

Reporting Agency: UNDP

Country: Armenia

STANDARD PROGRESS REPORT

No. and title: 00111782/00110609 -Increase Resilience of Armenia to Climate Change through Modernization of Armenia's Hydrometeorological Service

Reporting period: January-March 2019

I. PURPOSE

Project goal:

The overall goal of the project is to improve climate change adaptation planning and programming in Armenia through enhancing the capacity of national hydro-meteorological observation and warning services, for strengthening Armenia's resilience to Climate Change risks.

The project focuses on strengthening the technical and professional capacities of the Armenia Hydrometeorological Service (AHS) to ensure adequate forecast and warning services for contributing to climate resilient development. A substantial modernization program for the Armenia Hydrometeorological Service will include three directions.

Project objective:

1. Hydro-meteorological observation and forecasting system enhanced and modernized.
2. Hydrometeorological observation and warning infrastructure improved.
3. Hydro-meteorological service delivery and early warning mechanisms enhanced.

Duration: 01 January 2019 -31 December 2020

Theory of change: The AHS observation network consists of 47 meteorological stations and 7 hydrological (river basins) stations with 94 gauges. Five meteorological stations are functioning over 100 years.

A complex assessment for modernization has been conducted by the World Bank in 2017, providing justifications for introduction of an enhanced and modernized hydro-meteorological early forecast and response systems, to significantly increase the effectiveness of forecast and response activities, as well as adaptation planning.

It identified shortcomings related to the capacity of the AHS and related to basic forecast of temperature, precipitation and wind in the short and medium term at high accuracy and spatial resolution. Beyond basic forecasting, disaster risk management has an incremental need for accurate "nowcasting"-forecasting over the period of up to six hours. Nowcasting makes use of radar, upper-air sounding, stream gauge data (ideally reporting automatically in real time), rapid national weather and hydrological modelling at high resolution, and effective telecoms linking the national network of weather stations to headquarters. Forecaster workstations are needed, to enable forecasters to assemble information, analyse it, and present tailored and updated forecasts rapidly.

The project will provide technical assistance to the Government of Armenia for climate-induced disaster risk planning and national adaptation programming through supporting the national hydro-meteorological observation service improvement in the following 4 main directions:

- (A) generation, processing, exchange, retrieval and distribution of beneficiary tailored hydro-meteorological information;
- (B) improve access to the hydrometeorological information by data user groups;
- (C) better delivery of hazard alerts for adequate response, public safety and economic security; and
- (D) informed planning and decision-making for cost-effective investments in climate-resilient development.

Strengthening these four pillars will significantly solidify Armenia’s resilience to natural hazards and climate change and help enhance the economic performance of weather-dependent sectors such as agriculture, energy, transport and water resources management.

Implementing Partner: Ministry of Emergency Situations of the Republic of Armenia

Responsible Partner: United Nations Development Programme

II. RESOURCES AND FINANCIAL PERFORMANCE

	Total Project Budget (USD)	Current Year (2019)			All Years Delivery as of SPR date (USD)	All Years Delivery rate as of SPR date (%)
		Annual Budget (USD)	Delivery as of SPR date (USD)	Delivery rate as of SPR date (%)		
Russian Trust Fund	800,000	500,000	2,800	0.6	2,800	0.6
Total	800,000	500,000	2,800	0.6	2,800	0.6

III. RESULTS, PROGRESS

Sustainable Development Goal 13/Target 13.1: Climate Action / Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

UNDAF Outcome 7/ CPD Outcome 4. (Outputs 4.1, 4.2) By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied.

UNDP Strategic Plan 2018-2021. Outcome 1/Output 1.3.1. National capacities and evidence-base assessment and planning tools enable gender-responsive and risk-informed development investments including for response to and recovery from crisis.

Output indicator: Number of countries with development, risk reduction and recovery interventions informed by multi-hazard and other risk assessments.

Project’s progress vis-à-vis the Results and Resources Framework of Prodoc.

- Working group established for providing technical specifications, training needs etc, during project implementation, serving as advisory team between UNDP and MES Hydromet.
- Hail protection system assessment and recommendations developed by UNDP experts (local and international) which was presented to the minister and endorsed. The report is in translation stage from Russian into Armenian based on the MES request, to be ready to present to PM.

