



Food and Agriculture
Organization of the
United Nations



Forum summary report

FAO-ITU

Digital Agri Solutions Forum 2023

Location [Bangkok, Thailand]

Date: 27th and 28th September 2023



1. Introduction

The Digital Agri Solutions Forum for Asia and the Pacific (DASF), held from 27th September 2023 till 28th September 2023 in Bangkok, Thailand, was jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the International Telecommunications Union (ITU) under the theme “From solutions to ecosystem development: Scaling up promising digital innovations and lowering barriers to deployment and the persistent digital divide”. This was the fourth DASF event and had a vastly different context to the previous three events as the COVID-19 pandemic underlined the need to accelerate the adoption of digital innovations within agri-food systems across the Asia and Pacific. The Forum aimed to foster knowledge sharing on digital solutions and innovative initiatives that reduce the digital divide, and enhance availability, access, and affordability of digital tools. It also aimed to promote policy dialogue and facilitate the exchange of programs and partnerships to drive large-scale investments for accelerating digital agriculture transformation globally. Targeting policymakers, agritech startups, tech developers, civil society, academia, international organizations, and the private sector, the event also aimed to encourage young agritech entrepreneurs, startup founders, and enablers from the Asia-Pacific region to participate, share their story and thus foster collaboration and innovation in digital agriculture.

2. Meeting Summary

The Digital Agri Solutions Forum 2023 (DASF) was held from 27-28 September, 2023 at Bangkok, Thailand. The Forum was attended by in-person (53 participants) and online (97 participants on 27 Sep and 50 participants on 28 Sep).

The event began with opening remarks from Mr. Jongjim KIM, Assistant Director-General and Regional Representative to Asia and the Pacific, Ms. Atsuko Okuda, ITU Regional Director for Asia-Pacific, Mr. Maximo Torero Cullen, Chief Economist, Food and Agriculture Organization of the United Nations (FAO) and Mr. Nortachard Chinta Kanond, Executive Director International Affairs Bureau, NPTC Thailand. The event had 7 sessions across two days, with the first day having four sessions on different themes, namely:

- Accelerating Agrifood and Rural Digitalization: from ambition to action
- Digital agriculture solutions: Success stories of agritech applications, models and platforms from Asia in support of agrifood transformation
- Fostering digital agriculture ecosystems: Successful initiatives for promoting agritech startups, SMEs and social enterprises
- FAO Digital Village Initiative: Knowledge Portal demonstration of new dashboard and examples of digital villages and digital innovations in Asia

The second day had 3 thematic sessions, which included:

- Digitalization in the Pacific: Towards building smart islands and smart villages and towns
- Youth entrepreneurship and the agritech startup ecosystem: Successful stories from young startup founders in Asia
- Scaling up successful digital innovations: Examples of successful models in partnerships in digital agriculture and inclusive digital finance

An open tour of the exhibition hall was also held at the meeting venue which had several digital solution companies exhibiting and demonstrating their products and services.

The sessions were led by a session moderator and (depending on the theme), had panel participants from diverse backgrounds including policymakers, agritech startup founders, tech developers, civil society, academia, international organizations, and the private sector. The participants in each panel gave detailed presentations, discussed key relevant points and answered questions from the audience.

The event ended with a summary of events provided by representatives from ITU and FAO that underlined the key take home messages from the Forum. The summary outlined the importance of agri-food transformation and of digital connectivity and how sustainable digital transformation can be promoted leveraging the whole-of-government approach across Digital Villages, Smart Villages and Smart Islands that FAO and ITU are working respectively on. Use cases and examples of interventions involving artificial intelligence, IoT, remote sensing and satellite imagery services were showcased from different countries including a discussion on challenges stemming from data privacy, ethics and reliability from using these services. The discussions covered critical areas within agri-food transformation including water, bioinformatics, livestock management and crop health. The role of governments and examples from different countries on the strategies and policies they have used to promote technological adoption, innovation and encourage tech-startups across the agri-food sector were also discussed in detail.

FAO's Digital Village Initiative and ITU's Smart Island and Smart Villages initiative were prominently discussed in detail on how technology is bringing about a change in remote areas through community led initiatives. This demonstrated how innovation from the grass root level began once access to technology and skills were provided. Also part of the discussion was the progress on the narrowing of the gender divide in digital agrifood systems in the Pacific along with a concrete example of how United Nations agencies work together on deploying and scaling up technology through joint collaboration. A number of youth agritech startup founders from different countries were also invited to share their journey in digital innovation for agri-food, as part of a study on agri-tech startup innovation in the region. The event's last session was on digital finance and gender inclusion and how to scale up innovations and investments.

