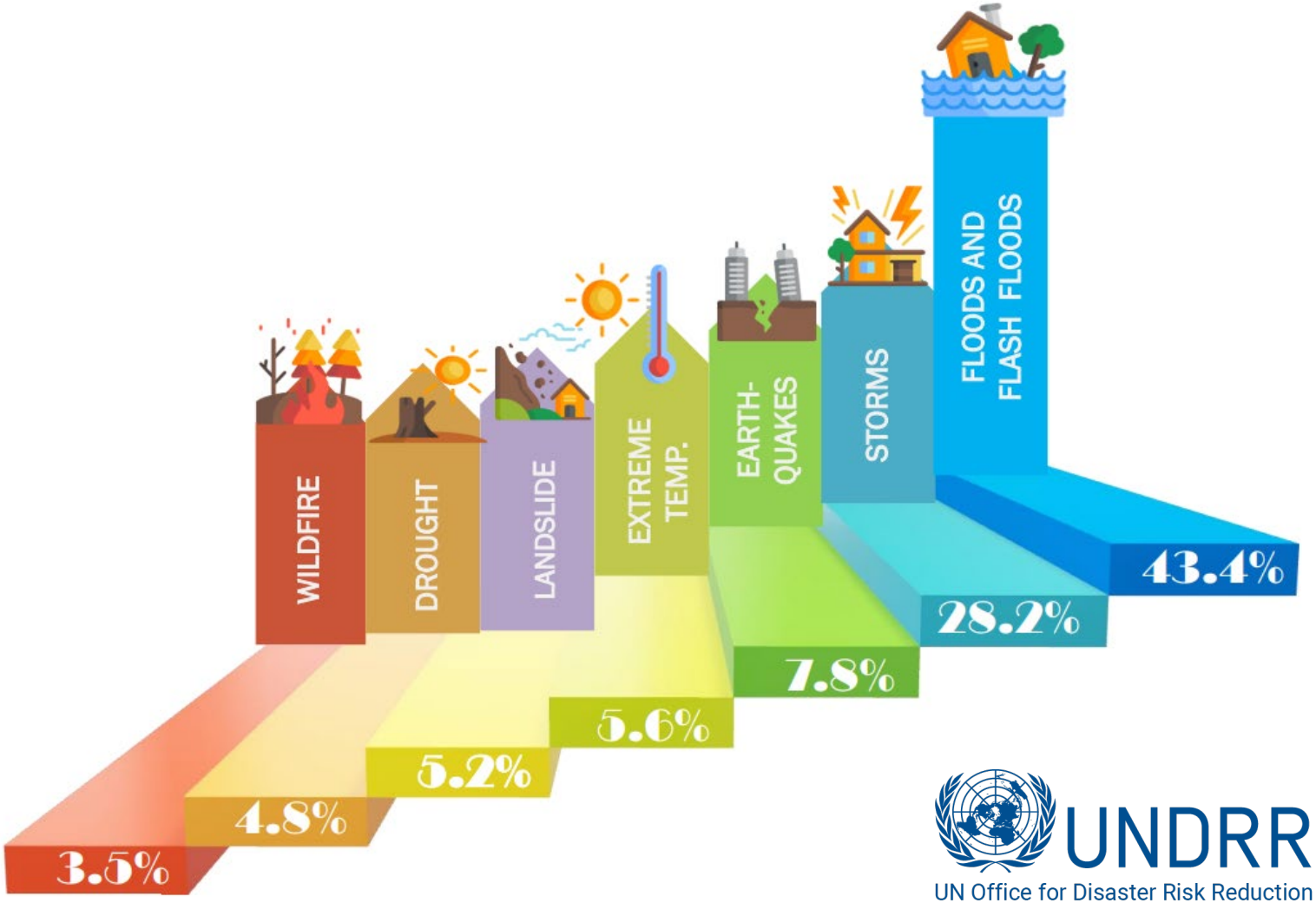
WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO Central Asia Activities and Efforts

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

The frequency of natural disasters



UNDRR
UN Office for Disaster Risk Reduction

WMO OMM

What is Flash Flood ?

