



**GREEN
CLIMATE
FUND**

Meeting of the Board
16 – 19 March 2021
Virtual meeting
Provisional agenda item 14

GCF/B.28/02/Add.14

23 February 2021

Consideration of funding proposals - Addendum XIV

Funding proposal package for SAP022

Summary

This addendum contains the following six parts:

- a) A funding proposal titled "Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change induced hazards";
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Secretariat's assessment;
- d) Independent Technical Advisory Panel's assessment;
- e) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
- f) Gender documentation.

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Simplified Approval Process Funding Proposal

Project/Programme title:	Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change induced hazards
Country(ies):	Uzbekistan
National Designated Authority(ies):	Ministry of Investments and Foreign Trade of the Republic of Uzbekistan
Accredited Entity:	UNDP
Date of first submission:	<u>2020/01/24</u>
Date of current submission/ version number	<u>2020/07/22 / V.002</u>
If available, indicate GCF code:	<i><u>This code is assigned to each project upon first submission of a Concept Note or Funding Proposal and remains the same throughout the proposal review process. If you have submitted this project/programme previously please indicate the GCF code here.</u></i>



Contents

Section A **PROJECT / PROGRAMME SUMMARY**

This section highlights some of the project's or programme's information for ease of access and concise explanation of the funding proposal.

Section B **PROJECT / PROGRAMME DETAILS**

This section focuses on describing the context of the project/programme, providing details of the project/programme including components, outputs and activities, and implementation arrangements.

Section C **FINANCING INFORMATION**

This section explains the financial instrument(s) and amount of funding requested from the GCF as well as co-financing leveraged for the project/programme. It also includes justification for requesting GCF funding and exit strategy.

Section D **LOGIC FRAMEWORK, AND MONITORING, REPORTING AND EVALUATION**

This section includes the logic framework for the project/programme in accordance with the GCF Results Management Framework and Performance Measurement Framework, and gives an overview of the monitoring, reporting and evaluation arrangements for the proposed project/programme.

Section E **EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**

This section provides an overview of the expected alignment of the projects/programme with the GCF investment criteria: impact potential, paradigm shift, sustainable development, needs of recipients, country ownership, and efficiency and effectiveness.

Section F **ANNEXES**

This section provides a list of mandatory documents that should be submitted with the funding proposal as well as optional documents and references as deemed necessary to supplement the information provided in the funding proposal.

Note to accredited entities on the use of the SAP funding proposal template

- The Simplified Approval Process Pilot Scheme (SAP) supports projects and programmes with a GCF contribution of up to USD 10 million with minimal to no environmental and social risks. Projects and programmes are eligible for SAP if they are ready for scaling up and have the potential for transformation, promoting a paradigm shift to low-emission and climate-resilient development.
- This template is for the SAP funding proposals and is different from the funding proposal template under the standard project and programme cycle. Distinctive features of the SAP funding proposal template are:
 - *Simpler documents*: key documents have been simplified, and presented in a single, up-front list;
 - *Fewer pages*: A shorter form with significantly fewer pages. The total length of funding proposals should **not exceed 20 pages**, annexes can be used to provide details as necessary;
 - *Easier form-filling*: fewer questions and clearer guidance allows more concise and succinct responses for each sub-section, avoiding duplication of information.
- Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other funding proposal documents such as project appraisal document, pre-feasibility studies, term sheet, legal due diligence report, etc.
- Submitted SAP Pilot Scheme funding proposals will be disclosed simultaneously with submission to the Board, subject to the redaction of any information which may not be disclosed pursuant to the [GCF Information Disclosure Policy](#).

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"SAP-FP-[Accredited Entity Short Name]-[yyymmdd]"

A. PROJECT/PROGRAMME SUMMARY					
A.1. Has this FP been submitted as a SAP CN before?			Yes ☒ No ☐		
A.2. Is the Environmental and Social Safeguards Category C or I-3?			Yes ☒ No ☐		
A.3. Project or programme	<i>Indicate whether this FP refers to a combination of several projects (programme) or one project.</i> ☒ Project ☐ Programme	A.4. Public or private sector	☒ Public sector ☐ Private sector	A.5. RFP	Not applicable
A.6. Result area(s)	Mitigation: Reduced emissions from: ☐ Energy access and power generation: <u>Enter number</u> % ☐ Low emission transport: <u>Enter number</u> % ☐ Buildings, cities and industries and appliances: <u>Enter number</u> % ☐ Forestry and land use: <u>Enter number</u> % Adaptation: Increased resilience of: ☒ Most vulnerable people and communities: <u>100</u> % ☐ Health and well-being, and food and water security: <u>Enter number</u> % ☐ Infrastructure and built environment: <u>Enter number</u> % ☐ Ecosystem and ecosystem services: <u>Enter number</u> %				
A.a. ¹ Total investment (GCF + co-finance)	Amount: 40,639,335 USD	A.a.1 Total GCF funding requested	Amount: 9,999,455 USD		
A.b. Type of financial instrument requested for the GCF funding	<i>Mark all that apply.</i> ☒ Grant ☐ Loan ² ☐ Equity ☐ Guarantees ☐ Others:				
A.7. Implementation period	6 years (72 months)				
A.8. Total project/ programme lifespan	15 years (180 months)	A.9. Expected date of internal approval	1/23/2020		
A.10. Executing Entity information	Government of Uzbekistan (GoU) acting through Ministry of Emergency Situations of the Republic of Uzbekistan (MES)				
A.11. Scalability and potential for transformation (Eligibility for SAP, max. 100 words)					
1. The Government of Uzbekistan through its Ministry of Emergency Situations (MES) implements a state program to modernize the early warning system for natural disasters³. This GCF project will provide the critical technical and financial resources, access to innovative technologies and expertise for the implementation and scale-up of this national initiative. The GCF project will promote the transformation of climate hazard forecasting and warning from a reactive (ex-post) hazard-based system to one that is proactive (ex-ante), user-oriented and impact-based. 2. The project puts a strong focus on strengthening the “last mile” delivery of disaster-related communication and interaction with end users, including vulnerable communities. The improved capacity of Regional crisis management centers (RCMCs) and local communities to use and interpret climate risk information into practical early responses will directly benefit at least 11 million people (34% of total population) currently at risk from climate hazards and enhance the community resilience as a whole. 3. Uzhydromet’s capacity as a WMO Regional Specialized Meteorological Centre (RSMC) will be strengthened, building on the CAHM⁴ (World Bank/WMO) project. The proposed GCF investment will develop automated procedures and modelling capacity that can serve as an example for other developing Central Asian countries, as					

¹ This fields will be automatically calculated in the OSS system.

² Senior loans and subordinated loans.

³ Cabinet Resolution No. 242 of the Republic of Uzbekistan “On further improvement of state system for warning and emergency applications of the Republic of Uzbekistan” from 24 August 2011

⁴ Central Asian Hydro-Meteorological project

well as being the driver of significant institutional change, catalysing increased efficiency in climate hazard warning generation and dissemination, and developing new operational procedures between MES and Uzhydromet.

A.12. Project/Programme rationale, objectives and approach (max. 300 words)

4. Climate change has been leading to more frequent and more intense hydrometeorological disasters in Uzbekistan and to a greater exposure to these disasters across the country. Uzbekistan sets climate change adaptation as a priority in its first Nationally Determined Contribution (NDC)⁵ under the Paris Agreement. In particular, the NDC clearly highlights the need to establish a Multi-Hazard Early Warning System (MHEWS).
5. This project will respond to a critical need of Uzbekistan to modernize its early warning system into an impact-based MHEWS (initially focussed on floods, mudflows, landslides, avalanches and hydrological drought in the more populous and economically important eastern mountainous regions), an essential element of the country's climate risk management framework. In the face of increasing climate risks, this MHEWS will serve to enhance climate resilience of 32 million people of Uzbekistan (indirect beneficiaries), including the most vulnerable and poor rural communities living in mountainous areas currently at risk from climate-induced hazards.
6. Specifically, the project will improve methods and capacities for monitoring, modelling and forecasting climate hazards and risks supported with satellite-based remote sensing, create a central repository and analysis system for hydrometeorological hazard and risk information, improve regulations, coordination and institutional mechanisms for an effective impact-based MHEWS, including the development of forecast-based actions. The project will explore and facilitate the concept of forecast-based-financing (FBF) with the national institutional stakeholders responsible for disaster risk management and financing by developing SOPs and prototype decision-making systems/protocols based on the enhanced impact-based forecasting and warning. As a result, the project will significantly enhance the quality and timeliness of climate and disaster-related information available to decision-makers and the dissemination of such information to the population, as well as develop information and procedures for ex-ante actions.
7. The GCF grant is required to upgrade the existing hazard forecasting and warning system in Uzbekistan so it can effectively deal with the additional pressure brought about through increases in climate variability and change. This requires investments in both new observing technologies, training of technical staff, demonstration of modern approaches to hazard modelling and prediction, as well as development of awareness and educational materials and communications with communities. Together these activities will demonstrate the potential benefits of the upgraded system and contribute to the transformation of the climate and disaster risk management in the country.

B. PROJECT/PROGRAMME DETAILS

B.1. Context and baseline (max. 500 words)

8. Uzbekistan is a lower-middle income, landlocked country located in the heart of the Central Asia. 72% of its territory is flat and extremely arid. Uzbekistan ranks high (24th) in the global natural disaster hotspots list compiled by the World Bank, with 9.3% of the total country area at risk, 65.6% of the population living in risky areas, and 65.5% of the national GDP (USD 12 billion annually) generated from areas at risk⁶. Uzbekistan's capacity to map, monitor and forecast climate risks, as well as act on this information, is however severely limited. Furthermore, many extreme weather events in Uzbekistan go unreported and Uzhydromet and the Ministry of Emergency Situations (MES) are unable to routinely collect data on disasters.
9. Uzbekistan is highly vulnerable to floods and mudflows caused by snowmelt, run-off or by severe storms, with over 2,600 extreme mudflows documented in the past 80 years. Very large floods and mudflows are also caused by outburst floods from mountain lakes. Most damages occur in economically strong and flooding-prone provinces in the east, particularly Andijan and Ferghana, two of the project target regions, which on average lose 3% and 2% respectively of annual GDP to flooding⁷. Based on the preliminary economic analysis (see Annex 10), the economic impact of flooding in Uzbekistan due to climate change can be estimated at US\$ 236 million.

⁵ http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Uzbekistan/1/INDC%20Uzbekistan%2018-04-2017_Eng_20170419093154_171926.pdf

⁶ Dilley, Maxx; Chen, Robert S.; Deichmann, Uwe; Lerner-Lam, Arthur L.; Arnold, Margaret; Agwe, Jonathan; Buys, Piet; Kjevstad, Oddvar; Lyon, Bradfield; Yetman, Gregory. 2005. Natural disaster hotspots: A global risk analysis (English). Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/621711468175150317/pdf/344230PAPER0Na101official0use0only1.pdf>

⁷ World bank (2016) europe and central asia country risk profiles for floods and earthquakes. <http://documents.worldbank.org/curated/en/958801481798204368/Europe-and-Central-Asia-Country-risk-profiles-for-floods-and-earthquakes> and outlined in Section 5 of the PFS.

10. Landslides in spring and avalanche hazards during winter are also significant risks in the country's eastern mountain and foothill areas (particularly along significant transport links such as the Tashkent-Osh highway). Almost 90% of the country's water resources originate from eastern mountain catchments located in neighbouring countries and supplied by rainfall, melting snow and glacial ice. Two major river systems - the Amu Darya and the Syr Darya – constitute 95% of the surface water flow. Mudflow, landslide and flooding risks are most prevalent in the east, with drought affecting the whole country, especially the more arid western areas. Given the high concentration of people, economic activities, and several climate-related hazards (floods, mudflows, landslides and avalanches), the Ferghana valley is subject to high climate-related disaster risks. Maps of climate hazards and exposure risks to population are provided as follows.

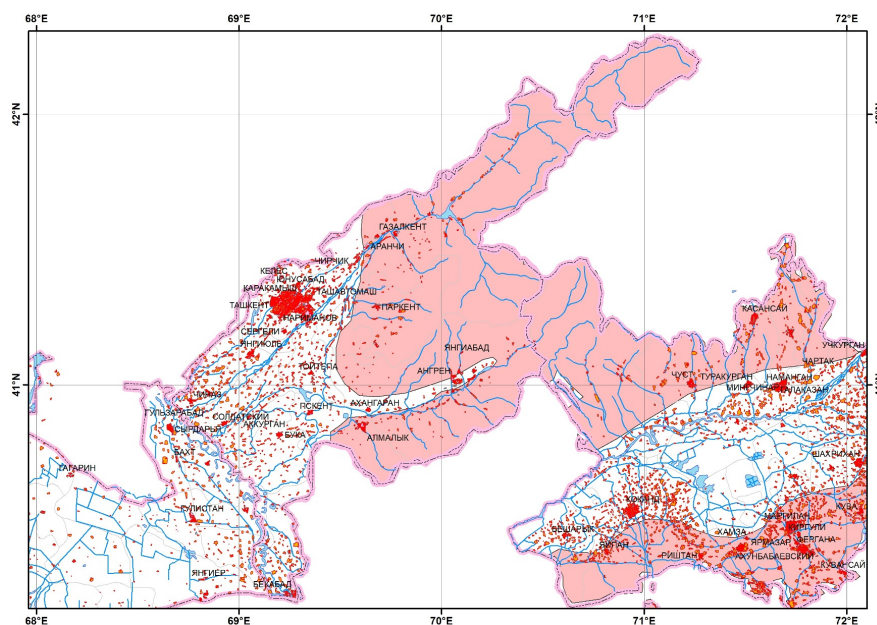


FIGURE 1: EXAMPLE OF AREAS OF MUDFLOW HAZARDS (SHADED) AND POPULATIONS/SETTLEMENTS (RED DOTS) FOR EASTERN UZBEKISTAN.

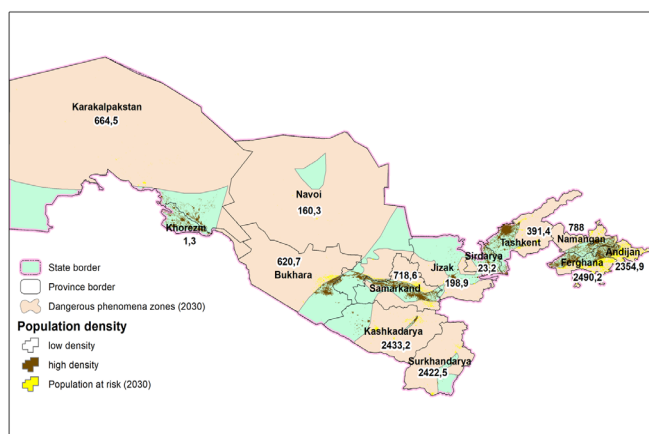


FIGURE 2: NUMBERS OF PEOPLE (THOUSANDS) EXPOSED TO ONE OR MORE HAZARDS (AND THEIR EXTENT) IN EACH PROVINCE IN 2030

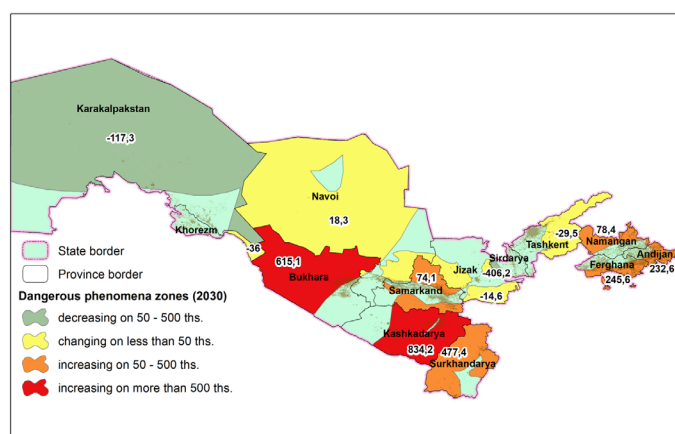


FIGURE 3: CHANGES IN THE NUMBERS OF PEOPLE (THOUSANDS) EXPOSED TO ONE OR MORE HAZARDS BY 2030

Climate change drivers of vulnerability:

11. Climate change is expected to increase the intensity and frequency of hydrometeorological disasters – droughts, floods, mudflows, landslides and storms – putting more Uzbekistan communities and economic assets at risk⁸. The annual average temperature increase since 1950 is 0.27°C per decade, which is twice the global average. It has led to accelerated evapotranspiration and caused changes in the timing and zones of snow and ice melt,

⁸ Third national communication of Uzbekistan under the UNFCCC. 2016. Tashkent http://www.un-gsp.org/sites/default/files/documents/tnc_of_uzbekistan_under_unfccc_english_n.pdf

consequently changes in river flows and increased risk of droughts, floods, mudflows and avalanches. Increases in rainfall intensity lead to increased risk of flooding, mudflow and rainfall-induced landslide risks over the eastern mountain and foothill regions⁹.

12. Glaciers presently contribute up to 70% of the water flow in some of the river systems during summer and climate impacts, particularly increased temperatures, changes in rainfall patterns and glacial melting, are anticipated to drastically alter the regional hydrological cycle, exacerbating existing water scarcity problems and water-related conflicts. These changes will not be the same over time, requiring flexible adaptation options which themselves need to be adaptable over time. For example, the rate of glacial melting is projected to increase in the short-term due to rises in temperature, initially leading to increased river flows, flooding, mud slides and soil erosion. In the long-term, however, the decline in glacier volumes is predicted to reduce the flow of the Amu-Darya River and tributaries of the Syr-Darya and Zeravshon Rivers by 25 – 30%¹⁰. Reductions will be particularly severe in hot, dry years when it is predicted that there will be up to a 70% reduction in river flows.
13. Trends in time and associated p-values (statistical significance) were calculated for climate indices using the ClimPACT2 software¹¹ (as recommended by WMO¹²) for the 11 stations where daily observations of precipitation, minimum and maximum temperatures were available for the 1990-2018 period. For each station the ClimPACT2 indices were calculated on a monthly and annual basis, and a linear regression used to establish if there had been trends in these indices between 1990 and 2018 and the statistical significance of any such trends. Nearly all the temperature and heatwave-related indices across most stations indicate significant positive trends, confirming the results in the feasibility study that there have been significant increases in temperatures across Uzbekistan since 1990. Trends in both SPI (Standardised Precipitation Index) and SPEI (Evapotranspiration Index) are negative where they are significant and more consistently so for SPEI, indicating that when increases in evapotranspiration are taken into account the intensity of drought at timescales from 3 to 24 months has been getting worse. Lastly trends in measures of rainfall intensity are harder to detect but where they are statistically significant they are positive, again confirming the results presented in the feasibility study that the intensity of precipitation has tended to increase in recent years.
14. Through the GCF readiness support programme, an assessment of expected climate changes and climate-included hazards in Uzbekistan was conducted by Columbia University using an ensemble of CMIP5 models (see Appendix 2 of FS). It clearly shows that changes in climate are expected to increase both the frequency and spatial extent of climate-related hazards (potentially occurring in areas not previously prone to such hazards), thereby increasing demands on the ability of MES, Uzhydromet and other government agencies to monitor and forecast them ahead of time, as well as forewarn affected populations, businesses and sectoral activities.
15. Specifically, warming temperatures are likely to increase the frequency and magnitude of heat waves, as well as evapotranspiration from ecosystems and agricultural lands. Under RCP4.5 precipitation changes vary by region, with earlier drying overall but wetter conditions in the west by the middle and end of the century. Overall wetter conditions increase flood hazards in winter and spring, although much of the precipitation rise comes in the winter and spring while the summers are likely to be drier. Models indicate a clear signal of increasing heavy precipitation events that are associated with flash flood hazards and the potential to destabilize hillslopes for mudflow and landslide hazards. A more vigorous water cycle will also lead to greater interannual and intraseasonal variations between drought and flood events, which will make managing risks more challenging. Warmer temperatures reduce overall snowpack, however there are likely to be strong elevational gradients in the direction of local snowpack changes with low elevations declining and high elevations potentially increasing. It will be particularly important to be able to track the transitional zone between solid and melting snow as it moves to higher altitudes with warmer temperatures, potentially exposing new areas to mudflow, landslide, and snow avalanche hazards.
16. ENSO impact on rainfall in Uzbekistan occurs primarily during the SON season, but is also present during DJF and MAM seasons (being strongest during autumn and spring)^{13,14}. The influence during warm ENSO events results

⁹ Climate Risk Profile of Uzbekistan prepared by UNDP project "Climate risk management of Uzbekistan". 2015.

¹¹ <https://www.climdex.org/learn/tools/>

¹² http://www.wmo.int/pages/prog/wcp/ccl/meetings/ICT-CSIS/documents/2016/presentations/Herold_WMO_climpact_final.pdf

¹³ Mariotti A. (2007) How ENSO impacts precipitation in southwest central Asia. GEOPHYSICAL RESEARCH LETTERS, VOL. 34, L16706, doi:10.1029/2007GL030078

¹⁴ Khaydarov M. and Gerlitz L. (2019) Climate variability and change over Uzbekistan – an analysis based on high resolution CHELSA data. Central Asian Journal of Water Research. 5(2): 1-19. doi: 10.29258/CAJWR/2019-R1.v5-2/1-19.eng.

from an anomalous southwesterly moisture flux from the Arabian Sea and tropical Africa, which increases rainfall. This is confirmed in modelling studies of ENSO and NAO impacts, which further show that during warm/positive events rainfall is enhanced through enhancement of westerly disturbances as they encounter the low pressure trough from the south¹⁵.

17. These ENSO impacts on atmospheric circulation and precipitation translate into different sectoral impacts depending on the timing of changes. Increased precipitation during an El Nino event can be beneficial for winter crops and vegetation phenology, but can result in increased risks of heavy precipitation, mudflows, landslides and avalanches over mountainous areas^{16,17}.

National priorities and baseline:

18. Agriculture accounts for 18.5% of the annual GDP in Uzbekistan and contributes to more than a quarter of the labor force in the country. A major problem causing the reduced agricultural productivity is inappropriate irrigation (both insufficient and over-irrigation) inadequately informed by climate information. Water resource management is a key development challenge in Uzbekistan, where demand will continue to rise and climate change impacts are likely to reduce water supplies. Expected reductions in the availability of water supply in the main rivers, according to a World Bank assessment of climate risks to the agriculture sector in Uzbekistan, will likely impact significantly the availability of irrigation water which currently consumes 90% of water resources. Similarly, higher than normal rainfall can cause problems with agriculture; during 2009, cotton had to be replanted four times because of excessive rainfall. These weather and climate-related impacts highlight the potential value that climate-hazard related knowledge can provide.
19. Uzbekistan's first Nationally Determined Contribution (NDC) under the Paris Agreement sets climate change adaptation as a priority for agriculture, water management, social protection, and protection of strategic infrastructure and production facilities. In particular, the NDC clearly highlights the need to establish a MHEWS which will:
- Raise awareness and improve access to information about climate change for all population groups; and
 - Develop early warning systems for dangerous hydrometeorological hazards which will provide information for climate risk management.

Relevant climate and disaster related policies and legislation in Uzbekistan are outlined in Section E.5.

20. Uzhydromet is responsible for weather forecasting, hydro-meteorological and agro-meteorological monitoring including monitoring of extreme weather events, the forecasting of water availability and climate research. Uzhydromet also operates and maintains a hydrometeorological observation network which comprises of 85 meteorological stations (75 manual and 10 AWS), 131 hydrological gauging stations (all manual), 3 doppler weather radars (Tashkent, Samarkand and Nukus), 64 observation points of atmospheric air pollution and 17 chemical labs for monitoring environmental pollution (see section 4.1 of the feasibility study (FS)). Twenty one (21) of the 85 stations contribute to international exchange (through the GTS) sending data as SYNOP messages, with 8 additional stations contributing to the exchange of hydrometeorological information with other CIS countries. Whilst hydrometeorological stations are concentrated in the east, AWS are only found in the west and many eastern mountainous regions, which experience spatially heterogeneous rainfall and associated hazards, are not covered (see FS, section 4.1.2). Uzhydromet has demonstrated sufficient capacity to operate and maintain its existing network (including all existing stations since 2010), utilising both public funds and income from services. It has, however, not had access to capital to upgrade (e.g. to automatic systems) and expand these networks (e.g. radars) to cover all hazardous areas.

¹⁵ Syed, F., Giorgi, F., Pal, J. *et al.* (2006) Effect of remote forcings on the winter precipitation of central southwest Asia part 1: observations. *Theor. Appl. Climatol.* **86**, 147–160. <https://doi.org/10.1007/s00704-005-0217-1>

¹⁶ ESCAP (2014) El Nino 2014/2015 Policy implications for Asia and Pacific. Science and policy knowledge series. Integration of disaster risk reduction and climate change adaptation into sustainable development. <https://www.unescap.org/sites/default/files/August%202014%20ESCAP%20EI%20Nino%202014.pdf>

¹⁷ Kirsten M de Beurs *et al* 2018 *Environ. Res. Lett.* **13** 065018. <https://iopscience.iop.org/article/10.1088/1748-9326/aac4d0/pdf>

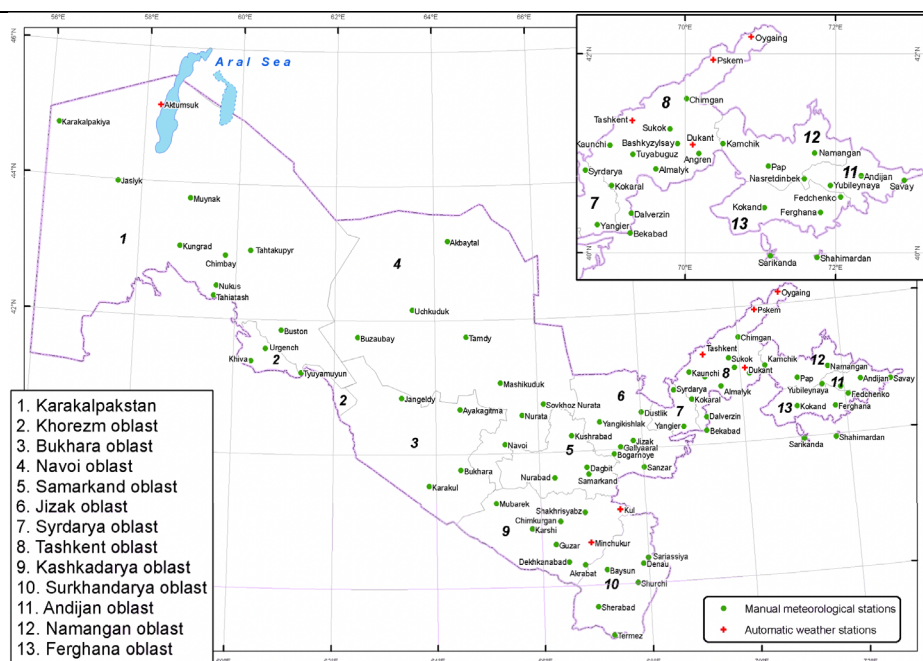
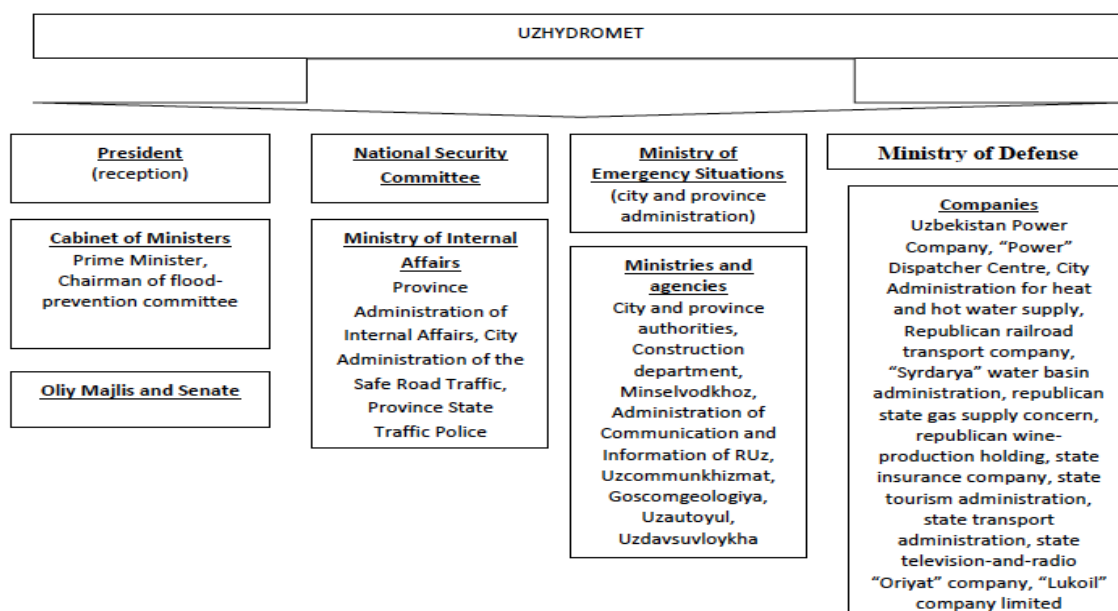


FIGURE 4: METEOROLOGICAL NETWORK OF UZBEKISTAN.

21. The State Emergency Prevention and Response System (SEPRS) defines the system, roles and responsibilities related to the emergency monitoring, forecasting, prevention, early warning and response (EWS is one part of the SEPRS responsibilities). MES is the lead government entity responsible for the overall management, coordination and control over the SEPRS. When there is the risk of hydrometeorological extreme event, Uzhydromet forwards warnings to the MES and other government bodies responsible for decision making (see below diagram of information flow within government agencies). MES is responsible for the distribution of warnings to the population and taking measures to respond to disasters. Public agencies receive warnings about possible storm phenomena, mudflow or avalanches which can cause damage to transport and other communications. For the risk of drought and low water, warnings are forwarded by MAWR. The dissemination of hydrometeorological information in ministries and agencies is by fax and via the internet. However, the dissemination of warnings to the public utilises are done via television, radio, newspapers, the website of Uzhydromet (www.meteo.uz), and SMS messages, with appropriate recommendations for addressing risks e.g. during heat waves, avalanches and mudflows. During mudflows/avalanches, warnings are forwarded to all government bodies responsible for operation and maintenance of roads and recreation activities. Whilst under the (SEPRS), MES can convene representatives of each institution to provide feedback on current risks, this is usually only done when risks are perceived to be high or in reaction to an ongoing crisis. There is no systematic ongoing monitoring of risks in a single environment where all risks can be considered together, which reduces the capability to deal with and identify multi-hazard risks. A detailed analysis of institutional coordination between relevant agencies can be found in sections 3.2 and 3.3 of the FS.



Related projects and synergy analysis:

22. There are several projects directly relevant to this proposal, including:

- the GCF project “Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB)”¹⁸ managed by the World Bank;
- UNDP/Adaptation Fund (AF) project “Developing climate resilience of farming communities in the drought prone parts of Uzbekistan”¹⁹;
- the second phase of the regional CAHM project "Upgrading of Hydrometeorological Services of Central Asian countries (Uzbekistan, Kyrgyzstan and Tajikistan)" implemented by the World Meteorological Organization (WMO) and the World Bank;
- the project “Integrated natural resources management in drought-prone and salt-affected agricultural production landscapes in Central Asia and Turkey (CACILM2)”²⁰ managed by FAO;
- National Adaptation Planning project under GCF Readiness Programme implemented by UNDP with Uzhydromet (2020-2022) will advance medium- and long-term adaptation planning and will contribute to enhanced coordination mechanism for multi-sectoral adaptation planning and implementation at different levels.

23. The following table provides a summary of related projects including key performance assessment, investment synergies to this proposal and upscale potentials :

#	Project name	Key performance assessment	Synergies with proposed GCF investment	Upscale potential
1	“Developing climate resilience of farming communities in the drought prone parts of Uzbekistan” (2014-2020) focusing on Karakalpakstan region, implemented by UNDP with funding support from Adaptation Fund	The project has passed its midpoint and delivered technical and economic assessments for the Drought Early Warning System (DEWS) in the Amu Darya river and Aral Sea basin (Karakalpakstan), which will serve as a prototype for the proposed GCF investment.	• hydrometeorological observing infrastructure • satellite/earth remote sensing technologies • drought/crop forecasting	Build on the project experience and lessons learnt to expand the coverage of DEWS to two additional river systems in Uzbekistan. (see section 4.2.5.1 of FS for details)
2	Regional CA project "Upgrading of Hydrometeorological Services of Central Asian countries (Uzbekistan, Kyrgyzstan and Tajikistan) – CAHM project" – supported by WMO and the World Bank (on-going)	Four Hydromet agencies (Kazakhstan, the Kyrgyz Republic, Tajikistan and Uzbekistan) have agreed to a common methodology to verify hydromet forecasting accuracy, completed installation of a regional distance learning system, and reached consensus on guidelines and approaches to regional procedures for emergency prevention. Introduction of a cascade method of severe weather forecasting (SWFDP-CA) in Central Asia is ongoing in Uzbekistan.	• regional climate services • weather forecasting • regional training	Use the experience and lessons learned on improvement of monitoring network and capacity building of Uzhydromet staff.
3	A Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB) - World Bank with funding from	The Uzbek component officially started in April 2017. Procurement for the meteorological monitoring equipment initiated in Tajikistan and Uzbekistan; delivery contracts	• hydrometeorological observing infrastructure	CAMP4ASB project will develop climate change knowledge services for climate change

¹⁸ <http://carececo.org/en/main/activity/projects/programma-po-adaptatsii-k-izmeneniyu-klimata-i-smyagcheniyu-ego-posledstviy-dlya-basseyna-aralskogo/>

¹⁹ http://www.uz.undp.org/content/uzbekistan/en/home/operations/projects/environment_and_energy/developing-climate-resilience-of-farming-communities-in-the-drou.html

²⁰ <http://www.fao.org/in-action/cacilm-2/ru/>

	GCF (2015-2021) focus on Tajikistan and Uzbekistan	for 50 weather stations and 2 mobile eco-labs signed for Uzbekistan; successfully held the 2 nd Central Asia Conference on Climate Change (CACCC-2019, April 3-4, Tashkent, Uzbekistan), and a series (4) of workshops on seasonal water availability forecasting based on snow cover assessment for the staff of national Hydromets; fostered the region's academic research on CC and water resources management in Central Asia; enhanced the competencies on climate and hydrological forecasting of universities' faculties; integration of courses on GIS, climate and hydrological modeling to Universities curricular in CA; as well as launched and supported the Central Asian Civil Society Organizations Coalition on Climate (Central Asian CSO Coalition on Climate or Coalition).		assessments and decision-making. There may be an opportunity to strengthen these by utilizing risk knowledge and information developed through the proposed GCF investment.
4	"Central Asian Countries Initiative for Land Management" (CACILM), a partnership program between the countries of Central Asia and the donor community – FAO supported Due to the fact that the countries of the region showed interest in continuing cooperation under the CACILM program, the GEF has allocated additional funding to start a second phase for regional activities. Turkey also joined the second phase of CACILM.	The project aims to expand the scope of integrated natural resource management (ICMP) to ensure sustainability and adaptation of agriculture to drought risks. Regional components included the following: i) cooperation and exchange of knowledge on drought forecasting and early warning; ii) the economics of land degradation and the valuation of ecosystem services with an emphasis on drought and salinity problems; iii) experience and knowledge sharing At the national level, the project had two components: a) Mitigating the effects of drought in high-risk areas of desertification in the face of climate change; b) Fight against salinization of irrigated lands and mitigation of climate change in the middle reaches of the Amudarya river basin.	• hydrometeorological observing infrastructure • satellite/earth remote sensing technologies • drought/crop forecasting	Engage key stakeholders and end-users to share project experience on drought forecasting and early warning through engagement channels created by NFCS and Climate Outlook Forum
5	National Adaptation Plan (NAP) in Uzbekistan - UNDP in collaboration	Uzbekistan's NDC, submitted in 2017 outlines the country's planning process to strengthen	The main beneficiaries of GCF financing support	The proposed GCF investment will work in coordination with

	with the Uzbekistan NDA and financially supported by GCF	adaptation and mitigation actions including political measures, implementation of climate actions, development of scientific research and education as a priority. The project aims to advance medium- and long-term adaptation planning in Uzbekistan and enable the Republic of Uzbekistan to integrate climate change adaptation requirements into developmental planning and processes. An adaptation financing and investment strategy for Uzbekistan will be developed. NAP was approved by GCF, implementation is due to start.	will be the Center of Hydrometeorological Services (Uzhydromet) as well as stakeholders from 5 key sectors (agriculture, water, health, housing and emergency management) and provincial governments in the three target provinces (Karakalpakstan, Bukhara and Khorezm).	NAP project and facilitate the integration of CC adaptation at national level.
6	“Business Forum of Uzbekistan phase 3: inclusive business models” funded by UNDP/Chamber of Commerce (2014-2017)	Developed partnerships with fruit and horticulture farmers to install weather stations and provide monitoring and services for forecasting pests/diseases and irrigation requirements(http://chamber.uz/en/news/998). Initially the project utilized weather equipment and forecasting services from Austria (IMETOS) and US (ACCUWEATHER). The project is currently working with an Uzbek company to develop local service providers, equipment and information sources.	• hydrometeorological observing infrastructure • inclusive business models and public private dialogue	Use the practices of installation of weather stations for agro-producers and potential benefits and relation to the hydro-stations.
7	UNDP/CCI joint project “Enhancing the adaptation and strengthening the resilience of farming to Climate Change Risks in Fergana Valley” with funding support of Russia-UNDP Trust Fund for Development (2019-2021)	In cooperation with the State Plants Quarantine Inspection installed and established a network of 9 agrometeorological stations for provision of weather forecasts, early warnings on expected disease and pests outbreaks, and recommendations to farmers on advanced agricultural technologies and practices. The project in partnership with the Inspection is going to establish an automated warning/information delivery system to end-users of the services.	• agrometeorological observing infrastructure • automated early warning communication system to end-users	The approach on establishing the automated system and working with small farmers and households will be studied and lessons learned for integration of best practices to the proposed GCF investment.

24. This GCF project will address remaining gaps in the efficiency of hydro-meteorological observation network by introducing automatic data feeds and expanding coverage of the hydrometeorological monitoring system (by adding hydrometeorological and upper air stations, doppler radars), as well as building the capacity to model hazards, combine with information on vulnerability and exposure, and analyse risks as part of an integrated monitoring, forecasting and dissemination system.

25. In particular, this GCF project proposal will build on the experience of a UNDP/AF project to continue installing/upgrading 25 automatic meteorological stations (AMS) in Uzbekistan. As a result of the modernization and improved efficiency of meteorological information transfer, Uzhydromet is expected to see a number of direct and indirect economic benefits, including an estimated increase of revenue from specialized services by 10% through the creation of a database archive. This proposal also seeks to expand the coverage of Drought Early Warning

System (DEWS) – developed by UNDP/AF project for the Amu Darya river and Aral Sea basin (Karakalpakstan), to two additional river systems in Uzbekistan. The GCF proposal will also strengthen the “last-mile delivery” of disaster-related communication and user-interaction with communities at risk, an outreach gap that was identified in the UNDP/AF project as “insufficiently covered due to limited budget” (see Feasibility Study, Sections 3.4 and 4.2.5.1 for details on the baseline projects; see Annex 11 for mid-term review of the AF project).

26. Details of related projects can be found in section 3.4 of FS.

Barriers to a more effective generation and use of climate information for climate risk management:

27. The current national EWS is inadequate to secure effective climate risk management in the face of increasing climate change impacts due to a number of barriers and gaps. The barrier analysis is summarized below according to the first three elements of the UNISDR framework for Early Warning Systems: risk knowledge, observation, monitoring and forecasting, and dissemination and communication of risk information and warnings. In this proposal, we focus on these three elements because: a) they are the most under-utilised and inefficient aspects of the current national system; b) the response capacity (the 4th component) is well-coordinated (between MES and other humanitarian actors e.g. IFRC) and funded; c) in order to move from a currently reactive (ex-poste) to a proactive (ex-ante) system, the first three components need to be strengthened; d) given limited resources under the SAP funding window, it is more cost-effective to focus on the first three components.

28. A feasibility study has been conducted in the preparation of this project and a number of gaps and barriers have been identified to the implementation of an effective impact-based MHEWS in Uzbekistan:

29. *Insufficient national technical capacities for hydro-meteorological monitoring, modelling, risk assessment and mapping.*

30. Uzhydromet has insufficient technical capabilities, ageing and inadequate equipment and software for data gathering and processing, inefficient data collection channels for real-time monitoring, risk assessment, mapping and impact forecasting based on the distribution of population, assets and infrastructure. Presently most of the surface monitoring equipment deployed by Uzhydromet is manually operated and not adequate for real-time relaying of observations of rainfall, temperature, snowfall, river flows and dam levels, for early warning of observed hazards. Coverage of eastern high mountainous areas, where several hazards are prevalent, is also limited. Advanced remote sensing technologies and methods for monitoring and assessing risks beyond the current coverage of existing observation sites (which are located based on current risks), are not utilized extensively. The capacity of national institutions to use and apply complex and data-intensive hazard modelling (for mudflows, floods, hydrological droughts and landslides) and assessment tools for monitoring and analysis of associated risks is another significant barrier. Previous and ongoing technical assistance to Uzhydromet has helped to address some of these barriers (e.g. investment in AWS etc.), but there remain gaps largely because: i) a lack of available government funds to upgrade equipment (though sufficient to maintain existing infrastructure); ii) investment has been mostly linked to project-specific geographic areas.

31. Specific technical barriers include:

32. Limited accessible, reliable and up to date monitoring data on weather/climate, hydrology and geophysical processes (to be addressed by Activity 1.1);

33. Limited use of remote sensing technologies (currently using MODIS) to improve coverage of areas not monitored through surface/field equipment e.g. EU COPERNICUS data (to be addressed by Activity 1.3);

34. Interpretation of some climate-related hazards (landslides, avalanches and mudflows) is currently undertaken through a process of expert review, without models/tools to help synthesize all available information e.g. landslide/mudflow risk models and visualization/GIS systems to intersect hazard forecasts with social vulnerability data to identify risks (to be addressed by Activity 1.2 and 2.1);

35. Insufficient information about transboundary hazards and risks (80% of floods and mudflows are formed outside of Uzbekistan). There are legal and institutional arrangements in the form of bilateral agreements between the National Hydrometeorological Services of the neighboring Central Asian states on the disaster data sharing and warning. However, there are significant capacity constraints on using remote sensing (though MODIS is used to determine Pamir/Tien Shan high altitude snowpack affecting river discharges etc.), GIS technologies (for analyzing risks), data processing and hazard-specific modelling tools (to be addressed by Activity 1.2); and

36. Uzhydromet takes part in the regional climate outlook forum (NEACOF) but national and sub-national climate outlook forums are infrequent (to be addressed by Activity 3.1).

37. *Insufficient institutional and technical capacities for timely multi-hazard forecasting and early warning, as well as effective communication and dissemination of disaster-related information.*
38. The generation and dissemination of hydrometeorological data is centralized at Uzhydromet, making it difficult for other ministries to directly access the data without putting in official request. This further restricts the innovative use of data, for example in real-time applications by other government agencies. The effectiveness of a multi-hazard forecasting and early warning system thus relies on the capacity of Uzhydromet to translate hydrometeorological information into hazard-related information (e.g. hydrological drought, mudflow and flood occurrence etc.), and also on the capacity of MES to coordinate the dissemination and inter-agency responses of multi-hazard forecasting and early warning, using various communication channels at national and regional levels.
39. At present, MES requires its regional offices to seek approval from the central office before responding to any reported hazards, which slows down response times. Existing organizational structure of MES, due to its relatively small number of personnel, does not ensure the full-scale coverage and effectiveness of emergency response and prevention measures. Warnings and advisories are not tailored to user needs and, as forecasts do not always indicate the area at potential risk, the messages are not geographically-specific. Moreover, warnings do not contain specific information on the potential impacts, nor do they identify specific thresholds of danger/risk which can be used to warn communities or trigger forecast based actions.
40. The lack of site-specific forecasts and risk information also hinders MES to adopt a more pro-active approach on prevention/mitigation of damages and losses, as compared to the current reactive (ex-poste) process to disasters after they have occurred. Whilst there has been some work with communities in Karakalpakstan to utilise forecasts of hydrological drought and with communities to understand and respond to earthquakes, there has been limited interactions with communities on how to interpret and respond to warnings on climate-related hazards in the eastern regions.
41. The following key gaps need to be tackled through GCF investments and co-financing:
42. Within Uzbekistan Regional (provincial) Crisis Management Centres (RCMCs), there is a lack of IT and communication facilities and access to critical and up-to-date information of climate-induced hazards and response measures, as well as communication boards to be able to warn the public, which limits their capacities to assess, communicate and proactively respond to evolving situations (to be addressed by Activity 2.3);
43. Limited skilled and qualified staff to run/programme hazard forecast models, manage IT systems and utilize tools for dynamically assessing risks (combining up to date information on vulnerable populations, assets and infrastructure). This can be addressed using either cloud-based servers and infrastructure or local servers and IT infrastructure. Given the nationally sensitive nature of some of the data (e.g. asset and infrastructure exposure) the latter is preferred by GoU (to be addressed by Activity 2.2);
44. Regulations and inter-agency coordination are largely based on information gathered through disaster-management structures e.g. Malhallas (local social institutions, serving as the link between central government and communities), and the media, as well as reports through different ministries. With real-time monitoring and forecasting networks in place, these will need to be reviewed and upgraded to allow for an effective climate risk management and real-time early warning system: risk assessment methodologies (including thresholds for forecast based actions), technical guidance and regulations, national communication and warning protocols. This includes procedures to account for improvements in efficiencies of data transmission, hazard analysis, and SOPs to define forecast based ex-ante roles and actions, as well as capacity to handle increased communications from the public (crowd sourcing) (to be addressed by Activity 2.1 and 2.2);
45. Currently the revenue generation of specialized hydrometeorological services at Uzhydromet (refer to FS section 4.1.1) makes up only 6.5-8.3% of its annual budget, with civil aviation and transportation being the largest customers. Uzhydromet has developed clear income streams yet paid services are infrequent. With improved monitoring and information storage capability, Uzhydromet can grow revenue from selling specialized services to business and agriculture users. MES is open to promote public private partnership in the delivery of early warning services, however the lack of a value-chain approach to identify business needs and priorities might hinder scale-up efforts (to be addressed by Activity 3.2);
46. Dissemination of warnings, alerts and "last-mile" communication to targeted areas and populations: currently MES uses mobile technologies to distribute SMS alerts to the whole population, but not targeted to mobile phones in the location of the predicted/observed hazards. Public message boards are used successfully in remote mountain areas with limited mobile coverage. However, these boards are only found in a few locations and do not cover all high risk areas (to be addressed by Activity 3.3); and

47. Communities have limited capacities to effectively utilize and understand climate hazard related information and advisories, including their options in responding to a hazard. Thus, there is a critical need to strengthen the co-design and co-production of disaster-related information with key stakeholders and end-users, through engagement channels created by National Framework for Climate Services (NFCS) (to be addressed by Activity 3.1 and 3.3).

