



**STRATEGY 2030
OPERATIONAL PLAN FOR PRIORITY 5
PROMOTING RURAL DEVELOPMENT
AND FOOD SECURITY, 2019–2024**

SEPTEMBER 2019

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Notes:

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Operational Priority 5

Promoting Rural Development and Food Security

- Improve access to rural services, attract private sector investments, and generate jobs in rural areas
- Distribute food efficiently from farmers to consumers; reduce post-harvest losses; improve farmers' profitability; and provide safe, nutritious, and affordable food
- Build food systems to sustainably produce more with less resources while addressing malnutrition

Strategic Operational Priorities

Operational Approaches

Sub-pillars

1 Rural development



Rural-urban connectivity



Rural health and education



Rural economic hubs



Modern agricultural value chains



Off-grid energy solutions



Food safety and traceability



Affordable rural finance



Climate-smart agriculture



Water service delivery and efficiency



Water-food-health nexus



Youth and women empowerment

Knowledge-intensive agriculture

2 Agricultural value chains

3 Food security

- Rural infrastructure assets established or improved
- Companies providing new or improved nonagricultural goods and services
- Health care, education, and financial services established or improved
- Rural economic hubs supported
- Wholesale markets established or improved
- Storages, agri-logistics, and modern retail assets established or improved
- Agribusinesses integrating farmers in efficient value chains
- Food safety and traceability standards improved
- Land improved through climate-resilient irrigation infrastructure and water delivery services
- Farmers using quality farm inputs and sustainable mechanization
- Commercial farming land supported
- Modern knowledge-intensive corporate farming models introduced

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ABBREVIATIONS

ADB	-	Asian Development Bank
DMC	-	developing member country
GHG	-	greenhouse gas
ICT	-	information and communication technology
IOT	-	internet of things
PSOD	-	Private Sector Operations Department
SME	-	small and medium-sized enterprise

STRATEGIC OPERATIONAL PRIORITIES

A. Overview

1. Significant progress has been made in achieving food security (including nutritional needs) in Asia and the Pacific but hunger and malnutrition persist.¹ Extreme poverty (\$1.90/day threshold) has declined from 53% in 1990 to about 7% in 2015 but 264 million people are still living below the poverty line.² Poverty is inextricably linked to food security. Poor people spend more than 50% of their income on food and about one-fifth spend 70% of their income on food.³ Over 1.1 billion people who live below the \$3.20/day threshold are constantly at risk of being pushed back into extreme poverty; thus, the number of food-insecure people in Asia and Pacific remain high (footnote 1). Levels of poverty and malnutrition vary significantly within Asia and the Pacific.⁴

2. Intake of safe and nutritious food depends on access, i.e., availability and/or affordability. Therefore, low-income populations in urban and rural areas are often food insecure, and children are especially vulnerable. Over half of the world's malnourished children live in the Asia and Pacific region. Malnutrition is multifaceted and affects people of all ages—ranging from severe undernutrition to obesity—but children bear the greatest burden. Over 79 million (25% of children below age 5) suffer from stunting, 34 million are wasting, and 12 million suffer from acute malnutrition with high risk of death. While stunting has reduced significantly, during the past decade little improvement has been made to address wasting.⁵

3. In rural areas, poverty incidence is much higher than that in urban areas and significant rural–urban disparities exist in education and health services in particular.⁶ Farmland in most developing member countries (DMCs) is highly fragmented.⁷ Over 80% of food is grown by smallholder farmers

¹ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

² ADB (Economic Research and Regional Cooperation Department) 2018. Updated Poverty Estimates. Memorandum, 5 November. These estimates are based on The World Bank's PovcalNet database.

³ ADB. 2013. *Food Security in Asia and the Pacific*. Manila.

⁴ ADB. 2018. *Key Indicators for Asia and the Pacific 2018*. Manila. Populations living in extreme poverty range from 2% in East Asia to 30% in the Pacific; and 7% (43 million) in Southeast Asia to 16% (240 million) in South Asia.

⁵ Food and Agriculture Organization (FAO). 2018. *Asia and the Pacific Regional Overview of Food Security and Nutrition 2018—Accelerating Progress towards SDGs*. Bangkok. In some countries, more than one-fifth of the population is undernourished and two in every five children below age 5 have stunted growth.

