



***Supporting Moldova's National Climate Change Adaptation
Planning Process***

Final Report

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PROJECT CYCLE MANAGEMENT

Project Final Report

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Project title:

<i>Supporting Moldova's National Climate Change Adaptation Planning Process</i>

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Reporting period:

Reporting period: 2013- 2017 y.y.	
Due date: 31 March 2018	Report submitted on 1 April 2018
Planned project duration from: 01 June, 2013	Until: 31 December, 2017
Reallocations: EUR 940,000	

ACRONYMS

ADA – Austrian Development Agency
AP – Action Plan
AWP – Annual Work Plan
BM – Board Meeting
CALM – Congress of Local Authorities in Moldova
CBT- Climate Budget Tagging
CCA – Climate Change Adaptation
CCAS – Climate Change Adaptation Strategy
CCO – Climate Change Office
CCCM – Climate Change Coordination Mechanism
CPSS – Civil Protection and Emergency Situations Service
DCT – Direct Cash Transfer mechanism
EWS – Early Warning System
HACT – Harmonized Approach to Cash Transfer
IC – International Consultant
ICA – Institutional Capacity Assessment
LPA – Local Public Administration
MoEn – Ministry of Environment
MARDE – Ministry of Agriculture, Regional Development and Environment
MoF – Ministry of Finance
NAF - National Adaptation Framework
NAP – National Adaptation Plan
NC – National Consultant
NGO – Non-governmental organization
NIM – National Implementation Mechanism
PB – Project Board
PIU – Project Implementation Unit
PM – Project Manager
Q – Quarter (of a year)
RM – Republic of Moldova
SAP-Sectoral Adaptation Plan
SGS – Small Grants Scheme
SHSM – State Hydrometeorological Service of the Republic of Moldova
SPM – Senior Project Manager
ToR – Terms of Reference
UN – United Nations
UNDP – United Nations Development Programme
UNEP – United Nations Environment Programme
UNFCCC – United Nations Framework Convention on Climate Change
WP – Work Plan
ZAMG – Central Institution for Meteorology and Geodynamics (Zentralanstalt für Meteorologie und Geodynamik) of Austria.

PROJECT SUMMARY

“Supporting Moldova’s National Climate Change Adaptation Planning Process” is a four-year Project supported by the Austrian Development Agency with funding from the Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria and implemented by the Climate Change Office, Ministry of Agriculture, Regional Development and Environment (MARDE) of the Republic of Moldova together with UNDP Moldova. The total project budget after the approved project cost extension is EUR 940,000.00, including original EUR 744,000 and a cost-extension was agreed through an amendment to the third-party cost sharing agreement concluded between ADA and UNDP on 31 May 2016. The amendment an additional contribution of EUR 196,000 was made available to the project, coupled with an extension of the implementation period until 30 Nov 2017 which was again extended by one month (until 31 Dec 2017) to provide UNDP with the opportunity to conduct the final project evaluation within the project implementation period and to account for the related financial commitments.

The National Implementing Partner is Ministry of Environment, Republic of Moldova (as of July 2017, Ministry of Agriculture, Regional Development and Environment - MARDE) through the Climate Change Office (responsible Party) with UNDP Moldova support. The project has an originally planned three-year implementation period, from June 2013 to May 2016. By the decision of the donor, the project implementation period has been extended through 31 December 2017.

The overall goal of the project **is to ensure that Moldova has a system and capacities in place for medium to long-term adaptation planning and budgeting** with the overall aim to reduce the vulnerability of the population and key sectors to the impacts of climate change.

The main project objective **is to support Moldova to put in place its National Adaptation Plan (NAP) process contributing to and building upon existing development planning strategies and processes and to implement priority adaptation actions.**

The project builds upon the findings of Moldova’s Third National Communication to the UNFCCC and upon the strategic directions outlined in Climate Change Adaptation Strategy of the Republic of Moldova (CCAS) (CCAS was at the draft form at the time of the NAP project design and was approved by the Government of Moldova in 2014). As such, the NAP project directly supports the objectives and implementation of the NAS.

In order to achieve the Project’s objective, a number of activities are designed to be implemented under the following outputs:

Output 1. Institutional and policy frameworks for medium to long-term gender-sensitive adaptation planning and budgeting are in place

- Development of coordination mechanism of the adaptation process of the Republic of Moldova to climate change.
- Adaptation mainstreamed in priority sectoral development plans
- Adaptation Plans for selected sectors developed
- Development of a plan for financing climate risk management and implement climate change adaptation measures
- Communication and outreach strategy for support to medium- to long-term adaptation planning developed and implemented.

Output 2. Institutional and technical capacities for iterative development of comprehensive NAP strengthened



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- Sectoral planners are trained in the use of the tools and approaches to advance medium to long-term adaptation planning, budgeting and implementation
- Data availability, management, dissemination and capacity to support adaptation planning improved.
- Partnerships to support adaptation planning and advance adaptation action in Moldova established.

Output 3. Adaptation interventions in priority sectors implemented including demonstration projects at a local level to catalyze replication and up-scaling

- Priority and innovative on-the-ground adaptation measures implemented in the most vulnerable areas/sectors in each of the three Development Regions
- A pipeline of strategic adaptation interventions for medium to long-term implementation developed.
- Replication and up-scaling of adaptation interventions supported.
- Development of climate change adaptation project concept note



Summary of the project implementation approach and reporting timeline

The reporting period covers the project implementation period of 1 June 2013 - 31 December 2017. All the project activities have been implemented according to the Annual Work Plans approved by the Project Board meetings. All implemented activities were geared towards producing the outputs and reaching outcomes of the project, and annually set targets. The Project followed UNFCCC *Technical guidelines for the national adaptation plan process*, as specified in the Project Document (page 6) and available on UNFCCC website <https://bit.ly/2bfinNP>

Brief analytical summary:

Through the implemented activities, the Project sought to develop the main components of Moldova's National Adaptation Planning in line with UNFCCC Guide, as a process that is dynamic, modifiable, and responsive to changing conditions of the country (political, economic, social) and latest information and knowledge on climate change impacts. Incorporation of adaptation into Moldova's planning process required a number of important decisions, taking into account future risks and by prioritizing early options, which was not easy to coordinate and adopt. These challenges are expected to be present in the future as well, therefore, the set-up of a mechanism for revision of the respective process was one of the most important components of the Project intended to build and enable the NAP process. *Cross-sectoral multi-stakeholder Coordination Mechanism* and its *Monitoring and Evaluation* framework that interlinks sectors during the planning and implementation of adaptation actions provide opportunities for addressing synergies between adaptation and mitigation dimensions.

Through the implementation of its activities, the Project offered continuous support to the Government of Moldova in establishing the NAP process as a modality to assemble various adaptation efforts into coherent and sustainable national process. In its turn, the NAP was envisaged to assist Moldova to maximize synergies of existing or under development processes of NDCs, SDGs, Paris Agreement, NCCAS and, to the extent possible, integrate and add value to a more sustainable and resilient development of the country.

Participation of stakeholders able to support adaptation in the political context, with a special focus on sector level was, therefore critical. From this perspective, the combination of resource constraints, current and projected climate change impacts required support for the development of cross-sectorial approaches for seven priority sectors: water resources, agriculture, forestry, health, energy, and transport – and created the priorities for the first iteration of the NAP (NAP-1). In addition, the regional development sector was considered as a priority because it is responsible for local level authorities and planning. Collaboration with Ministries and their subordinated institutions has brought a broad range of useful sector expertise, improving the understating of the sectoral context in relation to CCA and ensuring country ownership. In this regard, it may be concluded, that the Project has generated sufficient resonance and awareness raising among stakeholders of key sectors to implement further NAP activities.

Implementation of the Project was challenging due to the volatile political context affecting the progress and weakening the national ownership on the intended results. Despite all these, the project team was able to position the Project as a catalyst for government's planning on adaptation to climate change and has generated a momentum to move forward the issue of adaptation to climate change on the political priority agenda, as a distinct policy focus. This has been achieved through a continuous adaptive management, tailoring the Project activities to respond to an explicit request for assistance from the government.

Implemented activities under the **Output 1** contributed to the development of the Concept of National Adaptation Framework for the Republic of Moldova. **(1.1)** The Concept defines Moldova's approach



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to developing its National Adaptation Planning as a framework for adaptation decision-making (national adaptation framework, NAF), which will be supported by periodical implementation instruments, called National Adaptation Plans and Sector Adaptation Plans. The National Adaptation Planning Process in Moldova was established under the UNFCCC *as a process* to enable parties to identify medium and long-term adaptation needs and to develop strategies and programmes to address those needs. As envisaged by the UNFCCC, it is a continuous, progressive and iterative process. The document sets the key principles, the NAP concept and the process to develop a NAP, elements of the roadmap for the NAP1, monitoring and reporting procedure. During the consultations' process of the proposed concept, comments and objections of the MoEn/MARDE have been considered and incorporated into the final version of *National Adaptation Framework (NAF) for Moldova*. According to the UNFCCC guidelines for the development of the NAPs, each country is entitled to develop its own "roadmap" towards the development of its NAP. Therefore, the *Roadmap towards a National Adaptation Plan (NAP1)* as a document clarifying the elements and steps to be taken towards establishment of the NAP process in Moldova was developed as an overall guidance on the development and finalization of the NAP process in Moldova. It highlights the steps to be taken by the Moldovan government, including through the ADA/UNDP Project, to establish its adaptation planning process, develop its NAP1 and support sectoral adaptation planning. Overall, the developed Roadmap under the NAP Project sets key actions divided into four work streams, with the first three work streams being focused on the preparation of the NAP and adaptation planning in general, and the fourth one - focusing on long-term, iterative adaptation. It should be noted that ADA/UNDP Project has supported all four work streams.

Under the **Output 1** the Project team worked on the identification of the existing (baseline) status in relation to climate change adaptation in seven priority sectors: *regional development, water, agriculture, energy, health, transportation, and forestry*. The assessment focused on the overall organizational performance and functioning capabilities of the sectors and identified the sectors' needs in relation to climate change adaptation capacity development. The sector level capacity needs assessment involved consultations with key stakeholders, namely MoEn/MARDE, MoH, MRDC, MAFI, MoEc, Moldsilva Agency and review of data and available information. Based on the analysis of the systemic gaps in information and processes for integrating CCA, sectors' vulnerabilities and barriers to implementing climate adaptation, and institutional and technical capacities needs of the sectors with regards to CCA, the organizational and institutional capacity constraints of the sectors to effective planning of climate adaptation have been revealed. During ICA assessment, a number of key national institutions (sectoral ministries, agencies, NGOs) have been identified as having a central role to play in the NAP process. As a first step, the level of their understanding of climate change, in particular, of adaptation, was identified by conducting a *self-assessment questionnaire-based survey*. The results showed that in terms of consideration of climate issues as a national or sectoral priority, 48% of responses ranked climate of medium priority across all 52 aspects, with the balance of responses split almost evenly between high (27%) and low (24%) priorities. Against this baseline, the support of ADA/UNDP Project was allocated to address knowledge gaps, share information as an important part of the NAP process, promote access to information on climate change, as well as tools and methods needed for sectors to make informed decisions towards addressing current and future climate variability. Based on the ICA findings which identify a range of institutional capacity constraints and impediments faced by Moldova to effectively respond to climate change impacts, a *Capacity Development Plan (CDP)* was prepared, presenting the options and opportunities to address the identified barriers. As more data are available on climate change impacts and related vulnerabilities at the sector level the Institutional Capacity Assessment in relation to CCA is to be undertaken by sectors on a recurring basis. The Assessment will identify the emerging capacity gaps and the required adaptation measures. Therefore, the experience gained within the ADA/UNDP Project has been valuable both for the implementation of further Project activities which has built upon this assessment and as a first step towards an iterative NAP process.

A two-pronged approach to developing and strengthening institutional capacity and adaptive responses was recommended in CDP: (i) develop and strengthen the enabling institutional capacity and (ii) the development and strengthening of adaptive institutional capacity. The focus of CDP was on interventions that have to address gaps related to climate awareness, human resources, and risk management information and technologies.

Under the Output 1, in particular, within the extended period, the concept of *Climate Change Coordination Mechanism (CCCM)* (with emphases on adaptation component) was developed at the government's explicit request to which the project has responded promptly. It is grounded in the recognition that achieving and sustaining any adaptation outcomes depend on the contributions of multiple and interconnected actors at multiple governance levels equipped with enough capacities to incorporate adaptation into the development planning. Cross-sectoral multi-stakeholder Coordination Mechanism that interlinks sectors during the planning and implementation of adaptation actions, provides opportunities for addressing synergies between adaptation and mitigation components, track, monitor and assess the progress made in adaptation planning and implementation. The Project contributed to the conceptualization of the cross-sectoral multi-stakeholder CCCM in a Government Decision format, by which the responsibility of cross-sectoral coordination of adaptation was attributed to the *National Commission on Climate Change (NCCC)*. The CCCM is built on the existing in-country institutional arrangements for climate-related activities and comprises actors of horizontal, inter-sectoral and of vertical planning, with sub-national representation as well, thus ensuring the dialogue between national and sub-national governments. The Monitoring and Evaluation (M&E) framework/system was interlinked to the coordination mechanism of adaptation process, that responded to the need of monitoring and evaluating the effectiveness of developed policies and implemented measures, as well as of other adaptation progress related work. The M&E framework is tailored to the specific circumstances of Moldova, appropriate to country's circumstances and will be enacted through a Government Decision. Further, a portfolio of pragmatic monitoring and evaluation tools was proposed to assess the adequacy, effectiveness, and efficiency of adaptation planning and action, such as: climate change risk and vulnerability assessments (against the baseline); sectoral indicators to monitor progress on adaptation priorities along with indicators to measure the degree of adaptation at ecosystem or sector levels, cross-sectoral indicators in a score card format to measure institutional capacities and progress made in developing enabling environment, national climate expenditure reviews to examine whether public expenditures on adaptation are aligned with set goals and are allocated in a cost-effective manner, and others. The whole M&E is seen as a tool for learning, but also as a mechanism of accountability with regards to the adaptation, with a standardized procedure of evaluation which will ensure an iterative process of NAPs and SAPs. The *Concept of the Information System* laid the ground for setting up the main components of the system itself. The Developed *Climate Change Adaptation Information System* is an indicator-based monitoring and reporting system as one of the main tools of the M&E framework and contains: a) *a portal* intended for presenting the public information related to the sector level adaptation process and results: policy documents stipulating adaptation targets, reports on vulnerability & adaptation assessments, publications, reports on evaluations, other materials; b) *a monitoring platform* designed to create, monitor and evaluate various types of indicators by domains, focus area, level of development, data providers, calculation methodologies / formulas, spatial level, reference periods, frequency of data collection, expected adaptation trend and other options monitoring and evaluation based on templates. Despite the solid foundation provided by the project, institutional structure and cross-sectoral coordination remain one of the key challenges of climate change adaptation planning and implementation in Moldova. Further public consultation processes (during the submission to the Government planned for Q1, 2018) with relevant stakeholders will improve understanding of the proposed system and build confidence on designed CCCM, including the M&E component. **(1.2)**. Adaptation mainstreaming into sector level planning of Moldova was the effort of incorporating priority responses to climate change in strategies, policies and their implementation action plans in



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order to reduce potential climate risks and vulnerabilities. Adaptation mainstreaming from a climate change perspective was approached both through the development of climate change specific policy documents and associated implementation action plan, that address developmental aspects of vulnerability and also from a development perspective, integrating climate risk into sectoral development policies and action plans. In doing this, the intention was to get away from discreet, stand-alone adaptation actions addressing climate risks and adopt an integrated sectoral response incorporating adaptation into national and sectoral development to the extent possible. The process of mainstreaming climate change adaptation into already existing policy framework at the sector level went through modifications of policies, which was a challenge for both sector and district levels planners and required technical support. Therefore, staff knowledge and skills were issues to be addressed from the onset of adaptation planning and required capacity building efforts. The methodology of mainstreaming of adaptation context and action into the existing sectoral policies that will help system (sector) to reduce the risks and vulnerabilities and adapt to the impacts of climate change received dedicated support through development of step-by-step guides and providing trainings to technical planners. For transport sector, the most appropriate strategic document as an entry point for adaptation mainstreaming was considered *Transport and Logistics Strategy for the years 2013-2022*, while for energy sector *Energy Strategy of the Republic of Moldova till 2030* as comprehensive sectoral policy documents with high impact on sectoral planning. For both sectors were identified sets of actionable adaptation measures to be incorporated into sectoral planning, in particular into strategies becoming more robust in considering the potential mid to long-term implications of climate variability and change to transport and energy sectors. Mainstreaming climate change adaptation into district level development strategies and their performance-based budgets was a way to incorporate adaptation into the sub-national level planning, which improves the uptake and sustainability of the adaptation process at local level. Embedding new adaptation knowledge and understanding into existing district level planning of six regions of Moldova: Singerei, Falesti, Nisporeni, Calarasi, Basarabasca, Leova expands, strengthens and contributes to adaptation ownership at the local level. The project also contributed to the strengthening of the LPAs capacity to implement adaptation interventions in priority sectors. **(1.3)**. Mainstreaming of CCA into sectoral development planning of Moldova was applied also through the development of sector-specific climate change adaptation strategies and their implementation action plans. Development of the sectorial strategies was considered a way of framing climate problems and formulating sector-specific policy responses to current and future climate changes. This was in line with the *ex-ante* approach to integrating climate change into a sector strategic document. The Project supported development of *the Climate Change Adaptation Strategy* and its implementation *Action Plan* for the *health sector* and *Climate Change Strategy* and its implementation *Action Plan* for the *forestry sector* incorporating both adaptation and mitigation components of climate change. Development of sector-specific policy documents helped to build capacity by raising awareness and enhancing preparedness among the institutions, sectors and all involved stakeholders. In both cases, a working group and inter-sectorial committee have been created, composed of representatives from the lead institution (Ministry) and main stakeholder. It was assumed that the capacity built within sectors teams during the process of preparing the policy documents will facilitate and catalyze the design of other sectors adaptation policies or programs of action. **(1.4)**. This activity has been reconsidered in light of the national circumstances where the World Bank has promised financial support for development of the Climate Change Financing Plan. During the meetings between the representatives of WB, MoEn, and UNDP, in order to avoid overlapping and duplication of the activities, it was agreed that the WB will focus on developing an investment plan for climate risk management and adaptation, while ADA/UNDP project will be oriented toward developing the procedure on expenditures tracking and monitoring with regard to climate change adaptation. Therefore, as a follow up to the agreement between MoEn, WB, and UNDP under the Activity 1.4. the Project worked on adopting and supporting to the extent possible, the implementation of the *Climate Budget Tagging* (CBT) procedure and its incorporation into the M&E system. By choosing to link the M&E of the climate-related expenditures to NAP, it supports the mainstreaming of climate change



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policy formulation through the existing budgeting processes. This activity aims at improving the understanding of how and how much is being spent on national climate change responses, through which programs the funds are being spent, and which programs include climate change objectives (or co-benefits). This process supports the ability of the Ministry of Finance and the Ministry of Agriculture, Regional Development and Environment (MARDE) to track climate expenditures and improves their ability to ensure progress on climate change vis-à-vis Moldova's national development goals and international commitments. This process also supports development of the financial records required to help build a climate-financing framework. The purpose of identifying (tagging) climate-related expenditures is also to provide a systemic and replicable process that identifies and prioritizes climate-related programs, activities and projects (PAPs) in budget proposals and budget allocations. In conjunction with other climate change mainstreaming initiatives, CBT enables improved integration of climate change into national and sub-national planning. In this context, the need to generate robust data and the evidence upon which policy recommendations and future spending decisions are based is critical, helping policymakers understand the resource levels required, as well as the gaps, to finance the (national) response to climate change, monitor and track climate finance flows, reallocate, as necessary, the scarce resources to achieve climate-compatible national development, and increase transparency over resource allocation and management. **(1.5)**. The Project applied a wide range of communication tools identified important in adaptation implementation, including regularly updating of www.adapt.clima.md website, posted newsletters, development of publication materials (brochure, leaflets, guides, poster, video and audio spots, TV and radio broadcasts). The project employed tools to communicate with both targeted audience to carry out participatory dialog, along with engaging a larger audience through Facebook, Instagram, YouTube, Flickr, Issuu, CCO and UNDP websites. Communication on implemented pilot projects presented an opportunity to showcase the adaptation initiatives in rural communities and to learn from and build upon the success of these initiatives, which are small-scale but combine multiple approaches of engaging with the private sector and communities. In order to supplement national capacity-building efforts, the project also helped to support regional capacity-building, which is proving to be effective in information exchanges between countries (NAP-GSP programme workshop).

Under the **Output 2** the project offered continuous support to state institutions of national, sector and district levels to plan for and implement adaptation, as there was a need to generate enough interest from the decision-makers to demand and be receptive to climate vulnerability information. Since the majority of Capacity Development needs identified in the ICA were essentially linked to those of sectoral level, sector-specific activities were considered of utmost priority for supporting each sector's ability to adapt to climate change. Project activities were oriented towards developing the knowledge and required capacity-building of specific institutions and related governance systems at the state (national), regional (sub-national) and local levels to apply adaptation planning. In addressing institutional capacity adaptation efforts successfully, a number of context-specific tools and instruments were made available, in particular methodological materials and guidelines on adaptation mainstreaming into policy documents, adaptation measures identification and incorporation into sectoral planning, climate tagging of sectoral and national budgets, incorporation of gender equality into sectoral planning, evaluation of cost and benefits of adaptation measures, use of terminology and vocabulary of climate adaptation, application of conservation agriculture techniques, communication tools promoting correct and efficient climate communication. Guiding materials were developed by Project's consultants or adopted from the international sources ¹ and adjusted to country-specific needs.

Institutional capacity for climate change adaptation planning of line ministries and agencies of the Republic of Moldova was enhanced via thematic workshops, roundtables and meetings organized

¹ Least Developed Countries Expert Group. 2012. *National Adaptation Plans. Technical guidelines for the national adaptation plan process*. Bonn: UNFCCC secretariat. Bonn, Germany. December 2012.



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for key sectoral stakeholders with special focus on Ministry level decision makers and technical planners of Ministry of Health, Ministry of Transport and Road Infrastructure, Ministry of Environment, Ministry of Regional Development and Construction, Ministry of Agriculture and Food Industry, Civil Protection and Emergency Service. During these events reports and presentations addressing sectoral gaps with regards to climate change adaptation were presented and solutions discussed. The organized national and regional conferences had the objective to promote the importance of establishing medium- to long-term planning for adaptation at national and sub-national levels, targeting national and sub-national policy-makers and other stakeholders. Dedicated events were organized in order to strengthen the leadership within key Ministries on the importance of medium- to long-term planning for adaptation. Meetings with all relevant partner institutions (from the priority adaptation sectors) were organized in order to discuss their visions on implementing the NAP process in Moldova, the approaches to be used and the national and sectoral mandates. The roundtable “*Enhance the national vision and mandate for the NAP process*” had the objective to increase knowledge of the stakeholders on the NAP process, the involved mandates and the vision on the national adaptation planning process, the need of comprehensively and iteratively assessing development needs and climate vulnerabilities, and institutional functions in adaptation. A number of short-term training were conducted for sectoral planners on the use of the tools and approaches to advance medium- to long-term adaptation planning, budgeting and implementation, each training being supported with guiding materials produced for both participants’ use and for wider dissemination. **(2.2)**. The project has supported the State Hydro-meteorological Service (SHSM) to strengthen institutional capacities and develop the essential skills and competencies of the SHSM in line with EU Meteoalarm and EUMetNet standards and provide high quality hydrological and meteorological services. Distinct activities were directed towards improving the capacity of the State Hydro-Meteorological Service of Moldova (SHSM) and support its membership to EUMETNET. Technical and institutional capacity-building, including improvement of meteorological and hydrological services, was one of the main project’s focus during the extended phase of the Project. The nine modules delivered to SHSM staff by ZAMG (Austrian Central Institute for Meteorology and Geodynamic) had the objective of improving the institutional capacities and the quality of services of the SHSM. The training courses on advanced weather forecasting contributed to strengthening both individual and institutional capacities with regards to weather forecasting, hydrology, and IT. In order to improve the quality of data management, data availability and access to the general public and specific groups of users, a full reconstruction and modernization of the website of the SHSM were undertaken www.meteo.md. The current version has a modern design with an interactive operation and efficient in data management. Adjustment of weather data presentation according to Meteoalarm platform standards was done in parallel and the SHSM staff independently operates EU www.meteoalarm.eu platform. **(2.3)**. The Project has promoted strategic partnerships among key institutions, the most beneficial and relevant being the partnership between the State Hydrometeorological Service of Moldova (SHMS) and the Austrian Central Institute for Meteorology and Geodynamic (ZAMG), sharing best practices and mutual assistance

The focus of **Output 3** was placed on information that can help enhance adaptation action on the medium and short term at the sub-national level. Attention was paid to identifying those adaptation measures and activities that have the potential for scaling up and for understanding how distinct adaptation actions can be integrated into comprehensive strategies. **(3.1)**. Seven pilot projects of site-level adaptation interventions (ADA/UNDP Project) were implemented to demonstrate how the strengthening of community and farm resilience to climate pressures can be concretely carried out on small-scale projects. Six vulnerable districts from three regions of the Republic of Moldova (North, Centre, and South) were targeted for implementation of climate change adaptations. Developed *Guidance for implementing climate change adaptation options as a Small Grant Scheme (SMS)* was specific about the principles for selecting the target districts for implementation of adaptation interventions, the approach for the prioritization of sectors at the local level, and the general approach



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for financing CCA interventions was outlined. The Grant Scheme was implemented in the most vulnerable districts of the country based on Livelihood *Vulnerability Index* (LVI) produced in the Third National Communication of Moldova to UNFCCC (2014). The developed menu of adaptation options preceded the implementation of SMG with the purpose to guide the applicants on the variety of adaptation options with the potential to be implemented in Moldova's conditions. By promoting new agricultural technologies, like automated GPS navigation in conjunction with improved soil conservation methods and precision machinery, improved water management at the household level, applying PV for energy production at the farm level, the overall objective was to promote climate-resilience for farmers from vulnerable districts. The implementation of these technological type adaptation measures brought environmental, social and development benefits through minimizing potential problems, including soil erosion, degradation of soil, and excessive energy consumption, adding to the overall sustainability and energy efficiency of the entire farming operation, saving fuel and labor. Grants beneficiaries promoted also a wide variety of cropping practices as part of a systems approach to sustaining and improving natural resources. Dissemination workshops were used also as an awareness raising and experience sharing activity implemented at the local level. **(3.2-3.3)**. In addition to implementing priority adaptation initiatives, a number of strategic medium- to long-term adaptation interventions have been prepared. Based on the experience gained during the implementation of pilot projects, national experts produced and discussed with beneficiaries and implementers the learned lessons and discussed them during the experience sharing workshops conducted in rural communities. The up-scaling strategies and concepts aim at contributing to transformation adaptation, in particular through the deployment of technology type adaptation measures at the site level, involving multiple actors. The implementation of proposed strategies and concepts spans from the community to the sector levels and incorporate the approach of how the implemented distinct pilot actions which relate to the adaptation process at community/household level can be combined within comprehensive strategies. Under the enhanced consideration for upscaling were the project ideas based on lessons learned from the implemented pilot projects, along with technological ideas suitable for specific sectors with potential for scaling up. During the implementation of the seven pilot projects, the risks as well as the advantages of supporting, mentoring, and funding local capacities were considered in the development of scaling-up strategies and project fiches. **(3.4.)** The need in implementing a large-scale adaptation intervention oriented toward building country's resilience in the areas vulnerable to climate change was mentioned in many climate risks and vulnerability assessments undertaken by project's consultants, along with conclusions of other national and international expertise from the area. Therefore, after a number of coordination and preparatory activities carried out by project partners (ADA, CO UNDP, Ministry of Environment and PIU) a common area of interest of a potential adaptation intervention being water *resources management* was identified as one of the most suitable adaptation action. A pre-feasibility study on surface water management adaptation intervention in the Republic of Moldova to enhance climate resilient development of vulnerable areas of the country and to ensure water and food security was developed. The intervention aims at increasing the capacity of communities for better water operation, inform the policymakers through the provision of inputs for water policy, groundwater regulation, as well as water budgeting and sharing. The implementation of intervention will help build a long-term resilience of drought-prone areas of the country considering both current and future vulnerability to climate change, it will address social inclusion by integrating vulnerable communities of Moldova, including women, in climate resilient water resources management adaptation measures at the grassroots level. Use of renewables such as solar energy and other types of renewable resources would also be considered as an adaptation element in the water resources management and will be part of the feasibility analysis. Implementation of this activity was done through a wide consultation process, involving responsible in the country for water management institution *Apele Moldovei*, MARDE and LPAs in order to identify already available data on existing water reservoirs and coordinate further project actions in data collection. As part of the feasibility study, the questionnaire on the evaluation of water storing existing capacities and demand potential of the Republic of Moldova



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considering climate changes scenario through the rehabilitation or construction of small size water catchments was produced and distributed to all communities of Moldova. Based on the collected data of existing hydrographic reservoirs- ponds, heals, tanks, etc., including their number, size, spatial distribution, estimation of capacities, water volumes, water quality, type of property, destination, other characteristics, the current baseline scenario for water-related adaptation intervention was constructed. The survey helped to identify the needs of Moldova's communities in new water catchments based on run-off water. The study included the development of community-level maps to identify the existing water reservoirs and proposed by LPAs sites for building new water reservoirs.

Strengthening gender consideration in the NAP process of Moldova was done on the purpose to ensure equal participation of men and women in the decision making and implementation of the activities and to ensure that relevant knowledge is integrated into policies. The project addressed gender and climate adaptation topic through gender dedicated activities along with mainstreaming gender component into implemented activities. The Project included a series of outreach, awareness-raising and training activities at the national and sectoral levels, along with dissemination of gender-related experience at the sub-national level. Provided training to decision makers including the gender mainstreaming concept, gender dimensions in climate change, application of knowledge on gender data, development of sectors specific gender indicators, as well as the application of gender lens to developed policies and monitoring and evaluation tools. National experts on gender closely collaborated with sectoral working groups during the development of policy documents and made conceptual clarity on gender issues with regard to climate change, along with methodology to be applied in mainstreaming of gender equality in the sectoral policy framework. A number of gender-specific methodological guidelines were developed to help sectoral planners incorporate gender equality into sectoral and sub-sectoral planning. The Project organized events for general public addressing gender and climate topic through awareness raising and information events, organizing public debates, delivery lectures to students from various profiles; energy, transport, agriculture, architecture, journalism incorporating climate component into the developed gender-specific national policies and addressing gender issues at the local level.

Background/context

Moldova, a small, landlocked country in Eastern Europe, has an area of 33,846 square km and, according to national and international expertise, it is one of the most vulnerable countries in Europe to climate change. Over the last decade, the country has experienced a number of extreme events, such as droughts and major floods, along with incremental effects of increased mean temperature, uneven distribution of precipitations through the year, which have had negative consequences on the country's economy and population wellbeing and health. Severe droughts are recurring more frequently causing significant economic losses. The increasing scope and intensity of extreme events have also resulted in increased frequencies of high-risk situations. The droughts of 2007 and 2012 are estimated to have caused overall economic losses of around 1 billion USD and 400 million USD, respectively, and impacted 80% of the rural population. Damage and loss associated with the floods of 2008 and 2010 are estimated at around 120 million USD and 42 million USD, respectively.

Knowledge on climate change impacts, vulnerabilities and initial assessment of adaptation priorities in Moldova results from work conducted as part of the First (2000), Second (2010) and Third National Communications (2014) to the UNFCCC. The NCCAS, which built on the National Communications, and which has been developed with UNDP expertise support, identified the main climate change impacts, risks, and vulnerabilities for key sectors of the economy and provides an integrated vision on the development of opportunities to address the impact of these changes in a resilient manner. Additional sector specific and regional studies and projects provide important supporting information on climate modeling, impact analysis, vulnerabilities and potential adaptation measures.

To address these vulnerabilities, the Government of Moldova under CO UNDP guidance, through support received from the Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria launched its national adaptation planning (NAP) process through consultations with national stakeholders. During many occasions, the representatives of the Ministry of Environment/MARDE mentioned that the support provided by the Project to the Government in establishing the NAP process in Moldova is a major one, as it ensures that the long-term effects of a changing climate are taken into account in planning at national, sectoral and local levels.

The NAP is seen as a powerful tool for NCCAS development, and its *Action Plan*. During the consultation and development process of the NCCAS, sectors have been identified as a bottleneck in the country's general planning processes. Therefore, there is a need for a lead agency with influence across government and non-government organizations (NGOs) to coordinate comprehensive and integrated planning actions between sectors and at different scales, while increasing implementation effectiveness. This is especially pertinent to key sectors that relate to water, food security, and energy, which are a critical aspect of Moldova's national development goals.

The timeframe of Project implementation was an eventful one from the climate change perspective both at international and national arenas, setting a motivating background in advancing with activities implementation.

Through the Government Decision No.1009 as of 10.12.2014, the *Republic of Moldova's Climate Change Adaptation Strategy* was adopted which states Moldova's vision in relation to climate change adaptation and provides an integrated vision on the development opportunities to address the impact of these changes in a resilient manner. The general objective of the CCAS is oriented towards "increasing the capacity of the Republic of Moldova to adapt and respond to actual or potential climate change effects" and it is underpinned by an in-depth study of future climate risks and their impacts on vulnerable sectors. The NCCAS has three medium- and long-term objectives under which adaptation actions are clustered for the priority sectors (agriculture, water, health, forests, energy and transport), as well as for cross-sectorial action. Also included in the NCCAS is the prerequisite of developing an integrated mechanism for adaptation.

Moldova has ratified the *Paris Agreement* on climate change in May 2017 committing to reduce by 2030 gas emissions by 67% (as compared to 1990). The Agreement is called upon to implement 1992 Framework Convention on Climate Change ratified by Moldova in 1995.

Moldova's efforts to contribute to Paris Agreement goals are stated in its 2016 Nationally Determined Contributions (NDC). The NDC contains a strong adaptation component that relies upon the ongoing first cycle of the NAP process to inform the development of adaptation goals and their implementation. Linking of the NAP process with the establishment of the NDC targets will prompt a constructive feedback loop between national and international decision-making on climate change.

The 2016 *Low Emission Development Strategy until 2020* (LEDS) serves as the foundation for low emission pathways, particularly in energy sector, and for strengthening the national greenhouse gas inventory system, formulating Nationally Appropriate Mitigation Actions (NAMAs), and for designing a measuring, reporting and verification (MRV) system to support implementation and evaluation of NAMAs and LEDS. The policy document incorporates adaptation benefits, specifically in forestry sectors NAMAs.

At the same time, climate change knowledge and, in particular, adaptation, remains an issue that was addressed by the Project through all available means and tools: awareness raising, information and training workshops, guidance materials, participation in the events organized by the national counterparts or international projects/organization's. Most of the activities had a focus on the decision- makers at all levels of governance, oriented towards enhancing their knowledge on climate



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 change phenomenon and issues related to adaptation, along with the efforts needed to address these issues.

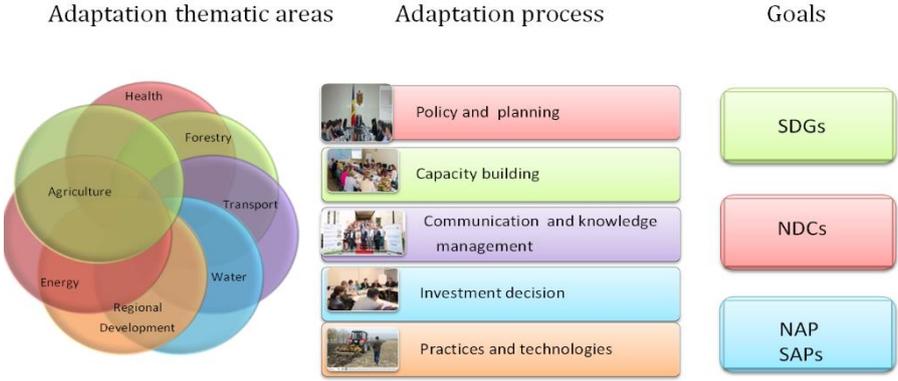


Figure I-1. Alignment of the adaptation process of Moldova to ongoing development planning.

An emphasis was also put on linking sustainable development and adaptation process. In addition, continuity of the adaptation efforts is not always guaranteed in situations where a new leadership and/or administration takes over. Moldova’s realities proved that when adaptation initiatives are conducted fragmented and in isolation from ongoing national planning and implementation activities, there is potential for resources to be wasted in creating institutional arrangements that duplicate existing functions. During Project implementation, one could observe that central finance and planning ministries require an additional understanding of the linkage between climate change adaptation and development and poverty reduction and subsequently the need to invest into response actions across all sectors of the economy.

At the grass root level, implementation of adaptation measures proved to be a convincing way to involve local private business in the adaptation process, yet, much more effort was needed to make the adaptation interventions part of the planning process. This issue was under the specific attention of the project during the reporting time and showed that mainstreaming adaptation into local planning can address both long-term but also immediate adaptation needs, recognizing that individual adaptation measures/projects may need to be designed and implemented to address these immediate needs.

I. Target group, beneficiaries

The prerequisite for a successful NAP is the meaningful participation of stakeholders from all key sectors in this process. Following this principle, the NAP Project team has engaged representatives of central and local public authorities, the private sector and civil society as well as academia and sectoral experts in all implemented activities.

