



with financial support of the Russian Federation



Empowered lives. Resilient nations.

**United Nations Development Programme  
Russian Federation – UNDP Trust Fund for Development  
Country: Republic of Armenia  
PROJECT DOCUMENT**

**Project Title:** Increase Resilience of Armenia to Climate Change through Modernization of Armenia’s Hydrometeorological Service

**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.

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

**Responsible Partner:** United Nations Development Programme

**Start Date:** 01.01.2019                      **End Date:** 31.12.2020

<b>Brief Description</b>
<p>According to the Armenia’s 3rd National Communication on Climate Change, Armenia already experiences extreme weather and climate variability resulting in negative impacts on communities and economy of the country from spring frosts, flooding, mudflows, droughts, hail and strong winds.</p> <p>Highlighting the importance of reducing weather related damages on different sectors of economy, and particularly - agriculture, the Government of Armenia is looking for partnership for implementation of measures for increasing the resilience of the country to climate related risks. The key prerequisite for proper planning and proactive actions aimed at reducing the loss and damage is well operating national hydrometeorological service.</p> <p>The overall goal of the proposed 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.</p> <p>The project will focus 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.</p>

1. Institutional strengthening and capacity building;
2. Modernization of observation, Information Communication Technologies (ICT) and forecasting infrastructure; and
3. Enhancement of service delivery system.

Implementation of the project will contribute to the enhancement of Armenia Hydrometeorological Service to enable effective hydro-meteorological forecasts and establishment of respective response system, as well as for development of possible climate risk reduction and response scenarios. This means combining modern hardware, improved management system for short, medium and long term hydrometeorological observation and forecast. In this regard the role of hydro-meteorological service is crucial for effective forecasting of hydro-meteorological hazards, early warning and response activities.

Upgraded capacity to forecast severe weather will be inefficient without operative delivery of timely alerts to end users. This will require building respective professional capacity of AHS for improved data generation, processing, exchange, retrieval and distribution.

<b>Programme Period:</b>	2019-2020
<b>Project Title:</b>	Increase Resilience of Armenia to Climate Change through Modernization of Armenia's Hydrometeorological Service
<b>Atlas Project ID:</b>	00111782
<b>Output ID:</b>	00110609
<b>Start date:</b>	01 January 2019
<b>End date:</b>	31 December 2020
<b>Management Arrangements:</b>	Support to NIM GEN2

<b>Total Resources Required:</b>	800,000 \$
<b>Total Allocated Resources:</b>	800,000 \$
➤ <b>Russian Trust Fund:</b>	800,000 \$
<b>Parallel funding:</b>	
➤ <b>Government:</b>	0.00 \$

Agreed by the implementing partner:

Feliks Tsolakyan  
Minister of Emergency Situations of RoA

21.12.2018



Date/ Month/Year

Signature

Agreed by the responsible partner:

Dmitry Mariyasin  
UNDP Resident Representative, a.i



21.12.2018

Date/ Month/Year

Signature

---

## I. DEVELOPMENT CHALLENGE

The project links closely to the ongoing work of UNDP Armenia and Ministry of Emergency Situations (MES) of the Republic of Armenia on improving risk assessments and disaster risk monitoring at local and national levels. According to the World Bank (Disaster Risk Reduction and Emergency management in Armenia 2009, [http://gfdrr.org/docs/Report\\_Armenia-Disaster\\_Risk\\_Reduction\\_and\\_Emergency\\_Management.pdf](http://gfdrr.org/docs/Report_Armenia-Disaster_Risk_Reduction_and_Emergency_Management.pdf))

Armenia is listed in the top 60 countries exposed to multiple hazards, with 80 % of Armenians being at risk of exposure to catastrophic events. The most devastating seismic event was the 1988 Spitak earthquake that killed 25,000 people, injured 15,000, left 517,000 homeless, caused significant damage to several cities, and resulted in direct economic losses of \$ 14.2 billion. The project is of particular importance to Armenia as the population, economy, and environment of Armenia are highly exposed and vulnerable to natural hazards.

**Armenia's climate: vulnerability and trends.** Armenia is characterized by dry climate, active anthropogenic and desertification processes and frequent natural disasters that make the country more sensitive to the impacts of climate change.

The hydro-meteorological hazards threatening Armenia include drought, hail storms, strong winds, heavy rains, etc., which lead to floods, landslides, cold and heat waves that aggravate extreme pollution episodes (related to long anticyclone periods, topography and low-level inversion). The damage and loss estimates for 19 such events were calculated for 1994–2013. The annual average assessed damage and loss makes around US\$76.5 million.

These phenomena can adversely impact the security and safety of the population and vulnerable economic sectors, especially agriculture, hydropower production and water resources management. Particularly, data from recent hydro meteorological studies indicate 1.13% increase of average annual temperature, and 9% reduction of yearly precipitation from the average reference period of 1961-1990.

According to Armenia's 3<sup>rd</sup> National Communication<sup>1</sup>, there has been a significant acceleration of temperature rise in Armenia: in 1935-1996, the annual mean temperature increased by 0.4<sup>0</sup>C; in 1935-2007 by 0.85<sup>0</sup>C; in 1935-2012 by 1.03<sup>0</sup>C.

There is decreasing trend in precipitation. Observations showed that, in 1935-1996, there was a 6% decrease in annual precipitation; in 1935-2015, it was close to 9%. The spatial distribution of changes in precipitation is irregular. Over the last 80 years, the climate in the north-eastern and central (Ararat Valley) regions of the country has turned more arid, while precipitation has increased in the southern and north-western regions, as well as in the western part of the Lake Sevan basin. Over recent decades, climate change has significantly increased the frequency and intensity of Hazardous hydro-meteorological phenomena (HHMP) in Armenia. The maximum aggregate number of 245 HHMP was observed in 2004, and the minimum number, 106 events, in 2006. The number of events with extreme frost has significantly increased. The number of days with heavy rainfall and hailstorms has increased, caused by the recurrence high cyclones.

**Economic effects: focus on agriculture.** The statistical data analysis of information from last two decades indicates that the agricultural damages only from hails and hail storms have continuously increased. On average, the 5.5% of annual harvest (in some cases up to 14% annual harvest) is being lost due to hail. Close to 70% of Armenia's territory is exposed to medium or high risk of hail and hail storms. The main damage is being reported in Ararat Valley and higher lands of the country. In 2016 alone, the total damage to Armenia's economy due to hails exceeded USD 70 million. At the same time, taking into account the fact, that agriculture provides jobs to more than 50 percent of Armenia's working population, and creates the 17 percent of gross domestic product, the establishment of an enhanced and unified hydro-meteorological management system in Armenia emerges as an issue of highest importance. The Government of Armenia has already undertaken certain steps in this direction, and the first pilot anti hail system module is currently underway.

---

<sup>1</sup> <http://unfccc.int/resource/docs/natc/armnc3.pdf>

**Future scenarios: effects of climate change.** Two scenarios for future climate change projections for temperature and precipitation have been developed up until 2100. Average annual temperature increases projections in the territory of Armenia related to the 1961-1990 average show that, in a first scenario, the temperature will increase by 1.7°C in 2040, by 3.2°C in 2070, and by 4.7°C in 2100. In a second scenario, the temperature will increase by 1.3°C, 2.6°C, and 3.3°C respectively. Summers in most of the regions of the country are usually characterized by hot and dry weather conditions. According to the model predictions, these conditions will worsen, leading to negative impacts on water resources, agriculture, energy, health, and other sectors.

The aggregate volume of river flow in the territory of Armenia will decrease by 11.9% by 2030, by 24% by 2070, and 37.8% by 2100 (compared to the 1961- 1990 baseline period).