3. Presentations and Discussions

Session 1: Accelerating agrifood and rural digitalization: from ambition to action

Speaker 1: Mao Neang, Under Secretary of State, Ministry of Post and Telecommunications, Cambodia

Key Points Covered: Mr. Mao Neang outlined Cambodia's agricultural landscape and said that the government's key goals include enhancing productivity, reducing costs, and promoting competitiveness and sustainability, with digital technology as a central strategy. He highlighted the importance of R&D, public-private partnerships, and product specialization, citing "one village, one product" programs as an example and emphasized that Cambodia's digital transformation is guided by policy and governance frameworks built on digital connectivity and trust. Future priorities focus on three pillars: Digital Citizen (improving digital literacy and security), Digital Transformation (modernizing information access), and Digital Business (developing the digital economy). Digital skills education, including AI and blockchain, is also being integrated into schools to prepare the next generation.

Speaker 2: Wang YaoZong, Ministry of Agricultural and Rural Affairs, China

Key Points Covered: Mr. YaoZong emphasized that rural digitalization is key to China's modernization. By 2021, broadband reached 100% of administrative villages, with over 99% having fiber optic and 4G access, alongside a growing 5G network. China promotes smart agriculture through IoT, AI, big data, and drones, improving efficiency in rice and cotton farming while reducing costs. In 2021, 25.4% of agricultural production was digitalized, with 11.2% of crops using drones and 24.4% of machinery equipped with BeiDou navigation. Mr. YaoZong said that rural e-commerce in China is expanding, with RMB 2.17 trillion in online rural sales in 2022. The government also enhances digital literacy, training 200 million farmers and developing a national agricultural cloud platform with 12 million users, providing free technical support and services.

Speaker 3: Mr. Waqas Rashid, Additional Secretary Planning, Government of Punjab Agriculture Department, Pakistan

Key Points Covered: Mr. Waqas Rashid highlighted Pakistan's digital agriculture initiatives, particularly in Punjab, to address climate change, food security, and mechanization challenges. One of the key initiatives taken is the Extension 2.0 program which digitized farm areas introduced grid-based soil sampling and provided 1.2 million farmers with soil reports. 3,600 tablets were distributed to extension workers for on-field implementation. Other key initiatives include the E-Credit Scheme for interest-free loans, CAPP for weather and market insights, and the Kissan Card for digital credit access.

Speaker 4: Mr. Robby Darmawan, Director of the Center of Data and Information System (CADIS), Ministry of Agriculture, Indonesia

Key Points Covered: Mr. Robby Darmawan discussed Indonesia's digital agriculture challenges, focusing on engaging millennial farmers and shifting from traditional to smart farming. Most farmers are older smallholders with limited ICT access and digital literacy, making technology adoption difficult. To address this, the government collaborated with farming communities to improve rural telecommunication infrastructure and promote digital awareness. A key challenge is the large number of stakeholders in the supply chain, prompting efforts to help farmers market products directly to consumers. He emphasized that ICT adoption requires a community-based approach involving all stakeholders.

Session 2: Digital Agriculture Solutions – Success Stories of Agritech applications, models and platforms from Asia in support of agrifood transformation

Speaker 1: Mr Krishnan Pallassana, Managing Director India, lead South Asia

Key Points Covered: Mr. Krishnan emphasized that digitalization is essential for agriculture, citing an example of farmers using Google Translate to overcome language barriers. Digital Green, a nonprofit tech startup, replaced costly pamphlet-based extension services with video-based advisory in local dialects, reducing adoption costs by over 10 times and reaching 4 million farmers. They trained 54,000 extension agents and built a vast video library in collaboration with governments.

Their next step is AI-powered conversational extension services, providing customized, on-demand advisory via text or voice. The open-source service is free, funded by donor partnerships. Private sector players can integrate and build commercial models. Digital Green aims to enhance low-literacy and offline farmers' access while continuously improving AI accuracy.

Speaker 2: Mr. Naveed Alam, CEO, inFarmer, Pakistan

Key Points Covered: Mr. Alam gave a presentation on the features of inFarmers digital agriculture solutions. InFarmer develops digital solutions for water and climate risk management using satellite data to provide actionable advisories for farmers. Their smartphone app allows farmers to trace land boundaries, receiving real-time insights on irrigation, crop health, and expected yield. Features like Crop Top and Crop Doctor help identify unhealthy crops for intervention. Their B2B2C model serves agri-businesses, government, and agro-processors, offering parametric crop insurance for rain, heat stress, and yield loss. Their virtual control room enables real-time monitoring of insurance and climate risks which has allowed them to become a pioneer in parametric crop insurance in Pakistan.