The target groups for capacity building activities and awareness raising are:

- **Decision-makers and civil servants** from all relevant line Ministries: Environment, Agriculture and Food Industry, Regional Development and Construction, Health, Forestry, Transport, Economy, State Chancellery.
- **Decision makers at the** district level, with a special focus on those forms most vulnerable to climate change.

Activities under Output 1 and Output 2 were directed towards decision makers of national, sectorial and local levels. Representatives of line Ministries participated in CCA awareness raising, information and training events: targeted workshops, round tables, and discussions thus, increasing the knowledge



Moldova - Climate Change Adaptation Planning Project on CCA and ensuring a good level of ownership and commitment over the adaptation planning. Several rounds of consultations of developed sector-specific policies and recommended adaptation measures took place with the active participation of decision factors. District level authorities is another target group for capacity building activities along with on the ground implementation of adaptation interventions.

- **NGOs active** in the relevant fields at the regional and local level including Women’s Associations and community initiative groups.

NGO representatives took an active part in the consultations and roundtable discussions on the findings of the CCA sector-specific assessments and in the sectors’ prioritization and validation exercise.

- **Civil servants and researchers** from the National Hydrometeorological Service and relevant academic institutions (in total about 30 persons).

The staff of the SHSM is seen as an important target group. SHSM actively participated in the initial discussions and preparations for the mission of the ZAMG for SHSM to become a member of the Meteoalarm community. During the Project implementation, dedicated activities were designed to both improve institutional and individual performances of SHM and to have client-orientation services of the institution.

- **Beneficiaries of Grant Scheme** are the representatives of local private business of six vulnerable districts from three regions of Moldova (North, Centre and South).
- **Women** as a vulnerable group within climate change context.

From the 7 local adaptation projects benefitted 4,596 people and produced changes on the ground in the way agriculture and business activities are carried out. Being a Project priority gender equity and climate adaptation topic was addressed in a number of ways, thus decision factors benefiting of the knowledge and tool, along with general public.

Indirect beneficiaries include the population of Moldova, currently 3.56 million out of which 51.9% women, 16.2% children in the age of 0-14, 14.8% aged over 60, and 58.3% rural residents.

Table I-1 a. Summary on the Project beneficiaries benefiting from the implemented activities

Output	Activity type	Number of beneficiaries		
		Total	Of which 602 women	Of which 929 men
Output 1	Capacity building	756	371	385
Output 2	Capacity building	285	90	195
Output 3	Capacity building	312	114	198
	Experience sharing	203	27	178
	Implementation of pilot projects	4,596	Not available	Not available
Total		6,152		

II. Local Project Partner and structures/processes for project implementation

The implementation of Project activities was guided by the Annual Work Plans and Budgets approved at the Project Board meetings, with specific annual targets as part of overall project targets and assessing indicators.

The project implementation followed the management arrangements as set in the Project Document and the amendment to the third-party cost sharing agreement concluded between ADA and UNDP, the logical framework was used as a management tool during the implementation of activities.

During the implementation of the project, there was an evolving successful collaboration between PIU, CO UNDP and Istanbul Regional Hub of UNDP. CO UNDP offered support to PIU for procurement of international technical expertise through competitive recruitment. UNDP provided continuous support to PIU for better alignment of the procurement processes with the overall planning. Project planning meetings were organized regularly in order to track progress and speed up implementation of planned activities.

Technical capacities needed for development and management of project activities were ensured by the PIU, and there was established good operational relationship between the PIU and the institutions involved in the ADA/UNDP Project. NAP project PIU followed the rules and procedures for purchasing goods, services, and works in accordance with the Republic of Moldova's procurement laws to ensure transparency, accountability, and best-value-for-money in the tendering/ recruitment process (*Law of the Republic of Moldova no. 131 from July 3, 2015 "About public procurements"*). The procurement cases undertaken under the NAP project followed the principle of best-value-for-money for national procurements, as well as those led by the CCO, in order to also increase transparency and competitiveness in the recruitment and tendering processes. The procurement planning put in place as a practice at the CCO and NAP project, was fostering timely implementation of project activities and sound management of allocated funds and is also supporting in identification of under-delivery risks. Under the project the following procurements were made: 1) consultancy services of national and international consultants procured through a competitive process based on specific tasks of ToRs according to project's activities proposal. PIU added other tasks to the ToRs of the consultants in accordance with identified project needs; 2) goods, travel, services procured based on RFQ or competitive process applied.

During the implementation of the ADA/UNDP Project the recruitment process both at the national and international levels was done in a transparent way, the ToRs were written by the Project manager and, in some cases, with comments from the UNDP CO. In total the project manager has produced 34 ToRs for national and international consultants assignments and 6 ToRs for Companies, some of them being amended based on additionally identified tasks. The announcements for NCs positions were posted on national job recruitment websites: www.alljobs.md, www.rabota.md, www.999.md, www.civic.md, <http://www.logos.press.md/>, www.clima.md, www.adapt.clima.md, while for IC, on CO UNDP website <http://www.md.undp.org/> and also on international UNDP website <http://www.undp.org/> and www.un.org.

To ensure transparency and cooperation within the Project, NCs and IC reports have been shared with stakeholders through the PIU Dropbox, Google Drive, www.adapt.clima.md website or directly send through the e-mail.

Organized by the PIU, the Board meetings provided an opportunity for all Board members, including ADA donor representatives to review the design of the NAP process, update the work plan and review the budget. The documents discussed during the Board meetings were submitted to CO UNDP for



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comments and shared in advance with Board members according to the requirements stipulated in the Steering Committee Members ToR. Documents and reports to be discussed during Board meetings were printed out and shared with Board Members. All Board meetings had a three-lingual translation: Romanian, English and Russian.

The information and outline of all workshops and meetings planned by PIU were sent to the UNDP CO for coordination. In many cases information on projects products and achieved results was shared with other international projects (e.g. of the World Bank) under implementation in order to avoid duplication and overlapping and also to make joint efforts in tackling climate change adaptation issues.

Agendas of ICs mission in Moldova were prepared by the PIU and shared with UNDP CO, along with all planned events. Briefing and debriefing meetings of ICs were held at the CO UNDP office.

The visibility of the Project was considered and promoted by the PIU in all organized events and during the participation in other national and international workshops (pls, see *Visibility* sub-chapter).

Overall, the Project followed the arrangements of the Chapter 5 of project document, having in place Project organization structure of project document. The activities under all 3 Outputs were led by the PIU, the adaptation content of developed products supervised and guided by the Project manager.

I. Project Progress / Intervention I

V.1 Narrative description of progress

Output 1. Institutional and policy frameworks for medium to long-term gender-sensitive adaptation planning and budgeting are in place.

Activity 1.1. Development of coordination mechanism of the adaptation process of the Republic of Moldova to climate change

Activity 1.1.A. Country-driven, gender-sensitive and participatory National Adaptation Plan developed, taking into consideration vulnerable sectors, groups, communities and ecosystems.

Under the *Activity 1.1* the *Institutional Capacity Assessment (ICA)* of seven sectors of Moldova, namely, *regional development, water, agriculture, energy, human health, transportation and forestry* was undertaken with the objectives to (i) Identify the existing (baseline) capacity of the country's institutions and their potential to drive the mainstreaming of climate change adaptation across a broad variety of stakeholders and levels; (ii) perform analysis of capacity gaps in the country's ability to respond to climate change threats; and (iii) formulation of recommendations on addressing these gaps in conjunction with the National Adaptation Planning Process provision of a road map for achieving the recommended measures. Sector level capacity needs assessment involved consultations with key stakeholders, most importantly MoEn, MoH, MRDC, MAFI, MoEc, MAFI and a review of data and available information. The key findings of the ICA are presented in the narrative bellow, for details pls see Annex 1.

Assessment of sectors' capacities to plan and implement climate change adaptation

Institutional capacity is an important element in building the National Adaptation Planning as a process however, the development of this capacity proved to be a challenge for the Republic of Moldova's institutions related to climate change. For further building and strengthening of these capacities it was important to understand the existing level of capacities in line ministries in order to plan development of those required, therefore, an Institutional Capacity Assessment (ICA) was carried out during 2014-2015y.y. in key priority sectors of Moldova's economy: *water resources, agriculture, energy, health,*



Moldova - Climate Change Adaptation Planning Project transportation, forestry, and regional development. The assessment focused on overall organizational performance and functioning capabilities of the sectors and identified the sectors' needs in relation to climate change adaptation capacity development.

The assessment considered the country's framework conditions with focus on the political commitment to influence climate specific capacity and on the opportunities for climate actions: whether they limit and impede, facilitate, or even incentivize climate actions—through a range of inter-related capacity variables, such as ownership, institutional arrangements, competencies, relationships and resources, that will gauge stakeholder sensitivities and awareness at the national and regional government level in terms of a) institutional enabling capacity, b) institutional adaptive capacity (Fig.1).

Self-assessment Questionnaire-based Survey

National level. To assess the capacity to address climate adaptation in the various ministries and sectors, a self-assessment questionnaire-based scorecard was conducted in 2014. The survey was jointly conducted by the Climate Change Office, Ministry of Environment and the consultants of ADA/UNDP project *Supporting Moldova's National Climate Change Adaptation Planning Process*. The survey included 38 agencies of seven sectors (regional development, water, agriculture, energy, human health, transportation and forestry) and several other line ministries.

The scorecard focused on the strengths, challenges and priorities as perceived by the respondents, by asking them to define: i) their perception of the current level of capacity in their organization; ii) their desired level of capacity in their organization within the project timeframe; and iii) the priority given to each capacity. Respondents were asked to rank, on a 5-point rating scale, their estimate of their institutions' current functional capacity to engage in climate adaptation across 4 functional categories: (i) Understanding of the enabling environment (institutional, policy and legal framework) for climate change; (ii) Capacity for the planning, implementation and monitoring and evaluation for climate related projects; (iii) Capacity for climate change knowledge management; and (iv) Capacity for community engagement.

In terms of consideration of climate issues as a national or sectorial priority, when averaged across all responses, 48% of responses ranked climate of medium priority across all 52 aspects, with the balance of responses split almost evenly between high (27%) and low (24%) priorities (Fig. 1-2).

On elements considered of core relevance to sector activities, responses tended to be consistent within each sector. Assessment of results indicates that within each sector there is a general agreement on the various capacity aspects, as well as agreement on ability to absorb changes in the context of current staffing and funding availability. On elements considered non-core to each sector, responses tended to present an overly optimistic estimate of current capacity levels and a widely optimistic assessment of future capacity. For example, 20% of responses rated current climate related community engagement levels as acceptable with another 48% as on-going.

Overall, the assessment tool revealed a consistency in the gaps between current and desired capacities across all dimensions. This indicates that, for the most part, the capacity issues are structural and reflect external constraints such as funding and staffing.

When combining aggregate gaps between current and desired capacities (Fig.1-3) with the importance attached to them, the sectorial pattern is distinctly different.

In analyzing the prioritized functional capacities across six sectors (health, regional development, agriculture, energy, forestry and transportation) the assessment tool revealed a consistency in the gaps between current and desired capacities across all dimensions. The largest gaps appear in the dimensions related to: (1) the need to identify clear climate priorities in strategies and plans; (2) the need for clear functions and roles; (3) the need for monitoring of implementation activities with clear outcomes/outputs and indicators; (4) the need for effective leadership; (5) the need for an effective



Moldova - Climate Change Adaptation Planning Project coordination mechanism; (6) the need to disseminate climate knowledge to regional and local levels; (7) the lack of good practice examples; (8) the integration of evidence-based decision making into programming; and the (9) the lack of effective community engagement. Overall the indicators reveal capacity gaps across a range of climate related dimensions.

When looking at the individual indicators weighted for importance, the top ten indicators are divided among dimensions relating to planning, monitoring and evaluation (5 indicators), the creation of an enabling environment (4 indicators) and climate-related knowledge management (1 indicator). These ten indicators constitute a list of potential priorities for CD responses for climate adaptation (Fig. I-4).

In general, the widest gaps between current and desired capacities are mainly found within the first and second dimension of the scorecard (planning, implementation, M&E and enabling environment), which reflects the need to strengthen these components for further implementation of adaptation action.

Sub-national level. In the Republic of Moldova, the sub-national level includes agencies with countrywide policy, planning and function authority within a given sector and those with regional (provincial) level authority within a given sector. The capacity to implement and succeed in achieving long-term climate change mitigation and adaptation objectives is closely linked to the ability of regional authorities to meet these challenges. While the ICA did not focus on local authorities per se, it used the Ministry of Regional Development and Construction's (MRDCs) three Regional Development Agencies (North, Central, South) as an indicator of conditions and awareness at the local level. This approach is congruent with both the MRDC's legal mandate as aggregator of priorities and needs from the local level to the national one and as diffusers of national priorities to the local level.

Within this context, there are clear differences between the three regions in their baseline capacity. The central region scored consistently higher in the understanding of the current institutional and legal framework for climate change; in the understanding of climate knowledge; in integrating climate change related planning and monitoring and in engaging with communities on the issue (Fig. I-5)

In terms of capacity target levels, there was little variability on the surveyed aspects between the Central and Southern regions (Northern region personnel did not address this aspect) (Fig. I-5). The assessed future capacity, based on current levels of funding and training, as well as the current legal framework, averaged 10%. This consistency reflects both a good understanding by staff of their ability to internalize institutional change in the next 4 years, as well as recognition that much of that change depends on central authorities, additional funding and technical support and increased staffing.

All respondents to the survey at the sub-national level noted that climate change should require strong coordination between the national, regional and local level.

The main impediments to improved climate-related capacity at the regional/sub-national level include:

- Limited knowledge availability of climate-related impacts for both local development strategies and sector;
- Limited technical and staffing capacity;
- Lack of a policy, strategy or coordinating mechanism providing the basis and guidance for the coordination of regional and local climate-related activities; and
- The limited capacity of lead agencies to coordinate and promote a higher degree of local level involvement combined with a limited understanding and awareness by local authorities on climate change impacts and adaptation approaches.

Review of Adaptation-related Policies for priority Sectors (Pls, see details in the Annex 1)

Within ICA the analysis of policies and policy practices in relation to climate change adaptation at the national and sector levels was undertaken with the aim to identify the level of consideration to address



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climate-related issues and provide recommendations for further mainstreaming of CCA into national and sectoral political framework. In the Republic of Moldova, the national level provides the overall guiding policy framework within which lower levels (sectoral, regional and local) operate and it is at this level where overall political responsibility for climate adaptation is located. This level is vital for the reason that the national government sets legislation and regulations, many of which directly or indirectly affect the climate risks facing the country and creates the incentives and disincentives for exploring adaptation opportunities. At the national level priorities are defined and implemented through budget allocations and can, therefore, facilitate adaptation across different government levels. In addition, the delivery of important adaptation prerequisites, such as fundamental climatic and other data, analysis and assessments on climate change impacts, vulnerability and early warning systems are provided by the institutions and agencies with the national level statute.

It was important to analyze the coordination of sectoral policies that takes place at the national level, as does the responsibility for many crosscutting issues and functions related to the coordination of sub-national authorities. Some of those are embedded in the inter-sectoral discussions that take place through regular planning and budgeting processes, but others have a separate operational role.

In conjunction with the content of national policies, the assessment also included the capacity of institutions to implement adaptation action.

Summary of Policy Review

Overall, the following shortcomings in legislation and policy documents exist:

- in most of the sectoral policies, climate change adaptation (and climate change issues as a whole) is not mentioned explicitly. When mentioned, the discussion is limited to the environmental management and is not mainstreamed into broader economic growth and poverty alleviation language;
- sectoral legislation and policies do not address climate-related impacts or adaptation, even in climate-sensitive sectors such as agriculture;
- the absence of a specific reference to climate change in many laws hinders the development of sectoral programs for adaptation because ministries and agencies without an express mandate to work on climate change adaptation cannot request funding for adaptation-related activities;
- the strategies fail to note or include climate adaptation considerations in proposed sectoral measures and targets, even when these targets are directly affected by climate variability and climate change.

Some of these shortcomings are also reflected in the results of the self-assessment survey that identified ten top priorities for CD for climate change adaptation: (1) the need to link leadership and vision to national climate priorities; (2) the need to identify clear climate related national priorities; (3) the need for national frameworks to address climate adaptation; (4) the need for clarity of roles and functions in relation to climate change; (5) the need for organizational realignment to reflect climate priorities; (6) the need for linking monitoring of implementation activities with budgeting processes, clear outcomes/outputs and indicators; (7) the need for an effective cross-sectoral coordination mechanism; (8) the need to diffuse available climate knowledge to institutions, regional and local governments; and the need to develop the good practice examples; (9) the integration of evidence-based decision making into programming; and (10) the need for effective stakeholder and community engagement. The summary of sectoral gap analysis is presented in the Table I-2.

The overriding need for the development of capacity in climate change adaptation is reflected in the national policy framework that establishes climate mechanisms and defines responsibilities at various levels of Government. In this context, the adoption of the *Climate Change Adaptation Strategy of the Republic of Moldova* was a priority, the document was approved through the Government Decision No.1009 of 10.12.2014 for a period till 2020. It provides for an integrated vision on the development



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opportunities of the Republic of Moldova to react in a resilient manner to the impact of climate changes and it is underpinned by an in-depth study of future climate risks and impacts of climate change on vulnerable sectors. It is a standalone document that provides a comprehensive analysis of Moldova’s vulnerability to climate change and it's man directions to adapt. The general objective of the CCAS is oriented towards “*increasing the capacity of the Republic of Moldova to adapt and respond to actual or potential climate change effects*”. The Strategy has as a prerequisite the development of a mechanism for adaptation to actual and potential climate change impacts, integrated and implemented across all sectors of the national economy so as to reduce vulnerability and increase resilience to the effects of these changes. The CCAS has three medium and long-term objectives under which adaptation actions are clustered for priority sectors, as well as cross-sectoral action.

Table I-2 : Sectoral Gap Analysis Summary

Sector	Gap Analysis by Capacity Level		
	Systemic	Organizational	Individual
National	Climate change and climate adaptation are, for the most part, not mentioned in national sectoral strategies or sectoral development plans, and therefore, not funded or monitored	Regional branches of government agencies lack funding and training opportunities for staff	Understanding of climate change varies significantly across sectors and regions
Regional	Climate change and adaptation are not mentioned in regional and local development plans and therefore not funded or monitored	Regional branches of government agencies lack funding and training opportunities for staff	Adaptation is an unfamiliar term and concept in many sectoral agencies even when their work may be directly related. Lack of materials about climate change in Moldova

Another national level strategy in support to climate change adaptation is the *Strategy of Biological Diversity for 2015-2020*, which addresses the reasons that determine the loss of biodiversity by integrating the requirements to stop the process of losing biodiversity starting with the Government throughout the entire society, reduce direct pressure on biodiversity and promote sustainable use, improve the conditions of biodiversity by safeguarding ecosystems, species and genetic diversity, enhance benefits resulting from biodiversity and ecosystem services, building capacities for Strategy enforcement by participatory planning, knowledge management and building legislative and institutional capacities. The Strategy also aims to ensure measures to reduce the impact of invasive species by developing a study, a program and a guide on practices to combat invasive species.

National Environmental Strategy (2014-2023) ensures long-term environmental strategic planning congruency with EU norms. The strategy contains the context for development and approval of climate adaptation strategies but lacks the institutional framework that would support the drafting of participatory strategies.

Cross-sectoral cooperation and coordination

During the ICA the level of cooperation between institutions was identified as not being strong enough and requiring further strengthening. The Republic of Moldova hasn’t put yet in place a coordinating mechanism to address climate-related challenges, however, efforts are put to conceptualize and operationalize it. While the Government provides for clear lines of communication and authority within individual institutions and agencies, cross-sectoral coordination of information and strategies is



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not a strong one. In addition, existing national government's organizational structure exhibits duplication and policy gaps as well as programmatic fragmentation. These impediments represent a major constraint on the ability of the national government to link environment and development strategies with climate change impacts. Efforts are put to move toward more coordinated and integrated approaches to climate change adaptation. Improving horizontal (cross-sectoral or agency) as well as vertical (between national, local government and communities) integration and coordination is crucial to the development of more systematic responses to climate change problems.

The main systemic level impediments to effective use of multi-level and multi-sector climate change coordination mechanisms to address climate change impacts and strengthen adaptive responses:

- Lack of an over-arching national climate-driven mandate for coordination of national strategies and priorities;
- A limited number of national climate change policies and strategies and limited references to them make coordination difficult, *ad-hoc* and project driven;
- Limited use of criteria and indicators to guide and monitor the work of coordination teams;
- A link between climate change coordinating mechanisms and other national coordinating mechanisms has yet to be established.

Capacity Development Plan and sectoral Adaptation Needs (full-text pls, see Annex 2)

Based on the identification of gaps, barriers, institutional impediments and vulnerability factors, identified during the *Institutional Capacity Assessment* of seven key sectors of the Republic of Moldova, a two-pronged approach to developing and strengthening institutional capacity and adaptive responses was applied in order to develop a *Capacity Development Plan* (CDP), including technical and financing needs:

- a) to develop and strengthen the *enabling institutional capacity*
- b) the development and strengthening of *adaptive institutional capacity*

The CDP addresses the above-mentioned needs in a comprehensive way, considering that responses to increasing climate variability require the development of adaptive capacity including human and social capital, strengthening of institutional systems, sound management of public finances and natural resources, technical capacities. Institutional capacity is vital to turning climate change challenges into opportunities for development.

Key sectors and institutions have started their engagement in the National Adaptation Planning process and some sectors provided necessary entry points for integration of climate adaptation into development planning.

The main policy documents that support research and innovation in the Republic of Moldova are the *Innovation Strategy for 2013-2020 "Innovation for Competitiveness"* and *Research and Development Strategy until 2020* stating the objectives related to the development of the innovations sector.

Experienced research institutes are encouraged to participate in supporting the development of the national climate change policy. Since most research institutes conduct studies only on a contractual basis, adequate financial resources are crucial for conducting climate change research, and collaborative relationships will be developed with international financial institutions as long as financial resources remain limited for a long time. A major emphasis will be placed on building the capacities of working group members for climate modeling to develop climate models and perform impact assessment studies, for example, by facilitating the exchange of experience and research visits to international climate modeling centers. (Pls, see details in Annex 2)

National Adaptation Planning framework of Moldova

The Concept Note of Adaptation Framework for Moldova defines Moldova's approach to developing its National Adaptation Planning (NAP) process as a framework for adaptation decision-making (adaptation framework), which will be supported by periodical implementation instruments, called *National Adaptation Plans* (NAPs) and *Sector Adaptation Plans* (SAPs). It sets the key principles, NAP concept, and process to develop NAP, elements of a roadmap towards the NAP, monitoring and reporting, examples of institutional arrangements with regard to NAP. The Roadmap encompasses sectoral activities and actions within the NAP Project to establish the NAP, but also how national adaptation planning will be deployed in the long-term, thereby setting the roots for long-term sustainability of the NAP Project.

Elements of a roadmap towards the NAF/NAP. According to the guidelines for the development of NAPs established by the UNFCCC, each country is entitled to develop its own "roadmap" towards the development of its NAP. Under the UNFCCC, the roadmap is intended as "a work plan, or list of steps, to be undertaken towards the design of the NAP, which includes the decision-making framework and the various supporting action plans". This roadmap should be developed at an early stage and expresses the vision of the country for its NAP. In general, it is recommended that the roadmap specify issues related to:

- The overall mandate and objective for the NAP
- Choice of approach for the design and sequencing of NAPs
- Selected approach for sectoral/geographic planning
- Gender mainstreaming
- Monitoring and reporting requirements
- The sequence of events/program of work to guide the process until the endorsement
- Approach to consultations with sectors, non-governmental entities, and sub-national entities

In the case of Moldova, the roadmap will be developed on the basis of sectoral assessments (see below), including from a gender perspective and submitted for discussion among the various sectoral partners. The purpose of the roadmap will be to elicit consensus on the overall model and approach taken for the design of the NAP process in Moldova.

The developed Roadmap highlights the steps to be taken by the Moldovan government, including through the ADA/UNDP supported the project, to establish its adaptation planning process, develop its NAP process and support sectoral adaptation planning. The Roadmap is organized by workstreams, with activities described in the narrative part of the document, while the time schedule and coordination and correlative links between Roadmap components could be seen in the Smart Sheet format (please, refer to Annex 4). This roadmap was developed as an overall guidance on the development and finalization of the NAP process in Moldova, the Roadmap was consulted with the Ministry of Environment and comments incorporated.

National Adaptation Framework Concept (PIs, see details in Annex 3)

The Concept of the Roadmap highlights the main components of NAP process in Moldova as a framework. The national adaptation framework (NAF) is first and foremost an institutional and policy framework for decision-making, reporting, and monitoring, and for facilitating the integration of climate issues into sectoral programmes and plans. It is:

- Formalized through a legal mandate
- Institutionalized through a multi-sectoral coordinating mechanism headed by high-level authorities.
- Implemented through a series of periodical National Adaptation Plans (5 years) and Sectoral Action Plans (4 years), sensitive to the social and gender dimension.
- Supported by a long-term financial strategy that includes national sources and international support, sensitive to the social and gender dimension.

- Accompanied by a strong communication strategy designed to foster long-term behavioral change among sectors, consumers, and the general public.

Key principles:

- In the Moldovan context, the NAP process takes an approach based on sectoral planning, so as to promote gradual mainstreaming of adaptation into government priorities at all levels.
- The adaptation framework and the various successive NAPs should be developed, finalized, and implemented in consultation with all government sectors, as well as the general public and non-governmental organizations, including women's organizations.
- The adaptation framework and the various NAPs will ensure the social and gender mainstreaming of climate change.
- The institutional framework, as well as the various NAPs will be subject to regular reviews, including the gender impact assessment, to ensure their continued consistency with national priorities and circumstances.

The NAF for Moldova would be comprised of the following elements, as follows. Details of each element of the NAF will be developed during the NAF design process:

1. *Government legal mandate (GD)*, will require all ministries and local governments to take necessary steps towards identifying vulnerabilities and adaptive actions and to integrate them into their respective planning documents. This integration is itself mandated by the objectives expressed in the National Climate Change Adaptation Strategy.
2. This same governmental decision would formalize an inter-sectoral and *multi-stakeholder coordinating mechanism*, where ministries, NGOs, including women's NGOs, and academia can discuss adaptation priorities and monitor progress. The coordinating mechanism should be placed under the responsibility of a Senior Ministry or a Central Agency with high-level decision-making power. To the extent possible, the coordinating mechanism would build on existing similar fora, including for example the National Climate Commission. The final form of the adaptation coordinating mechanism will be designed based on an assessment of existing mechanisms in the country and elsewhere.
3. Following the government decision, each ministry responsible for a sector would be charged to develop either a *Sectoral Adaptation Plan* every four years (in line with regular planning cycles), or to integrate adaptation options into their existing Sector Plans. Sectoral Adaptation Plans or the mainstreaming approach would identify a set of priority adaptation actions to be implemented on a rolling basis. Actions will be developed according to the impact that climate change may have on the various social groups, women, children, the elderly, people with disabilities. At the end of the planning period, each ministry would report on its actions. The plans would have to be implemented from existing resources or from newly identified resources.
4. In addition to the Sectoral Adaptation Plans, the national adaptation coordinating mechanism would develop a *National Adaptation Plan*, social and gender-sensitive that would include activities common to all sectors: for example, assessments, capacity development, technology, research, publications, consultations, reporting etc. These activities would be considered as enabling/supporting activities for the sectoral plans. That plan would be updated every 5 years, based on progress in implementation².
5. The NAPs and SAPs would be supported by the *financing strategies*. That is to say that financial resources should be identified for implementation at all stages. Financing strategies shouldn't exist as separate documents or outputs, as long as funding for adaptation options included in the NAPs and SAPs are explicitly identified. In the long-term, funding for adaptive actions

² Depending on consultations, it may be possible to consider that the NAP is itself the action plan of the National Climate Adaptation Strategy referred to above.



Moldova - Climate Change Adaptation Planning Project should form part of the national and sectoral budgets, taking into consideration the gender dimension.

6. *Monitoring and Reporting.* The foreseen planning framework would see each sector become accountable to the central government for the integration of adaptation options into their respective plans. The coordinating mechanism would be entrusted with the authority to request data and information from all sectors and to compile those into periodical reports to the government.

In its broader elements, the Roadmap for Moldova's NAP1 may contain the following key steps, undertaken concurrently:

1. *Assessment of adaptation needs, options, and institutional capacity,*
2. *Definition of the Adaptation Coordinating Mechanism.*
3. *Definition of the adaptation framework.*
4. *Formulation and approval of government mandate.*
5. *Definition of the Sectoral Adaptation Plans*
6. *Definition of the financing plan for NAPs and SAPs*
7. *Monitoring and Reporting.*

s

A.1.1.1 Development of Climate Change Coordination Mechanism for Adaptation

One of the main findings of the *Institutional Capacity Assessment* was that the required institutional capacity to effectively address the impacts of climate change needs to be strengthened, particularly in relation to the types and extent of participation of actors and stakeholders across different sectors and levels.

The integration of adaptation into government and governance across sectors is considered critical to long-term climate resilience and adaptation. During the consultation process with regards to Moldova's adaptation planning process undertaken through a number of public events (workshops, roundtables, meetings), participating stakeholders, in particular the decision factors, expressed their opinion that at the current stage of country's socio-economic development, the most appropriate approach in dealing with climate change vulnerabilities and adaptation would be sector-based. This approach was adopted during the development of country-level *Climate Change Adaptation Strategy of Moldova (2014)* and its implementation *Action Plan*, therefore, further on, in adaptation planning process sector-based approach was the one prevailing.

At the same time, adequate consideration of coordination of cross-sectoral interactions among key climate-sensitive sectors such as water resources, agriculture, forestry, health, energy, and transport was identified as an emerging need. Typically, the planning process of Moldova uses a sectoral and activity-based approach, with little consideration for cross-sectoral interactions, while climate change brought multiple stresses in Moldova, sectors facing resources constraints, therefore, planning and implementation of adaptation require comprehensive and integrated approach with coordination between sectors and at different scales. Cross-sectoral coordination will help identify nexus opportunities, in particular between key sectors: water-food security-energy and understand their perspectives in country's adaptation to climate change. The need of a leading agency with influence across government and non-government organizations was identified as a modality to ensure coordination of planning actions at multiple levels of governance and support building up of an integrated adaptation planning process and help driving effective action across sectors and ministries. Despite that sector-based approach is perceived as the main one, other approaches such as sub-sectoral, district, community levels have been integrated and applied during the planning and implementation of adaptation action.

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In order to meet these needs and requirements and to address future climate challenges in a systematic way, the concept of *Climate Change Adaptation Coordination Mechanism (CCACM)* was developed and discussed with the stakeholders. It is seen as a cross-sectoral multi-stakeholder mechanism to maintain a sustainable institutional arrangement for climate change adaptation in Moldova and should be chaired by the *National Commission on Climate Change (NCCC)*. Its mandate would be to coordinate adaptation planning and action among all government entities, to monitor progress on adaptation, to facilitate the implementation of enabling activities for capacity development and to oversee the distribution of resources for adaptation action. While in the initial version the concept was seen as a simple one (Annex 5), during discussions it incorporated additional details, later formulated in the Government Decision format (pls, see Annex 6). The mandate for creating an adaptation coordinating mechanism stems from the *Climate Change Adaptation Strategy of the Republic of Moldova*, which includes actions to strengthen appropriate institutional mechanisms and reinforced and operationalized through a dedicated Government Decision currently undergoing an approval process but which is expected to extend to 2018. The concept of CCACM was supported by an already existing climate coordination body that assisted in reducing the administrative burden for participants, with the aim to reduce the potential for duplication and is building on current existing collaborative arrangements. The *National Commission for implementing the commitments under the UNFCCC and the Kyoto Protocol 2003* focused on the mitigation actions, but further on was expanded to the adaptation and ultimately transformed into the *National Commission on Climate Change (NCCC)*. The commission is an independent body which advises the Government of Moldova on climate change as well as is mandated to report on progress in various areas of climate change. The NCCC is seen as a permanent formalized body with the highest representation of key stakeholders: sectoral ministries, NGOs, academia, research, private sectors, taking into consideration gender dimension through including representatives of women associations and considering gender equality in all supervising activities of NCCC (Fig. I-7).

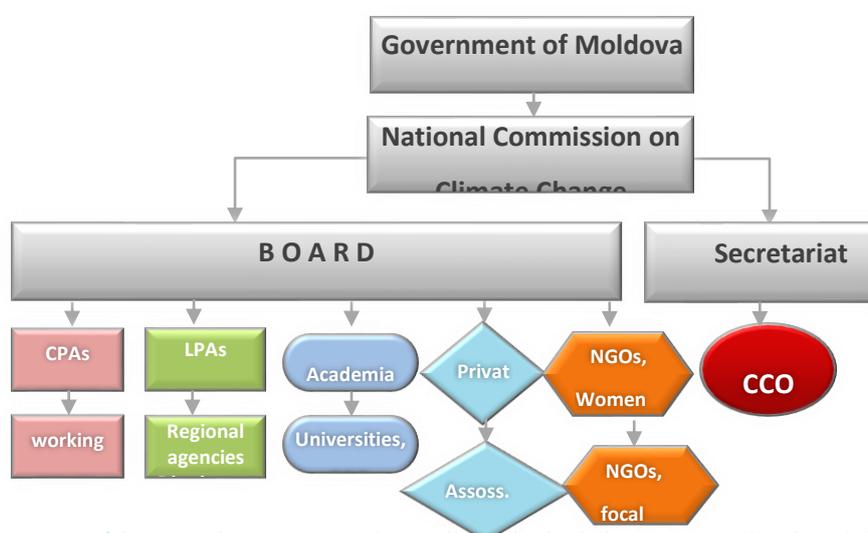


Figure I-2. The structure of the National Commission on Climate Change that leads the Cross-Sectoral, Multi-Stakeholder Adaptation Coordination Mechanism of Moldova.

Such an organizational structure of NCCC comprises actors of horizontal, inter-sectoral planning and of vertical integration, with the representation of below sectoral/national level, thus ensuring a multi-level framework with interactions between government and civil society representatives. The NCCC will have a Secretariat as a technical executive body and the Climate Change Office (CCO) under the Ministry of Agriculture, Regional Development and Environment as a legitimate and credible body that will provide staff of sufficient professionalism in the area. At the sector level, the NCC Commission will be supported by the sectorial administration in charge with the development of sector-specific climate change adaptation enabling environment and reporting on adaptation action forming working groups



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or nominating focal points. Technical committees on specific thematic areas will be formed ad hoc when the need for advanced thematic expertise will be required through recruitment of experts.

Through proposed structure and composition of CCACM, the Republic of Moldova overcomes the issue of limited integrations and connectivity between levels, which is an impediment to effective interaction in adaptation and supports national adaptation decision-making process.

The purpose of the multi-stakeholder adaptation coordination mechanism is to foster dialogue, coordination, collaboration and coherence among sectors, leverage, and report on planning and actions by all stakeholders related to climate change adaptation in the country. The established multi-stakeholder partnerships are foreseen to contribute to the development of common understanding in adaptation planning, improved rationality, and effectiveness of policy making, facilitate the implementation of adaptation action, have a contribution in the sustainability of governance. Cross-sectoral coordination will enhance also transparency in the implementation of adaptation measures and avoid maladaptation.

As the NCCC coordinates all 3 components referring to climate change: GHG emissions, mitigation, and adaptation, the roles and responsibilities of the NCCC with regard to adaptation component have been developed and formalized in the dedicated Government Decision (GD) (pls, refer to Annex 6) that will enact cross-cutting adaptation coordination. Enacting of the GD ensures a fully operational Coordination Mechanism with clear roles and responsibilities established as part of the national adaptation planning process. The Climate Change Adaptation Coordinating Mechanism is placed under the leadership of the Ministry of Agriculture, Regional Development and Environment, chairing the NCCC and it is tasked with: a) coordination of actions to implement climate change adaptation; b) coordination of sectoral plans on adaptation; c) monitoring of sectoral efforts to integrate adaptation into planning (mainstreaming); d) gender mainstreaming of climate change policies; e) the development/revision /update and implementation of regular NAPs; f) the development and implementation of monitoring and evaluation frameworks for adaptation; g) the creation of partnerships for adaptation nationally and internationally; h) the mobilization of resources and/or the monitoring of (national and international) resource allocations for adaptation; i) giving of accounts to the Government of Moldova on adaptation progress.

The Republic of Moldova in its efforts to establish an integrated National Adaptation Planning (NAP) process at national level and Sectoral Adaptation Planning process (SAP) at a sectoral level has aligned the functionality of the CCACM to planning a cycle of NAPs and SAPs. Therefore, following from the GD, each ministry responsible for a sector is in charge to develop a dedicated sector-specific adaptation enabling an environment for adaptation action every four years (in line with country regular planning cycles), or to integrate adaptation planning and action into existing sectoral development planning. Both approaches will lead to the formulation of a Sectoral Adaptation Plans. Prior to their approval at sector and national levels, the SAPs are consulted with NCCC in order to ensure their alignment with the *Climate Change Adaptation Strategy*, *NDCs*, and *SDGs*. As a result of the consultation, the NCCC shall issue its opinion, summarizing all members' viewpoints along with those of experts from the relevant (thematic) technical committees, and, where appropriate, recommendations for improvement shall be given.

