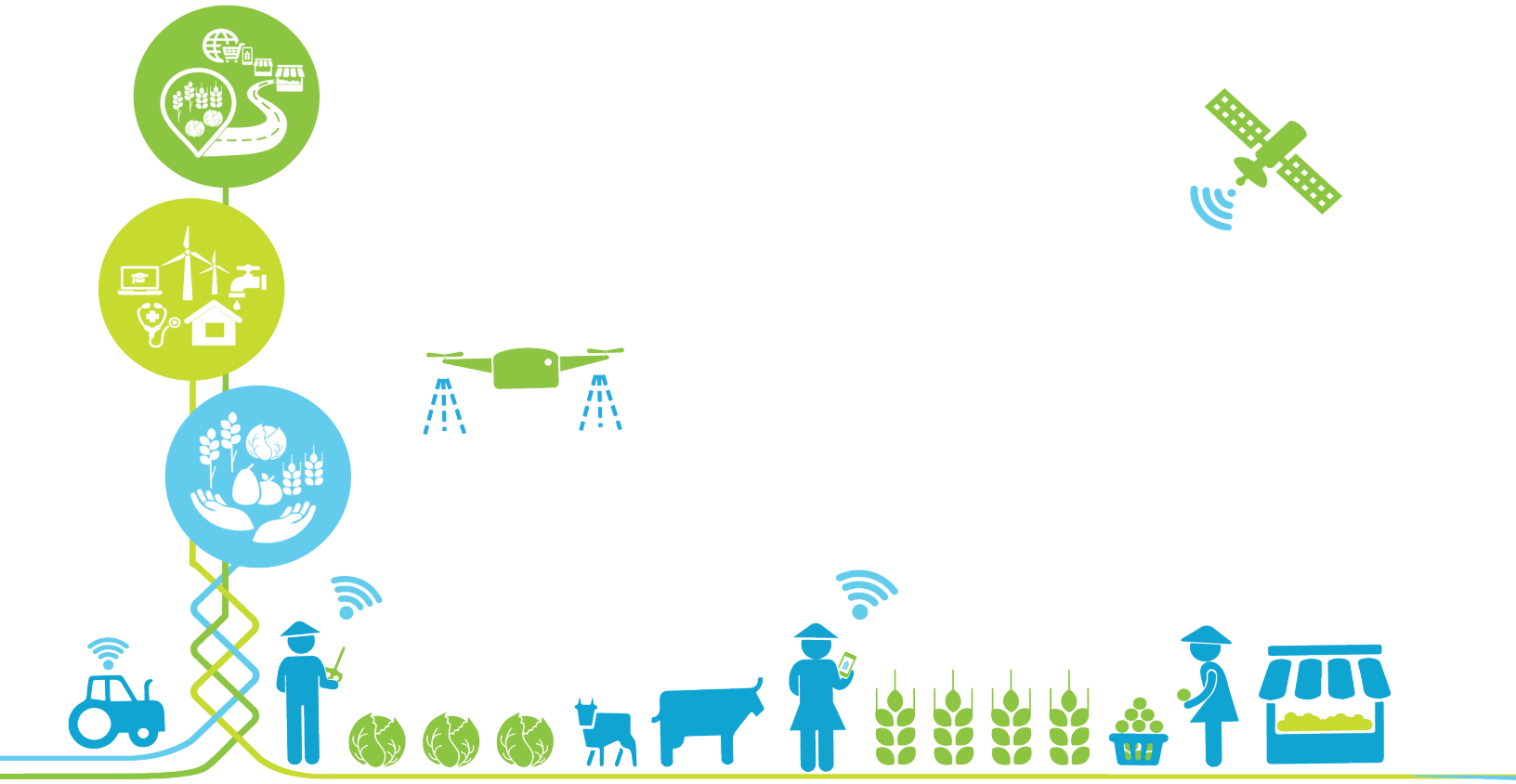

RURAL DEVELOPMENT AND FOOD SECURITY FORUM 2019 PROCEEDINGS

DECEMBER 2020

ASIAN DEVELOPMENT BANK

ADB

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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
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

Key ally in rural development. The active participation of the private sector is essential to drive transformative changes in rural areas.

