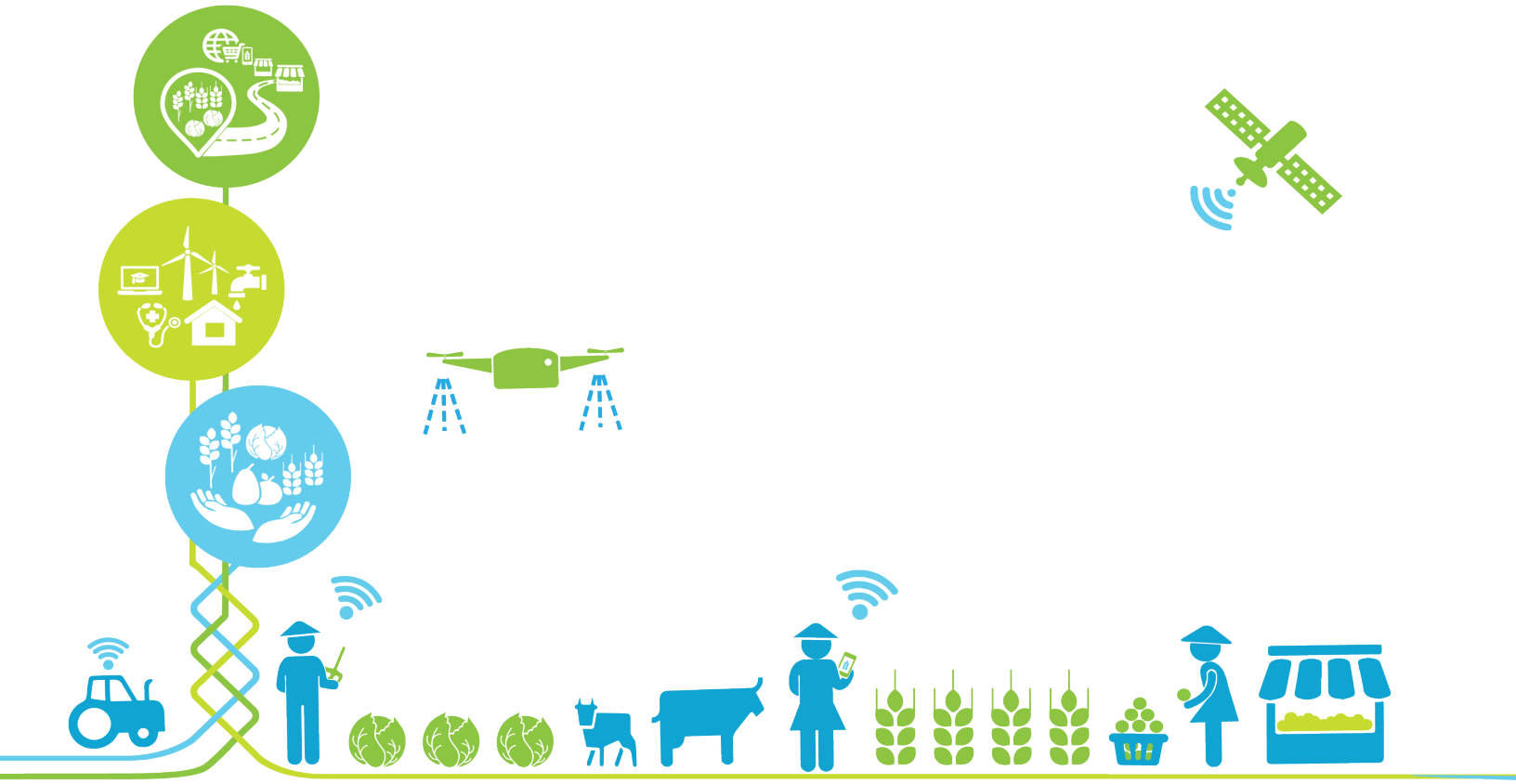

RURAL DEVELOPMENT AND FOOD SECURITY FORUM 2019 PROCEEDINGS

DECEMBER 2020

ASIAN DEVELOPMENT BANK

ADB

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ADB President Takehiko Nakao stepped down as President on 16 January 2020.
In this publication, "$" refers to United States dollars.
ADB recognizes "China" as the People's Republic of China.
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Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AWD	alternate wet and drying system
CIRAD	French Center for Research and Agricultural Development
CO_2	carbon dioxide
DMC	developing member country
DSR	directly seeded rice
EBRD	European Bank for Reconstruction and Development
EU	European Union
FAO	Food and Agriculture Organization
FDI	foreign direct investment
FPC	farmer-producer company
FPO	farmer-producer organization
GDP	gross domestic product
GIS	geographic information system
GMS	Greater Mekong Subregion
IAEA	International Atomic Energy Agency
ICT	information and communication technology
IFPRI	International Food Policy Research Institute
IRDP	Integrated rural development program

IRRI	International Rice Research Institute
IT	information technology
KMUTT	King Mongkut University of Technology, Thonburi
LAO PDR	Lao People's Democratic Republic
NATCO	National Confederation of Cooperatives in the Philippines
NGO	nongovernment organization
OECD	Organization for Economic Cooperation and Development
O&M	operation and maintenance
OTOP	One Tambon One Product
PGP	Carrageenan plant promoter
PNRI	Philippine Nuclear Research Institute
PRC	People's Republic of China
PPP	public–private partnership
PSOD	Private Sector Operations Department
RDFS	Rural Development and Food Security
R&D	research and development
SDG	Sustainable Development Goal
SME	small and medium-sized enterprises
STEAM	Science and Technology, Engineering, Arts and Mathematics
UK	United Kingdom
UNCDF	United Nations Capital Development Fund
US	United States
USAID	United States Agency for International Development
WHO	World Health Organization

Promoting inclusiveness. Several organizations and clients are joining hands on portals and apps to provide their services on an easy-to-use platform.