Activity/Output	Expected Results	Amount (\$)	Current Year (2019)					
			Planned				Actual	
			Q1	Q2	Q3	Q4	Status	Comments
Output 2: Hydrometeorological observation and warning infrastructure improved	Hail protection system assessment and recommendations developed by the expert.	2,800	X				Completed	

IV. GENDER MAINSTREAMING RESULTS

The project corresponds to UNDP Gender Marker GEN-2 score, in line with the respective outputs of the 2016-2020 Country Programme Document signed with the Government of Armenia. Gender equality and women's empowerment parameter is aimed to be a significant objective of the outputs.

There is no progress for Q1 period.

V. RISKS, CHALLENGES, LESSONS LEARNED

- *Risk log is updated.*

VI. COMMUNICATION AND PARTNERSHIPS

- *NA for this reporting period.*

VII. EVALUATIONS

- *NA*

VIII. PRODOC CHANGES, HORIZON SCANNING

- *NA*

IX. VALIDATION OF RESULTS (FIELD VISIT) AND QUALITY ASSURANCE

- *NA*

X. FUTURE ACTIONS, WORK PLAN

- Procurement and installation hydro-meteorological stations (10)
- Data-visualization software development
- Upgrading and modernization of radio-location system

Resource Results Framework

Intended Outcome as stated in the UNDAF/Country Programme Results and Resource Framework:

UNDAF Outcome 7/CPD Outcome 4 (Outputs 4.1, 4.2) By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied.

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

Indicator 4.1: No. of innovative tools/approaches introduced to promote environmental sustainability and resilience principles. Baseline: 0; Target: 20

Indicator 4.2: No. of communities benefiting from innovative disaster risk reduction/resilience measures and practices Baseline: 0; Target: 5

UNDP Strategic Plan 2018-2021. Outcome 1/ Output 1.3.1. National capacities and evidence-base assessment and planning tools enable gender-responsive and risk-informed development investments including for response to and recovery from crisis.

Output indicator: Number of countries with development, risk reduction and recovery interventions informed by multi-hazard and other risk assessments.

Project title and Atlas Project Number: Increase Resilience of Armenia to Climate Change through Modernization of Armenia's Hydrometeorological Service/00110609

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS (by frequency of data collection)			DATA COLLECTION METHODS & RISKS
			Value	Year	Year 1	Year 2	FINAL	
Output 1. Hydro-meteorological observation and forecasting system enhanced and modernized.	<i>1.1 Technical capacity of AHS staff for better forecasting, early warning and management are enhanced. Ensure gender-balanced groups (30-40% women).</i>	<i>World Bank assessment report</i>	0	2018	30%	30%	60%	<i>UNDP report, formal documents, LoPs</i>
	<i>1.2. The capacity to operate the hydro-meteorological radio locator system DMRL- C or DMRL-10 are developed.</i>	<i>MES-Antigrad-WMO assessment report</i>	0	2018	0	50%	50%	<i>UNDP report, formal documents, transfer act</i>
	<i>1.3: Modern forecasting tools and methodologies for weather and hydrological forecasting is introduced to improve accuracy, lead time and spatial resolution of forecasts. Involve female specialists in needs assessment and decision-making.</i>	<i>World Bank assessment report</i>	0	2018	0	1 toolkit	1 toolkit	<i>LoPs, media UNDP report, formal documents, transfer act</i>

Output 2: Hydrometeorological observation and warning infrastructure improved	<i>2.1 Meteorological and hydrological observation networks are rehabilitated, matching observation network design and a maintenance programs are installed.</i>	<i>World Bank assessment report DRM National Strategy</i>	0	2018	20%	40%	60%	<i>UNDP report, formal documents, transfer act</i>
	<i>2.2 Data collection and communication equipment and devices are upgraded</i>	<i>World Bank assessment report</i>	0	2018	10 stations	10 stations	20 stations	<i>UNDP report, formal documents, transfer act</i>
	<i>2.3 Real time forecasting system through use of radar, upper-air sounding system are enhanced</i>	<i>World Bank assessment report</i>	0	2018	30%	40%	70%	<i>UNDP report, formal documents</i>
Output 3: Hydro-meteorological service delivery and early warning mechanisms are enhanced.	<i>3.1 Enhanced integrated disaster loss data management system established to unify, analyse and disseminate all incoming and outgoing data.</i>	<i>World Bank assessment report DRM National Strategy</i>	0	2018	30%	40%	70%	<i>UNDP report, formal documents</i>
	<i>3.2 Climate risk mapping will be conducted for the targeted five marzes; Armavir, Aragatsotn, Vayots Dzor, Shirak and Lori with differentiated level of access for beneficiaries. Ensure at least 30-40% women as respondents. In focus groups, etc</i>	<i>World Bank assessment report DRM National Strategy SFDRR</i>	0	2018	40%	40%	80%	<i>UNDP report, formal documents</i>
	<i>3.3 Climate risk mapping conducted for the targeted five marzes; Armavir, Aragatsotn, Vayots Dzor, Shirak and Lori.</i>	<i>World Bank assessment report</i>	0	2018	40%	40%	80%	<i>UNDP report, formal documents</i>
	<i>Visibility, utility and credibility of the hydro-meteorological service are improved by facilitating access through modern communication technologies.</i>	<i>World Bank assessment report DRM National Strategy</i>	0	2018	30%	40%	70%	<i>UNDP report, formal documents</i>

