

RURAL DEVELOPMENT AND FOOD SECURITY FORUM 2019 PROCEEDINGS

DECEMBER 2020



ASIAN DEVELOPMENT BANK

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Notes: 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. All photos are by ADB. Cover design by Rodel Valenzuela.

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
0&M	operation and maintenance
ОТОР	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



Pushing for more gender balance. More effort is needed to promote lead roles for women and women entrepreneurs in ADB-funded projects.

ADB Experience and Knowledge Sharing (Focus on Gender, Climate Change, and High-Level Technology)

DB has stepped up its efforts to introduce innovative approaches and technologies under its policy-based and investment loans as well as technical assistance projects. This session was used to present some of these innovative projects and highlight lessons learned so that other DMCs may consider adopting similar approaches and designs for their projects.

Presentations

1. Efforts to Apply High-Level Technologies in Central and West Asian Countries by Natsuko Totsuka, Principal Portfolio Management Specialist, Environment, Natural Resources and Agriculture Division, Central and West Asia Department, ADB

In ADB, Central and West Asia starts from Pakistan, and includes Afghanistan, Uzbekistan, and other Central Asian countries. In our division, we have been making efforts to apply something new to each project. The Tajikistan–Pyanj River Water Resources Project is one of the first to introduce the satellite-based monitoring and evaluation for irrigation system. This project focuses on rehabilitation and modernization of an existing irrigation system (about 50,000 ha). The project was approved in September 2016 and project preparation took place between 2015 and 2016. During this time, we discussed the application of satellite remote sensing technology for monitoring and assessing irrigation performance. The model was developed during project preparation in 2016 with baseline data. We plan

to prepare updated maps during project implementation and conduct assessment of updated conditions at the end of the project in 2022 (and future) to compare beforeand-after cases. Using satellite data of evapotranspiration, the team computed water use ratio (actual evapotranspiration/optimum evapotranspiration as well as dry and wet season cases) to monitor and evaluate system performance.

We have also been using satellite imagery data for irrigation projects in Pakistan and other countries. Thereby, we encountered some challenges. We tried to collect field data using satellite imagery. However, we found that we needed quality ground truthing to verify remote sensing data collected and get better estimates. We also needed a higher specification of computers as well as experienced local staff to ensure sustainability of the project. The application of high-level technologies like remote sensing data is quite challenging in developing countries. We are now trying to look into applying high level but simpler technologies like mobile applications, which can work even under conditions of less stable internet access in countries like Afghanistan and Tajikistan to collect from and provide agriculture and water resources information to individual farmer level.

The two projects, one in Afghanistan—Arghandab Integrated Water Resources Project (raising existing multipurpose dam and development and rehabilitation of irrigation systems) and one in Tajikistan, use technology, which is technically and skills-wise, appropriate for the rural areas of these two countries. The Pyanj River Water Resource project disseminates to and collects information from the level of small farmers in Afghanistan and Tajikistan. The information includes field flow discharge measurements in the irrigation system and discharge data transfer to the server; agricultural extension advisory and information sharing (e.g., farm development cost information, crop recommendations, market information, a "howto" video, climate-resilience knowledge, etc.); and water allocation and availability information.

2. Mongolia's Agricultural and Rural Development and ADB's Assistance by Qingfeng Zhang, Director, Environment, Natural Resources & Agriculture Division, East Asia Departments, ADB

I will present how ADB operations can effectively address climate change and thereby also empower women's participation.

Mongolia's economy depends heavily on the mining sector, which accounts for 21% of GDP and 85% of its exports—but employs 4% of the population. Agriculture accounts for 12% of the GDP but employs about 30% of Mongolia's population. In agriculture, the livestock subsector plays an important role. While the human population is estimated at over 3 million, the livestock headcount is estimated at 66 million. The per capita livestock count stands at about 22 per person. The supply of livestock offers a big potential for export. However, Mongolia exports raw material and imports finished products, thus losing opportunities.

Drought and harsh environmental conditions also affect the livestock. They are vulnerable to climate change—lack of water, hay storage, and livestock winter

shelter—which have led to heavy losses. There is poor livestock, pasture, and water management. Seventy percent of pasture is degraded. There is greenhouse gas emission from organic carbon in soils, and by 2050, there will be a reduction by 6.3%–9.5% in forest steppe and the steppe regions.¹⁵ It is projected that animal losses caused by drought and *dzud* (severe winter conditions) will increase and are estimated to reach 8.2% in 2020 (footnote 7). Another constraint is lack of long term financing. The commercial loan terms in Mongolia are high, with interest rates at 30% and loan repayment period at 2 years.

From the ADB side, we have two examples to demonstrate how we effectively support agriculture, address climate change, and empower women. Since 2009, we have provided \$4 million in technical assistance and \$40 million from the Asian Development Fund grant. In 2015, we made \$50 million available as additional lending. Through this financing package we generated five key results: We (i) supported 15 enterprises to process cashmere, dairy products, and wool products; (ii) supported the production capacity of the herders and farmers; (iii) introduced cashmere wool-testing facility for improving wool products; (iv) provided support for marketing and certification of products for international market bringing investors, buyers, processors and sellers together; and (v) helped 70% of women achieve employment in the wool processing industry (e.g., Gobi Cashmere Company). We can significantly increase women employment by supporting the agriculture sector.