Speaker 3: Ms. Alisa Vangnai, CTO of BIOM

Key Points Covered: BIOM, led by Ms. Alisa Vangnai, develops bio-based agricultural products using biotechnology and digital tools to promote sustainable farming in Thailand. Their bio-stimulant contains microbes that clean and enrich soil, reducing chemical contamination. BIOM also created a detoxifying enzyme for washing fruits and vegetables, offering a natural, effective alternative to traditional products. While not replacing pesticides, BIOM provides peptide-based solutions for plant diseases in tomato, basil, and durian. The company focuses on biotech R&D, aiming to expand its technology across the industry.

Speaker 4: Mr. Kwang Myung Jeon, CEO, InFlow Inc

Key Points Covered: Mr. Kwang presented Korea's smart livestock management solution addressing workforce shortages as 43% of farm owners are over 65. Their AI-powered system for pig farms uses mounted cameras to count pigs, estimate weight, and optimize sorting, reducing labor needs. Another feature predicts insemination cycles and tracks weight gain in real-time, storing data in the cloud for smartphone access. The patented system serves 50 clients in 10 countries, managing 200,000 pigs with 98% accuracy. Using neural networks and 2D/3D modeling, they trained their AI with virtual farms. Future plans include AI-driven disease prevention for livestock.

Session 3: Fostering digital agriculture ecosystems: Successful initiatives for promoting agri-tech startups, SMEs and social enterprises

Speaker 1: Mr. Kwon Taehoon, Deputy Director, Smart Agriculture Division of MAFRA, Korea

Key Points Covered: Mr. Kwon Taehoon highlighted Korea's aging farm labor and the lack of youth interest in agriculture as key challenges. To address this, the government's strategy focuses on human capacity building, scaling up high-quality firms, and developing R&D infrastructure. One initiative, Smart Innovation Valley, offers smart greenhouses, young farmer training, and data centers. Each of the 4 Innovation Valleys recruits 200 young farmers annually, providing education and seed funding. It also supports startups with ICT services, data collection, and testing facilities. The big data center analyzes farm data, aiding young farmers and generating marketable insights for companies.

Speaker 2: Mr. Longbao WEI, Director Institute of Food and Agribusiness Management, Zhejiang University in China

Key Points Covered: Mr. Longbao Wei discussed China's rural and digital transformation, emphasizing the government's key role in fostering technological innovation and supporting private enterprises. He highlighted Zhejiang Province, which has become a leader in digital agriculture, with over 2,400 e-commerce villages and 6.5 million farmers turning into entrepreneurs. Zhejiang

University plays a vital role by offering agri-science courses and collaborating with leading tech firms like Alibaba. Successful digital innovations, such as TikTok e-commerce, have helped farmers boost sales. Wei stressed that government, universities, and farmers must collaborate for successful digital transformation in agriculture.

Speaker 3: Mr. Radasiri Wachirapunyanont, the Regional Innovation Hub Manager from Thailand

Key Points Covered: Mr. Radasiri spoke about the Water and Energy for Food (WE4F) program which he explained is a multi-donor initiative focused on improving food production while reducing water and energy use across 15 countries. It supports smallholder farmers through digital innovations like IoT solutions and apps, aiming to increase income and promote climate resilience. WE4F works with startups, offering technical assistance, research support, and network expansion. They ensure solutions cater to both men and women farmers and facilitate investment connections. They have supported 40 innovators, reaching 1 million users. WE4F also emphasizes policy work and expanding its gender-inclusive approach to agriculture.

Speaker 4: Mr. Srikanth Rupavatharam, Head of Innovations Hub, ICRISAT and Senior Scientist Digital Agriculture

Key Points Covered: Mr. Srikanth discussed the ICRISAT Innovations Hub, which was created to bridge science and the private sector. The hub collaborates with solutions like Plantix, which serves 25 million farmers across 160 countries, improving field performance by 75%. Data from apps like Plantix aids research and product refinement. He highlighted innovations such as low-cost aflatoxin detection and emphasized the role of science in developing sustainable agricultural tech. He also stressed the importance of partnerships and collaborations to ensure successful, scalable solutions in agriculture. Mr. Radasiri said that for him there are two key ingredients which are collaborations across the sector, collaborations across countries and the belief that startups can learn from similar challenges in other countries. Mr. Srikanth said that the government should have a facilitating role but the lead has to be taken by innovators and the private sector because their commercial success depends on it. Private players also need to be self-sustainable and not depend on government funds and grants.