Financing Agripreneurs and Rural Small and Medium-Sized Enterprises

Discussion in this session focused on innovative financing mechanisms, including emerging ICT platforms and FinTech to extend credit and banking services to small and dispersed borrowers, i.e., agripreneur and SMEs for farm and nonfarm operations in rural areas. The panelists explored how they see the future and what is required from the public sector in terms of enabling policies and creating level playing field to foster and expand pro-farmer smart financing options and opportunities.

Keynote Address

David Davies, Founder and CEO, AgUnity, Australia

This $50 phone will enable a small farmer to lift herself or himself out of poverty. It may be the most single, life-changing possession she or he ever owns. It transforms the farmer into a small enterprise, have a digital identity, and provides her/him the means of tracking what the farm produces. It also enables the small farmer to become a valid recipient for loans, credit, and become part of a natural community.

The most important challenge in the world today is eliminating poverty. It is number one on the UN SDGs for a very good reason—while one-third of the world still lives in poverty, we might be unable to address other big challenges like food security, deforestation, climate change. These are all connected. Of those in poverty, the vast majority are in farming, fishing or a part of their remote community and food supply chains. And good organizations, like you all here today, struggle with the one big issue:

connecting with people in remote, rural areas effectively and efficiently. And that is what my company does: we connect good organizations with those last-mile users.

We cannot solve poverty without addressing financial inclusion, and we cannot bring about financial inclusion at any sort of scale without technology that is relevant and useful to the people you are giving it to. A bit over a decade ago, the iPhone changed the world for most people like us. These smartphones gave us convenience and entertainment in our hands in ways that was previously unimaginable. But they did not help the poor. A modern smartphone might cost as much as a year's income of a small farmer. As much as farmers might enjoy Facebook, music, and YouTube, as we all do, those things do not help them in their work, earn more, or feed their children.

Technology Solutions

If you want to transform the lives of these people, it must be with a technology that is relevant to them. It needs to help them do the very basic things that they do daily, in a simple and intuitive way: ordering inputs, renting equipment, selling produce, and getting paid for it. The most basic thing is record keeping, something that we in most countries have taken for granted for over a hundred years. We have forgotten how important that simple accounting is to many in the world. This is the single biggest opportunity in the world: 2 billion people, of which there are half a billion farmers, most of them with no access to credit. Most of them could vastly increase their income and productivity with the right tools. But you cannot just give a smartphone to a farmer who has never had one before and expect it to be useful. How iPhone became such a game changer was how relevant it was to what we do every day. Who still remembers here in the room how we booked a hotel 20 years ago? This is how much things have changed but not for small farmers in the developing world. They still do things in same traditional way. And that is exactly what we need to change for low-income farmers of the world. Give them something that is relevant and changes the things they do daily.

The solution needs to be easy-to-understand and solve all the technical challenges of their area, such as: user experience, low literacy of people who may never have owned any technology before in their lives, poor connectivity challenges in remote regions, and securely recording transactions to improve trust and cooperation. Finally, you need a cost-effective way of deploying and supporting in remote regions so that you are not going out just to support a couple of individual users. What farmers really need is some sort of a super app where everything works together in some way, not dozens of little applications that all do small parts of the puzzle and requiring to user to struggle with separate passwords and separate applications and keeping everything updated. Even I struggle to keep everything on my iPhone working. Imagine how difficult it is for a 60-year-old farmer who has received a smartphone for the first time.

We built our platform like an app store in reverse. We encourage others to migrate their solutions onto the platform so that we can integrate with others and all work together. And all those other applications can build their own communities on the platform. Once a community builds a relevant technology, it becomes more and more

compelling for others to use it. By encouraging others to build their communities of users, the whole system links and works together. For users, what is important is that is simple to use and sort out their daily needs. But our actual customers are those organizations that need to connect with last-mile users (e.g., small farmers in remote areas). The sellers, who need a more efficient way to provide products and services at scale and solve the means of collecting payment. The commodity buyers, who want to trace produce or buy ethically or improve quality and show origin of goods to their customers. The NGOs that are already investing millions of dollars and need transparency of the impact of their projects. And most relevant to this forum, the banks, the insurances, and microcredit companies, that need a better way to connect with those last-mile communities.