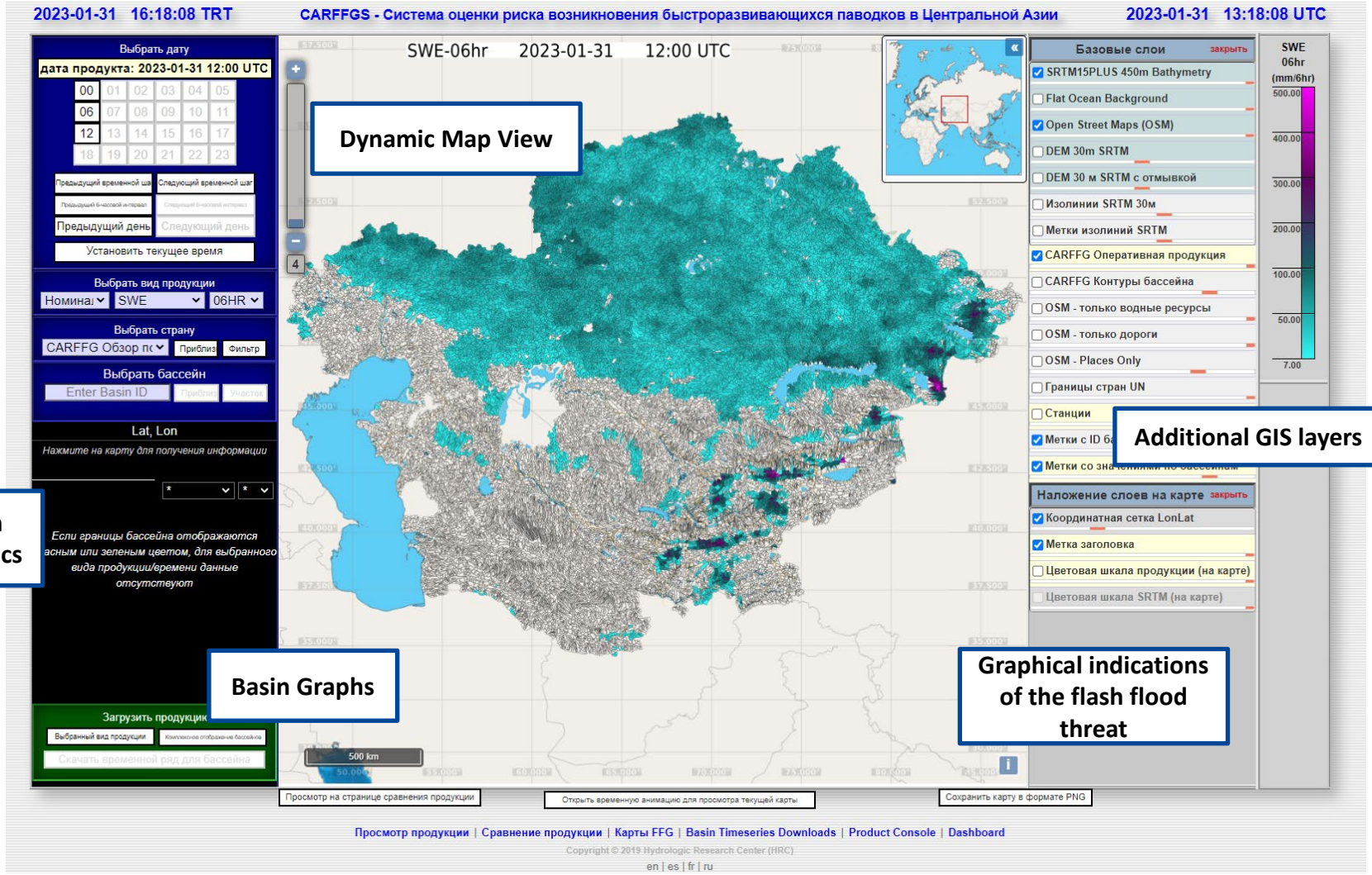
WMO OMM

What is Flash Flood ?

- "Recent findings of the WMO country-level survey where of the 139 countries, 105 indicated that flash floods were among the **top two most important hazards around the world and require special attention**".

- "On the average, these events **kill more people worldwide than any other [weather-related] natural disaster**. In an average year, flash floods kill over 5,000 unsuspecting people and cause millions of dollars of property damage"(WMO, 2008).

FFGS Map Server Interface – Regional View



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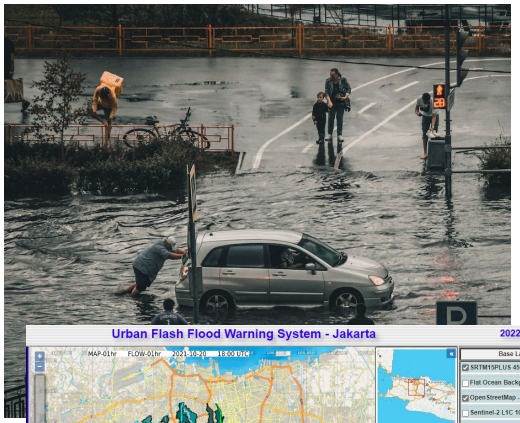
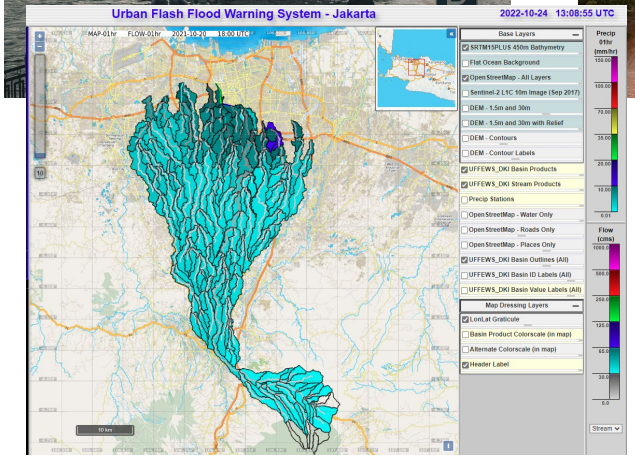
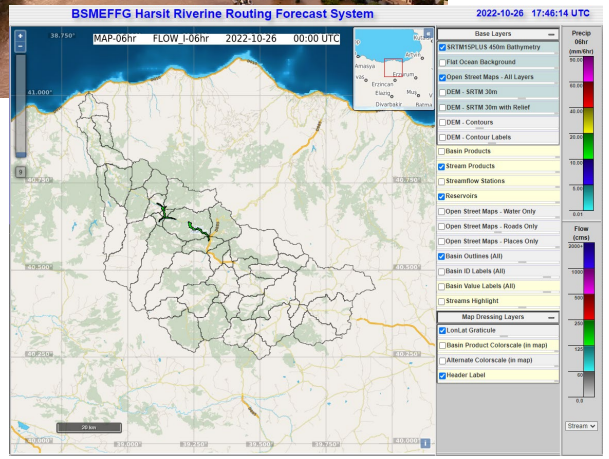
FFGS Additional Components

- Landslide module
- Urban module
- Riverine Routing module







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Central Asia Region Flash Flood Guidance System (CARFFGS)

Status: Ongoing	**Goal:** Forecasting, Warning and Guidance System for Flash Floods, Floods and Landslides	**Partner** *USAID/BHA* *WBG* *CREWS*

Completed Milestones and Next Steps

Implemented and active since 2017

Steering Committee Meeting (27 to 28 October 2022)

- Feedback from countries on the operational use was collected.
- Upgrades and enhancements of the FFGS products were introduced.
- Future goals were discussed.