Projected climate change will further worsen the situation. Major negative consequences under projected climate change for Armenian agriculture include: (1) Agro-climatic zones will shift 100 m upward by 2030, and 200-400 m by 2100; (2) Reduced crop yields as a result of temperature increases, reduced rainfall, and increasing evaporation from the soil surface; (3) Reduced productivity and degradation of agricultural land; (4) Increasing negative impact of extreme weather events due to expected increases in their frequency and intensity; (5) Expansion of irrigated land areas and the need for additional irrigation water; (6) More intensive degradation of land, including natural grazing land.

**The national hydro-meteorological service should be upgraded to enable effective hydro-meteorological forecasts and establishment of respective response system, as well as for development of possible climate risk reduction and response scenarios.** This means combining modern hardware, improved management system for short, medium and long term hydrometeorological observation and forecast. In this regard the role of hydro-meteorological service is crucial for effective forecasting of hydro-meteorological hazards, early warning and response activities.

Upgraded capacity to forecast severe weather will be inefficient without operative delivery of timely alerts to end users. This will require building respective professional capacity of AHS for improved data generation, processing, exchange, retrieval and distribution.

---

## II. STRATEGY

**Theory of Change (ToC).** *“Through an integrated interventions related to improvement of climate related data management system such as: 1) distribution of beneficiary tailored hydro-meteorological information; 2) improved access to hydrometeorological information by data user groups; 3) improved delivery of hazardous alerts for adequate response, public safety and economic security; and 4) informed planning and decision-making for cost-effective investments in climate-resilient development to help to solidify Armenia’s resilience to natural hazards and climate change and improve its economic performance of weather-dependent sectors such as agriculture, energy, transport and water resources management”.*

**Armenia’s Hydrometeorological Service (AHS) and Active Impacts on Hydro-meteorological Phenomena Service”** SNCO (AHS), which is operating under the Ministry of Emergency Situations, is the main state executive agency providing hydro-meteorological warnings and services, supporting public agencies, contributing to public safety and serving key economic sectors in Armenia.

Provision of data and information to stakeholders by AHS is regulated by the Republic of Armenia’ laws, legal acts, Armstatehydromet statute, instructions of the director and contracts concluded with individual organizations, as well as WMO Resolutions # 40 and # 25.

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. The AHS observe the weather, climate, hydrology and the geophysics of the Armenian territory and issues warnings for the respective hazards; it also complies with international hydro-meteorological obligations. However, the equipment and methodologies currently in use by the AHS are unable to provide the level of effectiveness expected by modern

systems. 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.

The studies conducted with the World Bank support have identified shortcomings related to the capacity of the AHS and in particular 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.

While attaching high priority to addressing the most critical needs related to management of hydro-meteorological hazards, (hail is priority) the Government of Armenia is implementing a pilot stage of the project for effective hail response system. 300,000 USD has been already invested, in establishing a radio-location system in Aragatsotn marz for forecasting hail storms and other climate related hazards. Following the results of the pilot project, the Government of Armenia is committed to allocate \$4,000,000 from state budget for procurement of two additional Doppler Meteorological Radar (DMRL-10 or DMRL-C) Systems. However, the Government is still looking for complementary funding for technical assistance.

**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 can help 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.

**Overall Goal/ Expected impact:** The Project Goal is to strengthen resilience of Armenia to climate change risks.

**The main objective of the Project** is to strengthen climate change adaptation planning and programming in Armenia through developing capacity of national hydro-meteorological observation and warning services

**Project Components are:**

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.

---

### **III. RESULTS AND PARTNERSHIPS**

#### ***Expected Results***

In the frame of the project the technical and professional capacities of the AHS will be developed to ensure adequate forecast and warning services for contributing to climate resilient development.

A substantial modernization program for the National Meteorology and Hydrology Service shall include three components<sup>2</sup>, namely: (i) institutional strengthening and capacity building; (ii) modernization of observation, Information Communication Technologies (ICT) and forecasting infrastructure; and (iii) enhancement of service delivery system.

The activities of proposed project are structured to ensure developments in the mentioned directions:

**Component 1: Hydro-meteorological observation and forecasting system enhanced and modernized.**

**Output 1.1: Building technical capacity of AHS staff - women and men - for better forecasting, early warning and management**

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 (at least 40 % of trainees are female specialists). Capacity building process and advance technology utilization training will be organized in partnership with Russian experts from Roshydromet and other relevant institutions.

This will include enhanced capacities of the staff, both women and men, to operate modern observing networks; use of modern tools for weather and hydrological forecasting; upgrading the data processing and management protocols; systems related to the application of downscaling methods for long-range forecasting and climate prediction. 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. Both women and men will participate in the assessment and provide inputs through needs assessment.

Moreover, the ongoing cooperation with the North Caucasus Federal University and High Mountain Geophysical Institute of “Roshydromet” will be utilized to support the professional capacity building of Hydro-meteorological service staff and the partnership will be established with the Crisis Management State Academy (CMSA) of Armenia based on which the selected students of CMSA will continue their education and professional development in above mentioned universities on bilateral bases including Master students. After graduation they will return to Armenia and will be contracted by MES to serve at the established hydrometeorological stations. 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.

**Output 1.2: Enhancement of the capacity to operate the hydro-meteorological radio locator system DMRL- C or DMRL-10.**

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.

Practical trainings will be conducted for the national anti-hail centre staff (possibly gender balanced representation) 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 of Armenia (see Output 2.3). Female specialists and gender mainstreaming experts will be involved in formulating a training package to formulate gender-sensitive (or possibly gender-responsive) training package.

**Output 1.3: Introducing modern forecasting tools and methodologies for weather and hydrological forecasting to improve accuracy, lead time and spatial resolution of forecasts.**

There is a need to tailor forecast accuracy and range to stakeholder’s needs. Localization and application of different forecasting tools. used by Roshydromet, ECMWF/EPSC, Weather Central /Germany, GFS (USA), Met Office will be supported by the project. Taking into consideration the ongoing partnerships, the forecasting tools will be assessed for identification of desired level and models for localization in Armenia, taking into account the existing experience and capabilities of the Roshydromet.

---

<sup>2</sup> David Rogers and Vladimir Tsirkunov: Weather and Climate Resilience-Effective Preparedness through National Meteorological and Hydrological Services –The World Bank, 2013.

## **Component 2: Hydrometeorological observation and warning infrastructure improved**

### **Output 2.1: Rehabilitation of meteorological and hydrological observation networks, observation network design and a maintenance program.**

An assessment will be conducted in 5 target regions and terms of references, with equipment technical specifications will be developed based on those assessments. 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. 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.

In Aragatsotn, Armavir, Lori, Shirak and Vayots Dzor marzes, a total of 8-10 hydrological and 15-20 meteorological stations will be re-equipped and digitalized, based on the priority conducted assessments. All hydro-meteorological stations will be integrated, which will enable to observe, collect and send unified, all around, near real time information and forecast on the hazards.

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, both women and men, will be increased to ensure effective maintenance of acquired equipment.

### **Output 2.2: Upgrade of data collection and communication equipment and devices**

Data storage and management systems including ICT hardware and software for remote sensing and customized tools for GIS and modelling and forecasting will be updated and enhanced based on needs assessment conducted jointly with AHS and Roshydromet.

This activity will complement to the assistance provided in the frames of ongoing World Bank/ GFDRR project.

### **Output 2.3: Enhance real-time forecasting system through use of radar, upper-air sounding system.**

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.

UNDP will propose a collaboration group for professional discussions between AHS and Roshydromet for identification of expected products and data from the acquired meteorological radars, base on which the most effective models between DMRL-C and DMRL-10 will be identified.