Sectoral Adaptation Plans identify a set of priority adaptation actions to be implemented on a rolling basis. Actions included in these plans are developed in response to the different impact that climate change may have on the sector and on various social groups. The prioritization of adaptation measures is done by the sectors or stakeholders participating in the development and implementation of NAPs and SAPs. Each time an SAP or a NAP will be proposed, it should contain prioritized measures for that planning period. The process of determining the prioritization and selection of certain adaptation options over others should be transparent and based on rationalized criteria. The prioritization exercises could be carried out by a stakeholders group, which can weigh in considerations from



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different economic, environmental, social, cultural or political spheres and concerns. Cost-Benefit Analysis (CBA), Cost-Effectiveness Analysis (CEA), Multi-Criteria Decision Analysis (MCDA) and other relevant to case econometric assessment methods and tools are applied during the prioritization of adaptation measures. At the end of the planning period, each ministry will report on its actions to NCCC (see M&E component).

The same Government Decision enforces the NAP/SAP approach in adaptation planning, therefore, CCACM foreseen to act based on NAP process cycle will ensure linkages between sectoral/national and sub-national adaptation planning and implementation. The plans would have to be implemented from existing domestic resources and based on accessed external support.

Activities common to all sectors, for example, assessments, capacity development, technology, research, publications, consultations, reporting are part of cross-sectoral actions within NAP. These activities are considered as enabling/supporting activities for the sectoral plans. That plan would be updated every 4 years, based on progress in implementation. The NAP would also be developed in a socially and gender-sensitive manner.

The Government of the Republic of Moldova is currently undertaking institutional reforms that will promote a stronger linkage between institutions within CCCM.

Climate change adaptation Monitoring and Evaluation framework

Scope and purpose of adaptation M&E framework. Along with cross-sectoral coordination of adaptation action, comes the need to monitor and evaluate the effectiveness of developed policies, implemented measures, vulnerability and adaptation of natural and socio-economic systems, financial and human resources, along with transparency of process and data collection, other adaptation-related work, therefore, the concept of the system/framework for Monitoring and Evaluation (M&E) with regard to adaptation component was developed and tailored to specific circumstances of Moldova's adaptation planning and implementation. The proposed framework addresses the issues of monitoring, reporting, and evaluation of adaptation, overcoming the barriers and constraints with respect to the development of adaptation indicators.

The *system of interest* for Moldova adaptation M&E framework includes agriculture, water, health, forestry, transport, and energy sectors considered as priority sectors in country's adaptation process due to their high impact of climate change.

Though the NAP process in Moldova is underway and is not completely formalized, the M&E system to assess and track progress under the successive NAPs/SAPs is under development and follows the phases mentioned in the Fig. 1-8.

The system serves as a basis to plan future iterations of each plan based on sectoral approach and the institutional set-up for coordinating adaptation planning. Such a system is necessary owing to the fact that adaptation is considered an iterative process, one which is expected to progress over time and the responsibility for implementing adaptation actions will be spread among sectoral actors. There is a need to ensure that actions are geared towards a common adaptation goal established for each NAP and monitored through the M&E system. M&E monitoring at sectoral and national levels is aligned with national priorities and catalyzes national level learning for further planning and is gender-sensitive in its composition and activities. The precise definition and methodology for measuring progress on specific level indicators, as well as capacity building and training of individual sectoral stakeholders for monitoring of other indicators are under development.

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

- create a set of overarching adaptation goals to which each sector will contribute,
- track and monitor individual sectoral objectives and indicators,
- allow for iterative planning and continuous, evidence-based adaptation planning,

- enforce the gradual integration of adaptation priorities in regular development planning,
- ensure transparency of adaptation process and data collection,
- measure and monitor the outcomes and impacts of adaptation activities, investments, programmes on women and men's resilience to climate change from gender-responsive perspective.

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

Ultimately, the goal of the M&E system is to *ensure the measurability of progress across geographic scales, time and sectors, and to be able to determine whether, as a result of its successive plans, Moldova is less vulnerable to the impacts of climate change.*

M&E institutional setup and the monitoring process. The M&E will operate as part of the overall cross-sectoral Climate Change Coordination Mechanism (CCCM) specifying sector level as the main one in the monitoring of adaptation planning and implementation.

The National Commission on Climate Change (NCCC) of Moldova with the representation of line Ministries in its composition, including its Secretariat will be the responsible entity in charge with national monitoring, reporting and evaluation procedure. The Secretariat will be tasked with collecting and integrating information on climate change implementation across sectors and producing reports according to the stage of NAPs implementation. Upon completion of each NAP, based on M&E system data, the NCCC and its Secretariat will produce an overall NAP report.

Upon approval of GD, the NCCC will monitor:

- progress and evaluate impacts of implemented policies,
- implementation of adaptation related planning,
- development and dissemination of adaptation related knowledge and research, including guiding material, methodology, tools, and instruments
- implementation of adaptation technologies and practices,
- adaptation related financing and investments, including adaptation-related external support, received,
- adaptation related quality assurance process.

Line Ministries will collect and report sector-specific data along with cross-sectoral information. Each sector assigns a working group led by an *adaptation focal point* or *M&E focal point*, whose responsibility is to track progress across the selected indicators. The focal points have the responsibility of collecting information from the sector, providing required syntheses, and participating in any cross-sectoral monitoring and reporting activities under the aegis of the NCCC.

Adaptation being a context-specific process, its monitoring, reporting, and evaluation components have to take into account sectoral objectives and priorities, therefore, prioritization of adaptation areas and measures for each sector are of high consideration within M&E system.

The proposed Monitoring & Evaluation framework is based on the need to monitor progress towards achieving resilient economic growth, as noted above. Using a sectoral planning approach aligned to NAP approach to adaptation, this requires monitoring of sector-based activity as well as their aggregate impact on the overall country economy and further communication of adaptation state at sector and national levels.



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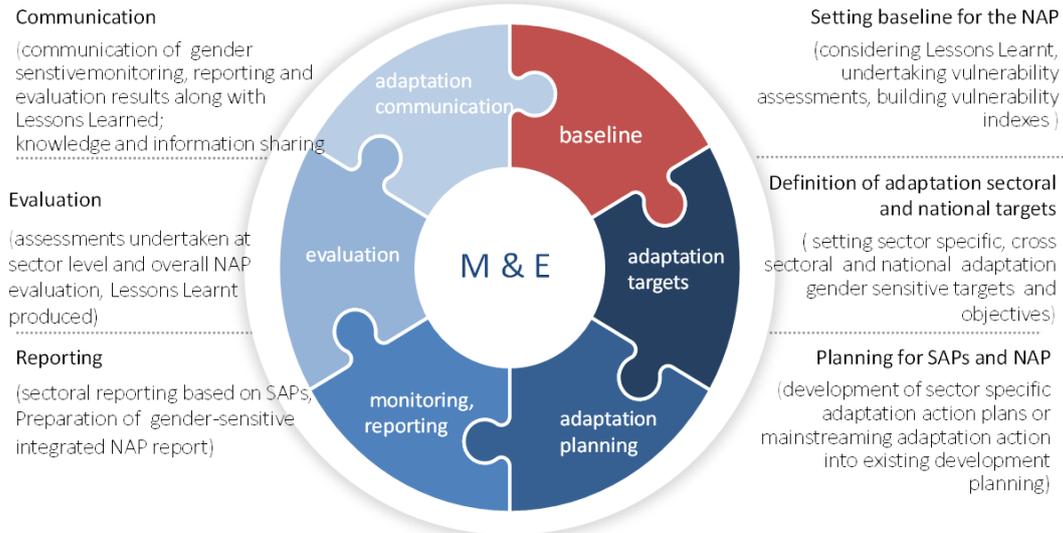


Figure I-3. Monitoring and Evaluation Framework Components of Climate Change Adaptation in the Republic of Moldova.

In order to better monitor progress on adaptation, an economy-wide definition of resilience, as well as sector-based resilience indicators, was designed during the development of national adaptation planning process. The following definition of resilience, appropriate to the Moldovan context and aligned to the national development objective of “ensuring qualitative economic development and, implicitly, poverty reduction”³ was proposed:

“A resilient Moldova is one in which economic growth and poverty reduction are not negatively impacted or restricted by climate variability and climate change”.

This constitutes the overarching objective of the current national adaptation planning for Moldova, or the ultimate adaptation goal. However, a series of intermediate results are envisaged to achieve this goal, mostly related to sectoral resilience.

Reporting procedure

According to the draft of the Government Decision on Climate Change Coordination Mechanism and M&E under revision by the Ministry of Agriculture, Regional Development and Environment, the reporting procedure will rely on an indicator based system that will ensure regular reporting depending on the type of indicators. The main responsibility for data collection and reporting falls upon the sectoral administrators, who will need to undertake annual and biennial reporting for respective indicators.

The draft of the Government Decision stipulates the level of reporting based on indicators, with high responsibility at the sector level. The data will be submitted to the National Commission on Climate Change, whose Secretariat will synthesize information to develop information notes and reports on adaptation implementation. The NCCC will also provide sectoral administrations with regularly updated templates, methodologies, and formats in order to allow for standardized tracking.

Indicator-based reporting format at different levels consists of indicators for tracking and evaluating the success of adaptation support and adaptation interventions.

In the current setup for the adaptation process of Moldova, the three levels of monitoring and reporting system is proposed, at the first, (bottom level of Fig. I-11) are *drivers of change, or enabling conditions*, which are addressed through the successive NAPs, because of their cross-cutting nature. These indicators are gender-sensitive, monitoring gender-responsive activities in all sectors. At the

³ National Development Strategy: 2020,



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second level, the implementation of adaptation actions is expected to lead to *short-term outputs* and *medium-term outcomes* all of which are expected to contribute to the achievement of the overall goal. These two levels are included in the sectoral action plans (SAPs).

The M&E System should, therefore, be used to assess progress along each of these steps, as well as the aggregate impacts of these actions, leading up to the overarching goal.

The M&E system, therefore, includes 4 types of system –based indicators:

- *driver indicators*: Indicators designed to measure the result of actions targeting the drivers of change, for the current stage they are identified to be: a) *there are resources mobilized for adaptation action*, b) *there is the capacity to plan adaptation*, c) *there is deep knowledge on climate risks, impact, and vulnerabilities*.
- *output indicators*: Indicators designed to measure the result of adaptation actions included in SAPs.
- *outcome indicators*: Indicators designed to measure the result of SAPs in terms of reduced sectoral vulnerability and advancing in adaptation/resilience.
- *objective indicators*: Indicators designed to measure the aggregate result of a NAP cycle, in terms of impacts on the vulnerability of the Moldovan economy and progress in adaptation.

The developed indicator-based monitoring system will be operated through the *Climate Change Adaptation Information System* with a website-based portal (details, pls, see Annexes 7,8). The system contains:

- a) *a portal* intended for presenting public information related to the sectors of the national economy: policy documents stipulating adaptation targets, reports on vulnerability & adaptation assessments, publications, reports on evaluations, other materials. The portal extracts indicator public data of the monitoring component, assessed and evaluated by the experts using data collection and analysis templates for each indicator. Information is extracted to allow the presentation and search of indicators by field, thematic areas, level of development, data providers, calculation methodologies/formulas, spatial level, reference periods, the frequency of data collection, expected adaptation trend and other monitoring and evaluation options.
- b) *a monitoring platform* designed to create, monitor and evaluate adaptation indicators by domains, focus area, level of development, data providers, calculation methodologies/formulas, spatial level, reference periods, the frequency of data collection, expected adaptation trend and other options monitoring and evaluation based on templates. The platform allows managing expert access roles to the information collection templates. The data can be collected over reference periods and can be made public directly from the platform in the PORTAL component in the general module for the presentation and search of indicators as well as for each individual sector. Any indicator can be published in or hidden from the portal. For each reference year, the data collection form can be changed as needed.

The indicators have been designed to inform progress toward climate change adaptation according to above mentioned three levels system and building climate resilience at the national and sub-national levels, they also reflect sectoral and national priorities within adaptation and sustainable development context. They consider social inclusion, geographical spread of adaptation efforts, are gender sensitive.

Indicator fiches contain specific information related to each indicator, category of indicator with regard to level of reporting along with their adaptation relevance: *impact, vulnerability, adaptation*, description purpose of indicator, affiliation to sector (*sector-specific, cross-sectoral*), data required, geographical coverage of indicator, units, measurement methods, sub-indicators (if needed), frequency of reporting, forecasted trend, link to reporting template (Fig. I-12).

The *reporting template* is specific to each indicator, including the data on entities responsible for reporting, mean of data verification, type of indicator, measurement units of presented data, types of adaptation measures that have been implemented in order to decrease the vulnerability and progress in adaptation, type of climate risk the indicator refers to, time of reporting period, geographical area covered by indicator, other specific information depending on particular climate risks and hazard sector has to cope with now and in the future.

Cross-sectoral reporting is based on the scorecard as a format for sectoral reporting to measure adaptation institutional progress, consisting of questions referring to the sectoral enabling environment, institutional capacities, knowledge, finance and human resources, the factors identified to drive changes in Moldova's adaptation. The scorecard incorporates also gender dimension and gender concerns with regard to climate change. The data collected based on the scorecard allow comparable measurement at sectoral level through the assessment of institutional performances and identify gaps with regard to climate adaptation. It is also a participatory process, allowing the stakeholder to self-evaluate themselves with regard to climate adaptation planning and implementation, which qualify the exercise not only as an accountability procedure but a learning tool as well.

The repository of indicators and indicators fiches, along with reporting templates of each indicator will be accessible to all participating administrations, in order to facilitate the flow of information.

The reporting process will be coordinated by the NCCC, through its Secretariat. Each sector will provide data and information according to agreed indicators and templates, for compilation and synthesis by the CCCM. The Secretariat of the CM will then produce periodical information notes to be communicated to public and reports to be submitted to the government for tracking adaptation and progress towards the overall objective of resilience. Recommendations for enhanced actions, feedback on reported information will be given to sectors.

The first phase of reporting that currently is under implementation, entails a baseline assessment of key indicators at all three levels, including sector-specific and cross-cutting indicators.

M&E Evaluation procedure. Operationalization of M&E system during the implementation of the NAP1 will set a historical baseline/ benchmark for comprehensive adaptation measurement in a long-term context within the multi-stakeholder participative exercise. The M&E framework is intended to expand over time and apply across to all economic sectors and across all levels of governance. Measuring and evaluation of intermediate outputs and outcomes (based on annual and biannual reporting indicators) will help to track changes at sector level in a shorter timeframe and ensure incremental improvements in adaptation and resilience efforts. The produced reports at sector and national levels based on monitoring results will be used in the further planning of successive SAPs and NAPs and reported to the Government of Moldova.

The data submitted to the National Commission on Climate Change through the Information System (IS) will be stocked in the CCA IS database. The Secretariat of the NCCC will synthesize information to develop reports according to the agreed reporting framework. The reports will generalize information based on all categories of indicators, but also including expert-based vulnerability assessments, gap analysis, thematic feasibility reports, and other types of assessments. Up to now expert knowledge is used in vulnerability and impact assessments at sector level and is an important source of information with regard to current stage of sectoral vulnerabilities with regard to climate variability and change and their consideration in sectoral planning to augment and interpret the trends identified by indicators.

As up to this data there are no specific norms and standards for adaptation, general principles of monitoring and evaluation based on good practices in managing, conducting and using evaluation shall be applied. The methodological guidance on this shall be adopted or developed with regard to

Moldova's NAP evaluation norms, which have to include evaluation competencies, and methodology, scope, timeliness, other details.

Quality assurance system is to be assured through the adaptation process, in particular, CBT process. Quality assurance and review (QAR) procedure will accompany climate change expenditure tagging in the performance-based budget system. Ensuring the quality of the climate change expenditure data is a key part of the budget review process. Maintaining a documentary basis for climate-related tagging decisions increases the transparency and credibility of the reporting on climate change expenditures by the Government. The purpose of the quality assurance and review process is to clarify the objectives and coverage of the tagged PAPs, identify adaptation and/or mitigation interdependencies and ensure progress on national climate change-related targets. The MoF and NCCC are the responsible institutions to ensure the quality of the collected data and to strengthen the mainstreaming of this data into budget planning, prioritization, monitoring and reporting processes. As part of this system, a QAR working group, under the auspices of the NCCC, will examine the sectoral tagging decisions and assess the evidence base that supports the tagging decision.

At the end of a planning cycle, the data would be aggregated into an overall "NAP impact assessment", which would synthesize all results achieved during the period and make recommendations for the next period. Concentrated effort to gather and evaluate evidence and interpret them, learn at the higher level of aggregation and produce recommendations adaptation to be integrated into social, economic and environmental development is to be put at the end of each NAP cycle. The report encompassing adaptation recommendations and Lessons Learnt will play an essential role in the further sustainable development and will be submitted to the Government of Moldova, through the NCCC.

The global synthesis will be produced every 4 years, or at the end of each NAP period. At a later stage will be decided if a third party like research organization, a team of individual consultants or NGOs will assess the progress of implementing the NAP or setting another objective of the assessment.

The above described M&E framework developed under ADA/UNDP Project is designed to monitor adaptation planning and action in Moldova partially is implemented. Additional resources both human and financing are needed to test, improve and fully operationalize the system.

A. 1.1.2. Gender proof mainstreaming into project's activities ensured.

Within the undertaken Institutional Capacity Assessment (Activity 1.1.) a number of gaps at the systemic level with regard to gender equality and climate change adaptation were revealed and later addressed in Project's activities, at all levels of adaptation planning and implementation.

Analysis of sectoral policies disclosed that most sectoral documents are gender neutral and contain no express reference to gender considerations and do not address relevant systemic gender indicators (socio-demographic, health, etc.). The exception is CCAS that addresses gender sensitive issues in a limited manner and the regional development policy that contains some gender-sensitive indicators. Further, there is a lack of gender studies and analysis related to the impact of climate change on vulnerable populations in the different sectors which leads to a distortion of undertaken assessments. Such capacity is needed to support government-wide interventions aimed at reducing climate impacts on vulnerable populations.

The main impediments identified to the inclusion of the impact of climate change on gender and vulnerable groups are:

- at the organizational level, the Ministry of Labour, Social Protection and Family and the Ministry of Health has a limited mandate to address climate change issues and there is a need to increase the knowledge of ministry staff on climate change impacts;

- there is a need to integrate poverty alleviation, humanitarian assistance, local and sectoral development with knowledge of climate change adaptation to better understand how it may affect gender and vulnerable groups;
- insufficient cooperation between the various sectors hinders the development and promotion of gender-integrated policies.

While climate change is not included in the Ministry of Labour, Social Protection, and Family mandate, it is a potentially effective channel for distributing information about climate change and adaptation, particularly because it works through existing relationships at the community level.

At an individual level, although women have direct knowledge and experience with climate threats, their individual adaptive capacity is very low, particularly among rural women living in poverty.

As a cross-cutting issue, gender requires action in many sectors and at multiple levels. Both at the output level along with that at of the outcome level (National Adaptation Planning process of the Republic of Moldova), gender mainstreaming was seen as an aspect that requires special attention but also as an important factor in adaptation to ensure efficiency, success, and sustainability of implemented activities. Therefore, gender mainstreaming into the adaptation planning and implementation activities along with gender dedicated activities was a priority requiring concentrated efforts, as in Moldova gender equality in various sectors is still not correctly perceived and treated in a superficial language.

A successful collaboration between the Ministry of Environment and the Ministry of Labor, Social Protection and Family and CO UNDP was established during the development of new *Strategy of equality between women and men in the Republic of Moldova for the years 2017-2021*. The Strategy included a dedicated Objective (1.10) *to climate change* which includes the following activities:

- Modification of sectoral policy documents from the gender perspectives of key sectors (transport and infrastructure, agriculture, energy, water and sanitation, food security, regional development and construction, health),
- Training of civil servants on the impact of climate change on health, poverty, accessibility of natural resources and gender roles in this context,
- Organization of information campaigns on the impact of climate change through gender dimension perspectives.

National experts on gender have closely collaborated with sectoral working groups during the development within the project's activities of policy documents and made conceptual clarity on gender issues with regard to climate change, along with methodology to be applied in mainstreaming of gender equality in the sectoral policy framework.

The newly developed adaptation policy documents of forestry and health sectors were screened through gender lens. Gender analysis was performed based on the: a) existence of gender indicators, b) text gender sensitivity, c) impact of adaptation measures on women and men, d) involvement of women and men in decision-making, e) assessment of the size of climate change risks for women and men, f) costs and resources for ensuring gender equality. The same gender screening approach was applied to the already existing sectoral development policies of transport and energy sectors for their further amendment. The analysis of various situations, including climate conditions along with men's and women's understanding of the impact of various legislative practices, cultural policies and programs on women and men and their relevant adjustment in the context of climate change was an important message to be brought to the decision factors and technical planners at sector level when engendering policy documents either already existing or the newly developed. Engendering strategic sectoral policies made gender visible and highlighted the gender dimension of adaptation planning and action.

Mainstreaming gender equality into socio-economic development planning at the district level along with the adaptation component necessitated a strong cooperation between gender and climate experts and LPAs of Singerei, Basarabeasca, Falesti, Leova, Calarasi, and Nisporeni districts. Gender mainstreaming into development planning required consideration of specifics of each district, where the understanding of gender issues in the local context had many challenges and required additional gender expertise.

Considering the sectoral approach of CCA in Moldova, a *set of indicators* for gender-sensitive development in the context of climate change adaptation planning was proposed to stakeholders for discussion and comments, with their further use for monitoring at the sector level. Gender disaggregated data were collected to the extent possible at the sectoral level through the incorporation of indicators into the sectoral policy documents. Stakeholders commented on the need to consider international experience and best practices in gender mainstreaming into policies, harmonization of national programs, and coordination of actions among multiple implementing actors. Other discussed challenges referred to women's access to and involvement in production, dissemination, and management of resources such as energy, transport, forestry, agriculture. The indicators were validated during the stakeholder workshop and recommendations have been considered in further development of sex-disaggregated indicators of the National Bureau of Statistics. Unfortunately, the database does not fully integrate climate-gender indicators. A more rigorous approach to climate-gender nexus is reflected in the cross-sectoral indicators of Climate Change Adaptation Coordination, Monitoring, and Evaluation. Based on these indicators, the sectors will collect and report gender-disaggregated data to NCCC. Moldova Women Association has representatives in the *National Commission on Climate Change of the Republic of Moldova*, its Coordination Mechanism, with involvement in the adaptation planning process, coordination, monitoring, and evaluation.

A gender dedicated training event entitled "*Considering gender dimension into sectoral planning in the context of the national climate change adaptation planning process*" for sectorial specialists, climate experts, gender focal points of central public institutions, environmental and gender NGOs was carried out. The goal of the event was to bring to the attention of the relevant stakeholders the importance of considering climate change through a gender perspective and mainstream gender equality in the development planning. The use of the gender screening techniques for gender mainstreaming into the existing policy documents and development plans as well as of the *ex-ante* gender mainstreaming into newly developed strategies and plans were the thematic areas of the practical group sessions of the training.

Another topic brought into discussion during the events organized by the Project was how to correctly communicate climate change adaptation and gender, using awareness raising and information events, publications, and other dissemination materials and media channels. Workshops and roundtables on *Gender-Responsive Policy Development* for sectors communicators of line ministries, journalists, representatives of National Bureau of Statistics, NGOs were held with the goal to familiarize participants with the concept of gender equality in the context of climate change adaptation. A specific attention was paid to building competency of decision makers to mainstream gender into sector development policies and correctly communicates climate change adaptation.

Gender components were mainstreamed in all capacity building activities, including those dedicated to SHSM staff training by ZAMG. The overall percentage of SHSM female participants amounts to 72%. Especially highlighted will be the high proportion of female trainees (95%) in the case of the meteorological training courses.

During the organized events, the need was identified to develop tools and methodologies for assessing gender responsiveness and sensitivity of programs and policies. Responding to stakeholders' request, within ADA/UNDP Project the methodological support was provided to technical planners on a sector-



Moldova - Climate Change Adaptation Planning Project based guidance. Guiding materials on gender incorporation from climate change perspectives into development planning of energy, transport health, forestry, and other sectors were developed and published (Fig. I-30) on www.adapt.clima.md or Issue)

Four (4) guides on mainstreaming gender dimension into sectoral policy documents for the forestry, energy, transport, and health sectors developed (V. Bodrug-Lungu) and published <http://bit.ly/1PXpaGi>.

Valorificarea dimensiunii de gen în politicile de dezvoltare sectoriale în contextul adaptării la schimbările climatice /Gender mainstreaming in sectoral development policies in the context of adaptation to climate change Guide developed and published.

Four (4) leaflets on gender equality in a changing climate for forestry, energy, transport and health sectors developed by V. Bodrug-Lungu and published <http://bit.ly/1pMO9Gm>.

Four (4) leaflets on gender equity in a changing climate for forestry, energy, transport and health sectors developed by V. Bodrug-Lungu were published in the Russian language as a request from the Russian speaking participants in the project events <http://bit.ly/1RLLtm2>.

Additional awareness raising and information leaflets on gender and climate change adaptation as one of the key determinants of sectors' vulnerability to climate change were produced by the national experts on gender. For the reason of widening gender and climate audience, the leaflets on adaptation-related gender-differentiated roles in different sectors were published both in Romanian and Russian languages.

During the training workshop "*Strategic communication in promoting the development projects in Moldova*" organized by the ADA/UNDP Project in cooperation with the State Chancellery of the Republic of Moldova, one-day training on gender and climate change topic was delivered to 45 sector level communicators. The importance of communicating climate change adaptation through gender lenses and different adaptation needs of women, men and the vulnerable group was the main focus of discussions held during the 2d day of the works.

ADA/UNDP Project organized a public event to debate on the issue of gender and climate with the involvement of civil society representatives. One of the objectives of "*Challenges and opportunities of climate change from gender perspective*" event was to involve more youth in the thematic discussion and debates; therefore, *Tucano* café, a location popular among students was chosen for the event. The main gender message brought to participants focused on the analysis of various situations, including climate conditions along with men and women's understanding of the impact of various legislative practices, cultural policies, and programs on women and men and their relevant adjustment in the context of climate change. The event was supported by the PIU of the project, national experts on gender and adaptation, NGO representatives. The debates were highly interactive, applying role games on various aspects of gender – climate theme. The main concluding remark of the participants was to continue the debates or other forms of interaction with youth representatives on the gender-climate topic (Fig. 7-26). The success story "*Women leading the way to climate-resilience in Moldova*" with posting on national and CO (http://www.md.undp.org/content/moldova/en/home/ourwork/climatechangeenvironmentandenergy/successstories/women-leading-the-way-to-climate-resilience-in-moldova.html) and global UNDP media platforms emphasized the role of women-entrepreneurs at the local level and could be seen as a source for replication of the best practices. Through the project's dedicated grant scheme to showcase innovative adaptation measures at the local level, money has been set aside to ensure that women have access to the training they need. As part of these efforts, the pilot project "Green energy for entrepreneurship activities" led by a woman, offered to consult and support to individuals on how to manage resources, fundraise, etc.

The PIU, national experts on gender, actively promoted gender equality in variously organized awareness raising, information and dissemination events, dedicated radio broadcasting events on gender and climate issues - Radio Moldova “*Spatial Public*”, *Radio Moldova Tineret*, *Media Centre for Youth*, *Publika TV*.

Activity 1.2. Adaptation mainstreamed in priority sectoral development plans

Redesigning the development framework of economic sectors through the incorporation of adaptation into strategic documents proved to be a complex and challenging process, requiring an advanced level of expertise on climate change vulnerability and adaptation. In practice, the pathway of mainstreaming was not a linear one. A number of climate-related assessments anticipated the mainstreaming process: climate vulnerability and risks assessments, sectoral and institution capacity assessments, gender assessments, institutional capacity surveys, other types of supporting work that contributed to the informed inclusion of vulnerability concerns into sectoral development policy documents. Awareness raising and information events (workshops, roundtables, bilateral meetings, trainings) with participation of decision and policy makers, ministry and district levels planners, NGO and private sector representatives, other stakeholders had the objectives to highlight the importance of climate change adaptation for Moldova along with seeking the opinions and solutions for identified problems. Another objective of vulnerability and adaptation-related discussions among sector stakeholders was to generate interest and motivation at the sector level so that the decision makers were more receptive to climate vulnerability information and could contribute to the creation of the enabling conditions for adaptation action and resulting into sector ownership of adaptation planning and action.

The process of *mainstreaming climate change adaptation into already existing policy framework* at the sector level went through modifications of policies, which was a challenge for both sector and district levels planners and required technical support. Staff knowledge and skills were issues to be addressed from the onset of adaptation planning and required capacity building efforts.

Methodological approach. In order to develop robust climate adaptation strategies, the correct framing of uncertainty in the medium and long-term planning and selection of appropriate approaches, methodologies and tools are of great importance and decision makers have to get command on them. This totally applies to the mainstreaming of climate change adaptation into medium and long-term sectoral development planning, therefore, the methodology of mainstreaming of adaptation context and action into the existing sectoral policies that will help system (sector) to reduce the risks and vulnerabilities and adapt to the impacts of climate change received dedicated support.

The methodology of screening the policy document (plan, strategy) against *climate risks* (applying climate lens) was an integral part of the effort to determine current and future vulnerabilities to climate change and a prerequisite to identify adaptation measures or pathways to reduce those vulnerabilities, increase resilience, and take advantage of any identified opportunities.

Applying this approach, consultants and sectoral planners undertaking climate risks screening of sector development strategies determined whether the subjacent strategic documents have considered the consequences of climate variability or/and climate change in a specific area of interest, even in spite of climate uncertainties and to help it become more resilient to climate change or more supportive of adaptation by understanding the relevant climate change risks and opportunities. The process of identifying risks, but also opportunities from climate change and variability, was an intrinsic part of the overall objective of mainstreaming CCA into the planning process of priority sectors by the sector planners of line ministries. Experience tells that new tools and processes work best when integrated into existing systems so that they become intrinsic to the ‘day job’ and are not onerous to apply. This is a key issue for Moldova and reflects the recognition that tools and processes have to be designed to work within organizations that have competing priorities, capacity challenges and limited resources, as is the case of line ministries.

At the same time, it was obvious that a more practical, context-specific guidance, incorporating Moldovan specifics of policy document evaluation was needed, therefore, based on the experience of CCA mainstreaming of two pilot sectors transport and energy, the methodological guidance *Mainstreaming Climate Change Adaptation into Moldova's Policy and Planning* (Annex 9) was developed within ADA/UNDP Project. This methodological tool provides a stepwise analytical approach and structure of mainstreaming procedure. The guide was developed based on quality standards of "UNDP Quality Standards for the integration of adaptation to climate change into development programming".

One of the first steps of the mainstreaming process was to identify the entry points for adaptation incorporation at the sector level (Fig. I-15). This step required consideration of entire sector development portfolio and coordination at institutional, sub-sector, sector and national levels for both energy and transport sectors. For transport sector, the most appropriate strategic document as an entry point for adaptation mainstreaming was considered *Transport and Logistics Strategy for the years 2013-2022*, while for energy sector *Energy Strategy of the Republic of Moldova till 2030* as comprehensive sectoral policy documents with high impact on sectoral planning. The incorporation of CCA applied the steps mentioned in the Mainstreaming Guide and the risks and opportunities identified at the sector level. The challenge of mainstreaming was in the *ex-post* improvement of the development strategic documents. The objective was to provide actionable recommendations for succinct and discrete edits to the existing and enacted Strategy document, through additions or modifications of existing text, in order to achieve a revised document which, while not altering the main strategic thrusts or require an extensive reconsideration of approved strategic orientations (which could risk the acceptance of the recommendations), moves towards a Strategy which is more robust in considering the potential mid to long-term implications of climate variability and change to transport and energy sectors.

Energy sector: climate impact, risks, and vulnerabilities (for details, pls, see Annexes 10,11)

Moldova's strategy for energy is framed in commitments under the Energy Community⁴, to which it associated as a full Member in 2010. The Energy Community acquis communautaire governs principles of competition policy, as well as legal acts in the area of power, gas, oil, environmental care, energy efficiency and renewable energy. The Republic of Moldova is also a partner country of the EU Inogate energy programme⁵, which focuses inclusive on energy security, supporting sustainable energy development and attracting investment for energy projects of regional interest.

The most likely positive impact of climate change on the energy sector in Moldova will be the warmer, shorter winters, which may trigger a reduction in the demand for heating. This will conduct to energy savings that may be considerable, with economic and environmental benefits for families, businesses, and the public sector. Reduced heating demand during the winter will most likely impact the use of biomass and natural gas (or other fuels used for heating purposes) but also electricity. Another positive impact may arise from the expected decrease in annual precipitation in that it will likewise entail an increase in the annual solar irradiance. The greater number of sunny days will be beneficial for the performance of solar energy systems (existing and projected). Efforts could be directed to making these technologies (solar PV and solar heat) more widespread.

On the other hand, the risks from the expected negative impacts can be dealt with and are opportunities themselves for transforming the energy sector, with benefits for other sectors as well. The principal climate change and variability pressures for energy sector are the rising temperatures and decreasing precipitation and the increase in the frequency and severity of extreme weather events including storms, floods, droughts and heat waves (extreme heat).

⁴ http://www.energy-community.org/portal/page/portal/ENC_HOME/

⁵ <http://www.inogate.org>

Table I-3. Climate Change Risk and Opportunity screening of the Moldova Energy sector

Component	Climate Change Risk	Opportunities for Adaptation (and avoiding maladaptation)
Natural gas sector	<ul style="list-style-type: none"> - Increased natural gas consumption due to rising domestic electric charge; - The deterioration of environmental conditions for crop growth forest climate, it poses a serious threat to energy production from biomass. 	<ul style="list-style-type: none"> - Implementing energy efficiency measures; - Sorting of waste and biogas from biodegradable household waste; - Implementing projects for installation of solar collectors for domestic hot water heating; - Increase consumption of natural gas in areas where there will be a shortage of combustible materials (pellets, briquettes, bales of straw).
Electric energy sector	<ul style="list-style-type: none"> - Increased demand for electricity caused by the increase in summer temperature and the need for indoor air climate; - Increased demand for electricity for irrigation caused the decline in soil moisture insurance; - Increased electricity losses due to rising air temperatures and lengthening the duration of the cooling system operating electrical equipment; - Increased duration of unplanned interruptions to electricity supplies increase the frequency of cases caused by wildfires in the protection of overhead lines; 	<ul style="list-style-type: none"> - Insulation of buildings and promotion of modern room-conditioning systems (eg heat pumps); - Develop programs coordinated development of power grids and construction of farmland irrigation stations; - Develop regulations on electrical equipment requirements limit to the newly purchased one, to reduce the climate impact on electricity grids and reducing energy losses; - Strengthen the regulatory framework for the promotion of energy efficient technologies within energy companies (including the approval of tariffs and enabling long-term reinvestment of savings achieved from reducing losses); - Create common regulation of the Ministry of Economy, Ministry of Environment and other stakeholders, the protection areas of networks; - Electric energy market liberalization and integration into ENTSO-E. Implementation of differentiated tariffs for electricity and construction in the southern republic of pump-storage hydropower plants (CHEAP) to settle the load curve in the national energy system.
Thermal energy sector	<ul style="list-style-type: none"> - Reduce heat demand due to rising mean annual temperature and shortening the cold period; - Decrease capacity of generating electricity and heat at power plants District (CET) caused by insufficient thermal load; - Increase water losses caused by the diminishing capacity of the cooling towers MGRES condensation heat. 	<ul style="list-style-type: none"> - Implement technologies cogeneration heat and power based on gas turbine combined cycle steam turbine; - Create near CHPs and MGRES of free economic zones for economic production from fields in technological processes using steam; - Construction in nearby MGRES CHPs and refrigerators to preserve fruit and vegetables, producing cold with steam.
Energy efficiency sector	<ul style="list-style-type: none"> - Increase energy intensity caused by the increase in electricity consumption for air conditioning and irrigation; 	<ul style="list-style-type: none"> - Insulation of buildings; - Energy labelling; - Implement building energy performance certificates; - Introduction of new forestry crops with higher tolerance to heat stress and water scarcity;
Renewable energy sector	<ul style="list-style-type: none"> - Decrease power generation capacity of HPP caused by diminishing water flow in the rivers Prut and Nistru result of lower rainfall; - Diminishing quantities of biomass due to higher occurrence of droughts; - Reduce the quota of renewable energies in the electricity system that ensures stability due to decreasing availability of balancing energy; - Reduce crop capacity growth will cause oily liquid biofuels produced smaller amounts. 	<ul style="list-style-type: none"> - The construction of wind farms, where wind potential will increase due to the increase in mean annual temperature; - The construction of solar power stations (photovoltaic) generation potential had risen; - Electric energy market liberalization and integration into ENTSO-E. Implementation of differentiated tariffs for electricity and construction in the southern republic of pump-storage hydropower plants (CHEAP) to settle the load curve in the national energy system.

Adaptation measures in energy sector

After screening the energy sector strategic documents against climate risks and undertaking vulnerability and sector capacity assessments, the national experts in collaboration with sector planners, and other stakeholders have identified the adaptation measures to be implemented by the sector.