Next Steps: Refresher Trainings

- Uzhydromet (completed 5 steps, WMO certificate) will assist in conducting refresher trainings for operational forecasters from the 5 countries.
- Training materials will be provided by WMO.
- 3 participants per country.

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CARFFGS: What is Next? CAFEWS Upgrade

- Develop a regional platform that will deliver improved predictions of floods, flash floods, droughts and landslides.
- Build on existing hydrometeorological operational models and tools.
- Use and deliver state-of-art hydrometeorological modelling practices to accommodate the regional technical capabilities.
- Support the countries of Central Asia to improve forecasting of transboundary floods, flash floods and landslides, as well as to improve warnings in the Amu Darya and Syr Darya River Basins.
- Model performance is heavily dependent on historical and real-time data: data sharing is paramount.

CAFEWS benefits and applications

Flood and severe weather warnings for the population

Disaster management authorities can act swiftly and preventively

More localized weather and water information for farmers

Essential water and weather data for engineering, energy, construction

Sound water management for energy and agriculture security

Robust and transparent information for cross-border water allocation

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Applications of the Dynamic Water resources Assessment Tool (DWAT)

WMO OMM

The purpose of DWAT

DWAT is intended to support users, particularly policy specialists and water resource managers to:

- Evaluate water availability and hydrologic status of catchment at local, regional and national scales
- Compare the current and past hydrological state of rivers, wetlands, storages and aquifers
- Improve understanding of the impacts of past and present water management practices on water resources
- Better understand interactions between climate, water and landscape
- Assist government policy formulation and the development of broad scale strategic plans and decision-making
- Contribute to efficient water management by providing simulated water resources information and data, such as surface water, groundwater, urban and agricultural water supply and use for various cases

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Dynamic Water Resources Assessment Tool (DWAT)

Status:
Ongoing

Goal: Water Resources Management

Partners

Ministry of Land Infrastructure and Transport, Republic of Korea

&

World Bank

Current Developments and Next Steps

Current

- Capacity Building initial phase completed and Pilot applications concluded
- DWAT will be concluded by Mar'23

Next Steps

- Software issues collected, team of experts are working to resolve

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Meteorology, Climatology and Hydrology Database Management System (MCH)

- Manages observational data from meteorology, climatology and hydrology under a single platform.
- A simple, customizable and license-free solution to store, analyse and visualize data.
- It can be used to gather data from measuring stations and to digitize in a standardized format records on paper and/or from other centralized data sources.
- Facilitates information exchange among National Meteorological and Hydrological Services (NMHSs).

WMO OMM

Meteorology, Climatology and Hydrology Database Management System (MCH)

Status: Ongoing	**Goal:** Data Management	*WMO Standard Tool*

Current Activities and Next Steps

MCH installation

- In 2022, it was installed in all CA countries.
- Hydromet data inclusion is ongoing

MCH-DWAT coupling

- Team of experts are working on coupling DWAT and MCH.

WMO OMM

Cryosphere Monitoring in Central Asia

Status: Completed	**Goal:** Technical assistance of hydrometeorological services in Central Asia	**Partner** *World Bank*

Completed Milestones

Task 1: State of Cryosphere Monitoring in Central Asia (Afghanistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan)

- Status of in-situ observation of the cryosphere (snow, glacier, permafrost).
- Status of historical records and recommendations for data rescue.
- Status of remotely sensed data available and used in the region (multispectral satellites, radar satellites. LiDAR satellites).
- Status of available NWP products relevant to the region of interest.
- Inventory of internationally funded and other scientific projects that collect Information on the cryosphere in the region.
- Analysis of institutions responsible for cryosphere monitoring.
- Recommendations on gaps and opportunities for addressing them.

RSMC and WMO Information System (WIS)