The *Forbes* magazine thinks this is a $100 trillion opportunity. My background was in global investment banking, so it does not surprise me that banks see this as a last great frontier opportunity. But after spending the last 3 years working with very small communities of low-income farmers, I think that the way most are approaching the subject is dead wrong. Taking advanced technology and making it accessible might look easy, such as taking modern farming systems and disseminating knowledge to farmers might seem the best and easy way. But it is the wrong way because it excludes the very poor. You are giving middle-level farmers better technology and providing them an advantage, while the poor, the very small-scale, the illiterate get left out; it creates a big gap between the haves and the have-nots. Instead of moving the technology down the pyramid, let us try to do the reverse. Instead let us address the very basic needs of the very bottom of the pyramid and slowly make it more powerful and functional, and adding more features. Thereby, we help everyone up to a solid level. This is the key to making this a good opportunity for financial service providers as well. Once you organize very small farmers into groups or cooperatives, banks, and financial service providers can deal with them effectively as a group.

We did not reach out to banks. We were presenting this agriculture solution, when banks came up to us and said—could we roll out our mobile banking in rural areas using this platform? The simple answer was yes although there is a lot still to be done to roll out mobile banking to remote, rural areas. By us focusing on the farmer's real needs, we inadvertently solved the big challenges that were impeding the financial inclusion of the very last mile. The banks loved the idea as they linked the opening of an account with them with free delivery of an awesome smartphone with an app that has banking and other service providers on the same platform. So, whether it be financial services or any other services that improve the lives of small farmers, we are here to help connect with the last-mile users.

Panel Discussion

Donneth Walton, ADB: It seems like a great idea for providing a one-stop shop of services—you bring the farmer and the service providers together, including the banks. But how do you make money? How does the app make money? Is the app being used globally or region specifically? How do you get the message out?

Connecting with the last-mile users. David Davies, CEO of Agunity, encouraged the audience to develop technology solutions that are easy for small farmers face in remote areas to understand and helps them sort out their daily needs.

David Davies, Ag Unity, Australia: There are two phases to introducing the app to farmers. In the long term we get small transaction fees from millions of farmers. Any company needs to be viable while at scale and that is where the group of service providers came. We found that many of them have a very real return on investment for connecting with last mile small users. The World Food Programme is paying for the project in Ethiopia. It is already investing millions of dollars and they are not sure what is happening. For the small cost of a $50 phone for the farmer they see the impact of the farmer and can deploy other services. Commodity buyers of coffee and cocoa often get poor produce at the end of the supply chain, but they do not know why some coffee is spoiling and not others. For $50 it is a good return on investment for them to improve the source of produce. Service providers selling inputs is a different model. But banks and financial service providers like to use the app as they have a real return on their investment. The service providers fund most of our projects and in return they get connectivity to the last mile. In the past they just lacked the appropriate tool to connect.

Coming to the forum here is important for us and so is working with NGOs. We have a pipeline of 20 different countries waiting for us to come and deploy our platform. Our challenge at the moment is to scale up all opportunities. Currently, we are in Ethiopia, Sierra Leone, Trinidad and Tobago, Indonesia, Papua New Guinea, and Solomon Islands; we are quite spread out at the moment but are preparing projects in India, Bhutan, the Philippines, Mali, and South Africa. Within the next year we aim to be across a very large part of the world.

Ramon Duarte, Union Bank Philippines: I can relate very well to what David has just described as connecting to the last mile. We in the Philippines are also trying problem-solving in that space. I just want to share with you the insights we have gained around the concept of co-creation. Our bank is responding to digitalization by developing a platform where ultimately, we seek to move all our customers, mainly private sector and large corporate players, to the online platform. Banks are required to rethink, redesign, and rejig all their products and services. We found along the way that the bank's services need to be closely integrated with the services of the online platform and in doing so we have to start from scratch and throw our conventional thinking out the window. We found it best to go about doing these changes by applying the concept of co-creation. Elinor Ostrom, Nobel laureate for Economics, said, "There is no reason that politicians and bureaucrats, no matter how well-meaning, are better at solving problems than people on the spot, who have the greater incentive to get the solutions right." That was the insight we had when it comes to solving problems in this sector. We found that the top-down approach, where designs are being rolled out from the top based on assumptions, has not worked well. Hence, we work with our customer firms, which have become agile, to design the platform and its services based on their needs and choices by fully engaging them in the process. We are still a long way from solving this problem but right now having this mindset of co-creation and using the technology and tools (availability of data, cloud, mobile phone). We have a new approach. This is certainly not the forte of the Union Bank, but we have gained confidence in our work. I have two projects, one in the southern part of the Philippines with indigenous people, working with an agripreneur, who is on the ground working with the indigenous community, and redesigning the platform with their inputs. There is a second project in the Visayas, where we are

co-creating an approach to finance tuna fishers in a sustainable manner. We also run hackathons with enterprises, fintechs and start-ups, and communities.

Donneth Walton, ADB: I still want to hear from all of you how can an organization like ADB support what you are doing? Do you see a role for government in this process at all? If yes, what should that role be?

Anil Kumar, Samunnati Finance, India: We as an entity are a private enterprise focused only on financing agriculture. We do this with two objectives: (i) how do we make the value chains that we operate in by moving to a higher equilibrium? (ii) how do we make markets work for smallholder farmers in India at this point in time? Most of us coming from a debit-credit (banking) background understand that working capital is a key constraint most of the agri-enterprises have. Removing working capital constraint could unlock a lot of potential in the value chain and that can bridge the gap between supply and demand regarding movement of cashflows. If we must do that in a sector like agriculture, we must customize these services for the agri-enterprises for each value chain. We do not consider ourselves a product company, rather a solution company. We offer working capital products from one day to investment credit up to 5 years and volumes ranging from $50 to $2 million. What is close to our heart is how to make markets work for smallholder farmers. We work with farmer collectives as a company and the moment we started working with farmer collectives we realized that finance is important but not enough. There are other dimensions—market linkages, advisory services, as well as institution-building that become relevant in addition to finance.

