to unregulated water extraction, local aquifers have been known to being depleted faster than they can be replenished. This is creating water stresses that will be exacerbated during times of drought - which happens fairly regularly and are predicted to increase in the near future. The percentage of water consumption by the agricultural sector increases when businesses along the agricultural value chain are included. This will be particularly the case under the TART programme as it aims to promote rural economic growth and reduce poverty by improving access to new job opportunities both on- and off-farm. TART-Adapt will therefore increase farm productivity, improve food security and income while reducing the vulnerability of climate vulnerable farmers to water stresses in the case of drought. It will build climate resilience through the promotion of water efficient and DRR technologies in a nationwide programme aimed singularly at job creation including for youth and women.

67. Women in Moldova make up 36 percent of the workforce in the agricultural sector, the project will therefore reflect this by ensuring that 30 percent of the beneficiaries are women. The target area of the USD 27m TART project is the entire country within which 14,000 productive-poor smallholder farmers will benefit with the capacity to reduce climate vulnerability through improved water efficiency while simultaneously reducing food insecurity by increasing production and sales.

68. The secondary social benefits produced by this project are associated with those resulting from CA, as the outcome of the project will directly facilitate the upscaling of CA but also SWM at the national level. The project will build national leadership awareness through developing strategies, policies and laws and legislation that will be benefit CA and SWM. By supporting the mainstreaming of CA nationwide the project will help upscale a form of agriculture that is environmentally sustainable but also lessens human inputs, in both time and effort allowing farmers to pursue other livelihood options. Since smallholders are among the poorest in Moldova, they will benefit widely from more stable yields and economic benefits, as well as from increased alternative income opportunities.

C Economic Benefits.

69. Since 2007 droughts in Moldova have been estimated to have cost nearly USD 1.3 billion in damages. These disasters have been increasing both in frequency and intensity over the last decades leading to ever greater financial impacts. While at present Moldova is not utilising all of its combined surface and groundwater supplies - a target that is expected to be reached by 2030 - inefficient water technologies and a lack of awareness is leading to unregulated local water extraction and reduced capacity to overcome periods of sustained water scarcity.

70. By being fully integrated into the IFAD TART programme for economic regeneration both on- and off-farm, TART-Adapt will contribute to the generation of economic benefits nationwide. TART-Adapt will

mitigate any negative environmental impacts through increasing awareness of climate change and the impact that start-up businesses may have on overall water consumption. It will help promote innovative water efficient solutions along the value chain but also specifically for climate vulnerable farmers. Solutions like water efficient drip irrigation have been shown to simultaneously reduce water consumption while also increasing agricultural productivity, with farmers recovering investments within a year. Reduced overall water consumption will ultimately reduce the stresses on the water supply and hence improve the resilience to climate shocks, with reduced financial impacts.

Cost-effectiveness.

Lessons learned and upscaling:

71. The project will be cost-effective through upscaling the best practices and lessons learned from the FAO project that closed in 2018 and which is summarised in annex 2. This pilot demonstrated the potential of introducing modern and climate resilient, water efficient irrigation technologies. The project demonstrated that it is possible to simultaneously increase production, with better quality agricultural produce with minimal water consumption. Farmers were also able to get their investment repaid within a year.

72. The Project will concurrently be learning from the ongoing IFAD/GEF CRCA project on CA that is due for completion in 2020. While still premature to present results, all indications are that the project will be successful in its objective to enhance the adaptive capacity of farmers to climate change through resilient agricultural approaches and to improve agriculture productivity and soil protection through sustainable agriculture and land restoration. One of the final outcomes of the CRCA project will be to produce a roadmap for CA upscaling at national level. Preliminary findings show that one of the main constraints on mainstreaming and upscaling at national level is a lack of awareness about the benefits of CA at ministerial level and the need for capacity building on policy and strategy development but also on designing legislation and enacting laws that will favour CA but also SWM.

73. By upscaling the FAO project and facilitating the future upscaling of the IFAD/GEF CRCA project, TART-Adapt aims to create an enabling environment for a long-term sustainable approach to climate change adaptation. The investments in innovative water efficient technologies will be recovered through improved productivity and reduced water consumption, but also by assisting in reducing future risks and financial impacts of increasingly frequent climate events. The cost-effectiveness of the CA component also lies in the fact that with a reasonably modest budget, the project will help ensure the magnification of ongoing and future efforts to introduce CA, by enabling its upscaling and mainstreaming at a national level.

Alignment with TART:

74. The Adaptation Fund project will be a blended project, fully integrated into the IFAD supported TART programme and as such it will benefit from sharing resources and structures. This partnership will boost the cost-effectiveness of both interventions, particularly as there will be a common management structure and a linked M&E framework. Other benefits expected are improved coordination and communication, the application of common procurement and supervision procedures (reducing costs); also, the implementation of complementary project interventions in the project districts.

75. The TART project will be further defined during the April design mission, however it is proposed it use different sources of funding in the form of matching grants, private investments, concessional loans to the GoM, and GoM co-financing in addition to the Adaptation Fund grant. The cost-effectiveness of the partnership with TART means that the Adaptation Fund will benefit from the blended finance allowing the grants be targeted where they are most needed, namely in facilitating adaptive innovation and targeting activities that countries would be reluctant to take out loans for.

Strategies.

76. **National Development Strategy (NDS) 2020.** The NDS 2020 aims at ensuring the transition to a green economic development, which promotes sustainable development principles and contributes to poverty reduction. This includes ensuring better governance in sustainable development, through the integration and strengthening of environmental protection aspects in all socio-economic development areas of the country. This will be achieved through: (i) a rate of economic development that would allow an increasing financing of environmental protection measures, and (ii) a balanced regulation of

the business environment, both in terms of economic impact and environmental impact. The TART-Adapt will be aligned to the NDS 2020 through facilitating agricultural development that is resilient to the negative impact of climate change and helps mitigate future challenges in increasing water scarcity. The project will promote improved ENRM and human wellbeing whilst improving agricultural productivity.

77. **National Strategy on Agriculture and Rural Development (NSARD) 2014-2020.** The NSARD works towards ensuring that the agri-food sector contributes to the sustainable achievement of the national economic and social development goals. It also aims to raise the competitiveness of the agri-food sector through comprehensive restructuring and modernization and to improve living and working conditions in rural areas whilst achieving synergies between agri-food activities and the natural environment. TART-Adapt will be aligned with the NSARD through the promotion of environmentally friendly and climate resilient water efficient technologies that will minimise water consumption while simultaneously improve produce quality and yields, whilst also reducing labour costs in time and money. The Adaptation Fund project will also raise awareness and build decision making capacity for the future upscaling of CA that also contributes to the reduction of labour costs, helps reduce negative agricultural environmental impacts promote soil regeneration.