Knowledge Sharing Among ADB Member Countries

Some countries in the region have taken creative and out-of-the box initiatives through public policies, and public and private investments. Discussions focused on what has been done so far and adopted by the member countries of the ADB. The sector profiles and developments showcased knowledge sharing and learning by participants to reflect on the good models that they countries can adopt..

Presentations

1. Farmer Producer Organizations: Experience in Maharashtra, India
by Anoop Kumar, Principal Secretary for Marketing Department, Maharashtra, India

Maharashtra is one of the largest states in India. It is third largest in area and second in population with 120 million. Agriculture continues to be the backbone of the economy: 52.1% of its population depends on agriculture and contributes 15% to agriculture GDP. Over recent years, Maharashtra has significantly transformed its agriculture, which is no longer based on cereals and food crops. It has become a leading state producing high-value crops like cotton, soya bean, horticultural crops, and vegetables. Maharashtra is a top exporting state of India containing maximum infrastructure, including the Jawaharlal Nehru Port Trust, which handles 70% of India's exports and a maximum number of institutions dealing with exports. We also have the largest number of farmers who are global agricultural practices-compliant. However, the state has a diverse geography and some areas are not doing that well—distressed areas such as Vidarbha and Marathwada.

In Maharashtra, all out efforts have been made in last 2 decades to intensify and diversify crop production, improve crop quality and productivity, making it more market-led production with better postharvesting handling. Maharashtra has ranked number one

in India in Agricultural Marketing and Farmer Friendly Reforms Index prepared by Government of India.

The formation of farmer producer organizations (FPOs) and/or farmer producer companies (FPCs) is a process of collectivization of primary producers, especially small and marginal farmers, into a formal legal entity. It has emerged as one of the most effective pathways to address many challenges of agriculture—access to markets, quality inputs, technology applications, improved logistic and public investment. Hence, the government of Maharashtra's policy focus has been on farmers' collectives and FPOs for better aggregation, better logistics, and their integration with retail market value chains. The FPOs, registered as FPCs, under the special provisions of the Company Act 1956, have emerged as most appropriate institutional formats in Maharashtra to mobilize farmers, build their capacity, and collectively leverage their production and marketing strength.

The farmers' price realization in most agricultural produce is in the range of 35%–50% of the price paid by end consumers. Farmers have neither control over logistics nor control over the entire value chain process. Many may ask what is the difference between FPO and cooperatives? In Maharashtra, cooperative societies developed early but over the years they lost relevance because of political overplay by dominant political forces. Except for commodities like sugar cane and cotton, cooperatives started failing the farmers. FPCs emerged as a viable option, which have between 20–25 members. It started primarily with the input side by scaling up the procurement operation, bringing down the cost of inputs, especially seed and pesticides. Later, FPOs started covering the entire value chain. First it started at farmgate level, with drying primary processing and then making it market ready. Then they went into market logistics, transport operation bringing produce to retailers, wholesalers, or commodity exchangers, or even export markets. Currently 1,696 FPCs have been registered, of which 1,000 are reported to be active. The Maharashtra state government has given various facilities to FPCs. They have received 50% discount on storage charges agricultural produce in Maharashtra State Warehousing Corporation. Free direct market licenses have been given to FPCs by the directorate of marketing. Interstate 50% transportation subsidy has been given to FPCs for agricultural produce trade. This subsidy is given by the Maharashtra State Agricultural Marketing Board. Priority has been given to FPCs to trade market their produce in weekly market organized by the board. Under several agriculture schemes, priority or preference is given to FPCs—for example, crop production, seed production, and farm equipment. Preference has been given to FPCs under the Public–Private Partnership-Integrated Agriculture Development scheme for example, modern onion storage projects.