UNDP will assist the government of Armenia in procurement and installation of two more Doppler Meteorological Radar (DMRL-10 or DMRL-C) systems in Shirak and Armavir marzes.

Regional management stations will also be established for active influence on hydrometeorological phenomena at local levels to enable local utilization and maintenance of systems, including early forecasting, warning, mitigation, data collection, analysis and dissemination. The project will ensure that female specialists (possibly 30-40%) are trained and are part of the task forces, including at decision-making level.

## **Component 3: Hydro-meteorological service delivery and early warning mechanisms are enhanced.**

### **Output 3.1: Enhancing integrated disaster loss data management system to unify, analyse and disseminate all incoming and outgoing data.**

UNDP will support the development of standard operating procedures for early warning operations, while also contributing to the formulation and distribution of early warning messages.

Support in establishment of integrated disaster loss data management system, including proper registration of hydro-meteorological emergencies and formulation of loss data statistics, including the historical data, as well as specifications for forecasting models and analysis.

The 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.

UNDP will support the AHS in formulation of legislative amendments in the sphere of hydrometeorological service by provision of proper expertise. Project will ensure gender balanced working group(s) and will involve gender mainstreaming specialist to scan the legislative package through gender lens.

**Output 3.2: Improving the visibility, utility and credibility of the hydro-meteorological service by facilitating access through modern communication technologies.**

In close cooperation with Roshydromet, specialized weather, climate and hydrological products and services will be developed tailored to sector specific needs (agriculture, water resources management, infrastructures, transport, energy disaster risk management, etc.). Institutionalize a mechanism to provide user feedback. Incorporate a mechanism to differentiate and analyse users feedback by gender, age, regions, etc

This will be done by facilitating access through modern communication technologies, public web portal including electronic feedback mechanisms (cell phone applications, web sites, etc.), and developing stronger relationships with decision makers, stakeholders, media, as well as end users.

***Resources Required to Achieve the Expected Results***

The Project will have the following human resources:

1. One full-time Project Coordinator with vast experience in implementing DRR activities in the country. The PC will work under the direct supervision of UNDP Sustainable Growth and Resilience Portfolio Analyst, where the latter will also provide quality assurance and high-level coordination with government bodies. PC will be responsible for project implementation, development, monitoring of project activities, managing financial delivery and ensure planned outputs as per Project work plan. He will also ensure project liaison with the government, regional and local authorities, civil society organizations, ongoing UNDP initiatives and international partners to ensure information exchange, coordination and synergism.
2. One Project Assistant (PA) to provide assistance for project administration and operational issues.
3. Three short term experts will be hired, as follows:
  - a) One local expert for identification of requested hydrometeorological equipment and their interoperability with the existing local, national and global systems.
  - b) One international expert for identification of criteria and parameters for forecast modelling and planning and development of mutual cooperation regarding to innovations and scientific research in Hydrometeorology.
  - c) One national consultant expert for legislative review in the sphere of hydrometeorology in Armenia.

Taking into consideration that the project evolution may suggest possible budget revisions, the project will be able to hire additional subject matter experts for concrete activities.

***Partnerships***

The Armenian Government has undertaken political commitment towards Disaster Risk Reduction (DRR) institutionalization and promotion. There is ongoing effective partnership with the Ministry of Emergency Situations and UNDP since 2006. UNDP has supported the establishment of National Crisis Management Centre and 911 Emergency call services in all 10 Marzes of Armenia. This partnership will be continued within the proposed project implementation.



UNDP has also received approval for implementation of National Adaptation Plan (NAP) to advance medium and long-term adaptation planning in Armenia, funded under the Green Climate Fund Readiness program (2018-2021).

### **Links to other initiatives**

The proposed project will cooperate with and complement the WB funded National Disaster Risk Management Programme aimed enhancing the professional knowledge and methodologies applied in AHS (2017-2018).

The Road Map developed by the World Bank lays out three scenarios for modernization of AHS: 1) low-cost technical assistance for high-priority activities focused on improvement of basic public services based on strengthening AHS capacity and introducing basic affordable new technologies; 2) modest investment for addressing most important user needs for provision of hydrological, weather and climate services vulnerable economic sectors; and 3) full modernization with investment to bring the AHS up to the level of advanced middle-income countries' capabilities for collecting and interpreting data and for providing impact-based forecasting and warning services to target areas and populations.

The World Bank project under GFDRR grant funding (budget estimated amount of 350.000 USD) is planned to support the Armenian AHS system in 2017–2018 to address the activities envisaged under scenario 1. The activities include priority training packages and technical assistance to procure low-cost ICT equipment and software such as:

- Improvement of short-range weather forecasting through the introduction of an open source meteorological workstation application (e.g. the ECMWF Metview) and training staff on the maintenance, use and manipulation of the application and on the use and interpretation of NWP products;
- Improvement of (monthly and seasonal) long-range weather forecasting through the application of the Regional Climate Downscaling (RCD) methods to provide detailed and accurate representation of localized extreme climate events, and training of staff in downscaling of climate models techniques;
- Low-cost, high-priority communication and computer equipment and software.

Taking into account that without modest investments in the infrastructure it will be difficult to address Climate Change related challenges the Ministry of Emergency Situations and UNDP Armenia present this joint project aimed at addressing most critical hydro-meteorological service infrastructural improvement proposal to enhance the hydro-meteorological hazard forecast and early response capacities in Armenia. The proposed project was formulated in close consultation with the World Bank and is complementing the overall AHS professional and methodological capacity building efforts.

The Government of Armenia and KfW are currently working over establishment of Agro-insurance system, to which the proposed project will greatly support. The index-based insurance system can operate conditioned with existence of early warning reliable system. The project will create enabling environment for promotion of emerging Agricultural insurance system in Armenia.

The Ministry of Emergency Situations of Armenia has conducted full capacity assessment of hail protection system and designed recommendations and roadmap for the improvement/establishment of unified hail forecasting and early warning system.

Armenia has three (outdated) meteorological radars that provide images to the AHS: one for aviation and two for hail suppression. Currently the AHS is implementing a pilot phase of the hail suppression system modernization project. 300,000 USD has been already invested in radio-location system in Aragatsotn marz for proper forecasting of hail storms and other climate related hazards. Another similar system is scheduled to be upgraded in Lori marz. The Government of Armenia is intending to invest additional 4,000,000USD for the procurement of two more Doppler Meteorological Radar (DMRL-10 or DMRL-C) systems to be installed in Shirak and Armavir marzes. The preliminary ToR for the Doppler Meteorological Radar was developed jointly with AHS and Roshydromet in 2017. During the project implementation the ToR will be finalised

accordingly based on the AHS system modernization requirements in consultation with the AHS and Roshydromet specialists and procured based on UNDP procurement rules and procedures.

The project is coherent with the above-mentioned Government initiative strongly contributing to the establishment of unified and modern weather forecasting system in Armenia which will create synergy between the radio-location systems and the hydro-meteorological stations in the targeted five marzes; Aragatsotn, Armavir, Shirak, Vayots Dzor and Lori. In that context it will be important to strengthen the cooperation of Ministry of Emergency Situations of RA with the “Scientific-production Center Antigrad” in Russian Federation.

**Potential cooperation with the Russian Federation**

The AHS have established good cooperation with the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet).