As a finance professional, I feel all these services need to be provided, not as a goodwill gesture or as part of corporate social responsibility but to mitigate the risk of cashflows associated with the activity. We engage with farmer collectives to build their institutional capacity, work with them in their operational structures, and more importantly to enable market linkages for them. It is not surprising that some of the farmer collectives we work ask us to link them to markets rather than lend them money. We have been active for the last 5 years and still a young organization, but we have had a reasonable scale so far and facilitated both access to finance and market linkages to about $400 million working with about 600 farmer collectives—which in turn have a membership base of about 2 million farmers. We are a unique organization because an entity like ours does not exist in India at this point in time. I am not familiar with the global landscape though. We are a lender, a market linkages company, and a capacity building organization.

One of the constraints we as a private enterprise and a nonbank finance company face in India is that government and multilateral development organizations focus on delivery of their projects through banks. Nonbanks are not considered to be part of that delivery mechanism. In my view, if the intention is to reach the ultimate beneficiary, the vehicle to reach that target group should be irrelevant. One should be agnostic to the delivery vehicle but focus on the destination. Some of the projects ADB is considering under a PPP dimension could explore other forms of entities that could make the program meaningful and successful for the intended beneficiaries. Furthermore, we as an entity also focus on SDGs and climate-smart agriculture. By

The vital role of the public ecosystem. There is a huge role for the public ecosystem, whether it is federal government, state government, institutions like ADB. They have to come together to accelerate adoption of innovations for the benefit of farmers.

their very nature, most of the projects under climate-smart agriculture are either not proven or risky. Are there guarantee structures that can come together so that farmer collectives, and ultimately the farming families, which take up climate-smart projects are protected from unintended losses that might come about? Entities like ours, which operate these programs sustainably, could also be protected should there be a loss. So ADB may want to look at specific guarantee structures and enablers so that a positive nudge is given to pursuing projects that are directly related to SDGs and climate-smart agriculture.

Donneth Walton, ADB: You have addressed one of the issues of how to manage risk. The idea of having some sort of guarantee scheme, which is an important one, maybe a challenge for some who are in public sector lending. Guarantees often come from government. The issue will be willingness of government providing guarantees to a nonbank entity. But that is food for thought.

Hemendra Mathur, ThinkAg and Bharat Innovation Fund, India: I want to talk about three points: (i) how Agripreneurship is evolving in India, and my experience has been mostly in India although this could be relevant to other developing countries in Asia too, (ii) how these innovations are enabling access to finance for smallholder farmers as well as the value chain players, (iii) the role of public ecosystem and institutions like ADB in accelerating adoption of innovations for the benefit of farmers.

On Agripreneurship or agritech, the term used in India, we have seen phenomenal progress, particularly in the last 3–5 years. We have about 2,000 registered agritech entrepreneurs as part of the start-up India program, of which at least 500 entrepreneurs have passed their prototyping stage. This is unprecedented in the history of agriculture in India that we are seeing so many entrepreneurs coming into agriculture. The most interesting part of this evolution is that many come from a non-agriculture background—many of them techies who have quit their high paying jobs and got into building models for agriculture in India. What they bring to the sector is

a lot of process orientation and understanding of technology, which is critical for the sector. These entrepreneurs are pursuing four or five themes. The first and foremost is market linkages. They are essentially trying to build a demand-driven supply chain. In India most of the supply chain has been supply driven and it continues to be that way. The new models are building demand orientation in the supply chain. In the supply chain in India there are essential 6–8 intermediaries. The new models are trying to reduce this to between 2–5. This makes the supply chain more transparent, efficient, and ultimately benefiting the farmers, who are not only assured of income because of the demand for their produce, but the ability to raise low-cost lending goes up significantly. There is a visible buyer who will pay for what the farmer is going to produce. Market linkage models will enable solutions to a lot of these financial challenges that banks and nonbanking financial corporations have.

The second theme is more around enabling access to quality agricultural inputs at the right time and price for farmers. There is some confusion that this is all about online outlets. These models require prescriptive selling, whereby product selling is also tied to diagnostics of soil, crop, and weather, to come up with solutions that are then sold to the customer, and not just products. That is one major distinction agritech models have compared to consumer-oriented internet online shops. There is also a need to have offline presence. Farmers usually do not trust online models. People on the ground must be present to establish that trust. The final delivery is an issue as unfortunately Google maps do not always work in rural India. Capabilities need to be built that enable delivery to the last mile. Interestingly, in the process, agritechs solve the issue of financing. Unfortunately, a lot of agri financing in India under private sector lending is not directed toward use of agricultural inputs. In fact, most of it is in the form of personal loans. In models targeting selling to farmers, many integrate finance for purchase of inputs. Input opportunity in India is over a $100 billion, which translates to financing opportunity. This, I think, will go a long way to enabling farmers to purchase inputs.

