Supported by:

REGIONAL WORKSHOP ON IMPACT-BASED FORECASTING:

Training-of-Trainers and National Demonstration Planning for Temperature-Related Hazards

SAHF IBF Working Group Implementation Plan Project

09-13 February 2026

Kathmandu, Nepal

SOUTH ASIA HYDROMET FORUM

RIMES

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Weather and Climate Information Services

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REGIONAL WORKSHOP ON IMPACT-BASED FORECASTING

Training-of-Trainers and National Demonstration Planning for Temperature-Related Hazards

Heat and Cold Risk Reduction through Impact-Based Forecasting (IBF) in Pakistan / Pakistan Meteorological Department

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1. National Demonstration Plan Overview

A1. Proponent Information	• Pakistan Meteorological Department (PMD) • Sector Co-Lead (Agromet Wing of PMD) • Other implementing partners (local government / CSO / academia / community level orgs)
A2. Focal Contacts	• NMHS Lead Focal (overall): Dr Zaheer Ahmed Babar, Chief Met, email, zaheer_a_babar@hotmail.com , mobile (WhatsApp): +92-321-5023944 • Sector Co-Lead (GEDSI) Ms Asma Jawad Hashmi, Director, email, asmajawadhashmi@gmail.com , mobile (WhatsApp): +92-345-5468129
A3. Demonstration Project Title	Heat and Cold Risk Reduction through Impact-Based Forecasting in Pakistan
A4. Geographic Scope	High Mountainous Region in the North West & Major Agri-Economic Zone in Central Punjab
A5. Seasonal Focus	o Heat o Cold ● Both
A6. Duration of Demonstration	March 2026 – March 2027 Heat-focused demos: Heat Stress; May-Jun 2026 (implementation); Jul 2026 (review) Heat Index; Jul-Aug 2026 (implementation); Sep 2026 (review) Cold-focused demos: Dec-Jan 2027 (implementation); Feb 2027 (review)

2. Temperature Risk Context and Intended Outcomes

The Challenge:

- Pakistan is a top-ten climate-vulnerable country globally.
  - **Extreme Heat (2020-24):** Temperatures >49°C caused over **568 deaths** and **>$200M** in agricultural losses.
  - **Extreme Cold (2024-25):** Chitral experienced its coldest winter in a decade (-9°C), disrupting lives and crops.

The Gap: Communities lack **localized, actionable advisories** to translate forecasts into protective measures.

Measurable Outcomes:

- Actionable advisories issued to **≥8,000 farmers** and **600+ youth volunteers**.
- **≥30% reduction** in temperature-related health incidents/livelihood losses vs. baseline.
- Operational EAPs institutionalized in **high-risk valleys (Chitral)** and **agriculture clusters (Faisalabad)**.

3. Stakeholders, Roles, and Coordination Approach

- **Core Implementation Team:** Led by **PMD**, co-facilitated by **RIMES.**
- **Monthly/Weekly Coordination:** Chaired by PMD, with all partners (PDMAs, FAO, District Admin, CSOs, Agri-Extension Department).
- **Memorandum of Understanding (MoU) / (LoA/LoC):** Following the recent IBF mechanism, MoU/LoA/LoCs may be initiated for the sustainability of cooperation between the major stakeholders, throughout the project.
- **Clear Roles:** PMD (tailored forecasts), RIMES (technical support), Agri-Extension (technical support and dissemination), FAO (anticipatory action), PDMAs/District Admin (local activation), CSOs (inclusive outreach).