Currently the bilateral partnership between Republic of Armenia and Russian Federation is carried out based on CIS Agreement on Cooperation in framework in the sphere of Hydrometeorology (February 1992) within the Inter-state council on Hydrometeorology (ICH CIS). Particularly, the ICH CIS is conducting monitoring of functionality of meteorological network of the Armenian Hydromet Service (AHS). The Cooperation between Roshydromet and "State service for hydro-meteorology and active impact on atmospheric Activity" SNPO is being realized within the frame of inter-agency agreement on scientific-technological cooperation from December 1993, which has been constantly updated and prolonged until 2002. Armenian specialists were being trained and certified for higher professional qualification at Roshydromet service within a Programme for cooperation under World Meteorological Organization, TV-INFORM-METEO equipment was delivered for the Armenian Hydromet Service.

Starting from 2012, Hydromet Center of the Russian Federation is supporting Armenian counterparts based on the Plan of Action on development of infrastructures of mutual cooperation regarding to innovations and scientific research in Hydrometeorology.

During this deepening partnership it has been identified by the Roshydromet, that Armenian Hydromet Service needs to further develop its technical and technological capacities, in which Roshydromet has expressed its readiness for support. Roshydromet also has suggested the possibility of its participation within measures of UNDP projects on climate change adaptation in Republic of Armenia.

<b>ONGOING BILATERAL COOPERATION WITH RUSSIAN FEDERATION</b>	<b>ADDED VALUE FROM THE PROJECT</b>
<p>AHS partners with the Roshydromet providing data from 16 hydrometeorological stations based in Armenia. AHS have collaborated with Russian colleagues in introduction of dual purpose WRF digital forecast model:</p> <p>Data from the AHS 16 hydro-meteorological stations are exchanged with the CIS national Hydromet services under the Interstate Council on Hydrometeorology. As part of the Hydro-meteorological Forecasting Cooperation Program between the AHS and Roshydromet, the AHS provide data from 32 meteorological stations. The AHS also contribute to the World Weather Information Service with five-day forecasts for Kapan, Sevan, Vanadzor and Yerevan stations.</p>	<p>The proposed project will strongly contribute to the enhancement and rehabilitation of the 8-10 hydrological 15-20 meteorological stations in the targeted five marzes; Aragatsotn, Armavir, Shirak, Vayots Dzor and Lori, which will increase the accuracy of the collected data and enhance the ongoing partnership between AHS and Roshydromet, as well as implement Numerical Weather Prediction models, such as WRF (Weather Research and Forecast) and COSMO, MM5 models with high spatial resolution to improve weather forecast as well as to develop an operational climate data platform for a regional scale research and modeling in order to strengthen climate services at national and regional levels.</p>

<p>Ministry of Emergency Situations of the Republic of Armenia (MES) established cooperation with “Scientific-production Centre Antigrad” of Russian Federation and in 2017 the capacity assessment of hail protection system was conducted and the recommendations for the establishment of unified hail forecasting and early warning system developed and presented to MES.</p> <p>Based on the assessment results the Ministry is implementing a pilot project and one radio-location system has been already modernized in Aragatsotn marz for proper forecasting of hail storms and other climate related hazards.</p>	<p>The proposed project will provide the much-needed technical assistance to support these efforts.</p> <p>The project will also ensure that another similar system is modernized in Lori marz through introduction and utilization of modern Russian technologies and expertise.</p> <p>Additionally, the Government of Armenia will pledge to procure and install two more Doppler Meteorological Radar (DMRL-10 or DMRL-C) systems in Shirak and Armavir marzes in partnership with. “Scientific-production Center Antigrad” of Russian Federation.</p>
<p>There is an ongoing cooperation with the North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet aimed at supporting the professional capacity building of AHS staff.</p>	<p>The project will serve as a great stimulus for the further development of recently initiated partnership between the AHS and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet and will ensure proper re-training and certification of 30 AHS staff for better utilization of hydrometeorological digitalized stations. The cooperation on “Professional capacity development” will be established between the Crisis Management State Academy (CMSA) of MES and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet, based on which the selected students of CMSA will continue their education and professional development in above mentioned universities on bilateral bases including Master students. After graduation they will return to Armenia and will be contracted by MES to serve at the established hydrometeorological stations. Whithin this activities UNDP wil invite also interns from technical universitites with hydrometeorological sphere to take part in the training of the specialsits under the project. AHS capacity building process and advance technology utilization training will be organized in partnership with Russian experts from Roshydromet and other relevant institutions.</p>

The AHS use the data from the Global models from the European Centre for Medium-Range Weather Forecasting, Met Office (United Kingdom), Météo-France, AccuWeather (Germany), Global Forecast System (United States) and Roshydromet (the Russian Federation) for short-range weather forecast. This network will be further utilized to integrate the hydro-meteorological digitalized stations established during proposed project implementation.

***Risks and Assumptions***

The main assumption of the project is that the enhancement of Armenian Hydromet Service managerial, human, technological capacities have been recognized by the Government as vital for improvement of overall resilience to the impact of climate change in Armenia.

Projections in future climate change are expected to increase inter-annual variability and the occurrence of extreme climatic events and are likely to become more intense and severe. And with more than 40% of Armenia's population dependent on predominantly agriculture for their livelihood, the country is extremely vulnerable to the impacts of climate change. Water resources and agriculture are among the most vulnerable sectors to climate change, with projected overall yields decline (cereals, potatoes, grapes, etc), exacerbating concerns of food security in the country.

The project will contribute to the enhancement of Armenia's resilience, through provision of technical assistance for a set of high-priority activities focused on improvement of basic public services based on strengthening AHS capacity and introducing basic modernization of AHS infrastructures.

At the same time, the potential of the private sector engagement has yet to be explored to its fullest, which would allow also to generate a new culture of DRR&CCA partnership and provide their experience, knowledge, innovative solutions to support the strengthening AHS capacities. Therefore, it is assumed, that project activities will bring synergy and contribute to establishing public-private partnership during project implementation.

The project also assumes that this effort will contribute to successful implementation of DRM National Strategy of Armenia, as well as to measuring the level of implementation of Sendai Framework for DRR, interlinked with the SDGs.

### ***Risk Analysis***<sup>3</sup>

The government of Armenia is currently supporting several baseline activities, however there are significant barriers and risks, which prevent the development and dissemination of climate and early warning information. The Project temps to address the following challenges and risks:

1. Poor meteorological and hydrological observation networks and inefficient information exchange. Observation infrastructures need to be strengthened urgently to provide the local climate information, which is required for various applications.
2. Limited financial, technical and institutional capacity. This hinders agencies such as AHS, Ministry of Emergency Situations, Water Management State Committee, agriculture extension services to fulfil their core mandates. While socio-economic studies conducted in different years by World Bank are demonstrating that the benefit to cost ratio of investing in Hydromet is high, the initial investment costs are high, and agencies have limited financial resources to implement the recommendations.
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.
4. The Government of Armenia is intending to invest USD 4,000,000 for the procurement of two 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 end of 2019. Based on Project results and impact, the Government has committed to invest additional USD 2,000,000.
5. Possibility of political modifications in the Armenian Government and subsequent shift from the ongoing policy of enhancing AHS capacities.
6. Anticipated structural changes in the RA Government may bring to internal re-organization and moving AHS to the RA Ministry of Nature Protection.
7. Strong earthquake or activation of other hazards, that could potentially impede or delay project implementation.

The project activities will contribute to the strengthening of resilience to climate change and reducing vulnerability of communities their livelihood and economy through improvement of provision of hydrological, weather and climate services. Project implementation process will be coordinated with the AHS and Roshydromet specialists and with their active involvement, which will allow to consider existing issues and

---

<sup>3</sup> Project Risks are detailed in Annex X

identify the main gaps, as well as to find the proper solutions. This will allow to strengthen existing human and technical capacities of AHS.

