



UNDP Climate Information & Early Warning Systems

Supporting Livelihoods and Protecting Lives in a Changing Climate

Climate Information UNDP Approach

1

Build Services

Ensure people receive climate info

2

End to End Approach

Identify gaps – build tailored solutions

3

Promote Innovation

Lower-cost technology

Climate Information

- ▶ Weather and climate data
timely, accessible, understandable
- ▶ Make informed decisions
survive in a changing climate
- ▶ Impact
human lives, food security, infrastructure

Climate Information Around the World

- Weather forecasts
- Climate projections
- Early Warnings
- Data processing/dissemination
- Technology transfer
- Capacity building
- Private sector engagement

Partners



Global
Environment
Facility



Green Climate
Fund



Adaptation
Fund



Canada

+ 13 million
people
reached/targeted
with improved
access to EW

*The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

\$776 Million Portfolio



Climate Information in 46 countries



Early Warning Systems in 30 countries

Coordination: Working with partners

Global/regional partners include:

- ◆ WMO / CREWS
- ◆ WFP
- ◆ UNEP
- ◆ UNU
- ◆ ACMAD
- ◆ AGRHYMET
- ◆ FEWSNET
- ◆ RIMES
- ◆ IGAD – ICPAC
- ◆ SADC
- ◆ IRI
- ◆ Tropical Cyclone Committee
- ◆ Global Fire Monitoring Centre
- ◆ IFRC
- ◆ Pacific Tsunami WC
- ◆ OCHA
- ◆ GIZ



Working together: Government, UN, development agencies, civil society and private sector

Climate Information Data Generation

Burkina Faso (LDCF) 4.5M

Hydro-Meteorological Data

Weather forecasts, early warnings for floods and droughts



Niger (LDCF) 8.9M

Applications

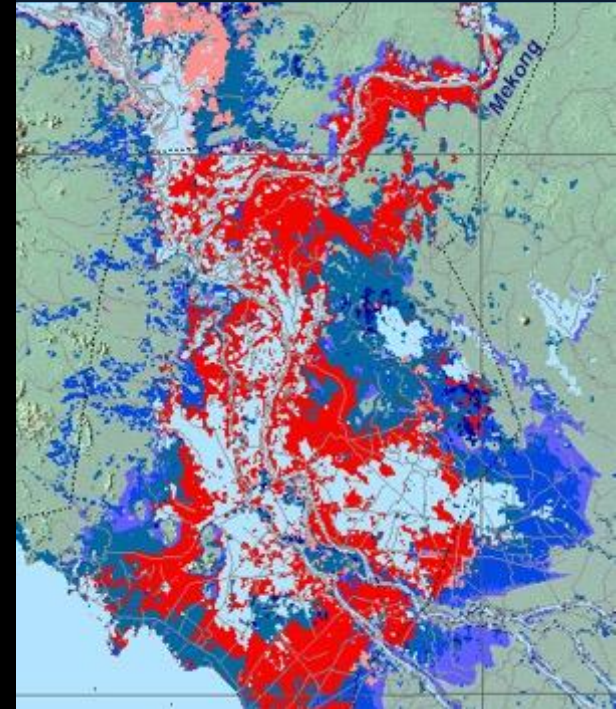
Farmer rain gauges, advisories and improving agricultural risk info



Vietnam (GCF, SCCF) 30.2M

Risk Assessment

Flood mapping, impacts on rural infrastructure



Climate Information Making Informed Decisions

Coastal Management

Liberia (8.9 M), Egypt (4M)
(LDCF, SCCF)

Coastal monitoring system
Coastal development planning



Flood Management

Georgia 27M (GCF)
Flood EWS – hydraulic modelling
Community-based flood warnings
Asset and vulnerability mapping



Drought Management

Malawi, (12.3M) Mali
(8.9M) (GCF, LDCF)
Climate-smart agriculture
Adjust planting times, crop types



Multi Hazard EWS – Uzbekistan GCF

US\$ 10 mln (GCF) + co-finance

Duration: 2021-2027

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



- Upgrading and modernization of the hydrometeorological Observation System
- Upgrading Uzhydromet capacity to store, process and develop hazard products, and to communicate hydrometeorological data
- Re-training and advanced training of Uzhydromet staff

Output 2 A functional impact-based MHEWS based on innovative impact modelling, risk analyses, effective regional communication and community awareness



- A modernized system for assessing climate risks, including socio-economic risk models for decision making and prioritization of future resilience-building investments
- Technical guidance, institutional and coordination frameworks
- A system for information dissemination to provincial MES management centres and area-specific mobile alerts including an information visualization system

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



- Establishing National Framework for Climate Services
- Designing a sustainable business model for disaster-related information and services
- Strengthening disaster warning dissemination and communication with end-users