B.2. Project/Programme description (max. 1,000 words)

48. The **project objective** is to enhance the efficiency and coverage of multi-hazard early warning system for climate change induced hazards in Uzbekistan in view of the projected climate change impacts. The approach combines principles articulated in the Global Framework for Climate Services (GFCS) with a 'value-chain' approach to target specific weaknesses in the delivery of early warning services, given the specific modes of operation, current infrastructure, technical capacities and institutional arrangements in Uzbekistan. The project will introduce the impact-based MHEWS based on the socio-economic risk modelling and will explore and facilitate elements of forecast-based financing as an innovative paradigm-shifting approach to the use of climate data in decision-making. In particular, the project will:

- a. Improve methods and data/models used to monitor and forecast variables needed to derive climate characteristics;
- b. Develop the capacity of national agencies to model climate-related hazards (hydrological drought, landslides, mudflows and avalanches) and to utilize modern weather and seasonal forecasting techniques;
- c. Expand areas and geophysical/biophysical observations using satellite-based remote sensing (including the monitoring of precipitation, vegetation, snow cover and landslip/slides) to monitor and assess hazard risks over extensive regions of Uzbekistan, especially those regions where it is impractical to place observational equipment;
- d. Introduce a socio-economic risk and vulnerability modelling as an integral element of the impact-based multi-hazard EWS;
- e. Create a central repository/facility incorporating an advanced information management system for the management, forecasting and monitoring of hydrometeorological processes;
- f. Enhance the regulatory framework, coordination and institutional mechanisms for an effective impact-based MHEWS and promote better regional cooperation for managing transboundary risks through existing and new regional coordination platforms; and
- g. Strengthen the "last mile" delivery of disaster-related communication and interaction with end users, in particular those in the communities with highest risks in Uzbekistan.

49. In order to transform the current EWS in Uzbekistan from a reactive system to one based on preventive warnings ahead of an event, it is necessary to:

- i) improve the efficiency in collecting and generating/forecasting weather and climate information; and
- ii) develop methods and operational systems which translate weather/climate information/forecasts into actionable warnings and disseminate them to users who understand their content and how best to react.

50. Output 1 will address the first element by investing in automatic hydro-meteorological monitoring infrastructure required for the generation of hazard-specific forecasting and risk models. Output 2 and Output 3 focus on the second aspect, building the systems and modelling capacity to generate impact-based forecasts^{21,22}, creating dissemination channels to first responders and communities through updated communication technologies to enable real-time risk analysis and evaluation, as well as working with communities at risk to be able to interpret, understand and react to those warnings.

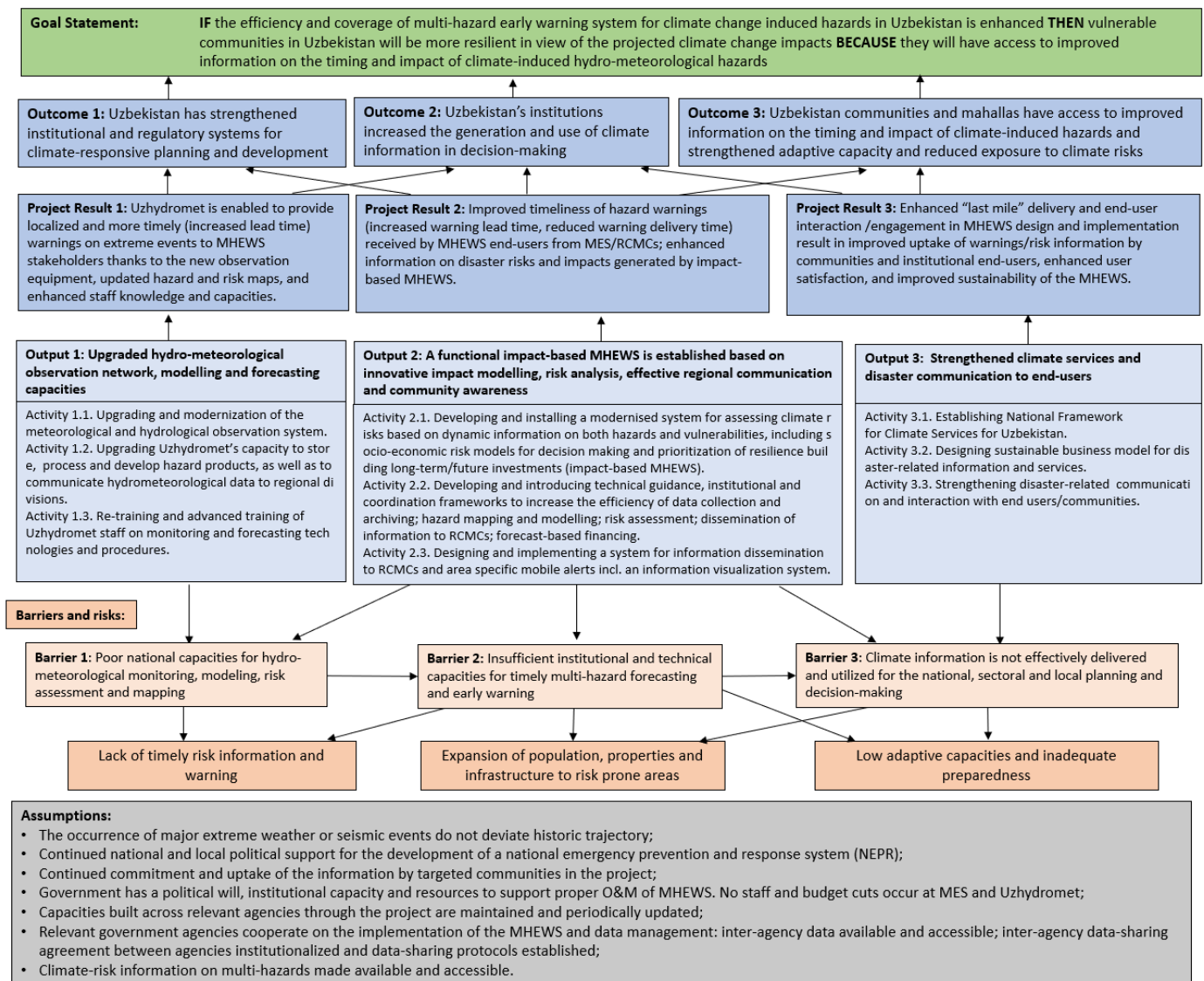
51. Building upon the feasibility analysis, this proposed project will address risks of avalanches, flooding, droughts, landslides, and mudflows. This project is designed to enhance the capability of detecting, monitoring, analysis and forecasting of these climate hazards in Uzbekistan, and develop impact-based risk knowledge products to enable warning dissemination and forecast-based actions in targeted areas. More specifically, the project has identified 15 districts located in seven provinces in eastern Uzbekistan as hazard-prone target regions. They are: Qoichirchik, Bostanlik, Sirdarya, Saihunabad, S. Rashidov, Gallaaral, Bulungur, Jambai, Koshrabad, Kitab, Yakkabag, Dehkanabad, Chust, Turakurgan, and Dangarin. The establishment of an effective MHEWS will allow the creation of geographically explicit risk maps with vulnerability assessment on population, assets and infrastructure in target regions. Business sectors such as aviation, transport, agriculture (water irrigation services), insurance will likely

²¹ <https://public.wmo.int/en/resources/bulletin/impact-based-forecasting-and-warning-weather-ready-nations>

²² https://www.wmo.int/pages/prog/www/DPFS/Meetings/ET-OWFPS_Montreal2016/documents/WMOGuidelinesonMulti-hazardImpact-basedForecastandWarningServices.pdf

benefit from improved hazard forecasting and alerting services to prevent potential disruption of services, delays and loss of agricultural productivity and incomes in target regions.

Theory of Change Diagram



Output 1: Upgraded hydro-meteorological observation network, modelling and forecasting capacities

52. The proposed intervention will create a more efficient monitoring network for weather, climate, hydrology and cryosphere, through both upgrading existing (automating) and installing new monitoring equipment (automatic weather stations (AWS), automatic hydrological stations, upper air sounding stations, and strategically placed low cost radars. This equipment and other existing data streams will be integrated into high availability/redundant single databases. Hazard-specific forecasting procedures will be developed and operationalized for climate-induced hazards. Training of Uzhydromet staff to undertake forecasting, operation and maintenance and data QA/QC/archiving procedures will also accompany these activities. Activities follow the GFCS and in this output are designed to address aspects related to: i) observations and monitoring; and ii) research, modelling and prediction. Uzhydromet will be the immediate beneficiary under all activities of Output 1, while their end beneficiaries include all the users of the upgraded hydro-meteorological observation network, modelling and forecasting capacities.

53. **Activity 1.1** Upgrading and modernization of the meteorological and hydrological Observation System. This will include upgrading/automation of 25 meteorological observation stations and equipment (software, workstations etc), modernizing the ground-based infrastructure (telemetry processing, hydrogen generators etc) for 2 upper-air stations (Uzhydromet/GoU will support the establishment of 2 more), installing 2 online X-band doppler radar systems to cover current gaps in mountainous areas, upgrading and technical equipment of 90 hydrological

stations, and establishing benchmarks and up to date equipment for instrument calibration (vacuum chambers, mobile laboratory etc). AWS and hydrological stations will be installed/upgraded at existing facilities and premises of key locations in the mountains above hazardous valleys and in the areas of high precipitation/landslides/mudflow risks, not already covered by investments through the CACILM and CAMP4ASB projects, as shown in Figure 46 (page 66) of the FS. Uzhydromet is strongly engaged with the WMO and maintains its standards and compatibility with existing systems. In particular it requires that goods and service comply with WMO 2003 Guidelines on Climate Observation Networks and Systems (TD No. 1185) and WMO Guide to Meteorological Instruments and Methods of Observation (the CIMO Guide No. 8, 2014 edition / 2017 update). These requirements will be taken into account during project implementation, and demonstrated compatibility with existing systems is part of any procurement (ITB/RFQ) tender documents under UNDP processes. All equipment will report data to central servers at Uzhydromet and will conform to WMO standards, including reporting to the Global Climate Observing System (GCOS), Global Basic Observing Network (GBON) and Global Telecommunication System (GTS). The project will also assist the government to identify long-term requirements and to enable budgeting and planning for the maintenance of all observing systems.

54. **Activity 1.2** Upgrading Uzhydromet's capacity to store, process and develop hazard products, as well as to communicate hydrometeorological data to regional divisions. This is a climate services information system (as described in GFCS) and involves the establishment of an operations centre, ICT servers and networking equipment to integrate data streams (hydrometeorological and satellite-based observations) and automate processes and analyses (including hazard forecasts). Software and processing routines will enable data and maps to be exported in common formats for sharing with partners and importing into the MES risk management system (see activity 2.1 below). A local cloud-based solution will be implemented to store and manage data that will benefit from offsite backups and easier access for the MES risk management system. Specifically this activity will: i) Integrate hydrometeorological data (from both automatic and manually operated stations) into a single database as a basis for developing products based on all available observed data. Automatically transmitted data from different providers/manufacturers will be integrated and undergo quality control/assurance within a single database in real time and will be available for interrogation via geo-visualization software. This activity will also: i) Expand the hydrological drought early warning system for Amu Darya (developed by the UNDP/AF project) to the Syr Darya and Zeravshon rivers. All historical streamflow and flood data for the two rivers will be collected and forecast models, with data ingestion and data processing routines, will be derived; ii) Develop automatic procedures for calculating avalanche risk in real time. Software and code will be developed to automatically update avalanche hazard maps based on snow accumulation from satellites (and AWS) and established procedures for estimating avalanche extent; iii) Develop code and procedures for automatically calculating mudflow risk maps based on precipitation observations and forecasts for 2-3 days lead time; iv) Develop a landslide risk model for Eastern Uzbekistan based on geophysical and geotechnical characteristics, including subsurface water and extreme rainfall. The skill of all developed forecast systems will be assessed using retroactive forecasts and used to assess their utility for forecast based actions in activity 2.1 and 2.2.

55. **Activity 1.3** Re-training and advanced training of Uzhydromet staff on monitoring and forecasting technologies and procedures (training of MES staff is covered in output 2 below). International experts will train weather forecasters to work with new products of the KOSMO model (with a resolution of 13 km and 2 km). Refresher courses and advanced training will be provided for new software and equipment, including the introduction of new methods for the analysis and prediction of hydrometeorologically important variables and climate hazards. The project will facilitate organization of on-the-job trainings, engagement with universities, courses and seminars with the involvement of foreign specialists. Training of IT specialists of Uzhydromet will be conducted for work with the computer center and operation of the KOSMO model, the UNIMAS, MITRA information reception and transmission system, workstation software (for weather forecasters, agrometeorologists, GIS-METEO, etc.) and EU Copernicus programme on satellite data, all of which will be used for impact-based forecasting where needed. Trainings on AWS installation, general user training and technical support will be provided. These increased capacities will also assist Uzhydromet in fulfilling its regional role as a WMO RMSC, in accordance with the GFCS capacity development, and help improve their capacity for regional cooperation.

Output 2: A functional impact-based Multi-Hazard Early Warning System is established based on innovative impact modelling, risk analyses, effective regional communication and community awareness

56. The proposed intervention will integrate and develop ICT systems to use the hydro-meteorological hazards predicted in output 1, and combine these with vulnerability data to identify risks and provide information for planning and mitigating their impacts. It will improve the efficiency of the current early warning system by automating the sharing and production of risk-related data, as well as the communication of warnings. The project will also develop

methodologies for and support hazard and risk mapping and risk zoning for key climate-induced hazards (floods, landslides, mudflows, droughts and avalanche). Specifically it will introduce an advanced, impact-based information management system for combining data on socio-economics (population, livelihoods, poverty indicators), infrastructure (roads, utilities, buildings, bridges etc) and the natural environment (landcover, vegetation, soils etc) in order to operationally assess the risks associated with each hazard forecast. This information will be transmitted and shared with RCMCs in key hazard-prone districts in Uzbekistan so that regional teams have the most up to date information available for planning their operations. Building on the existing mobile-based public dissemination platforms, the project will develop geographically specific risk based warnings tailored to the areas affected by each hazard (e.g. mudflows, avalanches, landslides and flooding). Based on the user interaction guideline of GFCS, inputs from consultations with key stakeholders and end-users (activities 3.1 and 3.3) will inform the design and dissemination of warnings and alerts to communities at risk. MES and its RCMCs will be the immediate beneficiaries under all activities of Output 2, while their end beneficiaries include all the users of the Multi-Hazard Early Warning System.

57. **Activity 2.1** Developing and installing a modernised and efficient system for assessing climate risks based on dynamic information on both hazards and vulnerabilities, including socio-economic risk models for decision making and prioritization of resilience building long-term/future investments. This would enable establishing an impact-based MHEWS, where hazard forecasting is linked to the risk and exposure information (socio-economic risk model). This involves installing both hardware and software to enable an advanced, impact-based information management system to be built, which will combine data on current vulnerabilities (e.g. indicators of poverty, education, health, housing etc), public and private assets (including infrastructure, roads, railways, housing, mines, airports, hospitals, schools etc), the environment (crops, lakes, rivers, tourism areas etc) and hazard impacts (input from Output 1) to operationally assess the risks associated with each hazard forecast. Based on evaluated risks and the skill of each impact-based forecast, a set of feasible ex-ante actions will be identified for different lead times. This activity will also develop software and standard operating procedures to automatically ingest hydrological and meteorological observations, weather and seasonal forecasts, and derived drought/avalanche/mudflow/landslide forecasts from Uzhydromet (through activity 1.2) into the system to be combined with available vulnerability data. Training to MES staff will be delivered on risk assessment, operations and maintenance of the systems. The system will also import long-term climate change scenarios to be used for forward planning and evaluation of future risks.

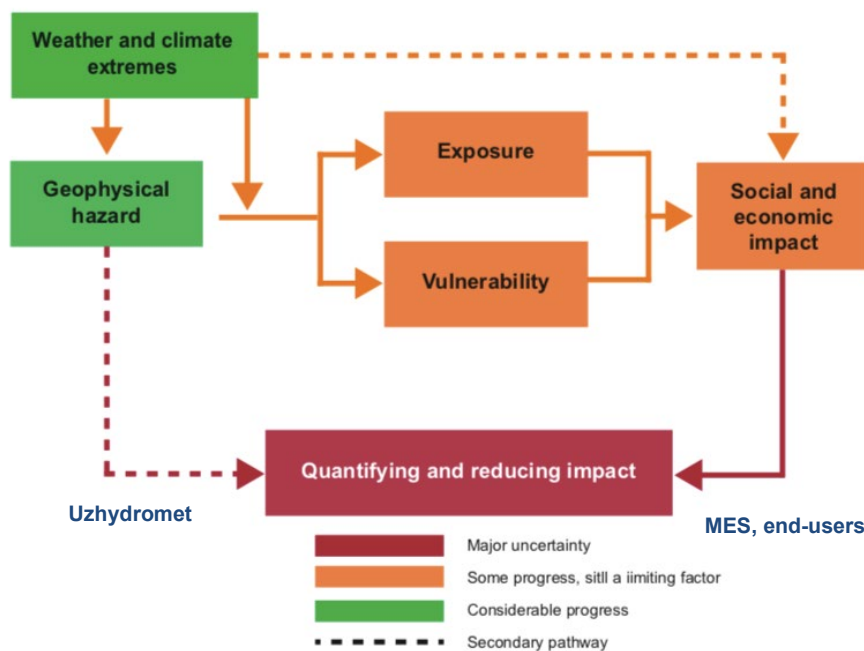


Figure 5: From WMO Guidelines on Multi-Hazard Impact-Based Forecast and Warning Services

58. **Activity 2.2** Developing and introducing technical guidance, institutional and coordination frameworks to increase the efficiency of: i) data collection and archiving (activities 1.1 and 1.2); ii) hazard mapping and modelling (activity 1.2); iii) risk assessment (activity 2.1); iv) impact-based warning and forecast-based actions (activity 3.2); and v) dissemination of information to RCMCs (activity 2.3). These protocols are also required to ensure that new climate

information sources (e.g. AWS, AWLS, radar and satellite observations – activity 1.1) are translated into products that are useful for decision making and investment by MES and Uzhydromet (based on feedback obtained through activities 3.1 and 3.3). Thus, under this activity the project will explore and facilitate promotion of forecast-based-financing (FBF) by developing draft SOPs and prototype FBF protocols/decision-making systems. This activity will include development of SOPs (both for ingesting and sharing data, as well as for forecast based actions to be undertaken when specific risk-related triggers/thresholds are reached), a national to regional EWS protocol, and communication protocols to accompany introduction of the new technologies. Guidance and procedures will be developed to support the application of socio-economic risk models and enhanced risk zoning in development planning and decision-making (activity 2.1). Corresponding training to MES staff will be delivered.

59. **Activity 2.3** Designing and implementing a system for information dissemination to RCMCs and area specific mobile alerts including an information visualization system for RCMCs with software. This involves setting up information visualisation and analysis systems (video walls, telecommunication systems, servers and ICT storage) at 7 RCMS, to enable them to visualise the maps and impact forecast information provided through the risk analysis and warning system (activity 2.1) and combine it with local (regionally available) information on current vulnerabilities and field-based information. This will enable them to better target advice and direct regional response teams. This activity will further develop (improving the existing MES dissemination system) area-specific mobile and SMS based warnings for mudflows, avalanches, landslides and flooding. This will reduce the chance of false alarms sent to those not at risk, as well as improve the content based on information from the improved MES risk and impact-based forecast system (activity 2.1 and 2.2). Inputs from consultations with key stakeholders and end-users (activities 3.1 and 3.3) will be used to design the dissemination system, following the co-design and co-production user interaction guideline of GFCS.

Output 3: Strengthened climate services and disaster communication to end users

60. The proposed intervention will strengthen the effectiveness of delivering climate information services and disaster warnings to users in Uzbekistan at two levels. On the overall national level, the project will initiate the establishment of the National Framework of Climate Services as a mechanism to systematically bring together producers and users of hydrometeorological and climate information and to ensure that information and services reach their end recipients both in the various sectors of the government and the society and at the different geographic levels down to local communities. Disaster-related information and services being the specific focus of the project, it will work with the various public and private stakeholders to reorient the existing financial / economic model behind the provision of such services to make it more cost-efficient and sustainable in the long-term, i.e. using private investment and partnership opportunities on the domestic and the international markets. Finally, on the warning dissemination and communication aspect, updated communication technologies will be utilised to support real-time risk evaluation by Regional disaster management agencies (RCMCs) and first responders and ensure 'last-mile' delivery of early warning risk information to the communities at risk and population at large. In collaboration with Red Crescent Society and other community-level NGOs, RCMC will organize trainings and annual community forums to help communities at risk better interpret, understand and react to those warnings, as well as facilitate forecast-based actions and responses. Uzhydromet (and, in the long run, other parts of the Government of Uzbekistan, as well as other providers and users of climate services) will be the beneficiaries under Activity 3.1, as the NFCS provides a platform where the various service providers and end-users are engaged in the co-designing, testing and co-production to improve the content and delivery of products and services. Uzhydromet and MES (and Uzbekistan's Government in the long run) will be the beneficiaries of Activity 3.2, as the development and promotion of a sustainable business model for disaster-related information and services in Uzbekistan will provide additional operational funding to the two institutions which currently to a large extent rely on government budgets. MES and its RCMCs as well as the communities in the 15 targeted districts as well as Uzbekistan's population at large will be the beneficiaries under Activity 3.3.
61. **Activity 3.1** Establishing National Framework for Climate Services for Uzbekistan
The Global Framework for Climate Services (GFCS), promoted and facilitated by the World Meteorological Organization in cooperation with GFCS partner organisations, is a framework that envisions better risk management and more efficient adaptation to climate variability and change through improvements in the quality, delivery and use of climate-related information in planning, policy and practice. GFCS, i.e. endorsed by the GCF Climate Services Strategy, focuses on developing and delivering information services in agriculture and food security, disaster risk reduction, energy, health and water, and organises its work around observations and monitoring; climate services information systems; research, modelling and pre- diction; user interface platforms; and capacity development. A strong focus of GFCS is on a multi-stakeholder approach to the definition and the actual delivery of services, thus bringing users and co-producers of climate and hydrometeorological information together and to

the centre of the design and production process as opposed to more traditional supply-driven approaches. The establishment of the NFCS would typically involve:

- i) an assessment of gaps, needs and user perspectives (i.a. through interviews) with respect to the current and desirable climate services;
- ii) based on this assessment, the drafting of NFCS Uzbekistan concept and action plan;
- iii) extensive consultations regarding the concept with the various sectors, users and co-producers of climate services; and
- iv) reaching a broad agreement and Governmental endorsement for NFCS implementation.

62. Following an accepted WMO blueprint for the conceptualising and establishment of a NFCS, the project will undertake a baseline assessment of climate services in Uzbekistan, followed by multi-stakeholder consultations and the participatory development of the country's NFCS concept and Action Plan to be endorsed both by stakeholders and at the high executive level, ready for implementation once supplementary NFCS-earmarked funds become available as a follow-up to the project.

As part of this activity, a platform will be set up to engage end users in the design and testing of new disaster-related climate information services and products. Similarly, a National Climate Outlook Forum will be established and supported as one mechanism to help shape and deliver climate services with longer time horizon, i.a. with a particular focus on disasters such as hydrological droughts. A connection will then established between the Forum and WMO's Regional Climate Fora operating in Europe (NEACOF) as well as Asia (FOCRAll). Both the NFCS user dialogue platform and the National Climate Outlook Forum will (as well as the NFCS process at large) will be managed by Uzhydromet.

63. **Activity 3.2** Designing sustainable business model for disaster-related information and services

While it may not be realistic to expect any significant level of private financing during project implementation given the existing public service management model and the time required for transition, there is long-term potential for private sector investment in climate information services and for expanded service provision to private sector based on enhanced hydrometeorological and climate information in Uzbekistan, including those related to natural disasters and early warning. Linked to the NFCS process above, the project will conduct a comprehensive analysis and discussion of long-term sustainable financing options for disaster-related services in Uzbekistan beyond current state-funding model, in particular drawing on blended finance through dedicated national funds and public-private partnership opportunities. This will include seeking financing, from both public and private sources, for forecast based (ex-ante) actions identified in activities 2.1 and 2.2. Based on the analysis and consultations, a sustainable value chain-based business model for disaster-related information will be developed and agreed with the key stakeholders, and the necessary legal and organisation changes will be outlined and planned on the national (adjustment of legislation) and the inter-institutional levels (Uzhydromet, Ministry of Emergency Situations, users of the services, private investors).

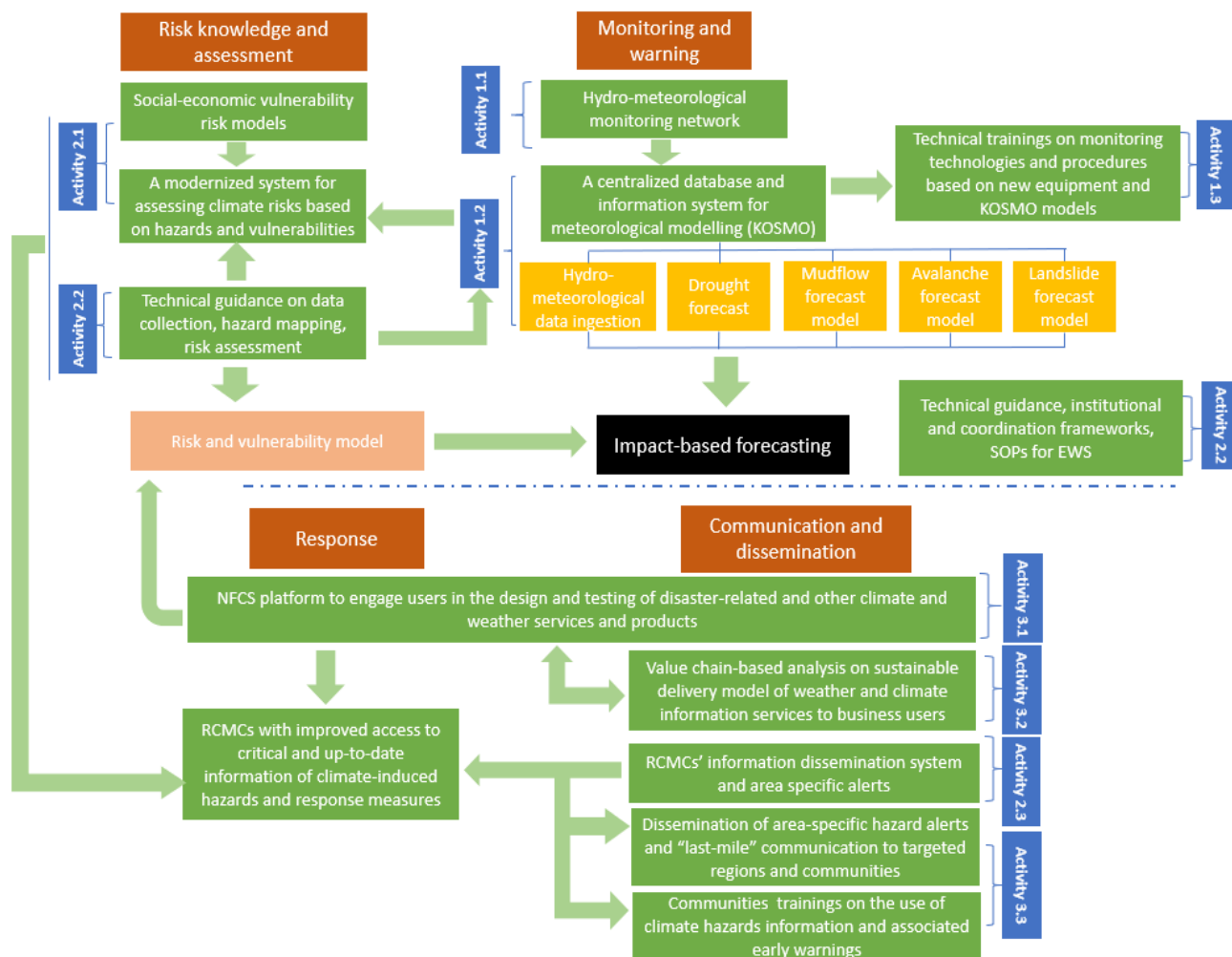
64. **Activity 3.3** Strengthening disaster warning dissemination and communication with end users

The project will significantly strengthen interaction with the end users with the aim to communicate and facilitate proactive responses to disaster information and warnings in Uzbekistan. Within the 15 RCMCs, outdoor communication boards²³ will be set up in identified communities at highest risk to alert and inform the population in real time about threats or emergencies, following which, through cooperation between MES RCMCs and the Red Crescent Society, communities will be trained to interpret and use information on climate hazards and early warnings. Printed visual information (leaflets) will be provided to RCMCs and Uzbekistan's communities on climate hazards and associated early warnings. With expected increase of user interaction level, regional staff of MES RCMCs will be further trained in the effective use of this information to support community interactions (crowd sourcing and survey data) and formulate forecast-based actions following the guidelines developed in Activity 2.2. Similarly, easy-to-understand and visual information will be channelled to mass media through existing agreements between them and MES / Uzhydromet, as well as to national NGOs. Finally, this activity will also complement the prior Activity 2.3 in the development of region-specific (as opposed to the currently used national-wide) broadcasting of early warnings, with the use of other modern communication channels such as social media and electronic

²³ These are physical boards used to relay warnings and messages, to be installed/set up by MES in targeted districts (including in hazard-prone areas with limited mobile receptions or not immediately reachable by a Regional Crisis Management Center). Boards will be installed in popular public places used by communities or on regular commuter transport routes.

messenger subscription groups. In addition, the project will establish a platform for organizing annual community forums on community-based EWS engaging target communities and representatives of vulnerable groups to exchange information, lessons learned, successes and opportunities. Through such platforms regular competitions will be organized engaging both youth and the most active community representative to advocate for structural and non-structure measures and ensure their inclusiveness.

CONCEPTUAL DIAGRAM OF THE IMPACT-BASED MHEWS



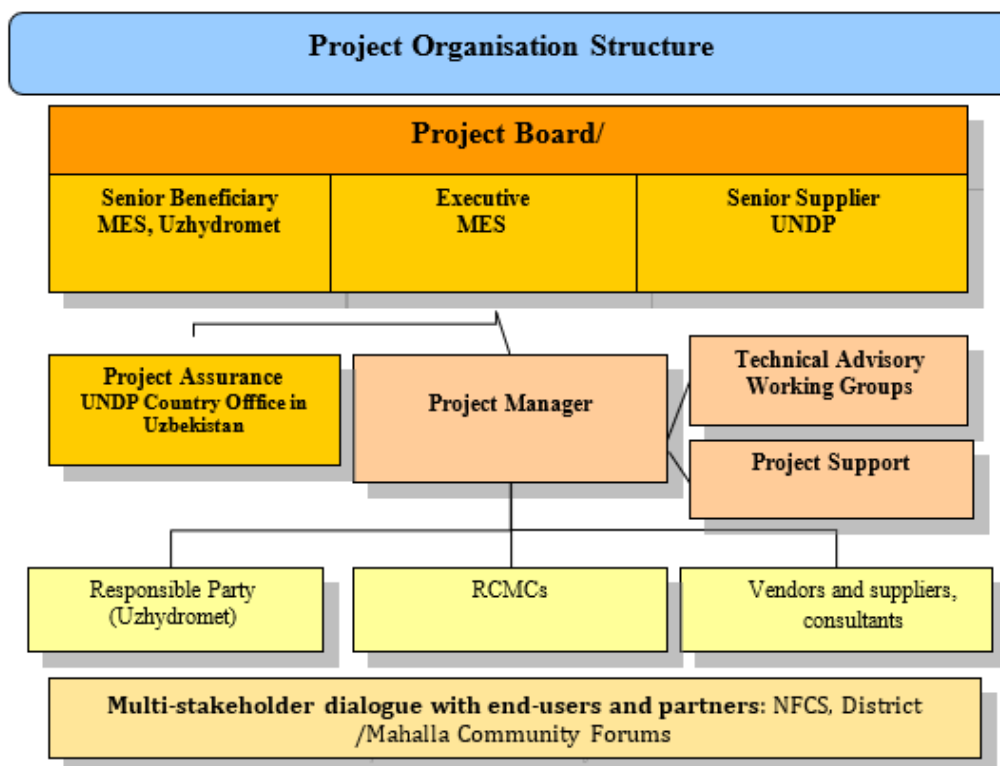
B.3. Implementation / institutional arrangements (max. 750 words)

65. The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Uzbekistan (10 June 1993) and the policies and procedures outlined in the UNDP Programme and Operations Policies and Procedures (POPP) (see <https://info.undp.org/global/popp/ppm/Pages/Defining-a-Project.aspx>)
66. The Executing Entity for this project is the Government of Uzbekistan acting through the Ministry of Emergency Situations of the Republic of Uzbekistan (MES). **MES** is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. As stated in Financial Regulation 27.02 of the UNDP Financial Regulations and Rules, an Executing Entity (or „Implementing Partner“ in UNDP terminology) is "the entity to which the Administrator has entrusted the implementation of UNDP assistance specified in a signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in such document." By signing a project document an Executing Entity enters into an agreement with UNDP to manage the project and achieve the results defined in the relevant documents. The accountability of an implementing partner is to:

- Report, fairly and accurately, on project progress against agreed work plans in accordance with the reporting schedule and formats included in the project agreement;
 - Maintain documentation and evidence that describes the proper and prudent use of project resources in conformity to the project agreement and in accordance with applicable regulations and procedures. This documentation will be available on request to project monitors (project assurance role) and designated auditors.
67. UNDP, in agreement with the GoU, will provide implementation support (support to NIM) as agreed in the Letter of Agreement on Support Services signed between MES on behalf of the GoU and the UNDP. Such project support services include procurement support and payments to vendors. The selection, engagement and payment with respect to each vendor shall be carried out by UNDP in accordance with the annual work plans, procurement plans and budgets established and approved by the Executing Entity. See the *Funding Flow Diagram* and the *Project Implementation Diagram* below. UNDP will also provide oversight through the Country Office in Uzbekistan, and BPPS/UNDP Nature, Climate and Energy Unit in Istanbul and HQ.
68. UNDP provides a three – tier oversight and quality assurance role involving UNDP staff in Country Offices and at regional and headquarters levels. This includes management of funds, programme quality assurance, fiduciary risk management, timely delivery of financial and programme reports to GCF and other requirements as per the AMA. The quality assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project Assurance must be independent of the Project Management function; the Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. The project assurance role is covered by the accredited entity fee provided by the GCF. As an Accredited Entity to the GCF, UNDP is required to deliver GCF-specific oversight and quality assurance services including: (i) Day-to-day oversight supervision, (ii) Oversight of project completion, (iii) Oversight of project reporting. UNDP's responsibilities are outlined in the AMA that has been entered into between GCF and UNDP and will also be outlined in the FAA for this project. The FAA and AMA will govern UNDP's responsibilities for GCF. The 'senior supplier' role of UNDP is to represent the interests of the parties, which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing) and is covered by the accredited entity fee provided by the GCF. The senior supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. Furthermore, as the Senior Supplier, UNDP provides quality assurance for the project, ensures adherence to the NIM Guidelines and ensures compliance with GCF and UNDP policies and procedures.
69. In addition, the Government of Uzbekistan may request UNDP to provide direct project services for this project. The UNDP and Government of Uzbekistan acknowledge and agree that those services are not mandatory, and will be provided only upon Government request and specified in the Letter of Agreement on support services. If requested, the direct project services would follow UNDP policies on the recovery of direct project costs relating to GCF funded projects. These services (in the amount of US \$0.140 mln under PMC covered by GCF funds) will be specified in the Letter of Agreement. Eligible Direct Project Costs should be charged to the direct project costs account codes: "64397- Direct Project Costs – Staff" and "74596-Direct Project Costs – General Operating Expenses (GOE)".
70. MES will enter into or put in place legal agreements and/or arrangements with Uzhydromet which will serve as a Responsible Party (in UNDP terminology) for the implementation of certain activities under Output 1. Uzhydromet will assist in successfully delivering project outcomes and will be accountable to MES for the execution of activities within their co-financing under Output 1. Relationships/responsibilities between MES and Uzhydromet related to the implementation of the EWS are fully covered in the national legislation governing the State Emergency Prevention and Response System, where MES has the overall management and coordination role and Uzhydromet has the mandate to provide climate information inputs. The project implementation framework is aligned with this national regulation. Specifically for the GCF project implementation, MES (EE) and Uzhydromet (RP) would have an arrangement in writing.
71. The Project Board (PB), chaired by MES, will be composed of representatives of UNDP, MES, Uzhydromet, Ministry of Economy, Ministry of finance, Ministry of Agriculture and Water resources, State Committee for Ecology and Environment Protection, State Service of the Republic of Uzbekistan on Monitoring of Hazard Geologic Processes. The Project Board is responsible for taking, by consensus, management decisions in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Resident representative in Uzbekistan. The Project Board will meet at least once a year, ad-hock meetings could be arranged at the request of the PB members.

72. The National Project Director (NPD) will be appointed by the Executing Entity to execute the project on a day-to-day basis on behalf of MES and will be accountable to PB. The NPD's prime responsibility is to ensure that the project produces results specified in the project document, meet required standard of quality, timeliness and cost criteria. In addition, the NPD will be a liaison between UNDP and the executing/implementing agency as well as will other key Ministries engaged in various components and activities as responsible parties/strategic partners.

The management arrangements for this project are summarized in the chart below.

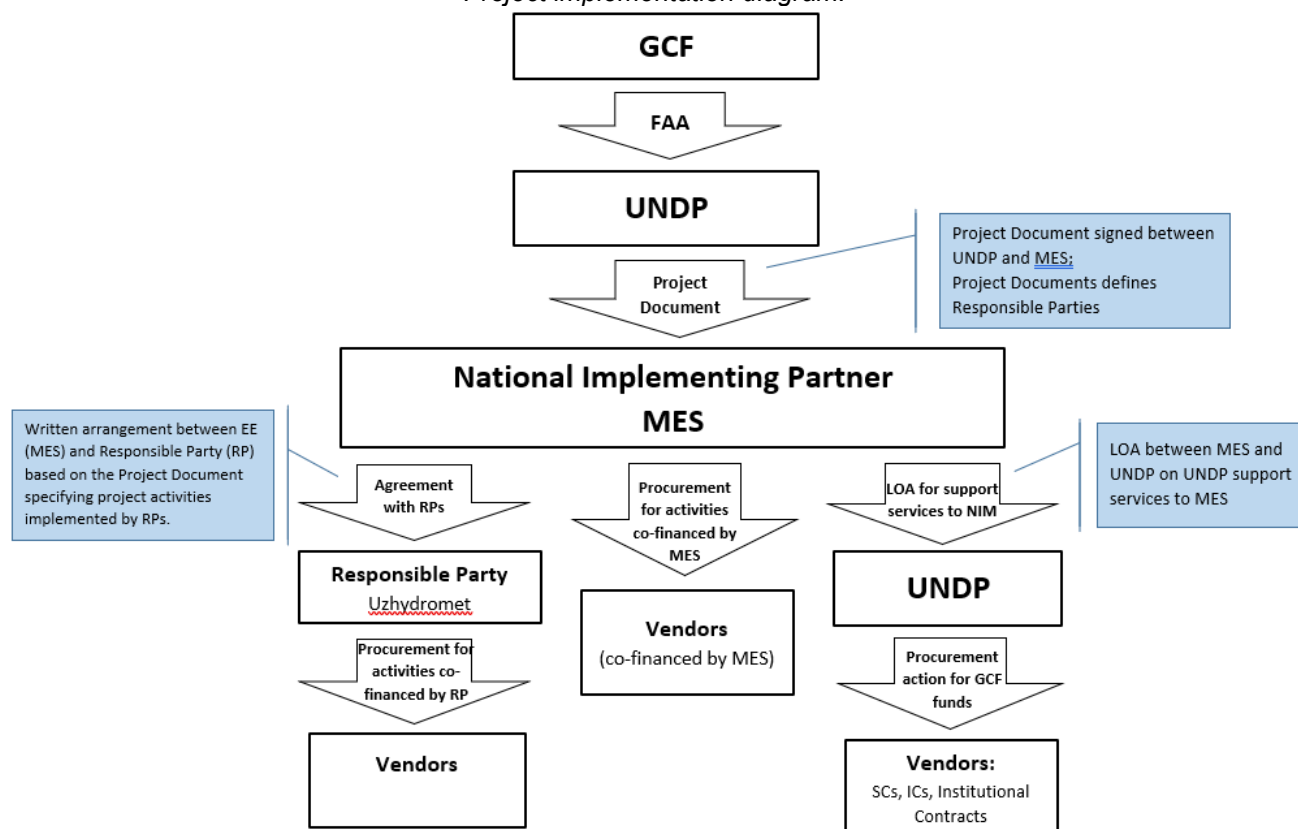


73. The International Chief Technical Advisor (CTA) will provide regular technical guidance to the project management and technical teams in managerial and technical issues. He/she will be hired for a long-term during the entire project implementation period by UNDP based on UNDP recruitment procedures.
74. The Project Manager (PM), recruited by UNDP Country Office in Uzbekistan, will run the project on a day-to-day basis on behalf of MES within the constraints laid down by the Project Board. The Project Manager function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP, has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.
75. Technical Advisory Working Groups (TAWG) will support the CTA and PM and will provide inputs to and endorsement of the design and quality of the project outputs. TAWGs members will be drawn from government, private sector, academia and civil society to provide guidance and technical advice on the project. A balanced representation of women and men in the TAWGs will be ensured. Local stakeholders and community members have a key role in the implementation and monitoring of the project. Local community consultations have been conducted during the project preparation phase (see Stakeholder Assessment and Engagement Plan). During the inception phase of the project, the project will additionally consult with all stakeholders, including vulnerable community members and local government, etc. and facilitate an understanding of the roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. Local community consultation forums will be established at community levels to maintain dialogue with the local beneficiaries and stakeholders throughout the project implementation. The

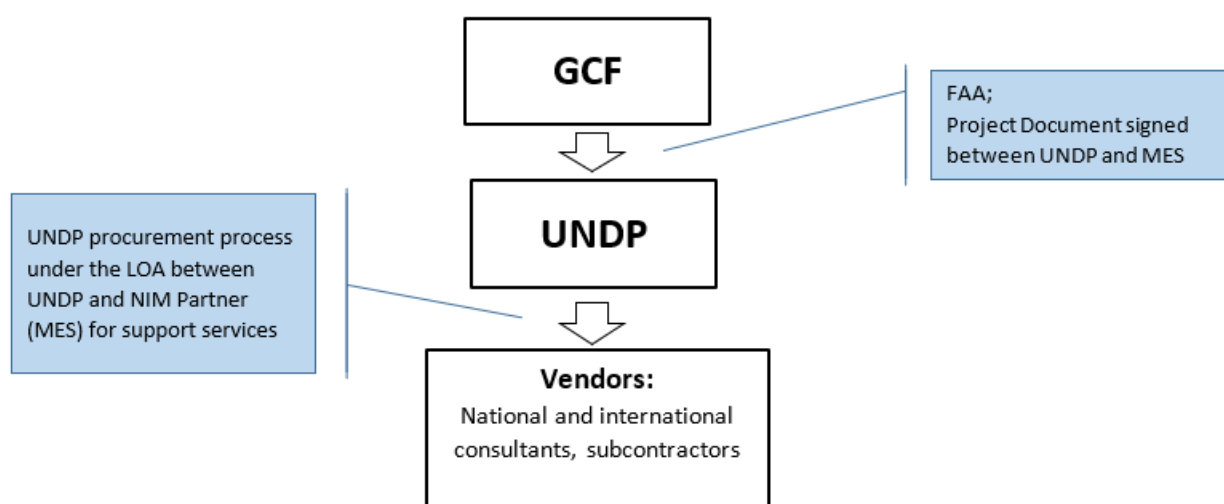
stakeholders will also be engaged during the mid-term and final evaluations to assess the progress of the project and enable adaptive project management in response to the needs and priorities of the communities.