### ***Stakeholder Engagement***

Throughout project duration, the Armenian Hydromet Service will closely and continuously cooperate with a variety of stakeholders, including the Ministry of Emergency Situations and its structural units, Ministries of Territorial Administration and Development, Agriculture, Nature Protection, as well as with Water Management State Committee, DRR National Platform, Regional and Community administrations, active NGOs and private sector.

Since 2012, Hydromet Center of the Russian Federation is supporting Armenian counterparts based on the Plan of Action on development of infrastructures of mutual cooperation regarding to innovations and scientific research in Hydrometeorology.

The Armenian Hydromet Service has established partnership with Roshydromet; and the latter has expressed interest to support AHS to further develop its technical and technological capacities. Roshydromet has also suggested the possibility of its participation within UNDP project measures on climate change adaptation in Republic of Armenia. Hence, a comprehensive partnership will be developed during all phases of project implementation. Particularly the professional and technical expertise of Roshydromet will be localized in AHS also with active involvement in planning, implementation, monitoring activities.

The project will serve as a stimulus for the further development of recently initiated partnership between the AHS and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet and will ensure proper re-training and certification of 30 AHS staff for better utilization of hydrometeorological digitalized stations. The cooperation on “Professional capacity development” will be established between the Crisis Management State Academy (CMSA) of MES and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet, based on which the selected students of CMSA will continue their education and professional development in above mentioned universities. After graduation they will return to Armenia and will be contracted by MES to serve at the established hydrometeorological stations.

This will be considered as an equal, participatory partnership between donor, implementing partner and beneficiaries.

All outcomes and achievements as well as the constraints and obstacles will be shared with UNDP, donors and other partners during public awareness events.

### ***Knowledge***

The project will consistently use the existing channels, including UNDP website and the websites of partners, along with the social media tools to share updates about the results and implementation status of the project. Respective social media tools will be used to share the knowledge generated and accumulated throughout project implementation. Next to this, the project will ensure that all the public events are widely covered by media and the most popular media outlets regularly get feeds from the project to provide the stakeholders updated content about the project and its lessons learnt.

The project will serve as a great stimulus for the further development of recently initiated partnership between the AHS and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet and will ensure proper re-training and certification of 30 AHS staff for better utilization of hydrometeorological digitalized stations. The cooperation on “Professional capacity development” will be established between the Crisis Management State Academy (CMSA) of MES and North Caucasus Federal University and High Mountain Geophysical Institute of Roshydromet, based on which the selected students of CMSA will continue their education and professional development in above mentioned universities. After graduation they will return to Armenia and will be contracted by MES to serve at the established hydrometeorological stations.

### ***Gender Mainstreaming***

The project corresponds to UNDP Gender Marker GEN-2 score, in line with the respective output(s) 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 output(s).

Mainstreaming gender into Disaster Risk Management (DRR) and Climate Change Adaptation (CCA) related developments offers an opportunity for addressing gender vulnerabilities by applying a cross-cutting approach, such as disaggregation risk information and ensuring also representation of women in decision-making processes, their participation in needs assessment and in focus groups and task forces. It will also undertake dedicated actions such as providing training on gender-sensitive Disaster Risk Reduction and Climate Change Adaptation. During the project implementation UNDP in partnership with MES will address gender specific unique needs and values, work to incorporate gender and age specific knowledge into the early warning, disaster preparedness, response and recovery policies, plans and programs.

Gender specialists will be involved through project implementation to ensure gender lens for relevant outputs and making gendering sensitive and gender-responsive project trainings. The project policy to ensure gender balanced focus groups, task forces and training audience will be 30-40%.

### ***Sustainability and Scaling Up***

The Armenian Hydrometeorological Service is part of the Ministry of Emergency situations, and all the provided assistance from similar projects greatly contributes to the further sustainable development of the AHS. Moreover, thanks to comprehensive bilateral and multilateral partnerships, additional resources are being integrated for scaling up the sustainable development at AHS.

The project will also contribute to building and strengthening the capacities of AHS, enhance its coordination mechanisms between all related state authorities, local governments and community administrations towards building community resilience.

The proposed project will create synergies and ensure sustainability and further scaling up with conducted projects, such as the World Bank project under GFDRR grant funding, which supported the Armenian AHS system in 2017–2018 addressing key activities such as priority training packages and technical assistance to procure low-cost ICT equipment and software.

The human and technical capacity building in forecasting and dissemination of early warning information in the sphere of hydrometeorology will contribute to enhanced, accurate GIS risk profiling and advanced more effective DRM solutions, monitoring and evaluation.

Hence, the above-mentioned knowledge, skills and measures will ensure the sustainability following the conclusion of the project and ensure sustained results after project completion.

---

## **IV. PROJECT MANAGEMENT**

### ***Cost Efficiency and Effectiveness***

In order to be cost-effective and work with high effectiveness the project management will rely to evidence on similar approaches in the country in order to deliver maximum results with available resources. By using theory of change analysis different options to achieve the maximum results with available resources will be explored. UNDP Sustainable Growth and Resilience (SGR) portfolio management mechanism will be used to improve cost effectiveness by leveraging activities and partnerships with other initiatives/projects. Project management board, SGR portfolio and project implementation unit with other stakeholders and partners will conduct joint monitoring of project activities or procurement process to increase the effectiveness.

### ***Project Management***

The project will be implemented through UNDP “Support to National Implementation” modality (NIM) under coordination with the Ministry of Emergency Situations (MES) as the Project Implementing Partner, and in close cooperation with the “Service for Hydrometeorology and Active Impacts on Hydro-meteorological Phenomena” SNCO as the main beneficiary.

UNDP will provide the Implementing Partner with the following major support services for the implementation of the project, in accordance with UNDP rules and regulations:

- identification and recruitment of project personnel and experts;
- procurement of goods and services; and
- financial services.

UNDP will ensure the accountability, transparency, effectiveness and efficiency of the project. The UNDP Country Office will ensure also financial oversight, independent audits, monitoring and mid-term and final evaluation of progress and results.

The Ministry of Emergency Situations, as the Implementing Partner of the Project, will represent the interests of the Republic of Armenia and will be consulted on all substantive issues related to the execution of the project.

The project will ensure close cooperation with the Embassy of Russian Federation in the Republic of Armenia. The Embassy representative will represent the Senior Supplier on the project board.

V. RESULTS FRAMEWORK								
<b>Intended Outcome as stated in the UNDAF/Country Programme Results and Resource Framework:</b> 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.								
<b>Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:</b> <i>Indicator 4.1:</i> No. of innovative tools/approaches introduced to promote environmental sustainability and resilience principles. Baseline: 0; Target: 20 <i>Indicator 4.2:</i> No. of communities benefiting from innovative disaster risk reduction/resilience measures and practices Baseline: 0; Target: 5								
<b>UNDP Strategic Plan 2018-2021. Outcome 1/ Output 1.3.1.</b> 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.								
<b>Output indicator:</b> Number of countries with development, risk reduction and recovery interventions informed by multi-hazard and other risk assessments.								
<b>Project title and Atlas Project Number:</b> 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	
<b>Output 1.</b> 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>



<b>Output 2:</b> 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>
<b>Output 3:</b> 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>

## VI. MONITORING AND EVALUATION

In accordance with UNDP’s programming policies and procedures, the project will be monitored through the following monitoring and evaluation plans:

### Monitoring Plan

<b>Monitoring Activity</b>	<b>Purpose</b>	<b>Frequency</b>	<b>Expected Action</b>
<b>Track results progress</b>	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	In the frequency required for each indicator.	Slower than expected progress will be addressed by project management.
<b>Monitor and Manage Risk</b>	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP’s Social and Environmental Standards. Audits will be conducted in accordance with UNDP’s audit policy to manage financial risk.	Annually	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.
<b>Annual Project Quality Assurance</b>	The quality of the project will be assessed against UNDP’s quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.
<b>Review and Make Course Corrections</b>	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.
<b>Project Report</b>	A progress report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk log with mitigation measures, and any evaluation or review reports prepared over the period.	Annually, and at the end of the project (final report)	
<b>Project Review (Project Board)</b>	The project’s governance mechanism (i.e., project board) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project’s final year, the Project Board shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	Annually	Any quality concerns or slower than expected progress should be discussed by the project board and management actions agreed to address the issues identified.