Session 4: FAO Digital Village initiative Knowledge Portal Demonstration of new Dashboard and examples of digital villages and digital innovations in Asia

Speaker 1: Mr. Aziz Elbehri, Senior Economist (FAORAP)

Key Points Covered: Mr. Aziz Elbehri presented FAO's Digital Village Initiative (DVI) Knowledge Platform and Dashboard, aimed at supporting digital transformation in agriculture. DVI is a country-led initiative focused on documenting, supporting, and promoting scalable innovations for rural agri-food transformation. FAO collaborates with countries like Mongolia, Vietnam, Indonesia, Bangladesh,

and Thailand to develop smart villages and digital solutions. The Dashboard provides a platform for sharing best practices, innovations, and success stories, making digital agriculture more accessible globally.

Speaker 2: Mr. Ajmal Anwar Awan, Ministry of Information Technology and Telecommunication, Pakistan

Key Points Covered: Mr. Ajmal discussed last-mile digital services in Pakistan's first smart village, established with ITU. Services include tele-education (Tele-Taleem) and tele-health (Sehat Kahani), where 100 girls receive quality education and 1,300 patients benefit from video consultations with female doctors. The smart village model aims to address poverty, healthcare, education, and gender gaps in rural areas. Future plans include agriculture and e-tourism training, and the National Incubation Center supports agri-tech startups. He concluded that with government support for digital transformation, smart villages would drive inclusion and improve rural living standards.

Speaker 3: Mr. Preesan Rakwatin, Deputy Director, Digital Economy Promotion Agency (DEPA), Thailand

Key Points Covered: Mr. Preesan Rakwatin discussed DEPA's efforts in piloting smart technologies for rural communities in Thailand. DEPA supports SMEs and the agriculture industry by matching them with digital solutions and providing cost-sharing for investments. Key initiatives include IoT watering systems, drones for pesticide spraying and illegal fishing monitoring, and the Moo Ban App for emergency alerts. DEPA also fosters an ecosystem for startups with incentives like tax exemptions and regulatory sandboxes, aiming to enhance digital literacy, improve public services, and boost rural income and tourism.

Speaker 4: Mr. Wang Yaozong, Ministry of Agriculture and Rural Affairs, China.

Key Points Covered: Mr. Wang Yaozong highlighted successful digital transformation stories in rural China. In Ban Niu Village, e-commerce boosted sales of mountain walnuts, creating 400 jobs and increasing income. Bediahuang Group in Heilongjiang transformed agriculture through a mobile app, expanding services to 26 regions. The app integrates land management, loans, insurance, and more. In Dequing County, a Digital Lifestyle Services Station uses big data to offer healthcare services, enabling remote health monitoring for residents and improving rural life quality. These examples demonstrate how digital technologies drive economic growth and enhance services in rural communities.

Speaker 5: Ms. Tha Tu Trang, IPSARD, Vietnam

Key Points Covered: Ms. Trang discussed Vietnam's digital economy, projected to reach USD 49 billion by 2025, with ICT being a fast-growing industry. She explained the concept of a smart village,

where rural communities leverage technology for sustainable development, narrowing the rural-urban gap. Pilot smart villages in Yen Hoa and Ha Thanh use digital solutions in agriculture, healthcare, and tourism, with e-commerce platforms like PostMart and tele-health services. Key lessons include the need for collaboration between central and local authorities and private sector participation to ensure successful implementation and expansion of digital solutions in rural areas.

Speaker 6: Mr. Mridul Chowdhury, CEO of mPower

Key Points Covered: Mr. Mridul Chowdhury introduced mPower, a social enterprise from Bangladesh focused on two key innovations. One is a cattle identification system using machine learning for low-cost insurance in place of RFID. The other is Geo Potato, which helps farmers prevent late blight disease in potatoes by tracking climatic parameters. mPower also provides Shufola, a weather-based advisory for various crops, and telemedicine services for livestock, offering digital prescriptions. Their business model follows a B2B2C approach, impacting 100,000 farmers in Bangladesh with solutions that improve agricultural productivity and livestock care.