Majority of FPOs formed in India are in the nascent stage of their operations with shareholder membership ranging from 100 to over 1,000 farmers. Even though the central and state governments are taking measures to strengthen FPCs network and improve their current situation, majority of FPCs face some critical challenges, which are inadequate professional management, inadequate access to credit, inadequate access to market linkages, inadequate access to postharvest infrastructure, lack of technical skills and awareness, and lack of risk-mitigation mechanisms. Benefits of FPCs are (i) farmers' cost-savings on inputs, (ii) cost reduction on harvesting and

reduction in losses, (iii) increase in value of produce and encourages farmers to undertake risks, (iv) working capital, (v) seed production, (vi) training and capacity building, and (vii) market linkages. So far 180,000 farmers have been mobilized into 406 FPCs. There has been a 22% higher price realization of goods produced and 8% input cost reduction for FPCs.

2. Harvest More with Less: Water Smart Farm
by David Tan, CEO, Netatech Pte Ltd, Singapore

Singapore needs to establish food security due to increased uncertainties. It has limited land, high costs of water and energy, climate change, supply disruption, and population growth. As a small country, what options are open to Singapore? By the way, which country ranks first in the world in food security? Singapore. Yes, Google and find out. We do have farmland and agritech. How did we achieve that? We have three lines of defense: (i) make a lot of money and buy globally—we procure food from 95 countries, (ii) grow globally, and (iii.) grow locally. We have stockpiled 3–6 months of rice to feed our population if global supplies are disrupted.

Let us look at the third line of defense—growing locally. This has called for a Smart Farm for a Smart City. We do indoor farming and use any space found suitable to grow food. We envisage a 20-story farm to grow vegetables on the rooftop and below that we can grow fish. Further down there are apartments used by people to live in. This is our vision for the future. One of the realistic spaces we are exploring to use are walls of large housing complexes, whereby we have 1 million square meters of vertical wall space available. If we can farm 2–3 kg/square meter, we can produce 2–3 million kg of vegetables, which is enough for at least 30% of our monthly food supply. We need to break away from traditional farming methods changing from centralized to decentralized farming. Hereby we are talking of utilizing very small spaces like 200–300 square meters per housing block—and we have about 10,000 housing blocks. We can invent a whole supply chain: how to produce seedlings, how do we grow and market, and how the food is delivered to the doorstep. Grow the food, use an app, order the food, pay for it, and receive delivery. We want to farm cleanly and responsibly because the farms we are proposing are integrated in the places we reside. We do not want to have contamination in our residential buildings, in the water, and the environment.

Singapore has high humidity and high temperatures that are not suited for good farming as there can be outbreaks of pests and disease. That is why we need to look for technologies and a new way of farming. Therefore, climate control is important and so is biosecurity, which is crucial to be able to farm 100% free of pesticides. Most people in Singapore do not drive but catch a cab. The rooftops of car parks are empty, and we can set up rooftop farms. Underneath highways we have space where we can channel light into and farm under viaducts. There is the option of underground farms, indoor farming, and vertical farms and integrate aquaculture and hydroponics.

The possibilities are endless. At the newly refurbished Funan Mall in Singapore, we are showcasing a pilot farm on the sixth floor, which grows rice. We grow dragon fruit, mushrooms, and chili, and do aquaculture and microgreens (sprouts).

From the vertical to the horizontal—5 years ago, we established a capacity building academy that trained young people from the region. We focused on research and training, brought young people to Singapore and trained them. They went back to their respective countries to fuse rural with urban ideas. We are trying to build capabilities for the future among younger generation that can deal with technologies to grow vegetables. In Singapore we grow capsicum and strawberries. Our trainees are provided with skills and then sent back to their countries so they could use their skills and knowledge. Our trainees, who went back to Chiang Mai, Thailand, which is 1,400 meters above sea level, started producing food and exporting to Singapore. When our trainees go back, we support them in farm operation best practices, crop and soil agronomy, farm system and infrastructure optimization, pest and plant health management, automation, and farm to Internet of Things digital solution. We walk with them in the field, build together and finance them. Vegetables grown on the farm are exported every 2 days to Singapore. We have built 34 greenhouses in 4 months that produce 10,000 kg of vegetables every month for export to Singapore. This kind of project is highly scalable, and it has created employment for 30 families in 4 months. We connect the producers directly to demand for their products using our supply chain system and help them brand their products. These products are now being sold to cold storages, supermarkets, and online. Together we can make a better world.