Multi Hazard EWS – Georgia GCF

US\$ 27 mln (GCF) + US\$ 38 mln (co-finance)

Duration: 2019-2026

Output 1 Expanded observation network and modelling capacities for reliable information on climate hazards, vulnerability and risks



- Procurement, installation and operationalization of new hydro meteorological monitoring equipment
- Climate sensitive hazard and risk maps
- Gender-sensitive socio-economic vulnerability assessments
- Multi-hazard disaster risk data repository with centralized information management, data protocols and knowledge portal

Output 2 MHEWS and new climate information products supported with regulations, coordination mechanism and institutional capacities



- Policy, regulatory and legal frameworks and institutional capacities for enhanced use of climate information and MHEWS
- Design and introduction of MHEWS for all 11 river basins
- Access and use of tailored climate weather information products and advise to farmers/agricultural enterprises
- Climate-informed basin-level multi hazard risk management plans and municipal multi-hazard response and preparedness plans

Output 3 Improved community resilience through the implementation of the MHEWS and priority risk reduction measures



- Community-based early warning schemes and community-based climate risk management
- Public awareness and capacity building to effectively deliver climate risk information for communities and local first responders
- Implementation of project selected from 13 short listed sites for location specific priority risk reduction interventions

Regional context: Central Asia

- UNDP/UNDRR mapping study on EWS across Central Asia (2024) identified key actors, their roles, and gaps in stakeholder engagement, and provided recommendations for improving existing EWS. <https://www.undp.org/eurasia/publications/early-warning-systems-stakeholders-mapping-exercise-across-central-asia>
- Regular CA DRR Ministerial Forums facilitated by UNDP
- [A Joint Appeal](#) to the UNSG by the Heads of emergency management authorities in 5 CA countries requesting support to a Regional Early Warning and Information System under the EW4All - an outcome of the 2023 CA Ministerial Forum.
- EU-funded *Climate change and resilience in Central Asia*: community-level EWS pilots in Fergana Valley (Kyrgyzstan, Tajikistan and Uzbekistan)
- DRR and preparedness actions: satellite GLOF monitoring and warning

Climate Information **Lessons Learned**

No 'one-size fits all'

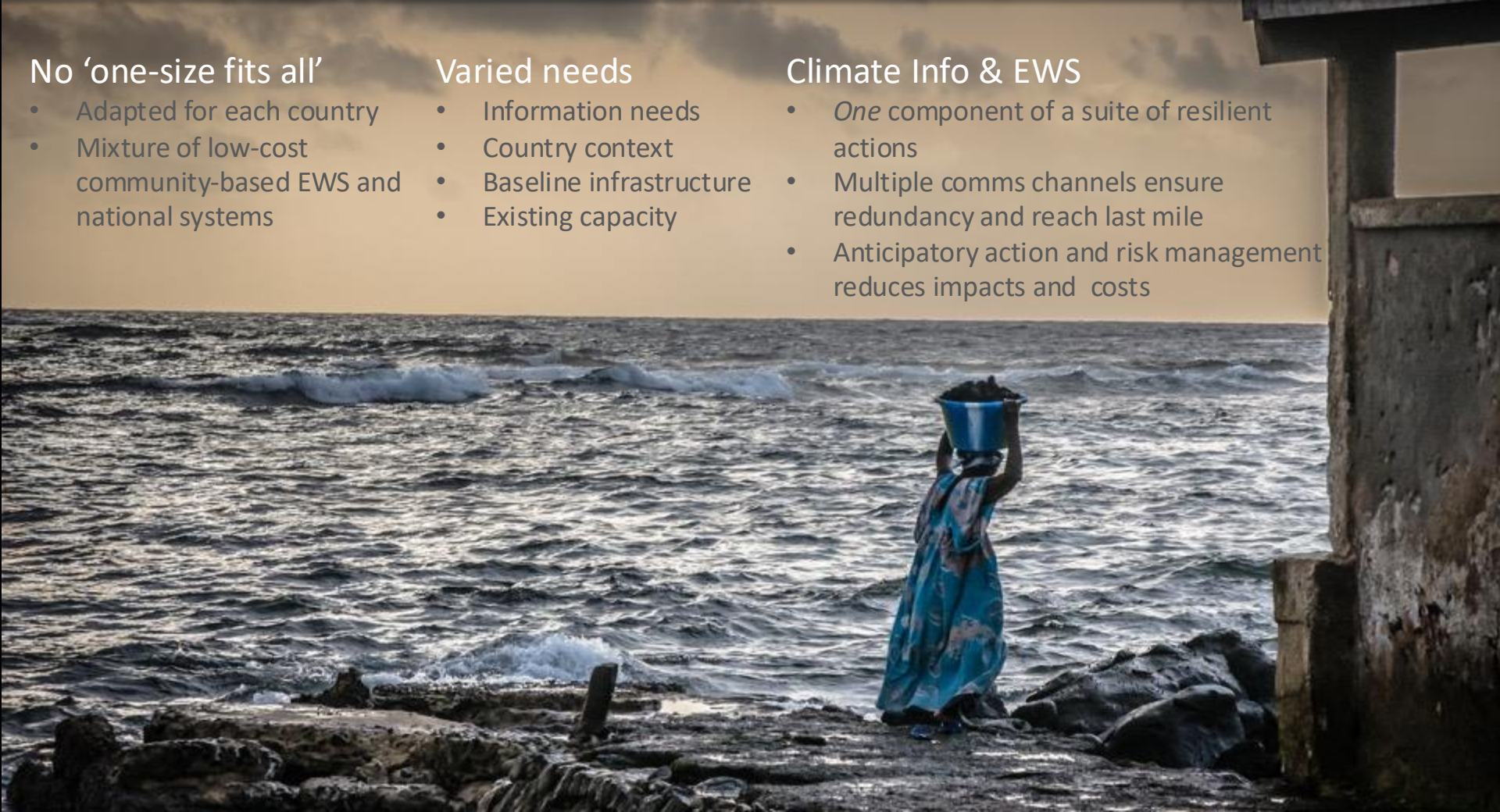
- Adapted for each country
- Mixture of low-cost community-based EWS and national systems