OFFLINE RISK LOG

Project Title: Increase Resilience of Armenia to Climate Change through Modernization of Armenia's Hydrometeorological Service						Award ID: 00111782		Date: 01.01.2019- 31.12.2020	
#	Description	Date Identified	Type	Probability & Impact	Risk treatment/ Measurements	Risk owner	Submitted updated by	Last Update	Status
1	The poor condition of meteorological and hydrological observation networks and inefficient information exchange.	01.09.2018	Operational	P = 3 I = 3 Inefficient level of information exchange and weather forecast.	Observation infrastructures need to be strengthened urgently to provide the local climate information, which is required for various applications.	Armen Chiling aryan	UNDP	15.04.2019	No change
2	Limited financial, technical and institutional capacities, hindering agencies such as AHS, Ministry of Emergency Situations, Water Management State Committee, agriculture extension services and others to fulfil their core mandates.	01.09.2018	Operational Organizational	P = 3 I = 3 Inability to fulfil its mandate and provide qualified services	Socio-economic studies of the World Bank demonstrate the benefit to cost ratio of investing in Armenia Hydromet Service is high.	Armen Chiling aryan	UNDP	15.04.2019	No change
3	Information and alerts are not adapted to the day-to-day needs of the users (both in terms of content, format and timing). Mechanisms for the translation of forecasts into early warning information for critical response and for activating action at state and community levels are not well established.	01.09.2018	Regulatory	P = 3 I = 2 Lack of qualified information and early warning on weather extremes	Formulation of comprehensive draft legal package on unmanned aerial systems (drones) for Governments consideration.	Armen Chiling aryan	UNDP	15.04.2019	No change
4	Doppler Meteorological Radar (DMRL-10 or DMRL-C) systems to be installed in Shirak and Armavir marzes. At this time, it is confirmed, that the Government will invest USD 2,000.000 by the	01.09.2018	Operational	P = 2 I = 3 Low level forecasting accuracy	Regular meetings with the Government counterparts carried out to explain the importance of investment and show the benefits and returns from investment. The	Armen Chiling aryan	UNDP	15.04.2019	No change

	end of 2019. Based on the Project results and its impact the Government has obliged to invest additional USD 2,000.000.				effectiveness and efficiency of the spending of first tranche will significantly improve the probability for receiving the second tranche. Moreover, significant communication will be established with the private organizations, in order to establish large private public partnership.				
5	Possibility of political modifications in Armenian Government and subsequent shift from the ongoing policy of enhancing AHS capacities.	01.09.18	Operational	P = 2 I = 2	Regular meetings with the Government counterparts carried out to explain the importance of investment and show the benefits and returns from investment.	Armen Chiling aryan	UNDP	15.04.2019	No change
6	Anticipated structural changes in the RA Government may bring to internal re-organization and moving AHS to the RA Ministry of Nature Protection.	12.12. 18	Operational	P = 3 I = 3 Delay in the project implementation	Regular meetings with the Government counterparts to present the project outputs and progress and update the project activities accordingly.	Armen Chiling aryan	UNDP	15.04.2019	No change
7	Strong earthquake or activation of other hazards, that could potentially impede or delay project implementation.	01.09.18	Operational	P = 3 I = 3	Project implementation process coordinated with the AHS and Roshydromet specialists considering existing mitigation measures against earthquake and other secondary hazards, identifying main gaps, and proper solutions.	Armen Chiling aryan	UNDP	15.04.2019	No change