3. Food Processing and Supply Chain Management
by Charoenchai (Charlie) Khompatraporn, Head of Sustainable Technology, Management and Design Research Cluster, King Mongkut's University of Technology Thonburi (KMUTT), Thailand

In 2018, Thailand produced over 39 million tons of food, of which 55% was consumed domestically, about 40% was exported, and 5% was kept as inventory. Some raw materials were exported for further processing abroad while other items were exported as processed goods such as canned tuna, cassava starch, canned pineapple, food flavors and sauces, as well as ready-to-eat meals. Most of the exports are to Japan, the PRC, US, and six countries in Southeast Asia as well as the UK. We are ranked twelfth as a global food exporter but have only 2.36% (as of 2018) of the global market share. How did we achieve that? Contributory factors were farmers willing and ready to adapt to new production methods and innovation, previously cheap labor (but losing the competitive edge to some neighboring countries), economies of scale, and food processing capacity. Some of these food processors collaborate with universities in Thailand. Our university—KMUTT in Thailand collaborates with two large processing companies in the country. Our students are placed in these companies after graduation and many secure good positions. Research projects we conduct are also requested by the private sector companies in the food processing sector. The government has also directly contributed to the food sector by establishing a Bank for Agriculture and Agricultural Cooperatives. The Ministry of Agriculture has a Department of Rice and an Agriculture Research and Development Agency. All are geared to supporting farmers and providing funding for projects relating to agriculture. These interventions have contributed toward Thailand's growth in food production, processing, and exports. What is next?

Thailand is progressively becoming an aging society. The government is trying to extend the retirement age of government officials to 70. Urban migration, which is happening everywhere as in Thailand, adds to the complexity of the supply chain. Food delivery services are growing in the cities and urban migration will add to changes in the future regarding processing and delivery of food. Climate change has also impacted on food production (vegetables, seed grains) and we need technology-driven knowledge and techniques so that we can cope with challenges the changing climate is bringing about in the environment. We also need a new business paradigm, as the younger generation does not wish to be farmers. Farming is no longer attractive. How do we cope with this situation?

There are technologies that can be adopted wisely instead of these becoming disruptive. Using 5G technology could perhaps help us monitor our crops remotely, use data-driven hi-resolution imaging technology to provide early warning, and keep costs down. Using artificial intelligence technology, and data analyzing techniques, we can also match demand with supply by using real-time data about consumer preferences and choices.

The technology could help us avoid overproduction of food in the future, reduce overuse or wastage of natural resources, and match plans with production. Using the internet technology and mobile applications, we can also monitor and match supply in rural areas with demand in the cities. In the inner-city areas, we can also analyze and match access to food with various food providers using simple apps. There is a movement in Thailand that focuses on resolving the food gap in Thailand. We produce a lot of food and yet we still have hungry people. Drone technology is another way of driving the cost down of crop and livestock management, monitoring conditions and taking timely remedial action, and providing accurate forecasts and yield predictions.

Lastly, when we look into the future, smart sustainable technologies and automation, create high value-added knowledge driven products, provide capacity building and an entrepreneurial ecosystem for the younger generation to operate in and provide services and shared benefits.