4. Pilot Area/s and Target Groups

Two Contrasting Pilot Districts:

- **Faisalabad District (Punjab):**
  - ***Hazard:*** Extreme **Heat** (>42-45°C)
  - ***Focus:*** Protecting **agriculture** (employs 45% of rural population) and critical **energy infrastructure** (hospitals, irrigation/agriculture and importantly the Industry etc are directly affected).
- **Lower Chitral District (KP):**
  - ***Hazard:*** Extreme **Cold** (< -5°C)
  - ***Focus:* Disaster Risk Reduction (DRR)** for **vulnerable communities** including **the farmers.**

***Heating may also be considered for Chital, based on recent observations.**

5. Data, Indices, Triggers and Thresholds

- **The IBF Pipeline:**
  - **Data & Forecasts:** PMD data + PMD models + sectoral data (crop calendars, FESCO, infrastructure).
  - **Impact Analysis:** Using the CARE ADVICE DSS (agriculture) and SLMC portal (community DRR).
  - **Actionable Products:** Localized advisories, impact maps/matrices, mobile/WhatsApp alerts in local languages.
  - **Early Action Protocols (EAPs):** Pre-defined actions triggered 72-48 hours before an event.

- **Threshold Validation & Calibration:**
  - Lead a technical working session with PMD climatologists/Agro-meteorologists and sector experts (agriculture, health, DRR) to review and scientifically validate the proposed **heatwave (Tmax ≥40-45°C)** and **cold spell (Tmin ≤ -5°C)** triggers.
  - Advise on the development of **composite or impact-based indices** (e.g., combining temperature with humidity for heat index, or wind chill for cold) that better reflect sector-specific vulnerabilities.

6. From Forecast to Action: *Products, Communication & SOPs*

- **Tailoring the Weather Forecast and Advisory Drafting:** **Forecast generated** for the target regions would be **tailored** in the respondent's perspective and be **shared with the technical working group** composed of the representatives from all the major stakeholders, it may be managed/coordinated by NAMC-PMD.
- **Input of Technical Working Group (TWG):** **TWG** (established after the initial meetings, to keep each stakeholder on board) **would promptly give its feedback** to make it more useful for the end-users. To proceed **ADVICE DSS may be utilized** or some alternate tools like **portal** or **WhatsApp** like options for quicker response.
- **Operationalize IBF Services**

  Integrate PMD forecasts with the **ADVICE DSS** (Faisalabad) and **SLMC platform** (Chitral).
- **Develop & Implement Early Action Protocols (EAPs)**
  - **Faisalabad:** Link heat stress/index forecasts to **energy management** with FESCO (protecting hospitals, irrigation, industry) and **agriculture advisories** for farmers, equally shared with PDMA/DDMA.
  - **Chitral:** Translate cold/heat wave forecasts into community **DRR protocols** via PDMA/DDMA.
- **Strengthen Institutional Coordination**
  - Create a **collaborative mechanism** between PMD, PDMAs, Agri-Ext. Dept., FESCO, FAO, RIMES, and CSOs.
- **Dissemination of IBF Product**
  - Suitable channels may be utilized to make it accessible to the end-users of both regions.

7. Assistance, Guidance, and Support Required

- **Data Integration Strategy:**
  - **National Data:** Confirm access and integration protocols for PMD station data, PDMA impact databases, and national exposure datasets.
  - **Regional/Global Data:** Formalize the pipeline for integrating model outputs, ERA5 reanalysis, and other datasets to enhance forecast skill and fill spatial gaps.
  - **Tool Customization:** Plan the technical configuration and customization of the **CARE ADVICE DSS** for Faisalabad (agriculture) and the **SLMC portal** for Chitral (DRR), ensuring they effectively ingest IBF products.
- **Capacity & Infrastructure:** Identify specific software, hardware, or connectivity requirements for PMD and district offices to operationalize the integrated system.
- Establishment of **Liaison with the potential stakeholders** at local level for both the target regions.
- ***Should we proceed with separate Impact Matrices/Maps for each group of target communities?***

8. Proposed Work-Plan

Sr. No	Title	Tentative Dates
1	Inception Workshop at Faisalabad	25th March 2026
2	Inception Workshop at Chitral	31st March 2026
3	Field Survey in Faisalabad Region	04 Days; 7th – 10th Apr 2026
4	Field Survey in Chitral Region	05 Days; 7th – 11th Apr 2026
5	1st Training Workshop at Faisalabad	02 Days; 21st – 22nd Apr 2026
6	1st Training Workshop at Chitral	02 Days; 28th – 29th Apr 2026
7	Stakeholders Meeting at Faisalabad (Technical Group may finalize the IBF products)	5th May, 2026
8	Stakeholders Meeting at Chitral (Technical Group may finalize the IBF products)	12th May, 2026

Additionally, Throughout the project period, about 06 meetings with the potential stakeholders including the agriculture departments, local disaster management, FESCO etc.