76. A Gender Advisor will be engaged by the project and will be a member of all TAWGs to ensure that gender is adequately mainstreamed in all technical discussions and in the project implementation and that gender outputs are monitored and reported.

Project implementation diagram:



GCF Funding flow diagram:



C. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi)	9.999455	million USD (\$)
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GCF Financial Instrument		Amount	Currency	Tenor	Pricing	
(i)	Senior loans	Enter amount	Options	Enter years	Enter %	
(ii)	Subordinated loans	Enter amount	Options	Enter years	Enter %	
(iii)	Equity	Enter amount	Options	Enter years	Enter % equity return	
(iv)	Guarantees	Enter amount	Options		Enter %	
(v)	Reimbursable grants	Enter amount	Options			
(vi)	Grants	9.999455	million USD (\$)			
(b) Co-financing information ²⁴		Total amount		Currency		
		30.639880		million USD (\$)		
Name of institution	Financial instrument	Amount	Currency	Tenor	Pricing	Seniority
Uzhydromet	Grant	1.215789	million USD (\$)	Enter years	Enter%	Options
Uzhydromet	In-kind	2.979716	Million USD (\$)			
MES	Grant	25.126875	Million USD (\$)			
MES	In kind	1.317500	million USD (\$)	Enter years	Enter%	Options
	Options	Enter amount	Options	Enter years	Enter%	Options
Click here to enter text.	Options	Enter amount	Options	Enter years	Enter%	Options
(c) Total investment (c) = (a)+(b)		Amount		Currency		
		40.639335		million USD (\$)		
(d) Co-financing ratio (d) = (b)/(a)		3.06				
(e) Other financing arrangements for the project/programme (max ½ page)		Co-financing is provided from the Government of Uzbekistan (GoU) as part of the budgetary allocations to MES and Uzhydromet, specifically to finance the Operation and Maintainance (O&M) cost for the new equipment and software purchased under Output 1 and 2 by GCF funding. Additionally, Uzhydromet and MES have agreed to provide the capital (in-kind) to house and support the equipment purchased by this project (e.g. AWS, radars and upper air station installations), as well as the support infrastructure needed for the expansion of RCMCs. The infrastructure will be located at existing facilities and/or on existing structures thereby reducing costs and importantly, mitigating environmental and social impacts. The co-financing amount is calculated for the project implementation period of 6 years. However, Uzhydromet and MES have committed to support O&M operational cost and personnel for all equipment invested in this project for up to 20 years. The additional O&M and personnel cost for year 7-20 is estimated by Uzhydromet to be USD 7,408,184 and USD 5,981,500 from MES, making the total public co-financing leveraged by this project to be USD 44,029,565. Co-financing by MES and Uzhydromet is provided in local currency Uzbekistani Som (UZS). All costs and expenses are defined in current prices as of 01/01/2021. (USD exchange rate is 10,500 UZS for 1 USD). The Accredited Entity's fee of 8.5% of the total GCF budget is not included in the total GCF funding (a) and will be payable by GCF to UNDP according to the FAA to cover UNDP's services as the Accredited Entity, including its role of Project assurance and Senior Supplier.				
C.2. Financing by component						

²⁴ If the co-financing is provided in different currency other than the GCF requested, please provide detailed financing information and a converted figure in the GCF requested currency in the comment box. Please refer to the date when the currency conversion was performed and the reference source.

Component	Output	Indicative cost (USD)	GCF financing		Co-financing			
			Amount (USD)	Financial Instrument	Type	Amount (USD)	Financial Instrument	Name of Institutions
Output 1	Upgraded hydro-meteorological observation network, modelling and forecasting capacities	8,495,125	4,509,395	Grants	Public Source	3,985,730	Grants	Uzhydromet
Output 2	Establish a functional Multi-Hazard Early Warning System based on innovative impact modelling, risk analyses, effective regional communication and community awareness	24,428,056	3,098,400	Grants	Public Source	21,329,656	Grants	MES
Output 3	Strengthened climate services and disaster communication to end users	5,708,380	1,915,880	Grants	Public Source	3,792,500	Grants	MES
Project Management	Click here to enter text.	2,007,774	475,780	Grants	Public Source	1,531,994	Grants	MES, Uzhydromet
Indicative total cost (USD)		40,639,335	9,999,455		30,639,880			

C.2.1 Financing structure (if applicable, mandatory for private sector proposal (max.300 words))

N/A

C.3 Capacity Building and Technology development/transfer

If the project/programme is envisaged to support capacity building and technology development/transfer, please specify the total requested GCF amount for these activities respectively in this section.

C.3.1 Capacity building	Amount: 323,000 USD
C.3.2. Technology development	Amount: 7,018,400 (combined investment under activity 1.1, 1.2, 2.1 and 2.3) USD

C.4. Justification for GCF funding request (max. 500 words)

If applicable, inform if other donors at national and/or international level (including private sector) have been previously consulted to support this project/programme.

77. GCF financing of this proposal is requested to provide the critical public good of climate information and disaster-related forecasting and warning services, including their dissemination and use, which will ultimately reduce the climate risks and directly enhance the resilience of up to 34% of the vulnerable rural population of Uzbekistan. The multi-hazard early warning system that will be developed and rolled-out under this project will enable the communities at disaster-prone areas to safeguard their lives, livelihoods and assets from climate-related hazards and risks. This is fully in line with GCF's mandate and strategic guideline on EWS, as well as other international framework and agreements:

- The **Paris Agreement Sub-paragraph 7(c)** calls for "Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making".
- The NDC submitted to the UNFCCC under the Paris Agreement **shows a high demand for EWS**

78. Furthermore, this project proposal, if approved, will serve as a timely response to the recently launched Global Alliance for Hydromet Development²⁵ at the COP 25 of UNFCCC in Madrid, where twelve international organizations including GEF, GCF, AF, ADB, EBRD, UNDP, UNEP collectively committed to scale up action that strengthens the capacity of developing countries to deliver high-quality weather forecast, early warning systems, water, hydrological and climate services and support the most vulnerable communities.
79. The GoU has been prioritizing disaster prevention work over the past decade through the gradual enhancement of the hydro-meteorological monitoring capacities and resettlement of populations in high risk areas. Consequently the overall losses of life from natural disasters has been falling. However, this work has been constrained due to the lack of capacities and access to modern risk assessment, monitoring and forecasting technologies. Continuous population growth and expansion of infrastructure increases risks due to climate-driven extreme events (which climate change is increasing). This requires a more efficient and timely approach to: i) the generation of warnings (most hazards are fast onset events which require real time monitoring and forecasting in order to act ex-ante); ii) climate risk management (monitoring and forecasting new areas which are either not currently observed through ground-based technologies or the impacts are not modelled); iii) risk knowledge (which needs to quickly identify people, assets and infrastructure at risk in light of immediate information on impacts/hazards); iv) application of modern information and communication technologies; v) co-development and understanding of warnings and information with communities.
80. The GoU requests the GCF funds in the form of grant, given the public good nature of the proposed climate risk reduction investments targeting enhanced resilience of 32 million people, including the most vulnerable and poor rural communities living in remote desert and mountainous areas. The project will develop climate risk information products which will benefit populations at risk, in line with the statutory obligations of the GoU to provide the necessary information to enable them to safeguard their lives, livelihoods and assets from climate induced extreme hydrometeorological risks. This is a public good and therefore does not lend itself to cost-recovery. MES does not have any income generating activities and all costs are covered by the GoU. Uzhydromet, whilst not having the funds to expand and upgrade its existing system, has however demonstrated its ability to use the funds it has to operate and maintain the existing network in its current state for many years since the breakup of the Soviet Union.
81. Under the Decree No. 601 by the cabinet ministers on Aug 8, 2017, the Government of Uzbekistan (GoU) outlines the structure of the national early warning system for natural hazards, including an automated system for disseminating alerts and warnings. The GCF grant is required to fill the critical technical and financial gaps in upgrading the existing multi-hazard information and MHEWS system in Uzbekistan so it can effectively deal with the additional pressure brought about through increases in climate variability and change. This requires investments in both new technologies, training of technical staff, demonstration of modern approaches to hazard modelling and prediction, as well as development of awareness and educational materials and communications with communities. Together these activities will demonstrate the potential benefits of the upgraded system.

C.5. Exit strategy and sustainability (max. 300 words)

82. By end of the GCF project, Uzhydromet and MES, will be technically, and technologically equipped and trained to maintain the modelling, forecasting and effective dissemination of impact-based climate-induced hazards and early warning services countrywide. In addition, the improved capacity of RCMCs and local communities to use and interpret climate risk information into practical early responses will enhance the community resilience as a whole with sustained impacts. The project puts a strong focus on community engagement, training and “last-mile” communication solutions, which will contribute to improved user interaction and ownership by local communities and key stakeholders and further promote the sustainability of this project into the long-term.
83. Operational wise, the establishment of a series of guidance and protocols - including a national to regional EWS protocol, and communication protocols will increase the institutional coordination capability among MES, Uzhydromet and other relevant government agencies, and support an integrated approach to long-term climate, socio-economic risk planning and decision-making.
84. Financial sustainability of this project is supported by the strong commitment of GoU. Since 2011, multiple cabinet resolutions and decrees have been issued to support the modernization of a more efficient and wide-ranging multi-hazard EWS. In particular, decree No. 601 by the cabinet ministers on Aug 8, 2017 states the responsibilities of MES to operate and maintain IT equipment and communications, and set out how funds/revenue should be

²⁵ <https://public.wmo.int/en/media/press-release/alliance-hydromet-development-launched>

dedicated in order to undertake this responsibility. As noted above in C.1 section, co-financing to this project will be provided by MES and Uzhhydromet as part of the budgetary allocations, specifically to finance the Operation and Maintenance (O&M) and personnel costs for the new equipment and software over a period of 20 years. The total public co-financing by GoU (including 20-year O&M, personnel cost, infrastructure and capital investment) leveraged by this project is estimated to be USD 44,029,565.

85. Uzhhydromet and MES have agreed to provide the capital (in-kind) to house and support the equipment purchased by this project, as well as the support infrastructure needed for the expansion of RCMCs:

- Internet connections and communications for field equipment (both satellite and GSM/GPRS based) and centres hosting databases, modelling capacity and risk mapping/remote sensing facilities;
- Infrastructure at the national Crisis Management Center (CMC) and regional Crisis Management Centres (RCMC) to house and support new risk analysis and communication systems.

86. Lastly, the project will seek to develop a sustainable business model to explore ways, including through Public-Private Partnerships (PPP) to attract private sector engagement in the delivery and use of climate and disaster-related information products and services. Notably, several public institutions including Uzbekistan Railway have expressed interest in the climate hazard warnings and advisories.

C.6. Financial management/procurement (max. 300 words)

87. The financial management and procurement of this project will follow UNDP financial rules and regulations available here: https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations_E.pdf

88. All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies.

89. Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures available at <https://info.undp.org/global/popp/frm/Pages/introduction.aspx>.

90. UNDP has comprehensive procurement policies in place as outlined in the 'Contracts and Procurement' section of UNDP's Programme and Operations Policies and Procedures (POPP). The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP. See here: <https://info.undp.org/global/popp/cap/Pages/Introduction.aspx>. Procurement of services and goods will be done in a cost effective and reliable way and by applying following principles: **Best Value for Money**, which consists of the selection of the offer that best meets the end-users' needs and that presents the best return on investment; **Fairness, Integrity and Transparency**, which ensures that competitive processes are fair, open, and rules-based. All potential vendors will be treated equally, and the process will feature clear evaluation criteria, unambiguous solicitation instructions, realistic requirements, and rules and procedures that are easy to understand; **Effective International Competition**, understood as giving all potential vendors timely and adequate information on UNDP requirements, as well as equal opportunity to participate in procurement actions; and **In the best interest of UNDP**, which means that any business transactions must conform to the mandates and principles of UNDP and the United Nations. As outlined in the Procurement Plan, procurement of goods and services will be mainly carried out by UNDP and the UNDP procurement procedures will be applied (POPP). Additional details on the UNDP procurement thresholds and methods are provided in the Annex 8 Procurement Plan.

91. The project will be implemented following the National Implementation Modality (NIM) following NIM guidelines available here: <https://info.undp.org/global/documents/layouts/WopiFrame.aspx?sourcedoc=/global/documents/frm/National%20Implementation%20by%20the%20Government%20of%20UNDP%20Projects.docx&action=default&DefaultItemOpen=1>

92. UNDP will ascertain the national capacities of the implementing partner by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners (part of the Harmonized Approach to Cash Transfers - [HACT](#)).

D. LOGIC FRAMEWORK AND MONITORING, REPORTING AND EVALUATION

This section refers to the project/programme's logic framework in accordance with the GCF's [Performance Measurement Framework](#) under the [Results Management Framework](#) to which the project/programme contributes as a whole, including in respect of any co-financing. This is different from the project/programme-level log frame(as there may be other impact measures for example that go beyond those defined by the GCF).

A project-level logical framework, with specific indicators, baselines and targets, means of verification and assumptions should be provided as part of Annex 2.

D.1. Paradigm shift objectives (max.200 words)

<i>Increased climate-resilient sustainable development</i>	The project will facilitate a significant shift in the provision of climate and disaster information and forecasting services through an enhanced multi-hazard early warning system in Uzbekistan. The GCF project will promote the transformation of climate hazard forecasting and warning from a reactive (ex-post) hazard-based system to one that is proactive (ex-ante), user-oriented and impact-based. Moreover, this project will be the driver of significant institutional change within Uzbekistan's hydrometeorology and disaster response services, as well as a potential catalyst for increased investment in the sector. Uzhydromet currently serves as a Regional Specialized Meteorological Centre (RSMC) within the WMO Network for Central Asian region. This project will strengthen Uzhydromet's capacity to potentially scale up the enhanced climate information management system to other Central Asian countries through experience sharing and peer learning. By the end of the project the number of its direct beneficiaries will come to 11.296 million people (34.9% of the total population), including 5.63 million men and 5.666 million women. Direct beneficiary of this project is the population currently living in high risk areas of Uzbekistan (people exposed to one or more climate hazards), estimated to be 34.9% of the population.
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D.2. Impacts measured by GCF indicators

Select the appropriate impact for the project/programme. Note that more than one indicator may be selected per expected impact result. Add results as appropriate.

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
<i>A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions</i>	1.1 Change in expected losses of lives and economic assets (US\$) due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention	National Emergency Situation Report issued by MES national and local government statistics; PDNA (where available) Focused group survey, national and local government statistics, National Emergency Situation PDNA (where available)	Loss of life: Average of 8 lives lost annually (1996-2016) for the entire country Economic losses for the entire country: US\$ 312.3 million average annual loss due to various hazards (floods, droughts and mudslides)²⁶.	0/No change (the new system will not be fully operational at scale by mid-term)	50% lives (average of 4) saved from climate-induced hazards per annum 3% or 9.37 million USD expected reduction in economic damages from various hazards²⁷	The occurrence of major extreme events (e.g.seismic) do not deviate historic trajectory

D.3. Outcomes measured by GCF indicators

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	

²⁶ FS section 5.2 provides the national estimate of direct economic cost of disasters that is used to calculate baseline: annual economic impact is estimated to be US\$ 236 million for floods, US\$ 67.2 million for droughts, US\$ 9.1 million for mudslides (including the valuation of loss of life: 8 people with a VSL of US\$ 871,798).

²⁷ According to the Economic Analysis, the US\$ 9.37 mln estimated reduction in economic damages, equal to 3% of US\$ 312.3 mln baseline cost of climate-related disasters, is based on the assumed economic impact from increased lead time of planning for hazards and on the avoidance of loss of lives due to the them

	Number of technologies and innovative solutions transferred or licensed to promote climate resilience as a result of Fund support	Project reports Site visits Central database owned by Uzhydromet for hydrometrological monitoring data, and an integrated impact-based risk information and knowledge database operated by MES, hazard forecasting, monitoring and risk assessment products	The majority of meteorological observation stations (75 out of 85) operate in manual mode, with limited use of remote-sensing and satellite data. The existing multi-hazard EWS system lacks of vulnerability data of population and infrastructure, as well as systematic risk assessment and hazard mapping tools. Baseline: 0 technologies/solutions; Status: initiated/installed	9 technologies/solutions; status: initiated/installed Including: 4 Hydrometeorological observation technologies upgraded and installed: AWS; automatic streamflow measurements; upper-air stations; radar 4 technologies for multi-hazard risk analysis, forecasting and impact-based MHEWS: socio-economic risk and vulnerability model; mudflow modeling; landslide risk modeling; Drought EWS for the Syr Darya and Zeravshan rivers 1 communication technology: visualization systems at 3 RCMCs	11 technologies / solutions; status: introduced/in use Including: 5 Hydrometeorological observation technologies upgraded and operational: AWS; automatic streamflow measurements; upper-air stations; radars; centralised database for meteorological measurements 4 technologies for multi-hazard risk analysis, forecasting and impact-based MHEWS: socio-economic risk and vulnerability model; operational mudflow modeling; operational landslide risk modeling; Drought EWS for the Syr Darya and Zeravshan rivers 2 communication technologies : visualization systems at 7 RCMCs, public notice	Relevant government agencies cooperate on the implementation of the MHEWS and data management Inter-agency data available and accessible as inputs to the knowledge management platform Continued government support and commitments to secure adequate O/M of monitoring equipment, relevant software and databases during the project implementation and afterwards
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					boards in 20 communities	
A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	5.2 Number and level of effective coordination mechanisms	NFCS meeting reports, action plan National EWS protocol and various SOP/coordination protocol products Focus groups, user satisfaction analysis based on surveys	Uzbekistan has not yet established a National Framework of Climate Services (NFCS), a framework that can promote more efficient adaptation to climate variability through continuous improvement in the quality, delivery and use of climate-related information in planning, policy and practice. Currently, MES under the State Emergency Prevention and Response System (SEPRS) has limited capacity to coordinate the dissemination and inter-agency responses of multi-hazard forecasting and early warning, using various communication channels at national and regional levels. Specifically, national baseline on the level of effective coordination mechanisms are defined by	A national to regional EWS protocol: Level 2 A National Framework for Climate Services (NFCS): Level 2 (baseline assessment conducted and Action plan endorsed by stakeholders) Number of institutional and coordination frameworks and technical guidance in use by Uzhydromet and MES on: i) data collection and archiving; ii) hazard mapping; iii) risk assessment; and iv) dissemination of information to RCMCs: 2 coordination protocols in place	A national to regional EWS protocol: Level 4 A National Framework for Climate Services (NFCS): Level 4, this includes the operationalization of a national climate outlook forum that brings end-users and co-producers of climate and hydrometeorological information in the design and production processes. Number of institutional and coordination frameworks and technical guidance in use by Uzhydromet and MES on: i) data collection and archiving; ii) hazard mapping; iii) risk assessment; and iv) dissemination of information to RCMCs: 4 coordination protocols in place	Continued and government support and cross-agency commitment the project;

			a metric of Level 1-4:28 A national to regional EWS protocol: Level 1 A National Framework for Climate Services (NFCS): None (Level 1) Number of institutional and coordination framework and technical guidance in use by Uzhydromet and MES: 0			
A6.0 Increased generation and use of climate information in decision-making	6.2 Use of climate information products/services in decisionmaking in climate sensitive sectors	National climate change and DRM/DRR policies, plans and reporting at the national, district, and community levels Reports on the performance of the MHEWS Project reports User /focus group surveys	Weather and climate related information is not generally used for preparedness and risk management purposes among government institutions in Uzbekistan, with a few exceptions of: · Hydrological drought forecasting for the Amu Darya · Identification of avalanche GLOF risks through monitoring of snowpack and lake levels at key sites and through remote sensing; · General monitoring of high intensity rainfall in	At least 2 government agency members under SEPRS use the forecasts and risk assessment for climate hazards in decision-making and prioritization; 30% of surveyed government beneficiaries (agencies) report improved emergency response due to improved disaster warning	At least 4 government agency members under SEPRS use the forecasts and risk assessment for climate hazards in decision-making and prioritization Inter-agency data-sharing agreement between agencies institutionalized, and data-sharing protocols established 50% of surveyed government beneficiaries (agencies) report improved emergency response	Uzhydromet and MES has continued national and local political support for the development of a state emergency prevention and response system (SEPRS).

²⁸ Level 1 = no coordination mechanism; Level 2= coordination mechanism in place; Level 3 = coordination mechanism in place, meeting regularly with appropriate representation (gender and decision-making authorities); Level 4 = coordination mechanism in place, meeting regularly, with appropriate representation, with appropriate information flows and monitoring of action items/issues raised.

			known areas of potential landslide and mudflow formation.		due to improved disaster warning	
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.2 Number of males and females reached by (or total geographic coverage of) climate-related early warning systems and other risk reduction measures established/strengthened ²⁹	Operational databases for observational equipment Gender-dissaggregated MHEWS coverage data, including RCMC/target community demographic profile, mobile subscriber coverage Gender-sensitive field surveys/focus groups	Integrated climate-resilient MHEWS doesn't exist 0 males and 0 females in the project implementation regions ³⁰ have access to up-to-date and area-specific climate hazards and early warning information.	At least 1,133,215 females, 1,125,985 males have access to climate hazards and early warning information.	All population (5,666,075 females, 5,629,925 males) in the project implementation region have access to climate hazards and early warning information.	Continued commitment and uptake of the information by targeted communities in the project Target communities understand shorter- to longer-term benefits of MHEWSs and risk reduction interventions Government has a political will, institutional capacity and necessary resources to support proper O/M of MHEWS. No staff and budget cuts occur at MES and Uzhydromet
A8.0 Strengthened awareness of climate threats and risk-reduction processes	8.1: Number of males and females made aware of climate threats and related appropriate responses	Project reports Gender-dissaggregated MHEWS coverage data, including RCMC/target community demographic profile Site visits and reports Project reporting and gender-sensitive field surveys/focus groups	0 males and 0 females in the project implementation regions have strong awareness of climate threats and risk reduction processes, and capacities to use such climate information for disaster preparedness	40% out of 500 surveyed EWS beneficiaries (100 males and 100 females) report enhanced risk awareness 30% out of 500 surveyed beneficiaries (100 males and 100 females) report that the warnings	80% out of 500 surveyed EWS beneficiaries (200 males and 200 females) report enhanced risk awareness 70% out of 500 surveyed beneficiaries (175 males and 175 females) report that the	Continued commitment and uptake of the information by targeted communities in the project Target communities understand shorter- to longer-term benefits of MHEWSs and risk reduction interventions Government has a political will, institutional capacity and necessary

²⁹ Number of males and females reached by the early warning system will be estimated based on the coverage data of mobile network (and other communication channels, e.g TV, radio broadcast).

³⁰ The project has identified 15 districts located in seven provinces in eastern Uzbekistan as hazard-prone target regions. They are: Qoichirchik, Bostanlik, Sirdarya, Saihunabad, S. Rashidov, Gallaaral, Bulungur, Jambai, Koshrabad, Kitab, Yakkabag, Dehkanabad, Chust, Turakurgan, and Dangarin.

				are clear and being used by their households for enhanced disaster preparedness	warnings are clear and being used by their households for enhanced disaster preparedness	resources to support proper O/M of MHEWS. No staff and budget cuts occur at MES and Uzhydromet * The methodology to measure change in awareness and the survey sample size will be established through activity 3.3 during the implementation phase (Year 1) as part of the survey design, tentatively it will include at least 500 project beneficiaries from 10 different communities.
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D.4. Arrangements for Monitoring, Reporting and Evaluation (max. 300 words)

93. Project-level monitoring and evaluation will be undertaken in compliance with the [UNDP POPP](#) and the [UNDP Evaluation Policy](#).
94. The primary responsibility for day-to-day project monitoring and implementation rests with the Project Manager. The Project Manager will inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, so that the appropriate support and corrective measures can be adopted. The Project Manager will also ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results. The Monitoring and Evaluation (M&E) officer, under the Project Management Team, will be responsible for the overall coordination of the M&E of the project. The M&E Officer is responsible for designing a performance monitoring framework to track the project's progress towards achieving its targets.
95. The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The UNDP Country Office is responsible for complying with UNDP project-level M&E requirements as outlined in the [UNDP POPP](#). Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP Regional Technical Advisor as needed. The project target groups and stakeholders including the NDA Focal Point will be involved as much as possible in project-level M&E.
96. A project inception workshop will be held after the UNDP project document has been signed by all relevant parties to: a) re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation; b) discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms; c) review the results framework and discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E plan; d) review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; e) plan and schedule Project Board meetings and finalize the first year annual work plan. The Project Manager will prepare the inception report no later than one month after the inception workshop. The final inception report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board.
97. An Annual Progress Report (APR) will be prepared for each year of project implementation. The Project Manager, the UNDP Country Office, and the UNDP Regional Technical Advisor will provide objective input to the APR. The

Project Manager will ensure that the indicators included in the project results framework are monitored annually well in advance of the APR submission deadline. The final APR, along with the terminal evaluation report and corresponding management response, will serve as the final project report package.

98. An independent mid-term review process will be undertaken and the findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the final MTR report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](#).
99. An independent terminal evaluation (TE) will take place no later than three months prior to operational closure of the project. The terms of reference, the review process and the final TE report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](#). The final TE report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The TE report will be available in English. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the management response to the public UNDP Evaluation Resource Centre (ERC) (www.erc.undp.org).
100. A detailed M&E budget, monitoring plan and evaluation plan will be included in the UNDP project document. Monitoring, reporting and evaluation arrangements will comply with the relevant GCF policies and Accreditation Master Agreement signed between GCF and UNDP.
101. Beyond the standard project monitoring, evaluation and learning frameworks, the core indicators/metrics for tracking progress will also focus on long-term performance targets of climate-related disaster risk and risk management (with the active participation of non-state actors). This will include:
 - Disaster deficit index: Measure the economic loss that a country could suffer when a climate-related catastrophic event takes place, and the implications in terms of resources needed to address the situation;
 - Monitoring of the O&M commitments of Uzhydromet and MES. This will include ensuring that O&M for new infrastructure is included in the current O&M management plan for both Uzhydromet and MES;
 - Prevalent vulnerability index: Characterize predominating vulnerability conditions reflected in exposure in prone areas, socioeconomic fragility and lack of social resilience - direct impact, indirect and intangible impact in case of the occurrence of a climate-related hazard event; and
 - Risk management index: Measure qualitative performance of risk management based on risk identification, risk reduction, disaster risk management, governability and financial protection, existing indicators of sectoral and national performance already utilized at the national level (e.g. in the context of increased effort towards monitoring the Paris Agreement).
102. Besides these indices, a project M&E system will be set up to collect feedback through a website and mobile phones, on the effectiveness and usefulness of warnings and advisories. Together with feedback through community meetings this information will be used to change and develop the issued warnings. Additional targets will be monitorer at the end of project cycle including:
 - Establishment of the NFCS;
 - Establishment of Quality management system and certification;
 - WMO categorisation of Uzhydromet.

E. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

E.1. Impact potential (max. 300 words)

E.1.1. Expected tons of carbon dioxide equivalent (t CO ₂ eq) to be reduced or avoided (Mitigation and cross-cutting)	Annual	Click here to enter text. tCO ₂ eq
	Lifetime	Click here to enter text. tCO ₂ eq
E.1.2. Expected total number of direct and indirect beneficiaries, disaggregated by gender (Adaptation and Cross-cutting)	Direct	11,296,000 people 50.16% of female
	Indirect	32.39 million people (100% of population) 50.16% of female
	<i>*For both, Specify the % of female against the total number.</i>	
	Direct	11,296,000 people at risk of climate-induced hazards (Expressed as 34 %) of the country

E.1.3. Percentage of beneficiaries relative to total population	Indirect	32.39 million people who will gain improved access to critical weather information and services (Expressed as 100 %) of the country population
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E.1.4. Impact potential for adaptation

103. The project will directly benefit over 11 million people living in high risk areas of Uzbekistan (34% of the population). Several climate induced hazards (such as floods) have caused significant economic damages and led to the loss of lives. For example, it is estimated that 7.6 million people are vulnerable to flooding in Uzbekistan. The economic impact of flooding due to climate change is estimated to be about 236 million USD. These hazards related to heavy rainfall and temperature extremes are either already increasing in frequency and/or intensity or are expected to do so under climate change, particularly over the eastern mountainous regions of Uzbekistan. The following chart shows the number of population of Uzbekistan exposed to one or more hazard in current climate and by 2030.

Province	Current	2030	Difference
Karakalpakstan	781.8	664.5	-117.3
Khorezm	37.4	1.3	-36.1
Bukhara	5.5	620.7	615.2
Navoi	142.1	160.3	18.2
Kashkadarya	1599.1	2433.2	834.1
Surkhandarya	1945.1	2422.5	477.4
Samarkand	644.5	718.6	74.1
Jizak	213.6	198.9	-14.7
Sirdarya	429.4	23.2	-406.2
Tashkent	420.9	391.4	-29.5
Andijan	2122.3	2354.9	232.6
Ferghana	2244.7	2490.2	245.5
Namangan	709.6	788	78.4
Uzbekistan Total:	11296	13267.7	1971.7

(Unit: Thousand of People)

104. Responding to the needs stated by the Government of Uzbekistan to modernize its national early warning system, the project will invest into critical technical and human capacity required for effective operation of MHEWS. Comparable efforts (MHEWS, climate information, and community-based DRM) have shown effective impact related to saving of lives, assets, and livelihoods. Advanced MHEWS systems are estimated to be 60% effective in reducing loss of life by floods, and 20% effective in case of drought.³¹

105. Specifically, we assume that the project investment in early warning system in Uzbekistan will lead to at least 3% reduction in damages due to the hazard (3% effectiveness). This is based on an increase in lead time of planning for the hazard and avoidance of loss of lives due to the hazard. Short (5 days to 2 weeks) or long-lead forecast (1-2 months) allows farmers, communities and governments to carry out actions that can help utilize improved flood forecast in the country. According to Economic and financial analysis (Annex 10), the project investment will lead to avoided damage from mudslide (60% lives saved) and drought (3% loss saved) owing to improved methods and capacities for monitoring, modelling and forecasting climate hazards and risks supported with satellite-based remote sensing.

106. As a result, the project will significantly enhance the quality and timeliness of climate and disaster-related information available to decision-makers and the dissemination of such information to the population of 32.39 million people (approx. 50% increase in the warning lead time and 50% reduction in the warnings delivery time), thus contribute to avoided household income loss (1% avoided damage due to climate information) and increased resilience and enhanced livelihoods of the most vulnerable people, communities in these regions, and to the increased resilience of health and well-being, food and water security in Uzbekistan.

E.2. Paradigm shift potential (max. 300 words)

107. The project will enable a paradigm shift in MES's approach to climate and disaster risk management, focussing on prevention of rather than reaction to disasters and high impact events. To enable this the project focusses on parts of the MHEWS value chain which can be speeded up (automatic data collection and processing, development of key SOPs, dissemination via mobile phones etc) and developing missing components (translation of weather

³¹ Teisberg, T. and Weiher, R. (2009) Benefits and Costs of Early Warning Systems for Major Natural Hazards

information into hazard/impacts, risk analyses based on vulnerable populations and infrastructure). By contributing to a culture of managing climate risk on an ongoing basis and ahead of time, the project will lead to a paradigm shift in the attitudes of the government and communities to identifying low-risk areas for future expansion/development.

108. In addition, the Impact-based forecast and warning services has also been identified as a high priority by the World Meteorological Organization (WMO) to increase the relevance and utility of forecasts and warnings. The GCF project will implement impact-based forecasting and MHEWS in Uzbekistan and will explore and facilitate enabling environment for forecast-base action and forecast-based financing.

109. The proposed GCF investment will transform the current risk management and EWS in Uzbekistan by introducing new innovative technologies, increasing the efficiency and cost-effectiveness of the EWS. The proposed technologies and multi-hazard risk and EWS will lead to a paradigm shift through a number of advances:

- Reduced losses of lives and economic losses in the face of climate change;
- A better understanding of risks and their economic costs (losses and damages);
- Reduced costs for climate monitoring infrastructure (increased reliance on remote sensing) that would otherwise increase significantly to be able to monitor increased climate-induced risks if manual systems are maintained;
- The increased use of satellite data/imagery for monitoring areas inaccessible to ground-based observations (including the use of radar technology to observe land movement), the data from which can be made available to adjacent countries, will promote regional coordination and data sharing. It will also stimulate its use and replacement of more costly ground observations where appropriate;
- Increases in the timeliness of monitoring observations and forecasts (increased warning lead time) will increase the efficiency of warnings and the likelihood that they will be received in time to act;
- The establishment of a central repository for hydrometeorological hazard and risk information that integrates automatically transmitted data from different providers/manufacturers with quality control/assurance and allows further interrogation via geo-visualization software;
- The development of improved hazard modelling and risk mapping capabilities will lead to clearly identified areas at risk (more targeted warnings);
- Introduction of a socio-economic risk and vulnerability modelling as an integral element of the impact-based multi-hazard EWS;
- The establishment of a series of guidance and protocols - including a national to regional EWS protocol, and communication protocols will increase the institutional coordination capability among MES, Uzhydromet and other relevant government agencies, and support an integrated approach to long-term climate, socio-economic risk planning and decision-making;
- Development of information and communication systems at RCMCs will enable them to undertake pro-active planning and response measures;
- Development of a sustainable business model for hydromet information services;
- Effective dissemination of warnings, alerts and “last-mile” communication to targeted areas and populations (50% reduction in warning delivery time), and empowering sectoral stakeholders to engage on climate risk management and climate change adaptation;
- Enhanced preparedness building upon high quality and timely climate-related risk information; and
- Improved WMO categorisation of Uzbekistan in climate forecast and climate services.

110. This project addresses one of the main objectives of SAP projects, which is to create an enabling environment for future scaled-up investment. By demonstrating the benefits of improved warnings and communications with regional centres and communities, it will provide the evidence and impetus for further funding to expand to the whole of Uzbekistan. Furthermore, by directly linking hydrometeorological data with hazard warnings, the utility of different data sources can be evaluated for better directing future investments.

111. The impact, scalability and paradigm shift potential of this GCF investment will be further elevated due to Uzhydromet’s role as the Regional Specialized Meteorological Centre (RSMC) for Central Asia. As the project will improve technological and institutional capacities of Uzhydromet, this will allow them to further improve on service/information delivery to other Central Asian countries, as well as any training, technology and knowledge transfer activities they undertake as an RSMC. The project will further facilitate such knowledge transfer across Central Asia by allowing sub-regional stakeholders attending the National and Regional Climate Outlook Fora, as well as observing and sharing collected data according to international standards and guidance (e.g. GCOS and GBON) and through standardised mechanisms (e.g. through the GTS).

E.3. Sustainable development (max. 300 words)

112. The project directly contributes to the UN 2030 Sustainable Development Goal 13: Take urgent action to combat climate change and its impacts, specifically target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; target 13.2: Integrate climate change measures into national policies, strategies and planning and target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. Furthermore, the project supports Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable, specifically target 11.5 which states that by 2030, number of deaths and number of people affected should be significantly reduced and direct economic losses relative to GDP be substantially decreased.

Socio-economic co-benefits

113. By improving knowledge on losses and damages which are associated with different climate-related hazards, the project will help the GoU to reduce and optimize budget spending, improving the use of public funds for disaster preparedness and recovery. Risk knowledge will inform land use and investment decisions to avoid maladaptation/poor development practises. Based on focus group discussion with communities in 7 disaster-prone regions of Uzbekistan, social impacts associated with climate hazards in those communities include: damage of schools and healthcare centers due to mudflows, power outage due to strong winds. An estimation of household loss in face of climate-related hazards are summarized in the following table. Through improved risk knowledge and hazard forecasting capacity, as well as strengthened "last-mile" delivery and community outreach efforts, a functional impact-based MHEWS will contribute to increased resilience and enhanced livelihoods of the most vulnerable people, communities and region in Uzbekistan. The detailed estimation method of savings, avoided losses and economic co-benefits can be found in section 4.4 and 5 of the FS.

Hazards	Estimated loss of household property/ possessions	Estimated loss of household daily income	Estimated loss of household farm produce (crops)	Estimated loss of household livestock	Estimated loss of household fish stock
Flooding	350,000 - 25 million som	20,000 - 1 million som	1 - 15 million som	2 - 60 million som	500,000 - 2 million som
Drought	-	-	-	-	-
Strong wind	200,000 - 1.5 million som	-	-	-	-
Landslide	350,000 - 25 million som	-	-	300,000 - 6 million som	100,000 - 1 million som
Mudflow	350,000 - 4 million som	20,000 - 1 million som	1 -15 million som	2 - 60 million som	500,000 -2 million som

Environmental co-benefits

114. Uzbekistan has numerous acute environmental challenges including inter alia: degradation of water resources, salinization of soil and water resources, loss of forests, desertification, land degradation, reduction in productive potential of arable land and pastures, biodiversity loss and the Aral Sea crisis. These are all exacerbated by climate change. Often a number of these environmental challenges are found in highly populated geographical areas and can combine to create compound problems. For example, in the Ferghana Valley, which contains industrial and radioactive waste, landslides can lead to radioactive waste spill over. This poses significant challenges to communities living in such areas. Enabling the identification of landslide risk areas under heavy rainfall through this project will provide much needed information ahead of such events. Additionally the development of hydrological drought forecasting for the Syr Darya and Zeravshon rivers will enable better water and irrigation management, especially during low flows, which will reduce the risks of salinization in agricultural areas. Mudflow and avalanche risk maps and forecasts will also provide prior warning, mitigating the need for prior blasting where there is a build up of landslips and snow.

Gender-sensitive development impact

115. The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) of which Uzbekistan is signatory and shares the commitments underpinning the framework, recognizes that gender equality and women's empowerment is a catalyst for effective disaster risk reduction in attaining the overall sustainable development goals.

116. Women suffer disproportionately from disasters due to uneven income distribution and lesser access to information, planning and decision making. Women and girls tend to have less access to or control over assets, including the resources necessary to cope with hazardous events, such as information, education, health and wealth, their vulnerability is in general relatively greater than men's.³²
117. The project follows a gender responsive approach that will ensure the particular priorities, needs, barriers, status and roles of men and women are recognized and addressed. There will be a particular focus on inclusion and empowerment of women as a critical element of sustainable development in the context of disaster risk reduction and climate change. A gender analysis undertaken at the onset and during the design phase of this project, acts as an entry point for gender mainstreaming throughout implementation. The stakeholder consultation process involved holding seminars with representatives of various Ministries (MES, Uzhydromet, Ministry of Health, State Committee for Ecology and Ecology, etc.) and representatives of Parliament, Civil Communities and Women's Committee. As a result, the gender analysis enabled the multi-stakeholder engagement and incorporated the gender-sensitive approach into the project design moving forward. For instance, gender aspects and specific needs will be integrated during development of the multi-hazard early warning regulations, mechanisms and protocols (Output 2). A Gender Action Plan has been developed in this process, which sets out gender-disaggregated target data and indicators to establish a baseline in which to measure improvements and identify areas of focus (Annex 4). The project will present a number of opportunities to promote gender equality in Uzbekistan. Specifically, gender-sensitive socio-economic vulnerability assessments and development of socio-economic risk models for decision making and prioritization of resilience building investments will bring transformative impact by providing evidence-based information on gender situation that further be considered at level of project implementation ensuring targeted support and access to the risk informed solutions. With regard to the gender-responsive technical design of the MHEWS, the project will ensure that warnings are tailored to the gender-differentiated needs and capabilities of specific population groups, such as children, senior citizens, and persons with disabilities. Multiple methods for targeting messages will be used for reaching broadest group of people, including TV, radio, Internet, sirens, flashing lights, registration-based alert systems sending messages to cell phones with information clearly stated orally and graphically. Pregnant women and the elderly and disabled will be included in emergency planning. The important element in mainstreaming gender is community awareness and capacity, and understanding of impacts of disasters on community resilience, when the project builds the capacity of communities and demonstrate the impact of hazards to various groups of people. Inclusiveness and consideration of needs of all groups including those are with special needs also make the project actions transformative. As a result, the project will ensure at least 30 percent representation of women and their active participation in project stakeholder consultations, capacity building and trainings, local and national decision-making bodies set up and/or facilitated by the project. This 30% target is based on the lessons from and experience of the earlier UNDP community based projects in the country, community consultations and DRR stakeholder consultations. The gender related targets proposed in the project are both ambitious and achievable, and will positively promote gender equality in Uzbekistan.

E.4. Needs of recipient (max. 300 words)

118. Although a lower middle-income country, poverty is nonetheless a persistent and significant problem in Uzbekistan with 12.3% of the population living below the national poverty line in 2016. Uzbekistan has a large population (in comparison to other CA countries) of 32.4 million, of which 63% live in densely populated rural communities, most of whom are dependent on agriculture for livelihoods. Poorly developed and distorted market relationships and an absence of properly established land tenure rights have resulted in heavy dependence of the rural population on natural resources.
119. Climate change induced hazards cause both economic damages and lead to the loss of lives. Approximately 8 million people (26% of the population) are affected by mudflows, 80% of which occur in the foothills and high mountainous areas and are caused by heavy rainfall. In the period of 1977-2015 1,335 mudflows were recorded, 33 of which led to loss of life. A single drought event in 2000 affected 600,000 people and caused an economic loss of \$50 million. In 1998, flooding from the Shakhmardan River originating in Kyrgyzstan killed 100 Uzbeks and caused damage estimated at \$700 million. A flood event in February 2005 in the Boymurod region affected 1,500 people. Landslide hazards are significant in the country's mountain and foothill areas, while there have been over 2,600 extreme mud flows in the past 80 years. A landslide in the Angren region on 4 May 1991 killed 50 people, while a landslide in January 1992 killed 1 person and affected 400 others. The 20-year return period

³²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/236656/women-girls-disasters.pdf

loss for all hazards is \$623 million (2.8 per cent of GDP), while the 200-year return period loss is \$2.13 billion (9.5 per cent of GDP), though this is based mostly on damages due to earthquakes.³³³⁴

120. Uzbekistan lacks financial resources, knowledge and capacities at system, institutional and individual levels to conduct multi-hazard, vulnerability and risk assessments, establish real-time monitoring, forecasting and early warning systems in order to make climate-informed decisions and implement climate-induced disaster risk management measures. There is significant financial gap between actual and required DRR and climate change adaptation investments. Both rural and urban populations and the government have low response and preparedness capacities. Uzhydromet conducted a survey among stakeholder ministries and departments in January-March 2017, with the purpose of determining the requirements for hydrometeorological information in the main sectors of the economy. The results demonstrated stakeholder's awareness of serious gaps in technical capacities of Uzhydromet. The results of the survey confirmed that the modernization of Uzhydromet is a critical and urgent task. These needs are articulated in SNCs, TNCs and NDC as well as in various DRR related policy documents and assessments. Specific needs include the following:
- (i) Key needs in risk knowledge largely associated with being able to map and monitor hazards over wider areas and use international best practices. For example, mudflow risk assessment and forecasting is based on outdated methods and relationships set up in the 1980's. Mudflow modelling needs to be updated using rainfall and flow models in a GIS environment. To be able to calculate risks, vulnerability information needs to be intersected with hazards, as does information on expected economic damages and impacts. In order to do this there are several noteworthy needs such as damage and loss data for most hazards which is not systematically collected and archived in an accessible database. Data is only available for direct damages and not for the indirect consequences.
 - (ii) Key needs in observations, monitoring and forecasting arising from a lack of funds for capital investments. This has restricted the ability of Uzhydromet to upgrade and modernise its equipment. The existing observational network do not provide sufficient spatial detail and information, especially for runoff forming zones in mountainous areas or data series gaps due to instrument failures, observer failures, radio communication failures, electricity outages, etc.
 - (iii) Key needs in communicating and disseminating of warnings, such as relying on the capacity of Uzhydromet to translate hydrometeorological information into hazard-related information e.g. hydrological drought, mudflow and flood occurrence, etc. This leads to an inability to estimate hazards which require specialised knowledge e.g. assessing rainfall-induced landslide risk requires capabilities and expertise beyond that available in Uzhydromet.
 - (iv) Public dissemination needs arising from the MES's monopoly on the issuing warnings and alerts including:
121. Whilst MES can command telecoms providers (including Ucell and Beeline) to disseminate alerts, these alerts are currently broadly disseminated and not targeted to mobile phones in the location of the predicted/observed hazards. This is possible to do but requires accurate and confident predictions of hazard extent;
122. The ability of MES to work in different regions is dependent on the establishment of regional crisis management centres (rCMCs) as mandated through resolution #242. However, currently these rCMCs are housed in offices which require updated communication facilities. In particular, they lack videoconferencing facilities, access to updated hazard and risk maps based on up to date hazard information; and
123. Public message boards are used successfully in many areas e.g. to disseminate avalanche warnings on the Kamchick pass. However, these boards are only found in a few locations and do not cover all high-risk areas.