78. **National Strategy on Adaptation to Climate Change (NSACC) 2020**. The Strategy aims to ensure that the social and economic development of the Republic of Moldova becomes resilient to the future impacts of climate change. The Strategy also supports the achievement of the global objectives established by the United Nations Framework Convention on Climate Change (UNFCCC) to which the Republic of Moldova is a Party. The project is aligned in terms of promoting capacity development; improving the adaptive capacity of vulnerable smallholders to changing weather patterns; and promoting sustainable water and soil use and conservation.

79. **National Environmental Strategy (NES) 2014-2023**. The objective of the strategy is the creation of an efficient environmental management system, which would contribute to the increase in the environmental factors' quality and guarantee the right of the population for a clean, healthy and sustainable environment. The project is aligned in terms of promoting sustainable water consumption and land conservation through CA policy development.

80. **National Strategy on Biodiversity (NSB) 2015-2020.** The overall objective of this Strategy is to create conditions for improving the quality of the biodiversity components by strengthening the basis for the sustainable development of the country. The Strategy was designed to align with the provisions of the international treaties to which the Republic of Moldova is a Party. These are the Convention on Biological Diversity (CBD) Strategic Biodiversity Plan 2011-2020; the Aichi biodiversity objectives approved in Nagoya (Japan) at the CBD Conference of Parties (2010); and the European Union (EU) CBD Biodiversity targets 2020. Through the promotion of water conservation and soil conservation management, the project will help protect biodiversity by reducing soil erosion, reducing soil fertiliser nutrient leaching, and improving soil microbiomes.

81. **Programme on the Promotion of Green Economy (PPGE) 2018 – 2020.** The aim of the Programme is to promote the implementation of the green economy principles in the Republic of Moldova in harmony with economic and social welfare. The project is aligned to the Programme with respect to the objectives to increase the level of knowledge about sustainable development among the youth and the general public by 30 percent by 2020; and to contribute to improving the institutional capacity potential in the field of green economy and increase the promotion of green economy in the field by 30 percent.

82. **Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1999).** The objective of this Protocol is to promote the protection of human health and well-being, both individual and collective, within a framework of sustainable development, through improving water management, including the protection of water ecosystems, and through preventing, controlling and reducing water-related disease. The project is aligned to the Protocol through the promotion of sustainable water management, and the protection of water systems through increased water efficiency.

83. **Water Supply and Sanitation Strategy (WSSS) 2012-2027.** The aim of the WSSS is to provide access to safe water and adequate sanitation for all localities and people in the Republic of Moldova, contributing to an improved health, dignity and quality of life, and enabling the economic development of the country. The project is aligned with the Strategy objectives of providing access to information, education, and awareness raising about the need to save water and protect water resources; and contribute to achieving the 2015 Millennium Development Goals (MDG) targets for a safe water supply for 65 % of the population by 2020.

84. **National Programme on Sound Management of Chemicals (NPSMC) 2009-2020.** The main purpose of the NPSMC is to implement the objectives of Strategic Approach for International Chemicals Management (SAICM) and promote the creation of adequate conditions for quality life of population and respect of citizens' right to a healthy environment as well as a sustainable form of development. The project is aligned to the NPSMC objectives of education, information and public awareness on the sound management of chemicals. TART-Adapt is fully aligned with TART and as part of the TART farmer field school (FFS) training programme, IFAD promotes the sound management of chemicals used in agriculture.

85. **National Waste Management Strategy (NWMS) 2013-2027.** The strategy aims to promote a new way of household and production waste collection, recovery of re-usable materials, environment protection and realization of a programme of uniform street sanitation which would contribute to the decrease in the amount of the waste stored in the respective areas by establishing an adequate system that would treat each type of waste separately for the protection of the environment. While the project does not engage in household waste management and recycling, the project does however strive to promote a sustainable culture for waste minimisation through water recycling and spreading the concept of CA that promotes waste minimisation and sustainable development.

National Technical Standards and Environmental and Social Policy

86. The project is aligned to the National Environmental Strategy and will comply with national environmental standards. During the full combined project design mission in April 2019, TART and TART-Adapt will conduct a thorough and detailed environmental screening that will meet both IFAD's requirements under the SECAP and the Adaptation Fund's requirements in accordance to the Fund's Environmental and Social Policy. These assessments will outline in detail, what the national environmental standards are and how the project will meet them. It will also detail how the project will address the 15 ESA principles as well as design an Environmental and Social Management Plan.

Duplication

Table 3 List of relevant projects

Other Projects / Partners	Summary	Geographic overlap with proposed project area of intervention	Synergies with the proposed project.
UNDP / Adaptation Fund (USD 4m) "Enhancing Climate Resilience and Adaptive Capacities of Farming Communities by Augmenting Management with small scale water reservoirs" (2020-2024)	To increase resilience and adaptive capacities of smallholder farmers to climate variability and extreme events through improved management of scarce water resources by promoting the use of technologies and actions aimed at developing climate smart, profitable, productive, and socially sustainable smallholder farms.	Countrywide	The project is still in the concept design stage, however there are potential synergies as both projects target smallholders to improve water management. UNDP aims in part to build water reservoirs while TART-Adapt will focus on climate smart technological solutions for water efficiency in agricultural production.
FAO (USD 400,000) "Increasing small scale farmers' resilience to drought by adopting best irrigation practices and modern technologies" (2015-2018)	Build capacity of farmers and Water User Associations to properly operate and maintain on-farm irrigation systems; strengthen local extension officers' capacities to provide farmers with quality	Central and Southern agro-climatic zones	TART-Adapt will build on the findings of the FAO project for the introduction of water efficient systems. This project has demonstrated the potential for these modern CC resilient technologies within the Moldovan context, to minimise water consumption while