9. Inclusion, Sustainability & The Way Forward

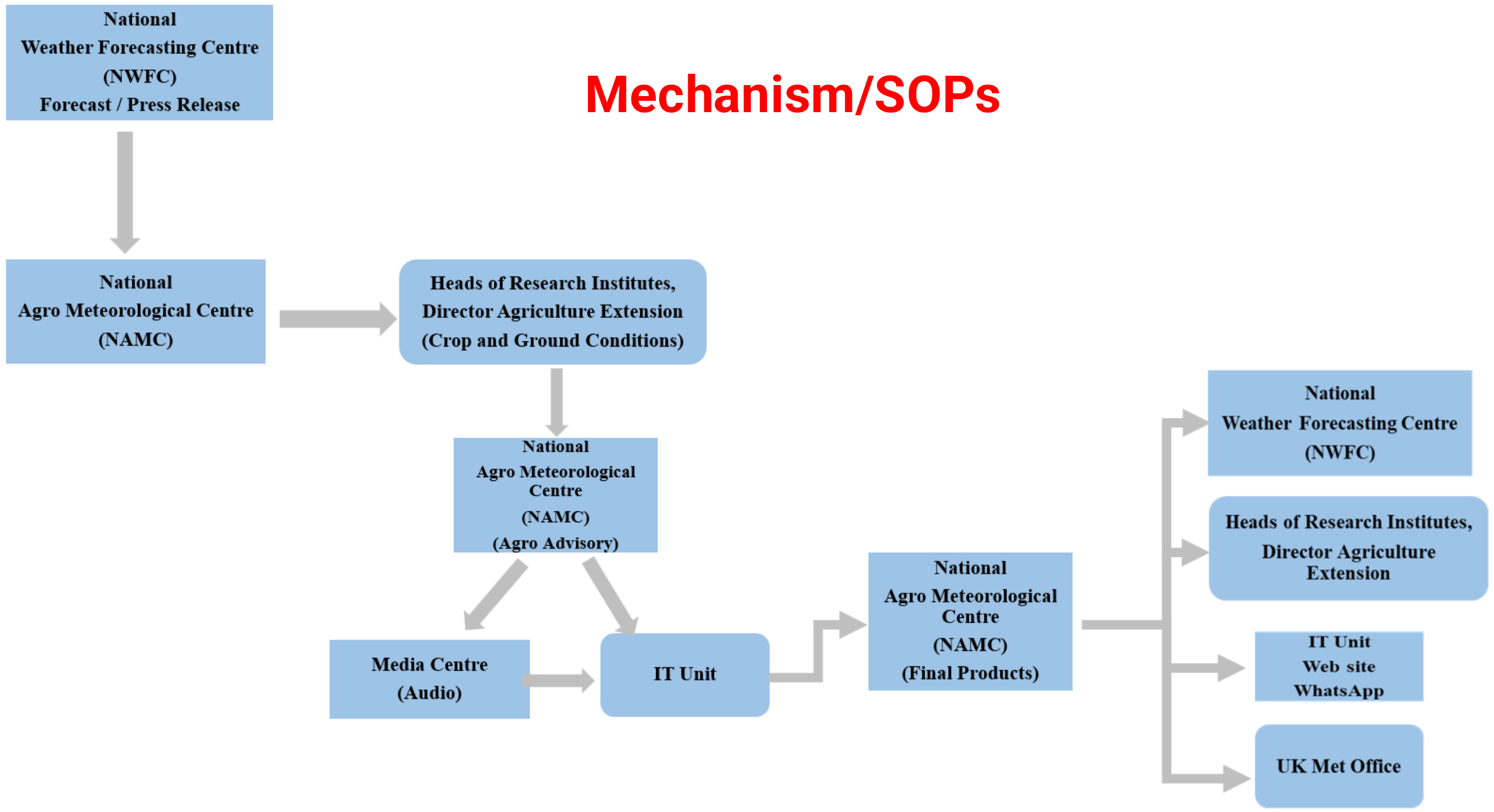
- **Inclusive by Design (Gender Equality, Disability, and Social Inclusion GEDSI):**
  - **≥30% participation** of women, elderly, and persons with disabilities.
  - Accessible alerts (audio, visual) in **Urdu, Punjabi, Pashto, and Khowar / Chitrali**.
  - Engagement through local women's committees and youth volunteers.
- **Path to Sustainability & Scale-Up:**
  - Institutionalize IBF workflows within **PMD's operational units**.
  - Embed EAPs in **PDMA Standard Operating Procedures**.
- **Replicate the model** to other vulnerable areas in Pakistan post-2027 with continued RIMES partnership.