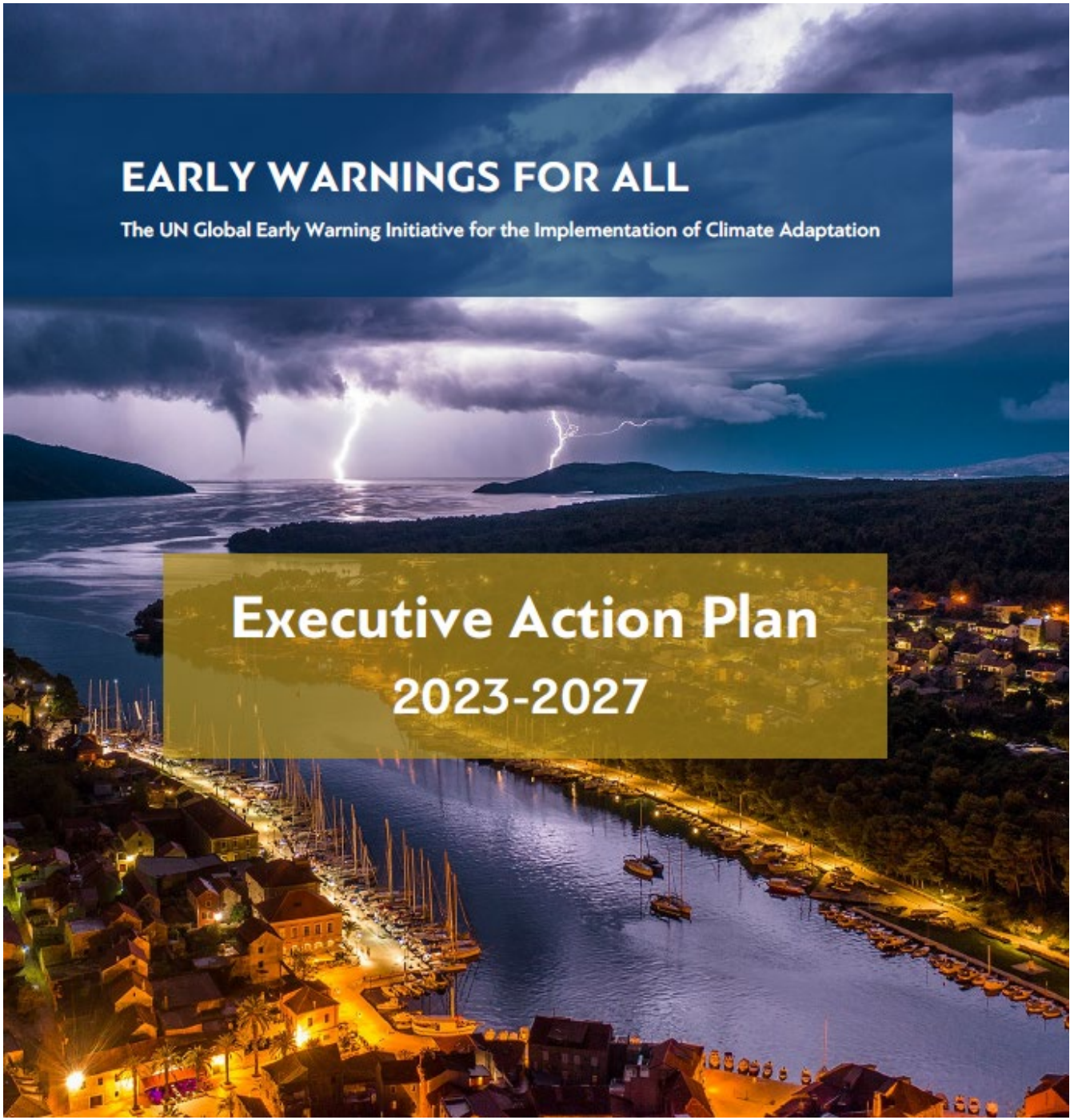
Status: Completed	**Goal:** Technical assistance of hydrometeorological services in Central Asia	**Partner** *World Bank*

Completed Milestones

Task 2: Map Regional Specialized Meteorological Centre-Tashkent (RSMC-Tashkent) for Numerical Weather Prediction (NWP), Severe Weather Centre (SWC) and Hydrological Services and add non-reporting stations to the WMO Information System (WIS).

- Analysis of Uzhydromet's capacities to serve as an RSMC in the future GDPFS.
- Discussions on opportunities and related issues, obstacles and needs with representatives from Uzhydromet.
- Possible options for specialization RSMC-Tashkent.
- Possible issues of repurposing RSMC-Tashkent.
- Compiled list of meteorological stations for addition to the WMO Information System (WIS).
- Online Workshop on Configuring Software to Add New Stations to WIS.
- Remote consultations and support of Uzhydromet's activities on adding stations to WIS.
- Roadmap on recommended actions.

According to the plan $3.1 billion will be invested for the implementation of the Executive Action Plan “Early Warnings For All”



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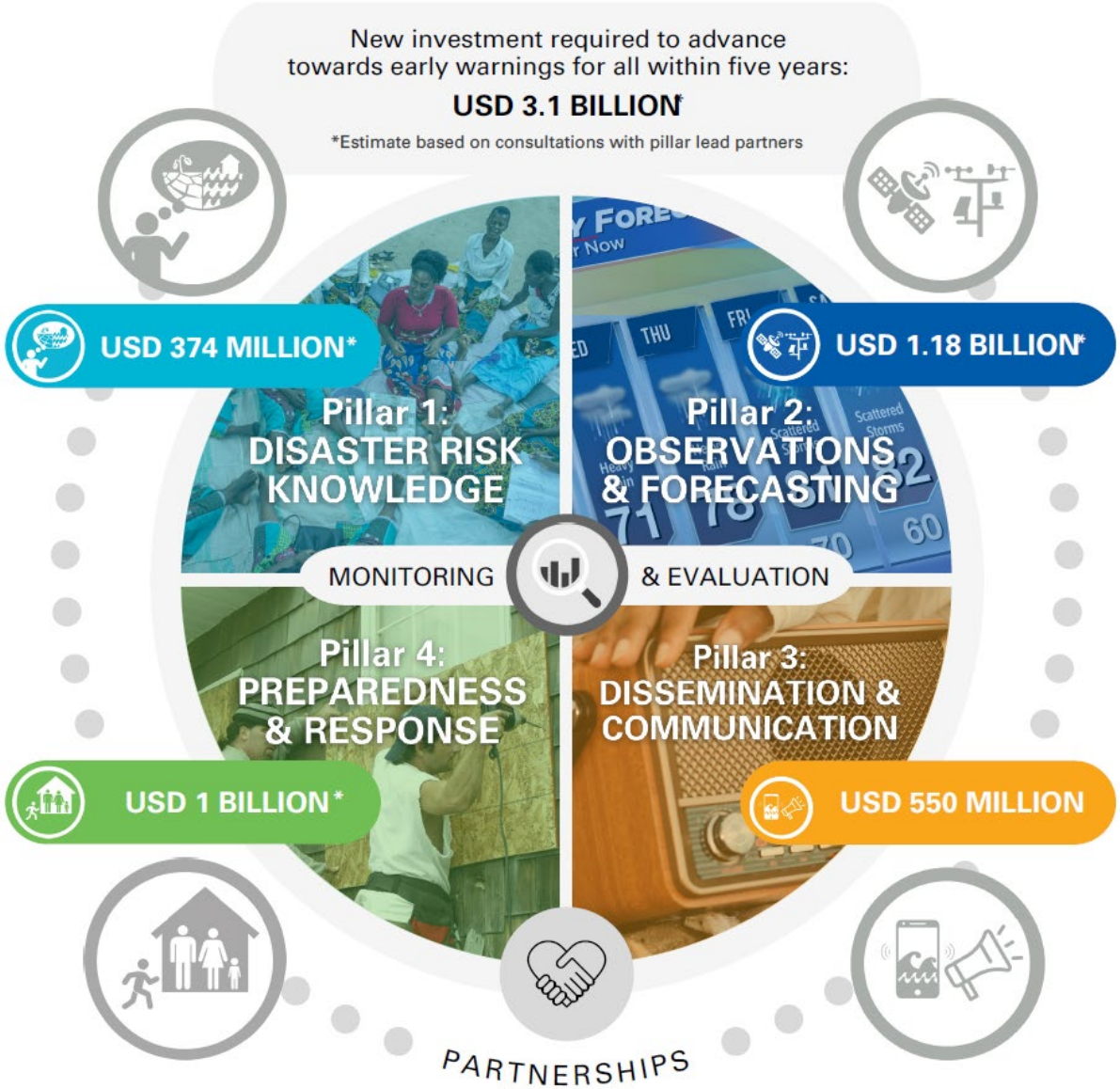