The third theme is around data. We have seen multiple start ups trying to capture data, and synthesize data using a combination of hardware and interesting algorithms. Hardware could be satellite imagery, drones, mobile phones, and spectrometers. Hardware is getting more commoditized. The secret lies in the algorithms that they are developing focusing around monitoring of crops from sowing to harvest, detecting farm boundaries, estimating yields, and assessing quality. If supply chain has to become truly efficient, data is critical and has a huge role to play. Unfortunately, we have so far never had accurate and timely data to enable access of farmers to finance and other goods and services. Data and financing go together. These are two big components that will integrate the entire supply chain. Samunnati (panelist Anil Kumar) has demonstrated that financing is profitable and sustainable, and we need more of such firms at a large scale. The common theme across all financial solutions is to innovate ways to onboard farmers conducting due diligence (know your customer), risk assessment, building interesting credit-scoring models, which reflect not only asset ownership or income generation potential but also behavioral parameters. We are seeing early stages of FinTech innovations in agritech. Hopefully with the ecosystem maturing we will see a lot of scalable models.

Postharvest solutions are another important theme. There is a lot of food wastage in a country like India where we have more than 1.3 billion consumers. Solutions around warehousing, cold storage, and postharvest financing are critical. Solutions around food fortification, nutrition, alternative proteins are areas that may require increased attention from start-ups building online models.

There is a huge role for the public ecosystem, whether it is federal government, state government, institutions like ADB. They have to come together to make it happen. First, there should be an open source digital platform, an Agristats, which can be accessed by banks, insurance companies, government, start-ups, and farmers. We have 150 million farmers of which 120 million are small and marginal spread across 600,000 villages. How do you reach out to them and how do they access innovations and technology? Parameters needed could be about who the farmer is, what is his or her location, what does the farm look like, what he or she is growing. Essentially, Agristats links the farmer to the farm ID. It can have multiple layers, such as soil nutrition layer, water stress layer, and mandi (market) layer, which can build a lot of interesting products and services beneficial to farmers. That is something the government feels excited about. I am not sure what role ADB can play but I am pushing for some pilots at a state level right now.

In order to reach out to farmers, there is a need for a local entrepreneurial ecosystem. Innovators and start-ups sitting in large urban centers cannot do it on their own and they need people on the ground. Building entrepreneurs and service providers at a local level is what is needed. Most of the capacity building work currently undertaken by Tata Trust or Syngenta Foundation needs to be supplemented by government efforts. There are hardly any applications of drones in India. There are a few people who know how to operate drones in rural India. We need training that will ultimately benefit farmers. Start-ups also need to connect to the corporate world, research institutions, and policymakers. Hence, there is a need to create a platform that enables this networking; I have founded ThinkAg, which is trying to do that. There are about 20 corporate members working with start-ups to pilot some of the innovations. Prototyping takes lot of time and that is where start-ups need hand holding. I am sure there is huge scope for many more such platforms to be created. And last, there is a huge need for catalytic capital if these innovations have been scaled up. Unfortunately, venture capital kicks in at a later stage, typically when prototypes have been tested and the product is ready to be serialized. The public sector needs to come in to fill the gap prior to serialization as this is a risky stage of trial-and-error and needs high risk capital. May be a small fund of $25 million–$30 million may go some way to hand hold and promote the innovations to see fruition. There has been deliberation ongoing for quite some time within government and maybe ADB could provide guidance and support. As Anil mentioned in his video, let's write this story together. We all need to come together and ADB has a huge role to play and can become an active participant in this. One of the issues you underscored is the importance of having a digital network infrastructure in place, which is critical, as a lot of rural areas do not have good functioning connectivity. There is a role for PPP. About a month ago I was in Kazakhstan where we are looking at a number of sector investments. One of them was the livestock industry. In Kazakhstan a smallholder has about 24 ha, which is unusual. One of the participants at a workshop was saying that

in the rural area he had to hunt for a high spot for his mobile phone to receive a signal. Access to correct data and information is critical. What I hear from all of you is it is not just about financing but also about a full-service provision for the farmers.

Chori Mirzaev, Turonbank, Uzbekistan: In Uzbekistan we are interested in studying and learning from other countries' experience in implementing state policy on development of agricultural production as well as providing support and financing for SMEs in rural areas. Currently, Uzbekistan is undergoing large-scale reforms aimed at modernizing economic sectors and development of private entrepreneurship including in the agriculture sector. We think that reforms in agriculture and increasing its competitiveness are key to improving the well-being of rural areas. ADB has established a long term relationship with our country initiated in 1995. Since then Uzbekistan has received more than $7 billion including two private sector loans amounting to $225 million and technical assistance at $87 million. Joint programs and projects implemented in Uzbekistan with ADB are focused mainly on key areas like support to agriculture, promotion of private entrepreneurship, regional cooperation in transport, as well as improvement of social sector such as protection of children and education. We are delighted to acknowledge that on the first day of the forum President Takehiko Nakao of ADB deemed it suitable to mention projects that are being successfully implemented in the agriculture sector of Uzbekistan. In recent years we have received loans amounting to $349 million to finance a project on Horticulture Value Chain Infrastructure.[19] As a result of this ADB-funded project more than 6,000 jobs were or are being created out of which 4,000 are for males and 2,000 for females. It is worth mentioning here that Turonbank, which I represent here, is one of the active financial institutions in Uzbekistan that finances the agricultural project. In the last 2 years our bank attracted more than $90 million from ADB to finance the farmers and small business to purchase agricultural machinery, equipment for drying vegetables and fruits as well as refrigeration equipment. Using the funds provided by ADB, our bank financed 63 projects totaling $61 million enabling the construction of greenhouse complexes for $41 million, processing of agricultural products for $12 million, and procurement of a cold storage equipment for $8 million. It is important to mention that implementation of these projects resulted in creation of more than 1,500 new jobs in the agricultural sector. In addition, the bank plans to extend financing for an additional 41 projects amounting to $30 million for supporting of similar projects. Through this additional financing another 1,000 jobs are expected to be created. Besides these investments the bank has applied for an additional $20 million for value chain improvement in the livestock sector.

