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Regional Workshop on Framework and Toolkit Development

Baseline Assessment of IBF Initiatives in South Asia

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OVERVIEW

01 Regional & National Initiatives

02 Supporting Resources

- Stakeholders
- Existing Tools/DSSs
- Training Mechanisms and Institutional Capacities

03 Limitations/Gaps and Recommendations

Session Objectives

- Present the findings from regional and national baseline assessments that have been validated by NMHS partners

- Map national contexts to inform development of framework and toolkit

Regional Initiatives

Major Initiatives in the Region

SOUTH ASIA HYDROMET FORUM

GLOBAL HEAT HEALTH INFORMATION NETWORK

South Asia Climate Outlook Forum

SASCOF

CREWS CLIMATE RISK & EARLY WARNING SYSTEMS

Country-specific IBF Initiatives for Temperature-related Hazards

Afghanistan

- IBF for temperature-related hazards is still in formative stages
- Afghanistan Hydromet and Early Warning Services for Resilience Project (WMO-CREWS), 2019-2023
- Challenges:
  - No established, country-level heat-health early warning system with heat calibrated thresholds
  - Lack of resources/technical experts
  - Limited observational data
  - Limited institutional mandate/resourcing and sustainability concerns

Bangladesh

- Operational thresholds for heatwave and coldwaves based on air temperature
- Initiatives for Heatwave
  - Feasibility study and EAP for heatwave by BDRCS, GRC (2021)
  - Heat Wave Anticipatory Action – “El Niño Anticipatory Actions for Drought and Heatwave in Bangladesh” by RIMES, Save the Children Bangladesh (2023–2024)
  - Special heat-stress advisories for farmers and crops through Bangladesh Agro-Meteorological Information Service (BAMIS) App developed by RIMES
  - Heat stress and adaptation planning for livestock through National Livestock Advisory System (NLAS) developed by RIMES
  - “HEATDOWN” – Community-led heat adaptive intervention model for farmers (ICDDR,B with RIMES, 2023–2024)
  - HEAT-SHIELD Project – Harnessing anticipatory action for agricultural field workers (ICDDR,B, RIMES, 2025–2028)
- Initiatives for Coldwave
  - Anticipatory Action for Cold Wave (Save the Children Bangladesh, START FOREWARN, RIMES, 2022)
  - Early Action Protocol (EAP) for Cold Waves in Bangladesh (BDRCS, 2025)
  - A harmonised Early Action Protocol for implementation of AA for Heatwaves initiated in June 2025
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- Challenges:
  - Operational heatwave and coldwave thresholds are based on air temperature only, need index based threshold for depicting real-world conditions
  - need for additional observational stations at remote and vulnerable locations
  - No established mechanism for IbF for HW/CW
  - Existing initiatives remain fragmented and siloed, requiring stronger coordination and integration.

Heatwave Classification	Temperature Threshold
Mild	36.0°C – 37.9°C
Moderate	38.0°C – 39.9°C
Severe	40.0°C - 41.9°C
Very severe	≥ 42.0°C

Coldwave Classification	Temperature Threshold
Mild	8.1°C –10.0°C
Moderate	6.1°C – 8.0°C
Severe	4.1°C - 6.0°C
Very severe	≤ 4.0°C

Bhutan

- Bhutan is vulnerable to both CWs (northern Himalayan peaks) and HWs (southern plains and foothills)
  - 2100 projections: temp to increase by 2.8-3.2ºC; warming can trigger GLOFs, forest fires, etc.
- Strategies for HW/CWs are integrated within broader frameworks like National Adaptation Plan (2023)
- As of 2024, NCHM just recently developed and piloted thresholds for heatwaves (only).

Hazard	Colour code for weather warnings	Color code with message	Conditions to fulfill
Heatwave	No Warning (No Action)	Normal conditions	
	Weather Remarks-Watch (Be Updated)	Hot day conditions	Whenever the maximum temperature remains in the T95 (95 percentile) or more and minimum remains 5°C or more above normal For regions– half or more than stations.
	Weather Advisory-Alert (Be Prepared)	Heat wave	Departure of maximum temperature from normal is + 5°C or more for the region, and above the T95 for 2 consecutive days For region– half or more than stations
	Weather Warning (Take Action)	Severe heat wave	Departure of maximum temperature from normal is + 6°C or more for the region, and above the T95 for 2 consecutive days For region– half or more than stations