4. Horticulture and Agri-food Business Development
by Mustafa Erkan, Professor, Department of Horticulture, Akdeniz University, Turkey

Turkey is the only country located between Asia and Europe and has four different climate zones with rich crop diversity. Turkey is ranked the largest country in terms of agricultural economy in Europe, having the second largest agricultural economy among OECD countries, and ranked ninth globally. Agricultural land covers 25 million ha with 3 million people involved in agriculture with a value of $62 billion in agricultural trade. The average farm holding size is 6 ha. The portion of female labor in Turkey's agriculture is ranked as third largest in the world. Turkey's agriculture produces over 54 million tons of fruits and vegetables, which is 3% of the total global production. Turkey is also the world's fourth largest producer of fresh vegetables and seventh largest producer of fruits, with an annual trading volume of $2.5 billion.

With regard to vegetables, Turkey produces about 32 million tons annually, of which tomatoes consist of 12 million tons. In terms of fruits, Turkey has a total out of 22 million per annum with grapes (nearly 4 million tons) ranked as number one followed by apple (3.6 million tons).

Antalya is the greenhouse center of Turkey containing 47% (13,962 ha) of total Turkey's greenhouses (29,954 ha) covering both glasshouse and plastic. Forty years ago, farmers were using traditional heating systems and since the 2000s, modern heating systems have been introduced in the greenhouses. Banana production has now been switched to greenhouses to maintain higher quality using geothermal energy sources to keep the banana greenhouses heated during winters. Turkey has nearly 3 million tons of installed cold storage capacity, which is essential for exports and cold chain management. One of the advantages Turkey has is the availability of nearly 500,000 tons of naturally cooled underground storage facility (average 10 degree Celsius) for lemon, potato, and onions, thus saving operating costs. As cherries are the number one export product of Turkey, modern packaging facilities and sorting lines have been introduced to facilitate exports.

While Turkey has had traditionally some advantages as well as legislation that is compatible with EU import requirements, it is weak in branding, has inadequate inspection and control, inadequate share of R&D and infrastructure, inefficiencies in producer access to markets, and high dependence on external markets for agricultural inputs. Rising energy costs, political instability in the region, negative impacts of climate change on production and markets, migration from rural to urban areas that jeopardize production and sustainability and increasing input costs due to currency exchange fluctuations are some of the threats that need to be addressed.

We achieved our successes due to government support, which came in the form of loans covering 50% of costs for building greenhouses and cold chain storages. The government also provided support to producers in introducing good agricultural practices and organic farming. Financial support also was provided for refurbishment and renovation of infrastructure (cold storages) to be modernized into dynamically controlled atmosphere storages. Most companies now use cold chain management to be competitive in export markets. There is a good relationship between universities, government, growers, and private sector companies involved in the sector where knowledge, skills, and technologies are shared through annual meets and training events. Sometimes growers are taken on study tours to other countries to learn about technologies. The government has been covering 50% of the costs per grower. All these government interventions have helped the Turkish horticulture and vegetable sectors to grow.

5. Private Sector Initiatives in Agriculture
by Cedric Wijegunawardane, CFO, Silvermill, Sri Lanka

My presentation highlights how the private and the public sectors can get together to assist farmers. In Sri Lanka government support to agriculture is not remarkable. Agriculture contributes 7% to Sri Lanka's GDP while absorbing 30% of the country's labor force. It offers livelihood to about 70% of the rural population and utilizes 43%

of the total land area of the country. But agriculture provides nearly 80% of domestic food requirements.

Some of the key issues faced by the farmers are:

i. cropping in an unplanned manner with little or no market intelligence,
ii. oversupply of produce with inadequate food processing facilities locally available,
iii. no expertise to cope with natural disasters,
iv. little or no strength to cope with middlemen,
v. no buy back agreements in place,
vi. insufficient knowledge to maximize usage of water and land resources,
vii. reluctance to change traditional agricultural practices, and
viii. limited opportunities of employment for women in rural areas—who look for jobs in urban areas leaving husband and children behind, with other social consequences.

Silvermill is a coconut-based company. It ensures that coconut farmers derive better value from their land, as there is land fragmentation. Once farmers do not get good returns, they usually sell their land to real estate developers. That affects the company, which has survived for 99 years but may not go much longer in the future if coconut—the raw material—is not available. The national average yield is 45 coconuts per tree whereas expectations of yield are between 100 and 120 coconuts per tree.