Session 5: Digitalization in the Pacific: Towards building smart islands and smart villages and towns

Speaker 1: Mr. John Jack, Deputy CIO, OGCI, Vanuatu

Key Points Covered: Mr. John Jack discussed Vanuatu's challenges and the ITU and Government of Vanuatu Smart Islands pilot program in South Malekula. The island faces issues like unreliable connectivity, low digital literacy, poor digital services, and high transportation costs. The program aimed to improve telecommunications, digital literacy, sales and marketing, financial services, education and energy access in the islands. By partnering with telecom operators, government agencies, and training institutions, the program proved to be relevant to the community's needs. For example, farmers gained digital skills, enabling them to access information, improve agricultural practices, and even export products like Kava, casava and coconut oil. The program also introduced solar grid power and partnered with financial services like M-Vatu. To ensure sustainability, a governance mechanism was set up to engage stakeholders and support Smart Islands in the long-term.

Speaker 2: Mr. Joseph Nyemah from FAO, Samoa

Key Points Covered: Mr. Joseph discussed FAO's efforts in the Pacific to enhance gender equality and food security using digital solutions. His presentation highlighted challenges like limited digital infrastructure, vulnerability to global shocks, and dependency on imports. Under the DVI initiative, 8 digital villages in 8 Pacific countries will pilot digital agri-food systems by 2024, aiming to increase productivity and trade for small-scale producers. Case studies included Fiji's Climate Resilient School

Gardening Initiative, promoting sustainable agriculture with equal gender participation, and a project in Samoa empowering women and youth in fisheries and agriculture. Collaboration and community engagement are key for success.

Speaker 3: Mr. Kanagat Alyshbaeyv, Project Officer, ITU

Key Points Covered: Mr. Kanagat presented the EU-STREIT PNG program, focused on digital agriculture solutions to boost rural entrepreneurship and economic development. The program consists of two components: sustainable value chain development (led by FAO) and climate resilience and value chain efficiency (in collaboration with five UN agencies FAO, ILO, ITU, UNCDF and UNDP). Initiatives include developing provincial e-agriculture strategies, establishing financial access points, providing renewable energy, implementing MIS for cocoa, vanilla, and fisheries, enhancing digital skills, and creating an e-marketplace. By June 2023, the program reached 435,000 individuals, benefiting 72,600 families and training 23,300 farmers. It also has synergy with ITU's Digital Government, Smart Villages, and Digital Transformation Centre programs.

Speaker 4: Ms. Tamara Nicodeme, IFAD PIRAS Regional Coordinator

Key Points Covered: Ms. Nicodeme discussed IFAD's ICT4D strategy and its work in the Pacific region, with an investment of USD 420 million. Key initiatives include the Pacific AgriHack competition (2018), a crowdsourcing market price assessment (2020), and a Tonga Food Security Dashboard. The My Kana app promotes home gardening, nutritional diversity, and food security, offering information on gardening, pest management, and recipes. Launched in January 2020, the app has over 5,000 downloads and 1,100 active users. The Traceable app also provides traceability solutions for agri-products, with 90,000 registered farmers in Fiji. These innovations support Pacific farmers, especially during disruptions like the COVID-19 pandemic.

Session 6: Youth entrepreneurship and the agri-tech startup ecosystem: Successful stories from young startup founders in Asia

Speaker 1: Ms. Sumaiyah Mousinin, co-founder of Deshifarmer, Bangladesh

Key Points Covered: Ms. Mousinin detailed her journey to founding Deshifarmer. She said her career began in the garment industry, where she was inspired to create a business that also had a social impact. In 2018, her co-founder launched Deshifarmer as a milk-focused platform, but it faced challenges due to a fragmented supply chain. During the pandemic, Ms. Mousinin researched the market, visited farmers, and pivoted the business to a fresh produce supply chain in 2021. She raised funds and created a platform offering farmers agri-inputs, financial support, and insurance, helping to onboard 26,000 farmers in just two years.

Speaker 2: Mr. Jie SHEN, CEO of Celefish, China

Key Points Covered: Mr. Jie Shen, founder of Celefish, a smart aquaculture startup, shared his experience in transforming traditional agriculture with digital solutions. With a background in fish farming and IoT, he saw challenges in China's aquaculture, such as environmental restrictions, inefficient supply-demand matching, and a lack of data for decision-making. Celefish's solution is a digital service for smart recirculating aquaculture systems (DFV), using IoT to monitor water quality, provide quality control, and support supply chain management. Their business model charges farmers for data and value-added services, aiming to reach 1 million farmers in five years. Mr. Shen emphasized the need for integrating digital technology with agriculture and fostering collaboration between governments and enterprises. Lastly, he mentioned that the innovation of the digital agriculture ecosystem requires the standardization of data.