Other Projects / Partners	Summary	Geographic overlap with proposed project area of intervention	Synergies with the proposed project.
	advisory services on irrigation practices and efficient water use.		simultaneously increasing agricultural production quantity and quality.
IFAD/GEF (USD 4.2m) "Climate Resilience Through Conservation Agriculture - CRCA" (2015-2020)	Enhancing the adaptive capacity of farmers to climate change through resilient agricultural approaches and improving agriculture productivity and soil protection through sustainable agriculture and land restoration.	North, Central and Southern Agro-climatic zones	TART-Adapt will work in synergy with the current IFAD/GEF investment on CA. It will anticipate and provide solutions to bottlenecks that have already been identified at decision making levels
The Czech Agency of Development (USD 1.3m). "Support of Fruit and Vegetable Production with Added Market Value." (2015-2018)	To contribute to the year-round presence of Moldovan agricultural products on local and respectively also on foreign markets.	All of Moldova	The project will be aligned along the principles of Improving agricultural production.
The Czech Agency of Development (USD 379,000) "Support of Institutional Control within Organic Farming" (2016 – 2021)	Supporting organic producers and internal and external market access.	No regional overlap	The project will have synergies through the common approach of supporting smallholder farmers improve agricultural production.
The Czech Agency of Development (USD 415,000) Supporting the implementation of the regional strategy with the use of GIS data (2018-2020)	Capacity building in the use of GIS data.	No geographical overlap	No direct synergies.
World Bank (USD27m) "Climate Adaptation Project" (2017-2023)	To enhance the adoption of climate-smart practices in agriculture, forestry and pasture management in targeted landscapes and strengthen national disaster management systems.	Countrywide.	The World Bank project enhances the adoption of climate-smart practices in selected rural landscapes by supporting: (i) the scale-up of farmers' climate-smart technologies and agricultural practices and provision of related advisory services; and (ii) expanded up-take of irrigation services. This project has the potential for duplication with the TART-Adapt. To address this, the full project design mission in April 2019 will hold consultations with

Other Projects / Partners	Summary	Geographic overlap with proposed project area of intervention	Synergies with the proposed project.
			the World Bank to identify in more detail where the synergies are and to prevent duplication.
UNEP/UNITAR/GEF (USD8.2m) "Global Project on the Implementation of PRTRs as a tool for POPs reporting, dissemination and awareness raising for Belarus, Cambodia, Ecuador, Kazakhstan, Moldova and Peru" (2014 – 2018)	To improve access and accuracy of environmental data on POPs and other priority chemicals in 6 countries, and to enhance awareness and public participation on environmental matters, through implementation of fully operational national PRTRs.	Countrywide	While recently closed, TART and TART-Adapt will have commonalities in terms of the sustainable management of POPs from the agriculture.

Learning, Knowledge Management and Lessons Learned.

87. As fully integrated with the TART project, the Project will benefit from IFAD's M&E system and it will fully incorporate the new IFAD Operational Results Management System (ORMS). The project's M&E system will rely on evidence-based data and as such, all baseline/completion surveys will be implemented promptly to allow for results-based analysis. Additional surveys/studies will be conducted when deemed necessary. IFAD will provide support for capacity-building for the M&E officer through IFAD programmes including the "Training and Global Certification for M&E in Rural Development" under the Program in Rural M&E. Knowledge management will be critical in making sure relevant learnings from the projects inform policy dialogue as well as feedback into project design and implementation.

88. Knowledge management activities are to be planned from the outset and knowledge generation and sharing will happen throughout the project with assessments and reports being carried out in outputs 1.1.1 and 2.1.1. Output 1.1.2 will focus specifically on the dissemination of best practices, lessons learned and CCA, CC and CA awareness raising. These will be captured by TART's M&E system and consultant reports and will be disseminated by means of leaflets, posters and radio and television broadcasts. The TART-Adapt will also disseminate knowledge throughout the project at TART value chain platforms and through the workshops to be held in output 1.1.1; also through the training programmes in outputs 1.1.3 and 2.1.3. These will be designed based on the data gathered by the needs and knowledge gap assessments in outputs 1.1.1 and 2.1.1.

Consultative Process

89. Between the 19th until the 30th of March 2018, an IFAD mission took place to Moldova to carry out exploratory information gathering for the TART-Adapt but also for IFAD's TART programme and developing IFAD's framework for making strategic choices about IFAD operations in the country. The mission was joined by representatives of MARDE and met a range of development partners including the EU, the World Bank, USAID but also civil society organisations. Annex 1 presents the endorsement letter for the project and annex 3 presents the mission schedule and list of people met. The mission also conducted field visits to meet beneficiaries - these included:

- Saving and Credit Association (SCA) Grimancauti – (Eduard Gojan in Straseni/Lozova area).
- SCA Agrocredit - Mamatiuc (Ion in Straseni/Vorniceni area).
- Beneficiaries of shelterbelts – (Dnu Ciofu in Cahul/Lebedenco area).
- Beneficiaries of grass cover – (Balan Stanislav in Cantemir/Lingura area).

- Yong Entrepreneurs programme beneficiary for field crops – (Talmaci Andrian in Cimislia /Sagaidac).
- Beneficiaries of shelterbelts - (Pogor Roman in Singerei/Cotovca area).
- Beneficiaries of matching grant for conservation agriculture machinery – (Tofan Gherasim in Singerei/Bilicenii Vechi area).
- Beneficiaries of matching grant for conservation agriculture machinery – (Tabara Alexei in Hincesti/Carpineni area).
- Beneficiaries of matching grants for conservation agriculture machinery – (Sandrovschi Constantin in Hincesti/Carpineni area).
- Yong Entrepreneurs programme beneficiary for sheep breeding – (Stefanco Zinaida in Causeni/Ucrainca).
- Yong Entrepreneurs programme beneficiary for field crops – (Onofrei Alexei in Stefan-Voda/Ermoclia area).
- Vegetable producers group from Stefan Voda region – group leader Cojocaru Ion.
- Friuts and table grapes producer group from Causeni region – group leader Gurschii Maria.
- Honey bee producer group from Hincesti region – group leader Bozianu Mihai.

Justification for Funding.