Our company created a foundation under its corporate social responsibility efforts to channel its funds and those received from foreign buyers (in the US and EU) directly to improve farmers' well-being. Local banks are also interested in participating by providing some training on microcredits and lending. We also aligned ourselves with the SDGs of the United Nations (UN).

We started with agriculture livelihood improvement by conducting field demonstrations, and coconut seeding and distribution by working closely with government extension officers who train farmers while we provide the necessary funding through the foundation. That is where PPP takes place. After the war in the Northeast came to an end, we were involved in development activities such as provision of clean water and affordable energy, and thereby rely on the army to supply us with the human resources to conduct development activities. This also helps the army to build bridges and restore good relationship with the civilians. We also tie up with various government agencies to secure technologies such as drip irrigation and get these introduced to the farmers. Waste reduction is another area we work on. We get the farmers to work on beekeeping to improve pollination, solar energy projects, composting, sanitation, educational skills development and other areas.

Harnessing creative thinking and partnerships. Session panelists showed that it was possible for countries to climb up the food security and international trade ladder through innovation and technology.

Panel Discussion

Question from the audience: All your presentations are admirable. Your success stories are worth replicating. You have accomplished so much within a short period of time and enhanced global food value chain. You have started using technologies (Singapore and Thailand) to further improve production, processing, and marketing. My simple question is addressed to Singapore—you are having outgrower schemes (e.g., in Thailand). Can you come to the Philippines and set an outgrower scheme here to help us out?

Mio Oka, ADB: Relating to this question I have a supplementary one received over the EventAir App. What are the facilitating factors at the policy and governance level that supports your company to implement a successful program in Singapore? Maybe you can elaborate on your relationship with the government?

David Tan, Netatech Pte Ltd, Singapore: Singapore has lost a whole generation of agriculture talent. For many years the government did not focus on agriculture but more on food security. We have our National Trades Union Congress supermarket, Fairprice, that is owned by the government, which controls the prices and takes care of our food. Only in the last 5 years when we were feeling the impact of climate change and geopolitical tensions, has the government started to look into food security aspects and what Singapore can do to minimize risks. In the last 2 years, the government started pouring in funds to create an industry in research and training. We must be realistic about the fact that Singapore does not have enough farmland, unless Singapore decides to reclaim more land. One of the plans is to float our farm on a reservoir. As I mentioned during my presentation, the Filipino trainee we invited to our academy in Singapore is now back in the Philippines as our ambassador. We have set up our office in Bonifacio Global City to start the farming transformation. About assistance and funding, I believe the business itself must be sustainable, just like any enterprise. We cannot just depend on the government or grants forever. So, crop and multicrop planning are important. If we can plug all the leaks in the supply chain, cut down on the waste, we are able to cover costs and even increase our profit margins. What we did was to track and monitor the supply chain in order

to upstream the profit. So, our entity the CrowdFarmX is a borderless cooperative farming platform. Most of the time a cooperative is localized. We build a community that stretches across borders. That can only happen with the young generation. I talk a lot about capacity planning, meaning that we are building know-how within existing constraints. But we should be looking at capability planning and building. Under capacity planning we plan for the farmers and their families. Under capability planning we build the next generation. We need both generations to come together.

Mustafa Erkan, Akdeniz University, Turkey: Sometimes support from government with legislation and financing is important. But at other times, small teams achieve success. For example, if the government provides support to the enterprise or exporter to attend or join an international fair, it is important for the exporter to take this opportunity to know the competitor and what steps are essential in the market. Many enterprises have the financial means, but they do not know what to do because market intelligence is missing or weak. Hence, small steps are equally important that may lead to big success.

Forum Participant: My question is addressed to the Singapore presenter. In growing vegetables, is the presence of fish necessary or have you tried growing vegetables with the fish?

