

# **Report on Panel Discussions**

## **Weather and Climate Innovation Meet for Startups and Entrepreneurs (WISE–2026)**

**Indian Institute of Tropical Meteorology (IITM), Pune  
Ministry of Earth Sciences (MoES), Govt. of India**

### **Executive Summary and Event Context**

The Weather and Climate Innovation Meet for Startups and Entrepreneurs (WISE–2026), hosted at the Indian Institute of Tropical Meteorology (IITM) in Pune, served as a foundational platform to bridge the gap between high-level atmospheric science and ground-level commercial applications. As India confronts the escalating realities of climate change, the Ministry of Earth Sciences (MoES) and its allied institutions are actively seeking to cultivate a dynamic ecosystem where private startups/entrepreneurs can translate complex meteorological datasets into accessible, hyper-local, and actionable intelligence. The newly inaugurated dedicated Incubation Centre at IITM is a significant step in this direction.

This comprehensive report details the proceedings of the five core panel discussions held during the event. The sessions brought together leading research scientists, policymakers, industry veterans, and startup founders to debate the most pressing challenges in the sector. The overarching narrative that emerged was a paradigm shift: the ecosystem must evolve from a model of mere data dissemination to one of collaborative innovation, business model scalability, and targeted problem-solving. Central to this vision is the newly inaugurated IITM Incubation Centre, which is envisioned not merely as a physical workspace, but as a rigorous scientific testing ground providing startups with unparalleled access to High-Performance Computing (HPC), sensor networks, and deep domain mentorship.

The following sections provide an in-depth synthesis of each panel discussion, capturing the nuanced debates surrounding data accessibility, intellectual property, procurement hurdles, and the specific technological needs of sectors ranging from agriculture to renewable energy and disaster management.

## **Session 1: Agriculture**

**Moderator:** Dr. Shalendar Kumar, ICRISAT

The agriculture panel underscored the critical need to transition from broad meteorological forecasting to highly specific, user-centric agricultural intelligence. Dr. Shalendar Kumar opened the session by acknowledging the vast array of high-quality products generated by IITM and MoES, but noted a significant translation gap very little of this scientific output is currently reaching the end-use stakeholders in a digestible format. He emphasized that the commercial viability of weather startups lies in their ability to bridge this gap, serving farmers, farm aggregators, credit and insurance providers, and the logistics and cold chain sectors.

During the panel, several startup founders shared their operational challenges and technological aspirations. Nilesh Vedgave, representing Climatag Technologies Private Limited, discussed their work on diagnostic OTG technologies designed to preserve agricultural commodities like onions through climate-smart storage. He highlighted the necessity for highly specific micro-climate data to design these facilities effectively. Similarly, Dr. Harsh Shah CEO of AgroCast Analytics Pvt. Ltd. outlined his startup's focus on providing NDVI-like products and site suitability consultations for farmers, stressing the need for highly localized weather data to accurately estimate crop water requirements and predict reservoir inflows.

The discussion also highlighted a paradigm shift in how meteorological data is perceived by the agricultural community. Farmers and micro-entrepreneurs are not interested in raw data; they require actionable advisories. For instance, Shashank Kaushik from Meteoxperts Solution Private Limited, which transitioned from manufacturing temperature loggers to remote sensing, noted the importance of thinking "out of the box" to provide terrain-specific forecasts. Furthermore, Dr. Asutosh Acharya from Aurassure Private Limited brought attention to the business possibilities of parametric insurance for farmers and the urgent need to frame policies that integrate startup innovations with government efforts. He also advocated for the facilitation of GPU and computational resources for startups, offering to share data from their proprietary sensor networks in return. The session concluded with a consensus that building credibility through association with institutes like IMD and IITM is vital for startups targeting the agricultural sector.

## **Session 2: Renewable Energy in India**

**Moderator:** Dr. Raghavendra Ashrit, NCMRWF

The Renewable Energy session delved into one of the most mature and rapidly expanding markets for climate technology. With India aggressively pursuing a target of 500 GW of non-fossil energy by 2030, the operational dependence on highly accurate forecasting has become a matter of grid stability and financial viability. Dr. Raghavendra Ashrit the context by highlighting the current status of wind and solar power penetration and the critical role of meteorology in efficient resource assessment and grid management.

The session addressed several key questions related to the growth and sustainability of the renewable energy sector in India. Discussions focused on the major constraints hindering the rapid expansion of renewable energy, strategies adopted by developers to manage tariff pressures and maintain project bankability, and the policy and financing reforms required to accelerate large-scale deployment. The panel also explored how the Ministry of Earth Sciences (MoES) can support renewable energy planning and operations through advanced weather, climate, and ocean forecasting capabilities. In addition, discussions highlighted the need for stronger collaboration between MoES and industry partners to improve solar and wind resource assessment, forecasting accuracy, and grid integration, while also examining the role of ocean energy, marine data, and hazard forecasting in supporting India's clean energy transition.