The main CCA measures identified for mainstreaming into the energy sector strategic document are:

- Restoring the electrical stations equipment of transport networks, for rime/frost melting/ or introduction of new defrosting technologies such as PETD (Pulse electro-thermal de-icer);
- Elaboration of coordinated development programs of electrical networks and construction of farmland irrigation stations;
- Construction of additional water systems of CHPs from alternative sources
- Creation of free economic zones (FEZ), close to CHPs and MGRES, for economic production from sectors that use steam or hot water in technological processes (greenhouses, absorption refrigerating equipment, processing of agricultural raw materials, etc.);
- Implementing the Energy Management Standard (ISO 50001: 2012 "Energy Management Systems. Requirements and Guideline") for energy and private companies in order to increase energy efficiency and reduce energy intensity.
- Construction of an excess energy storage plant produced by wind farms and photovoltaic power plants with energy storage purposes and its use when there is lack of wind and sun, to balance the electric charge of the national power system (NPS).

Each of proposed adaptation measure was desegregated into a set of adaptation actions (Table I-4) and in some cases up to project level with details for justification on the needs and benefits of mainstreamed measure into the sector development policy documents.

Table I-4. Implementation actions of restoring the electrical stations equipment of transport networks, for rime/frost melting/ or introduction of new defrosting technologies such as PETD (pulse electro-thermal de-icer) adaptation measure

Nr	Action	Implementation time	Performance indicators	Responsible institution	Costs thousand MDL	Costs thousand USD
1.	Inventory of the equipment for the ice /rime melting existing at the electric stations	Q III, 2017	Inventory register completed	„Moldelectrica” Agency	520	26,113
2.	Producing a feasibility study on electrical grids against frost deposits. (with consideration of mechanical and electrical technologies of frost removal, zonal reinforcement of EGs and implementation of early warning systems)	Q III, 2018	Feasibility study produced	Ministry of Economy, SHSM Moldelectrica Agency „RED Union Fenosa” Co SA RED-Nord-Vest, RED-Nord Co	1500	75,326

3.	Supplier selection and completion of delivery contracts for the required machine.	Q IV, 2018	Needed equipment delivered	Moldelectrica Agency „RED Union Fenosa” Co SA RED-Nord-Vest, Co RED-Nord	125 + the costs of the equipment estimated at a later phase	6,277 + the costs of the equipment estimated at a later phase
4.	Identification and contracting of the executors of the required works for the construction, assembly and adjustment of the warning system.	Q II, 2019	A warning system in place	SHSM	To be estimated	To be estimated
5.	Analysis of climatic changes and new technologies to remove the frost from the electrical grids components.	2030		SHSM Ministry of Environment, Ministry of Economy	260	13,056

CCA measures of the energy sector were subject to consultation at sector (Ministry of Economy, Department of Energy) and sub-sector levels (19 subordinated institutions) until consensus achieved.

Transport sector: climate risks and vulnerabilities (For details, pls see Annex 11,11A)

The approach to implementing climate change adaptation in the transport sector of Moldova was defined following the identification of concrete measures intended to reduce vulnerability to more extreme weather phenomena in the future with the purpose to increase resilience and robustness for continuous transport safety and mobility.

The main hazards for transport sectors are floods, droughts, and heat waves. According to climate projections, the Republic of Moldova is likely to be increasingly exposed to these hazards both in frequency and severity. Climate risks for the transport sector are directly related to the hazards (and the combination of hazards) and to the nature and condition of transport infrastructure in the country.

Floods, droughts and extreme heat can individually or in combination increase strain and fatigue to transport infrastructure over land, particularly roads and railways. Floods can cause short-term delays and interruptions but also long-term interruptions and detouring needs in the event of destroyed infrastructure⁶. Droughts, seasonal and annual reduced amounts of precipitation – as projected – will render reduced river flows which in turn will compromise the navigability (which is poor already) of the waterways. The two main waterways – rivers Nistru and Prut – may be affected and therefore shipping (passengers and freight) conditions may become more complicated. The possibility of shipping in these waterways will require greater efforts and measures. Rising temperatures may come to affect airport runways in the same manner as they will pave roads, possibly affecting air travel if unchecked.

Adaptation opportunities in the transport sector

The Table I-5 summarizes the risks and opportunities of climate change affecting the transport sector, as well as the risks for mal-adaptation.

The examination of climate change risks to the transport sector resulted in a series of adaptation options for the different transport subsectors for further sector concept development and economic assessment. As referred,

⁶ EEA Report No 8/2014 – Adaptation of transport to climate change in Europe. Challenges and options across transport modes and stakeholders (http://www.eea.europa.eu/publications/adaptation-of-transport-to-climate/at_download/file)

the key strategic document for the mainstreaming of climate change adaptation opportunities into the transport sector is the *Transport and Logistics Strategy for 2013-2022*⁷.

Components	Climate Change Risks	Opportunities for adaptation (and avoiding maladaptation)
Road Transport	<p>Significant variations in temperature</p> <p>Intense rainfall</p> <p>Surface deformations caused by asphalt temperature, rain, snow.</p> <p>Reduced public transport circulation and / or increased costs that will affect first of all vulnerable groups (including older women, children, etc.)</p> <p>Damage to bridges and viaducts caused by heavy rains</p> <p>Damage to the health of technical personnel involved in the maintenance and repair of roads</p>	<ul style="list-style-type: none"> - Development of new materials for use in road construction that is resistant to high temperatures. - Design and construction of street pavement tolerant to heat waves. - Grinding cracks roads - Adapt stations harmless cooling systems. - Use of road asphalt that is more resistant to cracking. - Promoting technologies of asphalt sealing against water intrusion. - Promoting effective road maintenance technologies. - Assess the impact of new roads climate change. - Improve flood protection. - Improving monitoring water levels. - Upgrading drainage for roads. - Upgrading technology design, construction and maintenance of roads in the context of climate change. - Restrict traffic in extreme periods (winter and summer). - Speed limits on certain sections of road. - Prohibit movement of vehicles weighing more than the allowed limit. - Development of affordable transportation networks, especially in rural areas - Replacing the pavement on bridges and viaducts. - Covering deformed pavement surfaces on bridges with a protective layer - Restrict traffic on bridges and viaducts. - Construction of reservoirs around bridges - Use of specialized equipment. - Shortening working days. - Increase the frequency of medical reviews
Air Transport	<p>Surface deformation of runways for takeoff and landing of aircrafts</p>	<ul style="list-style-type: none"> - Restrict take-off and landing aircraft during heat waves. - Lengthen runways. - Design of additional runways - Upgrade existing runways with materials tolerant to temperatures - Operationalization of Marculesti, Cahul, and Balti airports
Water Transport	<p>Navigation routes become impassable due to low water levels or climate events (droughts and floods)</p> <p>Population migration from the nearby settlements can impede further development of water shipping (passengers and freight)</p>	<ul style="list-style-type: none"> - Creating a specialized body for the management of waterways. - Equipping ports with facilities and equipment for collection, storage and use of waste from ships. - Procurement of equipment necessary for cleaning river beds - Construction of additional ports. - Procurement of equipment adapted to the waterway use - Widening rivers. - Continuous maintenance of navigable routes. - Planting forest bands on river banks. - Construction of overflow water reservoirs

Table I-5: Climate change risk and opportunity screening of the Moldova transport sector

The following mid- and long-term adaptation measures for transport infrastructure have been proposed to the sector:

⁷ Strategia de transport și logistică pe anii 2013-2022, Aprobată prin Hotărârea Guvernului nr.827 din 28 octombrie 2013

- Conducting a vulnerability study of transport infrastructure (roads, railways, airfields, and waterways) based on the best climate change projections;
 - Reviewing technical normative documents for design, construction and maintenance of transport infrastructure (roads, railways, airfields and waterways), and their adjustment to future climate change projections;
 - Evaluation of the technical and investment condition of roads, bridges, viaducts, airfields to climate change (evaluation of transport infrastructure adaptation capacity);
 - Conducting research on the design and development of advanced materials and technologies aiming to increase the resilience of roads, railway lines, airfields, harbors to climate change risks;
 - Conducting a feasibility study on covering down a layer of thermal and waterproof protection of the bridges;
 - Conducting a feasibility study on repairing and covering with an anti-thermal material the road sectors of Chişinău - Giurgiuleşti (M-3), Chişinău - Bălţi and Chişinău - Leuşeni (M-21);
 - Adjusting urban and landscaping plans to future climate change risks in transport infrastructure (roads, bridges, railways, waterways, airfields);
 - Creating a research-analysis-evaluation platform regarding insurance to climate change risks with an impact on transport infrastructure, using insurance companies;
 - Training the decision-makers that manage the construction of transport infrastructure, in climate risk conditions;
 - Conducting a study on installing hydrophilic and thermophilic forest bands on roads, waterways, railway lines, with increased climate risks;
 - Conducting a study on reducing weight limits, operating speed of weight transportation and traffic intensity (road, rail) in areas with high climate risks;
 - Cleaning the riverbed, straightening and deepening waterways of main rivers (the Nistru and Prut);
 - Development of the investment plan, prioritized on sectoral adaptation needs, coordination of the plan with development partners;
 - Development of a monitoring and evaluating system / mechanism for the implementation of adaptation measures to climate change in transport infrastructure;
 - Economic and environmental potential assessments for road, rail, air, water transport, promoting a shift to less polluting transport;
 - Adjusting procurement procedures and terms of reference (ToR) of infrastructure investment projects to climate change issues;
 - Electrification of railway lines and modernization of locomotives;
 - Identification of advanced / efficient technologies to improve the collection and disposal of rainwater from the road network;
 - Identification and implementation of corporate management and technologically advanced models of transport infrastructure construction to climate change;
 - Purchase endowments necessary for cleaning and widening riverbeds, and develop a system for monitoring their status and navigability;
- Promotion and application of new/ advanced technologies for covering bridges and highways with a layer of thermal and waterproof protection.

Mainstreaming adaptation into the strategic planning process at the local level (for details please refer to Annex 12)

The mainstreaming of adaptation into the strategic planning process at the local level required additional context-specific work based first and foremost, on a proper understanding of the major climate threats to the socio-economic development of the local territorial-administrative unit. Therefore, at the initial stage of mainstreaming process, it was important to carry out the analysis of the local economic capacity, a scanning of

the social, economic and environmental vulnerabilities and establishing of clearly defined goals with regard to local resilient development considering appraised adaptation priorities.

Based on the *Vulnerability Index* developed for 32 districts of the Republic of Moldova within Third National Communication of Moldova to UNFCCC (2014) the Local Public Authorities (LPAs) of six most vulnerable districts of the country (two pilot districts of each Development Region of Moldova) *Falesti, Singerei, Nisporeni, Calarasi, Leova and Basarabeasca*, with help of national experts mainstreamed climate change adaptation into existing district level socio-economic development strategies (LDS) and their implementation action plans.

Similar to the sector level, an important step was to identify and agree on the entry point of mainstreaming CCA into the district level strategic planning. The methodology described in the developed *Mainstreaming Climate Change Adaptation into Moldova's Policy and Planning Guide* was applied in screening of local development strategies (LDS) and action plans (AP) of six districts against climate risks and assess them in the light of climate change projections and impacts: *Integrated Development Strategies of Falesti (2013-2020)*, *Singerei (2012-2020)*, *Nisporeni (2013-2020)*, *Calarasi (2012-2020)*, *Leova (2015-2020)* and *Basarabeasca (2013-2017)* districts. Based on the screening results of these documents the work was undertaken to:

- identify appropriate adaptation measures to be implemented at the local level and mainstream them into the existing LDS and AP;
- review current spending on activities that could be considered climate resilience, climate change adaptation measures, disaster risk reduction, as well as effectiveness of these allocations, assessed;
- identify appropriate financial instruments and mechanisms through consultations with stakeholders, a comprehensive literature review, and building on international and regional best practice and applied to existing spending budget.

A stocktaking of available information with regards to climate change impact at local level considering the available information (sector and local level documents, studies and statistical data, geographical, historical, demographic, economic, and environment information) was conducted. For each of the 6 districts, a climate profile at district level was developed based on temperature and precipitation indicators, along with peculiarities of extreme climate events and climate risks specific for each district. Undertaken climate risks screening helped to reveal the risks at the local level, along with adaptation opportunities of the sector considered in LDS: agriculture, water, health, roads infrastructure, energy, forestry.

The activities ensured a properly aligned approach to addressing CCA at the local level in accordance with the national strategic documents (*National Climate Change Adaptation Strategy*, etc.). The mainstreaming approach encompassed also the design of appropriate financial instruments and mechanisms through budgetary planning, allocation and implementation (performance-based budgeting) to address climate change adaptation needs, in accordance with the priorities established in the local development policies/strategies.

Concurrently SWOT analysis was applied, based on which strong aspects with regards to climate adaptation were emphasized, along with identified weaknesses and threats. These aspects were further analyzed from climate change perspectives and modifications proposed to be mainstreamed into the narrative part of development strategies.

Identification of CCA measures. The identification of adaptation measures was done by the District Councils members (supported by the national consultants) that formed the working group of each district through an extensive consultation process and with help of adaptation experts. Considering local needs, a set of adaptation measures have been identified and proposed for incorporation in prioritized sectors of every district: agriculture, water, health, roads infrastructure, energy, and forestry. In most of the cases, the proposed measures were structured in a dedicated chapter as part of the LDS or incorporated into each LDS chapter. Working group of each district identified and prioritized the measures aligned to local economic development. Prioritized

adaptation measures were disaggregated into concretely defined actions and associated estimative costs along with an implementation timeframe, monitoring indicators, responsible institution/agency for implementation. For identified measures, a feasibility evaluation based on economic, environmental, technical and managerial criteria was carried out.

A concern expressed by the working groups during the whole process of adaptation mainstreaming was the allocation of resources, as local level budget faces big constraints. Therefore, the prioritization of CCA measures, mobilization of local resources and intensification of cooperation between local government, civil society and national and international economic agents and donors to implement adaptation action at the local level was seen as one of the major tasks of District Councils.

The consultation process of this activity encompassed discussions and meetings with LPAs of 6 districts and carried out by the working groups on the proposed amendment of LDSs to incorporate CCA measures and operationalization of associated performance-based budget. Involvement in consultation process of other stakeholders such as economic operators and civil society local representatives enlarged the knowledge of climate-related issues and modalities to address them and addressed in the developed climate change adaptation component of LDS.

The consultation procedure of each strategy was an extended one, followed by the approval process of proposed adaptation measures and restructured budget by the Districts Councils and it implied many coordination meetings and supporting activities. During the substantive work carried out by the whole project team, it was important to emphasize the need of building partnerships between the public and private sector (PPP), encouraging business representatives' involvement in the decision-making process within regard to climate adaptation. The final decision of mainstreaming in each district individual of a set of adaptation measures and on restructuring related budget was formulated as a *District Council Decision*, with specifics on the timelines, entities responsible for implementing the activities, entities responsible for monitoring the implementation, other details.

Embedding new knowledge and understanding of CCA into existing Local Public Authorities structures expanded and strengthened their capacity to implement adaptation interventions in priority sectors. Mainstreaming climate change adaptation into the district level development strategies improved the uptake and sustainability of the development process, as district communities develop a strong sense of ownership and their priorities are met.

Activity 1.3. Adaptation Plans for selected sectors developed (for details, please, see Annexes 13,14)

Mainstreaming of CCA into sectoral development planning of Moldova was applied also through the development of *sector-specific climate change adaptation strategies* and their implementation *action plan*, taking various mainstreaming requirements, in particular, climate change and variability into consideration from the onset that acknowledges and integrates those concerns and uses them to help shape the strategy. Development of sectoral strategies is considered a way of framing climate problems and formulating sector-specific policy responses to current and future climate changes. This was in line with the *ex-ante* approach to integrate climate change into a sector strategic document. Stakeholders from health and forestry sectors showed initiatives and interest in developing a sector-specific adaptation strong enabling environment based on policy framework.

Development of sector-specific policy documents helped building capacity by raising awareness and enhancing preparedness among the institutions, sectors and all involved stakeholders. In both cases, a working group and inter-sectorial committee were created, composed of representatives from the lead institution (Ministry) and stakeholder representatives. It was assumed that the capacity built within sector's teams during the process of

preparing the policy documents will facilitate and catalyze the design of other sectors adaptation policies or programs of action.

Climate Change Adaptation Strategy of Health Sector (pls, see the full text in Annex 13)

Climate variability and change are exacerbating many current climate-sensitive health outcomes and have the potential to affect the ability of health system institutions of Moldova to maintain or improve health burdens in the context of changing climate and development patterns of the country.

Health Sector Adaptation Strategy

Republic of Moldova public health response to the issues caused by the climate change was formulated in the sector-specific document *Climate Change Adaptation Strategy of Health Sector and Related Plan of Actions till 2020*. The policy document was developed by the sectoral Working Group (WG) supported by technical experts as a prevention strategy based on adaptation actions considered effective in reducing increasingly likely threats to the health of citizens of Moldova (Table I-6).

The vision of the strategy is to ensure that Republic of Moldova's population is more protected by increasing resilience and capacity of the health sector to adapt to the climate change, with the overall goal of reducing vulnerability and health risks by implementing measures contributing toward health sector adaptation to climate change.

The general objective of this strategy is to strengthen health sector capacities to prevent, prepare and respond to climate change events. This objective is supported by the specific objectives, under which the adaptation measures are grouped:

- Ensuring functional cooperation between the relevant sectors and institutions for a coordinated approach and efficient use of available resources.
- Information and public awareness on climate change and extreme weather events effects on health.
- Development of efficient mechanisms for prevention, early warning, management and control of heat waves effects generated by climate change.
- Reducing air pollution and cold waves effects on health
- Establishing an integrated and efficient system for prevention, early warning management and protection against increased levels of ultraviolet radiation
- Improve the prevention and control of infectious diseases influenced by climate change.
- Establishing a system for control and prevention of allergic diseases caused by pollen in the climate change context.
- Establish a system for prevention, early warning, management and mitigation of climate change induced floods and droughts
- Increasing the resilience of health facilities to climate change and developing "green" health services.

In numerous occasions, the WG of health sector mentioned that resource implication for adaptation actions of public health is a challenge at sector and sub-sector levels. Effective improvement of climate resilience and adaptation to on-going and future climate change will require high expertise at the national and local level and according to ICA results, this is a resource issue.

The up-front and continuing cost of adaptation measures creates another resource limitation issue for the health sector. The health sector also needs to develop knowledge and skills in local prevention/adaptation programmes, in order to reduce the cost of treatments for the rural population.

Table I-6. Climate Change Adaptation Measures/Actions of Health Sector of Moldova

Health system functions	Measures/actions for the floods drought. Storms and hydrological risks	Measures/actions for the heat waves and cold spells	Measures/actions for the environmental modification and vector-borne diseases
Health governance and policies	<p>Clear roles and delegation of tasks amongst the SPESS⁸, health authorities, SHS also in view of risk assessment and risk communication.</p> <p>Advocacy and inter-sectoral coordination in order to promote, monitor and report on:</p> <ul style="list-style-type: none"> - urban drainage maintenance, urban rivers banks maintaining, waste disposal care and well designed, sewage system upgrading, - water stock assessment and improvement, water emergency wells digging in coordination with AGMR⁹, safe water provision in rural areas; - groundwater quality assessment and treatment, also through the modernization of the AGMR; - rural areas supplied with safe water; - transport system improvement in flood-prone areas, - hill forestation/slope maintenance for landslide risk reduction. 	<p>Awareness increasing campaign with regard to healthy behaviors in case of heat waves (night and day), lifestyle, nutrition and alcohol abuse during cold periods.</p> <p>Advocacy and sectoral coordination in order to promote, monitor and report on:</p> <ul style="list-style-type: none"> - green belts and greening the cities, urban woods also aiming at absorbing Nitrogen and smooth Ozone generation; - fuel prices and energy affordability for the general population; - housing and public transports costs and general affordability rules and laws for a progressive housing insulation during refurbishing; - rules and laws new building according to international insulation standard; - district heating systems for new settlements, mainly if for deprived families housing; - urban and country road maintenance and refurbishment according to international road safety standard. 	<p>Awareness increasing campaign with regard to healthy behaviors in case of vectors spread and mainly outbreaks due to sudden parasites and insects spread.</p> <p>Advocacy and sectoral coordination in order to promote, monitor and report on:</p> <ul style="list-style-type: none"> - compliances with the international quality standard in husbandry and agricultural products; - safe cattle husbandry norms and regulation in coordination with the state veterinary service.
Human resources for health	<p>Health officers training on emergencies management;</p> <p>The institutional link between the CPESS and the health sector,</p> <p>Working group for health risk assessment and communication</p> <p>Health officer trained and specifically designated for leading communication</p>	<p>Health officers training on heat waves emergencies management;</p> <p>Health officer trained and specifically designated for population awareness increasing and risk communication.</p>	<p>Health officers training on new coming potential threats</p> <p>Health officer trained and specifically designated for population awareness increasing with regard to vectors spread, hygiene and safe behavior in case of insects related outbreaks.</p>
Information systems	<p>Task force for epidemiological surveillance on infectious diseases;</p> <p>Health officer designated to be in contact with the meteorological and geological services for early warning mainly for drought.</p> <p>Advocacy and sectoral coordination in order to promote, monitor and report on:</p>	<p>Strengthening the health information system (IS) by assigning to the well-identified entity the task to analyze data and report on :</p> <p>respiratory diseases morbidity and mortality with a special focus on tuberculosis and groups of the population as workers and aging people (65+);</p> <p>infant mortality 1-5 years by causes;</p>	<p>Review / strengthening the national research agenda on vectors related diseases spread and morbidity danger;</p> <p>Review / strengthening the national research agenda on pollens and molds health risk;</p>

⁸ CPESS: Civil Protection Emergency Situations Service

⁹ AGMR: Agency for Geology and Mineral Resources in charge of the sampling and stock assessment of the ground water in Moldova

	<ul style="list-style-type: none"> - Creation of a network of rain meters network whose data are able to elaborate the SPI¹⁰ index shall be installed for droughts' forecast. - Implementation of the early warning system for flood risk in the critically exposed areas. - Rescue and relief stocks to be placed, available and checked in municipalities at risks of flood and landslides. 	<ul style="list-style-type: none"> - epidemiological surveillance of specific diseases as asthma; - cardiovascular mortality by age group; - external causes mortality by age group with focus on road- and out-door worker accidents. <p>Advocacy and sectoral coordination in order to promote, monitor and report on:</p> <ul style="list-style-type: none"> - The SHS to produce a daily concentration of CO, NO_x, SO₂, ozone and particulate matter recording and reporting according to the international standards - SHS to produce forecast on heat wave and cold spells early warning; - SHS to produce forecast UV radiation and thermal inversion phenomena early warning. 	<p>Review, identification and updating on risks in order to tune the epidemiological surveillance according to specific / changing threats, if any. Advocacy and sectoral coordination in order to promote, monitor and report on:</p> <ul style="list-style-type: none"> - entomology monitoring on the spread of ticks, lice, midges, and mosquitos; - pollens and new species, botanic monitoring; - monitoring of emerging and new plants parasites.
Essential product and technologies	<p>Provision of ceramic filters to clean water in-house to householders and farmers</p> <p>Advocacy and sectoral coordination in order to promote, monitor and report on the availability of potable water supply chain.</p>	<p>Emergency wards fully operational for cardiovascular diseases in all main downtown and country hospitals.</p>	<p>Diagnosis capabilities and drugs to face vector diseases such as Lyme diseases, Nile fever.</p>
Service delivery	<p>Availability and stock in exposed municipalities of rehydration solutions and drugs for gastro-enteric diseases</p>	<p>Availability and stock checking in rural areas of food, fuel, stoves, blankets and so forth to face cold spells in remote areas and/or dispersed settlements.</p>	
Financing		<p>Increase of the general affordability of the health services mainly for disadvantaged families;</p> <p>Effectiveness analysis of the public health insurance/funding system.</p>	<p>Increasing the general affordability of the health service for early diagnosis and prevention.</p>

¹⁰ Standard Precipitation Index

Climate Change Forestry Sector Strategy of Republic of Moldova (for details, pls, see Annex 14)

Forestry Sector Climate Impact, Risks and Vulnerabilities

Moldova's forestry sector mostly consists of state-owned forests (87.5%), administered by the State Agency Moldsilva that is responsible for forestry and hunting policymaking and management; and LPA forests (12.4%), and managed by village or municipal level LPAs.

Moldova's forests are under multiple pressures and can suffer from a number of biotic and abiotic damages common to Europe's forest areas. The projections for the Republic of Moldova indicate that extreme events with a rare incidence of temperatures of 34-35°C for the reference period 1961-1990 will become averages of the summer temperature maxima in the future. More general predictors at European level show that flood risk is rising in Eastern Europe and droughts (with a current incidence of a 100-year event) will be repeated on average at 50 years and even more frequently in Southern and Eastern Europe, including the Republic of Moldova. At this time, most of the country is characterized by arid climate or semi-arid climate, but weather forecasts show that aridity, which leads to an increased incidence of droughts, will increase significantly by 2040. Moreover, aridity will become expressed in the plant growing season from June to October months. Researchers anticipate that minor changes in temperature and rainfall can severely affect the growth and future survival of the forest, especially in limiting ecosystems such as many of forest ecosystems in Moldova.

The *Climate Change Adaptation Strategy of the Republic of Moldova* identifies a series of effects of climate change on the forestry sector, including increasing the length of the vegetation season, endangering species sensitive to temperature changes, increasing vulnerability to forest fires, deteriorating phyto-sanitary condition, changes in the composition of the stands. During the development of *Forestry Sector Climate Change Strategy* other risks with regard to invasive species, modification of adaptation capacity of native species, change of success rate of forest regeneration, have been identified. These climate effects have socio-economic consequences: the impoverishment of firewood, reduction of biodiversity, reduction of forest regulatory effects in the field of soil erosion, landslides, floods, etc.

The major climate important risks identified by the specialists in the field changes in the composition of the stands, competitive behavior of the species, the rate of regeneration of the forest, the phytosanitary conditions, sensitivity to pests. Opportunities due to climate change are limited because the effects of rainfall and temperature increases are diminishing in the country's climatic conditions of increased CO₂ concentration. For this reason, increasing biomass production is considered an opportunity only in the northern area of the country. On the other hand, the role of the forestry sector in the mitigation of the effects of climate change through the sequestration of carbon in biomass is recognized. Concern about the extension of the area of forest land is a constant one and reflected in the sectoral priorities set out in various program documents already adopted or in the process of adoption, built upon already existing significant experience in implementation and monitoring of carbon projects under the Clean Development Mechanism of the Protocol Kyoto. This experience is useful in attracting and implementing projects in this area of activity, which can support emission reduction efforts.

The development of sector-specific strategic document was done by the Working Group of Forestry Sector consisting of forestry experts, decision makers, sector planners, and researchers. The preparation process of the Strategy was participatory and inclusive involving and considering opinions, comments of participating actors, including the aspect of incorporating mitigation component. After the stakeholders consultations and assessing the expectations and needs of the sector itself and the organizations within the sector and common work undertaken with sector WG, the recommendation was made to expand the strategy elaboration from a strategy dealing strictly with the climate change adaptation to a strategy to tackle all the climate change challenges, establishing effective links between climate change mitigation and adaptation, of the forestry sector in the

Republic of Moldova. One important reason for that was the fact that the main mitigation measures to be implemented are dealing with the extension of forest surfaces through afforestation and are very closely linked with the adaptation measures approaching extreme phenomena like landslides and floods.

The strategy vision defines the main directions of action for the duration of next decade of the forest sector to adapt to the consequences of climate change and mitigating the effects of climate change. The policy document sets up an integrated adaptive management response at the sector level through improvement in forestry planning based on monitoring of forest productivity and species distribution, other factors. The strategy is seen as a proactive document that allows for social learning and flexibility in responding to environmental feedbacks and promotes medium to long-term resilience for socio-ecological systems, adaptive management being a central component.

The goal of the strategy is to enhance the contribution of the forest sector and forestry ecosystems to adapt the social and economic development of the Republic of Moldova to climate change impacts and to achieve implementation of the current level of mitigation commitments assumed by the association at the Copenhagen Agreement.

The general objective of the Strategy is to increase the capacity of the forestry sector of the Republic of Moldova to adapt to the consequences of climate change by maintaining and improving the capacity of forest ecosystems to provide services to society and by maximizing their capacity to contribute to mitigating the effects through the increase of carbon dioxide sequestration capacity by 2020 by 25% compared to the reference year (1990) within the land use sector, changes in the land use and forestry management. Ecosystem-based Adaptation (EbA) approach that recognizes that ecosystem services and plays an important role in reducing people's vulnerability to climate change was incorporated into the developed Forestry Sector Strategy. The importance of ecosystem services is acknowledged in all eight objectives of the Strategy. During the development of sectoral strategy, WG members have identified the main climate risks the sector faces along with adaptation opportunities (Table I-7).

The strategy strongly emphasizes the adaptation needs of existing forestry system of Moldova, in particular, the potential roles of species diversification, the fostering of mixed stands or the promotion of alternative forest operations that may vary according to the rates of growth characteristic of a particular location and the predicted timescale of risks from projected climate change. This Strategy aims to be an efficient way of achieving the maximum potential of the forestry sector in the Republic of Moldova in the shortest possible time to adapt to the predicted climate changes and to mitigate their overall effect. This strategy defines the main lines of action for the next 9 years to adapt the forestry sector to the consequences of climate change, to maintain a normal flow of forest ecosystem services and to mitigate the impacts of climate change on the forestry sector.

Strategy Implementation *Action Plan* (Table I-7) includes ecosystem level activities for social well-being or adaptation, with most of them in support of other adaptation measures (e.g. infrastructure). These activities deal mainly with regulating services (soil rehabilitation, erosion control) and provisioning services (wood fuel). They also have the potential to promote integrative and cross-sectoral adaptation, as many of them consider multiple ecosystem services and beneficiary sectors.

Table I-7: Action Plan and Specific Objectives of Forestry Sector

Specific objectives and their implementation activities
1. Protection and management of existing forest areas
1.1. Sustainable forest management
1.2. Minimizing the possibilities of changing the destination category from land with forestry to other land categories.
1.3. Promoting and using forest systems and practices that protect carbon stocks.
2. Create new forest areas adapted to the consequences of climate change and able to efficiently capture carbon and produce biomass.
2.1. Expanding the forest fund by afforestation of degraded land.
2.2. Expanding areas covered with forest vegetation outside the forest fund.
2.3. Expanding energy crops.
3. Facilitating ecological adaptation of forests through an ecosystem approach.
3.1. Promoting adequate management in the network of valuable forest ecosystems.
3.2. Promoting the connectivity of valuable forest habitats.
3.3. Adapting forestry operations practices to climate change and prioritizing forest types and species vulnerable to climate change.
4. Adapting forest regeneration practices to the needs imposed by the climate change.
4.1. Reconsider genetic conservation in the forest area under the climate change.
4.2. Revision of practices on forest regeneration and extension.
5. Minimizing environmental risks from climate change.
5.1. Management of the risks of pests, diseases and natural disasters on forests.
5.2. Combating the instability of the slopes in areas susceptible to landslides.
5.3. Increasing forest contribution to combat erosion of rivers and lakes.
5.4. Use and enhance the practical potential of forestry in flood risk management.
5.5. Reconsidering the concept of forest protection strips to protect the field, including by adapting the compositional structure of existing forest strips to new climatic conditions.
6. Adapting the use of wood to climate change.
6.1. Optimizing the use of wood for energy purposes and diversifying renewable energy sources.
6.2. Increased use of woodwork.
6.3. Reducing the carbon footprint of the forest sector.
7. Promoting awareness and a good understanding of climate change and how the forestry sector can make a positive contribution.
7.1. Stimulating cooperation with other sectors.
7.2. Increase the capacity of the sector to implement mitigation and adaptation measures.
7.3. Stimulate cooperation with civil society and promote educational programs.
7.4. Promoting and implementing information to the general public.
8. Monitoring of adaptation and mitigation actions in the forest sector.
8.1. Adaptation monitoring activities

However, more technical, political and financial support is needed to foster the role of ecosystem services in adaptation at the implementation stage.

The consultation process with line Ministries and civil society was taken over by the Ministry of Environment (currently *Moldsilva* Agency is a subordinated institution of the Ministry of Environment) and the developed sector-specific policy document has to be approved through a Government Decision.

Activity 1.4. Development of a plan for financing climate risk management and implement climate change adaptation measures.

This activity was retailored in the light of national circumstances, in particular, external support coming from the World Bank for the adaptation finance planning. During the meetings between the representatives of WB, MoEn, and UNDP, in order to avoid overlapping and duplication of the activities, it was agreed that the WB will focus on developing an investment plan for climate risk management and adaptation, while ADA/UNDP project will be oriented toward developing the procedure on expenditures tracking and monitoring with regard to climate change adaptation. Therefore, as a follow up to the agreement between MoEn, WB, and UNDP under the Activity 1.4. the Project worked on adopting and supporting to the extent possible, the implementation of the *Climate Budget Tagging* (CBT) procedure and incorporate it into the M&E system (for details, pls, see Annex 15). By choosing to link M&E of the climate-related expenditures to NAP, it supports the mainstreaming of climate change policy formulation through existing budgeting processes. This activity aims at improving the understanding of how and how much is being spent on national climate change responses, through which programs funds are being spent, and which programs include climate change objectives (or co-benefits). This process supports the ability of the Ministry of Finance and the Ministry of Agriculture, Regional Development and Environment (MARDE) to track climate expenditures and improves their ability to ensure progress on climate change vis-à-vis Moldova's national development goals and international commitments. This process also supports the development of the financial records required to help build a climate-financing framework. The purpose of identifying (tagging) climate-related expenditures is also to provide a systemic and replicable process that identifies and prioritizes climate-related programs, activities and projects (PAPs) in budget proposals and budget allocations.

In conjunction with other climate change mainstreaming initiatives, CBT enables improved integration of climate change into national and sub-national planning. In this context, the need to generate robust data and the evidence upon which policy recommendations and future spending decisions are based is critical, helping policymakers understand the resource levels required, as well as the gaps, to finance the (national) response to climate change, monitor and track climate finance flows, reallocate, as necessary, the scarce resources to achieve climate-compatible national development, and increase transparency over resource allocation and management.

The CBT system ensures that the Government of Moldova can systematically identify and prioritize climate-related programs, activities, and projects in its sectoral and national budget proposals. The Ministry of Environment (currently merged with Ministry of Agriculture, Regional Development, and Environment) and the Ministry of Finance with support from adaptation experts have developed a *Methodological Guide on Climate Tagging of the National Public Budget* (pls, refer to Annex 16) for the identification of climate-related expenditures for technical planners use.

According to the Guide, in the implementation of CBT procedure, the responsibilities have been shared among Government institutions.

The Ministry of Finances has the responsibilities to:

- include the tagging of climate change expenditures, as well as changes and developments in related policies in the annual circular on developing proposals and draft budgets to the central and local public authorities (per Article 50 on Circular on the preparation of annual budgets (Law on public finances and budgetary-fiscal No. 181).
- Incorporate climate change budget indicators (CCBIs) in MoF performance-based budget system.
- Provide the MARDE and the NCCC with the relevant sectoral budget submissions required to assess and monitor progress on implementing climate change activities.

The MARDE, National Climate Change Commission, and the Climate Change Office have to:

- provide sectoral ministries, agencies, and institutions with information and support related to the tagging of climate change expenditures,
- assess and ensure the quality of the climate tagging against the guidelines and the completed Quality Assurance and Review (QAR) Forms,
- review and approve requests for new climate budget indicators (CCBIs) and, when necessary, streamline the related categorized activity tables,
- monitor developments in climate change related expenditures in coordination with the other oversight agencies and stakeholders and ensure progress in the achieving national development goals,
- in partnership with MoF, provide continuous capacity building programs to institutionalize and sustain climate change related budget indicators in the budget planning processes.

Line ministries share the following responsibilities in tracking climate change expenditures:

- ensure that climate change is integrated into the annual sectoral budget proposal;
- ensure the integration of climate change PAPs in the sectoral budget proposals during the technical budget hearings;
- identify and tag climate change expenditures in the annual sectoral budget;
- as part of the annual submission of sectoral budget proposals, submit to the MoF and the National Climate Change Commission (NCCC) the list of PAPs tagged as climate change expenditures;
- if there are PAPs that do not currently qualify under the guidelines, request that the Climate Change Office (CCO) and the NCCC support for the creation of new activities or climate change budget indicators.

Under the CBT tracking system, it is proposed that the monitoring of work plans is based on output indicators at the activity level and outcome indicators at the programme level. The MARDE, in coordination with the Ministry of Finance (MoF), will analyze the reports to assess the progress of implementation of the NAP and identify problems that need to be followed up.

The CBT system in Moldova has been developed to support both adaptation and mitigation components.

Four Climate Change Budget Indicators (CCBIs)/climate markers have been established for both adaptation and mitigation components.

The classification of a programme, action, project (PAP) into an adaptation or mitigation related CCBI depends on the type of activity it addresses and the key function of that activity in response to climate change:

1. *policy development and governance*. Represents measures that build resilience through comprehensive national policy frameworks, the legal framework to implement climate change policy (all elements of climate change/green growth policies), governance into activity and delivery, as well as integration, diversification, and strengthening of climate change investment effectiveness;
2. *research and development*. Represents measures that build resilience by developing science & technology as a foundation for formulating policies, as well as assessing impacts and identifying measures on climate change adaptation and mitigation;
3. *knowledge sharing and capacity building*. Represents measures that build resilience by improving awareness of climate change and developing community capacity to respond to climate change;
4. *climate response and service delivery*. Represents measures that build resilience to current and future climate risks by supporting the development of a resilient society, ensuring the development of a low-carbon production economy and ensuring the sustainability of natural resources.