⁶ ADB. 2017. *Key Indicators for Asia and the Pacific 2017*. Manila. Of the 19 economies with urban–rural disaggregation of poverty data (based on national household income and expenditure surveys, 2010–2016), the proportion of population living below the national poverty line is consistently higher in rural areas than in urban areas.

⁷ G. Thapa. 2009. *Smallholder Farming in Transforming Economies of Asia and the Pacific: Challenges and Opportunities*. Discussion paper prepared for the side event organized during the 33rd session of International Fund for Agricultural Development Governing Council. Rome.

who do not get fair returns for their labor and investment. The average age of farmers in the Asia and Pacific region is 60 and the young consider farming unattractive. In rural areas, water supplies are often contaminated and sewage untreated. Overuse/misuse of fertilizers and pesticides is contaminating soil, water, and marine resources. In most DMCs, food supplies are unsafe because of (i) contamination of soil and irrigation water, (ii) excessive use of chemicals resulting in unsafe food chains, and (iii) dire lack of cold chain to transport and store perishable food. The impact of unsafe food on human health is staggering.⁸

4. Rural areas have limited access to reliable grid or decentralized energy systems, clean water and sanitation, quality education and health services, and digital connectivity as well as limited job opportunities in manufacturing and services. Rapid urbanization coupled with accelerated rural–urban migration is one of the key drivers of continued rural impoverishment; young and enterprising people do not find gainful opportunities in rural areas. On the other hand, urban migration has to some extent contributed to reduction in rural poverty through remittances to rural areas.

5. Operational priority 5 under the Strategy 2030 of the Asian Development Bank (ADB) calls for renewing focus on rural development and improving market connectivity by transforming agricultural value-chain links. It focuses on rural infrastructure and agri-logistics centers to enable the integration of producers, agribusinesses, and consumers in the national, regional, and global marketing systems. Reducing postharvest losses and promoting agricultural value addition will help increase rural incomes and enhance food security in the region. Use of advanced technologies will assist in increasing factor productivity, ensuring sustainable use of land and water resources, enhancing food safety, and improving natural resource management (footnote 1).

B. ADB Experience and Initiatives

6. ADB has long and varied experience in helping its DMCs improve productivity and sustainability of agriculture, strengthen natural resource management, and achieve sustainable rural development. In 2009, ADB approved the Operational Plan for Sustainable Food Security in Asia and the Pacific, which had a multisector approach that emphasized agriculture productivity, market connectivity, and resilience against economic shocks and climate change impacts.⁹ The Operational Plan for Agriculture and Natural Resources 2015–2020 capitalized on the accumulated agriculture and natural resource knowledge in ADB, and refined the earlier plan through improved focus and quality of ADB operations in the sector. The four priority areas of the plan are (i) increasing productivity and reducing food losses; (ii) improving market connectivity and value-chain linkages; (iii) enhancing food safety, quality, and nutrition; and (iv) enhancing management and climate resilience of natural resources.¹⁰

⁸ World Health Organization. *Food Safety*. <http://www.who.int/news-room/fact-sheets/detail/food-safety>. About 600 million fall ill after eating contaminated food and 420,000 die every year; children under age 5 carry 40% of the foodborne disease burden with 125,000 deaths every year. Diarrheal diseases are the most common illnesses resulting from the consumption of contaminated food, causing 550 million people to fall ill and 230,000 deaths every year. Chemical contamination can lead to acute poisoning or long-term diseases such as cancer. Examples of unsafe food include fruits and vegetables contaminated with feces and raw shellfish containing marine biotoxins.

⁹ ADB. 2009. *Operational Plan for Sustainable Food Security in Asia and the Pacific*. Manila.

¹⁰ ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila.

7. ADB is meeting its \$2 billion annual approval target for food security. The success rate of ADB's agriculture and natural resources portfolio has improved from 59% in 2005–2009 to 79% in 2014–2017. The overall success rate of the portfolio is at 64.5% (at par with ADB average in 2005–2017) while that of irrigation is at 47%.¹¹ Key lessons to improve the performance of irrigation projects include quality at entry and deployment of modern technology tools to monitor the operation and maintenance of the irrigation infrastructure. ADB will review and improve the evaluation methodology of irrigation projects.