## Evaluation Plan

Evaluation Title	Partners (if joint)	Related Strategic Plan Output	UNDAF/CPD Outcome	Planned Completion Date	Key Evaluation Stakeholders	Cost and Source of Funding
Project Final Evaluation	All project partners	Effective institutional, legislative and policy frameworks in place to enhance the implementation of disaster and climate risk management measures at national and sub-national levels.	Sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied	December 2020	All project stakeholders	

## VII. MULTI-YEAR WORK PLAN

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Planned Budget by Year		RESP PARTY	PLANNED BUDGET	
		Y2019	Y2020		Funding Source	Budget Description
<p><b>Output 1:</b> Hydro-meteorological observation and forecasting system enhanced and modernized.</p> <p><b>Baseline:</b> Lack of modern Hydro-meteorological observation and forecasting system.</p> <p><b>Output Indicators:</b></p> <p><i>1.1 Technical capacity of AHS staff for better forecasting, early warning and management are enhanced.</i></p> <p><i>1.2. The capacity to operate the hydro-meteorological radio locator system DMRL- C or DMRL-10 are developed.</i></p> <p><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.</i></p>	<p><u>Activity 1.1:</u> Technical training including at least; basic meteorology, hydrology &amp; ICT, maintenance and operation of newly acquired equipment, ICT, data processing, analysis &amp; 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> <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> <p><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</p>	0.00	21,000.00	MES	Russian Trust Fund	71300 Local Consultants
		7,000.00	0.00	MES	Russian Trust Fund	71200 International Consultants
		1,000.00	1,000.00	MES	Russian Trust Fund	72400 Communication & Audio Visual Equip.
		3,000.00	0.00	MES	Russian Trust Fund	71300 Local Consultants
		2,000.00	0.00	MES	Russian Trust Fund	71300 Local Consultants

	<p>taking also into consideration the training implementation in Russian Federation. Whithin this activities UNDP will invite also interns from technical universitites with hydrometeorological sphere to take part in the training of the specialsits under the project.</p> <p><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.</p> <p><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.</p>	8,000.00	28,000.00	MES	Russian Trust Fund	75700 Learning expenses
		1,000.00	1,000.00	MES	Russian Trust Fund	73100 Rental&maintenance premises
		0.00	5,000.00	MES	Russian Trust Fund	72100 Contractual services-companies
		5,000.00	0.00		Russian Trust Fund	72800 Information technologies equipment
		1,463.00	3,538.00	MES	Russian Trust Fund	74500 Miscellaneous expenses
	<b>Sub-Total for Activity 1</b>	<b>28,463.00</b>	<b>59,538.00</b>	<b>MES</b>	<b>RTF</b>	
<p><b>Output 2:</b> Hydrometeorological observation and warning infrastructure improved</p> <p><b>Baseline:</b> Lack of modern Hydrometeorological observation and warning infrastructure</p> <p><b>Output Indicators:</b> <i>2.1 Meteorological and hydrological observation networks are rehabilitated, matching observation network design and a maintenance programs are installed.</i></p>	<p><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> <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>	3,000.00	0.00	MES	Russian Trust Fund	71300 Local Consultants
		20,000.00	20,000.00	MES	Russian Trust Fund	72100 Contractual services-companies
		130,000.00	130,000.00	MES	Russian Trust Fund	72800 Information technology equipment
		40,000.00	10,000.00	MES	Russian Trust Fund	72800 Information technology equipment

<p><b>2.2 Data collection and communication equipment and devices are upgraded</b></p> <p><b>2.3 Real time forecasting system through use of radar, upper-air sounding system are enhanced</b></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>	5,000.00	2,000.00	MES	Russian Trust Fund	72100 Contractual services-companies
	<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>	3,000.00	2,000.00	MES	Russian Trust Fund	71300 Local Consultants
		40,000.00	6,000.00	MES	Russian Trust Fund	72100 Contractual services-companies
	<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>	2,000.00	1,000.00	MES	Russian Trust Fund	72300 Materials & goods
		90,000.00	0.00	MES	Russian Trust Fund	72100 Contractual services-companies
		2,000.00	1,000.00	MES	Russian Trust Fund	74500 Miscellaneous expenses
	<b>Sub-Total for Activity 2</b>	<b>335,000.00</b>	<b>172,000.00</b>	<b>MES</b>	Russian Trust Fund	

<p><b>Output 3:</b> Hydro-meteorological service delivery and early warning mechanisms are enhanced.</p> <p><b>Baseline:</b> Lack of modern Hydro-meteorological service delivery and early warning mechanisms.</p> <p><b>Output Indicator:</b> <i>3.1 Enhanced integrated disaster loss data management system established to unify, analyse and disseminate all incoming and outgoing data.</i> <i>3.2 Visibility, utility and credibility of the hydro-meteorological service are improved by facilitating access through modern communication technologies.</i></p>	<p><u>Activity 3.1.1:</u> Support in establishment of integrated disaster loss data management system, including proper registration of hydro-meteorological emergencies and formulation of loss data statistics, including the historical data, as well as specifications for forecasting models and analysis.</p>	42,000.00	0.00	MES	Russian Trust Fund	72100 Contractual services-companies
	<p><u>Activity 3.1.3</u> The 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.</p>	2,000.00	0.00	MES	Russian Trust Fund	71300 Local Consultants
	<p><u>Activity 3.1.4</u> UNDP will support the AHS in formulation of legislative amendments in the sphere of Hydrometeorological service by provision of proper expertise.</p>	10,000.00	2,500.00	MES	Russian Trust Fund	72100 Contractual services-companies
	<p><u>Activity 3.2.1</u> Specialized weather, climate and hydrological products and services will be developed and distributed through the modern communication technologies in close cooperation with Roshydromet, tailored to sector specific needs (agriculture, water resources management, infrastructures, transport, energy disaster risk management, etc.).</p>	2,000.00	1,000.00	MES	Russian Trust Fund	74500-Miscellaneous expenses
	<b>Sub-Total for Activity 3</b>	<b>56,000.00</b>	<b>3,500.00</b>	<b>MES</b>	<b>Russian Trust Fund</b>	
<p><b>General Management Support</b></p>	<p>Project Management and implementation</p>	32,000.00	31,500.00	MES	Russian Trust Fund	71400 Contractual Services - Individ
		3,000.00	2,500.00	MES	Russian Trust Fund	71600 Travel
		2,000.00	1,000.00	MES	Russian Trust Fund	72300 Materials & Goods
		1,000.00	500.00	MES	Russian Trust Fund	73300 Rental and Maint of info tech Eq