Quality assurance and review (QAR) procedure accompanies climate change expenditure tagging in the performance-based budget system. Ensuring the quality of the climate change expenditure data is a key part of the budget review process. Maintaining a documentary basis for climate-related tagging decisions increases the transparency and credibility of the reporting on climate change expenditures by the Government. The purpose of the quality assurance and review process is to clarify the objectives and coverage of the tagged PAPs, identify adaptation and/or mitigation interdependencies and ensure progress on national climate change-related targets. The MoF and NCCC are the responsible institutions to ensure the quality of the collected data and to strengthen the mainstreaming of this data into budget planning, prioritization, monitoring and reporting processes. As part of this system, a QAR working group, under the auspices of the NCCC, will examine the sectoral tagging decisions and assess the evidence base that supports the tagging decision.

The proposed draft of Climate Budget Tagging (CBT) concept was consulted with the Ministry of Environment (now MARDE) and Ministry of Finance for further improvement and implementation. During the reporting period, several consultation meetings were held with representatives from the Ministry of Finance and the opportunities to incorporate CBT into the national budget discussed. Overall, the MoF was supportive of project actions however, it was clear that additional support is necessary, in particular, in relation to capacity building through specific training on the procedures and phased work on CBT. Unfortunately, the resources under the ADA /UNDP Project were limited and additional, unplanned, extra- budget activities were not possible to implement, therefore, further opportunities are to be identified to fully complete this task.

During the participation of PIU and CO UNDP members in various international meetings, the methodology described in the guide and adapted to country-specific context was highly appreciated and demanded by countries willing to implement climate budget expenditures tracking.

At the country level, the CBT system is to be operationalized through the Government Decision on Coordination Mechanism of the Climate Change Activities.

Activity 1.5. Communication and outreach Strategy to support medium- and long-term adaptation planning developed and implemented.

Awareness-raising on climate change and relevance of adaptation for sustainable development

(for details on organized by the project events, along with derived products, please, refer to the submitted reports of 2013-2017 y.y)

Awareness raising and information activities have been carried out as part of the capacity building initiatives of the Project oriented towards a better understanding of climate change as a phenomenon, its multiple impacts, and risks, opportunities of adaptation at all levels of governance, including the community. In all Project events dedicated to the decision factors, technical planners, other stakeholders along with those dedicated to civil society and the general public, the climate change awareness messages have been not just information delivery events but have aimed at encouraging stakeholders and citizens of Moldova to take concrete adaptation actions. The needs and purpose of a planned adaptation through setting up of National Adaptation Plan as a process have been clearly stated, explained and discussed with various stakeholders, thus increasing their level of knowledge on climate change adaptation, also their interest and commitment in participating in the NAP. Dissemination, experience sharing, and capacity building actions have been implemented at the national and sectoral levels. These actions were oriented towards facilitating the inter-sectoral connections in the development of national adaptation planning process; strengthen skills of communication, awareness, and promotion of public institutions' adaptation actions; outreach for the general public, within the process of elaboration and implementation of adaptation actions.

A *Communication and Outreach Strategy (CS)* (pls, see Annex 17) and its implementation *Action Plan* was developed at the Project level with the aim to facilitate inter-sectoral communication in the development of adaptation process; strengthen skills of communication, awareness and promotion of public institutions' adaptation actions; outreach for the general public within the process of elaboration and implementation of adaptation actions. The documents incorporate key messages for general and target groups, available communication tools, channels, activities and events for promoting adaptation planning and implementation. As part of CS, several disseminations, experience sharing, and capacity building actions have been implemented at the national and sectoral levels oriented towards facilitating the inter-sectoral connections in the development of national adaptation planning process.

Project's *Communication and Outreach Strategy* and its *Action Plan* was a guiding document in implementing communication and outreach activities oriented toward communicating adaptation and facilitating the inter-sectoral communication in the NAP elaboration process; strengthen skills of communication, awareness and promotion of public institutions' adaptation actions; outreach for the general public, as well as donor within the process of elaboration and implementation of adaptation actions. Effective and systemic implementation of technical assistance on communications and outreach strategies and CCA activity results, as well as the efficient organization and coordination of the communications process, contributed to enhance Moldova's internal capacity and broader success in delivering projects with stronger and measurable impact.

The newsletters with information about progress on the project and upcoming or already implemented events were produced regularly and published on the www.adapt.clima.md and other websites of stakeholders interest and Facebook page.

Organizing climate change adaptation thematic events was seen as an efficient way that stimulates discussion and exchange of knowledge among different target groups, raises adaptation awareness, share experience, disseminates results and liaises with stakeholders (Fig. I-16). A public debate on the topic "*Challenges and opportunities of climate change*" aiming to familiarize the young people with climate change as a phenomenon, its impact on people's everyday lives, including gender-specific in the context of climate change was organized. The main objective of the debate was to increase the awareness of citizens regarding climate change in Moldova and develop young people's interest in

promoting priority adaptation actions as a response to these changes. The event brought together Project experts in the field of climate change adaptation, gender equality, students, media and NGO representatives. The debate had a live online and radio broadcasting.

Within two -day thematic training seminar *Strategic communication in promoting of development projects in the Republic of Moldova*, State Chancellery representatives and 45 sectorial level communicators of 16 Ministries of the Republic of Moldova have been informed and trained in climate change communication areas, links between adaptation and Moldova's Sustainable Development Goals (SDGs), tools in monitoring climate media materials, significance of climate messages given through visualization.

Local level workshops with the title "*Climate change adaptation awareness raising and capacity building initiatives*" were held in most vulnerable from climate change point of view districts in three Development Regions of Moldova: North – Sîngerei, Fălești; Central – Călărași, Nisporeni; South – Basarabeasca, Leova. The workshops were attended by the decision factors of region and district levels, community leaders, local industry leaders, farmers, the private sector and NGOs representatives.

The events aimed at understanding climate change as phenomenon and the main causes of the global climate change, as well as the likely impacts on the Republic of Moldova; understand the threats climate change poses to districts, communities and livelihoods and the importance of climate change consideration at the local level; learn about tools to assess local vulnerabilities with respect to climate risks; facilitate thinking about ways to promote and implement climate change adaptation measures at the local level; understand the opportunities offered through implementation of innovative climate change adaptation technologies and measures. The events were coupled with Project Grant Scheme promotion with the goal to implement priority innovative adaptation measures based on pilot projects in the communities vulnerable to climate variability and change.

Experience-sharing workshops at the community level of implemented pilot projects aimed at promoting among participants innovative approaches and technologies in the agriculture, water and energy sectors, in particular PV systems, as a way to adapt to climate change, engage local authorities and civil society in similar adaptation initiatives and also to contribute to capacity-building of local communities with regard to climate resilience. The workshops combined different activities such as awareness raising and information on climate change phenomenon and the need to adapt to these changes (this part of the workshops was conducted by the PIU and NCs). The dissemination of successful practices and of the results achieved by the demo projects was done by the grants beneficiaries who played a central role in highlighting opportunities for replication of successful pilots and creation of self-sustaining results, in particular for the energy sector. Open discussions on various climate and technology related topics of interest for workshop participants were held, along with an on-site demonstration of technology operation and guidance on their application. Many participants in the districts are increasingly recognizing that modern - economically profitable practices are vital in the current climate environment of Moldova, therefore, sharing gained experience and disseminating pilot projects results was an important activity implemented in common with grants beneficiaries.

The information about mentioned workshops was promoted and reiterated through www.adapt.clima.md and Facebook, mass media channels namely: EUROPALIBERA.ORG <http://bit.ly/2dPapL5> and PUBLIKA.MD <https://goo.gl/u2DFXX>.

Throughout its implementation, the Project explored the most suited and efficient ways to communicate climate adaptation, therefore, a contest for journalistic materials (Media Print (for articles published in news, web pages); Radio (for audio materials); TV (for video content); Blog (text comment/analysis / opinion published on personal blog or on a common platform) on climate change adaptation topics (the impact of climate change on the economy and population of our country, including on vulnerable groups; the needs of adaptation to climate change at national,

sectoral and community levels; identify and promote adaptation action at the national and sub-national level, especially at the community level; sustainable development and action to adapt to climate change; urban sensitivity to the effects of climate change; addressing the issue of climate change from the perspective of gender equality; food security and food safety under the conditions of climate change; the impact of climate change on ecosystems and biodiversity in the Republic of Moldova) was organized for national and local journalists, representatives of press media, online media, radio and television. The objective of the contest was to encourage media representatives to produce media information on climate change adaptation of the Republic of Moldova, increasing their interest in this topic, contributing to the development and promotion of an effective communication platform on climate change, as well as to empower the society for the adaptation process. The criteria of evaluation journalistic materials referred to their complexity, thematic relevance, and quality of documentation during article development, subject originality, deployment tools and data visualization, impact, ethics compliance, process information accumulation. Despite the results of the contest didn't meet Project team expectations, in terms of participation and the quality of journalistic materials, it was a way to draw attention to journalist that adaptation to climate change should be present not only in the news and press releases but also a topic to be discussed in radio and TV shows and broadcasting, along with postcarding and blogs.

Capturing and codification of Moldova adaptation process knowledge products disseminated regionally. Online dissemination of resources was intended to contribute to highlighting the importance of climate resilient development, improved communication between sectors and between different levels of the local public administrations and the government, and facilitation of multi-stakeholder engagement in producing expected adaptation planning outputs.

Using social media as an active dissemination tool for the planned knowledge products allowed ADA/UNDP Project team to highlight the results of individual activities to different audiences and mobilize partners, stakeholders, and the general public to advocate for the results achieved through the project portfolio.

For example, “*Cultivating Climate-Resilience in Moldova*” success story was featured on multiple platforms www.adaptation-undp.org; www.undp.org; www.md.undp.org; <http://adapt.clima.md/>. The information was also placed on the Facebook page: <https://www.facebook.com/adaptarea-la-schimbarile-climatice>.

Increased use of online tools for awareness-raising activities, such as websites, social media has been applied in awareness-raising, information and dissemination events. The information on awareness-raising, experience sharing workshops, and other events were promoted and disseminated via social media means Facebook, Instagram, Tweeter, Youtube, Flickr.

Dedicated www.adapt.clima.md, www.clima.md and Facebook page “*#adaptarea la schimbarile climatice*”, were used to increase the visibility of Project 's adaptation related events, actions to the general public, and also as a way of sharing knowledge and information to support the needs of stakeholders such as decision makers. The website e-library, along with publications posted on *Issuu* platform contain developed methodological guidance dedicated to vulnerability and adaptation issues and modalities to address them.

To increase the availability of information to the targeted audience, specifically at the local level, the posting of information referring to the progress, achievements and lessons learned of implemented pilot projects was complemented by the Regional Development Agencies webpages of South <http://www.adrsud.md> /, Central <http://www.adrcentru.md> / and North <http://adrnord.md/>, local radio and local newspapers.

A visibility campaign that showcases the results of implemented adaptation pilot projects, along with the achievements of SHSM-ZAMG partnership has been promoted through a *portfolio of success stories* complemented by the *photo essays* visually highlighting the work done. The information was posted on the country and global UNDP platforms:

Photo essays

Improving meteorological services in Moldova;

Smart farming technologies;

Through rain or shine.

Sound the Alarm (Improving meteorological services to issue advance warnings & protect people from climate hazards in Moldova)

Success stories:

Cultivating climate resilience in Moldova;

Restored reservoirs allow business to bloom in rural Moldova;

Women leading the way to climate-resilience in Moldova;

Lighting the way for climate-resilient energy in Moldova

promoted through <https://undp-adaptation.exposure.co/>, www.weadapt.org,
www.adaptation.undp.org, www.undp.org, www.md.undp.org, www.one.un.org,
www.adapt.clima.md

Moldova Flickr *Photobook* has been collated and contains information on the specifics of climate change impacts on Moldova's economy sectors and population and the ongoing activities of adaptation planning at the national and subnational levels. These activities emphasize stakeholder engagement and capacity building, institutional arrangements, creating enabling an environment for adaptation action, including mainstreaming adaptation into planning processes.

Video and radio spots versions (Fig. I-19) have been produced with the goal to raise awareness among the local population, promote the ADA/UNDP Project results and increase NAP process visibility, they can be accessed at <https://youtu.be/Oz1tCPPACFo>, (short version): <https://youtu.be/ypZR-TWdNnY>
 radio spot: <https://youtu.be/BpbEv5CDxf4>.

A sound event of the Project was field exercise „*Giurgulesti – 2015*” implemented by the Emergency Situations Coordination Centre of the Commission of the Emergency Situations of the Republic of Moldova and the intervention teams of the Civil and Emergency Situations Service within the framework of the Agreement on Support signed between the Republic of Moldova and the Federal Government of Austria regarding the mutual assistance in case of natural and technological disasters and the cooperation for their prevention (Fig. I-20).

In collaboration with the press service of the Civil Protection and Emergencies of the Ministry of Internal Affairs, the information was distributed through the network of 100 e-mail users comprising representatives of national and regional media outlets, including blog sites holders. This approach was enforced by the announcements through direct calls to reporters of media Companies institutions: *Prime TV, PRO TV, Publika TV, TV 7, Channel 3 Moldova 1*, other. During the event, a video gallery was created and video images were recorded; they were later distributed to civil society through social networks.

After completing the exercise, communication experts issued press releases that were posted on various websites and through a number of media channels (*Dse.md, JurnalTV.md, Moldova-*

suverana.md, Provincial.md, Trm.md, Jurnal.md, Dsecahul.blogspot.com, Canal3.md, Prime.md, Protv.md, Monitoruldegalati.ro, Adevarul.ro, Viata-libera.ro, 24news.md, Youtube.com, Facebook) based on a text with a positive connotation, strictly informational.

A co-organized UNDP-UNEP National Adaptation Plan Global Support Programme (NAP-GSP) and in collaboration with the Government of the Republic of Moldova and UNDP Regional Hub for Europe and CIS, the regional workshop “*Supporting countries to advance their National Adaptation Plan (NAP) process*” presenting Moldovan experience as a showcase in the area of adaptation, was organized 28-30 June, 2016 in Chisinau based on ADA/UNDP Project experience. The event allowed delegates from 16 countries to share their national experience on identifying medium- and long-term climate adaptation needs and to mainstream these needs into national development planning processes and strategies (Fig. I-21). The press release of 19.07.2016 mentioned that „*Since 2013 the Government of Moldova with UNDP has been implementing the project “Supporting Moldova’s National Climate Change Adaptation Planning Process” funded by the Government of Austria through the Austrian Development Agency. The project has supported institutional and policy frameworks and capacities for medium to long-term gender-sensitive adaptation planning in Moldova and piloted adaptation interventions in priority sectors. Through a comprehensive participatory consultative process, the project delivered a draft of national inter-agency coordination mechanism/national adaptation framework, along with a monitoring and evaluation framework; sectoral NAPs for forestry and health sectors; recommendations for mainstreaming adaptation into the transport and energy sectoral plans; and a number of guidelines and tools to support the NAP process*”. During the event, participants shared information and experiences in the identification of needs in order to achieve a more significant integration of climate change in country’s planning processes.

During annually held by the Ministry of Environment and international organizations events *Europe Day, World Environment Day organized in Moldova, EU Sustainable Energy Week* PIU, national experts on adaptation used the events to raise awareness among local population and promote adaptation action through speeches, discussions, debates, posters, brochures, leaflets, video spots.

Wide dissemination of project results in the region and globally through implementation of information and knowledge management platform. Climate change brings a new dimension to development work, it is loaded with science and requires fresh self-reflections, new investigations and careful observation of cause and effect relationships to bring about new ways of adapting to its effects. Responding to climate change is a knowledge-intensive undertaking, and access to relevant and usable knowledge is an important prerequisite for successful and cost-effective adaptation actions. Management of this information and knowledge is important for enhancing institutional capacity whether it is individual organizations, inter-agency processes or team approaches; and is essential for fostering and maintaining participation and partnerships.

In the Republic of Moldova, information and knowledge on climate change issues continue to be generated from the scientific studies, assessments and other tools.

The *Institutional Capacity Assessment* revealed several limitations and other challenges facing Moldova’s CCA-related knowledge management efforts. Many of these limitations have their genesis in the deluge of new data, information, and knowledge continually generated on climate change issues from scientific studies, assessments, and other tools and is not well managed. These knowledge products are produced by a disparate array of institutions, including government, NGOs, academia, private sector organizations, etc. many of which do not have in situ arrangements for capture, documentation, and dissemination. To date, there is limited progress in the country with respect to strengthening capacity for knowledge management and dissemination of climate-related information. Climate change and related information is stored in various locations and is not easily accessible to the public. There is also an absence of mechanisms that ensure that scientific and other valuable climate and environmental information is shared across government and civil society sectors. The absence of

any policy or strategy on climate-related knowledge management further hampers capacity development in this area.

According to ICA, the main systemic level impediments to enhance climate-related knowledge management include:

- limited understanding and knowledge within government and lead agencies on knowledge management;
- the absence of guiding policies and/or strategies on knowledge management;
- limited capacity (personnel, equipment, operational budgets) to promote and enhance knowledge management in lead organizations;
- limited networking of government and other agencies to promote and enhance knowledge management; and
- lack of commitment by governments and policy for information management that promotes government-wide information sharing.

Knowledge management framework. The absence of any policy or strategy on climate-/CCA-related knowledge management further hampers capacity development in this area, therefore, a *Knowledge Management Strategy (KMSy) and a Climate Change Knowledge Management Plan (KMP)* with the aim to leverage existing knowledge resources on climate change adaptation, enhance adaptation's visibility for both domestic and international audience was developed (pls, refer to Annex 17A). The main users of developed KMSy and KMP are the staff of Climate Change Office (CCO), Ministry of Agriculture, Regional Development, and Environment, line ministries, climate change experts, policymakers, a wide range of CCA technology practitioners, NGOs, other stakeholders involved in climate change adaptation. According to the KMSy, Climate Change Office will work to establish continuous sharing of CCA progress and open reflection on ongoing activities as a key principle of its business, in thematic policy work and advisory services as well as operational and administrative work. Sharing knowledge in person as well as online should be promoted, incentivized, supported with appropriate tools and rewarded as the default mode of doing business, with senior management staff leading the way. It is also foreseen that KM considerations will be included in each sector's policy strategy to ensure cohesion and to ensure the integration of KM into own policies within the different ministries. Useful knowledge management will be characterized by practical examples, targeted to the intended audience. KMSy seeks to enhance the engagement with the private sector by building relationships, partnerships and new alliances and coalitions at country, regional and global levels.

Knowledge resources platform developed and used during the implementation of the Project. A dedicate website www.adapt.clima.md was created by the Project for online dissemination of information and to increase the visibility of the NAP project to the general public. It was also seen as a way of sharing knowledge and information to support the needs of stakeholders such as decision-makers, including through education, training, and learning from experts, reports, extensive discussions, facilitated engagement and participatory approaches. Promotion of the website during various events held within the Project made it more known and more useful in outreach activities and recruiting process. NC on communication issued press releases on the main activities implemented by the project <http://bit.ly/2eqtWEb>.

Other websites were used at the national level: for posting and disseminating project products and information www.clima.md, www.mediu.gov.md, www.comunicare.md.

On UNDP's knowledge-sharing platform: www.adaptation-undp.org, a dedicated NAP Project profile for Moldova was created. Highlighting ADA/UNDP Project's CCA work on this platform is, therefore, a vital link between otherwise isolated national products.

Another international platform that was used is www.weadapt.org. WeAdapt as a multimedia, cross-agency knowledge management platform focused on CCA, allows practitioners, researchers, and policy-makers to access credible, high-quality information and connect with one another.

Using national and international platforms, Project team endeavored to assemble knowledge resources, with a particular emphasis on sharing challenges and solutions in the 'enabling environment' domain, especially CCA mainstreaming within the sectoral policy framework, and sector-specific CCA strategies and action plans, lessons learned at the local level, gender-specific initiatives, etc.

Created *Climate Change Adaptation Information System* (www.portal.clima.md) on monitoring, reporting and evaluation of adaptation planning and action is seen as a web-based portal on CCA information and knowledge management, also as a tool to collect and stock adaptation-related information at the national and sub-national levels with special focus on sector level, and a modality of knowledge sharing with regard to advances in adaptation implementation, reporting and evaluation. Over time, the growing database of measured engagements can serve to provide an unparalleled research base for Moldova.

An important tool in promoting adaptation related knowledge was through the development of guiding and methodological materials that helped adaptation planners and practitioners of various levels of governance to correctly plan and implement adaptation (pls, refer to Activity 2.2).

KM as part of M&E. Communicating climate knowledge and disseminate the information related to adaptation planning and implementation is a component of the developed M&E framework. Knowledge and communications products will be monitored and evaluated as well, along with other CCA components. Through implementing information and knowledge management effective reporting on how knowledge and communications products are disseminated requires reliable information on whether they achieve their intended results.

Using social media as an active dissemination tool for the planned knowledge products will allow the management team to highlight the results of the individual activities/projects to different audiences and mobilize partners, stakeholders, and the general public to advocate for the results achieved through the portfolio.

To help establish a scalable social model that can effectively reach the broadest audience, PIU has established various presences on Facebook, YouTube, Twitter, and Flickr. These channels are easily consumed via smartphones enabling mobile access for a large part of the country's population, therefore, will be used further in awareness raising and dissemination activities.

In measuring Twitter performance using KPI will help identify mentions, followers and reach. Tweettronics (www.tweettronics.com) will be used as a way to view and monitor overall Twitter mention volume, reach, number of speakers and most common keywords associated with the specific brand in the Twittersphere.

Web Analytics is used to get info on webpages visits. This tool was used by adaptation projects team to monitor the number of web pages visitors. Google Analytics was part of sectoral communicators' training on climate change adaptation communication.

Output 2. Institutional and technical capacities for iterative development of comprehensive NAP strengthened.

Activity 2.1. Sectoral planners are trained in the use of the tools and approaches to advance medium- to long-term adaptation planning and budgeting and implementation

Strengthening of institutions at national, sector and district levels to plan for and implement adaptation was a continuous effort during the whole period of Project implementation, as there was

a need to generate enough interest from decision-makers to demand and be receptive to climate vulnerability information. Annex 18 provides gender-disaggregated information on the capacity building events organized by the Project.

Institutional capacity for climate change adaptation planning of line ministries and agencies of the Republic of Moldova was enhanced via a number of modalities:

- capacity needs assessment workshops, roundtables and meetings were held for key sectoral stakeholders with a special focus on Ministry level decision makers and technical planners. During these events reports and presentations addressing sectoral gaps with regards to climate change adaptation were presented and solutions discussed.
- the conference entitled *Environment and climate change: from vision to action* had the objective to promote the importance of establishing medium- to long-term planning for adaptation at national and sub-national levels, targeting national and sub-national policy-makers and other stakeholders. The participants discussed sector adaptation needs identified during ICA and the modality of integrating sectors into NAP process.
- dedicated events were organized in order to strengthen the leadership within key Ministries by targeting national and sub-national policy-makers and other stakeholders, on the importance of medium- to long-term planning for adaptation. Meetings with all relevant partner institutions (Ministry of Health, Ministry of Transport and Road Infrastructure, Ministry of Environment, Ministry of Regional Development and Construction, Ministry of Agriculture and Food Processing Industry, Civil Protection and Emergency Service) from the priority adaptation sectors were organised in order to discuss their visions on implementing NAP process in Moldova, approaches to be used, national and sectoral mandate. The roundtable *“Enhance the national vision and mandate for the NAP process”* had the objective to increase knowledge of stakeholders on NAP process, present mandate and vision of national adaptation planning process, the need of comprehensively and iteratively assessing development needs and climate vulnerabilities, and institutional functions in adaptation.

A number of short-term trainings were conducted for sectoral planners in the use of the tools and approaches to advance medium- to long-term adaptation planning, budgeting and implementation, each training being supported with guiding materials produced for both participants’ use and for wider dissemination.

The training seminar on *screening policy documents against climate risks and opportunities and mainstreaming climate change adaptation into sectoral planning* was organized for technical planners of key ministries from the Republic of Moldova: Agency for Land Relations and Cadastre, Ministry of Environment, Ministry of Agriculture and Food Industry, Ministry of Regional Development, Ministry of Foreign Affairs, State Chancellery, Ministry of Finances, Ministry of Health, Moldsilva Agency, Tourism Agency. The methodology helped to raise awareness of the need to mainstream climate change into national development planning, generate support and buy-in for a sectoral and where possible, cross-sectoral approach to climate change adaptation mainstreaming, and improve coordination by involving a wider group of stakeholders. Training topics covered: (i) introduction to climate change and fundamentals; (ii) tools and methodologies; (iii) sectoral case studies; (iv) group exercise in applying methodology; (v) group exercise in prioritization and needs assessment; (vi) assessing needs and recommendations for moving forward. As a result of the training, the national institutions’ representatives reinforced their understanding of Moldova’s climate profile and scenarios, key concepts on climate change and development processes, use the methodology for assessing climate risks and opportunities, and integration of climate risks in sectoral plans, strategies and planning processes. During the training, participants shared information and experiences in the identification of needs in order to achieve a more significant integration of climate change in the country’s planning processes. Discussions were held among participants on the assessment of climate

risks and opportunities in key sectors, with active participation in practical exercises about real strategy documents.

Applying climate change adaptation mainstreaming approach in national and sectoral planning training was given to technical planners of the State Chancellery, chiefs of Departments of Policy Analysis, Monitoring and Evaluation of Line Ministries. With a focus on the importance of climate change mainstreaming into planning process at the national level, the event aimed to promote among high-level segment of governance the need to consider CCA mainstreaming into national policies and discuss methodological approaches derived from case studies and activities already implemented, to foster the exchange of information and opinions among participants, good practice, ideas, experiences and successes acquired in executing implementation of adaptation measures, also provided an opportunity for participants to explore possibilities for cooperation among sectors. The training followed the key principles underpinning the “UNDP Quality Standards for the integration of adaptation to climate change into development programming”¹¹ methodology for identifying climate risks, risks of maladaptation, opportunities for adaptation and specific adaptation measures are: (i) identification of climate change risks to strategies, policies or plan, (ii) identification of risks that may result in maladaptation, (iii) identification of adaptation opportunities, (iv) assessment and Integration of potential adaptation measures. The training was designed for State Chancellery staff, Chiefs of Departments of key Ministries from the Republic of Moldova: Ministry of Environment, Ministry of Agriculture and Food Processing Industry, Ministry of Regional Development, Ministry of Foreign Affairs, State Chancellery, Ministry of Finances, Ministry of Health, *Moldsilva* Agency, Ministry of Transport, Tourism Agency, Agency of Land Planning and Cadastre, Civil Protection Department, Ministry of Economy.

District level capacities are an important element of local capacities with regard to the implementation of climate change adaptation at the local level. Development of such capacities remains a challenge for Moldova, where resources for development and implementation of adaptation actions at this level are limited. While efforts and progress has been made on integrating climate adaptation into decision-making at the sector level, many challenges remain with this regard to local level, in particular, rural communities, while at this level there are most of the vulnerable groups. Therefore, project-based support was provided to Local Public Authorities (LPAs) of 6 districts, bringing them up to the level of performance or engagement as partners appropriate for their roles in implementing CCA measures at the ground level. Information and training seminar on *screening policy documents against climate risks and opportunities and mainstreaming climate change adaptation into district level planning process* was organized for LPA representatives. This activity was important to implement, as a modality of embedding new knowledge and understanding into existing LPAs structures, expands and strengthens them and contributes to the adaptation ownership. The training was tailored to the specific needs of district communities and helped to strengthen the capacity of LPAs to implement adaptation interventions in priority sectors. It also encouraged the transfer of local knowledge, for example through a local network to exchange with neighbor districts. Participants noted that further efforts should continue to be developed and strengthened knowledge and skills of decision factors of district level to incorporate CCA into district-level strategic planning and development policy.

Several thematic area trainings have been conducted within ADA/UNDP Project for the chief engineers and technical staff from the State forest enterprises subordinate to *Moldsilva* Agency. The training was attended also by the administrative staff of *Moldsilva* Agency and Forest Research and Management Institute of Moldova Institute (ICAS). The topics covered a general description of predicted climate change and its impact on forest ecosystems of Moldova, along with forestry practices to improve forest resilience and to adapt to climate change. Participants benefited from detailed analysis and

¹¹ UNDP (2011). Mainstreaming Climate Change in National Development Processes and UN Country Programming: A guide to assist UN Country Teams in integrating climate change risks and opportunities. UNDP: New York, NY, USA

presentations of adaptation measures in response to current and future vulnerabilities of the local forest sector to climate change. During participatory training, there were discussed measures designed to increase the resilience of the forest sector in a holistic approach contributing to tackling the impact of and adaptation to climate change.

WHO/Europe Office and WHO Country Office supported health sector of the Republic of Moldova to strengthen its capacity to cope with the new challenges posed by climate change. Priorities for joint work are set out in the biennial collaborative agreements (BCA) between WHO/Europe and the Republic of Moldova. WHO/Europe Regional and WHO MD office in collaboration with ADA/UNDP Project have organized 3-day technical capacity building training for health professionals, heads of district-level public health units on thematic areas of climate impact on human health and sector level response which is fundamental to taking protective actions against climate-related health risk, to better understand and prevent negative impacts of climate change on health. The course covered the basics of climate change, its effects on health, and appropriate tools and actions to reduce climate-related health risks. The training was complemented by the stakeholder workshop on scoping the health sector adaptation strategy and action plan. The workshop contributed to technical capacity building and knowledge-sharing through improvement in planning and implementation of climate change adaptation.

Promoting the development and dissemination of tools and methods for adaptation planning and implementation. A key component in addressing institutional capacity adaptation efforts successfully is the availability of appropriate, context-specific tools and instruments to apply mainstreaming approach, in particular, methodological materials and guidelines. Therefore, a number of guiding materials have been adopted from the international sources and adjusted to country-specific needs or developed namely for adaptation cases of the Republic of Moldova and lately disseminated regionally and internationally.

1. *Mainstreaming Climate Change Adaptation into Moldova's Policy and Planning Guide* was developed as a policy instrument for mainstreaming CCA into sectoral strategies and their action plans. This methodological tool provides an analytical approach and structure of mainstreaming procedure, highlighting the importance of active engagement of stakeholders and following a stepwise approach in incorporating adaptation into already existing sectoral development planning of the Republic of Moldova.
2. Mainstreaming climate change adaptation into the sectoral planning of transport and energy sectors prove to be challenging, due to the sector-specific context of that time, from which insufficient knowledge on CCA at the sector level and, in particular, modalities to mainstream adaptation into planning was the most evident one. Therefore, ADA/UNDP Project has supported the development and publication of methodologically oriented brochure". *Climate change adaptation measures proposed for energy and transport sectors to be incorporated into sectoral policies*".
3. Another aspect that needed more elaboration, was the econometrics of proposed adaptation measures for sectoral planning, therefore, a dedicated publication on application of cost/benefit analysis of proposed adaptation measures based on the concrete example of transport, agriculture and energy sectors was developed by the national consultant "*Cost-benefit analysis in assessing sectoral measures to adapt to climate change*".
4. A knowledge supporting material was the *Glossary of climate change adaptation terminology* adopting mostly IPCC terminology, a publication developed as at the request of sectoral communicators, journalists, sectoral planners but also for all users interested in CCA and willing to understand and use correctly the terminology in order to avoid misinterpretation.
5. Implementation of adaptation practices referring to conservation agriculture in combination with correct crop rotation by local farmers along with the installation of PV system in remote communities of Moldova required day- to -day guidance and tutorial work from the national

adaptation experts in the area. As guiding material, the brochure *Conservation agriculture* was developed.

6. A user's *Methodological Guidelines on climate tagging of the national public budget* is a support document for mainstreaming CCA into the national budget. These guidelines articulate the process for identifying ('tagging') climate change expenditures across sectoral budgets, for the use of officials and technical staff as part of the sectoral budget development process. The described in the Guide approach supports the ability of the Ministry of Finance and the Ministry of Environment of Moldova to track climate expenditures and improves their ability to ensure progress on climate change vis-à-vis Moldova's national development goals and international commitment. This process also supports the development of the financial records required to help build a climate-financing framework.
7. Guiding leaflet was developed for the target groups from the energy sector focusing on adaptation technologies at the local level and entitled *Adaptation measures to climate change of energy sector in rural communities of Moldova /Masuri de adaptare la schimbarile climatice ale sectorului energetic in localitățile rural ale Republicii Moldova* (V. Colun, NC on energy)
8. A number of adaptation oriented guiding materials have been developed in support of the implementation of ADA/UNDP Project Small Grants Scheme: *Guidance for implementing climate change adaptation options* grant scheme specifying the principles of districts' selection for implementation of adaptation interventions, sectors' prioritization at the local level and the general approach for financing CCA interventions locally. It contains general requirements of the application process, selection process and eligibility criteria for adaptation project proposals, project partners, and project cost. The Grant Scheme was promoted in six most vulnerable districts from three regions of Moldova (North, Centre, and South), the selection being based on the *Existence Vulnerability Index (EVI)*, developed in the Republic of Moldova's Third National Communication submitted to the UNFCCC (2014). Information materials in a leaflet format were developed for better informing of community-level applicants on innovative technologies to be implemented for enhancing household and community level climate resilience and adaptation. Distribution of the information material was accompanied by awareness-raising and information campaigns.
9. Nine publications on climate change and gender topics please, see in the gender dedicated sub-chapter.

All abovementioned publications are available at www.adapt.clima.md, e-Library.

Experience sharing events. Identifying and collecting good practices, challenges, experiences and lessons learned from all types of adaptation works was an ongoing process during the adaptation planning and implementation in the Republic of Moldova and disseminated through media and internet platforms. Experience sharing workshops proved to be an effective modality in promoting adaptation priorities at the local level and ensure their ownership at community level.

Many farmers in the districts are increasingly recognizing that modern economically profitable agricultural practices are vital in the current climate environment of Moldova, therefore, sharing gained experience and disseminate pilot projects results was an important activity undertaken by the grants beneficiaries.

Local farmers, community level authorities, local NGOs in collaboration with CCO have organized a number of experience sharing workshops referring to the conservation agriculture technologies in support to climate-smart agriculture and water management at the community level through the construction of small-scale water catchments for crop irrigation. The main objectives of each workshop were to promote among participants innovative approaches and technologies as a way to adapt to climate change, share the experience gained during the implementation of pilot projects, engage local authorities and farmers in similar adaptation initiatives through scaling up of pilot projects experience

and also to contribute to capacity-building of local communities with regard to climate resilience (Fig.I-22).

The dissemination of successful practices and the approaches demonstrated during the course of the seven pilot projects implementation was done both by the national experts and by grants beneficiaries, in this activity they played a central role in highlighting opportunities to replicate successful pilots and create self-sustaining results, in particular for agriculture and water sectors. Open discussions on various climate and technology related topics of interest for workshop participants were held, along with an on-site demonstration of technology operation and guidance with regard to the application of a specific technique

At the local level, of particular importance were information and experience sharing workshops on promoting renewable energy technologies as a modality to adapt to climate variability and change. The main objective of each workshop was to promote among participants innovative approaches and technologies in the energy sector, in particular PV systems, as a way to adapt to climate change, share the experience gained during the implementation of energy pilot projects, engage local authorities and civil society in similar adaptation initiatives and also to contribute to the capacity-building of local communities with regard to climate resilience.

Activity 2.2. Data availability, management, dissemination, and capacity to support adaptation planning improved.

Capacity Building. Under the Activity 2.2, concentrated capacity building efforts have been directed towards improving data availability, management, public service quality and dissemination to support adaptation planning of the State Hydrometeorological Service (SHS) of Moldova in line with the standards of the World Meteorological Organisation (WMO). This climate information is important to be available at a good quality and sharing of such information in a timely manner as core technical challenges in reducing the risks of climate disasters.

Capacity building activities at the SHSM have been implemented under the partnership with the Austrian Central Institute for Meteorology and Geodynamics (ZAMG) with the goal to support SHSM to become a member of the EUMETNET EMMA/Meteoalarm community. EIG EUMETNET (<http://eumetnet.eu>) is a grouping of 31 European NMHSs that provides a framework to organize co-operative programs between its members in the various fields of basic meteorological activities. These activities include observing systems, data processing, basic forecasting products, research and development, and training. EUMETNET has been established so that the national weather services within Europe can be as efficient and effective as possible. EUMETNET share ideas, best practice and the costs of major infrastructure investments.

The main results of implemented activities under the abovementioned partnership are presented in the table I-8, along with Annex 19 A (ZAMG Report).