Speaker 3: Mr. Muhammad Bukhari, co-founder Farmdar (Pakistan)

Key Points Covered: Mr. Bukhari, co-founder of Farmdar, started his career at Cobra, then worked at McKinsey and British Telecom. With a farming background, he leveraged his skills to solve agricultural challenges in Pakistan. After recognizing a lack of localized precision farming solutions, he developed Farmdar's first products on his own farm. The company saw rapid growth, covering 60,000 acres in its first year and expanding to 10 million acres by 2022. They focus on corporate farming, particularly sugarcane, and now operate in Pakistan, Brazil, and Peru. Farmdar's B2B2C model has been successful, increasing profits for farmers and clients alike.

Speaker 4: Ms. Utari Octavianty, COO and co-founder of Aruna (Indonesia)

Key Points Covered: Ms. Utari, co-founder and COO of Aruna, created the company to improve livelihoods for Indonesia's impoverished fisherfolk. Aruna connects 40,000 fishermen to domestic and international markets, offering technology, gear, training, and fair prices. It exports seafood to 8 countries, providing traceability and sustainable practices. By empowering local communities, offering market access, capital, and insurance, Aruna ensures fishermen can earn twice the average wage in Indonesia, benefiting both fishermen and consumers with better seafood trading efficiency and sustainability.

Speaker 5: Mr. Phuvin Kongsawat, CEO of Easy Rice (Thailand)

Key Points Covered: Mr. Kongsawat introduced Easy Rice, an AI-powered platform for the rice industry, focused on improving rice quality and increasing income. Launched in 2019, Easy Rice offers two solutions: rice quality and paddy variety inspections, both faster and more accurate than traditional methods. The quality inspection is 10 times faster and 30% cheaper, with 95% accuracy. The company has inspected over 6 million tons of rice and processed 500,000 transactions. It has received ISO/IEC29110 certification and plans to introduce a nutrient inspection feature with 92% accuracy. Easy Rice aims to reduce the USD 4.5 million rejection cost in the industry.

Session 7: Scaling up successful digital innovations: Examples of successful models in partnerships in digital agriculture and inclusive digital finance

Speaker 1: Ms. Maria Perdomo, Regional Coordinator for UNCDF

Key Points Covered: Ms. Perdomo introduced UNCDF, a hybrid UN agency supporting agri-tech innovators to reduce poverty and promote sustainable development. Focused on unlocking private and public capital, UNCDF supports countries through grants, loans, technical assistance, and blended funds. She highlighted their work in the Pacific, such as partnering with AgUnity in Papua New Guinea to digitize farming with mobile platforms, improving market access and financial services. She also mentioned Nepal, where UNCDF helped digitize value chains and create digital wallets for 430,000 farmers. UNCDF in collaboration with private sector partners, insurance companies and digital solution developers has also designed and implemented an insurance based product that safeguards farmers from the effects of natural disasters where fishing nets and other equipment is damaged.

Speaker 2: Ms. Alreena Renita Pinto from World Bank

Key Points Covered: Ms. Alreena Pinto discussed the World Bank's efforts in promoting digital finance in India, focusing on mobilizing women into Self-Help Groups (SHGs) for group lending and facilitating access to formal financing. The World Bank has processed INR 85 billion in loans, with a focus on financing women-run enterprises. They use ICT tools for credit assessments and have piloted risk-sharing models. A notable example is blended financing in Tamil Nadu. She also explained the Digital Public Infrastructure (DPI) application which is an in-house application which has been developed to cover the end-to-end loan cycle from sourcing to payment. The Digital Public Infrastructure (DPI) application streamlines loan processing, with the next logical step being to create a national web portal for loan applications and digital repayments.

Speaker 3: Mr. Tim Scheffman, CEO of LTC Ventures (LAO PDR)

Key Points Covered: Mr. Scheffman from LTS Ventures discussed digitizing village funds in Laos to enhance transparency and prevent fraud. Their platform enables data analysis, secure fund transfers, and empowers women with financial literacy and independence. Serving 27 ethnicities with 51% female users, the platform supports 10,000 transactions daily. Women use loans for activities like agriculture, trade, and education. The company also helps development agencies target funds effectively. Expanding to Cambodia and Vietnam, LTS Ventures aims to include bill payments and finance agriculture value chains, emphasizing village banking as a tool to reduce poverty, especially in farming communities.