We are supporting the agriculture value chain and businesses, but we must not forget natural resources and climate change. We introduced the climate-resilient livestock sector project and focused on four key elements: (i) strengthening pasture management and grassland protection, (ii) upgrading of water points and enhanced winter shelters, (iii) facilitating livestock supply contracts, and (iv) improving processing capacity. We linked natural resource protection to marketing and women participation to impact climate change.

3. ADB Operations in South Asia by Mio Oka, Director, Environment, Natural Resources & Agriculture Division, South Asia Department, ADB

The South Asia region is growing. Compared to countries in Southeast Asia, India and Bangladesh enjoy robust growth. But water and food security are pressing issues in the region. By 2050, 100% more food must be produced with 30% less water in Asia. Despite economic growth, there are pockets of poverty. There is a large client demand for rural infrastructure (irrigation and rural roads). We estimate irrigation potential for modernizing to be around \$500 billion in the region. Our clients also have an appetite for new technologies and climate resilience to be embedded in the design of projects. There is a growing private sector but public funds for operation and maintenance (O&M) are inadequate.

¹⁵ According to the Mongolia Intended Nationally Determined Contribution to the 2015 Agreement under the United Nations Framework Convention on Climate Change.

In our team we have about 10 international and 10 national staff and we focus on three subsectors: (i) water - there are issues related to irrigation, flood management, and coastal management; (ii) rural roads – we have to connect pockets of poverty to urban areas so that they can enjoy economic growth; and (iii) agribusiness – farmers can grow enough food but they need to sell to generate additional income.

I will present two examples, one on irrigation and one on agribusiness. On irrigation, we do have issues and opportunities. Traditionally, ADB invests in open canals and drainage. Issues here include lack of efficient water use, need for more crop per drop, and lack of water for farmers at the end of the line. There has also been a multitude of small contracts with land acquisition. Hence, project implementation delays have occurred. Furthermore, funds for O&M are insufficient, or are set aside or committed elsewhere. Farmers did not pay for water; hence, sustainability was in question. Our response last year was the Madhya Pradesh Irrigation Efficiency Improvement Project in India, a large-scale project of \$375 million approved last year.¹⁶ It introduces a pressurized irrigation system, which will increase irrigated area from 58,000 ha to 125,000 ha using the same amount of water and with better irrigation service delivery. Secondly, we introduced design-build-operate contracts. Two contractors were appointed to design, build, operate, and maintain the system for 5 years. Water-user fee are to be collected by the service contractors.

The second example is from agribusiness. There were many trials and errors in India. Pilots were implemented, but the government did not have the confidence to scale up due to failures. As ADB was new to agribusiness, we had to demonstrate a workable solution.

Nowadays, technologies are available and private sector is entering the agriculture sector. New ideas are being tried in agribusiness. But farmers still rely on traditional ways to sell their products and hence, did not benefit from economic growth. Our response to the problems is the AgTech Application in Agriculture in Andhra Pradesh,¹⁷ India, which has the highest growth in the horticulture sector (17%), is ranked first for the ease-of-doing- business index (2017) and is the leading state for AgTech-driven innovations. The project funding is \$2.5 million grant, to be approved in 2020. It aims at successfully demonstrating doubling farmers' income through improving market information to farmers. A digital platform will be created where farmer-producer organizations can get access to data. We are engaging a farmer mobilization facilitator to help organize and collect data, disseminate information, build capacity, and provide advisory services.

4. Climate Friendly Agribusiness Value Chains in the Greater Mekong Subregion and Cross-Border Livestock Health and Value Chains in Southeast Asia by Ancha Srinivasan, Principal Climate Change Specialist, Environment, Natural Resources & Agriculture Division, Southeast Asia Department, ADB

⁶ ADB. 2018. India: Madhya Pradesh Irrigation Efficiency Improvement Project.

¹⁷ ADB. 2020. <u>India: Farmer Group Market Access Development using Agricultural Technologies in Andhra.</u> <u>Pradesh.</u>

I will introduce two projects from Southeast Asia. The first one is the Greater Mekong Subregion (GMS) Climate Friendly Agribusiness Value Chains Sector Project being implemented in Cambodia, Lao PDR, and Myanmar with a funding of \$250 million. Background to this project is Strategy for Promoting Safe and Environment Friendly Agro-Based Value Chains endorsed by the GMS ministers of agriculture in September 2017. This is the first project being implemented under the strategy. The expected project impact is the improvement of agricultural competitiveness in the project areas (reflected through enhanced productivity, climate resilience, quality and safety, value addition and rural household incomes). The expected outcome of the project is: Productive and resource-efficient agribusiness value chains developed in project areas. The project aims to (i) improve and make climate-resilient agribusiness value chain infrastructure, (ii) promote climate-smart agriculture and agribusiness, and (iii) enhance the enabling environment for climate friendly agribusiness.

We are undertaking actions on greenhouse gas mitigation mainly through bioenergy management, biodigesters, as well as promotion of solar energy. We are also enhancing the climate resilience of cropping systems as well as rural agribusiness infrastructure. We are also looking at opportunities for mitigation and adaptation synergies and promoting capacity for mobilizing green finance and ability to manage climate risks. In terms of high- level technologies, this project is looking at laser land leveling/solar drip irrigation for improving water use efficiency and reducing greenhouse gas emissions; drought, flood and salt-tolerant varieties developed through advanced breeding methods/tissue culture; ICT platform for agribusiness; and digital technology-based agriculture finance.

In terms of gender actions, we are trying to create employment for women along the value chain with preferential support to women-led enterprises, agriculture cooperatives, and agricultural production groups. In this context, we are looking at measures to address time poverty and upgrading of skills in value addition.