E.5. Country ownership (max. 500 words)

Country Ownership

124. The proposed project originates from consultation with the GoU and is based on the national request to support the establishment of an early warning system. The project is fully country-driven.
125. All national strategies related to the climate change adaptation, disaster risk reduction and natural resource management, including the first NDC, clearly prioritize the establishment of the efficient national climate risk

³³ [Sutton, William R., Jitendra P. Srivastava, James E. Neumann, Peter Droogers, and Brent B. Boehlert. 2013. Reducing the Vulnerability of Uzbekistan's Agricultural Systems to Climate Change: Impact Assessment and Adaptation Options. World Bank Study. Washington, DC: World Bank. doi:10.1596/978-1-4648-0000-9. License: Creative Commons Attribution CC BY 3.0](https://doi.org/10.1596/978-1-4648-0000-9)

³⁴ http://www.un-gsp.org/sites/default/files/documents/tnc_of_uzbekistan_under_unfccc_english_n.pdf

monitoring and early warning system. Most notably, multiple cabinet resolutions and decrees have been issued to advance the development of a state system for early warning and emergency responses, including:

- “State Program on Prediction and Prevention of Emergency situations” #71 of 03.04.2007, which includes forecasting of possible emergencies, in particular natural disasters, development of coordination mechanisms of emergency risk management, establishment of an early warning and information system;
- Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On further improvement of state emergency prevention and response system of the Republic of Uzbekistan from 24 August 2011 No. 242;
- Decree No. 5066 on 1 June 2017, sets the agenda for developing a new approach to monitoring and forecasting natural hazards responsible for creating emergency situations; and
- Decree No. 601 by the cabinet ministers on Aug 8, 2017 outlines the structure of the national early warning system for natural hazards, including an automated system for disseminating alerts and warnings. It also provides the legislative basis for the establishment of regional crisis management centres (RCMCs) as well as the mandate of MES to operate, maintain equipment and to set aside funds/revenues for IT system and communications, and requesting the use of privately owned telecommunication facilities in an emergency.

126. In April 2019, a new Cabinet Resolution No. 299 "On measures to implement the Sendai Framework Programme on Disaster Risk Reduction for 2015-2030 in the Republic of Uzbekistan" was approved. The resolution sets out Uzbekistan's national strategy and Action Plan for achieving the goals under the Sendai Framework, including the provision for:

- Development and implementation of advanced technologies and engineering and technical means for emergency response;
- Creation and development of systems for forecasting and monitoring of emergencies;
- organization, development and maintenance of management, notification and communication systems in constant readiness;
- Improvement of the system of training of managers and the population in emergency situations.

127. In November 2020 the Government of Uzbekistan adopted a new Resolution No. 4896 “On measures to enhance performance of the centre for hydrometeorological service of Uzbekistan” which outlines a strong commitment of the GoU to modernize and strengthen hydromet service delivery and includes above all a roadmap for technological and institutional modernization, improved human capacities, strengthened budget and non-budgetary financing, improved revenue generation opportunities and partnership with sectoral stakeholders. This Resolution reconfirms the strong GoU ownership over and commitment to the GCF project. The country ownership is also confirmed through co-financing commitments provided by MES and Uzhydromet for both project implementation and operations and maintenance costs.

Accredited Entity’s comparative advantages

128. The Government of Uzbekistan has requested UNDP to support the development and implementation of this project through consultations. UNDP has extensive experience in the implementation of projects and programmes in Uzbekistan. UNDP has a long history of collaboration with Uzhydromet and has carried out several joint projects, including technical assistance to Uzhydromet for designing and providing training programs for climatologists, as well as support for seminars and the supply of technological equipment to the Uzhydromet. In 2015 UNDP with Uzhydromet assessed climate change vulnerability across different provinces and sectors of economy and developed the first Climate Risk Profile for Uzbekistan. The most relevant UNDP-Uzhydromet project funded by the Adaptation Fund has developed a drought EWS for the Amu Darya basin, incorporating automatic weather stations, use of new remote sensing techniques, improved prediction of river runoff and tools for disseminating information to farmers. This prototype project will serve as a basis for up-scaling under this GCF project.

129. Furthermore, UNDP globally has an excellent track record and experience in implementing climate adaptation and disaster risk reduction programmes and projects. UNDP has an extensive portfolio on disaster risk reduction (US\$1.7 billion over 10 years in 163 countries) and on climate change adaptation (US\$ 900 million active portfolio in 85 countries). In Europe and Central Asia, UNDP has already supported development of EWSs in Armenia, Azerbaijan, Georgia, BiH and Uzbekistan. Globally, UNDP has an extensive experience in promoting climate information projects in 75 countries with 65 EWS tools developed with project funding through Green Climate Fund, Global Environment Facility, Adaptation Fund, Least Developed Countries Fund, Special Climate Change Fund and Canadian International Development Agency.

Executing Entity’s experience and competitive advantages:

130. MES manages Uzbekistan’s interagency State Emergency Prevention and Response System (SEPRS). MES is responsible for rapid response, tracking, prevention and mitigation of both natural and manmade disasters and

emergencies, including those occurring in the context of climate change. It coordinates the implementation of state/national programs on natural and manmade disaster forecasting and prevention. MES is responsible for: (i) management and control over the activity of SEPRS; (ii) preparation of proposals to the Cabinet of Ministers of the Republic of Uzbekistan to gather funds and resources for the purpose of preventing and responding to emergency situations; (iii) leveraging resources to provide the population with essential information, means and equipping special detachments to prepare for emergency situations. UNDP and MES have recently collaborated on a joint project "Strengthening Disaster Risk Management Capacities in Uzbekistan", which was implemented during 2010-2016 period. Partner capacity assessment (HACT) has been conducted for the MES that reconfirmed partner's capacities to govern and implement this project (Annex 16).

Stakeholder Engagement in the project

131. Uzhydromet and MES as the project implementing partners have been fully engaged in the development of this proposal. UNDP jointly with BMUB/GIZ/UNEP/WRI is managing a GCF readiness project which has engaged with stakeholders to identify priority projects to be developed for GCF investment. The stakeholder consultation process involved representatives from various Ministries (MES, Uzhydromet, Ministry of Health, State Committee for Ecology and Ecology, etc.), Parliament, Civil Communities and the Women's Committee of Uzbekistan. Based on these extensive consultations and needs assessment, the GoU requested UNDP to develop this GCF funding proposal.
132. During the process, the following stakeholders were also consulted and interviewed: Ministry of Finance, Scientific and Research Institute on Hydrometeorology, World Meteorological Organization, Ministry of Economy, Geohazards, Red Crescent society, Relevant international organisations (World Bank, FAO, USAID), local communities.
133. Various technical missions were undertaken by UNDP in February, August, November, December 2018 and January 2019. During these missions, various roundtable discussions with key national stakeholders resulted in the development of this SAP proposal. Focus group discussions were carried out with more than 180 participants from 15 districts across the country.

Table: General information about Focus Group participants

№	District	Number of interviewed	Gender		Age						Education		
			Male	Female	20-30	31-40	41-50	51-60	61-70	70 and older	Hig her	Secon dary - special	Secon dary
1.	Qoichirchik	15	8	7		2	6	4	3		4		11
2.	Bostanlik	13	8	5	4	1	5	3				4	9
3.	Sirdarya	15	9	6	3	2	4	3	3		7	2	6
4.	Saihunabad	15	15		1	5	4	5			4		11
5.	S. Rashidov	11	5	6		2	2	2	2	3	3		8
6.	Gallaaral	11	10	1	4	2	1	3	1		3	1	7
7.	Bulungur	10	5	5		6	3	1				8	2
8.	Jambai	8	6	2	3	2		2	1			2	6
9.	Koshrabad	16	16		2	4	4	6			9	5	2
10	Kitab	12	12		3	5	1	3			2		10
11	Yakkabag	11	9	2		4	2	3	2		3	2	6
12	Dehkanabad	11	9	2		4	4	3			3		8
13	Chust	13	7	6	4	2	1	6					13
14	Turakurgan	13	8	5		4	2	5	2		3		10
15	Dangarin	9	7	2	1	3	2	2	1		2	1	6
	Total	183	134	49	25	48	41	51	15	3	43	25	115

134. Key beneficiary groups at community level participated in the discussion, and information and feedback provided by the focus groups on climate hazards, in particular on the household loss/damage caused by climate hazards, has informed the project design and selection of target communities, and provided the baseline of project intervention.
135. Stakeholders from government institutions, financial and technical partners, international and national non-governmental organizations and local civil society will be consulted and engaged at all stages of the project implementation, from the launch of the project to its implementation and review, through sensitization, consultation, and training workshops.

136. Prior to undertaking any intervention, additional stakeholder engagement will be conducted to ensure that target communities in project implementation regions are fully consulted to ensure the project will not impact on them and/or their living environment. During the implementation phases of the project, if any person or group of people are identified as being adversely affected, directly or indirectly due to the project activities, the project will comply with the UNDP Social and Environment Standard, which will include a grievance mechanism to address any potential environmental or social issues. For further details refer to Annex 12 - Social and Environmental Screening Procedure and Annex 13 Stakeholder consultations and engagement plan.

E.6. Efficiency and effectiveness

E.6.1. Estimated cost per t CO ₂ eq, defined as total investment cost / expected lifetime emission reductions (Mitigation and Cross-cutting)	(a) Total project financing	US\$
	(b) Requested GCF amount	US\$
	(c) Expected lifetime emission reductions	_____ tCO ₂ eq
	(d) Estimated cost per tCO₂eq (d = a / c)	US\$ _____ / tCO ₂ eq
	(e) Estimated GCF cost per tCO₂eq removed (e = b / c)	US\$ _____ / tCO ₂ eq
E.6.2. Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (Mitigation and Cross-cutting)	(f) Total finance leveraged	US\$
	(g) Public source finance leveraged	US\$
	(h) Private source finance leveraged	US\$ _____
	(i) Total Leverage ratio (i = f / b)	—
	(j) Public source leverage ratio (j = g / b)	—
	(k) Private source leverage ratio (k = h / b)	_____

Efficiency and Effectiveness

137. The project budget has been developed based on the analysis of existing institutional and technical capacities with the realistic needs assessment for each output and activity. Cost-efficiency is achieved, above all, through narrowing down the priority target areas and hazards, as well as by proposing to apply lower cost technologies (satellite remote sensing) and reducing the reliance on expensive surface observation equipment. A suitable mix of technologies for monitoring and forecasting hazards has been identified which both builds on existing work with Uzhydromet (e.g. the World Bank modernisation programme through the CAHM project) and provides adequate monitoring information in near real time, whilst minimising the reliance on surface observation equipment. For example, installing AWS and hydrological stations at key locations – either replacing existing ageing equipment or at new locations.

138. The complete modernization of the hydrometeorological system requires a larger investment. Even though such large investments may be needed over a long period of time, there are clear advantages to building capacity slowly and for targeted applications: i) larger investments often focus on expensive technologies or expanding capacity too early; ii) without demonstrated applications of technologies and effective coordination mechanisms, projects and investments may focus on limited aspects of the MHEWS value chain. Here it is proposed to make a strategic cost-effective investment to catalyze the required changes in the system/approach to generating and communicating hydrometeorological hazard information, which will inform and facilitate future investments.

139. This project builds upon the projects listed in Section B.1 (many of which are focused on a particular sector or region of Uzbekistan), and complements their modernization of the hydrometeorological observation and forecasting system, by targeting inefficiencies and missing elements needed to complete the MHEWS value chain, in order to increase the capacity of Uzbekistan to monitor, forecast and warn of the likely impacts and locations of climate change related hazards.

140. In particular, the GCF project relies on the lessons of the UNDP/AF project “Developing climate resilience of farming communities in the drought prone parts of Uzbekistan”. The UNDP/AF project has upgraded 10 AWS weather stations with modern hydrometeorological equipment and conducted analysis of the economic efficiency of this modernization. The direct and indirect costs for maintenance and servicing of the equipment was assessed, which demonstrated that no significant additional costs would arise, except for a small additional charge for Internet services of 0.7 million UZS annually which was offset by a decrease in the costs of paying for electricity due to reduced consumption associated with the transfer of meteorological information from automatic weather stations to GSM modems. Overall benefits from modernization of Uzhydromet were estimated to range from 11.5 to 109.6 million USD per year, with modernization costs of approximately 3 million USD per year at a CBR ranging from 3.8

to 36.5. Modernization of Uzhydromet's technical base will result in further savings of public funds for operations and maintenance of the observation network and forecasting system. Based on the UNDP/AF project, the estimated benefits of installing 10 AWS include (see section 4.4 of the FS):

- With the installation of 2 Doppler water meters and 8 automated meteorological stations in Karakalpakstan, the drought-prone region is expected to increase its coverage of automated hydro-meteorological observation network to at least 40,000 km² and effectively improve the early warning capacity of 2 weeks ahead.
- The possibility of issuing target temperature forecasts for Karakalpakstan with 2 weeks lead time, facilitating reduction of losses from adverse weather conditions and increases in farmers' income by at least 10%;
- Annual savings on salaries due to transfer of night-time observations to automatic mode will amount to 261.8 million UZS;
- Annual electricity savings of 0.8 million UZS; and
- The creation of an archive (a database of operational data) will increase the revenue from specialized services provided by Uzhydromet by 10%, which will amount to an additional 130.0 million UZS per year.

141. Through GCF project funding, 25 AWS will be installed in existing target locations in the mountains above key valleys and areas of high precipitation/landslides/mudflow activities and expected to contribute to further savings in Uzhydromet's O&M budget. Critically, the infrastructure will be located at existing facilities and/or on existing structures thereby reducing costs and importantly, mitigating environmental and social impacts.

142. The proposal also builds upon the regional project "Strengthening Early Warning of Mountain Hazards in Central Asia"³⁵ and the recommendations of the Second Development Partners Conference on Strengthening and Sustaining National Meteorological and Hydrological Services³⁶.

143. Economic cost-benefit analysis was carried out to assess the impact of the project on society's welfare. The analysis of the project was carried out in accordance with the Guidelines for the Economic Analysis of Projects of United Nations Development Program (UNDP 2015). The economic desirability of the investments was determined by computing the economic internal rate of return (EIRR) and economic net present value (NPV) and comparing the EIRR with the assumed 10% discount rate (as recommended in UNDP 2015). Discounted fund flows period is 15 years based on the useful lifespan of the investments. We assume that after the useful life of each intervention, the benefits become zero.

144. The benefit of the project is assumed to be zero in the first three years. This is to allow for the installation of the different climate information systems, modelling and ground truthing of the data. Two sets of benefits are estimated:

- a. Avoided Damages very highly vulnerable: reduced damages from very highly vulnerable households with at least one flooding and mudflow event per annum, avoided damage from drought and avoided income loss to households and
- b. Avoided Damages highly vulnerable: reduced damages from flooding and mudflow events that occur once every three years plus avoided damage from drought and avoided income loss to households.

145. Given the above estimates, the net present value of the project ranges between \$22.6 million and \$51.8 million using a 10% discount rate, with an internal rate of return of between 24% for only very highly vulnerable households and 38% if we include avoided damages to highly vulnerable households. Additional benefits mentioned above (e.g. cost efficiencies, and ability to generate historical climate data in the country.) are not captured in the IRR analysis.

146. Three sensitivity test cases were examined: (i) total cost decreased by 20%; and (ii) total benefits decreased by 20%; and (iii) total cost increased by 20% and total benefits simultaneously decreased by 20%. In all cases, the project remains economically feasible. The analysis is presented in Annex 10.

³⁵ See <https://www.gfdr.org/en/strengthening-early-warning-mountain-hazards-central-asia>.

³⁶ See <https://www.gfdr.org/sites/default/files/publication/Second%20Development%20Partners%20Conference%20outcomes.pdf>

F. ANNEXES

F.1. Mandatory annexes

- ☐ Annex 1 NDA No-objection Letter(s) ([Template](#))
- ☐ Annex 2a Example project level logframe ([Example](#))
- ☐ Annex 2b Example timetable ([Example](#))
- ☐ Annex 3 Budget plan that provides breakdown by type of expense ([Template in excel sheet](#))
- ☒ Annex 4 Gender assessment and action plan ([Template](#))
- ☐ Annex 5 Co-financing commitment letters
- ☐ Annex 6 Term sheet and evidence of internal approval
- ☐ Annex 7 Risk assessment and management ([Template](#))
- ☐ Annex 8 Procurement plan model ([Template](#))
- ☐ Annex 9a Legal Due Diligence (regulation, taxation and insurance) ([Template](#))
- ☒ Annex 9b Legal Opinion/Certificate of Internal Approvals ([Template](#))

F.2. Other annexes to be submitted when applicable/requested

- ☐ Annex 10 Economic and/or financial analysis
(mandatory for private-sector proposals)
- ☐ Annex 11 Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
- ☒ Annex 12 Social and Environmental Screening Procedure Template (SESP)
- ☒ Annex 13 Stakeholder Analysis and Stakeholder Engagement Plan
- ☐ Annex 14 Operations and maintenance plan
- ☒ Annex 15 Feasibility Study
- ☒ Annex 16 Responses to GCF comments

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*

O'ZBEKISTON RESPUBLIKASI
INVESTITSİYALAR VA TASHQI
SAVDO VAZIRLIGI



MINISTRY OF INVESTMENTS AND
FOREIGN TRADE OF THE
REPUBLIC OF UZBEKISTAN

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№07-15-2 - 00259

09 ЯНВ 2020

The Green Climate Fund
175, Art Center-daero
Yeonsu-gu, Incheon 406-840
Republic of Korea

Re: Funding proposal for the GCF by UNDP regarding “Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change induced hazards” project

NO OBJECTION LETTER

Dear Madam / Sir,

We refer to the project proposal on “Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change induced hazards” submitted to GCF by the Government of Uzbekistan with funding request of \$10 mln. according to the funding proposal.

The undersigned is the duly authorized representative of the Ministry of Investments and Foreign Trade of Republic of Uzbekistan, the National Designated Authority / Focal Point of Uzbekistan.

With this letter, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

(a) The Government of Uzbekistan has no objections to the project as included in the funding proposal;

(b) The project as included in the funding proposal is in conformity with Uzbekistan's national priorities, strategies and plans;

(c) In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Sincerely,



Badriddin Abidov

**Deputy Minister of Investments and Foreign
Trade of the Republic of Uzbekistan,
the National Designated Authority / Focal Point
of Uzbekistan**

Secretariat's assessment of SAP022

Proposal name:	Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change-induced hazards
Accredited entity:	UNDP
Country/(ies):	Uzbekistan
Project/programme size:	Small

I. Summary of the Secretariat's assessment

- The funding proposal is presented to the Board for consideration with the following remarks.

Strengths	Points of caution
The project will enable a paradigm shift in climate hazard forecasting and warning from a reactive hazard-based system to a proactive, user-oriented and impact-based one, in line with the Global Framework for Climate Services (GFCS).	Ongoing World Meteorological Organization (WMO) Global Basic Observing Network (GBON) compliance is vital as a long-term goal of the project. This has been included in the term sheet negotiations and will be enforced by the funded activity agreement (FAA).
Upgrading Uzbekistan's hydrometeorological network and early warning systems will provide longer lead times to respond to disasters, and useful seasonal forecasts for key sectors such as agriculture.	Uzbekistan's market for climate information services is still not well-developed and thus private market involvement will be initiated within the scope of this SAP. The project will set up a platform to engage climate information providers and private sector and community beneficiaries to ensure both the relevance of products and explore market creation in the longer term.
Synergies with existing projects which will benefit from the improved monitoring network and risk information (especially in rural and mountain areas), better end user and stakeholder engagement channels, and mainstreaming adaptation into planning.	

- Uzbekistan is a landlocked country in Central Asia, highly vulnerable to floods and mudflows caused by snowmelt, run-off or by severe storms, as well as outburst floods from mountain lakes. Most damages occur in economically strong and flooding-prone provinces in the east, particularly Andijan and Ferghana, two of the project target regions, which on average lose 3 per cent and 2 per cent respectively of annual GDP to flooding. Over 2,600 extreme mudflows have been documented in the past 80 years.

3. Climate change has been leading to more frequent and more intense hydrometeorological disasters in Uzbekistan and greater exposure to these disasters across the country. The economic analysis has estimated the economic impact of flooding in Uzbekistan due to climate change at USD 236 million. Uzbekistan's nationally determined contribution highlighted the need to establish a Multi-Hazard Early Warning System (MHEWS) as a key action to adapt to the changing climate. This project will respond to a critical need of Uzbekistan to modernize its early warning system into an impact-based MHEWS (initially focused on floods, mudflows, landslides, avalanches and hydrological drought in the more populous and economically important eastern mountainous regions), an essential element of the country's climate risk management framework. In the face of increasing climate risks, the project will serve to enhance the climate resilience of 32 million people of Uzbekistan (indirect beneficiaries), including the most vulnerable and poor rural communities living in mountainous areas currently at risk from climate-induced hazards.
4. Uzbekistan has a strong track record operating, through Uzhydromet and utilizing public funds and income from services, its hydrometeorological observation network comprising 85 meteorological stations (75 manual and 10 automatic weather stations-AWS), 131 manual hydrological gauging stations, 3 doppler weather radars (Tashkent, Samarkand and Nukus), 64 observation points of atmospheric air pollution and 17 chemical labs for monitoring environmental pollution. There are, however, geographical imbalances in the distribution of stations – in particular, the lack of AWS in the eastern part of the country, leaving without coverage some eastern mountainous regions which experience spatially heterogeneous rainfall and associated hazards.
5. The main barriers to upgrading the network are mainly financial and technical in nature. GCF finance will enable technology transfer, the expansion and upgrading of the networks to AWS, and the upgrading of Uzhydromet's capabilities for weather forecasting, hydrometeorological and agro-meteorological monitoring. The project will also introduce an impact-based MHEWS based on socioeconomic risk modelling, and will explore and facilitate elements of forecast-based financing as an innovative paradigm-shifting approach to the use of climate data in decision-making and disaster response. The project will adopt an approach based on the GFCs while targeting specific weaknesses in the delivery of early warning services, facilitated by UNDP's ample experience working with Uzhydromet.
6. This project will deliver the following elements: (a) improved climate monitoring and forecasting data and models; (b) capacity-building of national agencies to model climate-related hazards and to utilize modern weather and seasonal forecasting techniques; (c) expanded observation through satellite-based remote sensing (including precipitation, vegetation, snow cover and landslip/slides) to monitor and assess hazard risks over extensive regions of Uzbekistan, especially where the use of observational equipment is impractical; (d) development of an impact-based MHEWS featuring socioeconomic risk and vulnerability modelling; (e) strengthened last-mile delivery of disaster-related communication and interaction with end users; (f) enhanced regulatory framework and institutional coordination; and (g) creation of a central repository/facility incorporating an advanced information management system for the management, forecasting and monitoring of hydrometeorological processes.
7. The envisaged exit strategy involves strong public sector involvement accompanied by the development of Uzbekistan's market for climate information services, still in its incipient stages. The project will set up a platform to engage climate information providers and private sector and community beneficiaries, to ensure both the relevance of products and explore market creation in the longer term, which would be a solid outcome for a SAP proposal. Commitment from the Government of Uzbekistan to continue to support and maintain the project's outputs is very relevant, as GBON compliance should be maintained after the duration of the project.

8. The project will be executed by the Ministry of Emergency Situations of Uzbekistan, the ministry responsible for rapid response, tracking, prevention and mitigation of both natural and man-made disasters and emergencies, and the implementation of state/national programmes on natural and man-made disaster forecasting and prevention. UNDP has a long history of collaboration with Uzhydromet and will be able to build on several joint projects. The risk information generated through the improved monitoring network, as well as channels for risk information (especially in rural and mountain areas), better end user and stakeholder engagement, and mainstreaming adaptation into planning, will benefit several projects under implementation in the country.

Table 1: Project financing

Source	Amount (USD)	Use	Amount (USD)
GCF	9,999,455 (grant)	Upgrading the hydrometeorological network	8,495,125 (20.9%)
Uzhydromet	4,195,505 (grant)	Establishing the MHEWS	24,428,056 (60.1%)
MES	26,444,375 (grant)	Strengthening climate services and communication to end users	5,708,380 (14.0%)
Total	40,639,335	Project management costs	2,007,774 (4.9%)

Abbreviation: MES = Ministry of Emergency Situations

1.1 Component-by-component analysis

Component 1: Upgraded hydrometeorological observation network, modelling and forecasting capacities (total cost: USD 8,495,125; GCF cost: USD 4,509,395, or 53.1 per cent)

9. Activity 1.1 will expand and automate the weather, climate and hydrological observation network with the installation of weather stations (AWS), automatic hydrological stations, upper air sounding stations, and low cost radars. All equipment will report data to central servers at Uzhydromet and will conform to WMO standards, including reporting to the Global Climate Observing System (GCOS), GBON and Global Telecommunication System (GTS). Through Activity 1.2, a Climate Information System will be established at Uzhydromet comprising ICT servers networking equipment to integrate data streams (hydrometeorological and satellite-based observations) and automate processes and analyses (including hazard forecasts), generating data and maps to be exported in common formats for sharing with partners and importing into the MES risk management system (activity 2.1). Activity 1.3 will build the technical capacity of Uzhydromet staff on monitoring and forecasting.

10. *Component 2: A functional impact-based Multi-Hazard Early Warning System is established based on innovative impact modelling, risk analyses, effective regional communication and community awareness (total cost: USD 24,428,056; GCF cost: USD 3,098,400, or 12.7 per cent)*

11. Component 2, the largest of the project interventions at 60 per cent of the budget, focuses on helping Uzbekistan manage risks and respond rapidly to potential disasters through an MHEWS, which will help cut lead times directly resulting in reduced loss of life and assets. To that end, the intervention will integrate and develop ICT systems to use the hydrometeorological hazards predicted in component 1, and combine these with vulnerability data to identify risks and provide information for planning and mitigating their impacts.

12. Activity 2.1 will develop and install a modern system for assessing climate risks based on dynamic information on both hazards and vulnerabilities, including socioeconomic risk models for decision-making and prioritization of resilience building long-term/future

investments, thus helping reduce exposure to risks. The MHEWS will be able to forecast hazards by automatically processing hydrological and meteorological observations, weather and seasonal forecasts, and derived drought/avalanche/mudflow/landslide forecasts from Uzhydromet (through activity 1.2) and combining them with risk and exposure information. Actions will be identified ex-ante for different risks and lead times.

13. Activity 2.2 will focus on developing and introducing technical guidance, institutional and coordination frameworks to increase the efficiency of data collection, hazard mapping risk assessment, impact-based warning and actions, and information dissemination to regional centres. Among these, the project will explore and facilitate promotion of forecast-based financing (FBF), which will increase the speed with which finance can be made available to affected areas and communities.

14. Finally, activity 2.3 will work on implementing a system for information dissemination to Regional Climate Management Centres (RCMCs) and area-specific mobile alerts. This involves setting up information visualisation and analysis systems (video walls, telecommunication systems, servers and ICT storage) at seven RCMCs, to enable them to visualise the maps and impact-forecast information provided through the risk analysis and warning system (activity 2.1) and combine it with local (regionally available) information on current vulnerabilities and field-based information.

Component 3: Strengthened climate services and disaster communication to end users (total cost: USD 5,708,380; GCF cost: USD 1,915,880, or 33.6 per cent)

15. Component 3 will support strengthening the delivery of climate information services and disaster warnings to users in Uzbekistan at two levels:

- (a) First, by establishing a National Framework of Climate Services as a mechanism to bring together producers and users of hydrometeorological and climate information and to ensure that information and services reach their end recipients both in the various sectors of government and society and at the different geographic levels down to local communities. In addition to ensuring the relevance of climate information products, working with public and private stakeholders with a view to reorient the existing financial model behind the provision of such services towards cost-efficiency and self-sustainability will be a key part of the exit strategy and long-term sustainability of the project; and
- (b) Second, by improving the 'last-mile' aspect of warning dissemination and communication, providing communication technologies to support real-time risk evaluation by RCMCs and first responders and ensuring 'last-mile' delivery of early warning risk information to the communities at risk and population at large. Trainings will be organized by RCMCs in collaboration with the Red Crescent Society and other community-level NGOs, and annual community forums to help communities at risk better interpret, understand and react to those warnings, as well as facilitate forecast-based actions and response.

16. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the respective term sheet and addendum XVII, titled "List of proposed conditions and recommendations", respectively.

II. Assessment of performance against investment criteria

17. The project consolidates the gains made under the World Bank Central Asia Hydrometeorology Modernization (CAHM) Project to upgrade the Uzbekistan Hydro-Meteorological Service (Uzhydromet) and provides the infrastructure and technology to further develop and improve the Uzbekistan Multi-Hazard Early Warning Services (MHEWS) for the

entire population. The project aims to provide improved hydrometeorological services for all of Uzbekistan, but most importantly for the 11 million people living in high-risk areas of the country (34 per cent of the population) who produce a significant proportion of the country's GDP. Uzbekistan is already a relatively vulnerable country to natural disasters and climate change will exacerbate these vulnerabilities.

18. The project proposal has been carefully considered and crafted and if successful will enable Uzbekistan's Ministry for Emergency Situations (MES) in conjunction with Uzhydromet to deliver comprehensive MHEWS to reduce losses and damage caused by high-impact hydrometeorological events in the country. Moreover, there is the prospect that the benefits of this project will extend to other countries by strengthening and improving Uzhydromet's services, which it provides in its role as a WMO Regional Specialised Meteorological Centre (RSMC). RSMCs provide important meteorological and hydrological information and data to other National Meteorological and Hydrological Services (NMHS) in the region, enabling disaster management authorities to make better informed decisions to reduce loss and damage in their own countries.

2.1 Impact potential

Scale: N/A

19. Uzbekistan ranks 24th on the World Bank global natural disaster hotspots, with 9.3 per cent of the total country area at risk, 65.6 per cent of the population living in risky areas, and 65.5 per cent of the national GDP (USD 12 billion annually) generated from areas at risk. These constitute the target areas of the project interventions.

20. The project seeks to reduce the exposure of Uzbekistan's communities, livelihoods and infrastructure to climate-induced natural hazards through a well-functioning, national, multi-hazard, impact-based forecasting and early warning system. It proposes to increase the resilience of communities by reducing the loss of lives, livelihoods and assets in two ways: (i) directly, through improved MHEWS for approximately 11 million people (34 per cent of total population) who live in flood and hazard affected areas of whom 50.16 per cent are women; and (ii) indirectly, through enhanced service delivery of Uzhydromet to improve community resilience as a whole. The project will promote the transformation of climate hazard forecasting and warning from a reactive hazard-based system to an anticipative, user-oriented and impact-based system.

21. The proposal seeks to provide an integrated and comprehensive approach for using the hydrometeorological hazards predicted and combining these with vulnerability data to identify risks and provide information for planning and mitigating their impacts. It will improve the efficiency of the current early warning system by automating the sharing and production of risk-related data, as well as the communication of warnings. The project will also develop and support methodologies for hazard and risk mapping and risk zoning for key climate-induced hazards (floods, landslides, mudflows, droughts and avalanche). Specifically, it will introduce an impact-based information management system for combining data on socioeconomics, infrastructure and the natural environment in order to operationally assess the risks associated with each hazard forecast. This is a good approach and has the potential to significantly reduce the loss of lives and livelihoods in Uzbekistan due to hydrometeorological hazards.

2.2 Paradigm shift potential

Scale: N/A

22. The project identifies the principal paradigm shift as being the change in approach of the MES to disaster risk management from one of reacting to disasters and high-impact weather events to, instead, focusing on the prevention of loss and damage. This is based on multi-hazard impact-based forecasting, GFCS and GBON standards, which are the best practices in

anticipatory action and climate services. If it is successfully implemented the project will transform the current risk management and early warning systems (EWS) in Uzbekistan by introducing new technologies and increasing the efficiency and cost-effectiveness of the EWS. This is likely to significantly increase the savings made by the country as it mitigates the effects of high-impact weather and climate events.

23. Another significant paradigm shift will be in the collection and sharing of hydrometeorological observations and services with other nations in the region. This process began under the World Bank CAHM project, but with the proposed investment in technology the GCF project is likely to take it to a new level, benefiting a significantly greater number of people than those in Uzbekistan through the improvement of hydrometeorological services in neighbouring countries. This has the potential to bring economy of scale through the use of innovative e-infrastructure that is location-independent such as cloud and internet-of-things technologies.

24. The project identifies the changes that are necessary (for example, numerous legislative, technological and community-based changes are proposed or expected through the project) and outlines the long-term changes that it expects to occur together with the anticipated impacts. However, it does not specifically nominate any particular milestones to achieve these.

25. The project provides strong evidence of improving and advancing the general technical understanding of the provision of improved monitoring and warning of hydrometeorological events in Uzbekistan and the threat they represent to the vulnerable population.

26. The project also states that, beyond the standard project monitoring, evaluation and learning frameworks, the core indicators/metrics for tracking progress will also focus on long-term performance targets of climate-related disaster risk and risk management (with the active participation of non-state actors). This will include:

- (a) Measuring the economic loss that the country could suffer in the event of a climate-related disaster, and the resources needed to mitigate the situation;
- (b) Monitoring the operations and maintenance (O&M) commitments of Uzhydromet and MES. This will include ensuring that O&M for new infrastructure is included in the current O&M management plan for both Uzhydromet and MES;
- (c) Characterizing the predominant vulnerable conditions in prone areas, including socioeconomic and environmental fragility; and
- (d) Assessing the performance of risk management interventions based on risk identification, risk reduction, disaster risk management, governability and financial protection, existing indicators of sectoral and national performance already utilized at the national level (e.g. the Paris Agreement, Sendai Framework and the Sustainable Development Goals).

27. While the project does not provide enough evidence of generating new business activities it is highly likely that new jobs will be created in the Uzhydromet organization in addition to MES and potentially at universities in Uzbekistan through expanded research and development. However, while the outcomes of the project are most likely to save many businesses from loss and damage, it will benefit from demonstrating how it will create the opportunity for generating new business or revenue streams that will in the long-term drive uptake and investments in climate information and early warning services.

2.3 Sustainable development potential

Scale: N/A

28. Uzbekistan is a landlocked, lower-middle income country in Central Asia ranked 24th on the World Bank global natural disaster hotspots. It has a complex geography with 72 per cent of

its territory flat and extremely arid and 9.3 per cent of the total country area at risk to climate variability and change. 65.6 per cent of the population live in climate risk areas and 65.5 per cent of the national GDP (USD 12 billion annually) is generated from these areas exposed to climate risk. The proposed interventions seek to build resilience of the communities, their assets and livelihoods.

29. The effectiveness of the interventions is based on the forecast accuracy and increase in lead time for effective planning to mitigate multi-hazards. The increase in lead times of the short-lead (from five days to two weeks) and the long-lead forecasts (from one to two months) will allow farmers, communities and government agencies to carry out early warning and actions using multi-hazard impact-based forecasting nationwide. The interventions will lead to an avoided damage from mudslide of 60 per cent of lives saved and 3 per cent drought damages avoided relative to the baseline. Furthermore, better forecast could lead to an avoided income loss to households of 1 per cent.

30. Although the project will not directly generate net income, it will protect incomes from loss and damages caused by high-impact hydrometeorological events. Similarly the project will not increase competitive capacity but it will increase productivity by providing a mechanism to mitigate the effects of some hydrometeorological hazards for a significant proportion of Uzbekistan's agriculture and infrastructure, which together make up more than 33 per cent of Uzbekistan's GDP.

31. The project will inform the design and construction of new infrastructure to make them more climate-resilient in keeping with the Sendai Framework ("build back better"). By improving risk knowledge on losses and damages associated with different climate hazards, the project will enable the Government of Uzbekistan to optimize budget spending, improving the use of public funds for disaster preparedness and recovery. Risk knowledge will inform land use and investment decisions to avoid maladaptation and poor development practices. Ultimately, this is likely to contribute to poverty alleviation.

32. Most notably, since disasters (natural or human induced) affect a greater proportion of women than men, this project has the potential to reduce gender inequalities in climate change impacts by providing greater warning and awareness of impending high-impact hydrometeorological events.

33. The project directly contributes to the Sustainable Development Goals (SDG), in particular, targets of SDG 13: (i) substantially reducing national disaster mortality, aiming to lower the average per 100,000 national mortality rate compared to the period 2005–2015; (ii) substantially reducing the number of affected people nationally, aiming to lower the average figure per 100,000 compared to the period 2005–2015; (iii) reducing direct disaster economic loss in relation to national GDP; and (iv) substantially reducing disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience.

2.4 Needs of the recipient

Scale: N/A

34. The annual average temperature has increased by 0.27 °C per decade since 1950 (twice the global average). This has led to enhanced evapotranspiration and changes in the timing and zones of snow and ice melt, consequently changing river flows and increasing the risk of droughts, floods, mudflows and avalanches. Increases in rainfall intensity has also led to increased risk of flooding, mudflows and rainfall-induced landslide risks over the eastern mountain and foothill regions where the valleys are highly populated and vulnerable to such risks.

35. The proposal has provided clear evidence that climate-induced hazards remain a significant threat to the sustainable development of Uzbekistan. About 8 million people (26 per

cent of the population) are impacted by mudflows of which 80 per cent occur in the foothills and high mountainous areas. From 1977 to 2015, 1,335 mudflows were recorded. The 2000 drought affected 600,000 people and caused economic losses of about USD 50 million. The 1998 flooding of the Shakhimardan River killed 100 Uzbeks and caused damages estimated at USD 700 million.

36. Climate change is expected to increase the intensity and frequency of hydrometeorological disasters (droughts, floods, mudflows, landslides and storms), putting more Uzbek communities and economic assets at risk. Improved warning services for these natural hazards will be vital for the future prosperity of the country.

37. The project addresses a priority of Uzbekistan to modernize its EWS into an impact-based MHEWS (initially focused on floods, mudflows, landslides, avalanches and hydrological drought in the more populous and economically important eastern mountainous regions), an essential element of the country's climate risk management framework. In the face of increasing climate risks, this MHEWS will serve to enhance the climate resilience of the 32 million people of Uzbekistan (indirect beneficiaries), including the most vulnerable and poor rural communities living in mountainous areas currently at risk from climate-induced hazards.

2.5 Country ownership

Scale: N/A

38. Uzbekistan has prioritized MHEWS in its first nationally determined contribution submitted under the Paris Agreement. The proposal directly addresses this country priority to build the resilience of its vulnerable communities, assets and livelihoods.

39. The project refers to a number of priorities from the country's national development framework. Specifically, the Cabinet Resolution No. 242 of the Republic of Uzbekistan "On further improvement of state system for warning and emergency applications of the Republic of Uzbekistan" which, through MES, implements a state programme to modernize the EWS for natural disasters. Also Decree No. 5066, 1 June 2017; Decree No. 601 passed by cabinet ministers, 8 August, 2017; and Cabinet Resolution No. 299 "On measures to implement the Sendai Framework Programme on Disaster Risk Reduction for 2015–2030 in the Republic of Uzbekistan" was approved in April 2019.

40. The project puts a strong focus on strengthening the "last mile" delivery of disaster-related communication and interaction with end users including vulnerable communities, which will require significant community consultation and engagement.

41. The proposal states that the project originates from consultation with the Government of Uzbekistan and is based on the national request to support the establishment of an EWS. It also states that the project is fully country-driven.

2.6 Efficiency and effectiveness

Scale: N/A

42. The proposed intervention will integrate and develop information and communications technology (ICT) systems to use predicted hydrometeorological hazards, combining these with vulnerability data to identify risks and provide information to mitigate their impacts and for planning. It will improve the efficiency of the current EWS by automating the sharing and production of risk-related data as well as the communication of warnings.

43. The improvements in the accuracy of the impact-based forecasts and increased lead times will bring significant net benefits. The net present value of the interventions is estimated to range between USD 22.6 million and USD 51.8 million based on a 10 per cent discount rate, with an internal rate of return between 24 per cent (for only very highly vulnerable households) and 38 per cent (if avoided damages to highly vulnerable households are included).

44. The proposal also provides a co-financing ratio of 1:3.06, which is significant compared to the baseline for an adaptation project of this nature. This indicates a strong commitment and ownership of the project by the Government.

45. The accredited entity, UNDP, has extensive experience in the implementation of projects and programmes in Uzbekistan and has carried out several joint projects with Uzhydromet, including technical assistance for designing and providing training programmes for climatologists, support for seminars and the supply of technological equipment.

III. Assessment of consistency with GCF safeguards and policies

3.1 Environmental and social safeguards

Does the project comply with the GCF Environmental and Social Policy?	Yes ☒ No ☐
Does the project have minimal to no environmental and social safeguards (ESS) risks compatible with SAP?	Yes ☒ No ☐

46. The project is expected to contribute to modernization of Uzbekistan's early warning system thereby improving generation and use of climate information for climate risk management and enhancing climate resilience of communities currently at risk from climate-induced hazards. The project focuses on the identification of landslide risk areas under heavy rainfall, and mudflow and avalanche risk maps and forecasts to provide much needed information ahead of such events, and the development of hydrological drought forecasting to improve water and irrigation management. The AE has classified the proposal as a low-risk project, which is confirmed as being equivalent to GCF category C classification, and within the AE's accreditation level. The project activities are low risk with regard to the requirements of the GCF Indigenous Peoples Policy.

47. Most of the interventions under the project include capacity-building for Uzhydromet and the Ministry of Emergency Situations, effective regional communication and community awareness. Any equipment to be installed by the project for upgrading and modernization of the meteorological and hydrological observation system will be located at existing government facilities and/or on existing structures, thereby reducing costs and importantly, minimising environmental and social impacts that may arise from the project's implementation. Potential minimal risks are mainly environmental, spatially and temporally restricted, and reversible. Examples include vegetation clearing, sediment movement, disturbance of riverine and riparian ecosystems, occupational safety risks to workers, and noise. For potential, minimal risks that have been identified, the AE has included mitigation measures in its environmental and social screening report for the project, including the budget for the proposed measures.

48. Requirements to ensure the implementation of mitigation measures for minimal environmental and social impacts will be included in contract documentation for service providers. The project management unit will engage a safeguards and gender specialist, however the roles and responsibility of the specialist beyond grievance redress management is not clear. The AE is required to ensure that the specialist oversees implementation of the mitigation measures and leads on other matters related to safeguards.

49. Stakeholder engagement was conducted during the project's design through dialogues and workshops. The stakeholder engagement plan includes a report on consultations held with national authorities and members of beneficiary communities, including details of dates and venues, and issues discussed at various meetings. Furthermore, the project has developed a plan for the engagement of stakeholders during the project's implementation. The plan identifies

stakeholders that will be targeted for different project activities and the means of participation that will be employed. Beneficiary communities will be engaged through community forums for activities that involve strengthening disaster risk communication and interaction with end users.

50. A grievance redress mechanism will also be established at the project level that will be managed by the project management unit. A safeguards specialist will receive and coordinate the resolution of grievances received. In addition, the AE's institutional-level grievance mechanism and the GCF independent redress mechanism will be available to affected or potentially affected people and communities. The AE is required to ensure that the project-level grievance redress mechanism is communicated to communities and other stakeholders prior to commencing implementation.

3.2 Gender policy

Does the project comply with the GCF Gender Policy?	Yes ☒ No ☐
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51. The AE has provided a gender assessment and gender action plan and therefore complies with the requirements of the GCF Gender Policy.

52. The gender assessment provides a description of the enabling environment for addressing gender equality in Uzbekistan. A legal and administrative framework has been put in place to promote gender equality and minimize discrimination against women. This includes laws and the constitution itself which established equality of rights between women and men. Uzbekistan ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and other international instruments. However, some of the regulations have created barriers for women. For instance, the labour code demotivates employment of women, particularly by private companies, by prohibiting female labour under certain working conditions and through restrictions on pregnant women and women with young children. At the institutional level, the Women's Committee of Uzbekistan, which was integrated into the Ministry of Family and Community Affairs, is the main entity for advancing gender equality. It aims for the advancement of women by developing and implementing policies on women's rights, improving the social and economic status of women, and ensuring women's participation in reforming and modernizing the country. In addition, a commission on gender equality supports the implementation of government policies related to gender equality.

53. The gender assessment provides the context for gender issues, specifically, access to education, politics, representation in decision-making, participation in the labour market and entrepreneurship, access to resources such as water, land and finance and gender-based violence. Women in Uzbekistan face gender stereotypes and community attitudes about their roles that negatively influence their access to professional training while caregiving responsibilities restrict their participation in the formal labour force. In the project's intervention area, the gender assessment demonstrates the disparities faced by women and men that result in differential vulnerabilities to climate-related disasters. Disparities encountered by women include higher levels of poverty due to lower incomes than men and extensive care-giving responsibilities and domestic work, which in turn present mobility constraints and therefore require timely evacuations during disasters. For men, the challenge comes from patriarchal and societal norms related to masculinity and men's roles in the family and home as the principal economic provider; bearing responsibility for the material well-being of dependents can be difficult when disasters destroy livelihoods and assets. In addition, the gender assessment outlines the perceptions of women and men on climate-related effects and subjectivity due to the lack of appropriate monitoring and assessment of climate change in Uzbekistan.