Table 4 Adaptation Fund Additionality

Baseline scenario	Alternative Adaptation Benefits of Adaptation Fund Project.
More frequent and more intense periods of drought over the past decade have been causing increasingly severe financial impacts on the agricultural sector. Heatwaves have increased to their highest levels in 120 years causing a 23 percent decline in agricultural output in the 2006/7 drought, with major crops like wheat, maize, and sunflowers reduced by up to 50–75 percent. Moldova's high-value exports, grapes and apples, are also impacted by the increasing incidence and severity of drought, particularly as higher temperatures increase their crop water demands. While the demand for water in Moldova is not expected to meet 100 percent of supply until 2030, unregulated local aquifer water extraction regularly exceeds replenishment rates, causing localised drought that increases the climate vulnerability of small holder farmers and the wider agricultural value chain. Projected changes in precipitation patterns risk making current investments in irrigation schemes insufficient to meet demand.	The project will identify and train beneficiaries[20] on the most appropriate water efficient methodologies and technologies, these will be based on available research and participatory and multi-stakeholder consultations. Ad-hoc technologies such as closed water greenhouses, rainwater harvesting tanks and other innovative water efficient technologies will be promoted. This will include drip irrigation that has a water efficiency of 80 percent compared to 50 percent for flood irrigation, and can lead to harvest yield gains of up to 250 percent hereby supporting food security and poverty alleviation among vulnerable farmers. The general increased water efficiency promoted by the project will reduce the collective burden on limited water resources helping build sustainable water management practices and mainstreaming disaster risk reduction solutions into the agricultural value chain.
CA is being developed as a solution to CC, exacerbated soil erosion and decreased yields that are major problems in Moldova. Gaps in awareness and knowledge still exist at policy and strategic levels relating to CA but also in the need for water	The project will strengthen future CA and water efficiency / conservation efforts through training on CA and SWM at all levels. The project will catalyse future efforts in CCA mainstreaming and upscaling by strengthening CA and SWM governance

[20] Beneficiaries will include small holder farmers and young entrepreneurial start-ups as well as other actors along the agricultural value chain. The project will cover the entire country however the precise numbers of beneficiaries will be determined through IFAD negotiations with the GoM during the design mission in April 2019, and will be presented in the full project proposal.

Baseline scenario	Alternative Adaptation Benefits of Adaptation Fund Project.
conservation and improved efficiency at the smallholder farmer level. Awareness and capacity needs strengthening at all levels including ministerial, regional, local, and farmer associations. Awareness also needs to be raised on CCA, SWM and CA at decision making level. Future CA upscaling and mainstreaming will be hampered by a lack of policy and strategy support; also, a lack of legislative and laws in support of CA.	landscapes with dedicated sector policies, strategies, laws and legislation.
Climate change events are already affecting Moldova and are predicted to increase in intensity and frequency, are not only limited to drought and flooding. Hail storms are becoming increasingly frequent and can be devastating to crops.	Alongside the water efficiency solutions the project will also support the installing of nets that will protect crops from hail storms. These nets will be rolled out when there is a storm warning and will be an insurance not only against hail damage but are multi-functional and will also function as protection against pests.

Project Sustainability

90. The sustainability of the project stems from the fundamentally participatory approach promoted throughout all project activities, that allow local communities and authorities to build ownership of the project results. The sustainability of the project is further enhanced through the combination of mainstreaming CA and SWM into institutional policy and strategy plans but also into legislation and at least one law at national, regional and local levels and the implementation of concrete adaptation awareness raising measures.

91. The project aims to influence SWM practices beyond project implementation. To achieve this, it builds on the successes and lessons learned of the pilot project implemented by FAO[21], on introducing climate smart and water efficient agricultural technologies in Moldova. These technologies have been demonstrated to reduce water consumption, reduce labour costs, increase production for more and better quality agricultural produce. Crucially however, the FAO project has shown that there is great appetite among farmers to adopt modern water efficient agricultural technologies. This project will upscale efforts by FAO that have been proven to be sustainable through a widely participatory and consultative approach that will welcome beneficiary inputs and ultimately ownership at the smallholder, regional, extension worker and ministerial levels.

92. Project sustainability will be further strengthened through the training programmes that will be implemented for both components; in component one for sustainable farm-based water efficient solutions that also improve productivity and income. In the second, awareness raising, training and advanced degrees that will build capacity at institutional level to develop future advocates of CA and SWM upscaling and mainstreaming. These will instil knowledge and awareness for future sustainable ENRM.

[21] See Annex 2 for more information.

Environmental and Social Impacts and Risks.

Table 5 Adaptation Fund Environmental and social checklist

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		**No risk** As part of the ESA and ESMP, the full project proposal will carry out an analysis of relevant laws and detail the project's compliance with said laws.
Access and Equity		**Low/no risk** When designing and planning the activities, ensure that any activity with communities targets vulnerable groups such as women and youth.
Marginalized and Vulnerable Groups		**Low/no risk** Marginalized and vulnerable groups – especially women - will be consulted during the proposal development process to ensure that their identified threats, priorities and mitigation measures are reflected. This project will empower vulnerable groups to make decisions on concrete adaptation actions, valuing their traditional and local knowledge. This project will create a space for women, and youth to choose adaptation activities in a transparent and participatory manner. Additionally, this project will respect land, property and customary rights.
Human Rights	X	**Low/no risk** This project affirms the rights of all people and does not violate any pillar of human rights.
Gender Equity and Women's Empowerment		**Low/no risk** When designing the full project proposal the project will align itself with both the Adaptation Fund and IFAD's policies on gender inclusion. In doing so it will reflect the percentage of women working in the agricultural sector in Moldova. The project will ensure that at least 30 percent of the beneficiaries will be women and it will also apply the same principles laid out in project targeting. The consultation process in the design of the full project document will ensure and monitor for satisfactory women inclusion, participation and consultation.
Core Labour Rights	X	**Low/no risk** The project will ensure respect for international and national labour laws and codes, as stated in IFAD's policies.
Indigenous Peoples	X	**No risk** There are no indigenous people in Moldova.
Involuntary Resettlement	X	**Low/no risk** The project does not foresee any resettlement. At all times the project will work through the national authorities, namely MARDE, to ensure that the vulnerable and marginalised will not be adversely affected. The project will engage in participatory consultative processes that will ensure that everyone's voice can be heard and concerns addressed. IFAD will also broadly advertise its grievance procedures so that anyone that feels they have been involuntarily displaced can find due recourse.
Protection of Natural Habitats		**Low/no risk** During the full IFAD/AF project design IFAD will carry out a SECAP and ESA that will identify and exclude national parks ensuring that

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		they will not directly or indirectly impact protected areas or high value conservation areas.
Conservation of Biological Diversity	X	**No Risk** The activities of this project will not adversely impact the conservation of biological diversity.
Climate Change	X	**No risk** The project will not generate any significant emissions of greenhouse gases and will not contribute to climate change in any other way.
Pollution Prevention and Resource Efficiency	X	**No risk** The project will not release pollutants. It is based on the principles of efficiency, minimization of material resource use.
Public Health	X	**No risk** No adverse impact on public health related issues is envisaged even if the use pesticides might be adopted in accordance to IFAD policies.
Physical and Cultural Heritage		**No risk** During the SECAP carried out by IFAD in the full project design mission for TART and the ESA as part of TART-Adapt, full analyses will be carried out on the potential impact on the physical and cultural heritage of the project areas.
Lands and Soil Conservation		**No risk** The project will promote sustainable land management practices from SWM to conservation agriculture. The activities will not negatively affect land and soil conservation.