We understand the significance of liberalization in the agriculture sector and its role in the provision of safe and nutritious food to a fast-growing population of the country. The state acts as a leading reformer by taking proactive measures. To foster timely implementation, Uzbekistan has created an Agroindustry and Food Security Agency responsible for realization and monitoring of the projects in the agriculture sector. Our government in Uzbekistan supports farmers and SMEs by reimbursing 50% of the interest on their loans and provides them with 50% collateral for subloans. The government also compensates the cost of pumps if farmers cultivate more than 35 ha

[19] ADB. 2018. Uzbekistan: Horticulture Value Chain Infrastructure Project.

of land by drip irrigation and rewards farmers with a $1,000 per ha if they use the drip irrigation system. Farmers also enjoy certain tax breaks. Government also supports farmers who export produce.

Subhadeep Sanyal, Omnivore Capital, India: I represent a venture capital fund from India. Let me try and illustrate some experience we have gained over the last decade coming from a venture capital lens in India. On the macro level in India, there are 150 million farmers, most of them smallholders. Rural telephony is going through the roof. We have between 500–600 million internet subscribers today in the country, half of whom are rural based. It is a well-made point that the only way to disrupt agriculture in India is to go digital.

At Omnivore Capital we believe in supporting entrepreneurs to solve three challenges: (i) technologies, which can help improve profitability of farmers; (ii) technologies, which can improve sustainability of Indian farming and, by that logic, smallholder farming; and (iii) technologies, which can reduce the uncertainty of smallholder farmers. We manage about $150 million, a fairly small fund looking at early stage enterprises and have so far invested in about 20 firms. It has been challenging. There is a portfolio company we support called DeHaat, which both Anil and Hemendra know well. DeHaat works in the most difficult states of India in terms of smallest of farm holdings, most with fragmented landholdings in the state of Bihar located in the Eastern part of India. The company is largely an agri-services platform for farmers having close to 250,000 farmers subscribing. All services such as access to inputs, finance, markets, unbiased farm advisory, are provided to farmers not only through a digital layer but also through a physical layer of entrepreneurs. That is important as we cannot expect all rural entrepreneurs to be fancy in terms of their know-how of technology. These are basically franchises or entrepreneurs themselves who can augment their income by providing services. They are farmers also, so they understand the local context required for working in that particular village or area. That is one kind of model in which we have invested between $4 million–$5 million in that company and the multiplier effect is amazing.

Another such example is Stellapps working in dairy. Milk comprises 4% of India's GDP, which is massive, but it comes with its challenges as an average dairy farmer in India may own only two cows. There are millions of dairy farmers and all that needs to be harnessed with challenges around quality, aggregation, payments, real-time services. The first problem here, as Hemendra alluded, was how to get real and live data across all small dairy farmers. Herein, cooperatives came in handy, and start-ups like Stellapps came into the picture to build an Internet of Things layer digitizing small a 2–3 animal dairy farmer in India and not a 50–100 animal farm as in New Zealand.

In the last 5 years, we have seen a lot of agritech companies in India move beyond the country to Indonesia, Viet Nam, countries in South America, and parts of Africa. Given that there is scope of connecting India and other similar developing economies, that is one area where ADB could be hugely helpful in terms of their access in South and Southeast Asian countries. What we see in India is an abundance of entrepreneurial talent and solutions that can be exported, shared, and partnered with local entrepreneurs. The other area is tackling the gap in the early stages of

product development initiated by start-ups and there is a working capital gap for companies in agriculture. Unlike a lot of purely technology companies like consumer internet companies, start-ups in the agri sector do not tend to burn money. If there is some way of boosting availability of working capital or shoring up initial costs of may be larger start-ups, this would be an area ADB could explore to support. In India we also have a massive gap in private equity. In agriculture, there is ample scope to do infrastructure development as well as scaling up companies. That is another area ADB may look at.