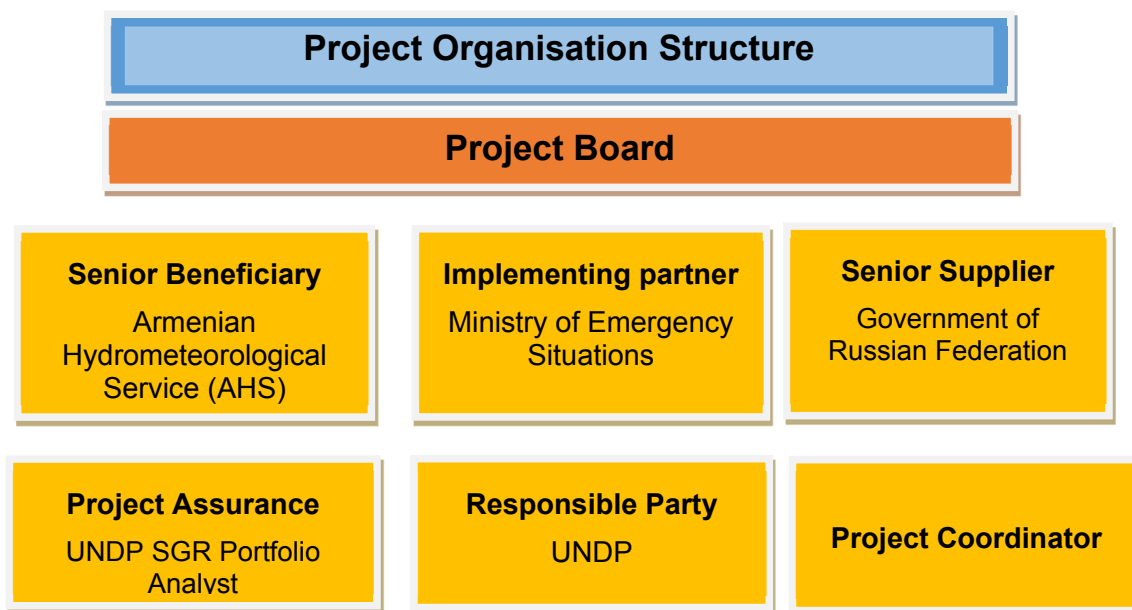
		1,000.00	1,500.00	MES	Russian Trust Fund	74200 Audio Visual&Print Prod Costs
		0.00	4,000.00	MES	Russian Trust Fund	74100 Professional services
		2,500.00	1,740.00	MES	Russian Trust Fund	74500 Miscellaneous Expenses
		2,000.00	0.00	MES	Russian Trust Fund	64300 StaffManagment Cost
	<b>Sub-total for Activity 4</b>	<b>43,500.00</b>	<b>42,740.00</b>	<b>MES</b>	<b>Russian Trust Fund</b>	<b>73,000.00</b>
<b>Russian Trust Fund</b>		<b>462,963.00</b>	<b>277,778.00</b>			<b>740,741.00</b>
<b>General Management service (8%)</b>		<b>37,037.00</b>	<b>22,222.00</b>			<b>59,259.00</b>
<b><i>Sub-Total Russian Trust Fund</i></b>		<b><i>500,000.00</i></b>	<b><i>300,000.00</i></b>			<b><i>800,000.00</i></b>
<b>TOTAL</b>		<b>500,000.00</b>	<b>300,000.00</b>			<b>800,000.00</b>



---

## VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Following structure is planned for the project implementation:



The roles and responsibilities of the management structure are as follows:

The **Project Board** is the group responsible for making management decisions by consensus for the project, including recommendation for UNDP/Implementing Partner approval of project plans and revisions.

The **Implementing Partner** is the Ministry of Emergency Situations, directly responsible for the government's participation in the project. The Implementing Partner will sign together with UNDP the Project Document, Project annual workplans and budget revisions, as well as the annual Combined Delivery Reports.

The **Responsible Party** is UNDP and will hold overall accountability for managing the project, including the monitoring and evaluation of project interventions, achieving project outputs, and for the effective use of project resources. It acts on the basis of the signed CPAP and the Project Document.

The **Senior Supplier** will be represented by the Government of Russian Federation.

The project **Senior Beneficiary** is the Armenian Hydrometeorology Service of the Ministry of Emergency Situations. as the coordinating body supporting establishment of the culture of resilience in the country.

The UNDP Sustainable Growth and Resilience (SGR) Portfolio Analyst will provide quality assurance over project implementation.

UNDP DRR Project Team, will carry out the envisaged activities to reach the project outputs. The project team will be managed by the Project Coordinator, who will coordinate project activities and serve as the financial authorizing officer.

The Project Coordinator will report to the UNDP SGR Portfolio Analyst and will be responsible for all project operations. He will ensure the proper use of funds and that project activities are implemented in accordance with the agreed project document and project work plans.

Management of project funds including budget revisions, disbursements, record keeping, accounting, reporting, and auditing shall follow the UNDP rules, regulations and procedures.

The Project Coordinator will be responsible for the project daily planning, implementation quality, reporting, timeliness and effectiveness of the activities carried out. NPC will be supported by support staff and experts.

---

## **IX. LEGAL CONTEXT AND RISK MANAGEMENT**

### **LEGAL CONTEXT STANDARD CLAUSES**

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Armenia and UNDP, signed on 08 March 1995. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by the Ministry of Emergency Situations of the Republic of Armenia in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

### **RISK MANAGEMENT STANDARD CLAUSES**

#### **Government Entity (Support to NIM)**

1. Consistent with Part VI on Programme Management of the Country Programme Action Plan (CPAP) 2016-2020 between the Government of Armenia. UNDP as the Responsible Party shall comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)
2. UNDP agrees to undertake all reasonable efforts to ensure that none of the [project funds]<sup>7</sup> [UNDP funds received pursuant to the Project Document]<sup>8</sup> are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via [http://www.un.org/sc/committees/1267/aq\\_sanctions\\_list.shtml](http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml). This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.
3. Consistent with UNDP’s Programme and Operations Policies and Procedures, social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
4. The Responsible Party Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
5. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

---

**X. ANNEXES**

1. Social and Environmental Screening
2. Project Quality Assurance Report
3. Risk Analysis
4. Letter of agreement between UNDP and Government of Armenia for the provision of support services
5. Capacity Assessment

## Annex 1. Social and Environmental Screening

Project information	
1. Project Title	<i>Increase Resilience of Armenia to Climate Change through Modernization of Armenia's Hydrometeorological Service</i>
2. Project Number	Project Atlas ID: 00111782
3. Location, Country	Armenia

### Annex 1: Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

#### **QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?**

##### *Briefly describe in the space below how the Project mainstreams the human-rights based approach*

The centrality of human rights is underlying the Project goals and objectives towards sustainable development, poverty alleviation and ensuring fair distribution of development opportunities and benefits. The human rights-based approach, as a key engagement principle in pursuing development outcomes, is mainstreamed by meaningful, effective and informed participation of project stakeholders in the formulation/design, implementation, monitoring and evaluation of Project's outputs and impact.

The project directly contributes to the right to work ICESCR Art 6.1, the right to an adequate standard of living ICESCR Art 11, as well as the elimination of discrimination against women UN CEDA Art 14.

##### *Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment*

The project will address gender vulnerabilities by applying a cross-cutting approach, such as disaggregation risk information and ensuring sufficient representation of women in decision-making processes and actions. It will also undertake dedicated actions such as providing training on gender-sensitive DRM. The project will address gender specific unique needs and values, work to incorporate gender and age specific knowledge into disaster preparedness, response and recovery policies, plans and programs. The project will equally consider both men and women as potential project beneficiaries.

##### *Briefly describe in the space below how the Project mainstreams environmental sustainability*

The project is in line with the overriding objective of DRM National Strategy, RA Government Programme 2017-2021, Sendai framework for DRR, Paris Agreement for Climate Change and World Bank Road Map for AHS capacity building to reduce the vulnerability of the population by focusing on climate related risks and increasing awareness, preparedness and response capacities at community and national. The project aims to link the improvement of 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.