David Tan, Netatech Pte Ltd, Singapore: In our experience over 5 years, we found that we get optimum results by combining vegetable growing with aquaculture by topping up aquaculture wastewater with micronutrients and using this for watering the vegetables. The water flow loop need not be connected in this manner.

Forum Participant: My question is addressed to the Turkey presenter. Are you using pesticides in growing bananas? We love bananas in the Philippines but there is high pesticide use in our country. I am just wondering whether in your greenhouse bananas growers use pesticides.

Mustafa Erkan, Akdeniz University, Turkey: The answer is not always yes as we have different types of growers. Some growers grow bananas for export and these growers do not use pesticide as it is forbidden. But in some humid regions, growers have to use fungicide not pesticide. The underground storages have usually constant low temperature, and these can be used throughout the year for storage of perishable products.

Fernando Egidio Amaral, Ministry of Agriculture and Fisheries, Timor- Leste: I have been the national director for Agribusiness for almost 12 years now. I found the Singapore presentation very surprising. We are still concentrating on horizontal farming and now Singapore is promoting vertical farming. Are you interested in investing in your neighboring countries like Indonesia, Timor-Leste, Malaysia, because we still have land for you. We are all here together and we really want to solve the issue of food insecurity not simply by considering food security but linking it to employment creation and rural development. In these past 2 days we are all talking about economic structure in the rural areas linked to agribusiness, SME, private sector

involvement, and how to strengthen PPP. If you are interested, tell us because we want to solve the rural development problem in our country.

David Tan, Netatech Pte Ltd, Singapore: The short answer is yes. But recently when Ethiopian officials visited Singapore and requested us to build an urban farm, we refused. Ethiopian population is 100 million and the officials wanted to have a farm serving 5 million in the urban area. We asked them to go back and do something for the 95 million.

Fernando Egidio Amaral, Ministry of Agriculture and Fisheries, Timor- Leste: Welcome to Timor-Leste. We are looking for opportunities to visit your country to see for ourselves your farm. We would like you to invest in Timor- Leste so that we can export vegetables to your country. My question is addressed to the presenter from India. The agriculture model you are promoting in your country is for upstream or downstream and what is the share percentage?

Anoop Kumar, Farmer Producer Organization, India: We are promoting downstream at farmer-producer level. The primary producers are being organized, especially the small and marginal farmer, which do not have access to market as the large farm holders have. So basically, at bottom level and the model is value-chain integration so that we can cut the intermediate forces, which squeeze out the profitability of small farmers. That is the whole idea.

Fernando Egidio Amaral, Ministry of Agriculture and Fisheries, Timor- Leste: I found the presentation from Sri Lanka very interesting. It is difficult for us to encourage our people to grow coconut. People say it takes 4–5 years to mature. In the meantime how about our food security? Tell us a little bit about your story how you engage people to do this specific crop. When we presented a state crop policy, one professor said: "Fernando. You have to invest in cash crop because you have tropical weather conditions. Without investing in cash crop, it will be a disaster for you." But we still find difficulties in engaging rural populations to invest in industrial crops, especially coconut.

Forum Participant: I think we need to focus on healthy, nutritious, and safe food production. As a breast cancer survivor, I am very conscious of my health and so should everyone else be concerned about the health of each and everyone, especially the end consumers. My question is addressed to the experts whether we can apply specific technology geared to promote organic farming?

Mio Oka, ADB: I see your question relates to technology, which we discussed at length in one of the previous sessions. May I just request Cedric to respond on the question Fernando raised about growing coconuts?

Cedric Wijegunawardane, Silvermill, Sri Lanka: Usually a coconut tree would take 8 years to bear commercially marketable fruit. There is a long gestation period for the farmer. What we advocate to the farmer to go for multi-cropping like pepper, depending on soil conditions, while the coconut tree is growing. This will enable the farmer to have other income on short rotational basis.

Mio Oka, ADB: Charlie, I got two questions for you that I see on the EventsAir App. Could you please elaborate on the Government of Thailand's support in particular to One Tambon One Product (OTOP)? What is Thailand's approach in assessing consumer behavior to monitor supply and demand? What is your observation?