Alex L.J. Shyy, International Cooperation and Development Fund, Taipei, PRC: While ADB is engaged in multilateral assistance, my institution is engaged in bilateral cooperation. We have tools of technical and financial cooperation and capacity building support and we look for opportunities to integrate and use our tools to help our partners. In agriculture and financing, we see it as comprising the whole value chain and we believe financial inclusion is part of the agriculture infrastructure development. We partner with microfinance institutions as these are close to farmers' daily activities and we support agricultural infrastructure investments in roads, irrigation, and power supply to rural farmers as well as storage, including cold storage facilities. However, the most important aspect is the value chain and not just focus on investments in production. There are many stakeholders from suppliers, farmers, cooperatives, postharvest processors to customers. As development agencies, we try to fix holes in the net of the agriculture value chain. My institution provides technical assistance and financial tools to improve the value chain and put effort in institution building (cooperatives). Initially, we may provide subsidies to the beneficiaries, which are paid back by farmers to the project over its lifetime (3–4 years). During this period, our technical experts assist the cooperatives to manage accounts, deposit funds in banks or financial institutions, thus building up a relationship of trust between the financial institutions and the cooperative. This makes it easier for cooperatives to borrow. Financial specialists deployed by our institution help farmers design appropriate financial systems for the cooperative. Sometimes we use third party service providers and innovative companies to design software and simple and user- friendly smartphone apps specifically targeted to the needs of the beneficiaries. On Bali island in Indonesia we had the One Village, One Product Agribusiness project to process citrus fruits, bring about multi-stakeholders, and create a cooperative that makes it easier for farmers to access financial support and credit. One of the conditions of membership in the cooperative is that a portion must be female members and there are a number of cooperatives that are 100% organized and managed by women. On disseminating technology, we support use of remote sensing and GIS as well as monitoring sensors in the farmer's fields on the supply and/or farmer's side and setting up simple weather stations to monitor micro-climate in the communities. Use of these technologies makes smallholders more competitive and financial institutions find it easier to deal with such farmer cooperatives and provide financial services.

Suzanne Kay Robertson, ADB: The panelists have given us a lot of interesting points to think about today. Access to finance is important but it is not the only component we need when it comes to doing value chain development. We need to be looking at an integrated approach to value chain of which finance and access to finance is a crucial and integral component but not the only one. When I look at how

to deliver on this, the other issue that has been highlighted here is the cooperation between the public and private sectors. That is where ADB can come in as an added value partner to provide services. It is in that context that we can look at providing an enabling environment to improve access to finance, provide a better linkage between public and private sectors and within the value chain improving linkages between enterprises, cooperatives, and smallholder farmers and bring this all into one integrated approach. In some ADB projects we are already undertaking integrated approaches, which have components of financial intermediaries looking at different ways of applying the services that address the real need. Agriculture in every country, every area, every value chain is different. We cannot apply the same services, and do not have the same needs. ADB can help identify those gaps, look at how to link the public and private sectors, and gauge the benefit for smallholder farmers. In that sense we look forward to strengthening cooperation between public and private sectors

Forum participant: Although there are a lot of initiatives from government and the private sector working with smallholder farmers. Still, the issue is access. I am impressed with experience shared by Taipei, China as they are also working with women cooperatives and I would like to know about experience of other panelists investing in and working with smallholder cooperatives. In my view this is the only way to bundle services to farmers. There are a lot of cooperatives, though not all are well capacitated, who receive services of extension, credit, and access to market. So may be the panelists can share some of their experience in integrating services and innovative technologies for cooperatives.

Anil Kumar, Samunnati Finance, India: I would like to share information about the work the Government of India is doing to address the farmer collectives. They in fact have set up a separate division called Small Farmers Agri Consortium with the sole focus on promoting farmer collectives from scratch and have built an ecosystem of entities that are specialized in community mobilization, entities that have the capacity to deal with fledgling collectives. In addition, there are several schemes that the Government of India has brought about to support the entities in terms of capacity building grants, matching equity, price stabilization, as well as a host of subsidy measures. On the execution side, the impact could be larger if private sector is opted in. That is where we see a lot of traction, at least in the context of India. On gender, I am glad that Alex Shyy mentioned this. In our experience, we see some activities that female entrepreneurs tend to favor and women entering into agri-value chain. We realized this that 70% of the entities we were working with had women. We realized that certain activities like dairy or vegetable growing and processing tend to employ more women. Then we made sure that such or similar activities that specifically attract women constitute a significant portion of our overall investment exposure in working the agricultural value chain. Our realization is that rather than pursuing the gender dimension in isolation, we might as well integrate it in our overall strategy so that it grows as a natural part of the business.

Ramon Duarte, Union Bank Philippines: On the critical and growing role of cooperatives in the Philippines, we certainly need more cooperatives with increasing roles. As much as private banks, like ourselves, want to reach out, many times we welcome working with cooperatives on the ground who know their member-farmers

better than us. Other than the established and known roles of cooperatives, there is a new role coming with the wave of technology. To enable the use of blockchain, there is always an issue of knowing your client, who can speak for the farmers, and can attest to what is going on. In areas where we are experimenting with the smallest of farmers, there is nobody there. Even government is not really present. We do not even have access to biometric identification of these farmers. The role of cooperatives is getting bigger than ever, and they are key to making high-tech solutions feasible and we need them.

David Davies, Ag Unity, Australia: I could not agree more. We work in some remote regions and often the cooperative is the only form identity the farmer has. Farmers bring cocoa beans to the cooperatives and that is the only way we can identify them. There is no government record and the smallholder farmers' cooperative membership is the only way their identification shows up in the digital world and becomes available to access.