Speaker 4: Mr. Krunal Prasad, co-founder and COO of CropIn

Key Points Covered: CropIn is an ag-tech platform founded in 2010, focusing on integrating organizations across the agri-value chain for efficiency. With offices in India, the US, Netherlands, and Kenya, it offers a data-powered platform for stakeholders. Over the years, CropIn has evolved through phases, including developing an AI Lab and building the world's first intelligent agriculture cloud. Their services support advisory, decision-making, climate-smart strategies, and traceability. They cover 30 million acres across 92 countries, empowering farmers, including women, with knowledge and access to credit. CropIn's B2B model has boosted farmer incomes by 38%, improved their ability to pay expenses by 32%, and increased crop production by 31%.

4. Key Outcomes

The DASF 2023 forum resulted in the following key findings and conclusions:

- Adoption of digital technology is instrumental in achieving inclusivity, sustainability and productivity
- Digital connectivity, digital infrastructure and digital literacy emerge as a key enabler of adoption of digital services and strong cyber security policies promote trust and confidence among users
- Services like free smartphone literacy trainings for farmers, access to information on production supply, e-extension and digitizing government services like registration for subsidies can remove barriers to adoption of technology within rural areas
- Digital ICT technologies can help farmers to market their product directly to end consumers at a better price
- Implementation of ICT in agriculture must involve all stakeholders – including government
- Ineffective extension is a global problem. Complex science-based advisories should be converted to a format and language that farmers can understand to increase adoption and behavioral change
- AI can be used to build quick to respond conversational, engaging, personalized e-extension services that are cost effective and increase productivity and have potential to reach women while capturing key data points
- Farmers need to become co-creators for digital solutions to be successful
- Digital solutions can provide agency to farmers, especially women
- Open-source solutions may allow other ecosystem actors to develop their own suite of services using already developed technology and without the need to reinvent the wheel
- B2B2C business models, where traditional agri-businesses, the government and contract farming organizations are targeted, are often suitable for remote sensing, science-based data and crop insurance solutions. These solutions can be offered to farmers and bundled as part of solutions which these traditional agri-businesses and government organizations already offer

- Text-to-speech features in e-extension based applications allow farmers that are not digitally literate to also use the application
- Digital solutions can reduce the cost and dependency on availability of labor for certain tasks
- Digital initiatives that provide an ecosystem of services that allow the development, testing and experimentation of new potential services clubbed with relevant training in an entrepreneurship program, can create interest among the youth and influence them to adopt farming and agri-tech
- Digital initiatives that bring together a large number of potential farmers and agri-tech startup developers for trainings and for solution development may sow the seed for connections and potential partnerships
- Offering ample opportunities for training through training centers, incubators and accelerators can facilitate the growth of entrepreneurial agriculture solutions
- Even with infrastructure and technology present, the participation of government universities and farmers are the key to make a successful solution
- Linking technical assistance and support to quantifiable targets is imperative to maintain a focus on growth
- Providing access for startups to a network of investors and facilitating those connections can improve sustainability for digital solution developers and allow them to develop new features
- Viewing technical assistance, especially on service design and user interface, through a gender lens allows services to be developed that are equally easy to use and relevant for both men and women
- Science-backed institutions and technology breakthroughs by universities can be used by the private sector to take things forward and develop relevant features and services for farmers
- Startups can collaborate across the sector, across countries and can learn from similar challenges faced in other countries
- Private sector players should aim to be self-sustainable and reduce dependency on funding and grants
- E-health and e-education solutions can be used to offer high quality of services to rural residents, including women, that also save the cost and time required to travel for accessing these services physically
- Making the production process of agricultural produce more transparent through technology can guarantee the quality of the produce. Similarly, using data to create accurate customer profiles can facilitate precision marketing of produce and result in higher sales and more efficient utilization of marketing funds
- Close cooperation between central and local authorities in designing, planning and implementing models can catalyze success
- Collaborating with governments and global actors who have experience in dealing with issues such as particular pest diseases can help to develop localized, customized solutions that create greater impact

- Providing farmers access to technology and digital infrastructure can enable them to learn and apply new techniques and skills on producing and marketing their products
- Setting up a governance mechanism is important for smart islands and digital village initiatives to be sustainable in the long run and engage a broad range of stakeholders
- Collaboration, community engagement and digital skills are can drive innovation at community level and also narrow the gender divide in using digital technologies for agri-food systems
- Business to business to consumer (B2B2C) business models for agri-tech solutions involving satellite data and remote sensing have promising potential for entrepreneurs and startups
- A holistic approach and efficient cooperation mechanisms engaging governments, academia, incubators and private sector will help develop the ecosystems to enhance sustainability.