- Overall NCHM diagnostics report (SOFF Project)
  - NCHM issues warning only for rainfall, winds, cyclones, snowfall, GLOFs, and floods; now HW; but no CW and other hazards like forest fires and droughts
  - IBF services not implemented due to capacity gaps
  - Lead times for warnings need to be improved
- The Coalition for Disaster Resilient Infrastructure Project (Sep 2025) by the Royal Govt of Bhutan and UNDP that aims to strengthen the flood resilience of critical urban infra in 3 main cites – NCHM will cover the component implementing/piloting IBF activities

India

- India is highly vulnerable to HW/CWs; and thus has become the pioneers in SA in managing them
- Established criteria for declaring HWs and CWs based on a) maximum temp and b) departure from normal temp; and based on regional/geographical differences (plains, coastal areas, hilly regions)
  - HWs: ≥40°C plains, ≥37°C coast, ≥30°C hills
  - CWs: ≤ 2/4°C plains; 4.5–6.4°C below normal.
- Operational Impact-Based Forecast and Warning (IbFW) services for multiple hazards (since 2017) incl. HW/CW
- Heat Action Plans and Cold Wave Action Plans (supported by NDMA/SDMA and IMD)
  - Ahmedabad, Gujarat (HAP) - 1st in SA (2013) & has become model for adoption in India / SA
  - as of 2025: 23 States in India have HAPs
  - Challenges:
    - HAPS lack tailoring to local context; broadly based in national guidelines
    - gaps in vulnerable group targeting
    - some are underfunded

Maldives

- Highly vulnerable to extreme heat; cold waves minimal risk.
- Heat Wave Action Plan (2019): Defines thresholds (≥35°C heatwave, ≥40°C severe), outlines awareness, health, infrastructure, and emergency response.
- EW4All Roadmap (2023): National strategy to scale up people-centered early warning systems.
- TRACT Project (2025–2030): GCF-funded, building an impact-based multi-hazard early warning system, sector-specific DSSs, and last-mile dissemination.
- Challenges
  - IbF for HW not operational
  - thresholds/triggers are temperature based, does not consider other parameters,
  - lack of sectoral impact information

Myanmar

- 2020 feasibility study confirmed that forecast-based action (FbA) is possible
  - highlighted the need for stronger government ownership
  - closer alignment with the Department of Meteorology and Hydrology (DMH)
- Simplified Early Action Protocol (sEAP) for Urban Heat Waves (2024–2026) with Myanmar Red Cross Society (MRCS)
  - trigger mechanism is based on a Heat Index threshold (90th percentile for three consecutive days), derived from DMH forecasts and regional datasets
- Challenges remain in institutionalizing IBF for temperature extremes
  - Current triggers still rely on MRCS-derived forecasts
  - Verification capacity for temperature extremes also remains limited
  - weak integration into national SOPs
  - DMH suffers with limited research capacity, low financial resources and the absence of a pilot IBF project

Nepal

- Rainfall IBF approaches are operational
- Pilots for cold waves
  - Raptisonari and Narainapur rural municipalities in Banke District formally approved a Coldwave Early Action Protocol (EAP) developed with Save the Children and the Social Development Forum in 2022
- The Nepal Red Cross Society (NRCS) and partners have developed Heat Action Plans in Nepalgunj (2023) and Dhangadhi (2025)
  - real-time heat alerts, water ATMs, greening measures, and awareness campaigns
- Resilience, Adaptation and Inclusion (RAIN) programme
  - led by People in Need (PIN) and funded by the British Embassy Kathmandu
  - Implemented in Madhesh and Lumbini provinces until 2029

Nepal

- Challenges
  - limited forecast verification for temperature extremes
  - need for standardized SOPs for heat and cold hazards
  - sustainable anticipatory financing mechanisms

- DHM’s rainfall IBF pilots demonstrate the institutional pathway for national adoption

- Red Cross–led Heat Action Plans and municipality-endorsed Coldwave EAPs, and the RAIN programme show how IBF concepts can be localized, community-driven, and scaled through systemic investment

Pakistan

- Karachi Heatwave Management Plan
  - Plan spurred after the 2015 Karachi heatwave, which caused over 1,200 deaths
  - Pakistan Meteorological Department (PMD) issues short- to medium-range forecasts (3–10 days) and operates a heatwave alert page for Karachi, providing official early warnings during high-risk periods
- Start Fund anticipatory project in 2018
  - 7–10 day forecasts to raise alerts, with action triggered 5 days in advance
  - Proposed that pre-agreed triggers, modeled on international examples such as Ahmedabad's Heat Action Plan, could unlock humanitarian financing ahead of extreme heat events
- Start Network and HANDS Pakistan in 2020
  - Piloted a heatwave anticipatory response in Karachi, backed by disaster risk financing
- Asia Regional Resilience to a Changing Climate (ARRCC) programme
  - piloted IBF approaches for agriculture
  - PMD tested household-level access to weather information and crop-specific advisories in Punjab