Figure 1: Budget overview for the four Pillars of the Early Warnings for All Initiative

In USD, for minimum 100 countries	Budget for Water, Hydro and Cryosphere related challenges* (POLICY, TECHNICAL, FINANCIAL)
Pillar 1 — 12 mil	• Global flood and drought risk mapping and information tool **10 mil** (POLICY, TECHNICAL, FINANCIAL) • Development of tools and modules to assess and analyse the uncertainty of extreme conditions is available **2 mil** (TECHNICAL, FINANCIAL)

Pillar 2 — 1.65 bil	• Optimize the hydrological observation network and monitoring. **5 mil per country** (TECHNICAL, FINANCIAL)
	• Global Water Data Portal. **1 mil (250 K per year)** (TECHNICAL, FINANCIAL)
	• Implementation of Hydro Status and Outlook System (HydroSOS) at the global, regional and national scale; Define set of parameters to monitor and support sustainable development on a long-term scale in cooperation with relevant organizations. **5 mil per country; 50 mil for global scale** (TECHNICAL, FINANCIAL)
	• GDPFS – development of hydrological centres, including regional forecasting and assessment centres/systems **20 mil; 1.2 mil per year** (POLICY, TECHNICAL, FINANCIAL)
	  ◦ 1) establishment of global centres on flood, drought and cryosphere within GDPFS and training of NMHSs to process and apply the information to the local context
	  ◦ 2) Global products for local use – Regional Specialized Hydrological Centre (RSHC) of GDPFS provide to Members Water Regional Assessment products, including training products and tools for interpretation
	• Development of Regional/National/Global data and products for flood (urban/flash/riverine) and drought modeling and forecasting systems (including cryosphere) **2 mil per country; 30 global** (TECHNICAL, FINANCIAL)
	• Development of water quality monitoring and modeling system at global, regional, and national level including training materials development and implement **1.2 mil per country; 25 mil global scale** (TECHNICAL, FINANCIAL)

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Pillar 3	360.6 mil	• Development of global, regional/ national flood and drought early warning platforms including training. **1.5 mil per country; 10 global** • Capacity building activities organized through APFM and IDMP, including curricula and training material based on needs identification, developed to enhance Members' flood and drought management capacities and capabilities. **1.3 mil per year** • Identification of requirements on globally/regionally/nationally produced information for use in flood and drought assessment, modelling and prediction at the national scale by NHSs, and Development of an interface for NHSs to search, use and interpret the products including training. **2 mil per country; 30 mil global** • Operational guidance and tools for verification of available products. **600k**
Pillar 4	75 mil	• Simulation exercise to test the effectiveness of flood and drought early warning systems and platforms **200k per country** • Capacity development on Search and Rescue operation for floods. **300k per country** • Coordination and collaboration with multi-stakeholders for effective flood and drought response. **250k per country**

WEATHER CLIMATE WATER
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Country Hydromet Diagnostic

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World Meteorological Organization
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CHD is road-tested

Country Reports

Afghanistan
PEER REVIEWER:
Turkish State Meteorological Service

Chad
PEER REVIEWER:
Direction Générale de la Météorologie, Maroc

Cote d'Ivoire
PEER REVIEWER:
Direction Générale de la Météorologie, Maroc

Kyrgyz Republic
PEER REVIEWER:
MeteoSwiss (Switzerland)

Liberia
PEER REVIEWER:
NiMet (Nigeria)

Maldives
PEER REVIEWER:
IMD (India)

North Macedonia
PEER REVIEWER:
ZAMG (Austria)

Sierra Leone
PEER REVIEWER:
NiMet (Nigeria)

Kazakhstan
PEER REVIEWER:
ZAMG(Austria)

Table 2: Maturity levels, on a scale from 1 to 5, from Country Hydromet Diagnostics road-test undertaken with eight NMHSs during spring 2021. Maturity Level 5 indicates the greatest maturity.

