Government of India
Ministry of Electronics and Information Technology
Emerging Technologies Division

Subject: Report on GPAI Sustainable Agriculture Convening

Background

The Government of India, as the Lead Chair for the Global Partnership on AI (GPAI) for 2024, is committed to promote collaborative AI among GPAI Members by supporting projects towards promoting equitable access to critical resources for AI research and innovation, in compliance with applicable intellectual property protections and data protection legislation. As part of this commitment, India had proposed during the GPAI Summit 2023, two new thematic areas, which were included in the GPAI agenda:

- Sustainable Agriculture
- Collaborative AI for Global Partnership

To continue this momentum, the Ministry of Electronics and Information Technology (MeitY) facilitated a virtual domestic convening on March 26, 2024 with stakeholders and credible voices from R&D and academia, technology-based organizations, and non-profits, on leveraging and adopting cutting-edge AI technologies for ensuring sustainable agricultural outputs in the country. Several thematic areas were discussed – such as AI for Customized Agricultural Advice, Interoperability and Contextualization in Agricultural Advisory Systems, and Exploring Sustainable Technologies and Collaboration - preparing the ground for a **Virtual Global Convening on Leveraging AI for Sustainable Agricultural Practices**.

The **virtual global convening** was curated around **three** core pillars:

- **Economic profitability and productivity** of agricultural outputs
- Social and economic **equity of farmers**
- **Climate-resilient** agricultural practices

The convening was held on **3rd April, 2024,** and was attended by GPAI members, experts, global and national stakeholders from the AI and Agricultural ecosystem, including policy experts, government officials, technical consultants, and from non-profit and technology development organisations.

The Republic of Serbia, as the **incoming GPAI chair** represented by Mr. Stefan Badza (Director for Special Projects and Advisor to the PM), provided introductory inaugural remarks on the use of AI in Sustainable Agriculture in Serbia and expressed Serbia's intent on fostering collaboration. This was followed by an introductory presentation on GPAI and the upcoming Innovation Workshop in Paris from the **GPAI Expert Support Centres** represented by Ms. Sophie Fallaha (Executive Director, CEIMIA). The introductory addresses were followed by two insightful keynote speakers:

- Mr. Erez Zaionce - Executive Director, World Economic Forum's Centre for Fourth Industrial Revolution, Colombia
- Ms. Brenda Gunde - Global Senior Technical Specialist, International Fund for Agricultural Development (IFAD), Kenya

The convening saw participation from GPAI members such as the United States of America, United Kingdom, Turkey, Senegal, Brazil, New Zealand, Argentina, Republic of Serbia, Republic of Korea, Czech Republic, Mexico as well as experts from the two GPAI Expert Support Centres of INRIA and CEIMIA.

The convening witnessed prominent speakers from diverse backgrounds, expertise and nationalities contribute to the discussions such as:

- Mr. Fariz T. Jafarov - Executive Director, World Economic Forum's Centre for Fourth Industrial Revolution, Azerbaijan
- Mr. Fabian Bigar - CEO, My Digital Corporation, Malaysia
- Mr. Taehoon Kwon - Sr. Deputy Director, Ministry of Agriculture, Food and Rural Affairs, Republic of Korea
- Mr. Rikin Gandhi - CEO, Digital Green, USA
- Mr. Ram Dhulipala - Sr. Scientist, International Livestock Research Institute, CGIAR, Kenya
- Dr. C.S Murthy - Director, Mahalonobis Crop Forecast Centre, Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India

This convening was part of a series of initiatives planned by India as lead GPAI Chair and served as the precursor for other events and activities in the GPAI calendar as well as the upcoming **GPAI Innovation Workshop, Paris.**

Discussion

The convening spurred discussions on challenges faced by smallholder farmers in Global South countries, existing and potential AI-driven solutions that can address these and the need for collaborative efforts and international cooperation to make progress. Below are key thematic areas highlighted by the esteemed speakers:

- **AI Solution Repository:** A key objective of the convening was to collate a dynamic repository of AI solutions to which global partners can contribute and which ties into the second thematic area of **Collaborative AI**.
- **Government of India's existing AI initiatives in agriculture:** MeitY leadership highlighted existing initiatives such as **CottonAce**, an AI solution implemented by the Ministry of Agriculture and Farmers' Welfare, Government of India, which has resulted in improved crop productivity as well as the impact of AI models that are being used for estimating water requirements for irrigation in the country.
- **Global use cases:** Representative, Incoming Chair, **Serbia** spoke about using sentinel data to enhance crop productivity, which can support decision makers to issue subsidies more effectively, among other use cases.
- **Bridging gaps between theory and practice:** Speakers highlighted the role of coalitions such as the GPAI's, in bridging gaps between theory and practice.
- **AI as a value add:** Speakers agreed that for Global South economies to adopt AI models, there can be financial challenges, which require **increased investment** and demonstrating the immediate benefits of AI.
- **Need to complement traditional agricultural practices with AI:** With growing populations, climate change and rapid urbanisation, AI solutions can accelerate the gains made, multiply incomes of smallholder farmers, deliver more information and better decision support systems to them.
- **Ensuring that benefits of AI are equally distributed:** It is especially critical that AI tools are adopted by **smallholder farmers at scale** and are used at the **community level**, without deepening the existing digital divide.
- **Need to recognize potential challenges:** It is important to identify challenges that are associated with the adoption of AI technologies – e.g. data privacy and ethical considerations –

and accordingly **build the capacity of local stakeholders**.

Breakout Sessions

The convening was designed to flow into three simultaneous breakout sessions (each lasting 40 min.) under the overall theme of AI for Sustainable Agriculture. The sessions were:

- Enhancing **Crop Productivity**
- **Market Access and Financial Services**
- **Climate Resilient Farming**

Each breakout session saw moderation and participation from experts in that particular domain. The moderators invited participants to share opening statements, respond to contextual questions and provide comments, drawing from their unique and localised experiences and expertise. These insights were collated in creative formats leading to further discussions on problem statements and use cases. These sessions not only allowed for focused deliberations but also paved the way for further knowledge exchange.

Key Problem Statements Highlighted

- Lack of effective public private partnerships for accessing AI-ready data
- Absence of indigenous knowledge that can be embedded in datasets
- Lack of impromptu advisories to farmers in the face of acute and sudden weather events
- Need for creating foresight among farmers for improved yield assessments and soil productivity
- Lack of incentives for smallholder farmers to generate and share data
- Challenges in accessing geo-located datasets
- Need for an innovation platform to avoid duplication of efforts by agencies and countries and to ensure development of unique AI solutions

Key Use Cases Highlighted

- Proven use case in Colombia, of using satellite images to generate data and advising farmers on aspects such as use of fertilizers in scientific and evidence-based ways; this intervention has led to 30% less use of fertilizers in the

geography.
- AI use case implemented in partnership between GIZ's Fair Forward and the Local Development Research Institute, Kenya which uses data in local languages on aspects such as crop yields, farm boundaries, localised weather conditions, etc. for predictive analysis to aid farmers' decision making.
- Exploring the potential power of AI in revolutionising advisories to extension officers by leveraging in situ data, imagery, remote sensing and GIS techniques and delivering the information through chat-based platforms.
- Using AI/ML to estimate resource utilisation-. e.g., assessing optimum requirement for water for agriculture practices and accordingly tackling drought and flood situations.
- Using remote sensing technologies to monitor crop cycles including region-specific sowing and harvesting patterns.
- Using radar and AI technologies to identify different crops, monitor their growth and share critical indicators with farmers.
- Increasing use of AI to develop financial products for farmers for functions such as credit scoring.
- Using AI to bridge the widening gaps between buyers and sellers by monitoring buying trends and accordingly advising farmers on crop growth.
- Application of drone data and use of AI in horticulture to calculate trees, bushes and assess their health.

<u>Outcomes</u>

- *Number of attendees:* 95
- *Number of breakout rooms:* 3
- *Number of countries represented:* 24
- *Attendee profiles:* Government, Think tanks, Private sector, Academia, International organisations

Prominent representation:

- Ministry of Electronics and Information Technology, Government of India
- CEIMIA
- INRIA
- Ministry of Agriculture and Farmers' Welfare, Government of India

- Ministry of Agriculture, Food and Rural Affairs, Republic of Korea
- Ministry of Foreign Affairs, Government of Mexico
- Ministry of Foreign Affairs, Government of the Czech Republic
- Ministry of Science, Technology and Innovation, Government of Brazil
- New Zealand High Commission
- United States Department of State
- International Fund for Agricultural Development
- World Wide Fund
- World Bank
- International Telecommunication Union
- Consultative Group on International Agricultural Research
- Center for Analysis and Coordination of the Fourth Industrial Revolution of Azerbaijan
- Syngenta Group, Switzerland
- National Institute of Plant Genome Research, India
- World Economic Forum
- The Institute of Agricultural Economics, Serbia
- Finance and Risk Management (FaRM) Consulting, Germany
- Cropix, Switzerland
- EuroGroup Consulting, France
- University of Florida
- IIT Mumbai
- Bill & Melinda Gates Foundation
- Wadhwani Institute for Artificial Intelligence