Ongoing Projects: IBF for Farmers of Potohar Region of Punjab

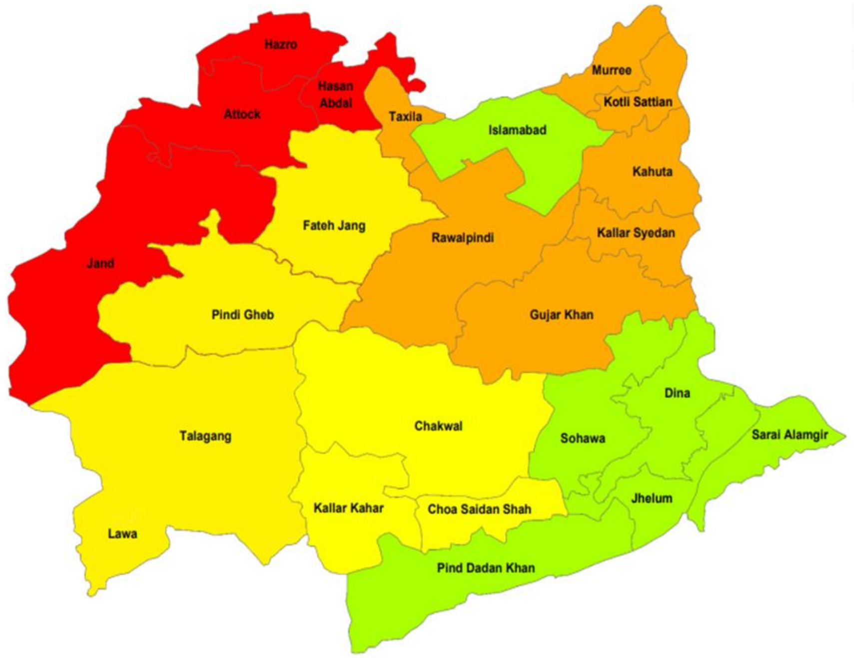
Operational since March 2022 (Extension of UKMO Pilot Project);

Peanut crop for Kharif season (Apr-Oct) and Wheat for Rabi (Oct-Apr)

Mechanism/SOPs



District	Tehsil (Sub-District)
Attock	Attock
	Hassan Abdal
	Pindi Gheb
	Jand
	Fateh Jhang
	Hazro
Chakwal	Chakwal
	Choa Saidan Shah
	Kalar-Kahar
	Lawa
	Talagang
Rawalpindi	Rawalpindi
	Taxila
	Kotli Satian
	Murree
	Kallar Saidan
	Gojar Khan
	Kahuta
Jhelum	Jhelum
	Dina
	Pind Dadan Khan
	Sohawa



Impact Map & Matrix

موسمی حالات کے متوقع اثرات

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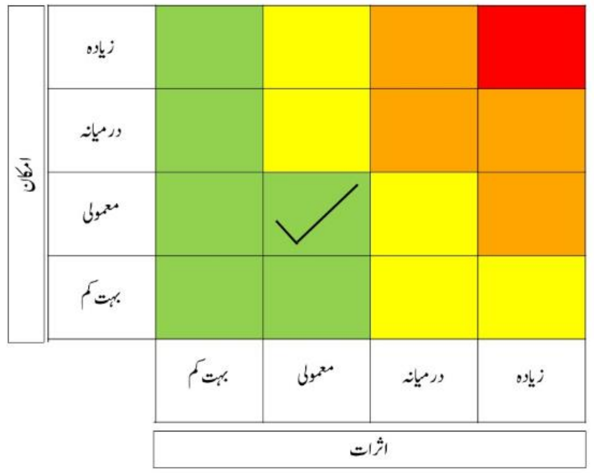