Varied needs

- Information needs
- Country context
- Baseline infrastructure
- Existing capacity

Climate Info & EWS

- *One* component of a suite of resilient actions
- Multiple comms channels ensure redundancy and reach last mile
- Anticipatory action and risk management reduces impacts and costs



Investment Opportunities – Early Action, EW, and Climate Information

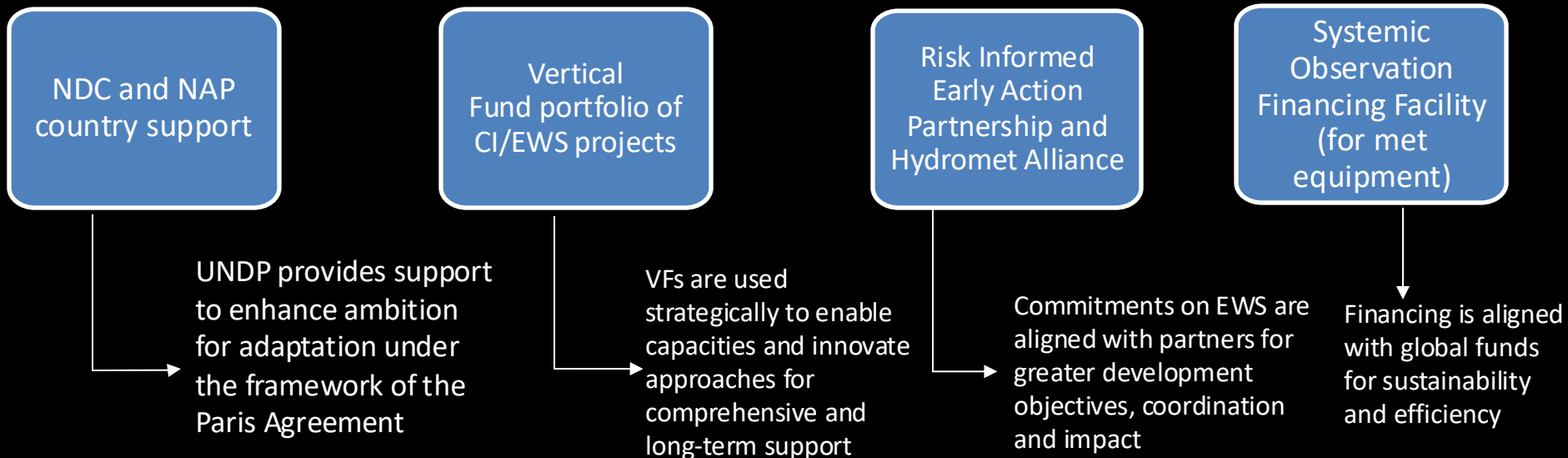


UNDP's Support for the SG's Early Warning for All

"By the end of 2027 everyone on Earth will be protected from hazardous weather, water, or climate events through life-saving early warning systems"

Secretary General's Pledge under the Early Warning for All Initiative

UNDP has the capacity to respond by aligning its work with countries and partners on EWS