Grievance and Redress Mechanism

93. The proposed project will utilize the existing IFAD's grievance mechanism to allow affected to raise concerns that the proposed project is not complying with its social and environmental policies or commitments. The consultative process with the community and beneficiaries aims to ensure prevention of grievances that might arise from the project activities. However, if at all, there are any grievances, the below redressal mechanism is proposed:

    - Grievance redressal mechanism would be shared with the community during the project inception workshop and subsequent meetings with the beneficiaries
    - As part of the grievance redress mechanism, the contact details of the project partners - Cluster Coordinator/ Project Manager would be made available to stakeholders including project beneficiaries and the community. Contact numbers would be displayed at common or predominant places along–with the project details. This is expected to promote social auditing of project implementation. The grievance mechanism will be available to the entire project intervention areas. However, the functionality of the mechanism rests with the beneficiaries considering that the project including the grievance mechanism is envisaged to be a bottom up approach.

94. Grievances are aimed to be addressed at the field level by the project team which will be the first level of redressal mechanism. If the grievance is not resolved at the field level, it will be escalated to the CPIU and then to IFAD who will be responsible for addressing grievances related to violation of any of the provisions of Environmental and Social Policy of the Adaptation Fund. All grievances received and action taken on them will be put up before the CPIU and Steering committee meetings and will also be included in the progress reports to the NIE for reporting and monitoring purposes.

PART III: IMPLEMENTATION ARRANGEMENTS

Project Implementation.

95. The TART project will be implemented by the Ministry of Agriculture, Regional Development and Environment (MARDE), through the Consolidated Project Implementation Unit (CPIU), embedded in MARDE. The CPIU, which is currently managing IFAD projects, will recruit additional specialists as needed, who will be responsible for the day-to-day management and implementation project activities, covering overall management/supervision, fiduciary management and monitoring and evaluation. Detailed implementation arrangements, including the involvement of local authorities, will be made during the full-sized design phase.

Table 6 Roles of contributing entities in project implementation

Project Component	Expected Concrete Outputs	Contributing Entities	Role
1. Mainstreaming climate change adaptation into water and landscape management.	1.1.1 Stakeholder mapping, needs assessments and workshops delivered to determine regional priorities and appropriate water efficient technologies and DRR options in Central and Southern regions.	MARDE	Provide manpower and locations for workshops.
		Consultants	Carry out needs assessment, deliver reports, train workshop facilitators
		CPIU	Recruit consultants finance workshops and monitor implementation
		IFAD	Oversight and quality control
	1.1.2 Awareness raised on CC, CCA, CA, and the importance of water conservation through the production of leaflets, posters, radio, TV and internet campaigns.	Consultants	Design website, radio and TV programmes / adverts, carry out graphic designing, writing text.
		CPIU	Recruit consultants and monitor implementation
		IFAD	Oversight and quality control.
	1.1.3 Training programmes designed, trainers of trainers and beneficiaries trained.	MARDE	Provide trainers and training locations / equipment etc.
		Consultants	Design training programmes and train trainers.
		CPIU	Recruit consultants and monitor implementation
		IFAD	Oversight and quality control
	1.1.4 Beneficiaries identified and grant equivalent assets distributed for innovative water saving technologies.	MARDE	Provide extension workers to advise support and monitor smallholders.
		CPIU	Project implementation monitoring and evaluation.
		IFAD	Oversight and quality control.
2. Strengthening the	2.1.1 Needs and	Consultants	Deliver needs assessment and

Project Component	Expected Concrete Outputs	Contributing Entities	Role
enabling environment to support conservation agriculture mainstreaming.	knowledge gap assessment carried out for CA policy and strategy development training.		reports
		CPIU	Recruit consultants and monitor implementation
		IFAD	Oversight and quality control
	2.1.2 Training programmes developed and exchange visits arranged	MARDE	Provide trainers and training locations / equipment etc.
		Consultants	Design training programmes and train trainers.
		CPIU	Recruit consultants, arrange exchange visits and monitor implementation.
		IFAD	Oversight and quality control
	2.1.3 Relevant CA/SLM/CCA legislation, laws, bylaws, policies reviewed through workshops and key stakeholder interviews at local, regional and national levels.	Consultants	Carry out review and compile report.
		CPIU	Recruit consultants and monitor implementation
		IFAD	Oversight and quality control
	2.1.4 Multi-stakeholder workshops held to validate findings of 2.1.3 and identify laws, bylaws, legislation, policies and strategies. Produce report.	Consultants	Conduct workshops in partnership with CPIU, produce report identifying policies, strategies, laws, bylaws to be designed.
		CPIU	Participate in workshops, monitor implementation.
		IFAD	Oversight and quality control
	2.1.5 A governance expert hired to assist, guide and help formulate CA policy, strategies, laws and legislation.	MARDE	Modify /introduce an existing sector strategy, policy and at least one law or legislation to benefit CA.
		CPIU	Monitor implementation provide support and guidance.
		IFAD	Oversight and quality control

Project Risk Management.

Table 7 Risk management

Risk	Impact	Probability of Occurrence			Mitigation Measures.
		Low	Medium	High	
Low ministerial buy-in for modifying creating existing CA and sustainable water management sector policy, strategy and at least one law or pieces of legislation modified or introduced to benefit CA.	Major	X			CA is part of the national agricultural CCA strategy, this should help persuade people. The project will also mitigate this risk through training, awareness raising and exchange visits to help sceptics understand the value of CA and water conservation mainstreaming at a national level.
Insufficient capacities to appropriately manage the day-to-day implementation of the project	Major	X			The CPIU has administrative and financial management autonomy and will assume the fiduciary management functions of the project. IFAD will participate as an observer in all stages of the recruitment process. The staff of the CPIU will be linked to the project by renewable annual contracts based on a performance evaluation.
Climatic shock: the main effect of climate change on weather patterns is the increased occurrence of extreme weather events: droughts, flooding, hail in particular. These weather shock can have a direct impact on crops and damage infrastructure.	Moderate		X		The programme will introduce climate smart infrastructure and will ensure that climate adaptation measures are implemented. It will in particular ensure that farmers will be able to minimise water consumption while also improving production and product quality, this will ensure that farmers will be better equipped to weather a drought. In the case of hail storms, the project will also equip hail nets to protect crops for those farms requiring them.
Low interest and capacity of smallholders to adopt new climate smart approaches and technologies.	Moderate	X			The programme will pay attention to technical capacity building and training. It will carry out demonstrations and raise general environmental and climate change awareness and train farmers on the economic and environmental benefits for the adoption of systems and new technologies. The adaptive

Risk	Impact	Probability of Occurrence			Mitigation Measures.
					support provided through TART-Adapt are blended with productive inputs, which makes the package very attractive to farmers.
Risk from general election in 2019 cancelling plans for IFAD loan	Moderate	X			IFAD is regularly faced with obstacles such as changing political parties and priorities, so it is experienced in overcoming these risks.