We are also preparing another project to be implemented in Cambodia, Lao PDR, and Myanmar called GMS Cross-border Livestock Health and Value Chains

Improvement Project with a funding of \$250 million. The areas of livestock disease control that the project will focus on are the following: Myanmar–Thailand, Myanmar–PRC, Lao PDR–PRC, and Cambodia–Viet Nam. There are also some secondary priority areas. Selection of priority areas will be done before the start of implementation as the project is still in the conceptual stage. The vision is the same as that identified by the ministers, which is that GMS becomes a leading supplier of safe and environment-friendly agriculture products. The expected outcome is healthy value chains, and formal trade of livestock and livestock products improved in project areas. The project objectives include: (i) livestock health and value chain infrastructure expanded and upgraded in a climate-friendly manner; (ii) capacity for improved production and health of livestock and livestock products strengthened; and (iii) enabling policies for better supply, health, safety and trade in livestock and livestock products enhanced. In terms of climate actions, greenhouse gas mitigation through feed/pastureland management, breeds, biodigesters, waste management

facilities will be promoted. Climate-resilient breeds, livestock value chain infrastructure will be built, and adaptation-mitigation synergies will be promoted.

In terms of high-level technologies, ICT-enabled disease control zones will be established, wherein an ICT-enabled Livestock Epidemic Prevention Platform will be created to foster e-traceability of livestock and livestock products. In terms of gender actions, the project will create employment generation for women along value chain; provide preferential support to women-led livestock enterprises; undertake measures to address time poverty; and upgrade of skills in value addition

5. Private Sector Solutions to Women's Empowerment in Agriculture by Martin Lemoine, Head, Agribusiness Investment Team, Private Sector Operations Department, ADB

I am in charge of the Agribusiness Investment Team in the Private Sector Operations Department (PSOD) of ADB. While my colleagues are focused on working with governments, my team works directly with private sector companies in the food and agriculture sector. Why would ADB give money to private sector? There are three important visions in this sector: firstly, it is highly complementary to what we do on the sovereign side. While the work with governments is focused on the supply side, ensuring that factors of production are in place through irrigation, rural roads, market infrastructure, standards etc., we focus on the demand. Our clients need to know what consumers want to buy. These two approaches join in the middle, essentially at the farmer level. The second reason is that there are market gaps. Many companies in this sector lack access to financing both in the short term for working capital, and long term financing when it comes to investing in new processing plants and new infrastructure. Thirdly, we wish to promote innovative business models. Each time we pick an investment we want to tell a story to promote a business model that is sustainable, inclusive, and should be replicated as much as possible in Asia and the Pacific.

One of the models is on contract farming, which Mio Oka referred to earlier. There is a contractual relationship between the farmer and an agro-processor. It is a win-win situation because the company will provide technical assistance and training to the farmers and ensure off-take of the produce. In Bangladesh, we work with a company called Pran, which operates a potato chip factory. The company has entered into contractual relationship with 2,000 potato farmers to supply the right kind of potato. The farmers will make more money. Each time we try and promote investments, typically, farmers double their income. That has been consistent across countries we are working in. It is not because the farmers are getting a higher price. It is mainly through higher yield and better quality. In Bangladesh, we also supported cassava contract farmers, who also expanded their cultivated area. There are various ways in which contract farmers can increase their returns.

The other model is to work directly with modern farms, or enterprises or corporate farms. This example is about a company that produces cut flowers in Viet Nam [Dalat Hasfarm] using modern greenhouses. This is a good model to support and we wish to see more greenhouses like this in Asia because these technologies are



Out-of-the-box thinking. There needs to be more ADB-funded projects that are climate-resilient and innovative through the use of appropriate and culturally-sensitive technology.

highly climate-resilient, protected from climate risk, efficient in water use, and has reduced the use of pesticides. In addition, working with modern farms allows enterprises to invest more in the workforce. The employee is trained and receives social security and benefits. This is where agriculture is moving toward an industrial stage—where a middle class that receives more benefits can be built. Ramesh asked what is the future? What is my dream? This could be a good career, to work in a modern farm like this. Skilled employees could make enough money to invest in a home or in the education of their children. In the case of Dalat Hasfarm in Viet Nam, 65% of the workforce consists of women—including those at the management level. This is something we also negotiate with the client—i.e., to push for more women empowerment in those companies. So far, we have worked with 15 companies in 10 countries. We are open for business. If you are willing to bring us a proposal, we will look at it.

Panel Discussion

Ramesh Subramaniam, Director General, Southeast Asia Department, ADB: My name is Ramesh Subramaniam and I am the director general of the Southeast Asia Department for ADB, which covers the 10 ASEAN countries plus Timor-Leste, which is part of the Southeast Asia group of countries in ADB. I am pleased to welcome all of you to this session. In the past one and a half days, there were some excellent discussions. There was a range of speakers largely from outside ADB. Many experts from think tanks as well as Secretary Dar; IFPRI's director general, and a number of others who had given their perspectives. What we have heard in this session are ADB perspectives. Five of my colleagues from different parts of ADB have shared with you what we do in the respective regions. Yesterday, the keynote speaker Dr. Mekhala Krishnamurthy presented in her first slide Vijay Tale, a farmer wearing a T-shirt saying, "Make your own destiny." She used that to highlight what making your own destiny means for poor farmers. Just imagine instead of Vijay Tale, a woman farmer would have to struggle to make her destiny. I can bet that her destiny will be even more

difficult to make. We do have gender disparities across the region. In fact, Akmal mentioned a country where being married off to a farmer was what parents used to scare girls who were not behaving well. We can imagine what plight a female farmer would face in such circumstances.