### Part B. Identifying and Managing Social and Environmental Risks

Risk Description	Impact and Probability (1-5)	Significance (Low, Moderate, High)	Comments	Description of assessment and management measures as reflect the Project design. If ESEA or SESA is required note that the assessment should consider all potential impacts and risks.

Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?

I = 2 P = 1	Low	Referred to SEESP Attachment Standard 1, Question 1.2	The tools and methodology introduced within the Project will significantly contribute to the development of culture of resilience in national levels, strengthen professional capacity and monitoring and evaluation tools for implementation of Sendai Framework for DRR and Agreement for Climate Change. The introduced innovative technical and solutions will also contribute to Armenian Hydromet more accurate forecasting and risk mitigation, risk-informed decision making.
Select one (see SEESP for guidance)			Comments NA
Low Risk	<input checked="" type="checkbox"/>		
Moderate Risk	<input type="checkbox"/>		
High Risk	<input type="checkbox"/>		

**Check all that apply**

- Principle 1: Human Rights
- Principle 2: Gender Equality and Women's Empowerment
- 1. Biodiversity Conservation and Natural Resource Management
- 2. Climate Change Mitigation and Adaptation
- 3. Community Health, Safety and Working Conditions
- 4. Cultural Heritage
- 5. Displacement and Resettlement
- 6. Indigenous Peoples
- 7. Pollution Prevention and Resource Efficiency

**Final Sign Off**

Signature	Date	Description	Comments
QA Assessor	21.12.18	Armen Martirosyan, Sustainable Growth and Resilience Portfolio Analyst	
QA Approver	21.12.2018	Dmitry Mariyasin, UNDP Resident Representative, a.i	
PAC Chair	21.12.18	Dmitry Mariyasin, UNDP Resident Representative, a.i	

## SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks	
Principles 1: Human Rights	Answer (Yes/No)
1. Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2. Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups?	No
3. Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4. Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5. Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6. Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7. Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8. Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project- affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3. Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?	No
For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being	

Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	<p>Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services?</p> <p>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</p>	No
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	<p>Does the Project involve significant extraction, diversion or containment of surface or ground water?</p> <p>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</p>	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	<p>Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?</p> <p>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</p>	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	<p>Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)?</p> <p>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</p>	No



3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions - even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No

6.3 Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.	No
6.4 Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5 Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6 Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7 Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8 Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9 Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
7: Standard Pollution Prevention and Resource Efficiency	
7.1 Would the Project potentially result in the release of pollutants to the environment due to routine or nonroutine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2 Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3 Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol	No
7.4 Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5 Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

## 1. Risk Analysis.

Project Title: Strengthening Disaster Risk Reduction National Platform capacities in Armenia						Award ID: 00076016		Date: 01.09.2017- 01.03.2019	
#	Description	Date Identified	Type	Probability & Impact	Countermeasures / Mngt. response	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	Observation infrastructures need to be strengthened urgently to provide the local climate information, which is required for various applications.	MES	UNDP	01.09.2018	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	Socio-economic studies conducted in different years by World Bank are demonstrating that the benefit to cost ratio of investing in Hydromet is high, although the initial investment costs are high, as well.	MES	UNDP	01.09.2018	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	Formulation of comprehensive draft legal package on unmanned aerial systems (drones) for Governments consideration	MES	UNDP	01.09.2018	No change
4	The Government of Armenia is intending to invest USD 4,000,000 for the procurement of two 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 end of 2019. Based	01.09.2018	Operational	P = 2 I = 3	Regular meetings with the Government counterparts is being carried out to explain the importance of investment and show the benefits and returns from investment. The effectiveness and efficiency of the spending of first tranche will significantly improve the	UNDP	UNDP	01.09.2018	No change

	on the Project results and its impact the Government has obliged to invest additional USD 2,000.000.				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 is being carried out to explain the importance of investment and show the benefits and returns from investment.	MES	UNDP	01.09.2018	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	Regular meetings with the Government counterparts to present the project outputs and progress and update the project activities accordingly.	MES, MNP	UNDP	12.12.2018	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 will be coordinated with the AHS and Roshydromet specialists considering existing mitigation measures against earthquake and other secondary hazards, identifying main gaps, and proper solutions.	MES	UNDP	01.09.2018	No change

### **Capacity Assessment of Armenian Hydro-meteorological Service (AHS) conducted by the World Bank**

In 1998 the UN General Assembly mandated UNDP to assume operational responsibility for natural disaster mitigation, prevention and preparedness. Disaster risk reduction (DRR) is one of the corporate priorities of UNDP. UNDP's work integrates issues of climate, disaster risk and energy at the country level, focusing on resilience building and ensuring that development remains risk-informed and sustainable. To this end UNDP assists governments in delivering on risk-informed development through communication, reduction and management of risk. UNDP supports national and local governments (and other stakeholders) in identification and assessment of hazards, exposure of populations and assets, and uncovering communities' underlying vulnerabilities.

UNDP Country Office in Armenia was established in 1993. The first Program of Cooperation in the field of DRR between Government of Armenia and UNDP was approved in 1997 for three years. Within the framework of this Program an agreement was signed with Emergency Management Administration (EMA) (later renamed to the Armenian State Rescue Service, and in May 2008 to the Ministry of Emergency Situations (MES) on the strengthening of Armenia DRR System. Due to this cooperation DRR system was essentially improved.

Since 2008, UNDP - Armenia supported the implementation of four phases of the Project entitled "Strengthening of National Disaster Preparedness and Risk Reduction Capacities." With a view to systematize capacity development efforts and identify significant gaps, in late 2009 and early 2010, UNDP jointly with the MES, embarked on a capacity assessment of the national DRR system in Armenia. The capacity self-assessment established a measurable baseline of DRR capacity in Armenia and assisted all parties involved in identifying and prioritizing key DRR actions, at the time when the National DRR System was being consolidated.

Proceeding from the results of the capacity assessment and consultations with MES, UNDP has supported MES and other stakeholders in addressing key areas of capacity development. UNDP assisted in the establishment of a DRR National Platform, elaboration of a National DRR Strategy, of Crisis Management Center (CMC) and 911 Emergency Call Service in 10 provinces of Armenia, in development of instruments for local level risk management, urban resilience, environmental emergency and climate risk management. These actions are mutually supportive and have contributed to a conceptual transition in Armenia from a response-focused to prevention-orientated approach.

After the World Conference on DRR in Sendai 2015 (SFDRR), the new Capacity assessment of the National DRR System in Armenia was initiated by UNDP, World Bank and MES and the Action Plan for 2016-2020 was developed and provided to the Government for approval (Annex 3). Country-wide assessment was conducted by using priority directions of SFDRR as toolkit. The assessment recommendations will contribute to Sendai implementation in the country and are interlinked with the Sustainable Development Goals. Based on these recommendations the DRM strategy was developed in 2016 and approved by the Government of Armenia in 2017(Annex 4).

In 2018 the Capacity assessment of Armenian Hydro-meteorological Service (AHS) was conducted by the World Bank Armenia and based on the assessment results a Comprehensive Road Map on Modernizing weather, climate and hydrological services was developed with three scenarios for modernization of AHS: 1) low-cost technical assistance for high-priority activities focused on improvement of basic public services based on strengthening AHS capacity and introducing basic affordable new technologies; 2) modest investment for addressing most important user needs for provision of hydrological, weather and climate services vulnerable economic sectors; and 3) full modernization with investment to bring the AHS up to the level of advanced middle-income countries' capabilities for collecting and interpreting data and for providing impact-based forecasting and warning services to target areas and populations.