A major focal point of the discussion was the stringent regulatory environment governed by CERC guidelines. Dr. Ramrathan Director of Earthquant Private Limited explained the financial ramifications of these requirements, noting that deviation settlement penalties (DSM) can severely impact the profitability of Independent Power Producers (IPPs). He explained how their proprietary solutions, Solar IQ and Wind IQ, utilize decades of historical data to manage parametric insurance issues and optimize generation forecasting. However, he emphasized that current national datasets barely meet hourly resolution, let alone the 15-minute granularity required by the industry, presenting a massive opportunity for startups to develop AI-driven downscaling techniques. In addition, he highlighted the importance of strengthening power evacuation infrastructure to ensure efficient integration of renewable energy into the grid. He also stressed the need to focus on the consolidation of DCR (Domestic Content Requirement) and non-DCR segments to enhance operational efficiency and support the growth of the renewable energy sector.

The panel also addressed the broader infrastructural and policy challenges. Mr. Sachin Bhandare Director of Meteodyn Climatology and Dynamics India Private Limited discussed the historical shifts in the renewable sector, noting how solar has outpaced wind due to evolving policies. He highlighted the impending need for repowering aging wind farms that are approaching the end of their 20-year lifespans, and the necessity of unified national policies to replace the current fragmented state-level regulations. Furthermore, the discussion touched upon the issue of power curtailment where generated power is wasted due to a lack of evacuation corridors drawing comparisons to similar challenges faced in China. The session underscored that while the government can provide foundational models (like the 12.5 km global models), achieving the sub-percentage accuracy demanded by the energy market will require bespoke, product-specific modeling approaches developed by agile startups in collaboration with MoES institutions.

### **Session 3: Hydrology, Disaster Management, and Health**

**Moderators:** Prof. Vimal Mishra, IIT Gandhinagar & Prof. M.S. Santhanam, IISER Pune

Combining the critical elements of water management, disaster resilience, and public health, this session focused heavily on the localized impacts of extreme weather events. Prof. Mishra emphasized the need for IITM and the Ministry of Earth Sciences (MoES) to develop a startup-friendly data policy that promotes ease of doing business through access to high-resolution datasets, research expertise, and forecasting infrastructure. He noted that such collaboration would create mutual benefits, enabling startups to develop innovative solutions while allowing IITM/MoES to enhance technology transfer, operational applications, and societal impact. Prof. Santhanam added a note of caution, stating that the Incubation Centre must not devolve into a mere "real estate agenda" where companies sit for a few years without producing translational science.

The startups on the panel highlighted the severe limitations of relying solely on satellite or coarse-grid data. A representative from Climatech argued that predicting extreme events in complex terrains, such as the Himalayas, requires a dense, hyper-local network in every village. This sentiment was echoed by Commander Sudheesh TM (Retd.), representing mistEO, who pointed out a massive disconnect between the high-level expertise of agencies like IMD and INCOIS and the actionable intelligence available to the common man. He stressed that the Incubation Centre must act as the bridge, allowing startups to translate complex meteorological data into accessible formats via APIs.

The intersection of climate and health was profoundly illustrated by Ms. Rashmi from the Population Council Consulting Private Limited. She introduced the critical need for qualitative historical data, noting that official temperature forecasts often fail to capture the reality of the Urban Heat Island effect. While a city's forecasted low might be 33°C, the concrete infrastructure in densely populated areas can radiate heat, keeping hyper-local temperatures up to 5°C higher. This discrepancy has severe implications for the health of the night-time workforce and the efficacy of municipal Heat Action Plans. The panel discussion highlighted that one of the major challenges faced by startups is the lack of easy access to raw meteorological data and the absence of standardized and user-friendly data formats. The panel concluded that while bootstrapped startups require subsidized data access initially, the market must evolve to recognize the commercial value of highly accurate, granular data, creating a sustainable ecosystem where startups can eventually pay for premium MoES data feeds.

#### **Session 4: Startup Open House and Weather Applications**

**Moderators:** Prof. Somnath Baidya Roy, IIT Delhi & Prof. Sridhar Balasubramanian, IIT Bombay

The final panel served as a reality check on the business mechanics of running a climate-tech startup. Prof. Baidyaroy shifted the conversation away from technical data requirements and directly into the realm of scalability, revenue generation, and intellectual property. He challenged the audience to consider whether they truly needed Incubation Centre or if they were merely seeking data access, emphasizing that a successful startup requires a dedicated focus on sales and marketing alongside technical development.

A robust debate emerged regarding the necessity of Intellectual Property (IP) and patents. While traditional venture capital often demands IP for valuation, several founders argued that in the rapidly evolving software and AI space, securing a patent in India is slow and often ineffective against minor algorithm tweaks. Further Dr. Asutosh Acharya advocated for a first-mover advantage and business model innovation. He argued that survival depends on solving immediate, tangible use-cases such as advising a single coffee farmer on sun-drying conditions or helping a municipal collector implement a Heat Action Plan rather than waiting years for a software patent.