My colleagues are: Natsuko Totsuka, principal portfolio management specialist from the Environment, Natural Resources and Agriculture Division, Central and West Asia Department; Qingfeng Zhang, director, Environment, Natural Resources and Agriculture Division, East Asia Department; Mio Oka, director, Environment, Natural Resources and Agriculture Division, South Asia Department; Ancha Srinivasan, principal climate change specialist, Environment, Natural Resources and Agriculture Division, Southeast Asia Department; Martin Lemoine, head, Agribusiness Investment Team, PSOD. My five colleagues have presented case studies of projects from respective countries that they deal with. I now open the floor for questions.

Forum Participant: I am from IRRI and work on rice. As you work in different parts of Asia and the Pacific, how do you ensure sampling of expertise of other international organizations and there is no repetition of some of the activities.

Qingfeng Zhang, ADB: We have an Agriculture and Food Security Thematic Group within ADB where we get together to exchange notes and share experiences. When we have a peer review process for projects, we invite external and internal peer reviewers to provide comments. If there are any important findings or lessons, we incorporate those in the project.

Ancha Srinivasan, ADB: For every project that we process we prepare a document called development coordination matrix. We assess what and how every development partner is helping the government in the related field, and wherever there are opportunities for collaboration—as the purpose of the document is to identify synergies and avoid overlaps—we discuss with potential development partners. For example, in the Climate Friendly Agribusiness Value Chain Sector Project that we are implementing in three countries, IRRI is one of the partners. In Cambodia, the International Institute for Tropical Agriculture is also supporting the project. I mentioned in the livestock project, the International Livestock Research Institute is interested in some form of collaboration. We try to look at competencies and match and avoid overlaps.

Martin Lemoine, ADB: From the private sector perspective, there is no risk of overlap or competition where the sector is underinvested. The more partners there are, the better. We also work with cofinancing partners on projects and that may include the International Finance Corporation, European Bank for Reconstruction and Development, Japan International Cooperation Agency, Korean Development Bank, and commercial cofinancing partners. In the new trending model of blended finance, we have countries that are willing to provide grants that can be blended with commercial financing. We can use this instrument in specific cases such as climate change mitigation or adaptation or in some specific countries. This is essentially subsidized but under very strict guidelines.

Forum Participant: My name is David Friedman and I work as ADB country economist for Timor-Leste. I have a question for Mio. You showed very clearly issues around water management such as needing to do more with less water and the move toward high-pressure irrigation systems. Presumably, O&M is more complex and challenging for the high-pressure systems. I was quite impressed with the idea of having the five-year O&M bundled into the packaging. My question is whether you considered long term O&M arrangements and whether you could also have a PPPtype model covering 25–30 years, whether that is something that you are looking at in the future?

Mio Oka, ADB: You are right. With this project, we started collecting water tariffs so that it can provide a basis for future O&M fees. Normally, ADB's involvement is to initiate one project. However, we will continue over a long term period, between 10–15 years. We have a PPP component in the second project, which is of a similar nature. With that we will continue to support building the capacity of the Department of Irrigation in the Madhya Pradesh State. Additionally, we are trying to change O&M financing system as well. So, it is a longer-term involvement, not only 5 years.

Forum Participant: I am from the information technology (IT) sector. In the past 3 weeks I have been doing roadshows in the north of the Philippines at local government levels. What I noticed is that there is a gap between what technology solutions we offer and what the local levels can utilize. My question is addressed to those who have successfully applied IT solutions in project. How did you address the technology adoption challenge, such as the lack or slow internet connection, lack of network coverage, smartphone usage, power-energy management, and gaps in education?

Qingfeng Zhang, ADB: As we discussed with the Government of Mongolia, we realized the importance of using high-level technology, which is lagging in agriculture than the mining sector. The government has recognized that the agriculture sector can help diversify the Mongolian economy. They have started discussing the comprehensive packaging of the big data, internet, and block chain technology in the agriculture sector. We discussed with the government about the ICT approach in agriculture. As livestock headcounts in Mongolia are estimated at over 66 million, the government has a strong buy-in into using technology for product certification and traceability, and website marketing on the internet. We currently have only one project in one of the core provinces of the PRC in Gansu—the Internet-Plus Agriculture recently approved by the board. We can also share with you how we can apply Internet-Plus in the agriculture sector.

Natsuko Totsuka, ADB: During the project design stage, it is important to assess infrastructure and existing capacity in terms of electricity and internet connectivity. There may be some changes during implementation, so we must include the potential improvement of infrastructure over several years. It is important to design projects for developing countries, which are not too ambitious. From my experience of more than 25 years, we should not be very ambitious. Project design must be simple. In terms of project implementation and sustainability, it may be better to be cautious. In terms of capacity building, the project can contribute to improving skills. In short, it is

important during design of the project to understand restrictions in each region and country.

Mio Oka, ADB: Rural infrastructure is important. Alongside those innovative projects, we do have general projects that support provision of national level infrastructure, not just rural but also highways, electrification, etc. That is important. I mentioned a lot of newcomers in the sector. Those are the IT people and venture people who have a lot of means. What we are trying to do is link them to working with traditional agricultural actors like agronomists. Newcomers may not be collecting the right kind of information to include in their apps. That is something that ADB can perhaps provide—acting as a bridge between the new and old, traditional actors in the sector.