54. The project aims to improve the coverage, efficiency and accuracy of the MHEWS and enhance community use of climate information to make their livelihoods resilient to climate-induced hazards. Developing a high level of awareness of disaster risks, particularly for women is one of the main issues identified by the gender assessment that may contribute climate change adaptation. The project is expected to address this through disaster warning communication to facilitate proactive responses to protect lives, assets and livelihoods. The gender assessment is based on a desk review of available information and focus group focus group discussions on the project during stakeholder engagement activities at the preparation stage. However, the community-level focus group discussions have not clearly identified the needs and priorities of women and men, nor has the AE presented the project's entry points to address them.

55. The AE is advised to undertake additional analysis to clearly identify needs and priorities of both women and men as part of the socio-economic vulnerability assessments included in the gender action plan. Further, the AE is advised to review if behavioural change in communities, particularly responsiveness and preparedness based on use of credible climate and disaster risk information and advice received through project's implementation. Indicators should go beyond counting of number of women and men participating in the project, and include issues such as level of satisfaction with climate information as a result of the project compared to the access to climate information before the project, and whether the information is tailored to their needs.

3.3 Risks

3.3.1. Overall programme assessment (medium risk):

56. GCF is requested to provide a grant of USD 9.9 million to modernize the early warning system (EWS) in Uzbekistan. Co-financing of USD 40.6 million is provided from the Government of Uzbekistan as part of the budgetary allocations to MES and Uzhydromet in the form of grant and in-kind contribution. There is no co-financing from the AE.

57. The Government of Uzbekistan and AE request GCF resources in full grant as the project does not have any revenue-generating activities and due to the public good nature of proposed activities.

3.3.2. Accredited entity/executing entity capability to execute the current project (medium risk):

58. UNDP is AE for the project and has extensive track record in the implementation of projects in Uzbekistan. It has carried out several joint projects with Uzhydromet and MES in the field of climate change and EWS.

59. The EE for the project is the MES which has implemented a number of projects funded by other development partners over the past 5 to 10 years with an average budget of USD 1.3 million. The UNDP and MES have implemented a joint project for disaster risk management over six years. The capacity assessment of the EE is yet to be received.

3.3.3. Project-specific execution risks (medium risk):

60. O&M plan: the funding proposal states that the Government is committed to cover the O&M cost up to 20 years beyond the project implementation. The current co-financing covers a total of USD 4.2 million for O&M costs during the project period. After the project implementation, ~USD13.4 million has been estimated for O&M over a 14-year period, however this amount is not included in the co-financing letter of the government. The AE assesses the

risk of non-availability of government financing to be low given the strong commitment of the Government to implement the EWS and official decrees (paragraph 33).

61. Integration of EWS in government planning: the project is planning to promote forecast-based financing (FBF) and to develop relevant standard operating procedures, frameworks and protocols for decision-making. Therefore, continued national and local political support and commitment to integrate EWS in government decision-making and policies is crucial for sustainability of the project.

62. Economic analysis: an economic analysis has been carried out, resulting in an economic internal rate of return (EIRR) of 24 per cent. It compares the with- and without-project scenario over 15 years. The benefits of the project have been estimated based on the assumption of a 3 per cent reduction in damages, avoided damage from natural disaster (e.g. mudslide, drought) and avoided income losses to households. Three sensitivity test cases were examined: (i) cost decreased by 20 per cent; (ii) benefits increased by 20 per cent; and (iii) cost decreased by 20 per cent, and simultaneously benefits decreased by 20 per cent. In all cases, the project shows positive net present values (NPVs).

3.3.4. GCF portfolio concentration risk (low risk):

63. In the case of approval, the impact of this proposal on the GCF portfolio concentration in terms of result area and single proposal is not material.

3.3.5. Compliance risk (medium risk):

64. Uzbekistan is not subject to the United Nations Security Council (UNSC) resolutions.

65. UNDP, as the AE, informs that, by virtue of being an organ of the United Nations, it is beholden to the Consolidated UN Security Council Sanctions List and screens (potential) partners against such list. UNDP confirms that no individual or entity that is listed on any UNSC sanctions list, including the UN Consolidated Sanctions list will be involved in any manner with the project or its activities, either as a counterparty, implementer, or beneficiary.

66. UNDP advises that it applies a zero-tolerance policy in relation to fraud and corruption in all its activities and operations. UNDP has a commitment, when developing a new programme or project, to ensure that risks related to fraud and corrupt practices are fully identified and considered in the programme/project design and processes and that adequate and effective measures to mitigate such risks are put in place.

67. In addition to screening potential partners against the UN Consolidated Sanctions List, due diligence requirements for UNDP's partners are incorporated in two main partner capacity assessment tools applied in relation to UNDP programming. The processes and requirements for UNDP's partnership capacity assessment tool (PCAT) require UNDP to carry out a thorough due diligence of the risks in relation to the programme/project it intends to engage in, as well as in relation to the potential partners who will be involved in the implementation of such programmes/projects.

68. The PCAT aims to assess overall capacity of partners required for implementation of projects and requires that all related risks must be assessed as part of formulating and appraising new programmes. Such capacity assessments include, among other things:

- (a) A screening of all entities being considered to be contracted by, or partner with, UNDP against the Consolidated UNSC Sanctions List; and
- (b) An assessment of any history of fraud, corruption or other fraudulent practices and/or potential conflicts of interest.

69. Internal control components are built in response to PCAT results and into the design of the project, ensuring that financial management of the programme/project contains adequate safeguards to prevent, monitor and address any risks and acts of fraud, corruption or anti-money laundering and counter-financing of terrorism (AML/CFT) that may be identified.

70. UNDP advises that the PCAT is supplemented by the inter-agency agreed risk-based Harmonized Approach to Cash Transfers (HACT) framework. The HACT framework represents a common operational (harmonized) framework for transferring cash to government and non-governmental partners (both implementing partners and responsible parties), irrespective of whether these partners work with one or multiple United Nations agencies. The objective of the HACT framework is to support a closer alignment of development aid with national priorities and to strengthen national capacities for management and accountability, with the ultimate objective of gradually shifting to national systems. It is intended to serve as a simplified set of procedures on requesting, disbursing, providing assurance, and reporting on funds to effectively manage risks, reduce transaction costs and promote sustainable development in a coordinated manner.

71. UNDP informs that any implementing partner or responsible party that is expected to receive cash transfers of more than USD 300,000 in a programme cycle (or subject to other specific high-risk considerations), is presumed to present a material risk to UNDP and will require a HACT micro assessment by a qualified third-party service provider. This risk-based micro assessment will define the frequency of spot checks, programmatic output verification, auditing requirements, cash transfer modalities, reporting requirements, among others, each of which will be built into the design of the project and aims to address risks in all instances involving transfers of funds.

72. UNDP confirms that there are no intentions to distribute or disburse to beneficiaries, either directly or indirectly, cash, vouchers, commodities or other items of value. Furthermore, no cash transfers to the IP are envisaged as the project components requiring cash applications shall be implemented by UNDP directly under the UNDP Country Office support modality.

73. UNDP advises that it is their policy that retaliation is strictly prohibited against individuals holding UNDP assignments/contracts (i.e. staff members, interns, UN volunteers and contractors) who have, in good faith, properly reported allegations of misconduct, or who have cooperated with a duly authorized audit or investigation. Such retaliation violates the fundamental obligation of all staff members to uphold the highest standards of efficiency, competence and integrity as required under the UN Charter, and to discharge their functions and regulate their conduct with the interests of UNDP only in view. Retaliation, as defined under the Policy for Protection against Retaliation, is itself misconduct and a staff member who commits retaliation may be subject to disciplinary measures.

74. Recommended risk rating: the Office of Risk Management and Compliance (ORMC)/Compliance Team has conducted a review of the project in accordance with relevant GCF Board approved policies and does not find any material issue or deviation with respect to compliance issues. Based on available information for this funding proposal, the ORMC/Compliance Team have determined a risk rating of 'medium' and have no objection to this request proceeding to the next steps for processing.

75. ORMC/Compliance would like to remind UNDP, as the AE, of its continuing obligations and responsibilities with regard to monitoring and reporting any risks for money laundering and financing of terrorism and prohibited practices among the intended counterparties, executing entities, beneficiaries, persons involved, or any of the proposed activities.

3.3.6. Recommendations

76. It is recommended that the Board consider the above factors in its decision.

Summary risk assessment		Rationale
Overall programme	Medium	The government's commitment to cover O&M costs beyond the project implementation is critical for the sustainability of the project. The capacity assessment of the EE is yet to be available.
Accredited entity/executing entity capability to implement this programme	Medium	
Project-specific execution	Medium	
GCF portfolio concentration	Low	
Compliance	Medium	

3.4 Fiduciary

Does the project comply with the GCF AE fee policy?	Yes ☒ No ☐
In case the EE (ies) is different to the AE, has the financial management capacity assessment of the EE (ies) been undertaken?	Yes ☒ No ☐

77. The United Nations Development Programme (UNDP) will act as the accredited entity for the project. The project will be implemented following UNDP's National Implementation Modality (NIM) and the executing entity will be the Government of Uzbekistan acting through the Ministry of Emergency Situations (MES) of the Republic of Uzbekistan. GCF funds will be provided in the form of grant, given the public good nature of the proposed climate risk reduction investments.

78. This project will provide the critical technical and financial resources, access to innovative technologies and expertise and will promote the transformation of climate hazard forecasting and warning.

79. UNDP provides a three-tier oversight and quality assurance role involving UNDP staff in Country Offices and at regional and headquarters levels. This includes management of funds, programme quality assurance, fiduciary risk management, timely delivery of financial and programme reports to GCF and other requirements as per the accreditation master agreement (AMA).

80. UNDP will provide implementation support as agreed in the Letter of Agreement on Support Services signed between the MES, on behalf of the Government of Uzbekistan and the UNDP. Such project support services include procurement support and payments to vendors.

81. UNDP will ascertain the national capacities of the implementing partner by undertaking an evaluation of capacity following the Framework for Cash Transfers to implementing partners (part of the Harmonized Approach to Cash Transfers-HACT). Partner capacity assessment has been conducted for the MES that reconfirmed its capacities to govern and implement this project.

82. The primary responsibility for day-to-day project monitoring and implementation rests with the Project Manager. The Project Manager will inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, so that the appropriate support and corrective measures can be adopted.

83. The financial management and procurement of this project will follow UNDP financial rules and regulations. The Project Board is responsible for taking, by consensus, management decisions in accordance with standards that shall ensure management for development results,

best value for money, fairness, integrity, transparency, and effective international competition. All projects will be audited following the UNDP financial rules and regulations and applicable audit guidelines and policies.

3.5 Results monitoring and reporting

Is the project in line with the GCF Monitoring and Accountability Framework?	Yes ☒ No ☐
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84. As an adaptation project, the intervention expects to reach about 11.3 million direct and 32.4 million indirect beneficiaries. The project will deliver direct benefits to 34.9 per cent of the Uzbekistan population, of which women comprise 5.7 million direct and 16.3 million indirect beneficiaries as per the gender-disaggregated metrics for the GCF core indicator

85. The theory of change adequately explains how change is understood to come about in the country. The goal statement is properly articulated, and stated outcomes are defined in a manner that is clearly supportive of meeting the ultimate project goal.

86. At the core indicator level, the logical framework has been designed with relevant details, including reporting on the appropriate core indicators for adaptation, as well as on the respective impact, outcome and output indicators for the targeted results areas as per the GCF performance measurement framework and results management framework.

87. As regards impact indicator A1.1, the proposed baseline and targets are properly aligned with relevant data and analysis provided in the Feasibility Study and Economic Analysis. At the project performance level, proposed indicators are designed to sufficiently capture what changes will occur as a result of establishing a functional Multi-Hazard Early Warning System, as well as having communities with improved access to early warning alerts in the targets areas.

88. The implementation timetable has been found to follow the appropriate format as it properly integrates specific milestones and deliverables for each of the activities.

89. The arrangements for monitoring, evaluation and reporting (section D.4 of the funding proposal) are adequate.

3.6 Legal assessment

Has the AE signed the Accreditation Master Agreement (AMA)?	Yes ☒ No ☐ <u>Date of AMA execution:</u> 8/5/2016
Has a bilateral agreement on privileges and immunities been signed with the country where the proposed project/programme will be implemented?	Yes ☐ No ☒
Has a certificate of internal approval been submitted?	Yes ☐ No ☒

90. The accreditation master agreement (the “AMA”) was signed with the accredited entity on 5 August 2016, and it became effective on 23 November 2016.

91. The accredited entity has provided a legal opinion/certificate confirming that it has obtained all internal approvals and it has the capacity and authority to implement the project.

92. The proposed project will be implemented in the Republic of Uzbekistan, a country in which GCF is not provided with privileges and immunities. This means that, amongst other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. The Secretariat sent a draft privileges and immunities agreement together with background notes to the national designated authority (NDA) of Uzbekistan in December 2018. However, no formal response has been received so far.

93. The Heads of the Independent Redress Mechanism (IRM) and Independent Integrity Unit (IIU) have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by GCF are made only after GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

94. In order to mitigate risk, it is recommended that any approval by the Board is made subject to the following conditions:

- (a) Signature of the funded activity agreement in a form and substance satisfactory to the GCF Secretariat within 180 days from the date of Board approval; and
- (b) Completion of the legal due diligence to the satisfaction of the GCF Secretariat.

Independent Technical Advisory Panel's assessment of SAP022

Proposal name:	Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change-induced hazards
Accredited entity:	UNDP
Country/(ies):	Uzbekistan
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. This is a simplified approval process (SAP), small-size adaptation funding proposal focused on technology transfer and capacity-building for the mitigation of climate change impact in Uzbekistan. The funding proposal aims to upgrade the early warning forecast and information dissemination capacities of the Uzhydromet service, which is the Regional Specialized Meteorological Centre (RSMC) of the World Meteorological Organization (WMO) in Central Asia. This funding proposal is supplementary to the ongoing World Bank and WMO joint Central Asian Hydro-Meteorological (CAHM) project¹ for strengthening RSMC operations at regional level in compliance with WMO standards and will be based on the experience and lessons learned from this project. The proposed GCF investment will contribute to the development of automated procedures and the modelling capacity for Uzhydromet services that can serve as an example for other developing Central Asian countries. The funding proposal plans to drive significant institutional changes, catalysing increased efficiency in climate hazard warning.
2. The Ministry of Emergency Situations (MES) of Uzbekistan is the executing entity (EE) of the project, acting on behalf of the Government of Uzbekistan, and is responsible for the overall coordination of project activities at national level. MES will enter into legal agreements and/or arrangements with Uzhydromet, which will serve as a responsible partner for the implementation of certain activities under Output 1. Uzhydromet will assist the EE in successfully delivering project outcomes and will be accountable to MES for the execution of its co-financing activities under Output 1.
3. Uzbekistan is highly vulnerable to floods and mudflows caused by snowmelt runoff and/or severe storms. Over 2,600 extreme mudflows have been documented over the past 80 years in Uzbekistan. Very large floods and mudflows are also caused by outburst floods from mountain lakes. The feasibility study showed that about 7.6 million people are vulnerable to mudflows and flooding in Uzbekistan. Out of this 7.6 million, 5.2 million reside in areas with

¹ "Upgrading of Hydrometeorological Services of Central Asian countries (Uzbekistan, Kyrgyzstan and Tajikistan) – CAHM project". Four hydromet agencies (in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) have agreed to a common methodology to verify hydromet forecasting accuracy, completed the installation of a regional distance learning system, and reached consensus on guidelines and approaches to regional procedures for emergency prevention. The project is led by Kazakhstan. The introduction of a cascade method of severe weather forecasting programme (SWFP) in Central Asia is ongoing in Uzbekistan (SWFDP-CA, SWFP-Central Asia | WMO).

high frequency of flooding (one case every one to three years), and 1.6 million live in areas of very high frequency with one occurrence of flooding per year.

4. Most damage occurs in the economically strong and flooding-prone provinces in the eastern part of the country, particularly Andijan and Fergana (two of the project's target regions), which lose 3 per cent and 2 per cent, respectively, of annual gross domestic product (GDP) on average due to flooding.² The populations of Andijan and Fergana make up 30 per cent of people living in landslide-prone zones and 57 per cent of people living in flood- and mudflow-prone zones. More details about territories (hectares), roads (kilometres) and railways (kilometres) in the hazard zones over the country's territory are provided in Annex 10 to the funding proposal.

5. The proposed project will invest in build critical technical and human capacities required for the effective operation of multi-hazard early warning systems (MHEWS). Three key outputs will be achieved by the project:

- (a) *Output 1 should be an upgraded hydro-meteorological observation network and modelling and forecasting capacities (45 per cent of GCF grant)* - This output will be achieved through the upgrading and modernization of the meteorological and hydrological observation system; upgrading of Uzhydromet's capacity to store, process and develop hazard products and communicate hydrometeorological data to regional divisions; and re-training and advanced training of Uzhydromet staff on monitoring and forecasting technologies and procedures. International experts will train weather forecasters to work with new products of the KOSMO weather model³ and other software packages. All equipment will report data to central servers at Uzhydromet and will conform to WMO standards, including reporting to the Global Basic Observing Network (GBON), the Global Climate Observing System and the Global Telecommunication System.
 - (b) *Output 2 should be established as a functional MHEWS based on innovative impact modelling, risk analyses, effective regional communication and community awareness (31 per cent of GCF grant)* - The following activities will be implemented to achieving this output: development and installation of a modernized and efficient system for assessing climate risks based on dynamic information on both hazards and vulnerabilities, including socioeconomic risk models for decision-making and the prioritization of resilience-building in long-term/future investments; development and introduction of technical guidance and institutional and coordination frameworks to increase the efficiency of data collection and archiving, hazard mapping and modelling, risk assessment, and dissemination of information to Regional Crisis Management Centers (RCMCs); and design and implementation of a system for information dissemination to RCMCs and area-specific mobile alerts, including an information visualization system for RCMCs with software.
 - (c) *Output 3 should be strengthened climate services and disaster communication to end users (19 per cent of GCF grant)* - The following activities will be implemented to achieve this output: establishing a National Framework for Climate Services (NFCS) for Uzbekistan; designing a sustainable business model for disaster-related information and services; and strengthening disaster warning dissemination and communication with end users.
6. To achieve these outcomes, 25 new automatic weather stations (AWS) will be installed, calibrated and put in operation; 4 upper-air stations will be modernized; 2 online radar system will be established; hazard and risk maps (covering landslides, mudflows, avalanches and

² World Bank (2016) Europe and Central Asia country risk profiles for floods and earthquakes.

<<http://documents.worldbank.org/curated/en/958801481798204368/Europe-and-Central-Asia-Country-risk-profiles-for-floods-and-earthquakes> and outlined in Section 5 of the PFS>.

³ COSMO-Model (cosmo-model.org)

hydrological droughts) will be prepared for seven⁴ of the most vulnerable districts; 600 Uzhydromet staff members (60 per cent women, 40 per cent men) will be trained on monitoring and forecasting technologies and procedures; 7 RCMCs will be equipped with visualization systems and have access to updated risk maps, area-specific hazard alerts and warning information for risk mitigation and early actions; level 3⁵ of user interaction in the co-design and co-production of disaster-related information establish as a result of an NFCS.

7. Key results anticipated are:

- (a) 11,296 million people (34.9 per cent of the total population of 32.39 million) are direct beneficiaries, and the rest of the population are indirect beneficiaries;
- (b) At least a 3 per cent (USD 9.37 million) reduction expected annually in damages (USD 312.3 million annual average) due to the various hazards. This is based on an increase in the lead time of planning for the hazard and avoidance of loss of life due to the hazard;
- (c) The lead time of warnings for hydrometeorological hazards provided in 1–3 days will be increased to 4–6 days for sudden changes in weather covering most of the territory of the country and to 3–4 days lead time for mudflows and 4–5 days for avalanche;
- (d) The time required to communicate warnings from the MES headquarters to its regional divisions will be reduced from 15 minutes to 7.5 minutes, and from 60 minutes to 30 minutes for communication to the population;
- (e) There will be a 50 per cent reduction in lives lost (from 8 in baseline to 4) during mudslides;
- (f) Economic loss during drought will be reduced by 3 per cent;
- (g) The level of institutional coordination among Uzhydromet, MES and RCMCs on multi-hazard early warning responses and dissemination reached level 4;⁶ and
- (h) At least three revenue generation options based on disaster-related information/services are endorsed by users in climate-sensitive sectors.

8. The independent Technical Advisory Panel (TAP) considers that the climate change impact mitigation potential of this funding proposal should be high, taking into consideration the upgrading of the early warning system (EWS) and improvements to the coordination among institutions involved in the operation of the EWS.

1.2 Paradigm shift potential

Scale: N/A

9. The most important element of this funding proposal is that it contributes to the climate change impact mitigation technology transfer process with strong activities on local capacity-building and strengthening the institutional coordination, which is crucial for the operation of the EWS.

10. According to the funding proposal, the EWS in Uzbekistan is not fully operational and does not have the capacity to ensure an ex-ante, user-oriented early warning process. The

⁴ The project has identified 15 districts located in 7 provinces in eastern Uzbekistan as hazard-prone target regions.

⁵ Level 1: No institutional engagement channels with end users exist; level 2: There is a user-dialogue platform set up through an NFCS consultation process to review the disaster-related information products; and level 3: A regular user-dialogue mechanism is incorporated into the NFCS action plan and the National Climate outlook platform.

⁶ Level 1: There are no institutional coordination mechanisms; level 2: An institutional coordination framework has been established but it is not supported by clear standard operating procedures (SOPs) on data exchange and communication; level 3: There are at least 2 SOPs in place at Uzhydromet, MES and the RCMCs on data exchange, risk and hazards analysis, and warning dissemination to regional crisis centres; and level 4: At least four SOPs are in place at Uzhydromet, MES and the RCMCs on data collection and archive, risk and hazards analysis, and warning dissemination to regional crisis centres.

project will promote the transformation of climate hazard forecasting and warning from a reactive (ex-post) hazard-based system to one that is proactive (ex-ante), user-oriented and impact-based. Such approach is not usual practice for Uzbekistan or for the countries in this region due to low capacities for early forecast and reaction and due to traditional approaches being practiced so far. The long-term climate change forecast capacities of Uzhydromet also will be strengthened, and it will provide sufficient information to introduce climate change-informed planning into infrastructural projects or other sectoral plans.

11. The project has high potential to be scaled up at least at the regional level, facilitated by the standardization of the monitoring and reporting of hydrometeorological processes and compatibility with the WMO and GBON standards and systems. This standardization process is supported by the CAHM project.

12. There are legal and institutional arrangements in the form of bilateral agreements between the national hydrometeorological services of the neighbouring Central Asian states on disaster data-sharing and warning. However, there are significant capacity constraints on using remote sensing, geographic information system technologies (for analysing risks), data processing and hazard-specific modelling tools (to be addressed by Activity 1.2). Strengthening of transboundary cooperation is another activity supported by the funding proposal, which leads to transformational changes. Given that 80 per cent of floods and mudflows, which have a significant impact on Uzbekistan's territory and population, are formed outside the country, strengthening the capacity of the national EWS in isolation (without establishing operational transboundary cooperation) cannot be transformative and effective. Therefore, the strengthening of transboundary cooperation on the early warning of climate change-related hazards by establishing common formats in the region is a significant transformational activity of the project.

13. During the exchange of views, the AE provided additional information on the contribution of the proposed project to promote the involvement of insurance companies in the climate change adaptation process, which significantly depends on the confidence in and reliability of Uzhydromet's product. According to the additional information provided by the AE, insurance programmes in Uzbekistan already contribute to increasing the climate change adaptation capacity of Uzbekistan through access to credit, but this is mainly for coping with small risks. Among 33 insurance companies currently operating in Uzbekistan, 8 out of the top 10 companies with a market share in general insurance above 70 per cent are in regular contact with Uzhydromet. Uzhydromet is developing a unified classification of hazardous phenomena in order to harmonize terms and conditions for insuring against disaster risks. This will both strengthen early warning communication and guarantee that insurance premiums can be paid based on weather risk statements certified by Uzhydromet.

14. The independent TAP considers that the project has a high potential to facilitate changes in traditional planning approaches in the economic and social development sectors and the decision-making process to move to preparedness-oriented planning; and strengthen the role of insurance companies in the climate change adaptation process by increasing the reliability of hydrometeorological observed data sets and future forecasts for planning.

1.3 Sustainable development potential

Scale: N/A

15. All components and activities of the funding proposal will contribute to the sustainable development process through increasing the safety of the most vulnerable populations and infrastructure (roads, railways), reducing economic losses and shifting the planning process from ex-post funding of rehabilitation costs to ex-ante planning and investing in strengthening the country's preparedness for climate change-related hazards.

16. The project directly contributes to Sustainable Development Goal (SDG) 13, to take urgent action to combat climate change and its impacts, and SDG 11, to make cities and human settlements inclusive, safe, resilient and sustainable. The funding proposal specifically focuses on the following SDG targets:
- (a) Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters by strengthening the technical parameters of the EWS and local capacities for its sustainable operation (outputs 1 and 2);
 - (b) Target 13.2: Integrate climate change measures into national policies, strategies and planning. One of the transformational changes expected after the project implementation is that ex-ante planning will prevail ex-post climate change impact reduction and rehabilitation (outputs 2 and 3);
 - (c) Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. Adaptation through climate change impact reduction, strengthening of the early warning process and human and institutional capacity-building are key activities of the funding proposal;
 - (d) Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global GDP caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. As a result of strengthening EWS operational capacity, life losses will be reduced by 50–60 percent, and the effect on the economy should be a 3 per cent reduction in annual losses.
17. By improving knowledge on loss and damage associated with different climate-related hazards, the project will help the Government of Uzbekistan to reduce and optimize budget spending, improving the use of public funds for disaster preparedness and recovery. Risk knowledge will inform land use and investment decisions to avoid maladaptation/poor development practices.
18. This proposed project contributes to all four priorities for action of the Sendai Framework for Disaster Risk Reduction 2015–2030, to which Uzbekistan is signatory: understanding disaster risk; strengthening disaster risk governance to manage it; investing in disaster risk reduction for resilience; and enhancing disaster preparedness for effective response in recovery, rehabilitation and reconstruction. The funding proposal plans to promote the insurance mechanism as an adaptation measure against climate change-related hazards.
19. The independent TAP assesses that this technology transfer proposal has high potential to contribute to sustainable development, however the long-term sustainability of this technology transfer project significantly depends on local capacity and institutional coordination established by the project.

1.4 Needs of the recipient

Scale: N/A

20. According to the country's Third National Communication (TNC) to the United Nations Framework Convention on Climate Change, since 1950 the average warming rate in Uzbekistan is 0.27°C per decade, which is twice the global average. The most considerable increase in average annual air temperature has been observed in the Fergana and Tashkent meteorological stations. The most considerable increase is observed in daily minimums, which increased by 8°C between averages for the periods 1900–1919 and 1994–2013 in the Tashkent meteorological station.
21. Increases in temperature lead to accelerated evapotranspiration and changes in the timing and zones of snow and ice melt, and consequently changes in river flows and increased

risk of droughts, floods, mudflows and avalanches. Mudflow, landslides and flooding risks are most prevalent in the east of Uzbekistan, while drought affects the whole country, especially the more arid western areas. The average number of mudflows per year over the observation period 1900–2013 is 32, while in the most recent 30 years, the number of mudflows increased to up to 42 per year. The simultaneous formation of mudflows in 20 and more gullies also happens in the east of Uzbekistan. Due to the high concentration of the population, economic activities and climate-related hazards such as floods, mudflows, landslides and avalanches, the Fergana valley (project target area) is subject to high climate-related disaster risks. The transboundary impact from neighbouring countries is also significant, as mentioned above.

22. In the period 1977–2015, 1,335 mudflows were recorded, 33 of which led to loss of life. A single drought event in 2000 affected 600,000 people and caused an economic loss of USD 50 million. In 1998, flooding from the Shakhimardan River originating in Kyrgyzstan killed 100 Uzbeks and caused damage estimated at USD 700 million. A flood event in February 2005 in the Boymurod region affected 1,500 people. A landslide in the Angren region on 4 May 1991 killed 50 people, while a landslide in the same area in January 1992 killed 1 person and affected 400 others.

23. Insufficient technical capabilities, ageing and inadequate equipment and software for data gathering and processing, and inefficient data collection channels for real-time monitoring is a barrier to coping with this problem for the country. Presently, most of the surface monitoring equipment deployed by Uzhydromet is manually operated and not adequate for real-time relaying of observations on rainfall, temperature, snowfall, river flows and dam levels to facilitate early warning of observed hazards. The capacity of national institutions to use and apply complex and data-intensive hazard modelling (for mudflows, floods, hydrological droughts and landslides) and tools for monitoring and analysis of associated risks is another significant barrier highlighted in the funding proposal.

24. The generation and dissemination of hydrometeorological data is centralized at Uzhydromet, making it difficult for other ministries to directly access the data without putting in an official request. This further restricts the innovative use of data, for example in real-time applications by other government agencies. The effectiveness of a multi-hazard forecasting and early warning system thus relies on the capacity of Uzhydromet to translate hydrometeorological information into hazard-related information (e.g. hydrological drought, mudflow and flood occurrence, etc.), and also on the capacity of MES to coordinate the dissemination of and inter-agency responses to multi-hazard forecasting and early warnings using various communication channels at national and regional levels.

25. According to the TNC of Uzbekistan, the modernization and development of the observation network is recommended by the WMO to the Government of Uzbekistan, which includes an increase in the number of stations to up to 130–150 (currently the country has 75 manual and 10 automatic weather stations) and equipping these stations with the advanced automated observation instruments, analytical tools and reliable communication systems.

1.5 Country ownership

Scale: N/A

26. The development of early warning systems for dangerous hydro-meteorological phenomena and climate risk management is one of the priority areas of the country's NDC (nationally determined contribution). The document also reports other needs of Uzbekistan such as carrying out of fundamental research in the area of climate change, the development of an advanced system for the monitoring and forecast of climate change and information systems for efficient solutions to climate change problems, the development of methodologies for the assessment of climate change impacts, vulnerability and risks.

27. Multiple cabinet resolutions and decrees have been issued by the Government of Uzbekistan to advance the development of a state system for early warning and emergency responses, and among them is an important recent resolution of the President of Uzbekistan: “On measures to further improve the activities of the Center for Hydrometeorological Service of the Republic of Uzbekistan”.⁷ The resolution adopted the roadmap, which outlines planned improvements in the regulatory framework and implementation of a set of measures to improve the monitoring, forecasting and prevention of dangerous hydrometeorological events. The document envisages the development and approval of the new resolution of the Cabinet of Ministers of Uzbekistan on the provision of specialized services by Uzhydromet, which will regulate the delivery of climate information and other services. According to the funding proposal, the adoption of this new resolution is planned in 2021. One element of this regulation will be devoted to the delivery of information to public authorities and the public about the risks of dangerous hydrometeorological phenomena. The regulation will also cover the delivery of the Uzhydromet information services to different climate-sensitive sectors, including the private sector.

28. This project also contributes to the implementation of resolution 299 from the Cabinet of Ministers: “On measures to implement the Sendai Framework on Disaster Risk Reduction 2015–2030 in the Republic of Uzbekistan”, approved in April 2019. The resolution sets out Uzbekistan’s national strategy and action plan for achieving the goals under the Sendai Framework, including the development and implementation of advanced technologies and engineering, technical means for emergency responses and the creation and development of systems for the forecasting and monitoring of emergencies.

29. The project will be implemented following the National Implementation Modality of the AE, the United Nations Development Programme (UNDP), according to the standard basic assistance agreement between UNDP and the Government of Uzbekistan. The EE of the project manages Uzbekistan’s inter-agency National Emergency Prevention and Response System. MES is responsible for rapid response, tracking, prevention and mitigation of both natural and manmade disasters and emergencies, including those occurring in the context of climate change. It coordinates the implementation of state/national programmes on the forecasting and prevention of natural and manmade disasters. The national implementation modality applied by the funding proposal will significantly strengthen the country ownership of this project.

30. Country ownership is also strengthened through the financial contribution in the form of a budgetary allocation from the Government of Uzbekistan to MES and Uzhydromet, specifically to finance the operation and maintenance (O&M) cost for the new equipment and software purchased under Output 1 and 2. The co-financing ratio of this contribution (30.6 million, 82 percent grant and 18 per cent in-kind) to the GCF grant is 3.06. In addition, Uzhydromet and MES have agreed to provide the capital (in-kind) to house and support the equipment purchased by this project (e.g. AWS, radars and upper air station installations), as well as the support infrastructure needed for the expansion of RCMCs. The co-financing amount is for the project implementation period of six years. However, Uzhydromet and MES have committed to support operational costs for all equipment invested in this project for up to 20 years and personnel costs.

1.6 Efficiency and effectiveness

Scale: N/A

31. A precondition for ensuring the effective operation of the national EWS and achieving the results listed in the impact assessment section is the successful mitigation of key weaknesses and gaps identified during the assessment of baseline capacities of Uzhydromet EWS by different projects and donors, including the preparatory phase of this funding proposal.

⁷ Resolution: #PP4896 dated 17 November 2020: <<https://lex.uz/docs/5108959>>.

Key barriers identified are insufficient technical capabilities, ageing and inadequate equipment and software for data gathering and processing, inefficient data collection channels for real-time monitoring, unsatisfactory capacities of local staff to effectively operate and maintain the EWS system, lack of coordination amongst institutions responsible for the operation of EWS, lack of transboundary cooperation and absence of common format for data exchange, limited effort to increase the country's preparedness to the various types of hazards versus planning rehabilitation activities, etc. As mentioned in the funding proposal, the effectiveness of the system (in terms of reductions in economic losses) will be improved by 3 per cent, loss of life will be cut by 50 per cent, and the impact of hazards on infrastructure and environment will also be significantly reduced, though relevant assessments are not provided at this stage.

32. Even though the project targets two regions in Uzbekistan that are the most vulnerable to floods and mudflows (Andijan and Fergana), an indirect beneficiary will be the entire country as long as the EWS will be available for the whole territory and all type of hazards. Transboundary countries will also benefit from information about long-term hazards (droughts, etc.).

33. It is the opinion of the independent TAP that the efficiency and effectiveness of the EWS operation completely depends on mutual support and coordination between Uzhydromet and MES. A failure in the effective operation of one of these responsible institutions will automatically lead to the failure of the entire EWS operation. This will result in low project efficiency and lessened sustainability of the results over the long term. To mitigate such risk, a series of guidance and protocols (including a national-to-regional EWS protocol and communication protocols) will be established by the project. These should support the institutional coordination between MES, Uzhydromet and other relevant government agencies.

34. Limited institutional cooperation is identified by the proposed project as one of the risk areas (risk factor 3). This risk is assessed by the AE as a medium probability risk which will be reduced through measures planned in activity 2.2. This activity should create protocols and technical guidance, mentioned above, to ensure that institutions timely share required data with end users. In addition to the measures planned in activity 2.2, the AE considers that an open data policy for MHEWS,⁸ as a public good, will be pursued by the country to ensure data is accessible to the public, through the RSMC. During the funding proposal assessment, the AE confirmed that changes in the existing institutional or regulatory frameworks are possible over time in view of the recent and planned development of the regulatory framework (e. g. Uzhydromet becoming a separate entity outside of MES), though the AE does not expect such changes to have an impact on the funding proposal implementation arrangements. The independent TAP is of the opinion that the long-term sustainability of the coordination among institutions should be considered as a high-risk output of the funding proposal and recommends that the AE drive significant institutional changes during project implementation. In particular, through intensive consultations, assist the Government of Uzbekistan in establishing an effective inter-institutional coordination mechanism, which will be sustainable beyond the project implementation period.

35. The establishment of local technical capacities for the sustainable operation and maintenance of advanced technologies is among the key challenges in the technology transfer process. To ensure long-term sustainability of local operational capacities within the short time period of project implementation has high risk. Two key activities are planned by the funding proposal to reduce such risk:

- (a) International consultants will be hired by the project to advise on the equipment specifications. Technical advisory working groups will be established to support quality assurance for purchased technologies. Equipment procured under Output 2 will be

⁸ "WMO Policy and Practice for the Exchange of Meteorological and Related Data and Products Including Guidelines on Relationships in Commercial Meteorological Activities" (WMO resolution 40).

- transferred to MES. O&M costs are confirmed by both key institutions (Uzhydromet and MES). Staff training costs are included in the project. Additional training of local staff and training after project completion will be the responsibility of beneficiaries/local partners;
- (b) Uzhydromet is closely engaged with the WMO and maintains its standards and compatibility with existing systems. WMO was contacted during project preparation, inter alia in the context of its intentions to certify Uzhydromet as a WMO RSMC, and it was agreed that the project will provide revisions and any retraining needed for Uzhydromet to maintain the respective standards. Throughout project implementation, the AE and Uzhydromet will maintain contact with WMO to seek advice and input as required for particular project activities (e.g. impact-based forecasting, the establishment of the NFCS, etc.); and
 - (c) Synergies will be pursued through parallel activities with WMO involvement. In particular, the AE commits that goods and service comply with the WMO Guidelines on Climate Observation Networks and Systems and the WMO Guide to Meteorological Instruments and Methods of Observation. These requirements will be taken into account during project implementation, and demonstrated compatibility with existing systems is part of any procurement tender process at the AE. It is the opinion of the independent TAP that close coordination with WMO (planned by the AE) and intensive on-job training of Uzhydromet staff, could ensure the sustainable and effective operation of hazards monitoring and the warning generation process.
36. To ensure the high efficiency of the project, any overlap with parallel projects should be avoided. In this regard, the AE provided additional clarification regarding two similar projects:
- (a) Synergies with the CAHM project have been discussed with the World Bank during project preparation, and it was agreed that the proposed project will implement NWP (numerical weather projection) and WRF (weather research and forecasting) models⁹ and train the Uzhydromet staff on operation. CAHM is taking the lead on the implementation of standards for Uzhydromet to be certified as a WMO RSMC, and it was agreed that the project will provide revisions to this function after CAHM has finished or if supplemental training is needed whilst CAHM is ongoing; and
 - (b) There are also synergies with the World Bank's Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB) (GCF funding proposal 014), implemented through the Regional Environmental Centre for Central Asia. As part of the funding proposal design, locations were plotted out for all weather stations to be installed through CAMP4ASB and other initiatives, and then locations were identified where gaps could be filled with parallel GCF investment, focusing on hazard areas in the east and in the mountains of Uzbekistan.
37. The independent TAP recommends that the secretariat maintain close monitoring of any type of possible overlapping between the CAMP4ASB and the current funding proposal.

II. Overall remarks from the independent Technical Advisory Panel

38. The independent TAP recommends this funding proposal for approval by the GCF Board.

⁹<<https://nar.ucar.edu/2018/ral/fine-scale-precision-nwp-wrf-rtfdda-les>>.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (SAP022)

Proposal name:	Enhancing Multi-Hazard Early Warning System to increase resilience of Uzbekistan communities to climate change-induced hazards
Accredited entity:	UNDP
Country/(ies):	Uzbekistan
Project/programme size:	Small

Impact potential
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the impact potential.
Paradigm shift potential
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the paradigm shift potential.
Sustainable development potential
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the sustainable development potential.
Needs of the recipient
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the needs of recipient.
Country ownership
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the country ownership.
Efficiency and effectiveness
The Government of Uzbekistan and UNDP are in agreement with the independent TAP assessment on the efficiency and effectiveness.
Overall remarks from the independent Technical Advisory Panel:



IMPROVING THE EFFICIENCY AND COVERAGE OF MULTI-HAZARD EARLY WARNING SYSTEMS FOR CLIMATE CHANGE INDUCED HAZARDS IN UZBEKISTAN

GENDER ASSESSMENT AND ACTION PLAN

I. Introduction

1. This gender assessment and action plan have been prepared for the submission to the Green Climate Fund with the proposal “Improving the efficiency and coverage of multi-hazard early warning systems for climate change induced hazards in Uzbekistan.” The assessment aims to provide an overview of the gender situation in Uzbekistan, identify gender issues that are relevant to the project, and to examine potential gender mainstreaming opportunities. The assessment was based upon available data from studies conducted by the Government of Uzbekistan, donor agencies, multilateral development banks, stakeholder consultations and any other sources, and includes:
 - 1) Undertaking a desktop review and aligning approaches in this proposal with the national priorities of Uzbekistan.
 - 2) Incorporating information and lessons learned from past studies and assessments on gender in Uzbekistan from the Government of Uzbekistan, the United Nations, civil society organisations, and multilateral development banks.
 - 3) Integrating gender considerations through project indicators, targets and activities as well as identifying women as leaders and decision-makers.
2. The objective of the project is to enhance the efficiency and coverage of multi-hazard early warning system for climate change induced hazards in Uzbekistan in view of the projected climate change impacts. The approach combines principles articulated in the Global Framework for Climate Services (GFCS) with a ‘value-chain’ approach to target specific weaknesses in the delivery of early warning services, given the specific modes of operation, current infrastructure, technical capacities and institutional arrangements in Uzbekistan. The project will introduce the impact-based MHEWS based on the socio-economic risk modelling and will explore and facilitate elements of forecast-based financing as an innovative paradigm-shifting approach to the use of climate data in decision-making. The project will do this through three main outputs:
 - a) **Output 1: Upgraded hydro-meteorological observation network, modelling and forecasting capacities:** The proposed intervention will create a more efficient monitoring network for weather, climate, hydrology and cryosphere, through both upgrading existing (automating) and installing new monitoring equipment (automatic weather stations (AWS), automatic hydrological stations, upper air sounding stations, and strategically placed low cost radars. This equipment and other existing data streams will be integrated into high availability/redundant single databases. Hazard-specific forecasting procedures will be developed and operationalized for climate-induced hazards. Training of Uzhydromet staff to undertake forecasting, operation and maintenance and data QA/QC/archiving procedures will also accompany these activities. Activities follow the GFCS and in this output are designed to address aspects related to: i) observations and monitoring; and ii) research, modelling and prediction:
 - b) **Output 2: A functional impact-based Multi-Hazard Early Warning System is established based on innovative impact modelling, risk analyses, effective regional communication and community awareness:** The proposed intervention will integrate and develop ICT systems to use the hydro-meteorological hazards predicted in output 1, and combine these with vulnerability data to identify risks and provide information for planning and mitigating their impacts. It will improve the efficiency of the current EWS by automating the sharing and production of risk-related data, as well as the communication of warnings. The project will also develop methodologies for and support hazard and risk mapping and risk zoning for key climate-induced hazards (floods, landslides, mudflows, droughts and avalanche. This information will be transmitted and shared with Regional Crisis Management Centres (RCMCs) in the 15 administrative districts in Uzbekistan so that regional teams have the most up to date information available for planning their operations. Building on the existing mobile-based public dissemination platforms, the project will develop geographically specific risk based warnings tailored to the areas affected by each hazard (e.g. mudflows, avalanches, landslides and flooding).

c) Output 3: Strengthened climate services and disaster communication to end users:

The proposed intervention will strengthen the effectiveness of delivering climate information services and disaster warnings to users in Uzbekistan at two levels. On the overall national level, the project will initiate the establishment of the National Framework of Climate Services as a mechanism to systematically bring together producers and users of hydrometeorological and climate information and to ensure that information and services reach their end recipients both in the various sectors of the government and the society and at the different geographic levels down to local communities. Disaster-related information and services being the specific focus of the project, it will work with the various public and private stakeholders to reorient the existing financial / economic model behind the provision of such services to make it more cost-efficient and sustainable in the long-term. On the warning dissemination and communication aspect, updated communication technologies will be utilised to support real-time risk evaluation by Regional Crisis Management Centres (RCMCs) and first responders to ensure 'last-mile' delivery of early warning risk information to the communities at risk and population at large. In collaboration with Red Crescent Society and other community-level NGOs, RCMC will organize trainings and annual community forums to help communities at risk better interpret, understand and react to those warnings, as well as facilitate forecast-based actions and responses

3. Thirty percent of Uzbekistan's 33 million population live in areas prone to natural hydro-meteorological disasters (mudflows; landslides; glacial lakes; hydrological droughts and agricultural hazards), which are predicted to be aggravated by climatic changes due to increases in the intensity of rainfall, temperature and evapotranspiration growth. These hazards significantly impact the people of Uzbekistan each year, cause loss of life and livelihoods, require the movement of people and assets, as well as damage infrastructure and reduce the availability of water for agriculture. Approximately 8 million people (26% of the population) are affected by mudflows, 80% of which occur in the foothills and high mountainous areas and are caused by heavy rainfall. In the period of 1977-2015 1,335 mudflows were recorded, 33 of which led to loss of life. Already limited water resources will be further exacerbated by higher temperatures and lower precipitation under climate change, which will increase irrigation water demand and reduce river runoff during the growing season. Furthermore, some of these changes (i.e. rising temperatures and vapour deficits) are already manifest in observational records. The project will address increasing exposure and vulnerability of Uzbekistan communities and their livelihoods to climate induced hydro-meteorological hazards.
4. The proposed project can strategically contribute towards greater gender equality by adopting gender-responsive approaches for the design of the climate information services, including how end users are communicated to and with; promoting gender-balance, where possible, through technical and maintenance capacity-building activities of hydro-meteorological networks, equipment and systems; and establishing a gender-aware policy national framework to inform collaboration between climate service and national/regional hydro-meteorological stakeholders.