Country	Peer reviewer	Supported by	Country Hydromet Diagnostic Elements									
			1.Enablers		2.Observation and DPS			3.Services and Products				4.Users
			A. Governance	B. Partnerships	C. Observations	D. Data and product sharing and policies	E. NWP model and tools	F. Warning and advisory	G. Climate services	H. Hydrology	I. Dissemination and outreach	J. Value of products and services
Afghanistan	Turkey	WMO	2	3	2	2	2	3	1	2	2	1
Chad	Morocco	WMO	2	1	1	1	2	1	2	2	1	1
Kyrgyz Republic	Switzerland	World Bank	3	3	2	2	3	3	1	3	3	2
Côte D'Ivoire	Morocco	UNDP	2	3	2	2	2	2	3	1	1	2
Liberia	Nigeria	AfDB	2	2	1	1	1	1	1	1	1	1
Maldives	India	UNEP	2	3	3	3	3	3	1	1	3	2
North Macedonia	Austria	GCF	3	3	2	3	2	2	3	2	2	3
Sierra Leone	Nigeria	AfDB	2	2	2	2	2	2	1	1	2	1

Maturity level key - 5 being the most mature:

1	2	3	4	5

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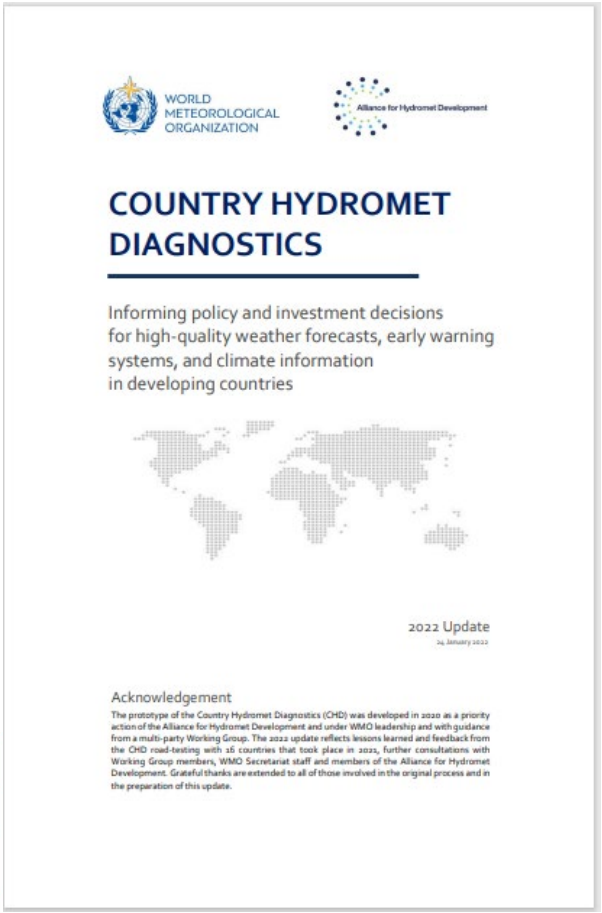
Next Steps


WORLD METEOROLOGICAL ORGANIZATION

Alliance for Hydromet Development

COUNTRY HYDROMET DIAGNOSTICS

Informing policy and investment decisions for high-quality weather forecasts, early warning systems, and climate information in developing countries

2022 Update

Acknowledgement

The prototype of the Country Hydromet Diagnostics (CHD) was developed in 2020 as a priority action of the Alliance for Hydromet Development and under WMO leadership and with guidance from a multi-party Working Group. The 2022 update reflects lessons learned and feedback from the CHD road-testing with 16 countries that took place in 2021, further consultations with Working Group members, WMO Secretariat staff and members of the Alliance for Hydromet Development. Grateful thanks are extended to all of those involved in the original process and in the preparation of this update.

Updated the methodology in 2022

- ✓ Retained the structure (10 elements)
- ✓ Two additional indicators
- ✓ Many additional data sources

Standardized process guidance developed

Delivery principles firmed up

In 2023:

- ❑ More CHD reports for investments
- ❑ Development of data scorecards and dashboards
- ❑ Further methodological and data improvements
- ❑ 2nd Hydromet Gap Report (focused on EWS) at COP28
- ❑ Joint action

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The Global Hydrological Status and Outlook System (HydroSOS) in Central Asia

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Organisation météorologique mondiale

What will HydroSOS provide?

An overview of the current hydrological status

An appraisal of where the current status is significantly different from 'normal'

An assessment of whether this is likely to get better or worse

Hydrological monitoring
Data sharing
Nowcasting (Current Status)
Seasonal to Sub-seasonal Forecasting