Table I-8. Main results achieved in the project compared to the initial situation

Initial situation	Envisaged results according to the roadmap
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<p>Weather warnings are provided for three regions on Moldova (north, central, south) Four color code (green, yellow, orange, red) for danger levels and impact of severe weather is used at SHSM since 2010 SHSM is not a member of EUMETNET and does not participate in the optional EUMETNET OPERA Program SHSM and others operate a modern state of the art dual-pol weather radar at the Chisinau airport</p>	<p>Harmonized thresholds and warning criteria according to EMMA recommendations Systematically include vulnerability, accommodate multiple timescales and account for evolving risk and rising uncertainty in the warnings Production of warnings in xml format according to the Meteoalarm standards Participation of SHSM in the optional EUMETNET programs EMMA/Meteoalarm and OPERA Access for SHSM to the European Composite Products (including Rumanian Radar data). SHSM radar data are included in the European OPERA radar composites.</p>
Deficits /gaps	Results achieved
<p>Warning criteria and thresholds are not compatible with the EMMA recommendations The capabilities of the SHSM radar are used in a very limited extent in actual practice. There is a significant lack of knowledge on the use of modern weather radars for nowcasting/forecasting and quantitative precipitation estimation at SHSM. A composite product including the SHSM radar and the neighboring radar stations is not available at SHSM.</p>	<p>Thresholds and warning criteria according to EMMA recommendations are harmonized as far as currently possible. Forecaster training courses successfully implemented. Relevant information for the consideration of vulnerability, multiple timescales and evolving risk and rising uncertainty in the warnings is available to SHSM, basis for the transition to impact orientated warnings (see forecasting recommendations in section 3). Special emphasis was laid on radar meteorology. SHSM contributes to the operational Meteoalarm system. Warnings are generated for 35 regions in xml/CAP format and transferred operationally to Meteoalarm by means of the <i>Paint and Alert</i> tool provided by ZAMG. SHSM weather warnings are fully integrated into the operational Meteoalarm system. SHSM participates in the optional EUMETNET programs EMMA and OPERA. European Radar Composite Products (OPERA) is available at SHSM. Data transfer organized by ZAMG. SHSM operational radar data are currently not available (hardware failure of the radar). Test data were provided by ZAMG to the OPERA radar data hub.</p>

The implemented capacity building concept and the tailored training program guarantee the knowledge transfer and the development of the essential skills and competencies of the involved SHSM staff. The main goal of the activities was the enhancement of the basic forecasting capabilities of the weather and flood forecasters in order to generate accurate weather and flood warnings according to the Meteoalarm guidelines and WMO recommendations.

SHSM staff members had the opportunity to acquire and to develop the required skills in various training courses. Successfully completed courses shall be used at SHSM for the competency assessment of the staff (e.g. forecaster of the services) according to international guidelines (e.g. WMO competency assessment).

Table I-1. Overview of the implemented training courses including the number of participants.

Training Course	Country	Participants
Basic Weather Forecaster Training	Austria	6
Advanced Weather Forecaster Training 1	Moldova	10

Advanced Weather Forecaster Training 2	Moldova	10
Advanced Weather Forecaster Training 3	Moldova	14 (9 SHSM, 5 MoldATSA)
Basic Training Course for Hydrologists	Austria	5
Advance Training Course for Hydrologists	Moldova	3
IT Training	Austria	2
Web Site Training CMS	Moldova	15
Web Site Training Administration	Moldova	3

The overall percentage of female participants amounts to 72%. It is especially important to highlight the high proportion of female trainees (95%) in the case of the meteorological training courses.

The gender specific aspects of the training courses are summarized below.

Training courses	Participants	Proportion female participants
Meteorological training	17	95 %
Hydrological Training	6	33 %
IT Training	2	0%

Basic Weather Forecaster Training Course. The focus for the first project phase was laid on the organization and implementation of the basic forecaster-training course at the ZAMG premises in Vienna. The course was designed for the assessment and enhancement of the basic forecasting capabilities of the SHSM forecasters.

Learning needs of the course:

- State of the art analysis/forecasting and nowcasting methods, use of operational radar and satellite images, use of numerical models results.
- After completing this course, the SHSM forecasters know the basics state of the art forecasting and nowcasting techniques, he/she knows how to interpret radar and satellite images and to use and interpret the output of numerical weather forecast models.

Advanced Weather Forecaster Training Course 1. The program of the advanced forecaster training was based on the experiences of the basic training and tailored to the actual needs and requirements of the SHSM forecaster. The training was divided into theoretical sessions and case studies that were presented by ZAMG. The forecasters of the SHSM had to practice this knowledge in exercises about severe winter weather situations (heavy snowfall and freezing rain) that were prepared by ZAMG. Every day ZAMG was invited to the daily weather briefing at SHSM, where forecasts, severe weather warnings, and model uncertainties were discussed.

Advanced Weather Forecaster Training Course 2. By best practice from the first course in November 2015, the training was divided into theoretical lessons and practical sessions. In the applied exercises the participants had to work on three prepared case studies and have to decide whether severe weather warnings should be issued for these cases. The results were discussed with the trainers.

Furthermore, a role-playing game was organized to practice the interaction between customers and weather forecasters. The focus was set on convective phenomena like thunderstorms and heavy showers with the danger of intense lightning, heavy precipitation, hail and strong wind gusts.

The trainers were also being invited to join the daily weather briefing at SHSM, where for forecasters on duty discuss the actual weather situation, the weather forecast and severe weather warnings for the next 5 days.

Based on the undertaken Advanced Forecaster Course II a number of recommendations were given by ZAMG to SHSM:

- During the convective season, it is more important for SHSM forecasters to deal with a more physical way of thinking about the processes in the atmosphere to understand the weather phenomena and its dangers better.
- SHSM has to follow strictly the rules of Meteoalarm System. They are now in the test phase. It is very important that all forecasters at SHSM can operate with the severe weather warning system to issue warnings with good quality quite in advance before the severe event will happen.
- The trainers propose an internal weather discussion between the forecasters on duty at SHSM on a regular daily basis to speak about weather scenarios, severe weather warnings and model uncertainties. This should lead to one collaborative decision of the whole team.
- Severe weather warnings have to be issued well in advance to enable Civil Protection Agencies and other users to have sufficient time for the reaction to reduce or even prevent damages and loss.
- The trainers draw attention that already existing severe weather warnings, as well as general forecasts, have to be monitored and checked. So nowcasting is a very important topic. The forecasters of SHSM have to use all their nowcasting tools e.g. weather radar, satellite images, station observations and soundings to evaluate the weather models and their own forecasts. In cases of changes, the severe weather warnings and general forecasts have to be updated and modified!
- The trainers suggested to the SHSM to have additional precipitation thresholds for different lengths of the rain event (24hrs, 36hrs, 48hrs, and 72hrs).
- The trainers draw attention to start with severe weather warnings as soon as possible before the event and to use some kind of probability/impact matrix for the first guess. Coming nearer to the weather event temporal and spatial details should be included in the severe weather warnings (if possible).

Advanced Weather Forecaster Training Course 3. The training held in Chisinau from 15th to 19th of May 2017 was dedicated to the topic heavy precipitation and convection. The training was divided into theoretical sessions, case studies, and exercises. The theoretical knowledge was checked both with oral examinations after the lectures and with questions during the presentations. The case studies were chosen by colleagues of the SHSM and data were provided by ZAMG. The exercises were selected and prepared by ZAMG. The trainees had to practice the knowledge in case studies and exercises about heavy precipitation and severe thunderstorms. Each trainee has to present at least one case study or exercise to receive a certificate. The ZAMG trainers watched the daily weather briefing at SHSM, too; afterward forecasts, severe weather warnings, and model uncertainties were discussed with the trainees.

Basic Training Course for Hydrologists. Two training courses for hydrologists were planned for the extension phase of the project. The ultimate goal of the hydrology courses was that the staff members shall have the opportunity to learn and to develop the skills for the generation and transfer of the flood warnings to the Meteoalarm System (EUMETNET EMMA H project).

Hydrology courses started with training in Austria (Vienna and Salzburg) from October 10 to 14, 2016. The training was organized by ZAMG in close collaboration with the Hydrographical Service of the Province of Salzburg, the Austrian Ministry for Agriculture, Forestry, Environment and Water Management, Division IV/4 Water Management and Verbund Hydropower Company.

The goal of the hydrology courses is that all staff members shall have the opportunity to learn and to develop the skills for the generation and transfer of the flood warnings to the Meteoalarm System (EUMETNET EMMA-H project).

The learning targets of the basic training course were:

- Meteoalarm system, basic concepts, and technical background
- Weather forecasts and warnings for flood warnings
- Hydrology in Austria
- Hydrological observation networks: design, setup, sensors, calibration, and maintenance
- Data flow, data management and quality control
- Extreme value statistics
- Application of numerical models (rainfall runoff, hydraulics, ensembles)
- Flood forecasting, generation, and dissemination of warnings
- The flow of Information, cooperation with civil protection
- Prevention, hazard zone mapping
- Extreme value statistics
- Hydropower control

Advanced Training Course for Hydrologists. The advanced training course for hydrologists held in Chisinau from May 23 to 26, 2017 was dedicated to the use of the Meteoalarm system for flood forecasters.

The presentations, practical training sessions, and exercises comprises the following topics:

- Presentation of current flood forecasting practices at SHSM by the flood forecasters
- Introduction to the Meteoalarm System:
- Basics of the Meteoalarm System:
- Introduction to the Meteoalarm Intranet and the *Paint and Alert tool*, use of the *Paint and Alert tool* for creating and editing CAP messages and for issuing and transfer warnings.
- Implementation of flood forecasts in Meteoalarm: flood warnings in Meteoalarm, delineating thresholds from return periods, color-coding of flood warnings, guidance on how to issue flood warnings.
- Discussion on the implementation of SHSM flood warnings in Meteoalarm: Starting from the current practices the implementation approach for the SHSM was jointly developed.
- Installation of the *Paint and Alert tool (CAP Creator)*:
- Practical training and exercises: Generation of the flood warnings according to the Meteoalarm guidelines and the transfer to the Meteoalarm test server

IT staff training. The IT Training course was organized in Vienna and Salzburg from November 16 to November 20, 2015. The focus was laid on the structure, dissemination, and transfer of weather warnings to the Meteoalarm System and on weather radar data formats.

Opposite to the original project plan, the course was organized in Austria. Reason for the change was the possibility to demonstrate all relevant details of the IT infrastructure (supercomputer, network, virtualization, databases) of a modern weather service at the ZAMG IT premises and to run parts of course at backbone IT Company in Salzburg. This company is responsible for the development, the technical implementation and the operation of the Meteoalarm system. User accounts for the Meteoalarm system were generated for the participants. The training content related to Meteoalarm contains the following topics, tailored to the needs of the course participants.

- Characteristics of weather warnings, spatial and temporal separation
- "LifeCycles" of weather warnings, example with actual SHMS warnings
- Metadata of warnings, data model

- Meteoalarm system, background, implementation, and operation
- CAP (Common Alerting Protocol) fundamentals
- Introduction to Meteoalarm CAP
- Elements of Meteoalarm CAP and their meanings
- Tools for the generation of CAP warnings
- Exercises: Generation of warnings in CAP and Meteoalarm CAP format.

During the second half of 2016 y. the training continued on *Content Management System* training in Chisinau:

- Basic introduction to the CMS for all departments
- A hands-on working session with the CMS to add content to the website. In this session was added the prepared content to the website and was directly answered questions from users
- Advanced training on the CMS for IT stuff and persons responsible for site-wide content management.
- Discussion about data flow management. Clarification of open questions to move as quickly as possible to a full automatization of the data flow.

ZAMG provided a number of services in order to support SHSM in the dissemination of severe weather and flood warnings to Meteoalarm (<http://meteoalarm.eu>) according to European and WMO standards. Basic concepts were developed together for the exchange of weather radar data within the OPERA project. European composite radar images have been made available for the SHSM forecasters.

OPERA. The OPERA program deals with the exchange of weather radar information in Europe. OPERA operates and develops the ODYSSEY data hub, which collects radar volume data, distributes quality flagged volume data to modelers and other radar data users, and produces quality-controlled radar products, like the European Radar Composite Images.

A modern state of the art weather radar is operated at the airport in Chisinau. SHSM provided raw radar data for the analysis and checking purposes of the raw radar data format (hdf5). The data are almost compatible to a large extent to the required OPERA radar data format. Only small adjustments were found to be necessary for the full compliance with the OPERA requirements.

Operational radar data from Chisinau airport are currently not available due to a hardware failure. Prerequisites have already been put in place, such that the Chisinau airport radar data can be operationally transferred to ODYSSEY in real time after the repair. Then the radar observations will be available for the implementation of the European Composite images.

Access to the European composite radar images is very important for the forecasting at SHSM. The real-time transfer to SHSM is already implemented. SHSM provided an ftp account for that purpose. The composite images are available for forecasting and available for the implementation in the meteorological workplace at SHSM.

SHSM nominated an official delegate for the OPERA expert team. SHSM was provided the full access the OPERA information, the delegate was invited to the OPERA expert team meetings.

Use of OPERA. SHSM provided raw radar data for the analysis and has checked the raw radar data format (hdf5). The data are almost compatible to a large extent to the required OPERA radar data format. Only small adjustments were found to be necessary for the full compliance with the OPERA requirements. The test data were made available for the OPERA specialists for the final approval. After the acceptance by OPERA the Chisinau radar data can be operationally transferred in real time to ODYSSEY. Data are available there for the implementation of the European Composite images.

Stakeholder Workshop

The user of weather-, climate-, water- and the environment-related information is in the center of effective service delivery. Therefore, the role of the SHSM is to identify the key users in order to understand their needs and requirements and to determine how SHSM is able to meet those needs,

either individually or in partnership with other partners. The applied approach followed the recommendations and guidance of the WMO Strategy for Service Delivery and its implementation plan (WMO, 2014).

The workshop “Using the Hydro-Meteorological Information of the SHSM by the beneficiaries, consumers and relevant partners” took place on November 3, 2017, at SHSM in Chisinau. The results of the workshop form the basis for the identification of the gaps between the current level of service delivery and the user needs and requirements. It is necessary to link the development of the products and services and their delivery in future to the user needs and requirements. The evaluation of user needs is nevertheless not a one-time requirement but a continuous and collaborative part of the service delivery process. Interaction and discussion were established as well as the impulse for further engagement with users. The user needs, and requirements were identified, collected and updated during the workshop.

SHSM web revamping.

In order to improve the quality of data management, the data availability and access for the general public and specific groups of users, so climatological services would become user-friendly, a full reconstruction and modernization of the website of the State Hydrometeorological Service of Moldova were necessary. This need was identified during the initial institutional capacity assessment and implemented during 2016-2017.

The modernization of the website of the State Hydrometeorological Service of Moldova was completed. The revamping was done based on three components: design, content, and functionality in order to ensure data quality and to improve climate service provision. It included the modernization of the Management System database of the website as OPEN sources, such as MySQL, integration of SHSM with the website <http://www.meteoalarm.eu/>, upgrading existing website data flow, importing data from external and internal sources, implementation of automatic stations data visualization graphically, spreadsheet or in other format; presentation of graphics, maps, tables in an interactive way, with automatic loading of databases, creation of modeling options of newsletters, alerts, reports, certificates, extracts from predefined forms, implementing a user management module: create accounts for different user groups: a) Individuals b) legal entities (state and private structures, which require specific information); c) civil society, NGOs d) academics (researchers, scientists, etc.); e) educational environment (teachers, students).

After the approval of the design, the web site elements were built by using state-of-the-art technology like *HTML5*, *CSS 3*, and *Javascript*. All *HTML/CSS* templates are build according to W3C standards (*HTML 5* and *CSS 3*) and can be used with the following browser generations: *IE 10+*, *Firefox 6+*, *Safari 6+*, *Opera 11.60+*, *Chrome 9+*. Legacy browsers, like *IE 8* or *IE 9*, will be supported but with some restrictions on functionality and design.

Putting in place a modernized SHSM website requires harmonization of SHSM data flow which is time and effort consuming activity, considering the many departments of SHSM have to change the format of data reporting. Therefore, during the implementation of this activity, along with coordination of website interface and content, data format change and operation was the main focus of activity. ZAMG representative’s visits to SHSM were in support to speed up the process and provide direct training and consultancy to SHSM on operating meteo data.

The development of the main technical components was finished in July 2017. The test phase started on August 1, 2017 and ended with the publication of the web page on October 19, 2017. The last phase was complete by the implementation of the mobile version of the web site optimized for mobile devices (tablets, smartphones), on November 30, 2017. Standardized bug reports were used for the documentation of the implementation process. Small graphic adaptations were implemented in addition.

After the completion of the website updating, a training on the website management is provided by ZAMG for SHSM staff on the weekly bases to clarify open issues. According to the contractual terms and conditions, web conferences will be completed in May 2018.

The updated SHSM website was relaunched in November 2017 and can be accessed at www.meteo.md

The following recommendations were given by ZAMG to SHSM for a sustainable development of the SHSM products and services:

Recommendation 1: Enhanced internal cooperation

It is recommended to use the available resources in an optimal way and to harmonize the products and services. The quality and efficiency of services and products, and therefore their reception by users and customers, political decision-makers and the public, will benefit from improved coordination and internal collaboration between the departments.

Recommendation 2: Forecasting

It is recommended to re-organize the daily internal weather briefing. The discussion of different weather scenarios, model uncertainties, and severe weather warnings shall be the main element of the briefing. To issue properly severe weather warnings it is advised to make final decisions together with all the meteorologists on your shift. If necessary you could also involve experts within your institute from outside the shift, e.g. flood forecasters shall be integrated into the discussion. The approach should improve collaborative decision-making (CDM) capabilities of the whole team at SHMS. The forecast area should not be restricted to the territory of Moldova. Weather forecasts for the upper reaches of the major rivers are essential for accurate and timely flood forecasts.

SHSM shall follow strictly the guidelines of the Meteoalarm when issuing severe weather and flood warnings. The warnings have to be issued well in advance to enable civil protection agencies and other users and costumes to have sufficient time for the reaction to reduce or even prevent damages and losses. In cases of changes in the situation, all types of warnings and general forecasts have to be updated and modified.

Warning systems in near future will get less generalized targeting towards anonymous users. They will become more and more user and impact oriented. The operational warning system at SHSM is based on fixed thresholds. It is recommended that SHMS follows the endeavors currently ongoing in the European NHMSs in the development of impact-based warnings and forecasts.

A good relationship to the media is equally important when issuing warnings. They might give advice or contribute with seminars to find the best wording for different warning scenarios in your language, or support your work with supportive interviews in crises. In any case, the mutual trust and the close relationship necessary for this type of interviews have to be established long before a crisis situation in order to be able to talk to well-informed media partners during a crisis.

Recommendation 3: Preparation for a crisis

During a crisis with a large impact, the stress for a National Meteorological Service will be much larger than usual. Be prepared that in most countries where EMMA/Meteoalarm scheme has been employed, the public attention towards the National Meteorological Service grew considerably. This might put stress on your hardware and on the personnel.

For these situations, a well-trained team used to CDM, previously installed and tested contacts and resilient technical channels to the media and civil protection are necessary.

Phone and internet lines might not be available as usual. Power shortages are typical during floods. Prepare several incoming phones and other communication lines and adequate personnel to distinguish between requests from the general public and other entities of higher priorities for weather, warning, and alert information.

Recommendation 4: Implementation of the WMO strategy for service delivery

The WMO Strategy for Service Delivery guides NMHSs in the development and improvement of their capabilities in serving the user communities including the public. The strategy explains the importance of service delivery; defines the four stages of a continuous, cyclic process for developing and delivering services and the elements necessary for moving towards a more service-oriented culture; and describes practices to strengthen service delivery. The goal of the Strategy is to help NMHSs raise standards of service delivery in the provision of products and services to users and customers. The Implementation Plan provides a flexible methodology to help members evaluate their current service delivery practices and to serve as high-level guidance for developing more detailed methods and tools that will enable members to improve their service delivery process.

Recommendation 5: Capacity building

Based on existing competencies of the staff members areas requiring additional training shall be identified. Individual training plans shall be compiled for the staff members. It is proposed that the plans follow the recommendations for competence development provided by the WMO Technical Commissions. The learning success shall be evaluated according to the WMO competency assessment.

Recommendation 6: Numerical Weather Prediction, enhance regional cooperation

A stronger collaboration for the joint use of numerical weather prediction models together with neighboring states is encouraged, an effort that would exceed the possibilities for a small weather service with limited resources like SHSM. Furthermore, a full exploitation of the WMO access to ECMWF products is strongly recommended.

Recommendation 7: Implementation of nowcasting systems

Nowcasting techniques are superior to the output of numerical forecast models for very short lead times of minutes to a few hours and are crucial for severe weather warnings. Observational data may be merged into an integrated automatic nowcasting system like INCA with a high spatial and temporal resolution and a very high update rate. Such a system is very important for warnings and interesting for various customers to optimize their activities. It is very likely that the development of such an automatic nowcasting system will attract new customers. Various NMHSs in Europe have substantial expertise in the development of automatic nowcasting tools. It is strongly recommended to benefit from their expertise and sound the possibilities for collaborations.

Recommendation 8: Commercial activities

Start with the structured development of commercial products. Prerequisites are the successful enhancement of the forecasting capacities, identification of user needs, and training of staff regarding the development of new products and services, sales and marketing. A thorough market analysis, economic and non-economic viability analysis, an accurate preparation of business plans, and appropriate marketing activities are a key to commercial success. The revenues can then be used for the recruitment of new staff members.

Activity 2.3. Partnerships to support adaptation planning and advance adaptation action in Moldova established

The implementation of this activity was supportive of the partnership established between State Hydrometeorological Service of Moldova (SHSM) and the Austrian Central Institute for Meteorology and Geodynamics (ZAMG).

After the evaluation of the institutional and technical capacities of SHS, a roadmap toward achieving the membership of EUMETNET was developed and further activities followed the path underlined in the roadmap (pls, see Annex 19). These activities included SHS staff applying for EUMETNET OPERA program, exchanges of weather radar data and providing weather radar data for the OPERA European

composite products, legally apply weather warning code and improve the dissemination of the information to decision makers and end users in the Republic of Moldova.

Within ZAMG-SHSM partnership, the Austrian side helped in establishing contacts with the European weather radar community and provided consultancy with regards to the application procedure of EUMETNET membership. ZAMG consulted SHSM for the provision of weather warnings according to the European Standards and for the provision of the information in the correct technical formats. The work improved the dissemination of the warnings and data to decision-makers, end-users and the general public at national (SHSM website) and international (Meteoalarm) level.

During the 15th EIG EUMETNET Assembly of Members 3-4 December 2015, EUMETSAT HQ, Darmstadt, the State Hydrological Service became an associate member of EUMETNET.

Another objective of the partnership was to increase SHS capacities for issuing weather warnings without external support for the EU Meteoalarm platform. Specific training courses for SHS were tailored to IT staff needs on the dissemination and transfer of warnings to the Meteoalarm system: (i) planning of the advanced forecaster training course, (ii) consultation of SHSM staff regarding the preparation of the request for the participation in EMMA/Meteoalarm and OPERA to EUMETNET, (iii) IT infrastructure (supercomputer, network, virtualization, databases) of a modern weather service at the ZAMG.

SHSM-ZAMG partnership was essential in helping Moldovan Hydrometeo service to become a full member of meteoalarm system and associate member of EUMETNET and starting from 21st of December 2016, independently operate Meteoalarm platform – European system of severe weather warnings, designed to provide public information on adverse weather conditions expected for the next 48 hours across Europe. Connecting and operationalization of information passed from test phase to the independent mode on Meteoalarm platform. Meteoalarm is an initiative of EUMETNET, the European network of public services within the World Meteorological Organization, to which Moldova joined in 2015. The information in the METEOALARM system is primarily graphically structured and should be readable without further explanations within seconds by the majority of the people. Further information is accessible for most of the countries via texts in English and local languages providing thereby a more detailed information. The response by the public showed the concept is successful, daily hit rates range between 1 and 12 million.

Further work under SHSM-ZAMG partnership was oriented towards:

- technical and content related clarification on the use of the green color (no warning)
- send daily test warnings inclusive correct treatment of the green color to the test server by SHSM by routine forecasters (pre-operational mode)
- approval of the data format of the Chisinau raw data by OPERA

ZAMG team provided support for *harmonization of the thresholds* and warning criteria, implementation of production and dissemination procedures together with SHSM and adaptation of the forecasting process warnings at SHSM to Meteoalarm system standards. The thresholds should be furthermore adopted and the warning procedures should be further harmonized. It is advised to link in any case closely with the civil protection agency and discuss again the threshold and impacts before the start of the operational transfer of warnings to Meteoalarm.

Table I-9. Warning Parameters and Thresholds currently used at SHS for Issuing Range Weather Warnings for Meteoalarm

Phenomena	Yellow	Orange	Red
Wind	gust of 15-20 m/s	gust of 21-29 m/s	gust of 30 m/s and more
Rain	amount of 15-49 mm,	amount of 50-79 mm,	amount of 80 mm and more,

	accumulated in 12 hours or less	accumulated in 12 hours or less	accumulated in 12 hours or less
Snowfall	7-19 mm, accumulated in 12 hours or less	20-29 mm, accumulated in 12 hours or less	amount of 30 mm and more, accumulated in 12 hours or less
Thunderstorms	deep, organized and persisting convection	-	-
Blizzard and snowdrifts	wind speed of 11-14 m/s, lasting for 3 hours or more	wind speed of 15 m/s and more, lasting less than 24 hours	wind speed of 15 m/s and more, lasting for 24 hours or more
Extreme low temperature	air temperature of -24 to -20°C	air temperature of -25 to -29°C	air temperature of -30°C and lower
Extreme high temperature	air temperature of 33 to 35°C	air temperature of 36 to 38°C	air temperature of 39°C and higher
Fog	visibility of 200m or less, for 3 hours or more	visibility 50m or less, lasting for 3 hours or more	visibility of 50m or less, lasting for 24 hours or more
Heavy showers	-	amount of 30 mm and more, accumulated in 1 hour or less	-
Long-lasting rain	-	amount of 100-149 mm, accumulated in 1-3 days	amount of 150 mm and more, accumulated in 1-3 days
Hail	diameter of 6-19 mm	diameter of 20-39 mm	diameter of 40 mm and more

A next step was the training on Pre-Operational Phase Severe Weather Warnings and Pre-Operational Phase Flood Warnings. In the pre-operational phase of Meteoalarm system, the shift forecasters generate and transfer daily warnings to the test server (CAP format). All duty forecasters have to get used to the tool and the warning procedures. ZAMG and Meteoalarm experts check routinely the test warnings and give feedback in case of incorrect warnings or technical problems. The operational phase starts after acceptance by the Meteoalarm expert team.

By the acceptance of the Meteoalarm Program Manager, the pre-operational phase was successfully completed in December 2016.

Operational Phase of Meteoalarm. After an update of the *Paint and Alert Tool* and technical adaptations, SHSM switched to the operational mode on December 21, 2016. SHMS severe weather warnings are operationally available in Meteoalarm (www.meteoalarm.eu).

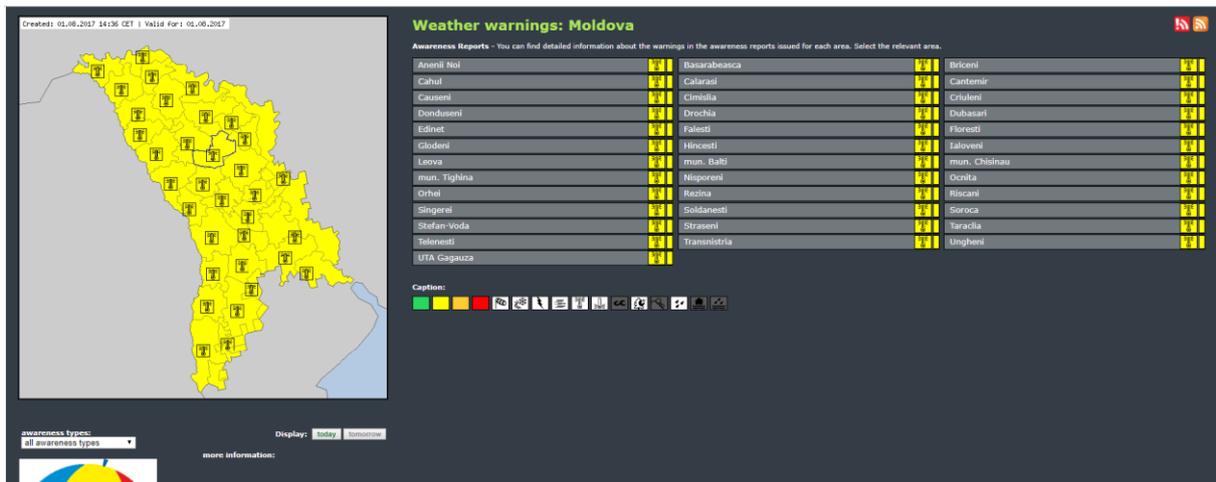


Figure I-4. Republic of Moldova weather warning at district/raion level on www.meteoalarm.eu

The operational implementation of Meteoalarm in Moldova was presented to the public in the workshop “State Hydrometeorological Service of the Republic of Moldova (SHS) Member of EU Meteoalarm Community” in Chisinau on November 2, 2017.

DRR capacity building field exercise. Local level prevention capacities for eventual climate risks disasters have been strengthened with a comprehensive civil protection field exercise „Giurgulesti – 2015” implemented by the Emergency Situations Coordination Centre of the Commission of the Emergency Situations of the Republic of Moldova and the intervention teams of the Civil and Emergency Situations Service. The exercise was observed by the Head of Civil Protection and Exceptional Situations Service of Moldova, Deputy Minister of Ministry of Internal Affairs, Deputy Minister of Ministry of Environment, representatives of the Austrian Embassy in Moldova, ADA representatives, permanent Deputy Representative of UNDP, attaché of the Austrian Ministry of Internal Affairs in Moldova.

The objective of this training exercise was to test the ability and skills of Moldovan rescue intervention team in the liquidation of consequences of adverse weather conditions in a climate disaster scenario of a long-time and heavy storm accompanied by strong winds and thunderstorm, which brought a sudden rise of Prut river water level and flooded the territory of Giurgulesti International Port. According to the scenario, long-time heavy rain caused dangerous geological processes with several severe consequences: a locomotive carrying fuel has derailed, causing fire breaks. Firefighters were organized in several fire-intervention teams, equipped with 24 equipment units and acted according to fire safety procedures. Simulation scenario included also instant road accident involving minibusses and cars with the spill in a ditch, with eight people killed, nine injured and another 18-people stricken. The intervention of ambulance and aeromedical crew flying with SMURD helicopter from Romania was done as a response action. During the exercise, Moldovan intervention teams’ actions were observed by the international experts from Austria. Austrian evaluators analyzed theoretical and practical components of the exercise and appreciated the high qualification of Moldovan teams and management work of Civil Protection and Emergencies Department administration.

Output 3. Adaptation interventions in priority sectors implemented including demonstration projects at a local level to catalyze replication and upscaling.

Activity 3.1 Priority and innovative on-the-ground adaptation measures implemented in the most vulnerable areas/sectors in each of the three Development Regions.

Under this activity, the Project demonstrated through site-level interventions, how strengthening resilience to climate pressures can be concretely carried out on a pilot project basis. The implementation of this activity required a significant preparatory work to be undertaken by the PIU and project consultants.

Considering the limited resources dedicated to this activity, one of the first step in implementing it was the identification of the pilot sites that would meet the criteria for implementing a Grant Scheme in support to adaptation action that would reduce vulnerability and build resilience at the community level. Therefore, as a methodological approach was to use the *Livelihood Vulnerability Index (LVI)*, elaborated within Moldova's Third National Communication, (submitted to the UNFCCC in January 2014) at district level and, based on this index, identify the most vulnerable districts of region and implement community or household level adaptation measures with the objective to be used as demo projects in further community based related adaptation actions. The Project team strived to maximize the value of the overall portfolio of pilot projects by targeting 2 districts of 3 Regional Development zones of Moldova:

Guidelines with phased approach for implementing climate change adaptation options through a Small Grant Scheme(SGS) were developed by the PIU (pls, refer to Annex 20), specifying the principles for selecting the potential districts for implementation of adaptation interventions, the approach for the prioritization of sectors at the local level, and the general approach for financing adaptation interventions were outlined.

The technical Evaluation Committee made its first evaluation based on the screening criteria specified in the Applicant's Guide, organized into a matrix, which was used to weight and rank the degree to which each project idea meets the selection criteria. The selection criteria were grouped under 4 main compartments and provided in the Guide for applicants: a) Relevance of the project to achieving national strategic climate change adaptation targets; b) The products and results of this project are explicitly defined and target them a clear target group; c) Project upscaling potential, d) Existing partnerships

The aspects related to environmental protection and the efficient use of natural resources during the implementation of the pilot projects are subject to two main Laws, namely Law no. 86 of 29.05.2014 "on Environmental Impact Assessment" and Law no. 851 of 29.05.1996 "on ecological expertise". The activities implemented through Pilot Projects do not fall under the above-mentioned laws therefore, specific assessments were not necessary. Nevertheless, all the on-the-ground projects implemented through the small grants scheme were observed for any impacts by the representatives from the environmental inspection and construction inspection usually present in each district/region. The same people certify compliance with environmental and construction requirements at the commissioning stage.

Activities referring to PV systems and construction of water catchments fall under the incidence of the Law of the Republic of Moldova no. 851 of 29.05.1996 "on ecological expertise". Thus, for these two types of measures the beneficiaries of the Pilot Projects obtained the opinions of the State Environmental Expert, issued at that time by the State Ecological Inspectorate, which finds the conformity of the project documentation with the provisions of the environmental legislation and includes the measures for the protection the environment that needs to be respected in the process of the project. These requirements were followed during the implementation phase and later on after the projects completed.

The promotion and implementation of conservative soil technology in the Republic of Moldova does not require either environmental impact assessment or ecological expertise. For these reasons, such assessments and notices have not been carried out.

As a result of the undertaken methodological and guiding work, the project team, six most vulnerable districts from the three Development Regions of Moldova (North, Centre, and South) were selected

for the implementation of climate change adaptation measures: *Singerei and Făleşti* (Development Region North); *Calarasi and Nisporeni* (Development Region Center); *Basarabeasca and Leova* (Development Region South).

A *menu of adaptation options* was developed by the national consultants with the objective to familiarize future applicants of the Small Grant Scheme and the general public on the adaptation options with the potential to be implemented in Moldova's communities with a contribution to reducing vulnerabilities to climate change and build resilient sustainable development. This information was posted on dedicated site www.clima.md, also as attached Annexes to the *Grant Scheme Application Guide*. During the calls for project proposals, potential grants applicants were encouraged to apply with innovative technological ideas.

The *Grant Scheme Application Guide* was developed to support the application procedure. It contains general requirements of the application process, the eligibility criteria for proposed project proposals, the selection process, project partners, and associated costs. A dedicated section contains the information on the evaluation criteria of project proposals for SGS (please, refer to Annex 20). The procedure of launching the Call for expressions of interest and stages of project proposals submission have been outlined in the Guide, along with monitoring, project implementation, and reporting procedures.

A number of additional supporting materials accompanied the *Application Guide* aiming to facilitate the application procedure and understanding of the requirements of the Grant Scheme (*adaptation options menu; financing application form, Concept Note template, Applicant's declaration, partnership statements, application form, overall project estimate, checklist and rating scales of projects, administrative checklist, administrative evaluation grid project eligibility, final evaluation grid, final reporting form, legal and policy context of climate change adaptation*).

The *Application Guide* was made available to general public and potential applicants through the website www.clima.md, RD North <http://www.adrnord.md/>, Central <http://www.adrcentru.md/> and South <http://adrsud.md/>, through the district Councils eligible for appeal, local Radio, and local newspapers.

According to the phased approach of the SGS implementation Guidelines, one of the important steps was the prioritization of adaptation thematic areas for each district, that was implemented by the PIU using the MCDA (multi-criteria decision making) during the meetings organized in each development region, with high participation of local decision makers: District and community level Council members, NGOs and private sector representatives. As a result of this exercise agriculture, *energy, water* sectors as thematic areas for projects application.

The first call for adaptation grant proposals of the SGS was launched at the end of 2014y. and repeated during the beginning of 2015 y. Both calls were accompanied by strong awareness and information campaigns undertaken by PIU, national and international consultants with targeted messages for local level decision- makers (District Councils members, Local Public Authorities), private businesses, district level NGOs. The agenda of organized awareness and information events for participants included the topics: a) climate change as a phenomenon, climate change scenario on a global level, regional level and in Moldova; b) resilience and adaptation to climate change at the community level, c) recommended actions to reduce vulnerability, d) innovative adaptation measures to address the CCA at the community level; e) Promoting NAP Project Grant Scheme and the call for proposals.

The start day of the Grant Calls was made during the meetings organized in three development regions, where, according to *LVI*, the two most vulnerable districts to climate change were selected as sites to implement the pilot project of the SGS, along with priority sectors validated per each region. Meetings participants (Local Public Administrations, civil society, and private sector representatives) were informed of the term and conditions of the application procedure. Regional Councils contributed to

the dissemination of call for proposals through their websites, also informing the public about planned activities to ensure wide participation of eligible applicants.

Reviewing process. Through the announced calls, 25 concepts ideas from the communities of most vulnerable districts were submitted. The Technical Evaluation Committee used a number of criteria in evaluating the initial proposals, the criteria were structured into evaluation matrix as part of the *Applicant's Guide*, used to weight and rank the degree to which each project idea meets the selection criteria.

As a result of the made evaluation, seven project ideas from the areas of agriculture, energy, and water resources were top-ranked according to established criteria and with the help of national consultants elaborated into fully fledged project proposals and submitted for funding to the Project Evaluation Committee and ADA donor. Projects proposals were developed based on the discussions with potential beneficiaries, interested parties, research on similar types of interventions, and review of sound sectoral and scientific practices. PIU and sector NCs worked on incorporating and fortifying adaptation component of the proposals, which brought better results in the second call of proposals compared to the first call.

The selected project proposals are grouped into 3 prioritized thematic areas categories:

Water management:

- *Expansion of irrigation surface through the reconstruction of a reservoir by capturing rainwater and groundwater under the management of a household.* (Sîngerei) The overall objective is to develop resilience capacity of the household to climate risk factors (drought) through the reconstruction of the existing reservoir in order to capture rainwater and groundwater.
- *Construction of a reservoir for "Agapie Radu" household by capturing rainwater and groundwater* (Călărași). The overall objective is to develop resilience capacity of the household to climate risk factors (drought) through the reconstruction (extension) of a reservoir by capturing rainwater and groundwater.