Martin Lemoine, ADB: On technology adoption, there is one model, which I thought is quite effective that is being used in the cut flower sector in Dalat, Viet Nam. Initially, there were no modern greenhouses in Dalat. There were traditional greenhouses for strawberries. [Dalat Hasfarm] was the first to establish greenhouses to produce cut flowers. Now, the technology is widespread, and neighbors have been copying them. The best way to spread technology among farmers is to encourage an investor to take the lead. The widespread greenhouse technology is not the same but is low-cost. They have learned at least the basic techniques. The company has been able to buy back products and the farmers have become contract farmers.

Ancha Srinivasan, ADB: Unlike other high-end technologies, the penetration of IT-related technologies is much faster in developing countries. While there are many bottlenecks, IT has something called technology leapfrogging modus, which is the reason why our projects are focusing more on IT-enabled technologies in all sectors, not just agriculture. We should take advantage of that. These interventions are not like high-end, traditional technologies facing serious constraints; IT has some advantages.

Forum Participant: Will ADB fund community-based projects managed by peoples' organizations, particularly in the area of natural resources management? Why is ADB not doing enough in this area?

Natsuko Totsuka, ADB: We do finance community-based projects in different regions. For instance, in Afghanistan we finance community-based projects, mainly for minor irrigation structures, which have been working very well. Not many contractors want to work [in Afghanistan] due to security reasons. Irrigation structures are people's assets. Therefore, the local communities are motivated. Government and communities have developed good working relationships. This is just one example.

Mio Oka, ADB: In South Asia, we do work directly with farmer-producer organizations, water user associations, and so forth. However, it does depend on the project implementation period. We have a thousand communities and it takes a lot of time to do community-based work. It must be a blend between community participatory approach and a contractor-based implementation.

Ancha Srinivasan, ADB: In Southeast Asia also, we work with several communities, including agriculture production groups or cooperatives. The modality of working with communities is established. We also work with civil society organizations and pilot community-based adaptation and disaster risk reduction measures. ADB, together with other development partners, is launching a community resilience partnership program that will mobilize additional funds to support community-based activities.

Ramesh Subramaniam, ADB: To supplement, it is a balance that ADB needs to achieve. Across the regions, ADB has projects where we work with community-based organizations. In the Philippines' KALAHI CIDSS National Community-Driven Development Program, natural resource management encompasses 25%–30% of resources. The success of the program is lies in a well-established structure with rules and protocols laid out at the local community levels in terms of participation and eliciting views. As opportunities are provided to communities, they require capacities to be built and the capability to manage finances at the local level.

Forum Participant: We talked about technology—how do we make sure that the high-level technology solutions reach out to the end-user, particularly poor farmers, who may not have capacity? What are the insights we have gained in engaging with local farmers and using such technology? What is ADB doing?

Qingfeng Zhang, ADB: This question is linked to the previous question about how to engage with the community. For example, we have the Internet-Plus Agriculture Project in the Gansu province in the PRC where the key users are farmer cooperatives. The executing and implementing agencies will engage the farmer cooperatives. Also, the transition between ADB's 2020 and 2030 strategies is a period of adjustment. The 2030 strategy has more modalities to accommodate a community-based approach. Both in Mongolia and the PRC, the natural resources project and the agriculture project are very much community based.

Ancha Srinivasan, ADB: For every technology we cannot directly go to the last consumer. The role of intermediaries is important. Depending on the level of capacity, we need to engage end-users for a successful demonstration of the technology. We cannot avoid the role of intermediaries in technology diffusion.

Ramesh Subramaniam, ADB: From what you experienced in the GMS, have you done any pilot testing of specific technology solutions and what are the insights gained?

Ancha Srinivasan, ADB: In Cambodia, we did a pilot study with the support of the Sustainable Development and Climate Change Department on the feasibility of ICT application for agribusiness. There were challenges in terms of data availability, data transmission, and the ability of farmers to reliably understand the weather information and credit or market information. How do we overcome those challenges in a real project? The feasibility study has given us some understanding of the challenges we have to overcome in the main investment.

Martin Lemoine, ADB: Technology should be part of an ecosystem. If we take the contract farming model, it is effective to add technology into it because an agreement already exists between producer and buyer. For instance, in Bhutan, we are supporting a hazelnut processor, who has helped 15,000 farmers plant hazelnut trees on their land. The company has deployed about 200 extension workers and monitors, who traveled through Bhutan to help the farmers. They have developed their own app and have the technology. Bhutan has good connectivity, so it works very well. It is true that the farmers will not be able to figure out the use of technology on their own. They have learned how to use the technology because someone from the company comes every month to teach them and solve their problems. Technology through the private sector, through government, through nongovernment organizations (NGOs) and civil society organizations using various channels.

Mio Oka, ADB: In ADB operations we always think about value addition. We try to ask ourselves about what the government is involved in at the moment. If ADB gets involved, what is the value addition that we can bring to the development project. One of the things we can often undertake in our sector is targeting. In a rural infrastructure project, we can target a less fortunate area; or in provision of capacity building, we can stipulate based on baselines undertaken a percentage (e.g., 30%) coming from a scheduled tribe (minority) or indigenous people, or poorest of the poor. We do include this targeting mechanism in the project design.

Forum Participant: My question is addressed to the livestock project. What were the main criteria for selection of farmers for funding? After receiving funding what is the increase in yield of milk and meat?