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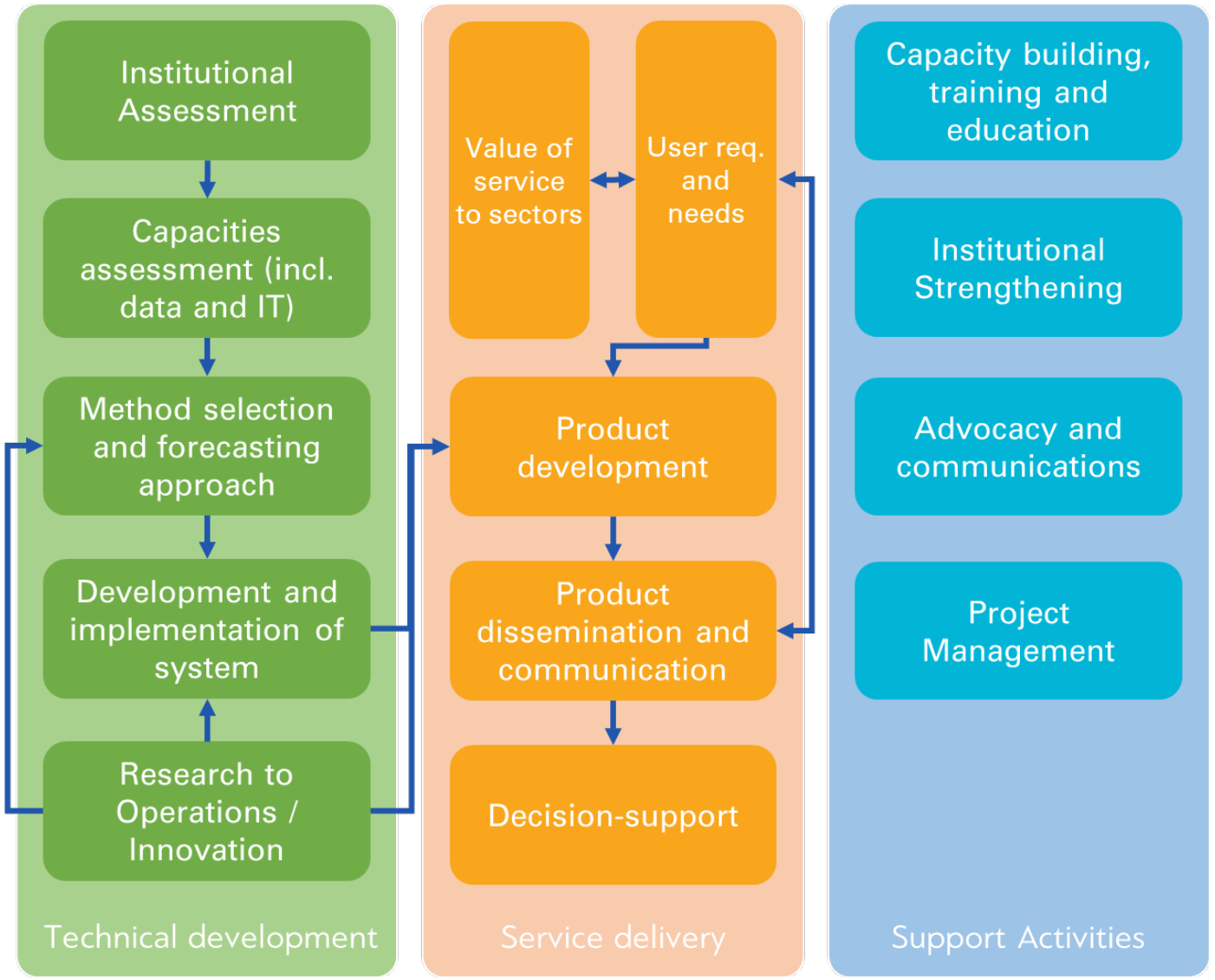
Key components of HydroSOS implementation



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Completed Actions and Next Steps

HydroSOS survey:

- A simple survey was circulated: https://forms.office.com/e/wrMqUcBcPX
- Questions about interest in HydroSOS, basins of interest, priority sectors
- Responses received: Kazakhstan, Kyrgyzstan, and Uzbekistan
- We need the other countries to respond please

- **Provide focal points** for HydroSOS (experts in operational hydrology). An official letter was sent in November 2022.
  These **focal points** will work **defining an implementation plan** for HydroSOS in Central Asia with the help of WMO Secretariat, HydroSOS Coordination Team and RA II Hydrological Adviser (from here to Feb 2023). Serik Sairov is the leader for Central Asian sub-region.
- **Focal points will meet in February 2023** in Bangkok to finalize the implementation plans for their respective sub-regions
- The findings will be presented at WMO Congress 19

Integrated Drought Management for Central Asia (IDCA)
Proposed project pre-concept for submission to the Adaptation Fund

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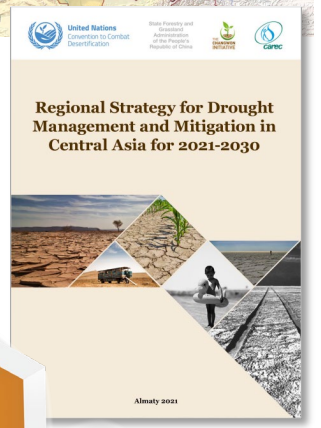
Integrated Drought Management for Central Asia (IDCA) – proposed project



- **Rationale:**
  - Water availability and management present major challenges for Central Asian countries, transboundary collaboration and IWRM are key for solutions
  - Droughts have become more frequent in the 20th century, climate projections indicate an **increase in extreme rainfall, evapotranspiration and aridity, and reduction of glaciers** (IPCC, 2021)
- **Objectives:**
  - To **reduce vulnerability and strengthen drought resilience** of Central Asia countries in Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan *+ Afghanistan*
  - Increased **technical capacity of the NMHS** and coordination with other governmental bodies, **stakeholder driven** development/implementation of drought policies and plans
  - Strengthening **regional partnerships** and co-creation of transboundary collaborative climate information structures (Regional Drought Center)

Project proposal organization

Targeted funding source: Adaptation Fund

Implementing entity: WMO

Executing entities:

- Global level: WMO, FAO, UNCCD, GWP
- Regional level: CAREC with support of GWP Central Asia and Caucasus
- National level: NMHS will lead and coordinate with other relevant governmental bodies

Proposed budget: 13,900,000 USD

Expected time: Start 2025-2030

Tentative time-line:

- **Pre-concept submission: August 2023 – AF response**
- Concept submission: 2024 – AF response
- Full project proposal dev. in mid 2024
- Decision AF in mid/late 2024
- AF agreement and funds delivery along second half 2024, Project start early in 2025.