II. Gender Inequality and Social Inclusion in Uzbekistan

5. Gender inequality is one of the main indicators of inequality and is played out along political, social and cultural dimensions. It is closely linked to poverty and other development challenges which is deeply rooted in social norms and economic conditions with a greater impact on the poor, particularly on women and young people.
6. According to the World Bank definition, Uzbekistan is a lower middle-income country with GNI per capita at US\$2,200 in 2016¹. Total number of population of Uzbekistan is 32.90 million people (2018).² Women constitute around half of population. GDP growth slowed to 5.3% in 2017 (from

¹ <http://data.worldbank.org/country/uzbekistan>

² State Statistics Committee of the Republic of Uzbekistan. <https://stat.uz/uploads/docs/demografiya-yan-iyun-18-ru.pdf>

7.8% in 2016), led by the deceleration in domestic demand.³ The main contributors to growth were services, which expanded by 6.9%, down from 9.3% in 2016. While transport and communications accelerated to 8.9% from 7.1% in 2016, slower growth in private consumption slashed expansion in trade, food, and accommodation to 3.9% from 13.4% in 2016. Growth in industry, excluding construction, moderated to 4.6% from 5.0% a year earlier, with weaker mining and quarrying. Construction growth, hit by higher import and credit costs, halved to 5.6% from 12.5% in 2016. Expansion in agriculture slowed to 2.0% from 6.6% in 2016 as prices for imported inputs nearly doubled in some terms, raising production costs and prices for purchasers. Meanwhile, the cheaper some and stronger growth in neighboring countries helped reenergize external demand for fruit and vegetables, boosting total sales.⁴

7. Uzbekistan is one of the countries that experienced socio-economic transformations from centrally planned economy towards establishing market mechanisms of economic development based on the strategy of macroeconomic stability and destructuralization of the productive sectors of economy, which is highly resource-dependent. However, the processes of maintaining economic growth, jobs creation and poverty reduction has been difficult. During transformation the living standards of population, specifically in rural areas, and existed elements of gender equality, inherited from the Soviet era has been negatively affected by the changes. The reduction of state support to nurturing and childcare has shifted back to women the entire responsibility for these functions. Coupled with continuing high participation rates, these has increased the “dual burden” on women and increased demands on their time.

2.1. Gender Inequality Measures for Uzbekistan

8. Through the years, several indices have been developed to quantify the concept of gender inequality. The United Nations Development Programme uses the Gender Inequality Index (GII) and Gender Development Index (GDI).⁵ GII is a composite measure that shows inequality in achievement between women and men in reproductive health, empowerment and the labour market while GDI measures achievement in human development in three areas: health, education, and command over economic resources. The GDI considers the gender gaps on human development between men and women. Uzbekistan has a GII value of 0.287 (2015) and ranks 57 out of 159 countries assessed. The GDI value (2015) is 0.946 with HDI ranking of 105.⁶
9. The Global Gender Gap Index (GGGI) of the World Economic Forum examines the gap between men and women in four categories: economic participation and opportunity, educational attainment, health and survival; and political empowerment. Uzbekistan is not ranked in the 2011 Global Gender Gap Index.⁷
10. The Organization for Economic Cooperation and Development (OECD) developed the Social Institutions and Gender Index (SIGI), a composite index that scores countries (i.e., 0 to 1) on 14 indicators grouped into five sub-indices: discriminatory family code, restricted physical integrity, son bias, restricted resources and assets, and restricted civil liberties to measure the discrimination against women in social institutions across 160 countries. The 2014 SIGI value for Uzbekistan is 0.1475 suggesting that discrimination against women is medium.⁸

³ <http://www.worldbank.org/en/country/uzbekistan/overview#3>

⁴ <https://www.adb.org/sites/default/files/publication/411666/ado2018.pdf>

⁵ United Nations Development Programme. Human Development Report. <http://hdr.undp.org/en/content/table-4-gender-inequality-index>.

⁶ <http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf>

⁷ World Economic Forum. The Global Gender Gap Report 2015 Country Profiles. http://www3.weforum.org/docs/GGGR14/GGGR_CountryProfiles.pdf

⁸ OECD. Social Institutions and Gender Index 2014. Uzbekistan <https://www.genderindex.org/country/uzbekistan>

2.2. Poverty

11. Evidence shows that, in Uzbekistan, women are more vulnerable to the risk of poverty than men, particularly if women are divorced, widowed, unmarried mothers or have large families.⁹ Recent official estimates show that poverty declined from 25.8 percent of the population in 2005 to reportedly 14.1 percent in 2013 (Table 1). This decline is a result of rapid economic growth, sustained annual increases in salaries, incomes from micro and small businesses, and the Government's targeted social support programs. Besides, net remittances from labor migrants have helped many families in Uzbekistan not to fall below poverty line.

Table 1. The Impact of Economic Growth on Poverty Rate

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP per capita as % against previous year	118.5	106.1	108.0	106.7	107.0	107.3	108.3	108.4	106.3
Total poverty rate	25.8	24.7	23.3	22.2	21.1	20.0	16.0	15.0	14.1

Source: State Committee of Statistics of the Republic of Uzbekistan, Welfare Improvement Strategy 2012-2015.

12. From 2002 to 2013 per capita GDP grew by 1.97 times and poverty significantly declined by 48.7 percent. However, the elasticity of poverty reduction to GDP growth still low. According to the World Bank estimations 1 percent decrease in per capita GDP in Uzbekistan is associated with 0.5 percent decrease in the poverty rate on average, which is lower than the average estimate for developing countries (approximately 3 percent decrease in the poverty rate per every 1 percent increase in per capita GDP). The weak impact of economic growth on the improvement of the quality of life and jobs creation is explained by the fact that growth has been concentrated in capital-intensive sectors of economic development (ex. the fuel and energy, and transportation) rather than labor-intensive sectors. Despite the low sensitivity of poverty reduction to GDP growth the level of inequality, measured by the Gini coefficient has changed. According to Uzbekistan official statistics the Gini coefficient declined from 0.45 in 2006 to 0.3 in 2012.¹⁰

Table 2. Urban Rural Poverty Trends¹¹

	2000-2001	2002	2003	2004	2005	2006	2007
Total poverty	31.5	26.5	27.2	26.1	25.8	24.9	23.6
Urban Poverty	27.8	21.8	22.0	18.8	18.3	17.9	17.6
Rural Poverty	33.6	29.4	28.7	30.3	30.0	28.8	27.1

Note: the 2000-2001 estimate is from World Bank 2007; 2002-2005 estimates are from the Welfare Improvement strategy; and 2006-2007 estimates are provisional.

13. The poverty rate in rural areas in 2000-2001 was 33.6 percent compared to 27.8 in urban areas; 27.1 in rural and 17.6 in urban areas in 2007. Between 2000-2001 and 2004, urban poverty decreased dramatically by over 32 percent. But progress slowed drastically between 2004 and 2007: the decline was a little over 6 percent. Such a slow reduction in urban poverty suggests that economic growth was not benefiting many urban centers and the poverty risk is high for the population living in small towns, where employment opportunities have decreased due nonfunctioning of former enterprises and limited access to the land.¹²
14. According to the World Bank estimation, the poverty rate in Uzbekistan in 2012 made up 15 percent, including poverty rate in urban areas at 11.6 percent and in rural areas 18.3 percent. Results of UNDP-supported household survey of 1500 households conducted in 2006 in six districts of

⁹ Country Briefing Paper, Women in the Republic of Uzbekistan, Wendy Mee, 2001, p. 7

¹⁰ The Ministry of Economy of the Republic of Uzbekistan.

¹¹ Addressing Urban Poverty in Uzbekistan in the Context of the Economic Crisis. CER. UNHABITAT. Tashkent.2010, p.18.

¹² Ibid

Namangan Region and the Republic of Karakalpakstan (UNDP year) shows that rural poverty is higher among households that did not own their own plot or households that had workers who relied on recruitment for seasonal agriculture labour. Households with members hired by private farms have higher income, but the number of such farms in six districts was very low. Income from micro businesses, focused on selling agriculture products or handicrafts was low and not sustainable.

15. Poverty was closely correlated with the size of a family's plot of land. The land holding of many households was only a small garden plot. Though the productivity of such plots was high, and their produce was used predominantly for household consumption. In some of the districts, 30-70 percent of family plots could not be used because of poor soil or water conditions. Many families owned livestock or poultry, but such assets were usually meager.

2.3. Health

16. The health care system in Uzbekistan was developed as a part of the Soviet system with the objective of providing adequate access to health services to all citizens. With these goals, a nationwide network of more than 6 thousand primary, secondary, and tertiary health care facilities was created under the control of the Ministry of health. The health care system is almost fully state owned; however, some health professionals offer private fee-for-service health care. Almost all hospitals have some beds operated on a self-financing basis through fee-for-service payment by patients.
17. The Government is in the midst of major health care reforms that focus on strengthening primary health care, modernizing the health service networks, and improving the efficiency of health spending. The ultimate goal is to improve the key health indicators of the population, and the main attention is given to reproductive health, family planning services, protection of motherhood and childhood, reduction of disastrous impact of ecological degradation on the health of women.

Table 3. Deaths by age, sex and main cause of death in 2016

	Number of deaths, persons		Per 100 000 population	
	Women 16-54	Men 16-59	Women 16-54	Men 16-59
Total	13361	30732	143.4	306.4
of which:				
Cardiovascular diseases	3977	12678	42.7	126.4
Accidents, poisonings and injuries	1661	5994	17.8	59.8
Neoplasm	3006	3247	32.3	32.4
Digestive apparatus diseases	1594	3364	17.1	33.5
Infectious and parasitic diseases	553	1193	5.9	11.9

Source: <http://gender.stat.uz>

18. Uzbekistan's health care system is more focused on struggling with the epidemiological changes in morbidity and mortality patterns in recent years. However, according to data from WHO, non-communicable diseases accounted for approximately 79 percent of all deaths in Uzbekistan in 2012.
19. The main causes of deaths in 2016 being due to the cardiovascular diseases (59.9 per cent of all deaths), death from the accidents, poisoning and injuries (6.7 per cent of all deaths), cancer (9.2 per cent), diseases of the respiratory system (5 per cent), diseases of the digestive apparatus (5.8 per cent), infectious and parasitic diseases (1.9 per cent).¹³ For all the death causes the death rate of men is twice higher than the death rate of women (Table 3).
20. The level of mortality in Uzbekistan has always been relatively low because of the favorable ratio of young and older aged population. However, over the past two decades, mortality of population has

¹³ The State Statistics Committee of the Republic of Uzbekistan. www.stat.uz

been changed under the influence of the difficulties of transition period. Within the first years of independence (1991-1994) mortality increased by 13.9 per cent and the crude death rate was 6.6 per 1,000 people. In the following year's mortality rate declined to 5.0 per 1,000 of population in 2016. In rural areas mortality the rate of population, for both men and women, in almost every age group, is 1,2 – 1,4 times lower than in urban areas.

21. Of particular concern is the death rate of the working-age population, especially men. So, 302.2 male deaths (per 100 thousand of population) of working age (16-59 years old) have been registered in 2012 that is 2.1 times higher than the same indicator among women. The mortality of men from diseases of the cardiovascular system was 2.9 times higher than the number of women died from the same disease, deaths from the accidents among men was 3.3 times higher than among women, deaths due to diseases of the digestive apparatus among men was 1.9 times higher, and the deaths from infectious and parasitic diseases among men 2.2 times higher than among women.
22. According to the State Committee of Statistics, in 2012, the causes of mental disorders among men are 131.3 per 100 000 of population, which is 1.3 times higher than among women; the morbidity rate of alcoholism and alcoholic psychosis among men is 30.6 per 100 000, which is 19,2 times higher than among women¹⁴.
23. The Government is taking serious steps to improve the quality of healthcare services. The laws "On prevention of micronutrient deficiency among the population"; "On restrictions on the distribution and use of alcohol and tobacco products"; "On combating the spread of the disease caused by the human immunodeficiency virus (HIV)", as well as the President and the Cabinet of Ministers Decree "On measures for further deepening the reform of the healthcare system "; "On additional measures to improve the reproductive health of mother and child in rural areas of the Republic of Uzbekistan", and etc.
24. According to the data of the Ministry of health of the Republic of Uzbekistan, infant mortality in 2012 year was 10.2 (per 1000 live birth) which is almost 3 times less than in the 1992 year (28.2 per 1000 live birth). The infant mortality rate is higher in urban areas (13.0 per 1000 live births in 2012) than in rural areas (7.9 per 1000 live births in 2012). 15 Maternal mortality in 2012 was at 20.2 (per 100 000 live births), which is nearly 1.5 times less than in 1992 - 30.1 (per 100, 000 live births). According to WHO, under five and maternal mortality rates were 40 (as of 2012) and 36 (as of 2013), respectively.
25. Consistent measures to combat HIV infection are in place. The Government approved a "Strategic program to combat the spread of HIV infection in the Republic of Uzbekistan for 2013-2017 years". According to the Ministry of health data, the incidences of HIV-positive women in 2012 were 12.0 cases (per 100 000 women) and in 2013 -12, 6 (per 100 000 women).
26. Special attention is paid to the health of rural women. According to the Decree "On additional measures to improve the reproductive health of mothers and children in rural areas of the Republic of Uzbekistan" of the Cabinet of Ministers No. 156 on 22.07.2010 within the timeframe from 2010 to 2015, special arrangements were in place for provision for free of the vitamin-mineral complex to all pregnant women living in rural areas: 400 pieces per were distributed for free per annum.
27. Despite the positive trend in the mortality rate of population of Uzbekistan the following challenges still remain in this field: the relatively high mortality due to avoidable causes of death; despite the positive changes infant and maternal mortality is still high; the increase of the death rate in older age groups of population, especially among men; the high mortality rate in the working-age group of population.

¹⁴ <http://gender.stat.uz>

¹⁵ The State Statistics Committee of the Republic of Uzbekistan. www.stat.uz Human Development Report. Uzbekistan. 1998.

28. Despite improvements, Uzbekistan still has remaining challenges related to maternal and child health outcomes. In response, the Government has initiated several policies and programs mobilizing both internal and external resources, with a resulting decline in infant mortality.
29. One of the objectives of Welfare Improvement Strategy (2012-2015) was identified as reduction of the number of Uzbekistan's underweight children, under the age of five, by 50 per cent, within the period from 2000 to 2015. In addition, the National Strategy for Improving the Population Nutrition in Uzbekistan for 2009-2011 was adopted and implemented.¹⁶ Measures taken in this area have increased the quality of nutrition not only among children, but also among the general population. Implementation of a national program designed to promote breastfeeding, salt iodization, the prevention of vitamin A deficiency, the fortification of flour with micronutrients, and other similar initiatives have positive impact. The lagging of children under five, in terms of weight, has declined from 7.1 per cent in 2002 to 3.3 percent in 2006 and to 1.2 percent in 2011. At the same time, lagging in terms of height has declined from 21.1 per cent in 2002 to 1.04 per cent in 2011.¹⁷
30. Implementation of measures designed to enrich and fortify flour with iron and folic acid has allowed for a reduction in the prevalence of anemia among children under the age of five from 66.6 per cent in 2000 to 12.12 per cent in 2011. The prevalence of diseases related to iodine deficiency has reduced from 47.7 per cent to 15.0 per cent during the same time period.
31. Reduction of inadequate nutrition has been partially contributed to by measures designed to increase birth intervals, and to improve the awareness of parents on how to provide care to their children. Thus, within the total number of births in 2000 and 2011, the share of births with an interval of more than two years increased from 90.9 per cent to 94.6 per cent respectively¹⁸.

2.4. Education

32. Uzbekistan inherited good education indicators and its education system outperforms those of the peer countries' in the lower middle-income group. The Government increased public expenditure on education from 5.6 percent of GDP in the mid-1990s to 10 percent of GDP in 2010, focusing mostly on primary and secondary education where the country has now achieved nearly universal enrollment.
33. Uzbekistan's educational system begins by preschool education, which is provided for children until they aged six-seven by state or private preschool educational establishments, and also within the family. Primary (grades 1-4) and secondary (grades 5-9) education provided free by the state. After grade 9, students may enter free specialized secondary education or vocational schools that are provided by state academic lyceums and professional colleges or vocational schools. Grades 1 through 12 constitute the compulsory education system. Primary and secondary education is carried out in 7 languages, including: 848 schools in Russian language; 409 in Kazakh language; 377 in Karakalpak language; 252 in Tajik language; 59 in Kyrgyz language; 43 schools in Turkmen language.

2.4.1. Preschool education

34. The national enrollment rate in early childhood education and care is at 20 percent and it is low by international standards. The current number of available seats in pre-schools exceeds enrollment levels by approximately 25 percent – and the trend has been consistent for the last decade. In addition to a low national rate of enrollment in preschool institutions, significant disparities in enrollment exist between urban and rural areas, and different regions. Children from rich urban households are more likely to access preschool institutions than those from poor rural ones. Several

¹⁶ Welfare Improvement Strategy 2012-2015. Uzbekistan. p.15

¹⁷ Ibid

¹⁸ Uzbekistan - Population Welfare Assessment. The World Bank Report. 2012.

factors affect low enrollment, including: the cost of enrolling children in pre-schools, the quality (and perceptions of quality) of the facilities on offer, the location and convenience of services, and the predominant model of offering pre-school on a full-day basis only (which accounts for 97 percent of all preschool enrolment).

35. A key reason for the low coverage of children by preschool institutions and the high vacancy rate is the inappropriate location of institutions in remote regions. Most of kindergartens are located in cities and large settlements.
36. During the Soviet time collective farms were able to either maintain departmental kindergartens or to arrange transportation of children to preschool institutions to remote locations. Currently, families must cover high transportation costs. Besides, the payment for one or two kids, specifically for rural large families, may exceed the monthly earnings of both parents. As a result, rural women have limited opportunities to work and have to take care of children.
37. Besides, working hours generally range from 09:00 to 18:00 hours, however, de facto, kindergartens operate only until 17:00-17:30 hours and 5 days a week. These limited hours require parents (usually the mother) find a job with a flexible schedule, and preferable close to the household, which is not possible in most of cases. Under these circumstances' women prefer not to work, or to agree to informal work with the condition of shorter working day. The proper development of a network of preschool institutions will have positive impact on women's economic involvement, increase their employment opportunities, and improve family wellbeing.

2.4.2. Primary and secondary education

38. Primary and secondary education is compulsory in Uzbekistan and the government reported that the complete gross coverage of children with school education demonstrates an absence of any regional or gender discrimination to education.¹⁹ 99.9 percent of students, who enrolled in grade one reach the next level of grade five in 2011 and the share of students who enrolled in grade one and reached grade nine, accounted for 95.6 percent in 2011. Literacy levels are equally high among young and adult women and men.
39. In professional colleges, the attendance ratio of young women and men is almost the same. However, the problem of professional education of girls is influenced by gender stereotypes that lead to occupational segregation of women at the stage of receiving professional education.
40. Figures (Table 4) show that professions related to the healthcare (75.8 percent female students) and education (71.8 percent female students) are more popular among girls. It should be noted that the rural girls' choice motivated by easier access to the pedagogical and medical colleges widely represented in all regions of the country, while other specialized professional courses do not exist in each district and region. Moreover, rural girls graduated from pedagogical colleges are unlikely to get a job even in kindergartens, because according to the law, they have to get higher education diploma to work at the capacity of preschool teacher.

Table 4. Students of secondary specialized, vocational education institutions by specialty at the beginning of 2012/2013 academic year. (Distribution by sex, %)

	Women	Men
Total	49.1	50.9
of which:		
Education	71.8	28.2
Public health, physical training and sports	75.8	24.2
Industry and construction	41.6	58.4
Agriculture	41.1	58.9

¹⁹ Welfare Improvement Strategy 2012-2015. Uzbekistan.

Transport and communication	30.9	69.1
Economics and law	47.6	52.4
Arts and cinematography	52.1	47.9
Services	50.2	49.8

Source: <http://gender.stat.uz>

41. This education provides little advantage in employment by several reasons. From one hand, it is an overabundance of medical and educational specialists with secondary professional education, which creates harsh competition in this segment; from other hand the area of application of labor for pedagogues and nurses with secondary professional education and is limited by an extremely small number of jobs in preschool and community medical establishments.
42. Another factor influencing young women's choice of profession is family's and community's attitude towards women's role and gaining nurse, tutor and seamstress skills will be useful in women's future family life. Stereotyped "Dos" and "Don'ts" limiting women's employment opportunities effected women's preferences in education.
43. Specific features of women's employment (low level of employment and economic activity, high unemployment, occupying mostly low-income jobs) in many respect related to women's lack of profession and noncompetitive professional education they have. Gender stereotypes existing not only at the family and community levels, but also represented at early stages of education. Research on gender expertise of basic education textbooks in Uzbekistan, conducted in 2001 identified that among 56 professions, which were mentioned in the basic education textbooks, only 9 have been mentioned in the link to women. The list of "women's" professions was limited with the following: in the area of education- teacher, librarian, tutor; in the area of healthcare- nurse, druggist; among "workers" – seamstress and craftswomen; in the area of agriculture – milkmaid, field worker, working on the cotton picking²⁰.
44. Current curriculum of education system is not adapted to the new requirements of the labour market. According to the ADB RETA Project "Sub-regional cooperation in managing education reforms" (2002), Uzbekistan women are almost totally absent from Management, Finance, and Information Technologies courses. The specific education programs preferred for women are not well linked to the existing demand of labour market. Besides, the system of professional education has until now been insufficiently effective and has not taken into account the particular needs of each region and their economic realities, which might require specific types of training to equip professionals with relevant skills. This situation specifically affects rural girls and young women, who have limited mobility freedom due to Uzbek cultural beliefs and stereotypes, and only pedagogical and medical colleges, are often available to them.
45. Successful implementation of the state employment policy requires improvement of the quality of the workforce and its competitiveness at the labour market, "...there is a need to carry out the ongoing monitoring of the effectiveness of the vocational education training system in accordance with the structural demand of the economy, which is important to make appropriate adjustments in the structure of placement of the new type vocational education institutions."²¹
46. It is important to note that the professional qualifications of the labour force do not meet requirements and demand of local employers. There is a shortage in highly skilled workers and technologists in the industrial sectors, lack of trained specialists in agricultural sector, such as agronomists, zootechnics and veterinary, hydromelioration, plant protection, sericulture. Other sectors, like construction and communication, the housing and utilities also experiencing lack of high-quality specialists. Many of mentioned specialties are gender 'neutral', however, under the influence of

²⁰ Alimdjanova D. Gender Expertise of Basic Education Textbooks in Uzbekistan. Report. Basic Education Textbook Development Project. ADB/The British Council/Ministry of Economy, 2001.

²¹ Akhmedova M. Employment and job creation in the Republic of Uzbekistan- research. Domoscope.ru. http://www.aloqada.com/m/news/2014/03/04/obespechenie_zanyatosti_i_sozdanie_novykh_rabochikh_mest_v_respublike_uzbekistan_issledovanie

gender stereotypes on women's role dominating in society specifically in rural areas these professions do not attract women.²²

2.4.3. Tertiary education

47. During the 2011-2012 academic year, 65 institutions of higher education opened their classes for students²³. Around 300 thousand students studying in these institutions of which 38.5 percent were female and 61.5 percent male. Approximately only 5 percent of women aged 19-25 are enrolled in universities, whereas this figure stands at almost 8 percent for men. Compare to the mid-2000s, the level of admissions to higher education institutions fell for both, men and women, however, the rate was faster for women.²⁴ One of the reasons for this trend was the abolishment of distance learning education in 2004. However, starting from 2017, Uzbekistan reestablished distance learning in higher education.

**Table 5. Students of higher education institutions by specialties
at the beginning of 2012/2013 academic year. (Distribution by sex, %)**

	Women	Men
Total	36.5	63.5
of which:		
Industry and construction	15.9	84.1
Transport and communication	10.5	89.5
Agriculture	21.6	78.4
Economics and law	19.9	80.1
Public health, physical training and sports	39.8	60.2
Education	55.7	44.3
Arts and cinematography	34.6	65.4

Source: <http://gender.stat.uz>

48. In 2004/2005 and 2009/2010 academic years the share of women among university students in Uzbekistan was about 40 per cent. In 2010/2011, this figure fell to 38.5 percent, in 2012/2013 academic year the proportion of girls among students of higher educational establishments has fallen to 36.5 per cent (Table 5). There is a strong tendency to reduction in the number of female students in higher education.
49. The proportion of girls among students of engineering professions is very small (Table 5). The industrial and construction specialties are not popular among female students (15.9 percent). The lowest share of female students is in transportation and communication sector (10.5 percent). At this stage of education, the share of female students of pedagogical institutions fell up to 55.7 percent. Gender disparities and women's limited access to higher education linked to unwillingness of parents to send their daughters to study far from home for long periods of time. Half of higher education institutions located in Tashkent and the rest of them located in Samarkand and Andijan. Parents prefer to arrange marriages for their daughters and existing gender stereotypes set household duties as a priority for women and the privilege for extending education is given for the boys.
50. The situation is further exacerbated by the fact that the number of students in higher education is constantly decreasing. For example, in Uzbekistan in 2008 year was 109 students per 10 000 of population, which is considerably low. For example, in Russia in 2008 the number of students per

²² ADB. 2013. Water Resource Management Project; ADB.2011. Uzbekenergo. Advanced Electricity Metering Project.; ADB. 2008. Monitoring and Implementation of Policy Reforms in Agriculture Project; UNDP. 2010. Enhancing Legislative and Institutional Environment for Equal Employment Opportunities for Men and Women in Uzbekistan Project. Findings of Social and Gender surveys conducted within the sectors under ADB projects

²³ Uzbekistan Modernizing Tertiary Education. The World Bank. 2014. Report No 886-0-UZ.

²⁴ Effective Employment Policy: Achieving Women's Labour Capacities in the Republic of Uzbekistan. Policy Paper. UNDP/CER. 2012. Uzbekistan

10 000 of population was 484 people, in Kazakhstan-380 people per 10 000 of population. Women's opportunities for higher education are decreasing, in both absolute and relative terms.

51. Low enrolment and weak relationship between employers and industry and universities hamper the economy's capacity for innovation, technology adoption and value creation. Clearly there is much that can be done to better prepare universities to respond to the needs of an evolving economy and reduce the mismatch between the supply and demand of graduates.²⁵

2.5. Political Participation

52. Abolition of quota system for women in the 1980s resulted in a sharp decline in their representation in highest and local decision-making positions. Among the deputies of the Supreme Soviet of Uzbek SSR there were 178 female members (or 34.9 percent).²⁶
53. Women's participation in political and social life of the society is one of the most important instruments for achieving gender equality. In 2003 women's organizations lobbied for the issue of quotas for women in elections to legislative bodies of the country. This issue was supported by the government authorities and members of Parliament. As a result, at the regular session of the Oliy Majlis "The Law on elections to the Oliy Majlis" introduced changes. Part 4 of article 22 of the "Law on elections to the Oliy Majlis of the Republic of Uzbekistan" dated by August 29, 2003 foresees that women share should not be less than 30 percent of the total number of candidates nominated to the Oliy Majlis by the political parties.
54. The number of women elected to the national Parliament, the Oliy Majlis, has increased to 16.7 percent in 2018. The proportion of women in the local councils of people's representatives, headed by khokims, has reached 23 percent.²⁷

Table 6. Composition of political parties of the Republic of Uzbekistan

	Distribution by sex, in percentage			
	2008		2012	
	women	men	women	Men
People's Democratic party of Uzbekistan	34.8	65.2	38.2	61.8
Liberal and Democratic party	34.8	65.2	38.2	61.8
Democratic Party of National Revival "Milliy Ticlanish"	43.0	57.0	47.5	52.5
Social Democratic Party of Uzbekistan "Adolat"	50.3	49.7	46.5	53.5

Source: Women's Committee of Uzbekistan.

55. There are four major political parties and Ecological movement in Uzbekistan. All political parties created "women's wing" to increase active involvement of young women into political parties' membership, providing them information and legal support for the development of leadership skills for their further active participation in the political processes of the country. All political parties have women's divisions dedicated to preparing women to run in election. In 2012 the number of women in most of political parties has increased (Table 6). The Ecological Movement of Uzbekistan has a ten percent quota (15 seats) in the Legislative Chamber of Oliy Majlis, and currently two of them occupied by women.

Table 7. Women and men representation in governance (December 31, 2010)

	Distribution by sex, (%)	
	women	Men
Cabinet of Ministers of the Republic of Uzbekistan	6.5	93.5

²⁵ Uzbekistan Modernizing Tertiary Education. The World Bank. 2014. Report No 886-0-UZ. P.10

²⁶ Report on the Status of Women in Uzbekistan. 1999. UNDP/GID Unit/CER/

²⁷ http://uza.uz/ru/society/s-lyubovyu-i-uvazheniem-k-zhenshchine-07-03-2018?sphrase_id=4816889

High level officials	14.3	85.7
Ministers and Chairpersons of State Committee	4.2	95.8

Source: Women and Men of Uzbekistan 2007-2010

56. However, despite the fact that women comprise 35% to 47% of the members of political parties, they do not occupy leadership positions. The physical presence of women (because of quotas) does not automatically ensure their active participation in political life and uphold the interests and rights of women. None of the major political parties' platforms include a program of action to advocate achievement of gender equality in the country.
57. Executive power is exercised by the Cabinet of Ministers and the government of the Republic of Uzbekistan. The government has undertaken measures to increase women's representation at different levels of executive branches. However, women by and large remain underrepresented in top positions. As of 2018, out of 14 ministries, only Ministry of Preschool Education is headed by a female minister. In 2010, women made up 6.5 percent of the Cabinet of Ministers and hold 4.2% of total ministerial positions. There are 11 state committees and women are only represented among members of two committees. Women account for 14.3 percent of high-level officials in government offices. (Table 7).
58. In Uzbekistan, local bodies of citizen self-governance, mahallas, are organized in villages, settlements, and neighborhoods of towns and cities. The mahalla is run by a committee of citizens, which is headed by the aksakal (an elected position). Out of 10,126 mahallas, women chair 1,131 mahalla committees (11.2percent).²⁸

2.6. Decision making

59. More favorable situation concerning the presentation of women at the managerial level is observed in the sectors of economy. As of January 1, 2010, 26.8 percent of managers in the economy were women, i.e. slightly higher than in the government (especially in the higher bodies of public administration) and men – 73.2 percent (Table 8). However, the share of men employed in senior positions in all sectors of economy is significantly higher than that of women.

Table 8. Women and men in managerial positions by sector of economy (as of January 1, 2011).

	Distribution by sex, (%)	
	women	Men
Total	26.8	73.2
Including:		
Industry	15.2	84.8
Agriculture	6.8	93.2
Transport	13.0	87.0
Communication	18.6	81.4
Construction	16.1	83.9
Trade, catering, sale and procurement	22.3	77.7
Housing, public utilities and personal services	10.8	89.2
Healthcare, physical culture and social security	36.2	63.8
Education	43.2	56.8
Culture and arts	32.4	67.6
Science	23.9	76.1
Finance, credit and insurance	18.8	81.2
Other sectors	17.0	83.0

Source: Women and Men of Uzbekistan 2007-2010, p.177

²⁸ Uzbekistan Country Gender Assessment. ADB, 2014, p.25

60. “Male management” especially prevails over in such sectors as agriculture and forestry (women – 6.8 percent, men – 93.2 percent), housing and utilities, and non-production of consumer services (10.8 and 89.2 percent), transport (13.0 and 87.0 percent), industry (respectively 15.2 and 84.8 percent) and construction (16.1 and 83.9 percent). Relatively equal parity is observed only in public education: among the leaders, women were 43.2 percent, and men – 56.8 percent.
61. Among the reasons hindering women's equal participation in the political life of the society are: a lack of national mechanisms to ensure the effective implementation of gender planning and funding initiatives that integrate a gender perspective at the national level; women lack of knowledge about how to run campaigns and to conduct policy advocacy dialogues as they may have limited experience in the fields of political science and public administration; existing gender stereotypes on the role of women in society and the dominant role of men; the lack of enough role models of women's leadership (there is a small number of women leaders not only at the national but also at the international level and there is no wide spread image of woman-leader);

2.7. Labour force

2.7.1. Women's employment

62. In order to achieve the goal of national development as well as to perform the global aims specified in Millennium Declaration and Poverty Reduction Strategy, the Government of Uzbekistan has demonstrated the willingness to solve the problem of gender equality. Especially, the Decree of the President of the Republic of Uzbekistan No. 3434 as of May 25, 2004 “On additional measures for support of activity of Women's Committee of Uzbekistan”²⁹ addressed issues, related to the development and implementation of the national policy in the area of social and legal support for women, improvement of social and public activity of women, their participation in State building; development and implementation of measures and programs directed to securing of women's employment, improving working conditions and educating women (especially in remote areas), as well as attracting them to business activity; organizing effective work in targeted areas (family, makhallas, workplaces, educational institutions) on explanation and observance of the national traditions, realization and protection of women's constitutional rights.
63. According to the statistical data employment among women lower than among man, but their share in the structure of formal employment remained stable at 45,4 percent in 2007-2012. However, there is an imbalance of sectoral distribution of female labour. Women are mostly employed in low paid state sectors of the economy, such as education, health care, agriculture, and etc. (Table 9).

Table 9. Employment by sectors of economy, distribution by sex, 2012

	As percent of total		Distribution by sex, in percentage	
	Women	men	Women	Men
Total	100	100	45.4	54.6
Industry	11.2	14.5	39.3	60.7
Agriculture and forestry	28.3	25.3	48.2	51.8
Construction	1.9	15.4	9.2	90.8
Transport and communication	1.4	8.4	12.2	87.8
Trade, catering, sale, procurement	12.8	9.3	53.3	46.7
Housing, public utilities and personal services	2.9	4.1	36.9	63.1
Health care, sports and social security	12.7	3.3	76.2	23.8
Education, culture, arts, science and scientific services	20.2	7.8	68.4	31.6

²⁹ Women's Committee is one of the key institutions urged to assist in every way to strengthen the status of rural women. Registered as a nongovernmental organization, Women's Committee of Uzbekistan is financed by the government and has the authority to be a governmental institution responsible for the policy and activity in solving women's issues

Finance, credit, and insurance	0.5	0.5	43.2	56.8
Other	8.1	11.4	37.3	62.7

Source: <http://gender.stat.uz>

64. The proportion of women employed in 2012 in the highly paid sectors of the economy - industry, construction, and transportation and communication was at 39.4 percent, 9.2 percent, and 12.25 percent respectively. Over the past 10 years, the values of these indicators had decreased by 2-3 percentage points. The highest proportion of women was in traditionally 'women's' low paid sectors of employment- health and education, but also within these sectors women tend to occupy leading positions significantly less frequently than men. The average wages in healthcare 2.7 times lower than, for example, in construction and industry.
65. Cross-sectoral and inter-professional differences in wages are one of the main reasons for the existence of gender disparities in the labour market affecting women's and family's wellbeing. Research conducted on the trends of the labour market show that an increase of wages in professions leads to the displacement of women by men. As it was observed in the 2000, and the outflow of men from the agriculture and forestry sector in Uzbekistan was also due to the reduction in its relative wages.

Table 10. Differentiation of wages by sectors of economy, 1999 -2010
(%% to the average wage level)

	1999	2000	2001	2002	2003	2004	2010
Average wage	100	100	100	100	100	100	100
Industry	197,9	192,4	197,3	213,1	224,6	234,6	160,2
Sectors of high level of women's employment							
Education	87,0	86,9	82,6	83,4	84,1	85,8	82
Healthcare	75,5	76,8	77,2	77,9	78,1	75,8	78,2
Culture	83,7	83,8	83,6	80,6	76,5	77,5	82
Finance	103,5	111,2	107,6	109,1	110,6	-	102,3

Source: The Ministry of Labour and Social Protection of the Republic of Uzbekistan

66. Besides, more women are involved in informal employment, resulting in a lack of social protection (pensions, social benefits and health care). Women also experience discriminatory attitude of employers while seeking a job- age discrimination, sex discrimination, sexual harassment and etc.
67. As it was already mentioned above women's employment and education are very much under the influence of gender stereotypes related to the women's role in patriarchal society. Girls more often encouraged by the family to learn professions that may be useful in a family, such as a teacher, nurse, seamstress, etc. This education provides little advantage in employment as it is an overabundance of medical and educational specialists with secondary professional education, and there is and an extremely small number of jobs in preschool and community medical establishments. Under these circumstances most of rural women either occupy low-paid positions of the budget sector or do unqualified low-paid work in informal labor markets. There is a growth of both open and latent female unemployment in rural areas, which takes a form of refusal from the search for a job (so called "disappointed unemployed").
68. According to the data of the State Committee of Statistics of Uzbekistan unemployment rate was 5.2 percent in the first half of 2014. The total number of unemployed made up 691, 4 thousand people. Women accounted for 68.1 percent of country's unemployed persons.³⁰ In January-December 2013 the number of unemployed was 639.7 thousand people and the unemployment rate were 4.9 percent of the economically active population.

³⁰ The State Committee of Statistics of the Republic of Uzbekistan. Demographic Situation. UzReport.uz 02.10.2014. Ministry of Labour and Social Protection of the Republic of Uzbekistan

69. High levels of unemployment are being observed in the Republic of Karakalpakstan (40.3 thousand, and the unemployment rate - 6.2 percent of the economically active population), in Andijan region (68.5 thousand and 5.4 per cent), in Samarkand region (76.2 thousand and 5.3 per cent), Khorezm region (37.1 thousand and 5.3 per cent), Kashkadarya region (58.3 thousand and 5.2 per cent), Namangan region (49.6 thousand persons and 5.2 per cent), Surkhandarya region (47.6 thousand and 5.2 per cent) and Navoi region (22.8 thousand persons and 5.2 percent).
70. Another reason for the lower level of female employment related to some social guarantees for women (“positive discrimination”), which the State delegated to enterprises. Private enterprises obliged to pay social allowances for working mother for childcare, in addition, in order to protect motherhood and the child the labour legislation provides a number of additional benefits and preferences on the part of the employer. Women also have the right to retire earlier than men (women retire at the age of 55, and men retire at the age of 60). These measures, on the one hand, aim to prevent harmful effects on the health of women and the creation of an enabling environment, but on the other hand, they create the preconditions for the greater tendency of employers to hire men rather than women (“preferences” unemployment), especially in the private sector.
71. It is a trend on increasing gender asymmetry in life opportunities for men and women, gender differences in employment and reassignment. Labor market inequalities, mentioned above, have been identified as “preference discrimination”, when employers give the employment preferences for men, with the motivation that women are not reliable workers.

Box 2: Some provisions of the Labour code of the Republic of Uzbekistan, demotivising women’s employment

Article 225. “the list of jobs with unfavourable working conditions in which fully or partially the use of female labour is prohibited”.³¹ The list includes mostly work in industry and construction.

Article 228. Work at night, overtime work or work on weekends and the travel assignments for pregnant women and women with children under fourteen years of age (disabled children up to 16 years), without their consent – not allowed. The involvement to the night shifts of pregnant women and women with children under three years old, is allowed if a medical report confirming that such work does not threaten the health of the mother and the child.

Article 229. At the request of a pregnant woman, a woman with a child under the age of 14 (or a disabled child up to the age of 16), including a child in her care, or caring for a sick family member in accordance with medical findings, the employer is required to employ them on a part-time basis or 5 days a week.

Article 236. Women with children under two years of age, besides to the usual rest and meal, should be provided by additional breaks for feeding the child. Such breaks provided not less than between three hours, for a period of thirty minutes each. If there are two or more children under the age of two years duration of the break shall be not less than one hour. Breaks for feeding a child are included in working time and are paid at the average monthly earnings.

Article 237. Termination of employment contract with a pregnant women and a women with children under age of three years, is prohibited, except in cases of the total liquidation of the enterprise, when the termination of an employment contract is permitted with mandatory job placement.

72. The Labour Code provisions related to the “positive discrimination” of women have been raised in the CEDAW Alternative report (2014) for Uzbekistan. The Government of Uzbekistan has undertaken a number of measures to address employment problems, specifically to increase rural women’s employment status. So, in 2013 in Andijan region 179395 of able-bodied and not employed housewives were identified. 41027 of them expressed their will to work and 26 448 of them were employed. Besides, Trade unions started the campaign on legalization of informal employment at leasehold farms. As a result of this activity 839281 workers at leasehold farms were registered as formal workers and received service record book.³²

³¹ The List is registered under the Ministry of Justice, No 865, dated 05.01.2000.

³² CEDAW report for Uzbekistan /C/UZB/5. 2014.

73. Annually about 1 million of new jobs created in Uzbekistan and 40 percent of them are allocated for women.³³ The government created a system of monitoring and monthly review of the implementation of the job creation programs within the sectors, regions and districts. Wide range of activities aimed on promoting rural women's employment, which was implemented primarily by engaging them in small business, farming, services and home-based work.
74. According to the working commissions in the local administrative bodies in 2013 980.2 thousand jobs were created, and 603.3 were created in rural areas; 535.1 graduates of education institutions and 466.4 rural women were employed.³⁴

2.7.2. Child labour

75. The Labour Code of Uzbekistan and the Law on the Guarantees of the Right of the Child, as amended in 2009, establish the minimum age for work at 16 and the minimum age for part-time light work at 15³⁵. The Labour Code also prohibits hazardous labour for minors under age 18.³⁶ The Government issued a Decree and Action Plan on Additional Measures to address the worst forms of child labour (2012), and reported that in 2012, unlike in prior years, the Government did not systematically close primary classes forcing young children to harvest cotton.
76. In prior years, local authorities practice of closing secondary schools and mobilizing children of ages 15 through 17 in the cotton fields to meet Government-mandated harvest plans. The harvest quotas were between 110 and between 175 pounds per day for older children, and 45 to 110 pounds for younger children. In the most of cases children may not have access to sufficient food, clean drinking water, in addition, children were paid little and may have food and other expenses deducted from their wages. Children miss weeks of school every year, which negatively impact their learning. In some cases, students, who refused to participate in the cotton harvest risk abuse, receiving low grades, or expulsion; their parents may also be threatened by local authorities or assessed fines.³⁷
77. Currently, the Government is implementing a range of measures to combat child labour in the cotton fields within the implementation of the International Conventions and Laws on Child Labour. However, it should be noted that despite the government recommendation not to mobilize children during the cotton campaign, in some cases local authorities involve adolescent labour. Employment of college students particularly affects girls as field camps and barracks for cotton pickers do not meet basic sanitary standards, do not have the necessary facilities, toilets, not enough water for sanitary needs, and etc.

2.7.3. Women's entrepreneurship in Uzbekistan: regional aspect

78. Uzbekistan is experiencing a new phase in small business and entrepreneurship development. Series of Presidential Decrees gave an impetus for tremendous increase of SMEs in Uzbekistan –

³³ Uzbekistan National Report. National review of implementation of the Beijing Declaration and Platform of Action (1995) on gender equality and extension of women's rights and opportunities. Women's Committee of the Republic of Uzbekistan. 2014

³⁴ Ibid.

³⁵ Government of the Republic of Uzbekistan. Law no ZRU-239 to amend the Labour Code of the Republic of Uzbekistan and Law on Child's Rights Guarantees UZB-2009-L-85547, 2009;

http://www.oit.org/dyn/natlex/natlex_browse_details?p_lang=en&p_isn=85547

³⁶ ILO Committee of Experts. Individual Observation concerning Worst Forms of Child Labour Convention, 1999 (No 182) Uzbekistan (ratification:2008)Published:2011;February 4 ,2013; <http://www.ilo.org/ilolex/cgi-lex/pdconv.pl?host=status01&textbase=iloeng&document=12724&chapter=6&query=Uzbekistan%40ref&highlight=&querytype=bool>

³⁷ ILO Committee of Experts. Report of the Committee of Experts on the Application of Conventions and Recommendations. In: International Labour Conference, 101 Session 2012; Geneva; http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_174843.pdf

The Decree of the President of the Republic of Uzbekistan (2011) “On Additional Measures to Create Most Favorable Business Environment for Further Development of Small Business and Entrepreneurship”, “On Additional Measures to Increase Lending to Small Businesses and Private Entrepreneurship” (2011); the Decree “On additional measures to stimulate the development of micro and small enterprises” (2005), “On measures to improve the system of legal protection of entrepreneurial entities” (2005).

Table 11. The share of small business in GDP by sectors 2006-2012 (%)

	2006	2008	2012
GDP	42,1	45,3	54.6
Industry	10,9	13,0	22.2
Agriculture	93,9	98,0	98.0
Construction	51,0	59,3	70.7
Trade	45,7	47,0	44.7
Paid services	50,8	48,0	45.6
Export	10,7	10,6	15.8
Import	34,0	36,8	37.6

Source: Socio-economic development of Uzbekistan, 2014.

79. Over the past few years, there has been a dynamic growth of the share of small businesses in the gross domestic product of the country. In 2012 the share of small business in GDP was 54.6 percent, including: 22.2 percent of industrial production, 98 percent of agriculture production, 70.7 percent of construction works, 45.3 of trade, 44.7 percent of paid services, 45.6 percent transportation of goods, and 83.4 percent transportation of passengers. The share of small business in the export volume constituted 15. 8 percent of GDP and in the volume of import – 37.6 percent. Out of 1 million new jobs which were created in 2012 in Uzbekistan 48.5 percent were created by small business entities, and 21.8 percent were created by extending of all forms of home-based businesses.³⁸

Box 3: Small Enterprises Classification in Uzbekistan

The main types of entrepreneurial activity are:

Individual enterprise, which involves: (i) doing business by an individual based on the license (patent) without company formation; (ii) with company formation.