Agriculture:

- *The increase of adaptive capacities to climate change by promoting new agricultural technologies.* (Basarabeasca) The overall objective is to develop resilience capacity of the household to climate risk factors (drought) using conservation tillage systems and to increase the efficiency of pesticides and mineral fertilizers administration by implementing an automatical GPS navigation system.
- *Using a tillage conservation system.* (Basarabeasca). The overall objective of the project is developing resilience capacity to adverse weather conditions (soil droughts and atmospheric heat waves) by implementing conservative minimizing soil basic works.
- *Resilience Capacity development to climate change effects using new technologies in the soil processing.* (Fălești) The overall objective of the project is to develop resilience capacity of the household to climate risk factors (drought) using conservation tillage systems and precision machinery.

Renewable energy:

- *Renewable Energy for entrepreneurship.* (Sîngerei).The overall objective of the Project is to use renewable energy sources in order to ensure stable and independent supply of electricity for 17 economic operators in IP, Business Incubator Sîngerei'.
- *Ensure the growth and preservation of gooseberries plantation by using alternative electric energy source.* (Nisporeni). The overall objective of the project is focused on using renewable energy to ensure the growth gooseberries plantation productivity due to the use of irrigation and extended

the expiry date of the berries by keeping them in the refrigerator which will operate using electricity produced by solar panels.

The implementation of the pilot projects was dependent upon funding from the ADA/UNDP Project, therefore, contractual agreements were signed based on the terms and conditions proposed by the PIU and coordinated with CO UNDP and Grants beneficiaries, specifying also the cost share of grants recipients as a contribution to the total cost of a pilot project. After the coordination process, seven contracts were signed between CCO, MoEn and the beneficiaries (pls, refer to Annex 21 as a typical contract signed with all 7 beneficiaries).

During the evaluation of project proposals, the assumption was made that despite of a certain set of pilot inputs that will lead to specific agricultural, energy and water outcomes, it may not be possible to measure the final pilot outputs based on specified indicators of project proposal, as they are generally long-term in nature, in particular for agriculture. It could take years to determine whether an innovative idea might increase long-term profitability, improve soil fertility, successfully preserve farmland based on conservative approach applied, improve water availability or increase energy autonomy of beneficiaries. In addition to the long-term nature of these evaluations, the evidence may never be conclusive enough to attribute the change to a single pilot or approach. Therefore, in the contractual agreements with beneficiaries, a clause was included on grants beneficiaries' obligations to report to UNDP Moldova about projects outcomes during next following 3 years after project implementation completed.

Local level pilot projects were under the close monitoring of PIU and national consultants, reviewing and analyzing supporting documentation of projects implementation, performance reports, monitoring the time schedule and the quality of work done. Site visits were an important component of the award monitoring because they allow a more effective review of the projects, typically, they were undertaken as needed and do not take place on a set schedule.

The procurements made within the projects complied with requirements of national legislation, through the announcement of open tenders, under the monitoring of project procurement assistant, PIU, and NCs. The copies of procurement documentation are kept in PIU office, while originals are held by the grants beneficiaries. At the same time, PIU and NCs did not control or try to control the recipient's day-to-day management of the projects and activities under grants recipients' responsibilities as a juridical and economic entity.

The disbursement of the grants funding of recipients was done in installments, after the fulfillment of obligations according to the signed contracts. Disbursement of grants funding was made based on submitted to PIU supporting procurement documents, narrative and financial reports on implemented activities and after dissemination and experience sharing workshops conducted. The summary on the implemented pilot project is presented in the table I-10 and Annex 21A.

Table I-20. Summary of implemented pilot project at household and community levels.

Nr	Pilot project title	Beneficiary name and location	Grant amount USD	Beneficiary contribution USD	Total costs USD
1.	Expansion of irrigation surface through the reconstruction of a reservoir by capturing rainwater and groundwater under the management of a household	"Burcovschi-Grup" SRL, Singerei district, Alexandreni commune, Țiplești village.	30,000	13,150	43,150

2.	Construction of a reservoir for "Agapie Radu" household by capturing rainwater and groundwater	„Radu Agapi” Peasant Farm, Călărași district, Buda village	26,120	6,530	32,650
3.	The increase of adaptive capacities to climate change by promoting new agricultural technologies.	”Sadac Agro” SRL, Basarabeasca district, Sadaclia village	23,000	11,500	34,500
4.	Using a tillage conservation system.	„Vasile Baciu” Peasant Farm, Basarabeasca district, Sadaclia village.	17,200	4,900	22,100
5.	Resilience capacity development to climate change effects using new technologies in the soil processing.	„Abilitate-Agro” LLC, Fălești district, Călugăr village.	26,120	6,930	33,050
6.	Renewable Energy for entrepreneurship.	PE ”Business Incubator Singerei”, Sîngerei.	30,000	13,150	43,150
7.	Ensure the growth and preservation of gooseberries plantation by using alternative electric energy source.	”Ocară Ștefan Dumitru” Peasant Farm, Nisporeni district, Marinici village.	29,600	8,200	37,800
Total:			182,040	64,360	246,400

Albeit the implementation of SGS was through 7 pilot projects of 6 most vulnerable districts of Moldova, the total number of direct beneficiaries was 4,596 people, including the landowners of agriculture conservation projects, business incubator beneficiaries (17 enterprises), owners and users of water reservoirs, while indirect beneficiaries, is the population of 7 rural communities benefiting from the improved food chain at the local level, enhanced food security, local scale social change, improved and resilient livelihood.

Project implementation process, along with the results and lessons learned have been shared and disseminated through a number of local and national media channels (pls, see Activity 1.5.), events organized by the project. Implementation of climate adaptation pilot projects served as relevant examples of adaptation action at community and household level, easy to adopt, with immediate results, which makes them attractive for private business and LPAs. Generated methodological and practical knowledge in implementing conservation and precise agriculture, installation of PV systems, inland management of water through the small-scale water catchments was appreciated by the community of practitioners.

3.2. A pipeline of strategic adaptation interventions for medium- to long-term implementation developed

Implementation of this activity had the objective to identify project ideas with potential for development into project proposals and seen as opportunities for strengthening resilience, reducing vulnerabilities, enhancing economic diversification and having mitigation co-benefits.

There is a clear rationale for adaptation planning and mainstreaming interventions in Moldova based on the existing evidence and projections of climate change impact on various sectors of economy and on communities, therefore, in addition to implemented priority adaptation initiatives in the three Development Regions of Moldova, the project sought to identify additional project ideas in the area of climate adaptation with potential to be implemented in Moldova. Project ideas produced by the national consultants working in developing of adaptation options menu and in the implementation of pilot projects, along with project ideas submitted by the applicants during the first and second grant calls that did not succeed to be funded, but valuable and feasible as adaptation options were developed as project fiches, adopting the project fiche template developed for pilot projects.

The project fiches are grouped into several main categories, for details, pls. refer to Annexes 22-25.

Water sector:

- 1) *inventory of hydraulic construction (dams, reservoirs) in human settlements vulnerable to flooding,*
- 2) *rehabilitation of sewage treatment stations with their further use for crop irrigation,*
- 3) *assessing technical, managerial-corporation and investment conditions of dams, dikes, and reservoirs in areas vulnerable to flooding,*
- 4) *rehabilitation and setting up of proper maintenance (increasing the degree of resilience) of dams (dams) in Hincesti and Leova districts,*
- 5) *wastewater treatment in rural settlements through wetlands*
- 6) *evaluating the applicability of the main documents related to flood and community protection,*
- 7) *training of decision factors and hydraulic structures managerial staff on water-related climate risks management.*

Transport sector:

- 1) *assessing the situation of existing drains after landslides and the state regional roads in the Southern Region,*
- 2) *revision of technical normative documents for the design, construction, and maintenance of road infrastructure*

Agriculture sector:

- 1) *introduction of vetch field as a green manure growth as a measure of increasing soil fertility and resilience to the hydric deficit,*
- 2) *anti-hail cover of orchards plantations;*
- 3) *using indoor crop production in order to increase productivity and quality of crops by limiting the influence of environmental factor;*
- 4) *application of sprinkler irrigation systems as a means of adaptation to water stress reduced productivity and quality of crops,*
- 5) *promoting varieties and hybrids of plants with increased resistance to extreme weather phenomena;*
- 6) *restoring grasslands and meadow as a measure to adapt to the scarcity of fodder of the livestock sector.*
- 7) *application of a drip irrigation system as a measure to streamline the use of water resources in agriculture.*

Energy sector:

- 1) *increasing energy independence of bakery factories by implementing energy efficiency measures through the use of renewable energy sources;*
- 2) *extra season greenhouse production of vegetables by using renewable energy sources;*
- 3) *solar collectors domestic hot water production by based on the use of renewable energy sources;*
- 4) *energy production in cogeneration by burning biogas from livestock ejection and corn silage in farm livestock.*

Project fiches are seen as a valuable information on identifying potential investment priorities in adaptation area, also developed into project proposal can have a real contribution to adaptation planning and implementation, also as an instrument in the discussion of adaptation measures to be implemented through PPP.

3.3. Replication and upscaling of adaptation interventions supported

The focus of this activity was to develop the information that can help to enhance adaptation action on the short and medium terms at various scales of implementation.

Under enhanced consideration were implemented under the Grant Scheme pilot projects and technological ideas feasible for implementation in specific sectors of Moldova's economy that have the potential for scaling up based on applicable but comprehensive strategic vision. The up-scaling strategies of technology type adaptation measures, involving multiple actors are seen as a modality that can bring transformation adaptation, therefore the identification of strategic concepts aiming at expanding the experience gained during the implementation of pilot projects during 2014-2016 y.y was considered and discussed with private sector representatives, LPAs, CPA.

Based on the experience gained during the implementation of pilot projects the NCs have summarized the conclusions as learned lessons and have disseminated them among participants during the experience sharing workshops conducted in communities and also posted on www.adapt.clima.md, mass media channels. The lessons learned produced by the national consultants specify the following factors contributing to the success of implemented pilot projects:

- the relevance of implemented technology to local priorities and needs;
- correct identification of that along with adaptation to climate promotes other benefits: community development, environment, economic, social;
- increased level of interest among local population, understanding, and engagement among beneficiaries;
- the relative good enabling environment for implementation of conservation agriculture;
- project implementation conditions;
- intensive awareness-raising and information campaigns;
- LPAs supportive of adaptation projects;
- continuous guidance and technical advice and support to farmers;
- high level of interest, understanding, and engagement among beneficiaries;
- intensive consultation process;
- experienced in the area beneficiaries;
- easy interactions and communication between pilot projects implementers, consultants, technical advisers.

The notable social and economic, technical, capacity experience gained from the implementation of pilot projects in the area of agriculture, water and energy had the potential to be upscaled to make a wider impact at regional or country levels. During the implementation of pilot projects valuable practical knowledge was gained in designing adaptation measures at household and community levels, correctly implement them through overcoming multiple barriers in the deployment of innovative technologies in the specific context of rural communities of Moldova.

Outreach materials (brochures, leaflets, video spot, success stories) incorporating the experience and knowledge were developed and distributed to local farmers, community leaders, district level authorities, sector stakeholders, NGOs, civil society. During the dissemination workshops, the national experts have discussed with participants various aspects of the up-scaling potential of pilot projects.

Based on the knowledge and experience gained the national experts on agriculture have proposed a *strategic concept for up-scaling agriculture conservation* based on no-till, mini-till, strip-till and precise agriculture techniques to be implemented in all three agricultural zones of the Republic of Moldova (pls, see Annex 26). The strategy is analyzing the existing barriers to scaling up successful interventions, describes the marketing potential of conservation technology and proposes the up-scaling concept based on replication of already implemented pilot projects, key factors for successful replication, including the analysis of political and business enabling environment, potential target groups, analysis

of investments per implementation unit, required technical capacities of hard component of technologies, accessibility to seeds, integrated pest control, required crop rotation, advocacy. The technology package includes the phased actions for implementation with characteristics of implementation zones, management, and monitoring approaches.

Renewable energy technologies (PV) up-scaling strategy (pls, refer to Annex 27) also derives from the experience of implemented renewable energy pilot projects at the community level, along with countrywide existing experience on implementing wind, solar and biofuel technologies. The document analyses the existing favorable conditions, in particular, the enabling environment along with barriers for implementing renewable technologies in Moldova and proposes solutions to overcome the barriers. The up-scaling concept relies on private sector involvement and necessary Government support. A thorough analysis of sites for implementation of PV systems is given considering economic, social, and technological aspects. A number of alternative ways of implementing renewable PV technology are given considering the involvement of residential, public, and entrepreneurial sectors of Moldova's in districts. A phased approach to implementation activities with all relevant details and characteristics is given along with a description of actions to build capacities at the district level for implementing proposed activities. A special emphasis is given to the horizontal and vertical implementation of proposed activities, analyzing up-scaling factors, in particular, marketing conditions for renewable energy technologies.

The impact and vulnerability assessments which were carried out showed high implementation priority of *water sector adaptation measures*. The undertaken hydrological assessment showed 40% run-off of precipitation, causing significant soil erosion and floods in rural communities, without little or no contribution to farms irrigation. Implemented water management pilot projects of Grant scheme emphasized Moldova communities' development characteristics vulnerable to water scarcity and limiting their adaptive capacities. Past and on-going successful water sector adaptation efforts are to be scaled- up and enhanced through increased implementation at the local level.

Another up-scaling strategy developed by the national experts refers to the promotion of *wheat and corn climate-resistant local varieties* (pls. refer to Annex 26). The strategy gives the analysis of complex climate-socio-economic vulnerability of the agriculture sector of Moldova with regard to the promotion of climate-resistant varieties, current international and national developments in the area, analysis of enabling environment, estimated costs and market potential of local varieties, analysis of barriers in promoting local varieties, strategic concept on how to promote local varieties with a phased approach, and concluding remarks on the implementation of proposed adaptation measure.

Other developed strategic concepts of technological type adaptation measures refer to the cultivation of vetch field as successive crop (intermediate) used as green manure, use of anti-hail mesh, the extension of irrigation systems as one of the main adaptation approach in combating climate drought hazard. Proposed concepts are based on the identified sectoral vulnerabilities and technological needs.

During the implementation of adaptation projects, stakeholder consultations, experts' meetings, public debates on the national and sub-national adaptation needs, a number of adaptation recommendations, lessons learned from the pilot projects, experts ideas were discussed and proposed to be developed into project fiches with further potential to be elaborated as project proposal when funding support identified.

Activity 3.4. Development of climate change adaptation project proposals

Under this activity, a number of coordination and preparatory actions were carried out by project partners ADA, CO UNDP, Ministry of Environment and PIU in order to identify common areas of interest of a potential adaptation intervention supported within the current ADA/UNDP project. The need in implementing a large-scale adaptation intervention oriented toward building country's resilience in the areas vulnerable to climate change was identified in many climate risks and

vulnerability studies undertaken by project's consultants, along with conclusions of other national and international expertise from the area. After several rounds of discussions, the collaborating partners have identified *water resource management* as one of the most suitable adaptation areas to be considered in developing a country level adaptation intervention. It has to be mentioned that the feasibility study was carried out within the available project resources in terms of human, finances and time, which were restricted at that stage of ADA/UNDP project implementation. Research for the feasibility study was conducted between June and November 2017 through an extensive literature review and consultation with key stakeholders in Moldova.

The proposed adaptation intervention aims at reducing water run-off and improve water availability through improved surface water management, enhance food security through livelihood diversification agriculture of fisheries, sustainable crop production, increase capacity of communities for better water operation, inform the policymakers through provision of inputs for water policy, groundwater regulation and as well as water budgeting and sharing. The implementation of intervention will help build a long-term resilience of drought-prone areas of the country considering both current and future vulnerability to climate change. It will address social inclusion by integrating vulnerable communities of Moldova, including women, in climate resilient water resources management adaptation measures at the grassroots level. Use of renewables such as solar energy and others would also be considered as an adaptation element in the water resources management and will be part of the feasibility analysis, as it will support nation-wide replication, the opening of the private markets, and large-scale adoption.

This activity was consulted *Apele Moldovei*, the agency responsible for water management, in order to identify already available data on existing water reservoirs and coordinate further project actions in data collection. It was identified that the existing in Moldova water registry was not updated since 2012 and available data are quite scarce for building a credible water management baseline. Therefore, as part of the feasibility study, the questionnaire on the evaluation of water storing existing capacities and demand potential of the Republic of Moldova considering climate changes scenario through the rehabilitation or construction of small size water catchments was produced and distributed to LPAs of rural communities of Moldova (pls, refer to Annex 29). The survey was conducted in 1,270 communities helped identify the current baseline scenario for water-related adaptation intervention (data of existing hydrographic reservoirs-ponds, heals, tanks, etc., including their number, size, spatial distribution, estimation of capacities, water volumes, water quality, type of property, destination, other characteristics), along with needs of Moldova's communities in new water catchments based on run-off water.

The Study was prepared as part of a set of technical studies, socio-economic studies and financial feasibility reviews being undertaken to inform project development. The literature review for the study consisted of a review of existing documents on climate change adaptation, risk assessment and resilience in Moldova and, as well as Government policies and programs. The project team also conducted a consultation workshop with the participation of district-level cadaster engineers to conclude on survey results and pilot sites identification. Additional individual meetings and telephone interviews with a range of national and international experts were conducted.

The criteria for the targeted development of small-scale water reservoirs (SSWRs) were developed based on hydrological suitability and climate-related socio-economic vulnerability. The identified community level needs were screened against these criteria to ensure that the final results represent both community needs and hydrological suitability.

The key focus of the adaptation approach proposed for the FS was to develop a framework for solutions that augment and improve small-scale surface water storage at the local level that address multiple, and sometimes, conflicting water uses. The idea is to promote a sub-watershed or sub-basin level integrated water resources management that incorporates the needs of multiple users, especially smallholder farmers. This Study provides an assessment of those aspects that impact the viability of

utilizing water reservoirs infrastructure as a water-related adaptation to reduce exposure to flood risk and increase food security and test their implementation feasibility. It was prepared as part of a set of technical studies, socio-economic studies and financial feasibility reviews based on the *Statistical Yearbook of the Republic of Moldova* that will inform the project development.

The report begins by reviewing the policy framework for adaptation and resilience in Moldova and then examines the priority areas of water resource management, agricultural production and on-farm energy use (pls, refer to Annex 28). It then summarizes a number of key findings and recommendation for consideration in further planning and provides additional relevant background materials in a series of annexes. The main components of the FS are structured to reflect the following climate change, water, and agriculture aspects.

Increasing temperatures and increasing unpredictability of rainfall characterize Moldova's vulnerability to climate change and threatens the long-term sustainability of the agriculture sector. Agriculture is central to Moldova's economy, as evidenced by the strong correlation between country GDP and agricultural GDP, productivity, soil erosion and landslides and the destruction of property and the loss of life. Agricultural production is inextricably tied to climate, making agriculture one of the most climate-sensitive of all economic sectors. The agricultural sector also generates almost 30% of the jobs nationwide, mostly in rural areas where the majority of the poor are concentrated. Most farmers (97.7%) are small-scale, with farm sizes ranging between 0.85 – 10 hectares. Plant growing forms the bulk of agricultural production, and its share in the total agricultural production is about two-thirds. Maize and sunflower dominate throughout the country, though only a small number of small-scale farmers cultivate value-added crops. Changes in temperature and precipitation will reduce most crop yields of wheat, maize, alfalfa, grapes, vegetables, and pasture. The loss of cultivable land due to water shortages and soil erosion has a direct impact on rural poverty. For the past decade, lower-than-predicted rainfall patterns and irregular access to water have reduced available irrigation water. Droughts and reduced availability of irrigation water will further reduce crop yields. As a result, farmers are supplementing surface water by pumping groundwater, and aquifers are being depleted. Uncertainty about irrigation water supplies is a major factor deterring farmers from switching to higher-value crops. Climate impacts could therefore adversely affect food security and economic growth in vulnerable rural areas and undermine the progress that has been made in poverty reduction.

Agriculture management regimes and practices are unsustainable in the longer-term and especially in the face of decreasing water resources. The three main problems affecting agriculture in Moldova are droughts, floods, and soil erosion. All three factors are expected to intensify with the advent of more acute climate patterns. Current management practices of farmers are of concern as they are unsustainable in the longer-term and especially in the face of decreasing water resources, the availability which is being exacerbated by climate change. Losses at the field level (e.g., related to water storage and irrigation equipment) and losses due to the non-optimal management of farming systems (comprising all the cultural practices from the choice of crops and rotations to the technical package, etc.) are significant. The Moldovan Government has already identified several measures for the management and development of water efficiency programs that could double the agriculture sector's added value and mitigate the negative impacts of the climate change and enhance the resilience of agricultural production. This includes the development of water-saving irrigation techniques, significant improvements to irrigation techniques for improved yields by planting more profitable crops, and the promotion of small-scale infrastructure.

Without appropriate adaptation interventions, it is likely that a large proportion of the rural population will remain extremely vulnerable to the interacting effects of climate change.

Associations (WUAs) have limited capacity to take on more responsibility for irrigation system management at the local level, to operate on a more commercial basis, and to effectively implement consultative mechanisms. There is a great need to encourage the adoption of more efficient and sustainable irrigation practices by water users (i.e., both male and female farmers) and to build their

capacity to take responsibility for the management of irrigation systems at the local level and to operate on a more commercial basis. Although some solutions are available, the adoption is slow due to slow transfer of knowledge, low education, and limited financial resources of smallholders hold back the adoption of climate adaptation measures. National institutions are aware of this threat. The overall goal of Moldova's National Climate Change Adaptation Planning Process (NAP) is to ensure that Moldova has a system and the capacities to support medium- to long-term adaptation planning in order to reduce the vulnerability of the population and key sectors from climate change impacts. Within this context, this project will contribute to the implementation of adaptation interventions in priority sectors (agriculture, water, and energy) by promoting local pilot projects that build on existing development planning strategies and processes and ensure successful regional and national replication and expansion.

Based on the lessons learned from past and ongoing efforts it is evident that an integrated approach to address irrigation systems and watersheds, together with interventions to address the availability of agricultural water, agricultural practices and use of micro-irrigation systems is critical to developing long-term climate resilience. Business-as-usual or single sector efforts to address agriculture, water, and water-related risk management are not effective long-term.

The policy environment is generally conducive to addressing many of these climate resilience issues. The water and agriculture sectors are in the position of promoting adaptation to climate change as a cross-cutting sector. It additionally recognizes the need for providing good quality water in adequate quantities, protecting water sources, as well as minimizing climate change impacts on food security, promoting climate-smart agriculture and access to improved weather information. Current interventions in the agriculture and water sectors include improvement and upgrading of irrigation systems, watershed protection, the introduction of climate-smart agricultural practices, rural water supply options such as advanced filtering facilities, rainwater harvesting, and community water supply schemes, and improving climate/weather and hydrological monitoring and forecasting capabilities. *However, there are gaps in ongoing efforts, which impose constraints to improving climate resilience of smallholder farmers.* There are many communities without irrigation systems (including the capacity to deal with anticipated changes in climate). Needs include the development of water storage options, development, and repairs to irrigation infrastructure and de-silting of reservoirs.

Recommendations for addressing identified gaps and barriers, presented in the report, were identified through extensive assessment of past experiences and consultations with stakeholders. The recommendations are guided by an integrated approach to enhance the climate resilience of communities and a holistic approach to the community water and irrigation systems. The key paradigm shift of these recommendations derives from the approach to water storage at the local and basin level to address food security, watershed and water supply management and floodwater mitigation. This will provide effective solutions in the 11 districts identified as most vulnerable. Cost-effectiveness is ensured by community mobilization for implementation and participatory management, and synergizing with ongoing efforts in the water and agriculture sectors. *The key interventions proposed are intrinsically linked within the hydrological confines of the community reservoirs and irrigation systems* and include: small-scale water reservoirs, micro-irrigation systems and flood control basins applied to agricultural and water management planning. The implementation of the recommendations will enhance resilience against floods and droughts, increase rural incomes and result in better health conditions.

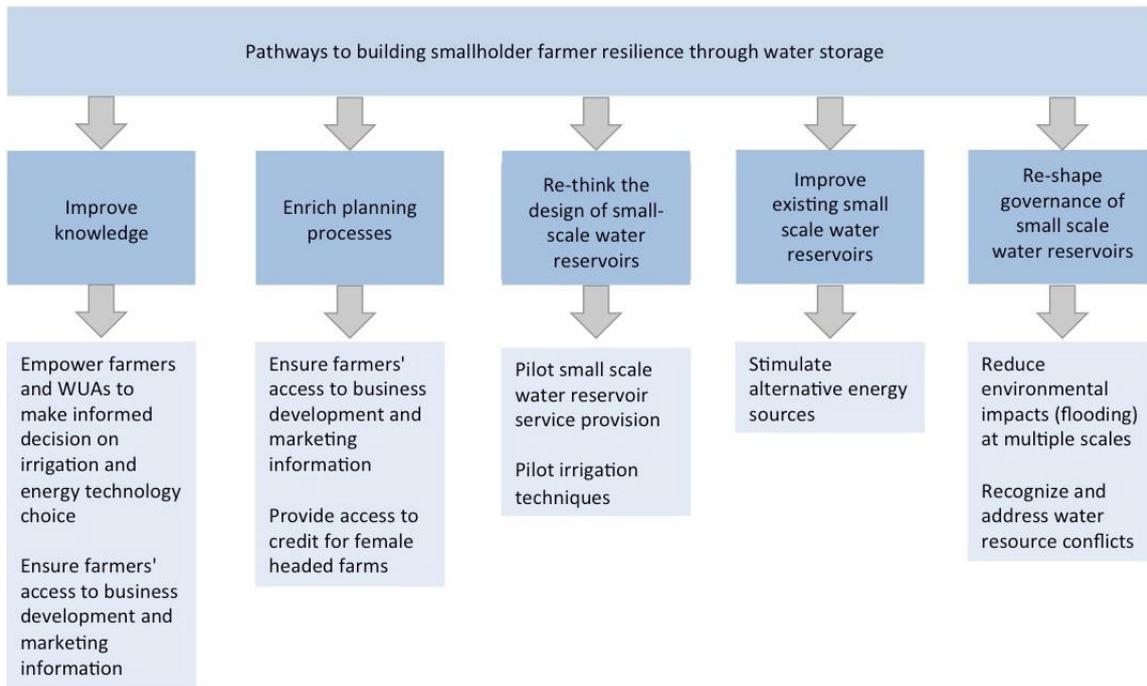


Figure I-5. Pathways of building smallholder resilience through water storage

Recommendations for the project components.

The proposed Project objectives will be to:

To increase climate resilience of communities through water storage and irrigation infrastructure by developing and strengthening the technical and institutional capacities needed to undertake strategic water infrastructure investments to improve agricultural water and irrigation options, facilitate changing the irrigation water source from groundwater to surface water, increase water and agricultural productivity, and build long-term climate resilience; and

To promote effective community involvement in water governance and improved awareness of climate resilience issues among end users of water services.

The Project is expected to result in improved and more climate-resilient communities through increased access to agricultural water and irrigation services for smallholder farms, increase to the extent of irrigated agricultural land in 11 districts, and increase net income from crops and on-farm and off-farm employment opportunities.

The following are the recommended project components:

Component 1: Water storage infrastructure for irrigation

The objectives are:

To develop suitable SSWR for reliable agricultural water supply, micro-irrigation systems, and equitable water allocation in farming communities; and

To develop 'positive feedback' incentives that would enable the achievement of targeted improvements to water productivity.

The purpose of this sub-component is to develop the physical storage infrastructure for increasing water availability, delivery efficiency, and productivity and to lay the foundation for the development

of efficient community-based and on-farm irrigation systems, such as drip and bubble irrigation systems, as well as technology for more efficient application of fertilizers and pesticides.

Component 2: On-farm water management and crop management

The objectives are:

To increase agricultural production and farm income through technical and management approaches (e.g., intensification and diversification); and

To increase agricultural production and farm income through improved crop selection and market-oriented approaches.

The purpose of this sub-component is to incentivize efficient on-farm irrigation systems to help improve rural living standards. Improved farm incomes are also expected to influence willingness to invest in improved water resource management and climate-smart agriculture practices. For implementation, substantial technical assistance is required in the organization of the production chain, for the proper use of chemicals and the support of the farmers in the use of modern irrigation technology.

Component 3: Increased floodwater mitigation with water storage

The objectives are:

To reduce the impact of intense rainstorms by delaying floodwaters and reduce flood damages with cascading flood control basins, making more water available for use;

To reduce the sediment load of intense storms and decrease the sedimentation of downstream water reservoirs; and

To improve water storage and infiltration capacity and promote flood control system redundancy.

Increase soil and water conservation measures to restore watersheds and reduce erosion with community-level interventions, such as agroforestry, climate adapted plant species and another climate smart agricultural interventions, to enhance crop production and improve overall climate resilience.

This sub-component includes development of flood control basins (e.g., extended dry and wet detention basins, dry flood-control basins, back flood dams, cross-slope barriers) to reduce downstream peak flow and associated flooding in agricultural areas, reduce sediment, nitrogen (N) and phosphorus (P) loads to protect water reservoirs and other surface waters, and facilitate the recharge of the aquifer and its appropriate management. Additionally, some of the dams may provide back-flood irrigation or have the storage capacity to serve as livestock watering sources. This component could also incorporate further watershed management measures to prevent silt inflow into the reservoirs from deforestation and over-grazing.

Component 4: Institutional development

All of the above physical investments will contribute to the productivity enhancement and sustainable development only if accompanied by horizontal integration and institutional change. Investments in community irrigation systems and improved agricultural practices complement ongoing Government investments and have the potential for synergies with ongoing and planned interventions on the development of community irrigation infrastructure for increased cropping intensity, safe drinking water availability, effective seasonal forecasting, flood mitigation measures and early warning systems. In addition, improved watershed management practices are needed to complement water storage plans:

Support the creation and strengthening of the institutions (e.g., WUAs) necessary to support SSWR and continued adoption of improved adaptive management practices, improving farmer managed

water distribution networks and introducing timely and reliable water supplies that will ensure long-term improvements in agricultural productivity and water use;

Developing linkages with local institutions capable of providing technical backstopping to assist communities as they evolve and strengthen. Continued support from extension services coupled with appropriate agriculture development policies will be critical to sustaining the benefits of water availability, and agricultural intensification and diversification;

At the water user level, support for farmers organizing into WUAs to manage community irrigation systems. They will measure water use and collect water charges that apply towards the O&M for sustainable use of the irrigation systems. External technical assistance in irrigation and agricultural technologies, through training and extension services, will be provided;

The project will support incorporating technologies, such as automatic rain gauges and data transmission systems reservoir for water levels and local rainfalls, to be used locally without having to wait for central/national agencies to transmit the data back. In addition, automatic water level sensors at strategic locations that cover an entire river basin will significantly enhance the early warning capability within river basins.

The project will facilitate the development and sharing of best practice across Moldova, ensuring that activities do not remain in silos, but can be replicated throughout the country. The created knowledge base is expected to generate a substantial amount of knowledge for river basin management, community-based irrigation systems (e.g., low-cost micro-irrigation), climate-smart agriculture practices, improve awareness of water resources and climate change adaptation options, mainstream environmental and social development objectives, and create an enabling environment for sustained community-based development.

Findings and recommendations. The recommendations outlined in the Study are aimed at increasing the resilience and adaptive capacity of smallholder farmers to climate variability and extreme events. Therefore, they aim at increasing the ability of the farmers to cope with climate-related challenges while developing adaptive responses to extreme climatic events.

Moldova has made considerable progress in developing a strong institutional base for effective climate change adaptation in recent years. The *Strategy for Adaptation to Climate Change by 2020* is a key policy milestone. The Government has also been clear regarding the importance of both mitigation and adaptation action and is committed implementing plans both to reduce emissions and protect development through adaptation.

Moldova's policy framework is being supported by clear action to implement adaptation, but the efforts remain small-scale and often fragmented. They are also under-funded, and funding onstraints are reducing the effectiveness of technical solutions to promote adaptation. Successful pilots exist, but these are not being scaled up and opportunities for complementarity to deepen impact have not yet been fully explored. In terms of pressing adaptation needs, availability of agricultural water to ensure food security and sustain rural livelihoods and incomes is a clear priority both in policy and human terms. Efforts to manage water resources and support increased irrigation-based agriculture must be core to any adaptation effort. It is also clear that the full potential of actions such as SSWR has co-benefits in both in term of disaster risk reduction and IRWM that should be fully explored. These should be embedded in wider development issues that show how integrated action generates community benefits not only in maintaining traditional livelihoods but also in protecting assets and development gains. Based on the core analysis, the following recommendations are made for consideration in the development of Project:

- Potential actions are closely aligned with national strategies and with existing Government programs and plans;

- Improving access to agricultural water and understanding of climate change risk information is essential. Without improved access to data and analysis, proposed investments cannot fully reach their potential;
- Access to low-cost irrigation, as a key asset of smallholder farming, can be an effective approach to create tangible and immediate adaptation benefits and livelihood improvements. The different 'business' models assessed in this Study all provide benefits, but the approach must be tailored to local topography and conditions. Efforts to integrate additional climate sensitive approaches, such as energy efficiency or solar power, can amplify the long-term benefits;
- The success of micro-irrigation projects can vary considerably based on the approaches employed, community uptake and the supporting actions. Careful consideration will need to be paid to whether additional techniques
- can be deployed in some areas, based on their ecological profile;
- Improving the integration between disaster risk reduction actions, specifically flood reduction, and water storage options, in terms of current and potential future climate actions should be a priority;
- Clear indicators to ensure the participation of women and other vulnerable groups will be key. Information work must enshrine the importance of gender and age-disaggregated data collection and be complemented by strategies to actively require participation from a range of community constituencies in project design and decision making.