8. An agribusiness investment team for nonsovereign operations was established in 2015 to increase both the number of private sector direct investments and technical expertise. ADB's nonsovereign operations support the entire food and agribusiness value chain through loans, equity, blended financing, and technical assistance projects. From 2012 to 2017, ADB's direct private sector financing amounted to \$700 million, averaging \$116 million for two to three projects per year. ADB is also indirectly contributing to private sector outputs and outcomes in food security through financial intermediaries' support to farmers and rural small and medium-sized enterprises (SMEs) and through trade and supply chain financing programs.

C. Key Trends, Challenges, and Opportunities in Developing Member Countries

9. **Lagging rural development.** Despite rapid urbanization, about half the population of the Asia and Pacific still live in rural areas. In most DMCs, the governments' development priorities and activities are significantly focused on urban areas. The quality and access to services—i.e., basic education and health, water and sanitation, roads, and electricity—are lagging far behind in rural areas compared to those in urban areas. This disparity created by urban-bias has led to economic conditions that put rural populations at a major disadvantage and induce young and skilled people to migrate to urban areas. Because of these disadvantageous economic and infrastructure conditions, (i) farm productivity is much lower than the economic potential, (ii) returns on farm labor and investment are much lower compared to those of nonfarm enterprises, (iii) private investment in farming and rural enterprises is much lower and does not create critical mass for increased economic activity, (iv) adoption of modern technology is slower, (v) cost of agricultural production is higher, (vi) postharvest losses are high, and (vii) rural-to-urban migration is much higher than it would be otherwise. More focused and balanced development in rural areas will slow down and/or will reverse these trends and generate significant benefits for the whole society.

10. **Dysfunctional agricultural markets.** Agricultural markets, in a great majority of DMCs, are largely dysfunctional. Some of the main causes include (i) outdated policies and regulatory frameworks, (ii) trading cartels and local monopolies, (iii) large number of middlemen, (iv) dilapidated wholesale market infrastructure, and (v) lack of cold chain infrastructure.¹² The consequences are costly to both the society and individual households: (i) three largest vegetables in production volume and market importance—potato, tomato, and onion—face 3- to 4-year

¹¹ Independent Evaluation Department. 2018. *Sector-Wide Evaluation: ADB's Support for the Agriculture, Natural Resources, and Rural Development Sector*. Manila.

¹² Less than 10% of perishable food—fruits, vegetables, dairy, meat, and fisheries—is marketed through cold chains.

production cycles resulting in huge losses to farmers and traders; (ii) this extremely high market volatility discourages private investment in high-productivity agriculture resulting in yields much lower than economic potential; (iii) cost of production remains high, leading to higher prices for consumers and low profitability for farmers; (iv) postharvest losses are high—40% of fruits and vegetables, 35% of fisheries, 25% of grains, and 20% of dairy products are lost before reaching consumers; (v) smallholders' share in retail price of most produce is low around 25%, (vi) lack of cold chain, misuse of fertilizers, excessive application of pesticides, and contaminated irrigation water significantly compromise food safety; (vii) smallholder incomes are low and highly variable; (viii) national-level postharvest losses amount to billions of dollars; and (ix) the most damning consequence of dysfunctional agricultural markets is widespread malnutrition in most DMCs. The poor suffer disproportionately as they spend more than half of their income on food. Most of the inflation in DMCs is also induced by spikes in food prices. In developed countries, modern agriculture and associated infrastructure have prospered because the governments have provided effective support through well-thought out policies and regulatory frameworks (under which the private sector has invested) and adequately financed public goods. DMC governments need to develop appropriate policies and investment frameworks to induce the private sector and accelerate public sector investments to transform their agricultural production and marketing systems (Box 1).

Box 1: Policies to Foster Rural Development

Policy-based loans by the Asian Development Bank (ADB) have generally not advocated transformative changes. Under operational priority 5, ADB can play a pivotal role in assisting developing member countries (DMCs) in major policy transformation with the aim of creating a conducive and enabling environment to foster rural development. Such enabling policies may generate investments and growth worth billions of dollars as opposed to leveraging a few hundred million dollars through a policy-based loan.

DMC policies and regulations are crucial for achieving economies of scale. A great majority of farm holdings in Asia and the Pacific are small and fragmented and farmers need incentives to agree to land consolidation and yet retain their ownership or tenure over their land. Such land consolidation must be voluntary and functional. Larger and commercial farms will be able to access modern inputs (irrigation, seeds, fertilizers) and technology (information and communication technology, internet of things, drones) to improve productivity. Use of information and communication technology and internet of things can assist in tracking use of pesticides, traceability of product origins, and value chain management.