The project consortium:

- **Integrated Drought Management Programme:** three pillar approach with large partner base;
- IDMP regional programme in Central Asia and Caucasus (CACENA) by **GWP**
- Central Asia Drought Strategy coordinated by **CAREC** (2021)
- **WMO** projects on flood early warning (CAFEWS and others)
- **UNCCD** project on drought policy in collaboration with CAREC (drought strategy)
- **FAO** CALCIM project on farmers and pastoralists climate resilience

Timeline and milestones

Needed for proposal submission:

- **Letter of Interest from NMHS to WMO** start the proposal process
- **Letter of no-objection from National Designated Authority** for AF is needed for Preconcept submission

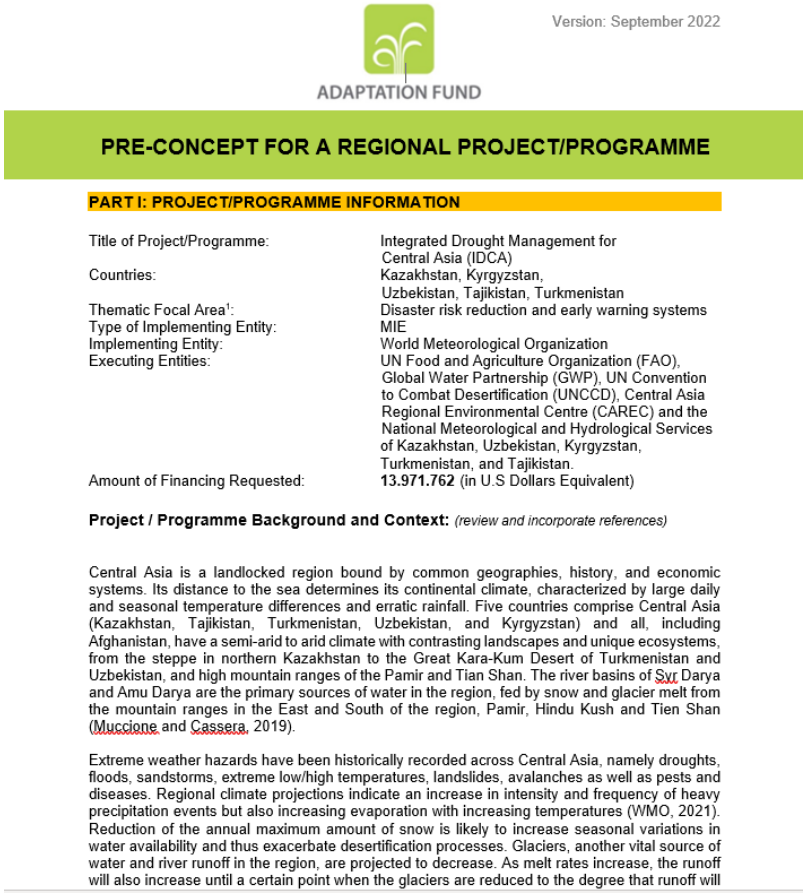
Needed:

- **Letters of interest from all 5 NMHSs** (submitted by Kyrgyzstan)
- **Letters of support from NDAs of all 5 countries** (submitted by Uzbekistan)

Next steps:

- **Decision of AF on pre-concept**
- **Development of concept note**
- **More in-depth regional consultation with countries (May/June)**

Next Step: Action needed
Submitting Letter of interest



Version: September 2022

ADAPTATION FUND

PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Integrated Drought Management for Central Asia (IDCA)
Countries:	Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan
Thematic Focal Area[1]:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	MIE
Implementing Entity:	World Meteorological Organization
Executing Entities:	UN Food and Agriculture Organization (FAO), Global Water Partnership (GWP), UN Convention to Combat Desertification (UNCCD), Central Asia Regional Environmental Centre (CAREC) and the National Meteorological and Hydrological Services of Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, and Tajikistan.
Amount of Financing Requested:	**13.971.762** (in U.S Dollars Equivalent)

Project / Programme Background and Context: *(review and incorporate references)*

Central Asia is a landlocked region bound by common geographies, history, and economic systems. Its distance to the sea determines its continental climate, characterized by large daily and seasonal temperature differences and erratic rainfall. Five countries comprise Central Asia (Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan, and Kyrgyzstan) and all, including Afghanistan, have a semi-arid to arid climate with contrasting landscapes and unique ecosystems, from the steppe in northern Kazakhstan to the Great Kara-Kum Desert of Turkmenistan and Uzbekistan, and high mountain ranges of the Pamir and Tian Shan. The river basins of Syr Darya and Amu Darya are the primary sources of water in the region, fed by snow and glacier melt from the mountain ranges in the East and South of the region, Pamir, Hindu Kush and Tien Shan (Muccione and Cassera, 2019).

Extreme weather hazards have been historically recorded across Central Asia, namely droughts, floods, sandstorms, extreme low/high temperatures, landslides, avalanches as well as pests and diseases. Regional climate projections indicate an increase in intensity and frequency of heavy precipitation events but also increasing evaporation with increasing temperatures (WMO, 2021). Reduction of the annual maximum amount of snow is likely to increase seasonal variations in water availability and thus exacerbate desertification processes. Glaciers, another vital source of water and river runoff in the region, are projected to decrease. As melt rates increase, the runoff will also increase until a certain point when the glaciers are reduced to the degree that runoff will

(Note: organization's letterhead to be added)

Our ref.:

Dr Elena Manaenkova
World Meteorological Organization
7bis Avenue de la Paix
CH-1211 Geneva 2
Switzerland

(Date)

Subject: Letter of Interest for the development of a regional project proposal on Integrated Drought Management in Central Asia

Dear Dr. Manaenkova

By this letter (add Name of Organization) is expressing its interest in the development of a regional project proposal with the aim to increase drought resilience in Central Asia.

In addition, (add Name of Organization) employees express their readiness to contribute to the development of the project proposal on drought resilience and to contribute to the implementation of the resulting project to its full capacity at a later stage.

Yours sincerely,

(Name and signature of PR of the Country)
(Title)

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Thank you.

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