The panel also discussed alternative business models beyond the traditional Business-to-Government (B2G) approach, which is often slow in terms of scalability. Mr. Virang Mankad

from Ruvision Ventures Private Limited introduced the idea of developing a “Perplexity for weather,” a natural query-based platform capable of providing probabilistic weather forecasts in a user-friendly manner. He further proposed the co-development of a Digital Public Infrastructure (DPI) for weather services, like India’s Unified Payments Interface (UPI) framework, which could serve as a common platform for startups to build specialized and commercial weather-related applications. Furthermore, Dr. Prasanna Bhogale from Romulan AI Private Limited highlighted the need to modernize legacy systems, emphasizing the opportunity to transform decades-old Fortran codes into optimized, data-driven AI models for defence applications. The session concluded with a consensus that the path toward building a climate-tech unicorn may lie not necessarily in securing proprietary technology, but in executing efficiently and scaling solutions across diverse Business-to-Business (B2B) verticals.

### **Session 5: Modalities of IITM Incubation Centre and Expectations**

**Moderator:** Dr. Anoop Mahajan, IITM

This pivotal session clarified the strategic vision and operational mechanics of the newly inaugurated IITM Incubation Centre. The panel, featuring top leadership including MoES Secretary Dr. M. Ravichandran, IITM Director Dr. Suryachandra Rao, former MoES Secretary Dr. Shailesh Nayak and Mission Director, Mission Mausam, MoES Dr. Praveen Kumar, aimed to establish the ground rules for collaboration between the state apparatus and private enterprise.

A recurring theme was the true definition of "Incubation." Dr. Nayak and Dr. Rao emphasized that startups must bring novel ideas and use-cases to the table, rather than merely viewing the Centre as a repository for free data. The Centre is designed to provide critical infrastructure that is otherwise financially out of reach for bootstrapped startups, such as access to High Performance Computing (HPC), lightning sensor networks, and specialized calibration facilities. Dr. Ravichandran provided an innovative example of crowdsourcing, suggesting the integration of IoT data from car wiper speeds to map hyper-local rainfall intensity, challenging startups to build solutions around such unconventional data streams.

The most intense discussions revolved around intellectual property (IP) and procurement. Addressing concerns from startup founders regarding commercialization, Dr. Ravichandran assured the audience that IITM is not interested in hoarding IP. Drawing parallels to the

ISRO/SAC model, he stated the goal is to transfer technology and empower startups to scale independently. However, the hurdle of government procurement remains. Founders expressed concerns that even after developing highly mature and operational products, they still must compete through conventional government tender processes that mainly prioritize the lowest-cost bids, which can discourage innovation. The panel acknowledged these challenges and discussed possible mechanisms to support startups, including the role of the Incubation Centre as a validation and testing platform. It was suggested that technologies proven within an operational MoES environment could potentially be adopted more efficiently by government and state agencies.

### **Overall Outcomes and Strategic Recommendations**

The WISE–2026 panel discussions collectively demonstrated a maturing weather and climate ecosystem in India, moving beyond academic research into the realm of applied, commercial technology. To ensure the success of the IITM Incubation Centre and the broader MoES mandate, the following strategic recommendations are proposed:

#### **1. Transition from Data Provision to Insight Facilitation:**

End-users across agriculture, energy, and municipal governance do not require raw meteorological data; they require decision-support tools. MoES and IITM must orient their support toward startups that are building the "last-mile" translation layers, turning complex numerical weather predictions into actionable, sector-specific advisories.

#### **2. Establish Open-Access Validation Frameworks:**

Startups face significant hurdles in proving the efficacy of their models to prospective clients. IITM should establish standardized, WMO-aligned benchmarking and validation frameworks. By allowing startups to test their proprietary downscaling algorithms or IoT sensor data against established MoES operational models, the Incubation Centre can provide a highly coveted "stamp of approval" that will aid startups in market penetration.

#### **3. Implement a Tiered Data Commercialization Policy:**

While high-resolution data has immense commercial value, bootstrapped startups cannot afford premium licensing fees. MoES should implement a tiered policy: providing subsidized or free API access to validated, early-stage startups within the Incubation Centre, and transitioning to a revenue-sharing or commercial licensing model once the startup secures institutional funding or achieves specific revenue milestones.

#### **4. Streamline B2G Procurement Pathways:**

The current tender processes are fundamentally misaligned with the procurement of cutting-edge, innovative climate software. The Ministry should explore the creation of regulatory sandboxes or specialized procurement channels. If a startup successfully demonstrates a mature, highly accurate product within the IITM operational environment, there must be a fast-track mechanism for government agencies to procure that technology directly.

#### **5. Prioritize AI-Driven Downscaling and IoT Ground Networks:**

The overwhelming demand from the renewable energy sector for 15-minute temporal data, and from the disaster management sector for village-level spatial data, cannot be met by satellite imagery alone. Strategic priority and funding should be directed toward startups developing AI-based spatial-temporal downscaling techniques and those deploying resilient, hyper-local IoT ground sensor networks to supplement the national grid.