V.2 Project results/ project status

Project Goal: Moldova has a system and capacities in place for medium- to long-term adaptation planning and budgeting with the overall aim to reduce the vulnerability of the population and key sectors to the impacts of climate change (by building adaptive capacity and resilience)						
	Indicator	Baseline	Targets (by the end of Project)	Actual Status (end of Project)	Source of verification	Deviations / comments / observations; Update on Risks and Assumptions
Project Objective To support Moldova to put in place its National Adaptation Plan (NAP) process contributing to and building upon existing development planning strategies and processes and to implement	Ind1. Moldova has operational individual, institutional and systemic capacities in place required to develop and advance medium- to long-term National Adaptation Plans (YES/NO)	Moldova has developed the National Adaptation Strategy (NAS) under the direction of the Ministry of Environment with an Inter-Ministerial Working Group steering the process. The NAS is intended to serve as an umbrella strategy that creates the enabling environment for specific sectors and ministries to develop their own concrete action plans for adaptation. Currently, the Third National Communication is being developed that will produce national vulnerability baseline and analysis of country's current adaptive capacities. Some sectors (agriculture, health) are advancing	T1. YES	T.1 The main components of a National Adaptation Planning process developed: Draft GD on operationalization the NAP as a process (under review by the MARDE); SAPs for health, forestry, transport, and energy sectors (different levels of approval); Cross-sectoral multistakeholder CCA Coordination mechanism developed and put in	The draft of GD on adopting the NAP process. (Annexes 06)	

<p>priority adaptation actions</p>	<p>with integrating climate change risks in their sector policies and plans. However, there is no systematic process in place of assessing and integrating climate change risks and opportunities in the development planning in Moldova. Knowledge and understanding of climate change issues are primarily concentrated in the Ministry of Environment, the State Hydrometeorological Service, and Academia, while sectoral planners have rather limited understanding and/or capacity for climate resilient planning.</p>	<p>place when the draft of the GD approved; M&E system developed and operationalized through www.portal.clima.md ; SHSM capacities improved and aligned to EU standards based on www.meteoalarm.eu platform, improved service delivery through revamped www.meteo.md; Mainstreamed CCA into 6 district level socio-economic development Strategies their APs and performance-based budgets. Implementation of community-level adaptation pilot projects in the most vulnerable districts of Moldova; Upscaling strategies of best practices from energy, agriculture and water sectors produced along with a feasibility study on water management at the</p>
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	Ind2 ¹² . % of project budget spent on advancing gender issues		T2. At least 10 %	<p>community level produced.</p> <p>Gender issue in the context of climate change adaptation addressed through dedicated activities along with part of adaptation activities; Improved knowledge on climate adaptation of national and subnational planners; Methodologies and guidelines on adaptation-related thematic areas produced. Press releases, newsletters, success stories, photobook, leaflets, websites, Facebook page, Issue, Flickr, video spots, Radio, and TV broadcasting on NAP process produced to communicate about advancing and results of NAP process in Moldova. T2. Advancing with gender issue was done through dedicated gender</p>	Gender-related 4 leaflets and 5 guides, e-library of www.adapt.clima.md
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¹² During the project Inception Phase together with the Project Team a detailed breakdown of the indicator (concrete activities to be measured) will be developed. The project will further undertake detailed planning of project activities and monitoring, and the development of operational project indicators in such a way so as to ensure that gender disaggregated data will be collected to the extent possible, allowing for the indicator to be efficiently tracked.

				activities, along with mainstreaming it into the project activities and results~ \$100,000.	<i>Moldova Gender Equality Strategy for 2017-2021</i> ; workshops minutes, Consultants' reports	
Output 1. Institutional and policy frameworks for medium- to long-term gender-sensitive adaptation planning and budgeting in place	<p>Ind3. Number of plans developed or policies, plans or programmes adjusted to incorporate climate change risks</p> <p>3a. The policy setting for effective climate change finance is strengthened</p>	<p>Moldova has identified urgent and immediate needs for adaptation through National Communications and Adaptation Strategy and started planning for those through some sectoral strategies. However, the country lacks capacity, data, expertise, institutions and financial resources to undertake medium- to long-term orientated adaptation planning. Institutional structures for mainstreaming climate risk into policy targets are lacking and financial allocations to support adaptation planning and implementation are not made through the national and sector budgeting processes. Institutional mechanisms for cross-sectoral coordination and planning are weak and no com-n and outreach strategy in support of medium- to long-term adaptation planning in place.</p>	<p>T3. At least four policies/plans/programs for at least 2 sectors introduced/adjusted</p> <p>T3.a The monitoring and evaluation tools for mainstreaming adaptation into Moldova's budget development</p>	<p>T3. CCA mainstreamed into six socio-economic development strategies of Singerei, Basarabasca, Falesti, Leova, Calarasi, and Nisporeni Districts and their PBB. Sector-specific adaptation Strategies of health and forestry sectors and their implementation Action Plans. CCA measures identified, developed and submitted to transport and energy sectors for mainstreaming into sectoral planning.</p> <p>T3a. The draft of GD on operationalization of NAP process has a separate component on climate tagging procedures that</p>	<p>The decision of six districts on the approval of incorporating CCA into socio-economic development strategies. (Annex 12)</p> <p>CC Strategy of forestry and health sectors and their implementation APs. (Annexes 13 and 14)</p> <p>The draft of Government Decision on NAP</p>	No deviations

	<p>Ind4. NAP process established in Moldova (YES/NO)</p>		<p>process developed. are</p> <p>T4. YES</p>	<p>will monitor climate expenditures.</p> <p>T4. Approval of GD on operationalization of NAP process will set NAP/SAPs-based adaptation planning as an iterative process.</p>	<p>process and its CCACM. (Annex 06)</p> <p>Methodological guide on climate tagging of the national public budget. (Annex 16)</p>	
Activities	Inputs	Current status (end of project)		Deviations/comments Update on Risks and Assumptions		
<p>Activity 1.1. Development of coordination mechanism of the adaptation process of the Republic of Moldova to climate change.</p>	<ul style="list-style-type: none"> - Consultation w/shops - National consultants - International consultants - Working groups 	<p>Cross-sectoral multi-stakeholder Climate Change Coordination Mechanism chaired by the National Commission on Climate Change conceptualized and the national format for government approval produced and submitted to the Ministry of Environment of Moldova.</p> <p>M&E framework conceptualized components online portal and monitoring platform under development. Indicator-based reporting system.</p> <p>The concept of Climate Change Adaptation Information System developed. Monitoring and Evaluation component concept developed, monitoring and reporting portal developed www.portal.clima.md</p>		<p>Instability at national and sector Government levels, not enough knowledge on CCA of high-level decision factors.</p> <p>Not well understood the role of adaptation coordination by the members of Climate Change Commission.</p>		

		Inter-sectoral and sector-specific indicator fiches and sectoral/agency reporting format developed. (Annex 05-07)	
Activity 1.2. Adaptation mainstreamed in priority sectoral development plans	<ul style="list-style-type: none"> - Consultation w/shops - National consultants - International consultants - Working groups 	CCA mainstreamed into six socio-economic development strategies and performance-based budget of Singerei, Basarabeasca, Falesti, Leova, Calarasi, and Nisporeni districts. CCA measures identified, developed and submitted to transport and energy sectors for mainstreaming into sectoral planning. (Annex 12)	Low level of sectors' engagement may put under the risk the implementation of the activity. Changes of high-level sectoral government may lead to changes in the commitment to NAP process.
Activity 1.3. Adaptation Plans for selected sectors developed	<ul style="list-style-type: none"> - Consultation w/shops - National consultants - International consultants - Working groups 	Climate Change Adaptation Strategy and its affiliated Action Plan of Health and Forestry sectors passed stakeholders consultation and submitted for approval. (Annex 13-14)	The low commitment of sectors may put under the risk the implementation of the activity. Changes of high-level sectoral government may lead to changes in commitment to NAP Project.
Activity 1.4. Development of a plan for financing climate risk management and implement climate change adaptation measures	<ul style="list-style-type: none"> - Consultation w/shops - International consultants 	The concept of Mainstreaming Climate Financing Plans into Moldova's Budget Development Process developed. User guide <i>Methodological guidelines on climate tagging of the national public budget</i> was developed (Annex 15 and 16).	Ministry of Finance not supportive in implementing CBT of the national budget.
Activity 1.5. Communication and outreach strategy for support to medium- to long-term adaptation planning developed and implemented	<ul style="list-style-type: none"> - National consultants - Mass media - Publications 	NAP web page www.adapt.clima.md developed and operationalized as a mean of on-going information and dissemination of project progress and results. Press releases issued on most important events and posted on the website, distributed through mass media channels.	Not enough resources (human and finances) in adopting and implementing efficient CCA communication tools.

5 photo essays and 4 success stories developed and promoted through national media channels and international UNDP platforms. Facebook page and Instagram, YouTube, Flickr, Issuu used as project communication tools. Experience sharing, and dissemination workshops of pilot projects of energy sectors completed. Awareness raising leaflets on energy topics published.

<https://undp-adaptation.exposure.co/>
www.weadapt.org ,
www.adaptation.undp.org, www.undp.org,
www.md.undp.org www.one.un.org ,
www.adapt.clima.md

Climate change adaptation knowledge management strategy developed (Annex 17 A.

Radio and video spot versions on climate change awareness and ways to adapt based on project results completed.

Project banner as a roller-up developed.

Incorporating climate change component into *Moldova Gender Equality Strategy for 2017-2021* approved by the GD No 259 of 28.04.2017

Organized “*Adaptation to Climate Change*” (*gender perspective*), debates.

Workshop *Strategic communication in promoting of development projects in Moldova* organized.

				Communication and Outreach Strategy. (Annex 17)		
Indicator		Baseline	Targets End of Project	Actual Status End of Project	Source verification	of Deviations / comments / observatio ns; Update on Risks and Assumptio ns
Output 2. Institutional and technical capacities for iterative development of comprehensive NAP strengthened	Ind5. Number of technical tools, detailed methodologies (by sector) available to support medium- to long-term adaptation planning in all key sectors, across sectors and at national levels	Knowledge and methodology on a coherent NAP process are not present in Moldova. Relevant government entities and other stakeholders have limited knowledge of available tools and methods to support their effort in advancing to medium- to long-term adaptation planning processes in the context of their development strategies. While climate change mainstreaming is foreseen in the draft NAS, policy guidance for integrating climate change adaptation into national and sector development planning is not yet applied. Guidance for assessing and designing adaptation actions is fragmented	T5. By the end of the project, appropriate guides for at least 3 priority sectors and related resource materials developed and dispersed through workshops and existing knowledge dissemination channels	T.5. The following guides developed: 3 sector level guides on mainstreaming CCA into policy documents, a guide on cost-benefit analysis and climate budget tagging, 1 guide on implementing conservation agriculture, 1 guide on identifying and developing sector level adaptation measures, 9 gender-related guides, 1 guide to using adaptation vocabulary and terminology.	Developed and published guide e-version at https://issuu.com/oficiulschimbareaclimei/docs/mainstreaming-climate-change-adapta , e-library on: www.adapt.clima.md	

	<p>Ind6. % of sectoral planners at national and regional/local level trained (gender-disaggregated)</p> <p>Ind7. Policy- and decision-makers have increased knowledge and skills necessary for addressing climate change adaptation in planning and budgeting</p> <p>Ind8. # of institutional partnerships established</p> <p>Ind9. Data management and service quality in SHS</p>	<p>and weak in methods to cost, prioritize and design programmes covering key sectors and targets, and linking them to the national budget process.</p> <p>The government entities have limited institutional partnerships with global and regional knowledge management institutions and other governments in place to strengthen capacities for medium- to long-term adaptation planning and coordination.</p>	<p>T6. At least 70% of relevant planners trained</p> <p>T7. At least 70% confirm increased knowledge and skills</p> <p>T8. At least two new partnerships established</p> <p>T9. YES</p>	<p>T.6. National, sectoral and district level decision factors from climate-related areas attended Project's awareness raising and training events, and, to some degree have promoted adaptation planning and implementation in priority sectors.</p> <p>T.7 Filled questionnaires by the sectoral planners and undertaken surveys confirm their increased knowledge. For SHSM staff professional certificates issued by ZAMG.</p> <p>T.8. SHSM-ZAMG partnership established and Austrian - Moldovan partnership based on Agreement on Support signed between the Republic of Moldova and the Federal Government of Austria regarding the mutual</p>	<p>Decisions on mainstreaming CCA into the development strategies. (Annex 12)</p> <p>ZAMG contractual report. (Annex 19 A)</p>	<p>High fluctuation in technical staff at the sector level</p>
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	improved (YES/NO)		assistance in case of natural and technological disasters and the cooperation for their prevention partnership reinforced T.9. SHSM associate member of EUMETNET and independently operating the Meteoalarm platform. SHSM website operational at new standards www.meteo.md	
Activities	Inputs	Current status (end of project)	Deviations/comments, Update on Risks and Assumptions	
Activity 2.1. Sectoral planners are trained in the use of the tools and approaches to advance medium-term to long-term adaptation planning and budgeting and implementation	<ul style="list-style-type: none"> - International and national consultants - Workshops, surveys, training programmes, knowledge exchange sessions - Training materials 	<p>Information events and short-term trainings on the use of approaches and methodology in mainstreaming adaptation into sectoral planning undertaken.</p> <p>District level decision factors information and consultation activities on the CCA mainstreaming into the local development strategies undertaken.</p> <p>Guide <i>Mainstreaming Climate Change into Moldova's Plans, Policies and Strategies</i> published.</p> <p>Guide on mainstreaming <i>climate change adaptation measures into transport and energy sectoral policies</i> published.</p>	Not sufficient engagement in CCA of local level decision factors along with insufficient resources put at risk mainstreamed into the development strategies CCA measures.	

		<p><i>Glossary of climate change adaptation terminology published.</i></p> <p><i>Use of the cost-benefit analysis in the evaluation of climate change sector evaluation measures – published.</i></p> <p><i>Methodological guide on the implementation of conservation agriculture in Moldova - published</i></p> <p><i>Methodological guidelines on climate tagging of the national public budget Guide published.</i></p> <p>9 Guides and leaflets on gender and climate change topics and mainstreaming approaches of gender in policy documents of Moldova published.</p> <p>www.adapt.clima.md (e-library)</p>	
Activity 2.2. Data availability, management, dissemination, and capacity to support adaptation planning improved	<ul style="list-style-type: none"> - Equipment, software, hardware for State Hydromet Service - Trainings - expert exchange visits 	<p>Nine training modules on nowcasting, forecasting and hydrology and IT delivered to 25 members of SHSM. (Annex 19 A)</p> <p>A full reconstruction and modernization of SHSM website continued, activities oriented toward improved and unified data flow reporting in line with WMO standards implemented. SHSM independently operates Meteoalarm platform. www.meteo.md</p>	
Activity 2.3. Partnerships to support adaptation planning and advance adaptation action in Moldova established	<ul style="list-style-type: none"> - Expert exchanges/ research visits - International experts 	<p>Contribution to the strengthening of the “Agreement between the Republic of Austria and the Republic of Moldova on mutual assistance in case of natural or technological disasters and cooperation with respect to their prevention”</p> <p>The institutional partnership between SHS and ZAMG on-going.</p>	

Indicator		Baseline	Targets End of Project	Actual Status (end of the project)	Source of verification	Deviations / comments / observations; Update on Risks and Assumptions	
Output 3. Adaptation interventions in priority sectors implemented including demonstration projects at a local level to catalyze replication and upscaling		<p>Ind10. Number of adaptation interventions implemented</p> <p>Ind11. Number of adaptation interventions in the pipeline</p> <p>Ind12. Number of case studies and lessons</p>	<p>A number of priority adaptation interventions have been identified through National Communications and NAS, however, linkages to the national/sub-national budget processes are not established and financial resources are limited or not available to implement them or even to conduct feasibility studies. Mechanisms to systematically identify and mobilize national and international financing are not in place. Costs for prevention and preparedness actions are generally not foreseen in local budgets. Awareness on the cost-effectiveness of no-regret measures is still limited and information on adaptation options and best practices is not</p>	<p>T10. At least five interventions implemented</p> <p>T11. At least 15 interventions in the pipeline (project fiche and/or feasibility study developed)</p>	<p>T10. Completed implementation of seven interventions.</p> <p>19 Project fiches in agriculture, water, and energy sectors developed. Water management feasibility study produced.</p>	<p>NC reports. Dissemination w/p minutes. Pilot projects media links, see Activity.1.5.</p> <p>Project fiches in agriculture, water, transport and energy sectors developed. (Annexes 22-25, 28)</p>	<p>Not enough competencies of consultants to develop</p>

	learned developed by the project	systematically collected and disseminated.	T12. At least five case studies/ LL developed	T12. Scaling-up strategies based on 3 agriculture and 2 renewable energy pilot projects developed, incorporating case studies and LL	Developed strategic concepts. (annexes 26-27)	scaling-up strategies
Activities	Inputs	Current status (end of project)	Deviations/comments Update on Risks and Assumptions			
Activity 3.1. Priority and innovative on-the-ground adaptation measures implemented in the most vulnerable areas/sectors in each of the three Development Regions	<ul style="list-style-type: none"> - Stakeholder consultations - International and national consultants - Contractors/service providers - Small grants (20% co-financed by LPAs, RPAs) 	Small Grant Scheme implemented according to validated sectors of each Development Region. Seven pilot projects in the area of agriculture, water, and energy completed: http://www.adapt.clima.md/slidepageview.php?l=ro&idc=327 (Annex 20-21) Post-project monitoring of implemented projects undertaken.	There were not essential deviations from the planned activities.			
Activity 3.2. A pipeline of strategic adaptation interventions for medium- to long-term implementation developed	<ul style="list-style-type: none"> - Stakeholder consultations - International and national consultants 	Project fiches in agriculture, water, transport and energy sectors developed. (Annexes 22-25)	There were no deviations.			
Activity 3.3. Replication and upscaling of adaptation interventions supported	<ul style="list-style-type: none"> - International and national consultants - Publications - Workshops at the district level - Media events 	Upscaling strategy of conservation agriculture at sector level developed. Upscaling strategy for renewable energy sources developed. (Annexes 26 and 27)	National consultants' expertise not sufficient for developing good quality upscaling strategies. Development of high quality upscaling strategies in the area			

			of renewable energy and conservation agriculture requires significant resources: time, finances, knowledge, methodology and experience. The project made best use of available resources to contract national experts that provided good services. For a higher quality services, are needed more resources to contract international companies supported by the national experts.
3.4. Development of climate change adaptation project proposals	- International and national consultants	Consultation and coordination work between ADA, CO UNDP, MoEn, PIU undertaken with regard to thematic areas. The Feasibility Study on climate change adaption intervention in the water resource management undertaken. (Annex 28)	Staff change, long-term coordination between partners During consultation with the local ADA office it was agreed to develop a project proposal for further submission by ADA to GCF once ADA gets accredited. As the GCF accreditation process turned to be a complicated one, the decision was taken together with the ADA office to have the feasibility study developed.
Project evaluation and audits	- International and national consultants - auditors	The project was audited annually in 2014, 2015, and 2016. Mid-term and final evaluations of the project carried out.	

II. Project management (difficulties encountered, management measures), Monitoring, Visibility

VI. I Project management

Mainstreaming climate change adaptation into national and sectoral planning of Moldova proved to be a highly demanding task, which often was overwhelming in its nature due to many reasons, the main being that adaptation is a topic where many interdisciplinary approaches are of highest request, resulting in time-consuming process, with many pitfalls, politically and technically. In this context, one of the main difficulty impacting Project implementation during the whole period was political instability, expressed in many changes of Government composition, including high-level positions of key sectors working with the Project. Due to these changes, a low commitment of staff to be replaced was noticed, with difficulties in buying-in of stakeholders and Ministries' staff. Often replacement of high-level positions at the Ministry of Environment required adjustment at the project level, it also impacted the approval process of project process and products. Therefore, the Project team had to show flexibility and continuous adjustment to respond to counterparts needs and keep the normal pace of project implementation to generate desired outcomes and delivery set outputs.

The PIU was responsible for project's financial management, oversight of procurement procedure, technical and human resources, reporting to CO UNDP and ADA donor, other services necessary to produce the outputs of the project, along with facilitation of the project partners coordination and monitoring during the implementation of the project. In doing these, the PIU ensured full compliance with the relevant national procurement and finance procedures and regulations, proper maintenance of the project designated account and project accounting records, management of funds flow, preparation of project financial and progress reports for submission to CO UNDP and ADA donor. CO UNDP commissioned scheduled independent financial audits of the project accounts and shared them with ADA donor, along with mid-term and final evaluation reports.

Project manager led the process and had the responsibilities of project implementation activities and completion of the agreed work plan, with involvement in all activities starting from the inception phase till finale evaluation of the project. Senior manager, CO UNDP liaised and worked closely with all partner institutions to link the project with complementary national programmes and initiatives (e.g. NDCs, SDGs).

The PIU organized several meetings with the World Bank representatives during their missions in Moldova, along with the on-going exchange of information to coordinate activities that interfere and are interlinked with further World Bank's investments in climate change adaptation in key sectors of Moldova. The coordination ensured that there is no overlap between projects and as a follow up the WB is directing its investments in support to the action of adaptation planning process in Moldova. The ADA/UNDP project has built an enabling environment in that sense. As a consequence, the WB team had to develop a climate risk financing investment plan, while ADA Project working on developing and putting in place Climate Tagging Budget procedure as part of Monitoring and Evaluation framework of the Coordination Mechanism.

An important joint effort was undertaken by the PIU and UNDP CO for developing and submitting the cost-extension request to ADA Office in Moldova, resulting in the cost extension of the project implementation, with a detailed description of further planned activities and supported the budget. The project implementation was extended from 1-st of June 2016 to 30 November 2017, with an additional dedicated budget of 196,000 EUR.

A dedicated coordination effort was carried out between the PIU, MoEn, UNDP CO, and ADA staff to agree on the type of support the Project can offer for further continuation of adaptation efforts in Moldova.

The project outputs and outcomes have been disseminated widely nationally and regionally and a collaborative relationship was established with the CO and the Istanbul Regional Hub of UNDP.

VI. 2 Monitoring

Besides the day-to-day monitoring undertaken by the PIU and UNDP CO, the following formal M&E activities were undertaken during the implementation time of the project.

Table II-1. Monitoring, evaluation and reporting activities during the implementation of the project.

Type of M&E activity	Schedule	Implementer	State at the date
Inception Workshop	After 3 months	PMT	completed
Inception Phase Report	End of IP	PMT	completed
HACT and capacity assessments	Inception Phase	UNDP	completed
Quarterly Progress Report	Every quarter	PMT	Every quarter during 2013-2017 y.y.
HACT spot-checks	as scheduled	UNDP	completed
Project Board meetings	Every quarter	PMT	10 Board meetings during 2013-2017 y.y.
Mid-year Report to the donor	Every 6 months	UNDP	30.11.2014 30.11.2015 30.11.2016 30.11.2017
Annual, 2013, 2014, 2015, 2016, 2017 y.y. Progress Report to UNDP	Annually	PMT	15.12.2013 16.12.2014 15.12.2015 20.12.2016 30.11.2017
Annual, 2013, 2014, 2015 y.y. Progress Report to the donor	Annually		19.03.2014 10.04.2015 29.04.2016 30.04.2017 31.03.2018
Mid Term Evaluation	Mid Term		November-December, 2015
Final Project Evaluation	End of Project		December 2017
Project auditing of 2014 y. Project auditing of 2015 y. Project auditing of 2016 y.	ICS Baker Tilly Klitou and Partners SRL-Project auditing for 01.06.2013-31.12.2014. Fabel, Werner & Schnittke GmbH-Project auditing for 01.01.2015-31.12.2015. Molda auditing Ltd., auditing for 01.01.2016-31.12.2016		20-24 April 2015 22-25 March 2016 7-25 March 2017

VI.3. Visibility

During whole implementing period, the Project organized and participated in a number of local, sectoral, national and international events (conferences, workshops, seminars, awareness-raising and

information campaigns, briefings, interviews) during which it was always clearly mentioned, that the project is implemented with funding from the Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria, along with informing stakeholders and general public about Project opportunities. Communication with the various targeted audience was based on the developed Communication Strategy and its Action Plan. In order to carry out effective Project visibility and communication, the PIU allocated human and financial resources for direct communication costs, but also for indirect costs such as PIU and consultants' efforts and time spent while carrying out activities related to Project's communication and visibility.

Visibility within the events

Project ensured on-going compliances with ADA's and UNDP's visibility requirements in all organized events and developed project materials:

- awareness raising and information events,
- experience sharing, and dissemination workshops held in 6 districts of Moldova;
- thematic workshops on various climate and adaptation topics;
- participation in the environment- related events organized by the Ministry of Environment of Moldova, EU representation in Moldova, and CO UNDP (*Europe Day, World Environment Day, Moldova environmental day, EU Sustainable Energy Week* PIU) used in promoting NAP Project outputs and Project visibility through video spot, posters, leaflets, brochures;
- communication materials published on local and global UNDP websites;
- co-organized with UNDP-UNEP National Adaptation Plan Global Support Programme (NAP-GSP), in collaboration with the Government of the Republic of Moldova, UNDP Regional Hub for Europe and CIS workshop;
- participation with presentations in adaptation-related international events.

Visibility through publications and video materials

All the publications edited under the Austrian Development Agency (ADA) Project mention the statement "This project has been funded with support from the Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria. This publication reflects the views only of the author, and the Project cannot be held responsible for any use which may be made of the information contained therein.

ADA and Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria logos

The materials produced under the project, such as the training material, as well as the materials published on the websites, special events, posters, leaflets, press releases, video materials, etc. contained both ADA and the Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria logos. When using the logos, there were no changes in the color and content, and these were not distorted, or rotated.

A project logo was created in order to define project's identity, as such easily identifying any kind of internal or public document such as deliverables, reports, internal communications, publications, and any other kind of document within the framework of the project.

ADA stickers

Large ADA stickers are placed on the door of Project room, Climate Change Office and the Ministry of Environment. Small ADA stickers are placed on all equipment (including portable equipment)

purchased with ADA and Federal Ministry of Agriculture, Forestry, Environment and Water Management of the Republic of Austria funds.

Display materials

During the events organized by the project and during those, in which the PIU and the consultants have participated there were openly displayed the materials, booklets, newsletters, brochures etc. developed by the project. (For more information please, see Activity 1.5).

Visibility through social media

Through the dedicated NAP web page (www.adapt.clima.md), the information about the ADA/UNDP project and climate change adaptation is communicated to the decision-makers, civil society, other project target groups as well as the progress on implementation of the project activities, reports, related guidance documents, and other useful information posted. Promotion of the www.adapt.clima.md website during various events held under the project provided the opportunity for the later to become more known and more useful in the outreach activities and recruiting process.

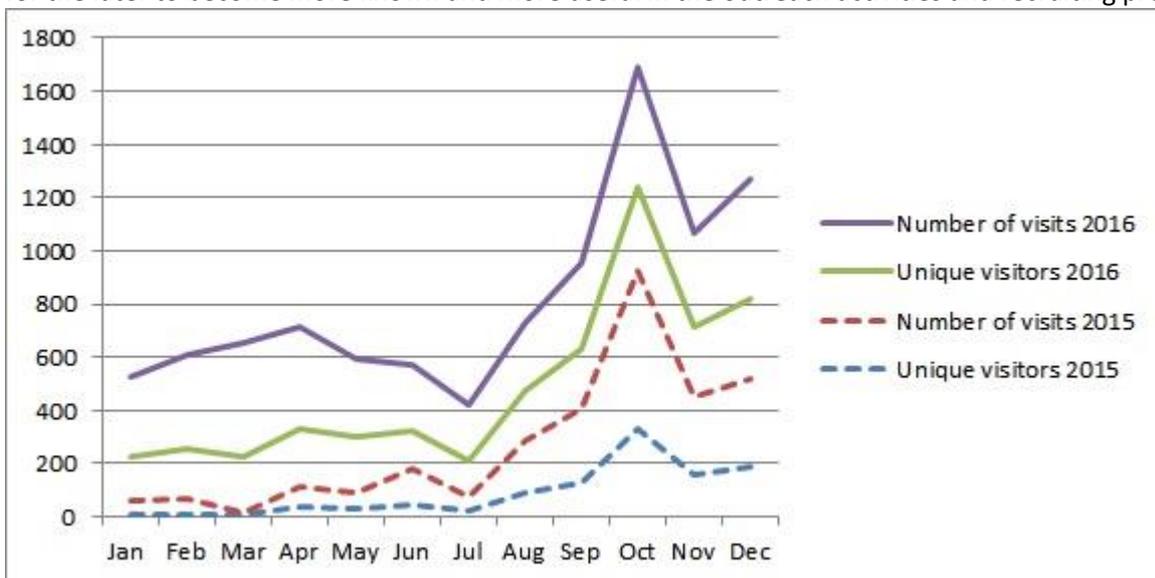


Figure I-6. Statistics of www.adapt.clima.md website visits: total number and unique visitors during 2015 - 2016 y.y.

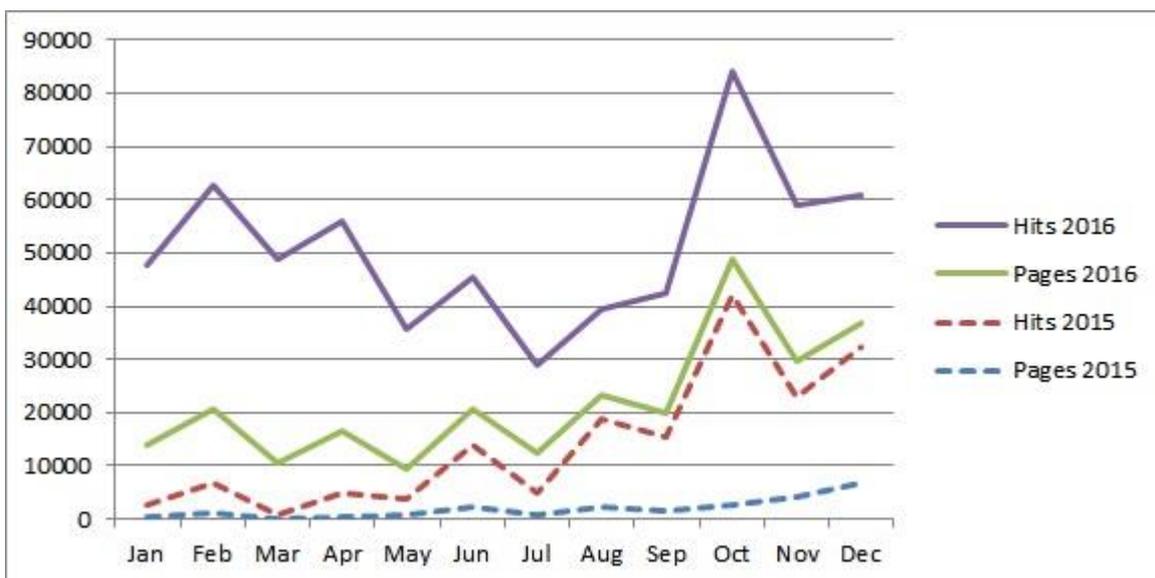


Figure I-7. Statistics of hits and pages for www.adapt.clima.md website during 2015 - 2016 y.y.

Project visibility was promoted through the dissemination of implemented activities and their results via a number of international media channels: www.WEADAPT.org, www.ADAPTATION.UNDP.ORG, www.UNDP.ORG, www.MD.UNDP.ORG, www.ONE.UN.ORG, disseminated via social media **Facebook** <http://bit.ly/1ZMEQD1>, **Instagram** <http://bit.ly/1R4SjQp>, **Youtube** <http://bit.ly/1UVYjSk>, **Flickr** <http://bit.ly/1VUKEKQ>, **Issuu** <http://bit.ly/1RLLtm2> and **Twitter** <http://bit.ly/2pAlENG>

III. 4. Sustainability

The Project structure and its design have a strong element of sustainability, which is embedded into the project activities with tangible outputs, leading to the sustainable outcomes. Under most economic, financial, social, cultural, institutional capacity, democratic governance circumstances, project outcomes are expected to be sustainable, meaning they continue or evolve under their own momentum or actions, without continued donor intervention. It was assumed, that the NAP Project may initiate a momentum for the policy reform and capacity building for a long-term sustainability of adaptation process, and to ensure that the strategies and policies renewed/developed within the project would be considered by the policy-makers for a sustainable use in enabling environment of adaptation activities.

During the implementation of the NAP Project, a number of activities targeted institutional capacities of the considered sectors, assessing them, understanding gaps and needs with regards to the CCA planning and also contributing to their development, including systems, policies, and skills of staff.

The project provided support to the sectors for the adoption and implementation of the developed policies. All remarks and comments received from all parties during the development of the CCA Strategies and Government Decisions have been taken into consideration and incorporated into their final version. The policy documents approved by the Government will ensure sustainability of the adaptation process at the sectorial level with the engagement of all interested parties. The project will technically assist the process and the development of policies; however, the ultimate responsibility and ownership lie with the Ministry of Environment, the respective line Ministries and institutions. This process will be facilitated by the Inter-Ministerial Working Group which will give guidance to the project. Considering that this report is written retrospectively, it should be mentioned, that members of the PIU, along with national consultants, provided support to the Ministry of Agriculture, Regional Development and Environment, Ministry of Health, Labour and Social Protection during the submission and approval process of policy documents.

From the project's perspective, the availability of a final high-quality adaptation planning process and sector policies is an achievement for which the project can assume the full responsibility. The official adoption of the developed policies and legislation, while being the ultimate goal, goes beyond the direct control and influence of the project, however, this process is being assisted by the project in any case due to the fact, that assistance is provided by the Climate Change Office operational after Project ends. It should be mentioned, that due to in depth-reform of Government structure with many replacements of climate-related staff of line Ministries, it was necessary to undertake additional information and explanatory work in order to promote the developed policy documents.

Under the NAP Project, we worked together with the decision-makers of the State Chancellery, ministries, districts and private sector to implement climate adaptation, developed tools and applied approaches for mainstreaming CCA into development strategies. These activities supported the development of capacities of the institutions in adopting long-term planning of the climate change adaptation process.

Through the adoption of the Government Decision with regards to the Climate Change Adaptation Coordination Mechanism, an iterative approach of adaptation planning will be put in place (Q1,2018)

in the country, based on a 4-year NAP cycle aligned to NDCs and SDGs goals. The proposed framework for NAPs and SAPs will allow for monitoring and planning along with a 3-tier M&E approach. As the adaptation planning is an iterative process, gradually growing in the scope and learning from the monitoring and review of on-going adaptation actions, through the monitoring process the sustainability of the adaptation progress will be ensured. Approval of GD on setting up of CCCM and its M&E component based on NAP/SAPs planning as a tool for iterative adaptation planning would be the major contribution to sustainability at the outcome level.

The local level sustainability of the adaptation actions was addressed by the project through mainstreaming of the medium and long-term climate change adaptation measures into the socio-economic development strategies and their action plans of Singerei, Basarabeasca, Falesti, Leova, Calarasi, and Nisporeni r-ns. This experience is to be strengthened and expended at the country level that is foreseen to be achieved within the next NAP2 Project of Moldova. Approval of the GD will generate additional interest and political focus on adaptation, that in addition to already carried out work of ADA/UNDP Project, will provide sufficient effect to future sustainable development of the country.

Through the developed and applied Grants Scheme, innovative opportunities for adaptation to climate change were piloted. Each of the 7 implemented projects organized dissemination results workshops with the participation of the interested local level private businesses, community administration, NGOs, civil society. To ensure the replication and upscaling of the local interventions as well as their sustainability, the commitment and full engagement of the local and central public authorities was a critical factor. The developed ownership of the climate change adaptation at the local actors means a greater responsibility and accountability in the adaptation projects and an increased sustainability at the community level. Increasing beneficiaries' responsibility enhanced their involvement and ownership of the project. *Water resources management* was identified a common area of interest of project partners along with relevance in addressing country 's adaptation needs. A pre-feasibility study on surface water management adaptation intervention in the Republic of Moldova to enhance climate resilient development of vulnerable areas of the country and to ensure water and food security was developed.

Sustainability of the project's results and developed products is assured through their compliance with the mid and long-term international agreements of the Republic Moldova, in particular, the Association Agreement with EU, signed Paris Agreement, communicated NDCs and under the development Moldova's SDGs.

Updated time schedule

The time schedule included in the Project Document was updated during the reporting period.

Activities	Year 1		Year 2				Year 3				Year 4					
	2013		2014		2015		2016		2017							
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
INCEPTION PHASE (4 months)																
Project initiation phase: establishment of the project implementation unit, detalization of the work plan for the Y1, engaging consultants, start-up w/shop, etc.	x	x														
IMPLEMENTATION PHASE (30 months)																
Output 1. Institutional and policy frameworks for medium- to long-term gender-sensitive adaptation planning and budgeting in place																
1.1. Development of coordination mechanism of the adaptation process of the Republic of Moldova to climate change		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1.2. Adaptation mainstreamed in priority sectoral development plans				x	x	x	x	x	x	x	x	x				
1.3. Adaptation Plans for selected sectors developed				x	x	x	x	x	x	x	x	x				
1.4. Development of a plan for financing climate risk management and implement climate change adaptation measures							x	x	x	x	x	x	x	x		
1.5. Communication and outreach strategy for support to medium- to long-term adaptation planning developed and implemented		x	x	x	x	x	x	x	x	x	x	x	x	x		x
Output 2. Institutional and technical capacities for iterative development of comprehensive NAP strengthened																

Activities	Year 1		Year 2				Year 3				Year 4						
	2013		2014		2015				2016				2017				
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
2.1. Sectoral planners are trained in the use of the tools and approaches to advance medium- to long-term adaptation planning and budgeting and implementation					x	x	x	x	x		x	x	x				
2.2. Data availability, management, dissemination and capacity to support adaptation planning improved						x	x	x	x	x	x	x	x	x	x	x	
2.3. Partnerships to support adaptation planning and advance adaptation action in Moldova established	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Output 3. Adaptation interventions in priority sectors implemented including demonstration projects at a local level to catalyze replication and upscaling																	
3.1. Priority and innovative on-the-ground adaptation measures implemented in the most vulnerable areas/sectors in each of the three Development Regions		x	x	x	x	x	x	x	x	x	x						
3.2. A pipeline of strategic adaptation interventions for medium- to long-term implementation developed						x	x	x	x	x	x	x	x				
3.3. Replication and upscaling of adaptation interventions supported						x	x	x	x	x	x	x	x	x			
3.4. Development of climate change adaptation project concept note															x	x	
CLOSURE PHASE (2 months)																	
Project closure, evaluation, reporting																	

Request for next disbursement

Summary project budget (relevant for accounting) according to contract	Amount approved so far	Amount presented for verification as at due date 31.12.2013	Amount presented for verification as at due date 31.12.2014	Amount presented for verification as at due date 31.12.2015	Amount presented for verification as at due date 31.12.2016	Amount presented for verification as at due date 31.12.2017	Budget presented for Verification as at due date 31.12.2017	Balance for
940,000 EUR	940,000 EUR	8,010 EUR	131,457 EUR	387,728 EUR	289,219 EUR	124,125 EUR	-539 EUR	

The final financial report is attached as Annex 30.

IV. Annexes of the report

Annex	Description
01	Institutional Capacity Assessment
02	Capacity Development Plan and sectoral Adaptation Needs
03	Concept Note and Guidance for a National Adaptation Framework for Moldova
04	NAP Roadmap
05	Framework for Monitoring and Evaluation Under the National Adaptation Framework
06	Draft of GD Coordination Mechanism
07	Informational System Concept
08	Trimaran web site based portal description
09	Climate Change Adaptation into Moldova's Policy and Planning
10	Assessment of climate risks and opportunities in the energy sector
11	Assessment of climate risks and opportunities in the transport sector
11A	CCA measures proposed for the Energy and Transport sectors to be incorporated into sectoral policies
12	District level measures and adaptation strategies
13	Adaptation Strategy for health sector
14	Adaptation Strategy for forestry sector
15	Implementing the Mainstreaming of Climate Change into Moldova's Budget Development Process through Climate Budget Tagging
16	Methodological Guidelines on Climate Tagging of the National Public Budget
17	NAP Communication Strategy and Action Plan
17A	Moldova Knowledge Management Strategy
18	Workshops 2013 – 2014 – 2015 – 2016 – 2017
19	SHS Roadmap
19 A	ZAMG Final Report
20	Small Grant Scheme Guidelines
21	Contract CCO with beneficiaries
21 A	Information sheet on Pilot Projects
22	Water project fiches
23	Energy project fiches
24	Transport project fiches
25	Agriculture project fiches
26	Strategic concept for up-scaling agriculture conservation
27	Renewable energy technologies (PV) up-scaling strategy
28	Feasibility study report
29	Questionnaire for LPA on water surface needs and site identification for water surface catchments building
30	The final financial report

The Annexes listed below could be downloaded at <https://bit.ly/2ljau8l>