Private Enterprise is a commercial organization established and controlled by the owner – a physical person.

Family business is a joint activity of physical persons without company formation, carried out by spouses based on their common property owned by them on joint tenancy, based on the spouses’ own labor, and helping them family members.

Micro-enterprises are the legal entities, with an average annual number of workers employed in production industries – not more than 20 people, in service sector and other non-production industries – not more than 10 people, in wholesale and retail trade and public catering – not more than 5 people.

Small business enterprises are the legal entities, with an average annual number of workers employed in the following industries:

- Not more than 100 people in light and food industries, metalworking production and instrument making, woodworking and furniture industry, and construction materials industry;
- Not more than 50 people in machine building, metallurgy, fuel and power industry, chemical industry, production and processing of agricultural products, construction and other industrial and manufacturing sectors;
- Not more than 25 people in science and scientific services, transport, communications, services sector (excluding insurance companies), trade and public catering and other non-production industries.

³⁸ Report of the President of the Republic of Uzbekistan Islam Karimov. The meeting of the Cabinet of Ministries on socio-economic development of Uzbekistan in 2012 and important priorities of economic program for 2013.

80. In 2013 the share of small business in GDP in Uzbekistan reached 55.8 percent, and it is 20 percent increase compared with a decade ago. More than 75 percent of the employed population involved in the area of small business and entrepreneurship. The proportion of female headed small and private enterprises increased by 1.6 times and made up 40 percent.³⁹
81. Each year, an average around 25-30 thousand new small enterprises are registered in Uzbekistan. In 2013, 26 thousand small enterprises have been opened and their total number reached 190 thousands.⁴⁰
82. Women constitute up to 45.4 percent of total number of employed populations.⁴¹ However, despite this relatively high share, less than one-quarter of all small and medium-scale enterprises are owned or managed by women (Table 12). One reason for women's under-representation in the business sector is their lack of knowledge, skills and financing, caused by poor access to education and credit. Yet evidence shows that increasing women's involvement in enterprise benefits the economy as a whole, and small and medium- scale businesses run by women are often more profitable than those managed by men. Women who work can make a substantial contribution to economies, producing long-term benefits to GDP growth and enterprise development. However, levels of women's economic engagement remain low and this signals a missed opportunity.

Table 12. Distribution of individual entrepreneurs by type of economic activity, (as of Jan 2011)

	Individual Entrepreneurs, thousand people	Distribution by sex, thousand people		Distribution by type of economic activity, sex (%)		Distribution by sex (%)	
		women	Men	women	men	Women	Men
Total in economy	161.0	61.7	99.3	100	100	38.3	61.7
Including:							
Retail sales	51.9	20.5	31.4	33.3	31.6	39.5	60.5
Craftsmanship	7.4	2.8	4.6	4.5	4.6	38.0	62.0
Services sector	27.3	10.2	17.1	16.5	17.3	37.2	62.8
Industry(local sweets, bakery and confectionary)	18.0	8.9	9.1	14.4	9.2	49.4	50.6
Construction (building work and design)	1.7	0.2	1.5	0.4	1.5	13.8	86.2
Other types of activities	54.7	19.1	35.6	30.9	35.8	34.9	65.1

Source: State Tax Committee of the Republic of Uzbekistan; Women and Men in Uzbekistan. Statistics bulletin. 2008-2010.

83. Individual enterprise has a special place in the development of entrepreneurship. According to the State Tax Committee of Uzbekistan, at the end of 2010, the number of individual entrepreneurs in the country has reached more than 161.0 thousand people, of whom 38.3 percent were women and 61.7 percent were men. (Table 12)
84. Distribution by type of activity indicates that women and men prefer mainly the same activities. Thus, most of the women entrepreneurs are engaged in retail sales- 33.3 percent out of total number of individual entrepreneurs in this area are women, service sector is the second important for women

³⁹ Report of the President of the Republic of Uzbekistan Islam Karimov. The Meeting of the Cabinet of Ministers on socio-economic development of Uzbekistan in 2013 and important priorities of economic program for 2014. 17.01.2014. http://news.uzreport.uz/news_4_r_11692.html

⁴⁰ Report of the President of the Republic of Uzbekistan Islam Karimov. The Meeting of the Cabinet of Ministers on socio-economic development of Uzbekistan in 2013 and important priorities of economic program for 2014. 17.01.2014. http://news.uzreport.uz/news_4_r_11692.html

⁴¹ <http://gender.stat.uz>

activity – 16.5 percent, and the third sector is food industry (production of local sweets, bakery and other confectionery products) – 14.4 percent.

85. As for men – entrepreneurs the employment in retail sales is also on the first place - (31.6 percent) out of all individual entrepreneurs, the service sector is on the second place (17.3 percent), and the food industry (production of local sweets, bakery and confectionery products) is on the third position (9.2 percent).
86. Analysis of the distribution of individual entrepreneurs by sex in the context of types of activities shows that men dominate in almost all activities. Thus, the proportion of women entrepreneurs in all sectors of economy is 38.3 percent, and the proportion of men is 61.7 percent, including those in retail sales – 39.5 percent of women and 60.5 percent of men, in craftsmanship – 38.0 percent of women and 62.0 percent of men, in the service sector – 37.2 percent of women and 62.8 percent of men, in food industry (production of local sweets, bakery and confectionery) – 49.4 percent of women and 50.6 percent of men, in construction and design works – 13.8 percent of women and 86.2 percent of men.

Table 13. Distribution of individual entrepreneurs by sex and regions.
(as of January, 2011*)

	Individual Entrepreneurs, thousands people	Total persons, thousand people		Distribution by sex (%)	
		women	men	women	men
Republic of Uzbekistan	161.0	61.7	99.3	38.3	61.7
regions:					
Andijan	15.0	6.1	8.9	41.0	59.0
Bukhara	12.5	4.5	8.0	36.0	64.0
Jizzakh	6.1	4.4	1.7	73.0	27.0
Kashkadarya	13.5	5.4	8.0	40.0	60.0
Navoi	7.8	2.3	5.5	30.1	70.0
Namangan	12.3	3.6	8.7	29.0	71.0
Samarkand	13.9	6.0	7.9	43.0	57.0
Surkhandarya	8.2	3.4	4.8	41.0	59.0
Syrdarya	3.4	1.7	1.7	51.0	49.0
Tashkent	12.9	4.8	8.1	38.0	62.0
Ferghana	22.6	7.8	14.8	34.0	66.0
Khorezm	7.7	3.4	4.3	44.0	56.0
City of Tashkent	16.9	4.7	12.1	28.0	72.0

Source: Women and Men in Uzbekistan.2008-2010. Statistical bulletin.

87. The craftsmanship includes women's domestic work as spinning, carpet weaving, gold embroidery business, production of traditional bedding, national clothes and hats, making puppets, and etc. The largest number of small business owners is in Ferghana region-22.6 thousand people, in the city of Tashkent with 16.9 thousand, and in Andijan region -15.0 thousand. In Samarkand and Tashkent regions the number of people involved in small business is 13.9 thousand and 12.9 respectively. The lowest level of entrepreneurial activities and women's participation is in Syrdarya (1.7 thousand) and in Navoi (2.2 thousand) regions (Table 13).
88. Territorial dimension of women's employment and sectoral profile of women's entrepreneurship is influenced by many factors: the nature of labour force and production specialization, the nature of the settlement and a number of socio-cultural characteristics of each region. The share of women's entrepreneurship is higher in the sectors identified as "women's" under the influence of gender stereotypes.

89. The dynamics of stable growth of small business enterprises in Uzbekistan is around 3-4 percent per year. Despite the fact that women's share among entrepreneurs is 38.3 percent, the indirect data shows that successful and sustainable business after three years of its foundation run by women (63.2 percent).⁴²
90. Analysis of the database of the Association of business women of Uzbekistan allow to track some trends in the development and structure of female entrepreneurship. Thus, the proportion of women in the field of medium-sized businesses with stable working capital is 5-10 percent. The proportion of women in small business with small working capital (as a rule, it is a barber shop, canteen, laundry, and etc) is 25-30 percent.
91. Data analysis shows that there is a need to develop a coherent program to support women's entrepreneurship based on its sectoral characteristics. In particular, it is necessary to provide support for women who express the will to start business, for those who already started their business to help them to strengthen and sustain their business, but also provide special support to those who have already managed to receive the level of running small business and to create more favorable conditions for women entrepreneurs to enter large-scale business.
92. The potential of women's entrepreneurship is quite high, due to the active position of women. Despite the difficult conditions more and more Uzbek women become active participants of productive sectors of economy. However, female entrepreneurship is influenced by gender inequalities in different areas.
93. Unfortunately, there is still no statistics characteristics of entrepreneurs by sex, including the share of private enterprises run by women, by type of activity, by size, by their participation in various sectors of the economy, their productivity, etc., as well as women's domestic work is invaluable at the macroeconomic level. The absence of statistical data does not allow to adequately determine the proportion of economic, political activity of women, the level of access to economic resources, to measure their contribution to human development and participation in decision-making at different levels, from macro to micro, as well as to calculate the country level Gender Empowerment Measure in the context of human development.

2.8. Access to Resources

2.8.1. Women and water management

94. According to the surveys, conducted in different rural areas of Uzbekistan high level of rural women are involved in household work and agriculture activities at the household plots and dehkan farms. Under these circumstances, rural women face a number of challenges due to lack of water for irrigation. Public irrigation systems in Uzbekistan have been designed as being for agriculture use only. However, often before or after reaching the farmer's field, water resources are shared by dehkans, by gardeners or village streets supplying household plots. Unfortunately, according to existing regulations under the WUA priorities on watering farms are given to private farms involved in state order on growing cotton and wheat, thus dehkan's farms, mostly run by women, do not have enough access to water for irrigation. Because of the combination of the priority given to cotton and wheat farmers, and an outmigration of male season laborers, women become more active in irrigation and water management within the village boundaries. The new roles of women are defined according to age groups, while young women (kelins⁴³) irrigate, elder women negotiate with men, makhalla mirabs⁴⁴, heads of WUA and local authorities. Increased involvement of female small water users

⁴² Report "The level of entrepreneurship development among rural women in Uzbekistan". 2009. ADB/UNDP/Gender Program of the Swiss Embassy in Uzbekistan.

⁴³ Kelin – daughter in Law

⁴⁴ Makhalla mirab - community water master.

challenged traditional irrigation –specific gender roles as well as village norms⁴⁵. So far, these new roles for women have not been institutionalized within the organizations that have been specifically set up with the goal to improve water management at the local level- WUA. 1654 WUA were registered in 2007. But there is a trend to spontaneous organization of people at makhalla level into water users' groups with involvement of local women-irrigators which are still operating outside the new institutional settings.

95. The low level of participation of women in WUA and other structures, responsible for water resource management is due to different reasons, including: insufficient use of gender approaches in implementing economic and social policy and in decision making level in general in water management structures; lack of readiness of government employees to resolve gender issues, as well as a lack of a specific understanding of the role of women in the sector and the importance of ensuring gender equality; low level of rural women's education and awareness on their legal rights; absence of leadership skills and etc.

2.8.2. Women's access to finance

96. The institutional environment for development of entrepreneurship generally and individual entrepreneurship in particular is maintained through creating of permanent all-round structures, which operate in the form of financial credit institutions, consulting and leasing companies and professional associations.
97. One of the important factors for the development of women's entrepreneurship is easy and free access to resources and national programs aimed at business development, providing accessibility to financial resources in particular are also important.
98. The following laws and regulations adopted in establishing of system of crediting in Uzbekistan include:
 - The Decree of the President of the Republic of Uzbekistan of March 21, 2000, "On Measures for Further Liberalization and Reforming of Banking System", aimed at establishing in the commercial banks the Fund of lax crediting of small businesses and micro companies, farming enterprises, high-tech and innovative projects through contributions of 25.0 percent of the bank's profits to this Fund;
 - The Decree of the President of the Republic of Uzbekistan on March 11, 2011 "On Additional Measures to Increase Lending to Small Businesses and Private Entrepreneurship";
 - The Resolution of Cabinet of Ministers of the Republic of Uzbekistan of May 19, 2000 "On Additional Measures to Stimulate the Participation of Commercial Banks in the Development of Small Business", providing incentives for commercial banks to increase their own resources directed to crediting the small businesses through tax exemption of all income derived from the small businesses crediting until 2016;
 - The Decree of the President of the Republic of Uzbekistan of 24 August 2011 "On Additional Measures to Create Most Favorable Business Environment for Further Development of Small Business and Entrepreneurship", providing the simplification of the crediting process, according to which the accounts of small businesses in local currency will be opened at no charge, and credit applications will be considered by commercial banks within the period of three banking days.
99. To implement the above-mentioned Decree of the President of the Republic of Uzbekistan, active measures are taken to establish a Guarantee Fund for development of entrepreneurship. The Guarantee Fund will be another important step in creating particularly favorable environment for development of entrepreneurship by expanding accessibility of entrepreneurs to financial resources, thus solving the problem of collateral, which is highly important.

⁴⁵ Nozilakhon Mukhamedova and Kai Wegerich. Integration of Villages into WUAs –the Rising Challenge for Local Water Management in Uzbekistan. International Journal of Water Governance 2014. XXX-XXX DOI 10.7564/13-IJWGI9.

100. As part of the administrative and economic measures carried out by the government in the sphere of development of a such an important financing tool for small businesses and private enterprises as microlending, the State Program “On the Priority Areas for Further Reforming and Improving the Stability of the Financial and Credit System of the Country in 2011–2015 and Achieving High International Rating Indicators” has been adopted. This program provides:
- Expansion of the credits’ volume provided by commercial banks and provision of microfinance services by non-bank credit institutions in 2011–2015 by 2.8 times;
 - Creation of microlending organizations specialized in granting the microcredits and micro-loans to women from low-income families, providing sources of allotting them with privileged resources, including funds of international financial institutions, investors and donors;
 - Implementation of pilot projects to introduce methods of unsecured microlending based on joint liability of borrowers’ groups.

**Table 14. Credits, granted by commercial banks to small business entities (2007 – 2010).
(billions of sums)**

	2007	2008	2009	2010
All sources of credits	743.7	1250.7	1851.7	2690.2
including:				
micro lending	110.0	202.5	322.1	485.2
including granted to the development of entrepreneurship				
Women	90.1	148.7	204.2	264.9
men	19.9	53.8	117.9	220.3
Share of micro lending granted to, in percentage:				
Women	81.9	73.4	63.3	54.5
Men	18.1	26.6	36.7	45.5

Source: The Central Bank of the Republic of Uzbekistan; Women and men in Uzbekistan 2007-2010;

101. According to data of the Central Bank of the Republic of Uzbekistan, in 2010, 485.2 billion sum (Table 14) were allocated to business crediting, which was 30 percent higher than in 2009, most of this sum (54.5 percent) was allocated to the development of female entrepreneurship. The Mikrocreditbank Joint Stock Bank allocated in 2010 26 billion sums to women wanting to partake in business activities, which is 41.8 percent higher than in 2009. These funds enabled 17,000 workplaces to be created all over the country. In addition, the Women’s Committee and Mikrocreditbank JSB conducted annual training seminars all over the country for women, living in rural areas and wishing to start their own business.
102. Despite these positive trends, the percentage of loans allocated to businesswomen is only around 10 percent and has been gradually decreasing over the past three years. Such a low share of loans allocated to businesswomen is linked to other factors, in particular to the problem of mortgage conditions to obtain the loan. Women starting a small home-based business usually do not own property or have an access to additional property which could be used as a loan guarantee. The situation is less complicated for men, as they generally own property, and therefore providing a guarantee is not as difficult as it is for women.
103. Female entrepreneurship is also supported in the course of implementation of international programs and projects in the country. These programs include: Project ‘Promotion of Women’s Economic Rights in Uzbekistan’ implemented by the Women’s Committee of Uzbekistan with the assistance of UN Women and in cooperation with ‘Mikrocreditbank’ JSCB; Credit Line of “Savings Banks’ Fund (Germany) in the OC “Mikrocreditbank” for start-up capital for women-entrepreneurs; project of the European Union and UNDP and the OC “Mikrocreditbank” – “Development of Group Lending” in six regions of the country.
104. The country is constantly working to improve the professional and legal literacy of men and women entrepreneurs. With this in view, a permanent committee on development of female entrepreneurship

has been established under the Chamber of Commerce. A system of women's education containing the programs aimed at the development of local industries and crafts has also been established.

105. The legislation of the Republic of Uzbekistan formally provides equal rights for men and women in business, in obtaining loans, mortgages and other forms of financial credit. However, within the redistribution of the State property of income-generating resources the vast majority were located in the hands of men. Currently, the system of State support and development of women's entrepreneurship is at the early stage of establishment. Certainly, women and men, running business, should be in equal conditions. However, the process of privatization within the beginning and middle of 90's does not benefit women. Women do not have enough resources that could enable them to become the owners of large and medium-sized properties. Reform of agricultural enterprises and their privatization also occurred without the participation of women. Only a very small number of women were able to participate in privatization and establishment of their firms and farms.

2.9. Gender-Based Violence

106. The transition period has been characterized by many factors – increasing unemployment, poverty, income inequality- that may influence on the level of violence against women. These factors also increased women's vulnerability by the breakdown of social support network and increased economic dependence on their partners. Domestic violence includes economic and social costs for society, the community and the family and harms women's well-being: a woman as an object of violence may lose her life, health, her education, career, professional growth suffers, and the family economic welfare weaken. Demonstration of violence poses a threat to future generations. Children as witnesses of domestic violence adopt an example of violence as the main means of resolving family disputes and in future use it in their own families.
107. There is a little data available on the level of violence in Uzbekistan as it is only recently that domestic violence has been recognized as a social problem, enable to policy respond. However, Uzbekistan has acceded to more than 60 international treaties on human rights-women rights, joined several international institutions, and participated in conventions committed to the promotion of gender equality and the protection of women's rights. The country joined the Beijing Platform and Beijing Plan for Action and Convention on the Elimination of Discrimination against Women (CEDAW) and regularly develops National Action Plan to implement UN CEDAW Committee recommendations. The last one was adopted and signed by the Deputy Prime Minister of Uzbekistan in October 2017. This plan contains measures to prevent violence against women and girls; separately track cases involving violence; establish a data collection system for cases of violence; punish the guilty and provide assistance for victims; and establish programs designed to identify the causes of violence and the conditions that fuel it. It also provides for improved public information activities on the topic.⁴⁶ The next National sixth periodic report to UN CEDAW committee was submitted on November 2019. The periodic National Report on Implementation of Beijing Platform and Beijing Plan for Action in Uzbekistan was submitted on 10 May 2019.
108. In September 2019 two laws on "Guarantees of equal rights and opportunities for men and women" and on "Protection of Women from Harassment and Violence" were approved by the Government. The Law of the Republic of Uzbekistan On Protecting Women from Oppression and Violence, adopted on 2 September 2019 directly devoted to the protection of women from all form of oppression. The Article 3 of the law contains legal definition of Violence, Gender violence, Physical violence, Economic Violence, Philological violence and harassment. The Law provides system of measures on preventing all forms of violence against women, preventing measures as well as sanctions for abuser. .

⁴⁶ Concluding observations on the fourth periodic report of Uzbekistan, adopted by the Committee at its forty-fifth session (18 January-5 February 2010). United Nations, Committee on the Elimination of All Forms of Discrimination against Women, February 2013.

109. According to current procedures, all women affected by domestic violence have the right to get support of Mahallas (local communities), police, medical institutions and set of other governmental and non-governmental structures. Starting from 2019 Uzbekistan legislation introduced new form of legal protection of women – Security (protection) order. As per articles 21-26 of the Law “On protection of Women from Harassment and Violence”, any women, victim of violence, has the right to receive the Security order, which contains different measures of restriction of behavior of aggressor. The Order is being issued by Police, which is monitoring and ensuring its strict implementation. Article 27 of the Law containing definition of the shelter and empower its creation by government and non-government structures.
110. According the Presidential Decree and “The Program of Practical Measures for the Improvement of Social Rehabilitation and Adaptation, the System of Prevention of Domestic Violence”, the Women Committee of Uzbekistan (WCU) has been in charge of fostering the domestic violence response efforts. As part of its mandate, WCU has worked closely with women CSOs. According to Women’s Committee of Uzbekistan’ information, WCU has opened more than 160 Centres for Rehabilitation and Adaptation for women victims of violence in the country since 2018 where psychological, legal and social assistance is provided to victims of domestic violence. At the beginning of March 2019, more than 4,120 women and girls turned to the created Centers. The hotline “1146” of the Women’s Committee has been launched, where women and girls who need help and find themselves in a difficult life situation will be able to receive appropriate psychological, legal, and medical assistance, including on an anonymous basis.
111. Gender based violence

III. Mechanisms to Address Gender Inequality in Uzbekistan - Legal and Administrative Framework

3.1. Law and Policy on Improving the Status of Women

112. The authoritative women’s public organization – Women’s Committee of Uzbekistan was created in 1991 and the consistent legal and institutional development of the national machinery for the advancement of women began in 1995, when the decree of the President of the Republic of Uzbekistan “On measures to enhance the role of women in state and public construction of the Republic of Uzbekistan” introduced the post of the Deputy Prime Minister for the chairperson of the Women’s Committee of Uzbekistan.⁴⁷ In 1995 the Republic of Uzbekistan ratified the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), and the State delegation of the Republic, with a number of representatives of NGOs had participated in the Fourth World Conference on women (Beijing, 1995).
113. The Constitution of Uzbekistan established equality of rights between women and men in art. 46. In 2004, a 30% quota for women in political party election lists was introduced and this measure increased women’s representation in the Parliament (16 %in 2016 in the Oliy Majlis, 27% -in government authorities, 19% - in the civil service, 13% -in the judiciary, and in the diplomatic service only 3 % of women) . Starting from 2016 The government and leadership of Uzbekistan pays strong attention to the promoting women rights and ensuring gender equality in general, and addressing domestic violence in particular. The adopted “Development Strategy of Uzbekistan for 2017–2021” became the basis for carrying out reforms, developing policies, programs and implementing projects aimed at achieving gender equality and improving the status of women. The Strategy identifies priorities for increasing the socio-political activity of women, strengthening their role in government and society, the active participation of women in peacebuilding processes, increasing economic independence and ensuring the employment of women and young people, especially those living in

⁴⁷ The chairperson of Women’s Committee is the deputy prime minister (this post is preserved for a women and in practice this is an officially established “glass ceiling” for women at the top decision making level). Accordingly, the chairpersons of the women’s committees of the Republic of Karakalpakstan

rural areas. Another development was a creation of the ‘Commission on Gender Equality’ chaired by the Chairperson of the Senate to support the implementation of the government policies related to family and gender equality by developing recommendations, monitoring the implementation of national and international norms, conducting studies, preparing proposals for the Parliament, conducting preliminary review of laws, and considering appeals from individuals and legal entities. During the 20th plenary session of the Senate of the Oliy Majlis of Uzbekistan (21 June 2019) the President of Uzbekistan proposed to organize a new Committee on Women issues and Gender Equality in the Senate of the Oliy Majlis of the Republic of Uzbekistan. In accordance with Article 86 of the Constitution of Uzbekistan, the candidature of Tanzila Narbaeva, who held the position of Deputy Prime Minister of the Republic of Uzbekistan - the Chairperson of the Women's Committee of Uzbekistan, was proposed to the position of the Chairperson of the Senate. Following a secret(close) ballot, Tanzila Narbaeva was elected to the post of Chairman of the Senate of Oliy Majlis.

114. In accordance with the Resolution of the 70th Session of the General Assembly of the Organization of the United Nations, adopted at the United Nations Summit on Sustainable Development in September 2015 and with a view to facilitate the systematic and continuous implementation of SDGs until 2030, the Cabinet of Ministers of Uzbekistan approved 16 national sustainable development goals and associated targets for delivery by 2030. A national set of indicators was developed and approved to facilitate the monitoring of the progress in the implementation of the SDGs. From 206 adopted indicators, 32 are gender-related. A dedicated website (<http://nsdg.stat.uz/>) was launched in 2018, reflecting the processes of implementing the National Goals and Objectives for the SDGs in Uzbekistan. The process of nationalizing the SDGs is led by the Government of Uzbekistan, in consultation with the UN. The Resolution of the Council of Ministers as of 15 February 2016, formally defined the institutional order of the nationalization of the SDGs in Uzbekistan.
115. Over the past 20 years more than 80 legal instruments relating to the promotion and protection of the rights, freedoms and legitimate interests of women have been adopted in Uzbekistan.⁴⁸ Ratifying the CEDAW, the Beijing Platform and Plan of Action, as well as other international instruments on women's rights was the necessary international legal framework for the national level elaboration of specific measures for the implementation of international standards in law and practices.

Box 4: The most important international instruments ratified by Uzbekistan include:

1. International Covenant on Civil and Political Rights (UN)
2. International Covenant on Economic, Social and Cultural Rights (UN)
3. Convention on the Political Rights of Women (UN)
4. International Convention on the Elimination of All Forms of Discrimination (UN)
5. Convention on the Elimination of All Forms of Discrimination against Women (UN)
6. Convention on the Rights of Child (UN)
7. Convention (100) concerning Equal Remuneration for Men and Women Workers for Work of Equal Value (ILO)
8. Convention (103) on the Protecting Motherhood (ILO)
9. Convention (111) concerning Discrimination in Respect of Employment and Occupation (ILO) and etc.

116. The CEDAW requirements have been translated into a selection, family, labor, criminal, administrative and other branches of law. The President of the Republic of Uzbekistan adopted a special Decree “On additional measures to support the activities of the Women's Committee of Uzbekistan (May 24, 2004). The government practiced the adoption of the National Action Plans on implementation of the recommendations of the UN Committee following the consideration of the periodic reports of the Republic of Uzbekistan on CEDAW implementation.

⁴⁸ Women of Independent Uzbekistan. Women's Committee of the Republic of Uzbekistan. 2014. p.5

117. Attention has been given to women and girls in several annual state programs such as the Year of Rural Development and Improvement (2009), the Year of Social Protection (2007), the National CEDAW Plan (2010), and the State Program on “Year of Family” (2012), though a review of official policy documents related to such programs found that none referred specifically to gender equality.
118. In addition, a Decree of President of Uzbekistan on “Additional measures for ensuring further economic development and enhancing the efficiency of economic policy” adopted in January 2019, emphasized the structural reforms in 2019-2021 to: (i) remove restrictions on women's participation in all sectors of the economy; (ii) improve the targeting of government programs to increase women's participation in the economy; and (iii) conduct campaigns to promote the culture of professional leadership and entrepreneurship among women.
119. The principle of equal rights between women and men is supported by national law, as determined in Article 18 of the Constitution and other legislative acts. For example, both the criminal code and the labor code protect against discrimination on the basis of sex. The labor code also guarantees equality in employment, working conditions, remuneration, and promotion and, in several cases, affords special protections to female workers. According to the adopted Decree of the President of Uzbekistan the following changes were made to the Family Code of Uzbekistan, from September 1, 2019, the minimum age for marriage for men and women is equal to 18 years (previously for men was 18 years, for women -17).

3.2. National Machinery for the Advancement of Women

120. The national machinery for the advancement of women of the Republic was created to take all appropriate measures to achieve equality between women and men, to ensure positive changes of the traditional roles of women and men in society and in the family. The main institutions responsible for women's issues till 2020 were the Women's Committee, the institution of Ombudsman under the Oliy Majlis (The Supreme Assembly) which deals with general human rights cases, including violation of women's rights. In 2000 the Commission on Family and Women's issues and the Committee on Social Issues and Employment were created under the Parliament. In July 2019 Committee on women and gender equality issues was created under the Senate of the Parliament of the Republic of Uzbekistan. The Committee has the primarily focus on the gender issues and already became effective mechanism for promoting gender issues at the highest level. Creation of the Gender commission with participation of the gender civil society organizations became effective instrument of involving women NGOs to the decision making.
121. Women's Committee was a “rare example (of a quasi-governmental organization) which participated in the protection of women's rights in the labor and domestic sphere”⁴⁹.
122. The Women's Committee of Uzbekistan, created soon after independence, was the primary agency that coordinates women's affairs nationally, regionally, and locally. Its mission includes developing and implementing state policies on women's rights, improving the social and economic status of women, and ensuring women's participation in reforming and modernizing the country. The Women's Committee had the status of an NGO but also has important links with government structures and plays a quasi-governmental role in policy implementation. The chairperson of the national Women's Committee was also a deputy prime minister, an appointed position reserved for a woman. The Women's Committee had branches in all 14 regional administrations⁵⁰ and 219 districts or cities, and which were led by women who hold the office of deputy hokim (local leader).⁵¹ In addition, since

⁴⁹ USAID.2011.2010 NGO Sustainability Index for Central and Eastern Europe and Eurasia. 14th ed. Washington, DC. p. 215.

⁵⁰ The 14 regional administrations of Uzbekistan represent 12 regions, the city of Tashkent, which has the status of a region, and the Republic of Karakalpakstan, an autonomous republic.

⁵¹ National Center of the Republic of Uzbekistan for Human Rights. 2010. Second National Report of the Republic of Uzbekistan on the Provisions of the International Covenant on Economic, Social and Cultural Rights. [In Russian]. Tashkent. p. 108.

2004, each mahalla, a local community-based organization, had an advisory position on religious, spiritual, and moral education that was reserved for a woman and is partly funded by the Women's Committee. The vertical nature of the Women's Committee, extending from the highest level to the community level, was one of the strengths of the organization.

As per Government decree starting from February 2020, the structure and the functions of the Women committee were integrated to the newly created Ministry on family and community issues.

123. Other state institutions that play a role in protecting women's rights or monitoring implementation of commitments under CEDAW include the Authorized Person of the Oliy Majlis of the Republic of Uzbekistan on Human Rights (the human rights ombudsman) and parliamentary committees on labor and social protection and on democratic institutions and civil society.

IV. Gender Specific Vulnerabilities in the Disaster Management Cycle in Uzbekistan

124. Several climate change induced hazards currently cause both economic damages and lead to the loss of lives. These include mudflows, landslides, floods, scarcity of water resources and draughts. The objective of the project is to improve the coverage, efficiency and accuracy of the multi-hazard EWS in Uzbekistan and enhance the use of climate information for an increased resilience of communities and their livelihoods to climate-induced hazards. The project will introduce modern risk assessment and forecasting techniques/technologies, improve the availability of multi-hazard risk information and enable a climate information and EWS system which can more flexibly adapt to changing climatic conditions in the future, as well as provide tools for pro-active planning.
125. Women appear to suffer disproportionately from disasters due to uneven income distribution and lesser access to information, planning and decision making. When disaster strikes, men and women have different abilities, means and ways of responding, and, in the end, the impacts are different. It has been widely observed, researched and documented that women are more vulnerable than men of the same social classes, races, ethnic and age groups during all phases of a disaster across several dimensions, such as material resources, human capital, social capital, political capital, etc.

Box 5: Summary of gender differences in vulnerability and adapting to disasters

Disparities that increase risks for women in disasters

- Higher levels of poverty
- Extensive responsibilities of caring for others
- Domestic violence
- Traditional women's occupations

Disparities that increase risks for men in disasters

- Occupational segregation
- Internalized norms of masculinity
- Roles in the family and in the home

Gender experiences that can increase capacities for managing disaster situations by:

Women

- Social networking
- Caring abilities
- Extensive knowledge of communities
- Management of natural and environmental resources
- High levels of risk awareness

Gender experiences that can increase capacities for managing disaster situations by:

Men

- Professional and work contacts
- Technical abilities
- Limited childcare responsibilities

125. As is outlined in Box 5 above, gender experiences can increase the capacities for managing disaster through for example extensive knowledge of communities and high levels of risk awareness. The project will leverage these capacities in developing the risk models for the project (activity 2.1); in designing and implementing a system for information dissemination (activity 2.3); and in strengthening disaster warning dissemination and communication with end users (activity 3.3).

4.1. Higher levels of poverty among women

126. Evidence suggests that, in Uzbekistan, women are more vulnerable to the risk of poverty than men, particularly if women are divorced, widowed, unmarried mothers or have large families.⁵² Compared to men, women own less property and productive assets. A survey of female entrepreneurs in farming found that of 35 women, only 5 owned their own machinery and others made use of machine tractor fleets or hired from private owners.⁵³ That is why women are more dependent on natural resources for subsistence than men.
127. The total number of economically active population at the beginning of 2018, 42.7% were women employed in the economy and 52.8% were unemployed. Rural women head only 10% of all existing farms (2015), women from rural areas occupy only 4.2% of senior positions in the agricultural sector and earn 82% of men's earnings. The proportion of women as a share of all employees in the SME sector, including farming, was growing slowly between 2014 and 2016 (21.7% and 22.5% respectively).¹⁵ However, as of 2017, the share of women in employment and entrepreneurship in SME sector started growing more rapidly: as of beginning of 2018, there are over 182,000 women entrepreneurs, representing 29% of all registered business entities in the country. In terms of economic activities, a significant gender gap in the number of employees is observed in such types as construction (5,8 % of women and 94,2 % of men), transportation and storage (7,2 % of women and 92,8 % of men), education (75,6 % of women and 24,4 % of men), health care and the provision of social services (76,6 % of women and 23,4 % of men). In 2017, the percentage of the difference between the average monthly wages of men and women to the average monthly wages of men is 34,6.
128. Women - heads of farms in Uzbekistan make 5.4% (8105), they specialize in: horticulture - viticulture - 36.3%; cotton-growing viticulture -35.5%; oilseeds and melon-growing-10%; vegetable -7.7%; livestock-6.2%; vegetable-growing - melon-growing - 4.4%. According to the information of the State Committee for Land Resources, Geodesy, Cartography and State Cadastre, the percentage of the adult population owning land including women-18% and men 82%, (as of April 2019).

According to the data of the Ministry of Employment and Labor Relations, in 2017, the number of unemployed in the country was 837,0 thousand people, of which 367,1 thousand were women (43,9 % of the total number of unemployed), men 469,9 thousand (56,1 % of the total number of unemployed). The unemployment rate in 2017 was 5,8 %, of which among women - 5,6%, and among men - 6,0 %.

4.2. Women's extensive responsibilities of caring for others

129. In their families, Uzbek women are primarily responsible for household chores⁵⁴, responsible for collecting water, which often needs to be done two to three times a day, and includes travelling several kilometers⁵⁵, and carries out the role of the manager of her household, nursing for husband, children and for elder members of family.⁵⁶

⁵² Country Briefing Paper, Women in the Republic of Uzbekistan, Wendy Mee, 2001, p. 7

⁵³ Uzbekistan Country Gender Assessment, ADB, 2014, p.63

⁵⁴ Uzbekistan Country Partnership Strategy 2012-2016, ADB, 2012, p.4

⁵⁵ United Nations Children's Fund (UNICEF). 2006. *Multiple Indicator Cluster Survey*. Tashkent.

http://www.unicef.org/ceecis/MICS3_Uzbekistan_FinalReport_2006_en.pdf?bcsi_scan_87C32BF4337FFED6=1

⁵⁶ Uzbek family and position of women, p.1, available electronically at

<http://www.musawah.org/sites/default/files/Uzbekistan-report%20for%20Home%20Truths.pdf>

4.3. Domestic violence

130. Domestic violence is being addressed through the same legal instruments as a Gender based violence. In September 2019 two laws on “Guarantees of equal rights and opportunities for men and women” and on “Protection of Women from Harassment and Violence” were approved by the Government. New legislation and infrastructure of Shelters, created in Uzbekistan, are the good basis for protection of women in Uzbekistan. According the Presidential Decree and “The Program of Practical Measures for the Improvement of Social Rehabilitation and Adaptation, the System of Prevention of Domestic Violence”, the Women Committee of Uzbekistan (WCU) has been in charge of fostering the domestic violence response efforts. As part of its mandate, WCU has worked closely with women CSOs. According to Women’s Committee of Uzbekistan’ information, WCU has opened more than 160 Centres for Rehabilitation and Adaptation for women victims of violence in the country since 2018 where psychological, legal and social assistance is provided to victims of domestic violence. At the beginning of March 2019, more than 4,120 women and girls turned to the created Centers.

4.4. Occupational segregation

131. Education- According to the CEDAW concluding observations, 2015 -Uzbekistan reached gender parity among students in primary and secondary schools. For the 2017/2018 - academic year-Universities-girls-students-38%, and boys-students-62%. But women and girls continue to choose traditionally “female” areas of education and professional activities, such as health care and services (76.5%) of women and education (75.6%). As of 2018-2019, a positive gender dynamics has been evolving: the index of gender parity of students enrolled in part-time study programme was 2.03 (67% women and 33% men).⁵⁷ Gender stereotypes largely define women’s choices in courses and prospects for employment. When selecting a career, girls are motivated less by employment and success, but rather by the desire to obtain a qualification that will be useful in family life (e.g., health worker, teacher, or seamstress). Women are highly represented in the social sectors (education, health care and social services, accommodation, and catering services), which typically offer lower salaries, while men predominate in technical fields (construction, industry, transport, finance and insurance, information and communication technology), which usually offer higher salaries.

4.5. Norms of masculinity and men’s roles in the family and in the home

132. The customary view is that men are superior to women in society and as such must be the main household caregiver and economic provider.⁵⁸ A study of attitudes about the preferred family model reveals that gender stereotypes remain entrenched in Uzbekistan today. Most respondents to a survey on family models preferred a patriarchal family model in which “the husband plays a dominating role in a family and bears responsibility for the material well-being.” In 56% of households surveyed, the male head of household managed the family budget, and in 51% of households, he made decisions concerning expensive purchases.⁵⁹

4.6. Human capital

133. Human capital is an economic measure that comprises of labour power, health status, skills and knowledge of an individual. In Uzbekistan, across all of these measures, women fare poorer than men. Although women’s life expectancy in Uzbekistan exceeds men’s,⁶⁰ women have in general more health related problems than men.

⁵⁷ Report of the implementation of the Beijing Declaration and Platform for Action, Uzbekistan, 2019, p.4

⁵⁸ Uzbekistan Country Gender Assessment, ADB, 2014, p.9

⁵⁹ Uzbekistan Country Gender Assessment, ADB, 2014, p.10

⁶⁰ Uzbekistan Country Gender Assessment, ADB, 2014, p.19

4.7. Social capital

134. Social capital comprises of social trust, norms and networks, that can be drawn for solving problems. Uzbekistan is a society based on high levels of social capital.⁶¹ However, both the 2003 and the 2005 AsiaBarometer surveys, reveal a very low level of generalized trust in the Uzbek society.⁶² In 2003, only 19.2% of respondents say that “most people can be trusted”, whereas the majority, 80.8%, does not trust others and states that one cannot be too careful in dealing with others. In 2005, the situation improved only slightly, with 22% thinking that people can be trusted, and 77.6% preferring not to trust others.
135. ‘Mahallas’, considered to be a strength of the Uzbek society in terms of social capital, are community-based organization or council that comprises citizens from a neighbourhood, village, or settlement; they are formal structures run by committees, with an elected chairperson, and fulfil local self-government functions.⁶³ Since 2004, each mahalla, has an advisory position on religious, spiritual, and moral education that is reserved for a woman and is partly funded by the Women’s Committee. The tasks of the mahalla are numerous and range from practical assistance to consultation and officially assigned public tasks. The mahallas organize the repairs to houses on the basis of collective assistance, offer consultations to families in case of abuse and divorce, organize neighborhood anti-crime-groups and waste collection and act as an authorized local level authority, providing certain forms of social assistance to those in need. International donor organizations like the UN agencies, the World Bank and the EU rely on the mahalla system for implementing their assistance programs.⁶⁴

4.8. Political capital

136. Political capital is defined as an ability to influence policy and processes of government. Although they are not part of any law or policy, notions about the traditional role of women, connected to motherhood, children, and family, are prevalent and are often at odds with women’s public roles in political office or in business. Despite the fact that women comprise 35% to 47% of the members of political parties, they do not occupy leadership positions. The physical presence of women (because of quotas) does not automatically ensure their active participation in political life and uphold the interests and rights of women. None of the major political parties’ platforms include a program of action to advocate achievement of gender equality in the country.

4.9. Age, seniority and disability

137. Those with functioning disabilities, such as moving, hearing, seeing and cognitive functioning comprises the group with higher degree of vulnerability, especially among the elderly. Isolated living arrangement, diminished social networks, lower access to information (e.g. use of internet, mobile applications), limited physical and cognitive capabilities restrict access and adequate perception of warnings by elderly. As a result, they often do not respond to warning. They are also reluctant to be separated from normal/accustomed surroundings and fear the unknown. Sensory impairments, mobility problems, reduced thermoregulatory capacity in the elderly make them more susceptible to the effects of extremely hot or cold temperatures. The ability to survive injury also decreases with age. These factors explain higher death rate among elderly due to disasters. At the disaster warning, there is a high chance that children be separated from parents, being at school or kindergarten.
138. In 2015, 327,199 (1.3 percent of total population) was registered as having disability status in Uzbekistan.⁶⁵ The distribution of PWDs differ across regions, with the biggest shares being

⁶¹ Social Capital and Economic Development: The Case of Uzbekistan, Manuela Troschke, 2011, p.1

⁶² The possible answers in the AsiaBarometer survey with regard to trust are: high level of trust, normal level of trust, low level of trust, no trust at all and no idea. The level of partial trust and trust are frequently taken as aggregate, whereas no trust is taken directly, ascribing to the relative percentage levels given.

⁶³ Uzbekistan Country Gender Assessment, ADB, 2014, p.10

⁶⁴ Social Capital and Economic Development: The Case of Uzbekistan, Manuela Troschke, 2011, p.27

⁶⁵ Disability at a Glance, UNESCAP, 2015, p. 82

concentrated in the Republic of Karaklpakistan (1.97 percent), and in the regions of Navoi (1.8 percent), Sirdarya (1.76 percent) and Khorezm (1.58 percent).⁶⁶

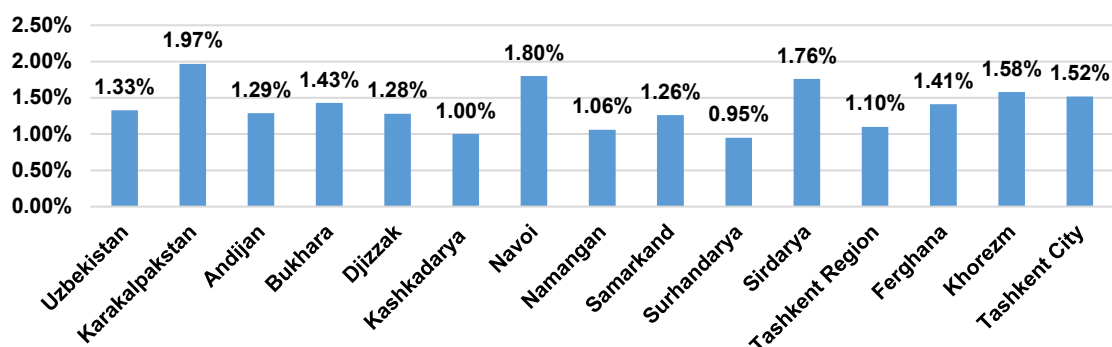


Figure 1. The percentage of PWDs by regions, 2000

Source: Country Profile on Disability: Republic of Uzbekistan, 2002

139. People with disabilities are less likely to be employed and have University education and hence are more prone to poverty. Despite deterioration of functioning many seniors tend to not have a disability status, but are highly vulnerable to impacts of disasters.

4.10. Ethnicity

140. Uzbekistan's population is multi-ethnic, with Uzbeks comprising 83.8 percent in 2017.⁶⁷ The biggest ethnic minority group is Tajiks (4.8 percent), while there are three other minorities of comparable size: Kazakhs (2.5 percent), Russians (2.3) and Karakalpaks (2.2). Other ethnicities, such as Kyrgyz, Tatars, Turkmen, Koreans, Ukrainians, etc., together comprise 4.4 percent. Karakalpaks are mainly concentrated in the autonomous Republic of Karaklpakistan, where Karaklpak is the main language and, along with Uzbek language, has the status of the state language. Ethnicity is closely linked with faith, and overwhelming majority of Uzbeks, Kazakhs, Karakalpaks, Tatars, Kyrgyz are sunni Muslims, while Russians and Ukrainians belong to Russian Orthodox Church. In many cases, representatives of non-turkic minorities, do not master Uzbek language, much lower than understanding of verbal information is understanding of written materials.

4.11. Gender-based perception of climate change indicators.

141. Perception of changes in the air temperature in winter and summer. According to a study conducted by UNDP in 2013⁶⁸, women's perception of the changes in the climate based on the perception of the air temperature in winter and summer across the regions of Uzbekistan vary significantly (Table 15). In the Republic of Karaklpakistan, Bukhara and Khorezm regions all (100%) of surveyed women have indicated that in winter the temperature drops lower, while in summer it rises higher than before.
142. In Andijan, Ferghana, Jizzakh, Samarkand and Kashkadarya regions, from 60 to 89% of the surveyed women have indicated that in winter the temperature drops lower than before, while in Kashkadarya, Namangan, Samarkand, Surkhandarya Syrdarya and Ferghana regions, from 67 to 80% of the surveyed women have indicated that in summer the temperature rises higher than before. In Jizzakh and Navoi regions, all (100%) of the surveyed women have indicated that in summer the temperature rises higher than before, while in Surkhandarya all (100%) of the surveyed women have indicated that in winter the temperature drops lower than before.