ANNUAL WORK PLAN 2019

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Q1			Q2			Q3			Q4			PLANNED BUDGET	
		1	2	3	4	5	6	7	8	9	10	11	12		
<p>Output 1: Hydro-meteorological observation and forecasting system enhanced and modernized. Baseline: Lack of modern Hydro-meteorological observation and forecasting system. Output Indicators: <i>1.1 Technical capacity of AHS staff for better forecasting, early warning and management are enhanced.</i> <i>1.2. The capacity to operate the hydro-meteorological radio locator system DMRL-C or DMRL-10 are developed.</i> <i>1.3: Modern forecasting tools and methodologies for weather and hydrological forecasting is introduced to improve accuracy, lead time</i></p>	<p><u>Activity 1.1:</u> Technical training including at least; basic meteorology, hydrology & ICT, maintenance and operation of newly acquired equipment, ICT, data processing, analysis & management, geographical information systems and remote sensing. AHS capacity building process and advance technology utilization training will be organized in partnership with Russian experts from Roshydromet and other relevant institutions. CMSA students will continue their education and professional development in above mentioned universities on bilateral bases including Master students.</p>													28,463.00USD	
	<p><u>Activity 1.1.2:</u> Initial capacity assessment will be conducted to identify the main needs and capacity gaps. The “Roshydromet” and WMO expertise will be used for training sessions, and the training package will be developed in cooperation with the Roshydromet.</p>														
	<p><u>Activity 1.2.1</u> In partnership with Roshydromet the ToR will be developed for the modernization and enhancement of Radio locator system DRML-C/DMRL-10</p>														

<i>and spatial resolution of forecasts.</i>	<u>Activity 1.2.2</u> In partnership with the North Caucasus Federal University and High Mountain Geophysical Institute of “Roshydromet”, training needs will be identified, and proper training package will be formulated taking also into consideration the training implementation in Russian Federation. Within this activities UNDP will invite also interns from technical universities with hydrometeorological sphere to take part in the training of the specialists under the project.														
	<u>Activity 1.2.3</u> Practical trainings will be conducted for the national anti-hail centre staff of the AHS in managing the radio-location system for proper forecasting of hail storms and other climate related hazards. Designed training package will be tested in Aragatsotn region, and later extended to AHS staff serving 2 new systems planned to be purchased by the Government.														
	<u>Activity 1.3.1:</u> The forecasting tools will be assessed and introduced for identification of desired level of accuracy and subsequent models for localization in Armenia, taking into account the existing experience and capabilities of the Roshydromet.														
Output 2: Hydrometeorological observation and warning infrastructure improved	<u>Activity 2.1:</u> An assessment will be conducted in target 5 regions and terms of references, and technical specifications for the equipment will be developed.														

<p>Baseline: Lack of modern Hydrometeorological observation and warning infrastructure</p> <p>Output Indicators: <i>2.1 Meteorological and hydrological observation networks are rehabilitated, matching observation network design and a maintenance programs are installed.</i></p> <p><i>2.2 Data collection and communication equipment and devices are upgraded</i></p> <p><i>2.3 Real time forecasting system through use of radar, upper-air sounding system are enhanced</i></p>	<p><u>Activity 2.1.1:</u> Rehabilitation of high priority meteorological observing stations; expansion and upgrading of the surface meteorological network: Automatic Weather Stations, rain gauges, standard equipment, power supply, telecoms for field stations will be acquired and installed</p>													
	<p><u>Activity 2.1.3:</u> Expansion and upgrading of hydrological stations and specialized hydrological equipment will be done for rivers and reservoirs. Following a reorganization of the hydrological network, current meters, new automated water-level recorders will be installed as needed to meet new operational needs for flood-prone watersheds.</p>													
	<p><u>Activity 2.1.4</u> The newly established stations will be synchronized with the existing meters, to ensure the sustainability and accuracy of generated information flow. The professional capacities of staff will be increased to ensure effective maintenance of acquired equipment.</p>													
	<p><u>Activity 2.2.1</u> Data storage and management systems including ICT hardware and software for remote sensing and customized tools for GIS, risk modelling and forecasting will be developed/updated and enhanced based on needs assessment conducted jointly with AHS and Roshydromet.</p>													
	<p><u>Activity 2.3.1:</u> The radar installed in Aragatsotn will be re-equipped with auxiliary equipment, and modernization of similar system in Lori marz will be conducted through introduction and utilization of modern Russian technologies and expertise which will allow to proceed with real time information.</p>													
													335,000.00USD	