5. Next Steps

FAO and ITU continue to share knowledge on digital solutions for agriculture with stakeholders.

6. List of Participants

Annexure1: List of Online Participants 27th Sep 2023

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Annexure2: List of Online Participants 28th Sep 2023

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Annexure 3: List of Participants at the venue

SNo	Name	Organization	Participation Type
1	Ahmed salem Alabdi	Graduating	Panelist
2	K.M. Jeon	Intflow Inc.	Panelist
3	Haji Muhammad	SAWiE Ecosystems (Pvt. Limited) Pa	Panelist
4	Fouad Riaz Bajwa	Digital Dera (Climate Resilient Smart	Panelist
5	Victor Afari-Sefa	International Crops Research Institute	Panelist
6	Tim Scheffmann	LTS Ventures	Panelist
7	Ajmal Anwar Awan	Ministry of Information Technology &	Panelist
8	Anika Murarka	Wadhvani AI	Panelist
9	Raddasiri (Bes) Wachirapunyanont	Water and Energy for Food	Panelist
10	Utari Octaviany	Aruna Indonesia	Panelist
11	Eva Galvez Nogales	FAO	Panelist
12	Krishnan Pallassana Vaidyanatha Sarma	DIGITAL GREEN FOUNDATION	Panelist
13	ASHISH NARAYAN	ITU	Panelist
14	Yaozong Wang	Ministry of Agriculture and Rural Affai	Panelist
15	Tanvir Quader	Aspire to Innovate(a2i)	Panelist
16	Ta Thu Trang	Information Center for Agriculture and	Panelist
17	Phuvin Kongsawat	Easy Rice Digital Technology	Panelist
18	Muhammed Bukhari	Farmdar	Panelist
19	Kanagat Alyshbaev	International Telecommunication Unio	Attendee
20	Aidil Razeek	Malaysia Digital Economy Corporatio	Attendee
21	Shinjae Kim	FAO	Attendee
22	Navin Sinnathamby	Malaysia Digital Economy Corporatio	Attendee
23	Najihah	Malaysia Digital Economy Corporatio	Attendee
24	Tshering Delkar	FAO	Attendee
25	JAVARIA ASHIQ	Nuclear Institute of Agriculture and Bi	Attendee
26	Manilath Kinphounsinh	Ministry of technology and communica	Attendee
27	Muzamil Afzal	Asian Institute of Technology	Attendee
28	Mridul Chowdhury	mPower Social Enterprises Ltd.	Attendee
29	Sakdipon	University of the Chamber of Commer	Attendee
30	Syed MD Fahim	Deshifarmer Limited	Attendee
31	Minseok Jang	Intflow	Attendee
32	Junior Latu	Ministry of Communications and Infor	Attendee
33	Soma Dhavala	Wadhvani AI	Attendee
34	Salman Mohammad	Wadhvani AI	Attendee
35	Chandan Agrawal	Wadhvani AI	Attendee
36	Bohee Kim	Intflow Inc.	Attendee
37	Pongsagorn (ART)	Water and Energy For Food (WE4F)	Attendee
38	Cathy CAO Xi	FAO RAP	Attendee
39	Sharbendu Banerjee	FAO	Attendee
40	Stephane PASSERI	UN FAO	Attendee
41	Nguyen Ngoc Linh	Morning Glory Inc.	Attendee
42	Ugyen Namgay	Government Technology Agency, Bhu	Attendee
43	Florencia Serale	UN-Habitat	Attendee
44	SYED MD FAHIM	DESHIFARMER	Attendee
45	Bohee Kim	Intflow Inc.	Attendee
46	SRINIVAS BOLLAM	International Crops Research Institute	Attendee
47	DELGRMAA Dambadarjaa	Communications Regulatory Commiss	Attendee
48	Md. Sayed Ali	Ministry of Commerce, Bangladesh	Attendee
49	Theerameth Kijteng	Easy Rice Digital Technology Co., Ltd	Attendee
50	Doan Anh Vo	EASY RICE DIGITAL TECHNOLOGY	Attendee
51	Pham Bao Duy	Easy Rice Digital Technology	Attendee
52	Khatiwada Purushottam	Ministry of Communication and Inform	Attendee
53	Mr Kannapat Thontanyakul	Office of The NBTC	Attendee