Forum participant: I understand that we need an integrated and holistic approach. In Southeast Asia I understand there are 60 million poverty-stricken families as well as those who belong to the hunger-stricken families and adding another 30 million unemployed youth—so 90 million are our primary target group right now. In the past few days, I have been listening to the various models as well as gaps that exist in their implementation. I understand that the challenges can be easily resolved and make those 90 million easily recover from poverty and hunger. What if ADB makes available a digital platform, wherein different countries of Southeast Asia can combine, unite, and cooperate to provide, by representing the affected segments of their people, business plans, and marketing plans that allow the affected population of 90 million to work on producing and exporting agricultural produce. The products thus produced could be branded differently—extolling virtues of climate change, free, etc. Will it be possible for ADB to provide a digital platform for ASEAN countries?

Donneth Walton, ADB: ADB would certainly be willing to engage in that sort of an undertaking if governments request it. When we mention ADB, we have to think about two different parts. We have a private sector side and a public sector side. We work with governments, put together a program, and agree on types of interventions or projects we will be supporting. If governments want to borrow for these projects and are these are feasible, we can do it. I think the question that you pose may be more suitable to the private sector side of ADB operations.

Ramon Duarte, Union Bank Philippines: Just by way of sharing, the gentleman envisions a rather large concept. We work with the Monetary Authority of Singapore and they have a program called Business sans Borders and perhaps it could be the beginning of such a concept. They plan to build a platform of platforms essentially trying to interconnect and initially to give visibility from one market to the other by making information on what one group of SMEs are producing available to the demand side across the region through the platform. This is something Singapore is championing. India is part of that and so is the Philippines.

Forum participant: I would like to direct my question to Mr. Ramon Duarte. In the Philippines we have the Agri-Agra Reform Credit Act of 2009, which mandates all

banks private or government owned to set aside 25% of total lending for agriculture and fisheries, 10% of which should be exclusively allocated to agrarian reform beneficiaries. Since its implementation, banks have not met that requirement. My question is: can you share with us mechanisms or programs undertaken by your bank that can be accessed by small farmers or fisher folk and what are the factors that hinder implementation of the law?

Ramon Duarte, Union Bank Philippines: This is a very frequent question that we get, particularly here because of the Agra Law we have. It is difficult for me to answer that and I think no bank can really answer that very easily because almost all banks are not in compliance with the Agra Law. The reasons for that are simple. It is not a workable proposition for us in the current state of things. That is why we are saying that even though agriculture is not our forte and we do not have particular strengths in this sector. We are looking at new ways of implementing it, which is why it has to come from alternative scoring models. With availability of technology, data, partners on the ground, we can look at developing those models and perhaps live up to the purpose of the law. But currently we and other banks do not see any solution to comply with the law in a sustainable way.

Hemendra Mathur, ThinkAg and Bharat Innovation Fund, India: There are also some lessons from India. We have this concept of priority sector lending, whereby banks are supposed to lend 18% of their book to farming and allied activities, including direct and indirect financing. The target for the current year is about $180 billion, which is a large number. There are two challenges: firstly, most of this lending is servicing medium and large farmers, probably 30–40 million and yet about a 100 million are deprived of this funding. There is still a huge access issue. Unfortunately, most banks do not have branches in rural areas, which is one of the reasons not to lend. So we come back to the idea of a digital platform—how do we enable a platform to solve some of the issues and most banks are quite open to such ideas where they can have access to a digital platform and can do basic compliance checks using the platform. Secondly, I think this kind of lending does not differentiate between lending for personal usage and lending for productive usage. That is another challenge. So how do we make a significant part of this lending for productive purposes, which could be buying of inputs, taking care of livestock, or paying for services etc. That is another area we need to be thinking about and make it more effective.

Forum participant: Have you considered that technology is limited on non-smartphones and most farmers cannot afford smartphones. How do you deal with that?

David Davies, Ag Unity, Australia: When we first rolled out our program in Kenya, we tried to get farmers to install apps on their phones. That was a failure. It cost us more as an organization to try to get them to set up and run on any sort of standardized system than it is to just give them the phone (loaded with all kinds of useful apps). We started with $20 phones in Kenya and we evolved to new ones which are $50, which are waterproof. If we buy phones in bulk, the price comes down and is affordable for farmers. Every organization that has worked with us on the project is happy to pay $50 per phone to give it free to the farmer, which lasts them 3 years.

Rural Development and Food Security Forum 2019 Proceedings

Smart rural development, effective agricultural policies, and efficient regulations are critical to ensure a sufficient, safe, nutritious, and affordable supply of food to Asia and the Pacific's growing population. Toward this end, the Asian Development Bank hosted the Rural Development and Food Security Forum 2019 to prompt governments in the region to provide the leadership and transformative change needed to generate rural prosperity and effective stewardship of land and water resources. Among the topics discussed were the farm income crisis, food insecurity and malnutrition, and rural distress and prosperity challenges. This report captures the stories and on-the-ground experiences of farmers, entrepreneurs and young agripreneurs to help prompt leaders to provide active leadership, effective resource stewardship, and promote transformative changes in rural development and food security.

About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members —49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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