Early Action, EW, and CI

Innovative technology

Private sector, government

- Mobile data collection of field instruments and vulnerability
- Applications and SMS based warnings and advisories
- Satellite monitoring of environment and impacts
- AI tools to identify impacts and translate warnings/advisories
- Engage mobile operators to use rain fade, cell broadcast tech.
- Social media tools to monitor evolving events

Funding early action

Response agencies

Establish and fund consistent and evidence-based early action

- Developing scientific and data driven triggers for action
- Early action protocols and standard operating procedures
- Establishing early action funds and contingency plans (reduce damage)
- Forecast based financing
- Innovative use of risk financing- insurance and bonds
- Integrating climate risk in financial planning and investments

Resilient Livelihoods

- Sector specific advisories and value chain services to support revenue generation
- Climate informed extension services
- Mobile platforms with weather/climate information
- Farmer feedback and workshops to help co-produce products
- Multi channel communication (radio, Whatsapp, TV, etc)
- Expand/strengthen district climate information centers
- Parametric insurance



Observational Systems

- Investment in observational equipment (capacity assessments, maintenance capacities, standardization)
- Lake buoys + lightning detection for forecasting severe weather
- Product development for tailored early warning alerts
- Data processing for enhanced forecasting
- Incorporating remote sensing data
- Community monitoring protocols

Capacity building and regional coordination

- Improve regional forecasting capacities (climate and impact modelling)
- Support regional coordination of disaster management responses
- Establish regional technical support networks with academia
- Improve data sharing and knowledge exchange
- Support work with national agencies and global centres
- Enhancing community capacity for informed action

Disaster Risk Management

- Anticipatory Action and Disaster Preparedness
- Community-based EWS linked to national forecasts
- Strengthening area and village civil protection committees
- Water-level and stream flow gauges (manual + automatic)
- Hydraulic flood models and risk mapping
- Tailored alerts for coastal and marine areas
- Safety at sea through beach village committees



EWS4All – Investing 100M to scale up EWS and CI for increased resilience



Global Early Warning for all Project (concept)

GCF FINANCE is 100M in 3 Outcomes across 7 + 10 countries

Outcome 1: Development of a pipeline of projects that are investment ready

5M

Gap and needs assessments, technical and scientific support to upgrade hydromet infrastructure, harness remote sensing systems and develop surveys for vulnerability assessments

Outcome 2: Sustained support for global coordination and support architecture for EW4All

6M

Data sharing frameworks, technical support through WMO Region Climate Centres, engagement with corporate and private sector partners

Outcome 3: End-to-end EWS that is inclusive and builds community resilience to climate hazards

89M

National level investments for impact-based forecasting, enhanced capacities for data processing, observation infrastructure, multi channel information systems for early alert dissemination

Antigua & Barbuda, Cambodia, Chad, Ecuador, Ethiopia, Fiji, Somalia (all targeted through the SG's EW4All)

Global GCF/UNDP/WHO proposal on Climate and Health (concept)

GCF proposal for 15 countries; US\$64 mln (GCF); US\$58 mln (co-finance)

Output 1 Multi-partner co-investment facility for transformative action on climate and health

Output 2 Policy, knowledge, and investment frameworks for 12 countries to deliver on their COP26 Climate and Health Commitments

Output 3: Innovative climate solutions for climate resilient and sustainable healthcare systems and facilities

Relevant activities:

Enhance climate and health knowledge, data and information systems: design climate-informed health EWSs

Implement integrated climate and health surveillance and EWS: integrating climate and weather information in health EWS; ICT/Digital tools for climate and health surveillance and EWS; enabling policies, SOPs, communication protocols; capacity building and training for hydromet and health workforce

Enhance climate-informed disease control and prevention programmes

IMPACT of investing in Early Warnings and Climate Information Systems



USD 1 in
EWS
provides a
x 9 return

Transforming
capacities for
improved planning

Government Ministries
Local governments
Infrastructure
developers
Agricultural extension
Water services

Enhancing existing
observational
systems

Hydromet agencies
Technology providers
Data and analytics
processors
Global and regional
Observation Networks

Enhancing
information and
coordination for
climate action

Disaster risk agencies
Agricultural services
Humanitarian and
development agencies
Local communities
Regional forecasting
centers
Parametric insurance

Technological
innovation for
impact

Leapfrog technologies
Satellite systems
Cloud technologies
Cell broadcast tech
Forecasting products
Tools for processing big
data
Web based apps for
information delivery
Mobile platforms for
community monitoring

Financial models to
crowd in climate
finance

Anticipatory action
funds
Public Private
Partnerships (data
sharing and product
development)
Forecast based financing
Catastrophic bonds
Financial services that
integrate climate risk

Last-mile support
for
increased resilience

Civil society
Web developers
Media
Academia
Communities
Agricultural
extension officers
Productive
associations
Mobile networks



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