Environmental and Social Risk Management.

96. The objective of the SECAP is for the full mainstreaming of environmental, social and climate issues throughout the IFAD project cycle. It analyses the potential risks and provides information to strengthen the social, environmental and climate dimensions of programmes and projects; and maximizes the social, environmental and climate change adaptation and mitigation benefits, and avoids or minimizes the negative impacts. During the full project design in April 2019, the project will conduct an environmental screening and assessment that will meet both IFAD's requirements under SECAP and the Adaptation Fund's requirements in accordance to the Fund's Environmental and Social Policy, namely the Environmental and Social Assessment (ESA) as well as designing the Environmental and Social Management Plan (ESMP).

97. The aforementioned assessment will strengthen the project proposal as the purpose of the TART-Adapt will also be the fulfilment of the recommendations set out in the SECAP of the TART project. In strengthening the social and environmental aspects of the TART concept, the concept aims to create an enabling environment for climate change adaptation at the institutional level and to contribute to increasing the resilience of local communities (in particular young women and men). It will achieve this through the i) strengthening of local communities and young people's adaptive capacity through awareness raising, capacity building, introducing climate change adaptation measures for the development of climate resilient businesses; and ii) the strengthening of institutional frameworks to mainstream climate change adaptation into national, regional and local policies, strategies, legislation and laws to benefit conservation agriculture and SWM.

98. The activities in this project and the way they will be designed, planned and implemented will ensure the minimization of any risk for negative social impacts. The full-sized project will be designed though a participatory and consultative process giving beneficiaries and stakeholders the opportunity to contribute and raise concerns at every level. The project targeting methodology, that will be refined during the full project design mission, will include 14,000 productive-poor climate vulnerable smallholders including 40 percent youth and 30 percent women.

Monitoring and Evaluation Arrangements.

99. **Project Monitoring and Evaluation (M&E)** will be under the oversight of the CPIU, and led by the M&E officer who will work closely with the implementing partners. The M&E system should: (i) produce, organize and disseminate the information needed for the strategic management of the project, (ii) document the results and lessons learned for internal use and for public dissemination on the achievements and (iii) respond to the information needs of Adaptation Fund, IFAD and the Government on the activities, immediate outcomes and impact of the Project. A monitoring and evaluation manual that

will describe a simple and effective system for collecting, processing, analysing and disseminating data will be prepared in the first year of the Project.

100. A computerized database will be developed that will enable the generation of dashboards used in IFAD projects. The system will be regularly fed from data collected in the field by the implementing partners and the various studies carried out as part of the projects' implementation. Trainings will be organized to strengthen the capacities of the various stakeholders involved in the monitoring and evaluation system.

101. Day to day monitoring of implementation progress will be the responsibility of the project team, based on the project's Annual Work Plan and its indicators. During the first months of the project, the project team will complete and fine-tune baseline data for each indicator, and will define and fine-tune performance. Specific targets for the first year of implementation, progress indicators, and their means of verification will be developed at the Inception Workshop (below).

102. **Project Inception Workshop.** A inception workshop will be conducted within two months of project start up with the full project team, relevant government counterparts and IFAD. The inception workshop is crucial to building ownership for the project results and to plan the first-year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, and assist the project team to understand and take ownership of the project's goals and objectives.

103. **A Project Inception Report** will be prepared immediately following the Inception Workshop. It will include: (i) a detailed First Year/Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project; (ii) the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan; (iii) a detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners; (iv) a section on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation.

104. **Baseline study.** A baseline study will be conducted within the first year to collect data and serve as the basis for the assessment of how efficiently the activity has been implemented and results achieved. The study will include the target group and a control group which will be essential to determine the attribution of results to programme activities.

105. **Quarterly Progress Reports** will also be prepared by project implementing partners in the field, and submitted to the CPIU to ensure continuous monitoring of project activities and identify challenges to adopt necessary corrective measures in due time.

106. **Technical reports** – such as a best practices and lessons learned report - will also be completed, as determined during the project inception report.

107. **Annual Project Report (APR).** The project team will prepare an APR to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work. The format of the APR will be flexible but should include the following issues: (i) an analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome; (ii) the constraints experienced in the progress towards results and the reasons for these; (iii) the three (at most) major constraints to achievement of results; (iv) AWP and other expenditure reports; (v) lessons learned; (vi) clear recommendations for future orientation in addressing key problems in lack of progress.

108. **Supervision** will be by IFAD (under its direct supervision framework and guidelines), with a supervision mission mobilized at least once per year. Additional implementation support from IFAD on specific identified issues will be mobilized if considered necessary by GoM and IFAD or recommended by the Supervision mission. The composition of the Supervision missions would be based on an annual supervision plan. The supervision plan would highlight, in addition to the routine supervision tasks (fiduciary, compliance and programme implementation), the main thematic or performance areas that require strengthening and would imply deployment of additional inputs for capacity building, in-depth analytical studies or review of existing policies.

109. **Mid-term Review (MTR).** The MTR will be carried out in year 3. It will assess operational aspects such as programme management and implementation of activities as well as the extent to which the objectives are being fulfilled and corrective actions needed for the programme to achieve impact. Depending on the achievements the programme and the resources available, the possibility of scaling up the activities to other regions will also be considered in consultation with the government.

110. **A Final Evaluation** will be conducted three months before project closure which will include the programme completion survey (below).

111. **Programme completion survey** (impact evaluation): Will include the same set of questionnaires included at baseline to allow for comparison against baseline results. In addition, a panel of households will be interviewed to provide a thorough analysis of programme impact. Moreover, analysis will be done by type of beneficiary, region and gender of household head.

Table 8 Breakdown of M&E fee utilisation.