Chareonchai (Charlie) Khompatrapon, KMUTT, Thailand: OTOP was a project started over 10 years ago by the Government of Thailand to promote local products in any village. Almost every village in Thailand would compete, select the best products of that village, and then market that product in the larger province so that the products will gain the interest of the consumers and become known. That was a very good initiative as the Thai people got to know the special products of each province. Now, when we travel around, most consumers look for OTOP products. On the question related to consumer behavior, the analysis of behavior data is usually undertaken by the private sector. In the supply chain analysis, we differentiate and keep track of three factors, such as information, materials, and fund flow. Otherwise if we mix all these factors, we will be unable to solve the issues in the food supply chain. We track each aspect separately—e.g., information using new technologies, or materials dealing with, for example, delivery of food, or funding. All three are separate but we need to analyze them separately and bring them together to seek out matches in order to solve problems in the food supply chain.

Mio Oka, ADB: Mr. Kumar, to what extent has your program reached out to the extreme poor or marginal in the state? How can that affect them?

Anoop Kumar, Farmer Producer Organization, India: The program reaches out to resource poor, marginal, and small farmers. But of course, the program does not reach out to the landless and extreme poor. When farm income increases within the village, there is definitely overall prosperity and the extreme poor can get better jobs. Farming enterprise in general becomes a little bit more profitable. In future we would like to focus more on gender as women play a very important role in organizing these producers. Then we will turn to those who are not holders.

Augusto de Silva, Ministry of Agriculture and Fisheries, Timor-Leste: I have a question for the presenter from India as the program is addressing both downstream and upstream. In Timor-Leste, farmers' associations will sell the produce where the government has established a shop to receive farmer's produce. Every month, the government pays the producers 80% of their income. Farmers send their representatives, sell their produce and receive 80% of the value of their produce. The 20% retained by the shop is for the future operations of the shop and not for the government. With this model in mind (which I know from Timor-Leste), what kind of model do you use? Are you giving more to the farmers or you are retaining more for the government? The model itself is still unclear to me. That is why I wish to know whether the farmers are getting more, or the government is keeping more, or the private sector is getting more, making the farmers worse off. We are talking about food security, sustainability, and involvement of smallholder farms. Farmers are very important in the link up to all these actors.

Anoop Kumar, Farmer Producer Organization, India: The program is about improving the rural marketplace infrastructure. The Government of India has now come out with a large program to improve rural market infrastructure. But the model is integrating growers producing high-value crops with the urban consumer. For these growers, the rural markets are not the best places to sell. We have the farmer market concept, which is nothing but a temporary market on weekends where these growers go and sell their produce at a premium price and thus their profitability increases. The whole idea is to support the growers to reach paying customers who can give them the best value for their crops. We work on removing all those hindrances to promote integration of producers in the market.

Mio Oka, ADB: I have a question for David. How is the demand for your products? What is the market share? What are the marketing activities you have initially implemented to ensure demand for the product?

David Tan, Netatech Pte Ltd, Singapore: These are very important questions. Positioning and segmentation are important. In Singapore, Asian greens make up 80% of the vegetable market share. Australians may think lettuce has the highest share and Israelis may think cucumber is the most important vegetable. Even in the Asian green segment, we need to slice down to the niche. The difference in price for Asian greens starts from $0.50 per pack from the PRC to $3.00 for organic. You need to decide where you are positioning yourself. Our farm is not organic yet, but we are pesticide-free. We are doing fast rotation crops and multi-crops. We are able to operate a farm like a factory. The demand is for a multi-variety of crops and we position our product at US$2.50 per pack (which is 250g). The stratification of the market is big and so we can upstream profit back to the farm. When we help the farm, we are helping not just the farmer but a community. We help the school; we help the children. We hire the mothers and ensure that they send their kids to school. Otherwise we would not be part of a community. Segmentation and positioning are important.

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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