Pakistan

- Challenges/Gaps
  - embedding IBF approaches into national DRM systems
  - ensuring sustained funding
  - greater coordination between PMD, NDMA, and local authorities
  - better verification of triggers across different climate zones

Sri Lanka

- Operational Early Warning System (EWS) for various hazards
- Uses a specialised **Heat Index Advisory System** that issues heat index forecast daily for the next 24-hour period

Heat Index	Level of warning	
27–38	Normal	
39–45	Caution	fatigue is possible with prolonged exposure and activity. Continuing activity could result in heat cramps.
46–52	Extreme Caution	heat cramps and heat exhaustion are possible. Continuing activity could result in heat stroke.
over 52	Danger	heat cramps and heat exhaustion are likely; heat stroke is probable with continued activity.

- More initiatives:
  - Early warning, Early action, Early finance (AWARE) platform
  - Anticipatory action simulation for drought
  - Climate Resilience Multi-Phase Programmatic Approach (CResMPA) with World Bank and WMO support
- Challenges:
  - Limitations on forecasting capabilities remain constrained
  - Limited financial resources and technical expertise
  - Difficulty in collecting and analyzing impact data after events
  - Shortcomings in communication and dissemination continue to create barriers

IBF and Temperature Thresholds Across the Region

Country	Are IBF services operational?	Temperature Thresholds/ Indices
Afghanistan	No operational IBF; warnings hazard-based	No defined thresholds or indices for HW/CW
Bangladesh	IBF available only for monsoon riverine flood and cyclones at small-scale	HW/CW Thresholds based on air temperature HW: Severe: 40-41.9°C; V.Severe: ≥42°C CW: Severe: 4.1-6°C; V.Severe: <4°C
Bhutan	Warnings hazard-based; UNDP flood resilience project introduces IBF pilot implementation	Recent HW thresholding developed (>2 days, 50% or more stations) HW: Departure from normal of +5°C Severe HW: +6°C
India	Yes – operational for multiple hazards, incl. HW/CW.	HW: ≥40°C plains, ≥37°C coast, ≥30°C hills; CW: ≤ 2/4°C plains; 4.5-6.4°C below normal
Maldives	No operational IBF; warnings hazard-based	HW: ≥35°C Severe HW: ≥40°C
Myanmar	No fully operational temperature IBF; reliance on project-based pilots	Heat Index 90th percentile for ≥3 consecutive days (sEAP trigger)
Nepal	Partial - rainfall IBF operational; Temperature IBF not yet institutionalized	CW: 3-4 consecutive days below normal temperature of 5°C; HW criteria piloted (urban heat index ~90th percentile or >40°C for >2 consecutive days)
Pakistan	partial pilots exist, not scaled nationally	HW thresholds via PMD + ECMWF; ≥40°C forecasts 5-7 day lead time
Sri Lanka	Yes - operational for multiple hazard	No single temperature threshold but different heat risk depending on region/location using the Heat Index Advisory (based on combined effects of temp + humidity)

Limitations and Gaps

Limitations and Gaps

- Initiatives for temperature-focused IBF
  →relatively new compared to floods or cyclones
- Pilot efforts on heat waves and cold waves
  → early stages of development
- Lack of standardized operational SOPs
- Some Early Action Protocols (EAPs) and Heat Action Plans (HAPs) exist at city or project levels, but institutionalization as part of national EWS is still envisioned
- Uneven national capacities hinder harmonized progress

Recommendations & Way Forward

Recommendations and Way Forward

Strengthen Regional Governance	Establish a harmonized South Asia Framework for IBF under SAHF, aligned with WMO standards, including common methodologies, SOPs, and peer-learning mechanisms.
Enhance Technical and Institutional Capacity	Develop and deliver targeted training for NMHS staff and partner agencies on hazard thresholds, vulnerability mapping, forecast verification, and user engagement, with dedicated modules on temperature extremes.
Secure Sustainable Financing	Promote anticipatory financing models, link IBF to social protection schemes, and mainstream IBF-related resource mobilization into national DRM and climate finance strategies.
Foster Strategic Partnerships	Document, adapt, and scale proven IBF practices (e.g., anticipatory cash transfers, community-based early warning, hybrid science–community models), ensuring systematic collaboration among NMHSs, humanitarian agencies, and academia.
Embed GEDSI Principles	Integrate gender, disability, and social inclusion considerations into all IBF training, SOPs, and early action plans to ensure no one is left behind.

Thank you!

SAHF IBF Working Group Implementation Plan Project

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