IE Fees Breakdown of M&E Supervision	Responsibility	Timeframe	Budget (USD)
Inception Workshop Report	CPIU	After Workshop	0 (as completed by CPIU)
Baseline Study	CPIU	First Year (2020)	20,000
Supervision Visits	IFAD, CPIU , government	Biannual	53,331
Annual Work Plans and Budget	CPIU	Annual	0 (as completed by CPIU)
Semi-Annual Progress Report	CPIU	Semi-annual	0 (as completed by CPIU)
Annual Project Report	CPIU	Annual	0 (as completed by CPIU)
Final Evaluation	IFAD, external consultants	2024	27,896
Total			**101,227**

Results Framework

Table 9 Results framework

Project Objective(s)		Indicators	
Overall Objective: To enhance climate change adaptation and food security through facilitating access to climate resilient technologies and enhancing policy and decision-making capacities.		No. of smallholders with improved food security. No. of smallholders with access to climate change resilient technologies. No. of policies, strategies developed and laws and legislation passed to benefit CA and SWM.	
Component 1: Mainstreaming climate change adaptation into water and landscape management.			
Expected Outcome	**Outcome Indicators**	**Expected concrete outputs**	**Output indicators**
1.1: Water conservation, climate smart water efficient technologies, techniques and DRR solutions promoted and implemented	No. of smallholders with climate smart water efficient technologies. % of water saved through efficiency gains. % of smallholders with DRR solutions. % of farmers that successfully overcame a climate event during the project cycle.	1.1.1 Stakeholder mapping, needs assessments and workshops delivered to determine regional priorities and appropriate water efficient technologies and DRR options in Central and Southern regions.	Assessment report delivered. No. of workshops delivered. No. of region specific priorities identified.
		1.1.2 Awareness raised on CC, CCA, CA, and the importance of water conservation through the production of leaflets, posters, radio, TV and internet campaigns.	No. of awareness campaigns successfully launched. No. of leaflets and posters printed and distributed. Number of TV and radio advert and programmes developed. Website developed.
		1.1.3 Training programmes designed, trainers of trainers and beneficiaries trained.	No. of training programmes successfully developed. No. of trainers trained. No. of FFS sites selected. No. of smallholders identified and trained.
		1.1.4 Beneficiaries identified and grant equivalent assets disbursed for innovative water saving technologies.	No. of smallholders receiving grant equivalent assets. No. of smallholders improving quality and quantity of produce. No. of ha. of agricultural land made climate resilient.
Component 2: Strengthening the enabling environment to support conservation agriculture mainstreaming.			
Expected Outcome	**Outcome Indicators**	**Expected concrete outputs**	**Output indicators**

2.1 Enabling environment strengthened for CA and SWM mainstreaming and upscaling.	No. of people receiving training. No. of policies, strategies, laws and legislation introduced and modified.	2.1.1 Needs and knowledge gap assessment carried out for CA policy and strategy development training.	Report produced detailing needs and knowledge gaps.
		2.1.2 Training programmes developed and exchange visits arranged	No. of training programmes developed and implemented.
		2.1.3 Relevant CA/SLM/CCA legislation, laws, bylaws, policies reviewed through workshops and key stakeholder interviews at local, regional and national levels.	No. of regional workshops held. No. of key stakeholder interviews held. Report produced.
		2.1.4 Multi-stakeholder workshops held to validate findings of 2.1.3 and identify laws, bylaws, legislation, policies and strategies. Produce report.	Workshop held. Report produced with recommendations.
		2.1.5 A governance expert hired to assist, guide and help formulate CA policy, strategies, laws and legislation.	No. of sector policies and strategies produced to benefit CA and SWM. No. of laws or legislation modified or introduced to benefit CA and SWM.

Project Alignment with Results Framework of the Adaptation Fund[22]

Table 10 Alignment with AF results framework

Project Objective	Project Outcome Indicator(s)	Fund Outcome	Fund Outcome Indicator(s)	Grant Amount (USD)
To enhance climate change adaptation and food security through facilitating access to climate resilient technologies and enhancing policy and decision-making capacities.	No. of smallholders with improved food security. No. of smallholders with access to climate change resilient technologies. No. of policies, strategies developed and laws and legislation passed to benefit CA and SWM.	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level.	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses. 3.2. Modification in behaviour of targeted population.	4,280,000
		Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	
		Outcome 7: Improved policies and regulations that promote and enforce resilience measures.	7. Climate change priorities are integrated into national development strategy	800,000

Project Outcome	Project Output Indicator(s)	Fund Output	Fund Output Indicator(s)	Grant Amount (USD)
Component 1: Mainstreaming climate change adaptation into water and landscape management.				
Outcome 1.1: Water conservation, climate smart water efficient technologies, techniques and DRR solutions promoted and implemented.	No. of media campaigns implemented No. of Smallholders receiving training and awareness raising.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities.	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	280,000
	No. of smallholders with climate smart water efficient technologies. % of water saved through efficiency gains.	**Output 4:** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset	4,000,000

[22] Based on the AF Results Framework and Baseline Guidance Project-level document (2011) https://www.adaptation-fund.org/document/results-framework-and-baseline-guidance-project-level/

Project Outcome	Project Output Indicator(s)	Fund Output	Fund Output Indicator(s)	Grant Amount (USD)
	% of smallholders with DRR solutions. % of farmers that successfully overcame a climate event during the project cycle.		types)	
Component 2: Strengthening the enabling environment to support conservation agriculture mainstreaming				
Outcome 2.1 Enabling environment strengthened for CA and SWM mainstreaming and upscaling.	No. of MARDE staff trained. No. of policies, strategies, laws and legislation introduced and modified.	**Output 7:** Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks 7.2. No. or targeted development strategies with incorporated climate change priorities enforced	800,000

Disbursement Schedule

Table 11 Disbursement schedule

Budget Disbursement	Y1	Y2	Y3	Y4	Total
Project funds	1,390,650	1,390,650	1,390,650	1,390,650	5,562,600
Implementing Entity Fee (8.5%)	118,205	118,205	118,205	118,205	472,821
Total	1,508,855	1,508,855	1,508,855	1,508,855	6,035,421

PART IV: ENDORSEMENT

A. Record of endorsement on behalf of the government[23]

Mr Nicolae Ciubuc, Minister of the Agriculture, Regional Development and Environment Ministry	Date: *26 November 2018*

B. Implementing Entity Certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Margarita Astrálaga, Director, Environment Climate Gender and Social Inclusion Division, IFAD Implementing Entity Coordinator	
Date: *12/19/2018*	Tel. and email: +39 06 54592151 m.astralaga@ifad.org
Project Contact Person: Nicolas Tremblay, Lead Regional Environment and Climate Specialist – Near East, North Africa, Europe and Central Asia, IFAD	
Tel. And Email: *+39 06 5459 2704; n.tremblay@ifad.org*	