Ongoing Projects: IBF for Farmers of Potohar Region of Punjab

Expected weather & Impact Tables (Jan / Feb) Wheat Crop *at Stem Extension*

Weather Forecast/Probability (in case of Expected Rainfall)

- Up to 10 mm of rain in 24 hours with 5 to 18 km/h wind (or no wind)
- Rainfall up to 0.3 mm with wind of 5 to 18 km/h (or no wind) in five days.

- 10 to 30 mm of rain with 20 to 45 km/h wind (or no wind) at a few places in 24 hours
- 30 to 50 mm of rain with 20 to 45 km/h wind (or no wind) at a few places during five days.

- More than 30 mm of rain in 24 hours with thunder/hail (and/or) wind speed of more than 45 km/h (or no wind)
- Over 50 mm of rainfall with a thunder/hail (and/or) wind speed of more than 25 km/h (or no wind) at most places over the five days.

Potential Impacts on Crop

Minimal	Minor	Significant	Severe
• Little puddles in the fields • Muddy paths	• Puddles in the fields • Muddy paths and fields • Weeds may appear	• Water Inundation • Muddy paths and fields • Weeds may appear	• Localized flooding • Fields inaccessible • Stagnant water may damage the crop

Advice/Actions

Very Low	Low	Medium	High
• Keep updated with the weather forecast • Fertilizer applications after consultation with the local agri departments	• Be Vigilant • Monitoring of crops • Weedicide operations • Fertilizer applications after consultation with the local agri departments	• Be cautious • Be prepared for water drainage • Weedicide operations • Fertilizer applications after consultation with the local agri departments	• Immediate drainage required

Weather Forecast/Probability (in case of Expected Dry Conditions)

• No chance of rain during next 5 to 7 days	• No chance of rain during next 8 to 10 days	• There is no considerable rain expected during the next 10 to 15 days • Also, cold weather/winds likely to prevail	• There is no considerable rain expected during the next three to four weeks • Also, cold weather/winds likely to prevail

Potential Impacts on Crops

Minimal	Minor	Significant	Severe
• Apparently, no significant impact	• Slight change in color of the crop	• Color change / yellowing of crop • Wilting of leaves	• Color change / yellowing of crop • Wilting of leaves • Growth stops

Advice/Actions

Very Low	Low	Medium	High
• Keep updated with the weather forecast	• Monitoring of crops • Keep updated with the weather forecast	• Monitoring of crops • Irrigate, if necessary, after consultation with the local agri departments	• Immediate irrigation required • Prepare future action plan in consultation with the local agri departments

Ongoing Projects: IBF for Farmers of Potohar Region of Punjab

Pics taken during the Major Activities (Pilot – Extension)

Stakeholder workshop November 2019

Ongoing Projects:

IBF for Farmers of south Punjab and lower Sindh

Implemented in Jan 2026 under an FAO project

- **Piloting the Project:**
  - **Consultative/Inception Workshops** organized in both of the targeted areas in **August 2025**, in which all the relevant stakeholders (including Agriculture Extension, Irrigation, Research, Academia, FAO and PMD) were gathered. The purpose was to introduce the basic concept and mechanism of IBF.
  - **Field surveys** conducted in **October 2025** by technical teams of NAMC-PMD with FAO liaison, for obtaining a **real-time feedback from the local farmers.**
  - **Training workshops** conducted in November 2025, to educate the key stakeholders as well as **to establish Technical Working Groups** (TWGs) composed of FPs from all important partners.
  - **Online meetings** held in December 2025 to discuss the draft of **Impact Tables** in perspective of the major standing crop in both regions i.e. **Wheat.**

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THANK YOU!