Qingfeng Zhang, ADB: We have had two approaches related to farmers. One is contract farming. Most of the cases are with small and medium-sized enterprises (SMEs) that have pig farms or culture farms and have contract farming arrangements with individual farmers. In some cases, we have also directly engaged with individual farmers. One of the long term projects we are working with in the PRC is the Efficient Utilization of Agricultural Wastes Project with biogas digesters. At the individual farm household levels, we lend them \$2,000. But this kind of modality is difficult to scale up. That is why we are encouraging the agricultural value chain and participation of agro-processing enterprises, financial intermediaries, and commercial banks.

Forum Participant: I am from Timor-Leste. My question is addressed to the panelist on private sector operations. You mentioned contract farming and it has a great impact in the community. It has increased incomes in the community. Is it possible for you give some elaboration on the socioenvironmental impacts of that? When the private sector comes into play, most of them focus on income (profitability), but those farmers are also looking at food security. When they produce for exports, most likely they will have to rely on food importation. Once cash crop producing-countries face problems, there will be problems for farmers. Could you give information on ensuring food security for those involved in contract farming. The second question is on irrigation scheme. Ensuring water availability is very important and Timor-Leste is no exception to that. We are a small country with a big problem of water provision. I was impressed with the pressurized system of irrigation mentioned. ADB has done some study in Eraulo in Timor-Leste on water and was going to undertake some work but up to now the project has not been implemented. Since the initial considerations, 5 years have passed, and I do not know why nothing has happened. Water provision in Timor-Leste is very important. Without ensuring water availability, we cannot talk about productivity or food security. The introduction of technologies will remain without impact unless we ensure water is available. Is there any opportunity for ADB to apply experience from other countries to Timor-Leste in improving water provision, using PPP, or other mechanisms to help vulnerable people?

Martin Lemoine, ADB: Your point on the risk of the contract farming model is fair. We are quite selective in trying to pick business models that are sustainable for the farmers. There are two elements. Firstly, we do not support purely a trader who will come in-and-out. We pick agribusinesses that are investing for the long term in the countries. If we invest in a coffee processing plant, for example, this could be a 10-20-year investment and we cannot just abandon it after a few years. That is why foreign direct investment (FDI) is so important. An investment is a multiyear commitment as opposed to a trade, which could be for less than a year. That is why we support long term investments and FDIs. When the farmers see that, they understand the commitment. The farmers then are also ready to invest on their part. It is thus important to have long term commitment in agribusiness from the buyer. Secondly, our support and technical assistance promotes intercropping and discourages mono-cropping. For instance, hazelnut tree growing in Bhutan is being done on barren land intercropped with cassava. Farmers still retain their paddy fields for rice, and they have livestock on the side. In Timor-Leste, we have ensured that intercropping for coffee farmers is part of the technical assistance.

Ramesh Subramaniam, ADB: In the past few weeks we have been discussing a new business strategy and plan for Timor-Leste. I suggest is that my colleagues Jiangfeng Zhang and David Friedman discuss with you. In short, we will certainly be happy to look at it because until now our support has been focused on transport connectivity. Both the government and ADB are interested in looking at water supply as well as water resources, including efficiency improvements.

Forum Participant: What are the challenges faced by ADB in trying to bridge farmers and the private sector and how does it address those challenges?

Qingfeng Zhang, ADB: The agriculture and rural development project I just presented is an example how we can use private sector to reach out to farmers. I shared information about cashmere wool and dairy products in Mongolia. These products are difficult to package if there is no intermediary SME to reach out to the farmers. That is why we engage the five commercial banks and these banks lend funds

¹⁸ ADB. 2018. Lao People's Democratic Republic: Climate-Friendly Agribusiness Value Chains Sector Project.

to 15 SMEs, most from the private sector, who work with farmers and herders to buy the raw material. Then they process and sell products to international and domestic markets. The modality is quite important: commercial bank as a finance intermediary, private sector, farmer-herder.

Ancha Srinivasan, ADB: It varies from country to country depending on the extent of the appropriate enabling environment for private sector participation in agriculture. For example, in Lao PDR under the Climate Friendly Agriculture Value Chain Project,¹⁸ we plan to try a matching grant scheme. The intention is to provide up to 60% grant to a private sector entity that has prepared a business plan, which provides for working closely with smallholders and commits to help them with climate-smart agriculture practices while following good, climate friendly manufacturing practices. The intention is to build confidence between the private sector and farmers so that farmers can see that the private sector company is not only after profits but is there to help them. The variation of such interventions depends on the maturity of the private sector and farmers and the appropriate enabling environment (e.g., the contract farming law as regulation vary with each country). PPP frameworks are also of variable quality. The extent to which PPPs will work for the agriculture sector is more challenging than in sectors like tourism, textiles, and mining.

Martin Lemoine, ADB: A critical element to bridging the gap between companies and farmers is working capital. That is the main issue for many of our clients. Working capital is important in this sector because one may have to (i) advance cash to farmers to purchase seeds, equipment, or other inputs; (ii) carry inventory because buying is scheduled once or twice a year. Advances and inventory are elements of working capital, which are short term assets that have to be financed by short term loans from banks. That component of financing could become huge and become an issue because if at the same time the company wants to grow, this will eat into the operating cashflow. This is an area that needs attention and it would be good if governments could look into it. They could partially subsidize the costs or enact a law to allow banks (as in the Philippines) to allocate a certain percentage of their lending to the sector. Thus, working capital is very critical for the sector.