Smallholder subsistence farming remains generally unprofitable, therefore, unattractive to youth. Enabling policies can attract youth to agriculture through incentives and access to finance and technology with support to building entrepreneurship skills. Infrastructure development in rural economic hubs could be undertaken through public-private partnerships, where the public sector provides incentives through policy and financing for infrastructure and the private sector invests in business development.

Source: ADB.

11. **Unprofitable smallholder farms.** More than 80% of the food in Asia and the Pacific is produced by smallholder farmers, who till farms of less than 2 hectares. A great majority of these subsistence farmers are nearing retirement age (average age is 60). In general, smallholder farmers' access to modern inputs, financing, and markets is quite limited. Despite some mechanization (mostly with tractors and threshers), farming remains a labor-intensive and back-breaking drudgery; therefore, young people consider farming unattractive. The farm consolidation and mechanization that took place in the developed countries during their economic transformation (40 to 80 years ago) has not

happened in Asia and the Pacific. Unless governments provide incentives through policy, regulatory frameworks, and financial systems, smallholder farming will not become productive and/or profitable. The food systems will remain largely inefficient and the whole society will be worse off.

12 **Fisheries—tapping the potential for protein and employment.** ADB has a long history of supporting fisheries and marine resource management projects. But after a series of projects in the 1980s and the 1990s were rated as unsatisfactory, ADB significantly reduced its support for this subsector. The history of ADB involvement and lessons learned from fisheries projects are summarized in Appendix 3. Marine fish stocks in Asia and the Pacific, after decades of overexploitation and mismanagement, are nearly exhausted, and their habitats severely degraded. However, in the last 10–15 years, both inland and marine aquaculture has fast developed as a significant subsector meeting over half the total demand for food fish. Aquaculture has become a major source of protein in diets and employment especially for low-income households and women. Farmed fish, such as tilapia, carps, and catfish, in most DMCs are now the cheapest source of animal protein; in some DMCs, only poultry may be cheaper. Given its significant potential for further growth, generating employment for poor and especially women, and to reduce the protein deficit resulting in malnutrition, ADB will support aquaculture projects by strengthening public policy and regulatory frameworks, and financing fisheries value chain development in public-private partnerships (PPPs) complemented by private sector investments. Well-designed aquaculture value chain projects now have much higher probability of success especially those implemented with private sector targeting urban and export markets. With modern technologies of tracking, supply chain management and compliance to environmental and safety regulations are now more effective and less costly to deal with concerns for food safety; hence can be easily incorporated in value chain investments.

13. **Women’s empowerment in agriculture.** The female share of agriculture labor is 40%–50% and increasing. This growing feminization of agriculture is attributed to substantial migration of men to urban areas or overseas for employment. Women farmers tend to have less access than men to productive assets, opportunities, and technology. Given the same access as men, women could potentially increase farm yields by 20%–30% and reduce the number of hungry people in the world by 12%–17%.¹³ There is also a direct positive correlation between increasing agricultural investment and achieving gender equality.¹⁴ Moreover, populations across the region are aging, and it is often the older generation and younger females who remain in rural areas and engage in farming. This demographic shift provides both opportunities and substantial social, economic, and cultural challenges.¹⁵ Therefore, improving women’s equal access to productive assets, education, technology, and financing would be key to promoting efficient farming, and nutritious and safe food systems.

14. **Climate change impacts on agriculture.** Projections to 2050 for Asia and the Pacific show that with rising temperatures, crop yields may decline significantly.¹⁶ In addition, the prices of rice, wheat, and soybeans are projected to increase by 10%–50%. Consequently, without significant increases in food production above present trends, declines in caloric availability and an increase in child malnutrition by up to 20% are anticipated.¹⁷ The increasing frequency and intensity of extreme

¹³ FAO. 2011. *The State of Food and Agriculture 2010–2011: Women in Agriculture*. Rome.

¹⁴ ADB and FAO. 2013. *Gender Equality and Food Security: Women’s Empowerment as a Tool against Hunger*. Manila.

¹⁵ United Nations Population Fund. 2012. *Ageing in the Twenty-First Century: A Celebration and A Challenge*. New York.