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Annex 1 Endorsement Letter

MINISTERUL
AGRICULTURII,
DEZVOLTĂRII REGIONALE
ȘI MEDIULUI
AL REPUBLICII MOLDOVA

MINISTRY
OF AGRICULTURE,
REGIONAL DEVELOPMENT
AND ENVIRONMENT OF
THE REPUBLIC OF
MOLDOVA

MD-2005, Chisinau, 9 Constantin Tanase Str
Tel. 20 45 81; Fax 22 07 48, E-mail: madrm@madrm.gov.md, WEB: www.madrm.gov.md

26.11.2018 Nr. 09/01-5408

La nr _____ din _____

Subject: Endorsement letter for the project proposal "Talent Retention for Rural Transformation"

In my capacity as Designated Authority for the Adaptation Fund in the Republic of Moldova, I confirm that the above project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Republic of Moldova.

Accordingly, I am pleased to endorse the project proposal *"Talent Retention for Rural Transformation"* with support from the Adaptation Fund. If approved, the project/programme will be implemented by IFAD and executed by the Ministry of Agriculture, Regional Development and Environment.

Sincerely,

Nicolae CIUBUC,

Minister

Veronica LOPOTENCO,

Designated Authority

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org

Annex 2 FAO Project case study

FAO Project

To increase the resilience of small-scale farmers to climate change by helping them access modern irrigation systems and technologies.

Budget: 400,000

Objective: To build the capacity of farmers and Water User Associations to properly operate and maintain on-farm irrigation systems; strengthen local extension officer's capacities to provide farmers with quality advisory services on irrigation practices and efficient water use.

Target area: The central and southern parts of the country the regions are more exposed to drought. In the absence of modern technologies, small-scale farmers spent large amounts of water and time irrigating crops, which led to increased costs and lower productivity.

Activities: between 2014 and 2018 representatives from three water user associations that manage centralised water systems in the project areas benefitted from training delivered by local and international experts:

- More than 370 regional and local extension officers were trained in irrigation practices and technologies through one national training of trainers workshop and 34 regional workshops.
- 10 competitively selected demonstration farms were established with the purpose of raising farmer awareness and promoting best water management practices. Farmers received irrigation systems including drip irrigation systems, sprinkler irrigation systems, ebb and flow irrigation systems, geomembrane atomisation electric pumps, along with training on operation and maintenance requirements. They also received advisory services on growing technologies, marketing and access to finance.
- Extension officers conducted an information campaign in 100 rural communities, 1700 farmers targeted with information sessions, distribution of leaflets and posters.
- More than 370 agricultural producers attended the Farmer Field Schools to learn about irrigation system operation and maintenance and requirements and the impact of irrigation crops.

Case studies

- **Case study 1: Flower production:** closed water system with galvanized steel tables, trays, a pump, 2 filters and a reservoir. Water was recycled into a reservoir until it is used up instead of flushed down the drain. Plants became more vigorous with minimal water consumption.
- **Case study 2: Walnut and plum tree production:** modern irrigation equipment with two filters – a sand and a disk filter for purification prior to entering the irrigation system. This has resulted in a plentiful harvest with more and bigger walnuts and improved quality when compared to earlier years.
- **Case study 3: Table grapes production:** Drip irrigation allowed to obtain higher yields and superior quality to commonly established vineyards. In one year harvested 2 hectares, 15 tonnes per hectare a yield that is impossible to get from rain fed vineyards where you would normally get 10 tonnes per hectare.

Results

- Farmers received irrigation equipment that best suited their needs and saw immediate improvements in crop yield and quality. Cuts in production costs were observed due to increased water, energy and labour efficiency, hereby increasing production at a competitive cost and also ensuring improved water distribution uniformity.
- Water consumption was minimised, labour costs were down, production was up, sales were up for more and better-quality fruit and vegetables. Farms were able to hire more people are for harvest.

Annex 3 Mission Schedule and Persons Met

Week 1		Mission Programme (19/03/18-31/03/18)	
Date	**Time**	**Activity**	**Organisation**
Monday 19/03/2018	10:00	Meeting in the CPIU-IFAD office	CPIU / IFAD
	10:00	Discussing the agenda for COSOP mission and logistical arrangements	CPIU / IFAD
	13.00	Meeting with Marcela and Vitalii Climate change experts CPIU	CPIU / IFAD
	15-00	Meeting with Anatol Gobjila,	World Bank
Tuesday 20/03/2018	09:30	Meeting in the office	CPIU / IFAD
	10:30	Meeting with I.Usurelu, General Secretary	MARDE
	11:30	Meeting with Galina Petrache, Head of the Division Policies and Programs for Regional Development	MARDE
	13.00	Meeting with Tudor Robu, Assistant FAO Representative to Moldova	FAO
	14:30	Meeting with Panagiotis Patras, Key Expert in Rural Development Project: Technical Assistance for the Implementation of Sector Reform Contract: "European Neighbourhood Programme for Agriculture and Rural Development" (ENPARD)	ENPARD
	16:00	Meeting with Aurel Rotaru, EU expert for revision of the National Strategy for Agriculture development	EU
Wednesday 21/03/2018	11.00	Meeting with Rodica Miron, Project Coordinator	USAID
	11:30	Meeting with Youth Entrepreneurs	
	14:00	Meeting with Victor Galusca, Deputy State Secretary for Environment	MARDE
	15:20	Ion Balan, Agrarian Parliamentary Commission	Parliament
Thursday 22/03/2018	09:30	Meeting with Mr. Galupa, Director Institute for Forest Research and Development (ICAS)	ICAS
	09:30	Meeting with Moldova Agroindbank	MAIB
	12:00	Meeting with Mrs. Iva Stamenova, Project Manager	EU Delegation
	14:00	Meeting with Mr. Octavian Armasu, Minister	Ministry of Finance
Friday 23/03/2018	09:00	Wrap-up meeting	
	10:00	Meeting with Mr. Liviu Volconovici, Minister	MARDE
Saturday 24/03/18		Day off	
Sunday 25/03/18		Day off	
Week 2			

Date			
Monday 26/03/2018		Field missions	
Tuesday 27/03/2018		Field missions	
Wednesday 28/03/2018		Field missions	
Thursday 29/03/2018		Field missions	
Friday 30/03/2018		Return to Capital	
Saturday 31/03/2018		End of mission	