Forum Participant: I am from IFPRI and my question is addressed to Mio. It seems that your projects on irrigation in South Asia tend to focus on technical or irrigation side of interventions. To what extent is ADB looking into soft interventions, such as social learning, behavioral change, and community institutional development, particularly in managing ground water resources? With our partner in India, the Foundation for Ecological Security, a large NGO, we have been piloting experiential learning using group games relating to groundwater management issues, which also involve community-wide discussion and briefing sessions on what they learned. We found that these games help improve perceptions of individuals and the community relating to how one's actions will affect the resources for others and how important rules and enforcement are. Communities who underwent involvement in games were likely to adapt water security plans and these games tend to play a role in making communities more receptive to technology interventions. To what extent is ADB thinking about incorporating soft interventions in the programs what ADB sees as challenges and issues in doing that?

Mio Oka, ADB: You are right. We put the farmers in a position to pay for water, which they never paid for before. As the farmers plant grains, the project encourages farmers to also grow high-value crops as well for more income. The technical assistance that goes with the project will be implemented by the Department of Agriculture. As we go along, we will identify lessons from within India and from outside and will be happy to learn from experiences gained by other institutions.

Forum Participant: My first question is addressed to private sector operations. I am sure you have interacted with a lot of agribusiness groups. From your interaction, what are the policy constraints that could probably be addressed by the public sector operations to further development of agribusiness in this area.

For the regional departments, I have two questions. One is about ADB's promotion of PPP schemes—are there any success stories, which you could possibly share with us and inform? Secondly, we have been hearing in the past one and a half days that Asia has been quite successful in reducing poverty incidence but not the hidden hunger, which is malnutrition; on the one hand, we have stunting, which is becoming a persistent problem. On the other hand, we have obesity, which is emerging as a major issue. We all know that food and nutrition security are inextricably linked. What are the present and future investments that ADB is looking at in the context of addressing the linkage of food and nutrition?

Forum Participant: Could ADB private sector loans focus on more products to address nutritional needs?

Martin Lemoine, ADB: The FDIs usually express one constraint, which is the requirement of local ownership in some countries. This is typically not well understood and probably not needed, but there are historical reasons for that. Governments need to think carefully what they wish to pursue. The sector is underinvested, and countries need investments in the sector. The foreign investor should be responsible and should have a sustainable business. Such investors should then be allowed to own the FDI as a 100% entity. In the case of Viet Nam, the cut flower company is a 100% foreign-owned company and works very well. Secondly, trade barriers e.g., rules regarding import of packaging materials are heavily taxed; vitamins and minerals one can use for fortifying flowers or biscuits are heavily taxed. If we want to make food more nutritious, importation of such ingredients should be without trade barriers. Perhaps governments are not aware of this problem as there is no feedback loop. Thirdly, the tax system in some countries is very attractive (agriculture is not taxed at all), while in other countries the tax system could be quite disadvantageous to the sector. Nutrition is a core priority for ADB. In the past, we have supported investment in the dairy sector, which is important for nutrition. We have supported agribusinesses dealing with fresh fruits and vegetables, which is also important for nutrition. We support the coconut sector, which is considered a healthy ingredient for food and beverage. We could go into fortified food.

Qingfeng Zhang, ADB: For PPP I can use Mongolia as an example. In the livestock sector there is tremendous opportunity to use PPP. PSOD looked at a number of companies from the 15 SMEs. Gobi Cashmere may be sizable enough to be

considered by PSOD. But that is not enough. In terms of dairy production there is an opportunity for PSOD to examine downstream investment in the livestock project. The public sector is paying attention to providing an enabling framework while private sector is picking up investments on processing and value addition.

Natsuko Tosuka, ADB: In the Central and West Asia Department, we have several financial lending programs where ADB channeled its loans to private banks through the Ministry of Finance. Private banks provided subloans to the private sector like food processors, large farmers wishing to build cold storage, or anything related to value chain improvement (e.g., horticulture). We are now going to have lending in the livestock sector. The financial intermediary modality helps to link private sector to farmers to develop the value chain. The modality also helps develop the value chain in line with government policy. Instead of just providing the private sector with financial support, we involve the Ministry of Agriculture, for instance, to evaluate subloan proposals from private banks to ensure that these proposals are in line with government policy. The financial intermediary loans can only be applied in countries that have a robust financial system. For countries that have sufficient capacity in the financial sector, the financial intermediation modality is one option, where the private sector can contribute to agriculture investments, while the government enables a sound policy environment.

Ancha Srinivasan, ADB: In terms of PPP there are several models that have been tried out with each model having its own strengths and weaknesses, as well as particular circumstances of the country and the regulatory framework of the PPP law. Like environment or climate change, investments in nutrition are seen as soft investments. We do not have concrete numbers that can convince policy makers on how much additional investment is needed for nutrition. That is where we need to do more work and create a demand for nutrition-related investments.

Forum Participant: I have been hearing about the use of high tech to foster growth in agriculture in the last few days. Technology does not necessarily need to be high tech to be relevant. It can also be simple, affordable, safe, practical, scientific, and yet eastto-use, free or cheap, and relevant, especially in times of climate change. I agree with the gentleman from Timor-Leste that water availability would first have to be ensured for any irrigation system to be fully utilized. Otherwise, investment in agriculture may not be as relevant. In India, there are many groundwater recharging and traditional water harvesting systems available. I am sure there are many more in other countries, which may have become lost due to disuse but are more than ever relevant today because of climate change, as water availability can really become volatile. Similarly, many traditional varieties of crops are available, which are not only robust and resilient to climate change stresses—many are high yielding varieties. Many modern climate-resilient varieties that have been developed have been based on traditional genomes, which are again based on traditional knowledge of farmers. Is ADB doing anything to revive traditional infrastructure relating to knowledge, resources, varieties, as the economic value is huge?