⁶⁶ Country Profile on Disability: Republic of Uzbekistan, 2002, p. 4

⁶⁷ <https://stat.uz/en/435-analiticheskie-materialy-en/12075-demographic-situation-in-the-republic-of-uzbekistan>

⁶⁸ Assessment of gender-based perception of climate change indicators, UNDP, 2013, p. 2.

143. The findings of the abovementioned **assessment** also demonstrate existing disparity between women and men in perceptions of some climate change indicators. As per table 15, there are differences in the gender-based perception of the changes in the air temperature in winter and summer across the regions of Uzbekistan and generally in the country. In particular, at the national level 39,4% of men and the 53% of women responders believe, that the winter temperature drops. However, in some regions the disparity between women and men in perceptions of the changes in the air temperature in winter and summer is significant. For example, in the Republic of Karakalpakstan 75% of men suppose that winter temperature rises, and 100% of women responders stated, that temperature drops. In Bukhara region 100% of women suppose, that temperature in winter drops and only 50% of men have the same opinion. In Tashkent region 100% of men responders suppose, that summer temperature rises and 100% of women on opposite suppose that temperature drops.

Table 15. Gender-based perception of the changes in the air temperature in winter and summer across the regions of Uzbekistan and generally in the country
(% of the surveyed population)

	Men				Women			
	Air temperature				Air temperature			
	winter		summer		winter		summer	
	rises	drops	rises	drops	rises	drops	rises	drops
Republic of Karakalpakstan	75	25	62	38		100	100	
Andijan Region		50	50		22	78	56	44
Bukhara Region		50	50			100	100	
Jizzakh Region	40	60	100		11	89	100	
Kashkadarya Region	58	42	86	14	40	60	80	20
Navoi Region	100		100		100		100	
Namangan Region	92	8	61	39	67	33	92	8
Samarkand Region	50	50	80	20	38	63	75	25
Surkhandarya Region	40	60	60	40		100	80	20
Syrdarya Region	40	60	100		55	45	80	20
Tashkent Region		100	100		80	20	20	80
Ferghana Region	60	40	20	80	33	67	67	33
Khorezm Region	100		100			100	100	
Total for Uzbekistan	60,6	39,4	76,6	23,4	47	53	81	19

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

144. Table 16 shows the gender-based perception of the changes in the level of precipitation in the last 15-40 years in the growing season (April-September) and in winter (December-February) across the regions of Uzbekistan and in the country in general. Analyses of replies at the national level demonstrates, that perception of the changes in the level of precipitation of men and women is almost at the same level. 38 % of men and 42 % of women responders suppose, that precipitation in growing season (April-September) rises. Likewise 56 % of men and women responders have replied, that the precipitation in winter (December-February) drops. However, in some regions the difference between men and women perception of the level of precipitation is significant. In particular, there is the discrepancy in the amount of men and women responders, who suppose, that the precipitation in growing season drops. In Andijan region the difference is 89% (100% of men and only 11% of women), Kashkadarya region- 23% (67% of men and 90% of women), in Namangan region the difference is 37% (62% of men and 25% of women), in Syrdarya region the difference is 51% (29% of men and 80% of women), in Ferghana region the difference in perception is 51% (29% of men and 80% of women),

Table 16. Gender-based perception of the level of precipitation (in the last 15-40 years) in growing season and winter across regions of Uzbekistan and in the country in general (as % of the surveyed population)

	Men		Women		Men		Women	
	precipitation in growing season (April-September)				precipitation in winter (December-February)			
	Rises	drops	Rises	drops	rises	drops	rises	drops
Republic of Karakalpakstan	50	50	60	40	50	50	100	
Andijan Region		100	89	11		100	33	67
Bukhara Region	100		100		100		100	
Jizzakh Region		100		100	80	20	89	11
Kashkadarya Region	33	67	10	90	38	62	50	50
Navoi Region		100		100		100		100
Namangan Region	38	62	75	25	62	38	75	25
Samarkand Region	25	75	25	75	25	75	38	63
Surkhandarya Region	40	60	40	60	60	40	40	60
Syrdarya Region	33	67	60	40	33	67		100
Tashkent Region	67	33	45	55	33	67	30	70
Ferghana Region	71	29	20	80	29	71	20	80
Khorezm Region	100			100	100		33	67
Total for Uzbekistan	38	62	42	58	44	56	44	56

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

145. Table 17 shows the gender-based perception of changes in the frequency of manifestations of hazardous phenomena in Uzbekistan. According to the table, significant numbers of women have indicated that such phenomena as droughts (54% of women), heat waves (74%), longer hot period (68%) and dangerous changes in the temperature of air (46%) have been occurring more frequently. The results of the research, provided in the Table 17, identified that there is no significant discrepancy in the perception of men and women of the changes in the frequency of manifestations of hazardous phenomena in Uzbekistan. For example, the difference between replies of men and women fluctuates around 1-9%. There is some higher discrepancy in the replies of men and women responders only on the following issues:

- “Mudslide occurs more often”- 11% (38% of men and 49% of women);
- “Landslides occurs less often” – 16% difference (27% of men and 11% of women);
- “Hail occurs more often more often”- 10% (30% of men and 20% of women).

Table 17. Gender-based perception of changes in the frequency of manifestations of hazardous phenomena in Uzbekistan (as % of the population surveyed)

Hazardous phenomena	Men			Women		
	Yes, occurs more often	No, occurs less often	I don't know	Yes, occurs more often	No, occurs less often	I don't know
Mudslide	38	19	43	49	12	39
Drought	58	21	21	54	26	20
Avalanches	23	24	52	19	19	62
Landslides	23	27	50	22	11	67
Heat waves (hot weather)	66	20	14	74	14	12
Extreme cold	41	41	17	37	43	20
Frosts	40	36	23	45	30	25

Hail	30	35	35	20	50	30
Wind of destructive force	24	38	38	23	39	38
Longer cold period	38	46	16	31	40	28
Longer hot period	67	18	15	68	23	9
Dangerous changes in air temperature	54	20	26	46	24	30
Not typical meteorological phenomena for a specific time of the year	34	23	43	19	35	46

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

146. Table 18 shows the gender-based perception of the changes in the frequency of manifestations of negative agro-hydrometeorological phenomena. According to the perception of 70% of women shortage of irrigation and drinking water was observed more often, and 63% of women noted that deterioration of water quality was observed more often. Significant numbers of women have indicated that soil erosion (36% of the surveyed women), pasture depletion (36%), plant incidence (42%), spreading of pests and weeds (40%), plant death (37%) and incidence among domestic animals (45%) was observed more often. Data, provided in table 18, also demonstrates the difference between men and women in the perception of changes in the frequency of manifestations of 9 negative agro-hydrometeorological phenomena.

147. There is no significant discrepancy in the perception of men and women of the following phenomena:

- Deterioration of water quality – 1% of discrepancy in the answers of women and men;
- Spread of pests and weeds – 8% discrepancy in the answers of women and men;
- Plant death - 3% discrepancy in the answers of women and men;
- Incidence among domestic animals - 1% discrepancy in the answers of women and men;

Replies regarding another 5 phenomena demonstrated bigger discrepancy between male and female responders.

- The difference between amount of men and women, who suppose that the Soil erosion and soil fertility decline was observed more often, is 15 % (51% of men and 36% of women).
- Between men and women responders, who suppose that the Pasture depletion was observed more often the discrepancy is 26 % (62% of men and 36% of women).
- Between men and women responders, who suppose that the Plant incidence was observed more often the discrepancy is 26 % (62% of men and 36% of women).
- Between men and women responders, who suppose that the Death of livestock and poultry was observed more often, the discrepancy is 13 % (37% of men and 24% of women).

**Table 18. Gender perception of changes in the frequency of manifestations of negative agro-hydrometeorological phenomena
(as % of the population surveyed)**

Negative agro-hydrometeorological phenomena	Men			Women		
	Observed more often	Observed less often	I don't know	Observed more often	Observed less often	I don't know
Soil erosion and soil fertility decline	51	17	32	36	12	52
Lack of irrigation and drinking water	65	14	21	70	21	9
Deterioration of water quality	64	14	22	63	19	18
Pasture depletion	62	13	26	36	10	54
Plant incidence	56	18	26	42	15	43
Spread of pests and weeds	45	18	37	40	17	43
Plant death	40	21	38	37	18	45

Incidence among domestic animals	46	11	44	45	11	44
Death of livestock and poultry	37	21	41	24	16	60

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

148. Figures 2 through 4 shows the women's perception of changes in the frequency of mudflows, droughts and heat waves across the regions of Uzbekistan. According to Figure 2, significant numbers of the surveyed women in such regions and Bukhara (100%), Navoi (100%), Jizzakh (88.9%), Surkhandarya (80%), Samarkand (75%), Kashkadarya (70%) and Tashkent (60%) have indicated that mudflows have been observed more frequently.

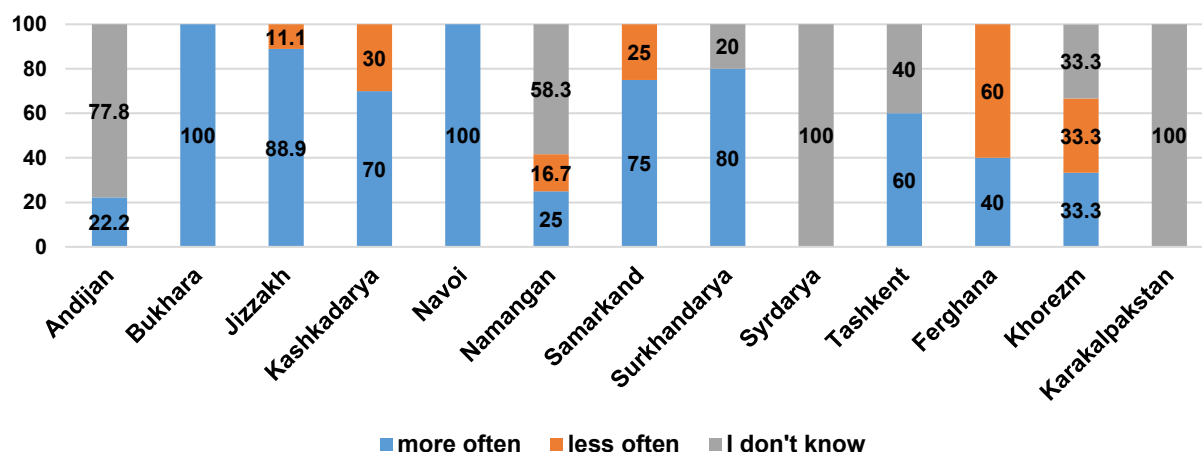


Figure 2. Women's perception of changes in the frequency of mudflows in the regions of Uzbekistan (as % of the surveyed)

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

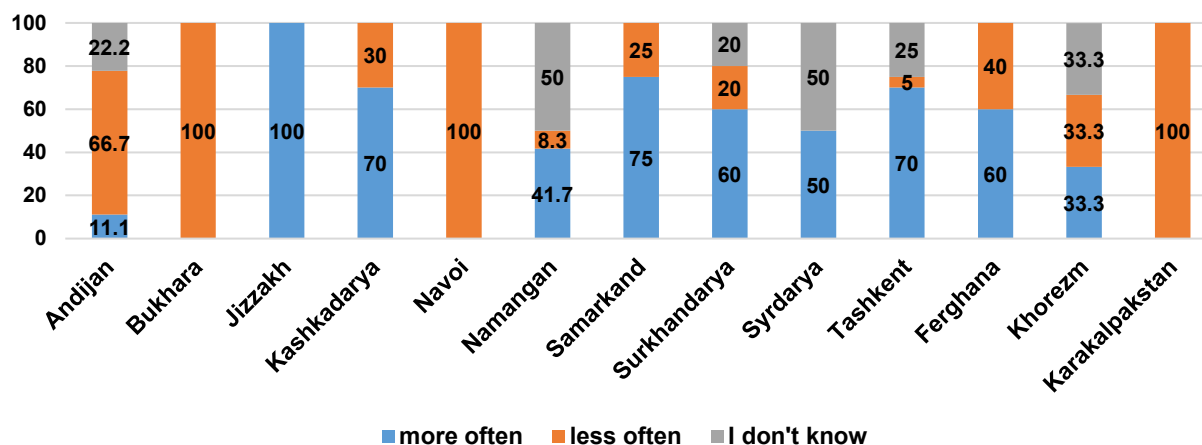


Figure 3. Gender perception of changes in the frequency of drought in the regions of Uzbekistan (in% of the population surveyed)

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

149. According to Figure 3, significant numbers of the surveyed women in such regions as Jizzakh (100%), Samarkand (75%), Kashkadarya (70%), Surkhandarya (60%), Ferghana (60%) and Syrdarya (50%) have indicated that droughts have been observed more frequently.

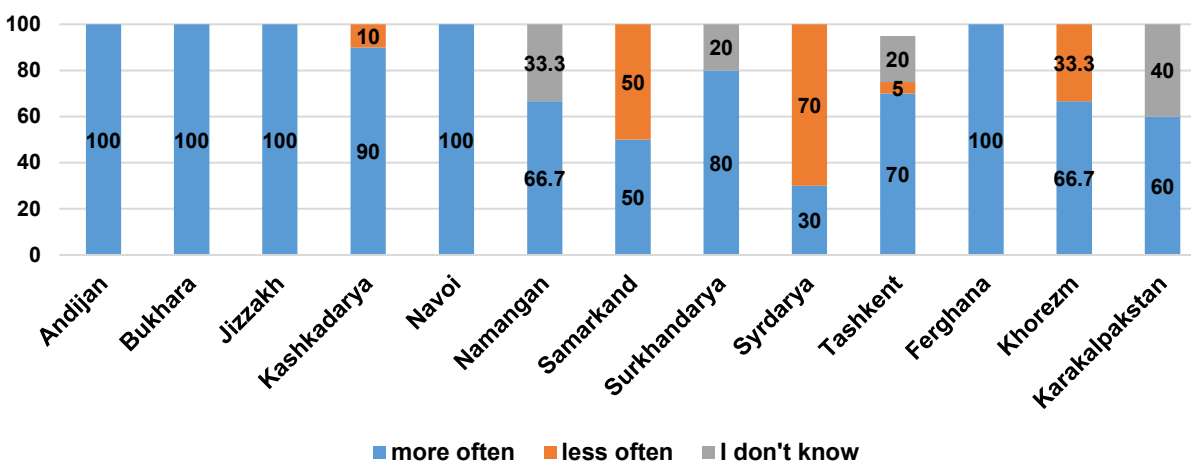


Figure 4. Gender perception of changes in the frequency of heat waves in the regions of Uzbekistan (in% of the population surveyed)

Source: Assessment of gender-based perception of climate change indicators, UNDP, 2013

150. According to Figure 4, significant numbers of the surveyed women in such regions as Andijan (100%), Bukhara (100%), Jizzakh (100%), Navoi (100%) Ferghana (100%), Kashkadarya (90%), Surkhandarya (80%), Tashkent (70%), Khorezm (66.7%), Namangan (66.7%) and Karakalpakstan (60%) have indicated that heat waves have been observed more frequently.
151. Overall analyses of the gender-based perception of climate change indicators, such as: “Changes in the air temperature in winter and summer”, “The level of precipitation (in the last 15-40 years) in growing season and winter”, “The frequency of manifestations of hazardous phenomena in Uzbekistan” and “changes in the frequency of manifestations of negative agro-hydrometeorological phenomena” demonstrates existing discrepancy in the perception of men and women on some issues.
152. According to the experts’ opinion, such differences in the perception could be explained by traditional social roles (both in the family and in the society) of men and women in the patriarchal model of society in Uzbekistan. In the most cases women are responsible for bringing water, producing vegetables for domestic needs and taking care of the pets, including caws and sheep. The significant amount of men, especially in the rural areas of Uzbekistan, are effected by internal or external migration. These objective factors could explain the discrepancy in the gender based perception. At the same time, perception of the climate related effects by male and female population is very subjective due to the lack of the special education and developed system of monitoring and assessment of the climate change in Uzbekistan. Project activity will allow to address and partially mitigate the abovementioned reasons.

V. Gender issues related to different phases of disaster management cycle

153. The impact of the all above mentioned vulnerabilities is revealed at all phases of disaster management cycle, i.e. at prevention and protection, response, impact and coping. The purpose of the gender mainstreaming throughout various phases of disaster management is to empower women

and see them as capable agents of change, who can manage crisis, deal with its aftermath, and take on leadership roles in the family and community. Women play important economic and community roles that help in reconstruction and resilience building. Women often take on leadership roles in family and community in the face of death or disability.

154. Prevention and protection: Early warning system works as a potent protection mechanism against natural hazards. But as receivers of warnings are humans, for warranting the desired response a number of human related factors should be considered. Information on hazard risk can be delivered in time, but still the problem of understanding information, believing it and acting according to provided recommendations and hence saving life, health and property remains problematic. That's for the messages on multi-hazard risk information are to be tailored to the needs and capabilities of vulnerable groups, targeting women, children, senior citizens and persons with disabilities (PWDs). Education level, knowledge of language in which warning is communicated, problems of hearing and seeing constitute serious barriers for adequately grasping the threat.
155. Women and men differ in regard of appraisal of trustworthiness of information sources, men believe more in official and media announcements, while women rely more on personal information obtained from kin and neighbours. Effective targeting requires utilization of both sources.
156. Men are more risk tolerant than women, hence less prone to take self-protective actions. Men often label evacuation calls as panic and do not react. Besides, acting according to stereotypical gender roles men may decide not to evacuate to safeguard property. On the other hand, women are readier to respond to risk, but lack of social power deters them to mobilize family to respond, they also may be slow to react according to instructions until securing family members.
157. Children and people with low education level may encounter problems of understanding messages when they are worded in impersonal, official manner. Elderly citizens with the problems of hearing or seeing and living alone can be left out of reach in case of delivery of hazard risk messages only by printed or electronic media.
158. Response to disasters: Effectiveness of response in a great deal depends on a well-planned emergency behaviour, preparedness and social cohesion of community. Therefore, outlined below features should be reflected in emergency planning. Timely evacuation is a challenging issue for small children, seniors and persons with disabilities, especially with problems of moving and of persons with poor health. People dependent on health services for survival (dialyses, cancer treatment) are faced with life threatening circumstances in disaster.
159. Women's, children's and elderly's' vulnerability is greater due to the mobility constraints. Both car ownership and having driver's licence is less frequent among women than men. No information about gender patterns of vehicle ownership or use is available, but observers note that women are much less likely than men to drive cars in Uzbekistan, and this is supported by the common viewpoint that driving is a "male" occupation.⁶⁹
160. Impact of disasters and coping: Psychological reaction to natural disaster can be: withdrawal, stunning, apathy, disbelief, but also increase in community bond and social cohesion. Experience of natural hazards may result in stress, anxiety, depression and other mood disturbances. Effect usually is not long lasting, only 25 percent of victims suffer psychological effects some months after disaster.⁷⁰ Coping strategies of disaster affected population could be leaving area, over-exploiting resources in order to survive (e.g. cutting down trees for wood), liquidation of assets (e.g. livestock), reducing food intake.

⁶⁹ Uzbekistan Country Gender Assessment, ADB, 2014, p.53

⁷⁰ Scaling-up Multi-hazard Early Warning System and the Use of Climate Information in Georgia: Gender Analysis and Action Plan

161. As women, more than men depend on natural resources for livelihood, disaster has a more severe effect on women. At the same time women play key roles in the sustainable use and management of natural resources. As among senior women considerably outnumber men, they are more likely to experience physical limitations that matter so much in emergencies. The burden of domestic work and care-giving to children, as well as to ill and disabled family members mainly falls on women, so caring in aftermaths of disasters becomes more challenging for women. As men can decide to migrate due to property or employment loss, family burden increases for women. However, labor migration is becoming increasingly feminized, and women's lack of competitiveness in local labor markets is leading them to seek work elsewhere.⁷¹ The migration of family member also effects senior citizens as they have to look after grandchildren.
162. Limited political and professional representation, lower involvement in consulting process of key stakeholders make women more vulnerable as their perceptions and needs are not reflected in planning of recovery process. Gender stereotypes negatively reflect on men. Men often are overwhelmed with emotions after disaster, but are constrained to express them, which has health related consequences and often stimulates substance abuse, domestic violence and engagement in risky behaviours.

VI. Gender analysis and recommendations

6.1. Gender analysis and stakeholder engagement

163. The gender analysis undertaken at the onset and design of this project acts as an entry point for gender mainstreaming throughout implementation. The stakeholder consultation process involved holding seminars with representatives of various Ministries (MoES, Uzhydromet, Ministry of Health, State Committee for Ecology and Ecology, etc.) and representatives of Parliament, Civil Communities and the Uzbekistan Women's Committee (UWC).
164. In addition, during the project development UNDP conducted community level focus group consultations. The focal group discussion included specific consultations related to the needs and priorities of men and women. Specific questions addressed include the following (i) Identification of climate hazards where women are the most susceptible; (ii) Women/men perception of risks associated with each hazard; (iii) Consequences of risks for men versus women; and (iv) The type of consequences perceived – i.e. difference in priority, degree, severity. Appendix 1, Annex 13 Stakeholder Analysis and Engagement Plan, includes additional detail on the consultations.
165. The consultations and focal groups did not provide any further insight into the degree to which women and men perceive risks associated with particular hazards nor was there any measurable difference in the type or consequences perceived. However, the 2013 UNDP assessment (detailed above), did demonstrate that women and men have different perceptions of climate based indicators. These data points demonstrate the need for further examination of these perceptions through additional surveys and analysis that will take place during the first year of implementation.
166. The gender assessment provided a number of entry points for how to better integrate gender perceptions into climate service models. These include the following:
 - Adopting gender-responsive approaches for the design of climate information services;
 - Promoting gender-balance, where possible, through technical and maintenance capacity-building activities of hydro-meteorological networks, equipment and systems;
 - Establishing a gender-aware national framework to inform collaboration between climate service and national hydro-meteorological stakeholders; and

⁷¹ Uzbekistan Country Gender Assessment, ADB, 2014, p.xii

Ensuring gender-disaggregated data and indicators to establish a baseline in which to measure improvements and identify areas of focus.

167. Disasters often affect women, girls, men and boys differently due to gender inequalities caused by socioeconomic conditions, cultural beliefs, and traditional practices that repeatedly have put females at a disadvantage. Understanding different gender roles, responsibilities, needs, and capacities to identify, reduce, prepare and respond to disasters are critical to effective disaster risk management (DRM). Significant evidence shows that despite gender-differentiated vulnerabilities, women and girls are also powerful agents of positive change during and after disasters. Women empowerment is therefore an important approach to build broader community resilience and contribute to sustainable development.⁷²
168. As a result of project implementation more lives, property and productive assets will be secured from the impacts of climate induced disasters. Beneficiaries will be all the population of Uzbekistan and therefore it is important to ensure gender considerations are taken into account in the design of the EWS to avoid the disproportionate burden disasters have on women, girls, and other vulnerable populations (elderly, disabled, etc)
169. The recommendations and the Gender Action Plan as summarized below have been designed to ensure that both men and women have full and equitable access to the Project's resources and benefits, with specific actions and responsibilities aimed at ensuring the full participation of women in Project activities.

6.2. Recommendations

170. Given the above context for gender and MHEWS in Uzbekistan, the following recommendations are included to help ensure effective gender outcomes in implementing the CIEWS project:
- (a) Conduct further baseline assessments of women's participation in decision making and access to/control of resources in relevant sectors at the national level and particularly across the 15 districts in Uzbekistan. This should also include a deeper examination of specific roles and representation of women and detailed information on any challenges and barriers, particularly for accessing and utilizing climate information products. Continue to identify existing women's groups and community networks that could support the active engagement of women and other vulnerable groups in community-based interventions.
 - (b) Trainings and outreach designed for local communities and end-users should be tailored to meet women's needs and requirements. This should include formatting any written or textual outreach material in a way that is accessible and digestible despite potential education/awareness gaps. This should also include options for how to utilize the climate information for women who do not have access to specific communication assets and other resources and ensuring that trainings are designed in a way that includes women and fosters their active participation despite social norms
 - (c) Directly engage women entrepreneurs and other potential end-user organizations during the design and implementation of the activities to ensure better access to and utilization of climate information products
 - (d) Feedback mechanisms should be built into the climate information services and communication products to ensure that they are continuously adapted to support the dynamic needs and priorities of end users, particularly women.

⁷² GFDRR Gender and Disaster Risk Management; Available at: <https://www.gfdr.org/en/gender>

- (e) As part of activity 2.1, conduct gender-sensitive socio-economic vulnerability assessments and development of socio-economic risk models for decision making and prioritization of resilience building investments to bring transformative impact by providing evidence-based information on the gender situation. This will support gender-sensitive risk informed solutions. The important element in mainstreaming gender is community awareness and capacity, and understanding of impacts of disasters on community resilience, when the project builds the capacity of communities and demonstrate the impact of hazards to various groups of people. Transformation of mindset and behaviour of people, based on credible climate and disaster risk information and advice, is one of the main priority of the project, which will lead to better responsiveness and preparedness of communities. Inclusiveness and consideration of needs of all groups including those are with special needs also make the project actions transformative.

6.2.1. Monitoring and evaluation

Through onset analysis, data has been collated to establish an initial baseline. This data shall be verified during year one of implementation and then monitored throughout implementation and examined during the midterm review and terminal evaluation process. Monitoring will include the collection of lessons learned from gender mainstreaming activities undertaken by the project.

The analysis identified the differences between men and women within at-risk populations. In order to monitor and evaluate progress of the project, the following indicators can be measured:

Quantitative outcomes:

- Women as beneficiaries;
- Improvements in health and well-being;
- Improved livelihoods;

Qualitative outcomes:

- Improved coverage, efficiency and accuracy of the multi-hazard EWS in Uzbekistan and enhancement of the use of climate information for women;
 - Expanded involvement in public and project decision-making as a result of initiation of women into active participation in income generating activities;
 - Support for training and educational activities which may include activities related to improvement of the coverage, efficiency and accuracy of the multi-hazard EWS in Uzbekistan and enhancement of the use of climate information, agriculture, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and increased involvement of women to participate with confidence in community activities; and
 - Effectiveness of awareness raising.
- Gender disaggregated reporting will be further introduced beyond the project level at the national level through the multi-hazard disaster risk information and knowledge system to be designed by the project (activity 1.4. of the project)

6.2.2. Gender Sensitive Vulnerability Assessments

- The project will conduct gender-sensitive socio-economic vulnerability assessments (activity 2.1) and develop socio-economic risk models for decision making and prioritization of resilience building

investments. It will introduce an advanced information management system for combining data on socio-economics (population, livelihoods, poverty indicators), infrastructure (roads, utilities, buildings, bridges etc) and the natural environment (landcover, vegetation, soils etc) in order to operationally assess the risks associated with each hazard forecast. The project will ensure collection of the following data:

- The assessments will provide sex- and age- disaggregated data on social vulnerability across regions, assessing employment, education, health problems connecting with adequate functioning, disability, physical abilities (to swim, climb and run), ownership of house and productive assets and farming opportunities, ratio of dependent persons in households, household composition-single member male and female, women headed households, livelihoods, unpaid care and domestic work responsibilities.
- They will also produce mapping of households receiving state subsistence allowance assistance by analysing social assistance database across regions.
- In addition, the assessments will carry out group discussions and in-depth interviews with key stakeholders, ensuring an equal representation of women, persons over 65, disabled or family members of disabled, community leaders and government officials for mapping hazards and risks, collection of existing community coping strategies, identifying local businesses and institutions able to contribute to DRM activities. To identify priority needs, responses to, separate coping mechanisms of women and men, elderly, disabled and poor.

6.2.3. Enhanced gender considerations in disaster preparedness activities

- Men and women of different age groups, as well as those from vulnerable communities, will be involved in planning and implementation. Community consultancy groups with at least 30 percent representation of women will be established.
- It will be ensured that information on hazards, their character, probability of occurrence, threats to life, possible impact on livelihood, houses, crops and livestock and on protecting measures is reaching both women and men through appropriately tailored channels.
- The project will increase preparedness of educational institutions. Information will be provided to teachers and students, academic and other staff on different types of disasters and on effective immediate response to them.

6.2.4. Ensuring universal access to disaster warnings

- Warning will be tailored to the gender-differentiated needs and capabilities of specific population groups, such as children, senior citizens, the sick and persons with disabilities.
- Multiple methods for targeting messages will be used for reaching broadest group of people, including TV, radio, Internet, sirens, flashing lights, registration-based alert systems sending messages to cell phones with information clearly stated orally and graphically.
- Pregnant women and the elderly and disabled will be included in emergency planning.

6.2.5. Mainstream gender considerations and engagement of women in resilience building activities

- Several trainings will be undertaken for the MES and Uzhydromet -the proportion of female staff is 30% and 62% respectively. As such, 35% is a realistic target for training related to MES and 60% is a realistic target for training with Uzhydromet. These targets are reflected in the GAP.

- The project will disseminate information and stimulate involvement of population of the hazard prone regions in insurance programmes, including insurance of crops and live stock.
- The project will disseminate information on risk zones with recommendations for construction of dwellings, agricultural activities and livestock husbandry.
- The project will strengthen social capital through creating community groups for planning for, safeguarding from and mitigating adverse effects of natural disasters with at least 30 percent women participations.
- It will be ensured that representatives of all ethnic minorities have the equal access to project benefits.

6.2.6. Gender mainstreaming training and capacity building of national stakeholders responsible for various disaster risk reduction functions

- In 2016 UNDP Istanbul Regional Hub (IRH) developed and piloted a three-module training manual on Gender mainstreaming in disaster preparedness and response. The tool is designed for UNDP staff and government officers working in disaster preparedness and disaster response in the Europe and CIS region. In 2017 the tool was piloted with the DRR project practitioners in the Western Balkans countries. A series of training and capacity building workshop on gender mainstreaming will be conducted in the course of the GCF project based on the UNDP training manual targeting various stakeholders and practitioners (government, NGOs, community leaders, youth groups, women's groups, farmers' groups) at the national and local levels.
- The project will ensure equal participation of minority groups (including community members speaking languages other than Uzbek) in trainings and capacity building activities. Moreover, it will produce training/knowledge/ public information materials in the languages of large ethnic groups and will distribute them among target beneficiaries. In addition, the project will ensure English-Russian-Uzbek (and to/from other languages, as necessary) interpreting during the trainings, where representatives of ethnic minorities will participate.

6.2.7. Engage women in decision-making

- The project will ensure at least 30 percent representation of women and their active participation in project stakeholder consultations, local and national decision-making bodies set up and/or facilitated by the project.
- Secure participation of the Gender Advisor in all project management and planning meetings and activities.

6.2.8. Requirements to the project staff

- To ensure implementation of the project in accordance with gender and social vulnerability priorities, the project staff will be composed of women by at least 30 percent, evenly represented at all levels of decision-making. Staff members should have a record of participation in trainings on gender mainstreaming and on social vulnerability approach.

6.2.9 Provision of gender expertise across the Project

As the Accredited Entity (AE), throughout the project, UNDP will provide an advisory and quality assurance role. UNDP as the AE will have access to any needed gender expertise through cooperation with UNDP's Gender Team, along with UNDP's Istanbul Regional Hub (IRH), the UNDP Country Office and the Regional Technical Advisor (RTA). As with the entire implementation of the project UNDP will ensure quality assurance of all gender aspects of the project..

UNDP ensures gender equality results through its four point-scale gender marker mechanism, whereby all projects are expected to generate such results. All UNDP project workplans are required to incorporate specific and properly budgeted activities to contribute to implementation of the Gender Action Plan with special focus on involving more women in capacity building interventions in both local and central levels. UNDP projects encourage participation of female government officers and rural women in planning workshops and meetings throughout the implementation. Local community-led activities of the projects prioritize benefits to women headed households.

In country, the project will partner with the Women's Committee of Uzbekistan (WCU)⁷³, which has a strong track record in the country on Gender Equality and Social Inclusion. The Project Manager (PM) will be responsible for ensuring this engagement and provision. The Chief Technical Advisor (CTA) will engage gender expertise and ensure specific discussions on the gender dimension are mainstreamed into different activities of the project. Finally, the Technical Advisory Working Groups (TAWGs) will include representatives from women's organisations to facilitate that gender needs are reflected in project decision-making.

Finally, a national gender advisor and an international gender specialist will be hired to ensure proper implementation of the action plan. *National gender advisor* will secure implementation of the Gender Action Plan; support gender mainstreaming in the project activities by reviewing/contributing to the technical TORs as adequate; participate in project technical working groups; deliver trainings to national partners, experts and communities; support implementation of the local grievance redress mechanism; liaise the project partners with gender expertise and gender mainstreaming stakeholders. An international gender specialist will be tasked with undertaking initial training on gender mainstreaming for both the PMT and executing entities to ensure gender aspects are fully incorporated throughout the project implementation; assist to develop and implement gender sensitive awareness programme, guidance documents and education programs as well as training modules on gender sensitive CRM/DRR, MHEWS, CBMHRM, etc..

Grievance Mechanism

The project will set up a grievance redress mechanism (GRM), as outlined in Annex X. The GRM has been designed to be able to:

- Record, categorise, and prioritise grievances;
- Resolve grievances in consultation with the complainant and other stakeholders;
- Inform the aggrieved parties about the solutions; and
- Forward any unresolved cases to higher authorities for resolution.

The GRM will address any concerns and complaints from affected parties promptly and transparently through the process, with responsibilities and required activities outlined above. The GRM will be gender-responsive and readily accessible to all affected parties at no cost.

Furthermore, the national Executing Entities will be required to place localised GRMs, including stakeholder consultations and national procedures relating to grievance redress. GRMs should be gender and age-inclusive and responsive, and address potential access barriers to women, the elderly, people with a disability, youth and other potentially marginalised groups. Localised GRMs shall also maintain a flexible approach with respect to receiving grievances in light of identified local constraints to communications and access to resources for some stakeholders. To facilitate communications with and between the GRM and potential claimants, the GRM will seek support from local government, civil society organisations and women's groups. All individuals and communities participating in project activities will be made aware of the GRM and the means to access it.

⁷³ As mentioned above, the Women's Committee of Uzbekistan is one of the key institutions with a mandate to support and strengthen the status of rural women. Registered as a nongovernmental organization, the WCU is financed by the government and has the authority to be a governmental institution responsible for the policy and activities related to solving women's issues

VII. Gender Action Plan

GCF Project Activities	Gender Mainstreaming Actions	Indicator and Targets	Responsible Institutions	Timeline
<u>Output 1: Upgraded hydro-meteorological observation network, modelling and forecasting capacities</u>				
<u>Activity 1.1</u> Upgrading and modernization of the meteorological and hydrological Observation System	Community consultations undertaken to ensure that women are adequately represented in the consultations, including ethnic minorities and other vulnerable groups	Indicator: No of consultations undertaken Target: At least one per community/local settlement Indicator: proportion of women attending consultations Target: At least 50% participants of consultations are women	Project Management Team (PMT), Gender Advisor UZHYDROMET Women's Committee of Uzbekistan (WCU)	Years 2-4
<u>Activity 1.2.</u> Upgrading Uzhydromet's capacity to store, process and develop hazard products, as well as to communicate hydrometeorological data to regional divisions.	Level of gender integration in hazard information products, and various information, education, and communications materials	Indicator: Level of gender criteria integration achieved Target: Gender criteria are fully integrated into products (Level 3)⁷⁴	PMT, Gender Advisor, Gender Specialist UZHYDROMET WCU	Years 2-5
<u>Activity 1.3:</u> Retraining and advanced training of Uzhydromet staff on monitoring and forecasting technologies and procedures	Include gender mainstreaming in the training and capacity building courses	Indicator: Number of women Uzhydromet staff trained	PMT, Gender Advisor, Gender Specialist UZHYDROMETWCU	Year 2

⁷⁴ 1 = not integrated; 2= partially integrated; 3= fully integrated

	Make sure that men and women have equal access to training	Target: 60% of those trained women ⁷⁵		
Output 2: A functional Multi-Hazard Early Warning System is established based on innovative impact modelling, risk analyses, effective regional communication and community awareness				
<u>Activity 2.1</u> Developing and installing a modernised and efficient system for assessing climate risks based on dynamic information on both hazards and vulnerabilities, including socio-economic risk models for decision making and prioritization of resilience building long-term/future investments	Gender-sensitive socio-economic vulnerability assessments and development of socio-economic risk models undertaken	Indicator: Baseline indicators refined and validated Target : sex and age disaggregated data identified Indicator: Assess means in which women and men access and perceive hazard and climate information across multiple sectors Target: Gender-sensitive socio-economic vulnerability assessment conducted	PMT Gender Advisor, Gender Specialist WCU	Year 1-2
<u>Activity 2.2.</u> Developing and introducing technical guidance, institutional and coordination frameworks to increase the efficiency of: i) data collection and archiving; ii) hazard mapping and modelling; iii) risk assessment; and iv) dissemination of information to RCMCs.	- Ensure that the data collection and information systems support gender-disaggregated data for decision-making - Ensure that institutional capacity assessment	Indicator: Number of women in consultation groups and among training audiences Target: At least 35% women⁷⁶	PMT, Gender Advisor, Gender Specialist, UZHYDROMET MES WCU RCMCs	Years 3-6

⁷⁵ Given that Uzhydromet currently employs 62% women, 60% is a realistic target.

⁷⁶ These trainings will be done with MES staff and staff from RCMCs – where 30% of the employees are women. The 35% target provides for an overrepresentation of women given the current staffing proportions.

	reflect gender considerations • Make sure that men and women have equal access to training • Review of the operating procedures within existing government structures by the gender advisor to identify gender gaps and mainstreaming opportunities	Indicator: Capacity assessment scorecards reflect gender parameters Target: Gender parameters fully integrated into capacity assessment (Level 3)⁷⁷ Indicator: Gender considerations are reflected in guidance (and policy) documents Target: Gender considerations fully integrated into policy documents (Level 3)⁷⁸		
Activity 2.3. Designing and implementing a system for information dissemination to RCMCs and area specific mobile alerts including an information visualization system for RCMCs with software	• Tailor warnings and multi-hazard risk information to the needs and capabilities of vulnerable groups, targeting women, children, senior citizens, persons with disabilities and ethnic minorities • Use multiple methods for targeting messages to outreach all vulnerable groups, including TV, radio, Internet, sirens,	Indicator: Warnings are useful to the needs of vulnerable groups Target: Vulnerable groups find information useful (Scale of 4)⁷⁹ Indicator: Information on hazards delivered to multiple vulnerable groups	PMT, Gender Advisor, Gender Specialist UZHYDROMET MES WCU RCMCs	Years 2-4

⁷⁷ 1 = not integrated; 2= partially integrated; 3= fully integrated

⁷⁸ To be reviewed and confirmed by gender advisor

⁷⁹ Through survey or whether information is useful Likert scale (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree.

	flashing lights, registration-based alert systems sending messages to cell phones with information clearly stated orally and graphically. Use multiple languages and signals/tools for warning messages to reach ethnic minority groups and disabled persons • Ensure adequate representation of women within the planning teams and consultation groups, including women representing vulnerable groups (e.g. elderly, bread-makers, ethnic minorities, disabled persons, IDPs)	Target: Ethnic, Minority groups, disabled persons reached		
GCF project activities	Gender mainstreaming Action	Indicator and Targets	Responsible Institution	Timeline
Output 3: Strengthened climate services and disaster communication to end users				
Activity 3.1. National Framework for Climate Services for Uzbekistan	• Training workshops on gender mainstreaming (based on the UNDP training manual on gender mainstreaming in disaster preparedness and response) • Ensuring adequate participation of women in NFCS consultations (at least 30%)	Indicator: Decision makers and practitioners are trained on gender mainstreaming based on UNDP training manual Target: 35% of those trained women⁸⁰	PMT Gender Advisor WCU UZHYDROMET MES	Years 2-6

⁸⁰ As above, these trainings target Ministry staff with 30% female employees.

	• Mainstream gender considerations in the planning process			
<u>Activity 3.2.</u> Sustainable business model for disaster-related information and services	• Ensure adequate representation of women within the planning teams and consultation groups	Indicator: Representation of women in planning teams and consultation groups Target: 35% of representatives on planning teams and consultation groups women⁸¹	PMT Gender Advisor WCU MES	Years 2-4
<u>Activity 3.3.</u> Strengthening disaster-related communication and interaction with end users	• Provide information to women groups, teachers, students and staff on various disasters and effective immediate response to them. Ensure equal access of all vulnerable groups, including ethnic minorities, to the benefits of capacity building activities. • Achieve 30 percent representation of women in capacity building and outreach activities, including women representing vulnerable groups (elderly, bread-	Indicator: Design of weather/climate advisories are tailored to the needs of men and women Target: Degree to which advisories are tailored (Level 3)⁸² Indicator: Information disseminated is utilized by women Target: Women utilize information (scale 3)⁸³ Indicator: proportion of women trainees and outreach audience	PMT Gender Advisor WCUZHYDROMET MES Mahalla	Years 2-6

⁸¹ Women-owned businesses represent 29% of all registered business entities in the country – target seeks to ensure an overrepresentation from the general population therefore target is set at 35%

⁸² 1 = not tailored; 2= partially tailored; 3= fully tailored

⁸³ Through survey to women on whether information disseminated is utilized Likert scale (1) never (not utilized); (2) sometimes (slightly utilized) (3) often (moderately utilized) ; (4) always (highly utilized)

	makers, ethnic minorities, IDPs, etc.) • Tailor information and awareness campaigns for the needs of men, women, boys and girls, vulnerable groups (elderly, bread-maker women, ethnic minorities, IDPs, disabled persons, etc.) • Involve local vulnerable groups in creation of the networks of local volunteers among local communities with at least 30% representation of women • Ensure that women and vulnerable group members (elderly, bread-maker women, people living under poverty line, ethnic minorities, IDPs, etc.) are equally reachable by the networks of local volunteers and materials are disseminated by them • Make sure that men and women, including those from vulnerable groups (e.g. ethnic minorities, IDPs, etc.) have equal access to new climate information products	Target 50% Women trainees and outreach audience⁸⁴ Indicator: Share of women-recipients of information products and agrometeorological advisory services Target: 50% of recipients of information products and agrometeorological advisory services are women Indicator: Community advisory groups include women representation Target : 50% of representatives are women		
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⁸⁴ For activity 3.3, the target is the general population therefore the 50% target for women reflects the general population.

	• Mahalla-based community advisory groups with at least 30% representation of women			
GCF project activity	Gender mainstreaming Action	Indicator and Targets	Responsible Institution	Timeline
Effective project management				
Staffing	• Gender advisor and international gender specialist hired and ToR developed •	Indicator: No. of gender experts • Target: 2 gender experts	UNDP	<u>Year 1</u>
Staffing	• Ensure that staff of the project is composed of at least 30% of women	• 30% percent of women in the staff	UNDP, MES, PMT	Throughout project life
Capacity building and training	• Trainings to PMU to raise their gender sensitivity and enhance gender mainstreaming strategies	Indicator: Gender training targeting PMT • Target: All PMT staff trained	Gender Advisor/Gender Specialist	<u>Year 1</u>
Capacity building and training	• Executing Entity/Responsible Party training will be provided to raise their gender sensitivity and enhance gender mainstreaming strategies	Indicator: Training provided to EE staff involved in project implementation for MES • Target: All MES staff working on project trained (at least 35% women)⁸⁵	Gender Advisor/Gender Specialist	<u>Year 1</u>
Stakeholder consultations and participatory decision making	• Make sure that women are adequately represented in project	• Gender Advisor participates in all key processes, meetings,	PMT, Gender Advisor UZHYDROMET MES	Throughout project life

⁸⁵ These trainings will be done with MES staff– where 30% of the employees are women. The 35% target provides for an overrepresentation of women given the current staffing proportions.

	decision making and key meetings, events and processes. Secure participation of the project Gender Advisor in all key processes, meetings, events.	events. Gender considerations are taken into account in all project discussions, decisions. Balanced representation of women and men in all key project decision-making processes, meetings, events.	WCU	
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VIII. Proposed Gender Action Budget

Type of Supply	Category	Activity	Description of procurement	US\$
Individual Consultant	IC		Project Gender Advisor	96,000
Goods and works	Training, workshops and conferences	3.2.	Training of relevant agencies on gender sensitive socio-economic vulnerability analysis, with 1 or two sessions fully dedicated to gender aspects of the analysis.	5,000
International consultant	International consultants	3.2.	International consultant to - conduct training of key decision-makers on multi-hazard early warning systems and CRM, with special sessions to be dedicated to gender mainstreaming in climate and disaster risk management and EWS - assist in developing and implementing gender sensitive awareness programme, guidance documents and education programs as well as training modules on gender sensitive CRM/DRR, MHEWS, CBMHRM, etc.	26,000
Goods and works	Audio-visual and printing and production costs	3.6.	Publications, brochures/case studies on gender sensitive community based MHEWS and MHRMP as well as on the gender dimension of the project	10,000
			TOTAL	137,000