Ancha Srinivasan, ADB: Definitely, there are many projects that are building on traditional knowledge, and it is important. However, we cannot only rely on traditional knowledge or traditional practices to cope with for example future impacts of climate change. Building on current technologies and then blending with modern technologies is the approach in ADB.

Ramesh Subramaniam, ADB: Our President talks about his visit to Sri Lanka, how 4-centuries old water management technology and system is still robust, in operation, and could go on operating for many more decades to come. Certainly, the point that you have made about traditional systems and knowledge and their value today is valid.

Qingfeng Zhang, ADB: There are old irrigation schemes in the PRC that are 2,000 years old and still working in Chengdu and Sichuan province. These are still relevant for adaptation to climate change. Nowadays, we do have hydrological maps and basin maps that provide us with a structure and forecasting has become relevant. But knowledge of traditional structures is still valid today.

Farmer Participant: My name is Samath and I am from Cambodia. I am from the Livelihood Improvement Association that has a membership of 30,000 farmer families. Women represent about 60% of our membership. I am happy to inform you that all our members are happy to receive ADB support. I would like request ADB to continue support and confirm that our women members have received a better understanding than in the past. I hope that ADB will introduce new farming and livestock-raising technologies and facilitate linkages with the market. Finally, I would like to request ADB not to abandon us as we have just been established for one and a half years. The association in the near future will increase its membership by another 15,000 farmer families. We need continued ADB support.

Ramesh Subramaniam, ADB: Thank you very much for that feedback. ADB colleagues working in Cambodia flank you on both sides in the room here. They have heard your feedback and we will certainly take this into account.

Forum Participant: My first question is, is there any facilitation like R&D for livestock, crops, and fisheries due to climate change? Do you have any framework or model for private sector research institutions, including the end-user approach? My second question is, how do we assess the impact of our projects implemented in the different DMCs? Do you have any data to show sustainable impact in the DMCs?

Qingfeng Zhang, ADB: We do have a research associate with livestock background and capacity building expertise. You can contact us.

Ramesh Subramaniam, ADB: I will also supplement your question on whether there is any framework in terms of engagement with such institutions. The answer is yes. We do have some models, for example in promoting South–South cooperation, learning between countries. There has been work done with PRC as well as between India and the Philippines. We can share these frameworks with you. On the second question relating to impact of projects in DMCs—that is a major question. Evaluations are done from time to time. The usefulness of the evaluation also depends on how good the design is, particularly if you are looking at community-level interventions. The time and effort put into design and monitoring framework, the key performance indicators we have in place is important. Ground trothing and ground-level data is an issue.

Forum Participant: I am from the University of the Philippines, Los Baños. I am also a farmer and an entrepreneur. Most of the initiatives shared today are on the supply side, i.e., increasing farm productivity and income. But I have not heard anything on the demand side—good distribution and consumption, which in my opinion is lacking. It is also related to how rural–urban linkages can be facilitated. My family owns a food store. Our vision is that every corner of a settlement should have a 7/11 food store. We all know what 7/11 offers. Maybe less than 20% of that store content can be classified as food. Nevertheless, I think that every 300 households should have access to a food store. Activities of this nature can be put together by the private sector. But we want that the neighborhood store should be inclusive. I mean homeowners associations, tricycle drivers associations, for example, should have a place there. Putting up something like this will need logistics and organizing producers and consumers. Does ADB have a business model that can do this, and which can be replicated elsewhere?

Martin Lemoine, ADB: Retail distribution is important for the private sector. We know this from our partners like EBRD, which has had a huge success in this. It is highly important to develop and promote modern trade and retail outlets that include 7/11 or supermarkets. But they need to be inclusive. One model we are supporting in Kazakhstan and the Kyrgyz Republic is the model of a food and beverage company that is helping shopkeepers by providing coolers. It is similar to contract farming— only that this is contract retailers, creating a win-win situation. By putting in coolers with products of the company in the retail outlets, it opens multiple avenues for the sale of its products. The coolers are energy efficient, which is good. But we are telling them to go beyond that. We insist that 50% of coolers should be given to women-owned retail shops. We could try that in the Philippines.

Ancha Srinivasan, ADB: Consumer-driven interests have driven the design of projects even in the public sector. It may not be directly evident when we explain the project. For example, in the agribusiness project I am referring to, we look at the type of standards and quality and safety standards that are on demand by consumers, whether high-end consumers, tourists, or for the export market. Consumer demand of standards are guiding factors in the design of agribusiness projects.

Qingfeng Zhang, ADB: We need to have integration between rural and urban. Tomorrow my colleague will talk about rural vitalization in the PRC, which is a demand-driven project we are supporting. More importantly, it is necessary to attract investment from urban to rural areas. **Ramesh Subramaniam, ADB:** Before I bring this panel discussion to a close, I would like to supplement on your last question, which is a very important point you have raised. If you just type "agriculture," "ADB," "demand side," you will find a series of things funded by the Japanese Fund for Poverty Reduction (e.g., support for establishing rural retail markets), thus bringing supply and demand side together, including examples from the Philippines, Myanmar, Cambodia, South Asia and many other parts of the Asia and Pacific region. I greatly appreciate your active participation and a round of applause for my ADB colleagues.

Thank you.

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.

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