¹⁶ For example, irrigated rice is projected to decline from 20% to 14%; wheat, from 44% to 32%; and soybeans, from 18% to 9%.

¹⁷ ADB. 2009. *Building Climate Resilience in the Agriculture Sector of Asia and the Pacific*. Manila.

weather events are expected to have serious and enduring consequences for agriculture.¹⁸ Agriculture in Asia and the Pacific accounts for 37% of global agriculture greenhouse gas (GHG) emissions, primarily from crop cultivation, raising livestock, land-use changes, and deforestation.¹⁹ Closing the gap between actual and potential yield will offset some production loss from climate change in the future. Adopting climate-smart agricultural practices and technologies will be key to meeting these impending challenges.

15. **Environmental degradation.** About 80% of fresh water in Asia and the Pacific is withdrawn for irrigation; however, irrigation efficiencies remain low—averaging 37%.²⁰ Fresh water scarcity is compounded by rapid depletion of groundwater aquifers because of unregulated abstraction and increased competition for scarce water between agriculture and other users. In South Asia, about 43% of total agricultural land is degraded, with 31 million hectares already highly degraded, resulting in severe production and income losses.²¹ Forest degradation, land and water pollution, soil nutrient depletion, and soil salinization create a widening gap between the demand for natural resources for food production and the environment’s ability to provide and to replenish those resources. Maintaining the natural capital is a crucial goal for DMCs.²² Soil and water pollution—caused by misuse of fertilizers and pesticides and release of untreated industrial and sewage water in freshwater streams—not only degrades land-based production systems but also marine resources when pollution is carried to oceans. The “dead-zone” in the Gulf of Mexico, created by runoff from the US midwest farms, is a well-studied example of the devastating impact of agriculture on marine resources. Similar dead-zones have been identified in Asia and the Pacific such as the Bay of Bengal that require more robust studies.

16. This operational plan provides guidance to ADB in assisting its DMCs to improve rural development and food security.²³ It also complements and supports the operational plans of other strategic priority areas to (i) address remaining poverty and reduce inequalities; (ii) accelerate progress in gender equality; (iii) build climate change and disaster risk resilience, and enhance environmental sustainability; (iv) strengthen governance and institutional capacity; and (v) foster regional cooperation.

¹⁸ W. Easterling et al. 2007. Food, Fibre and Forest Products. In Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Cambridge, UK: Cambridge University Press. pp. 273–313.

¹⁹ United Nations. 2012. *One Planet to Share: Sustaining Human Progress in a Changing Climate*. Bangkok.

²⁰ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

²¹ M. Khor. 2013. Land Degradation Causes \$10 Billion Loss to South Asia Annually. Global Policy Forum. <https://www.globalpolicy.org/global-taxes/49705-land-degradation-causes-10-billion-loss-to-southasia-%20annually-.html>

²² ADB. 2013. *Environment Operational Directions 2013–2020: Promoting Transitions to Green Growth in Asia and the Pacific*. Manila.

²³ The agriculture and natural resources sector include irrigation; agriculture drainage; rural flood protection; rural market infrastructure; agriculture production; agro-industry, marketing, and trade; agriculture research and application; livestock; fishery; forestry; land-based natural resources management; water-based natural resources management; agriculture policy, institutional, and capacity development; and water policy and institutional and capacity development. ADB. 2014. *The Project Classification System—Toward Strategy 2020: A User Guide*. Manila.

A. Approaches

17. Priorities from the previous plans of 2009 and 2015 will remain part of this plan, but three additional and/or expanded features will provide impetus to sector development. Renewed but special focus on rural development is key to spur economic growth and create quality jobs in rural areas. Even if 15%–20% of young people are incentivized to remain in rural areas, it will significantly decelerate urban migration; cities in Asia and the Pacific are highly overcrowded. The second feature is to introduce transformative interventions in agricultural value chains by developing wholesale market infrastructure using public–private partnerships (PPPs) to improve farmer profits and help stabilize food prices. The third feature is to strengthen food security by (i) ensuring irrigation sustainability through improved operation and maintenance using modern technologies, (ii) introducing transformative interventions in farm consolidation and mechanization to induce youth to take up farming, and (iii) addressing malnutrition through focused interventions. This operational plan has three main pillars: accelerated rural development, efficient agricultural value chains, and food security for all. The framework for operational priority 5 is presented in the figure on page 8.

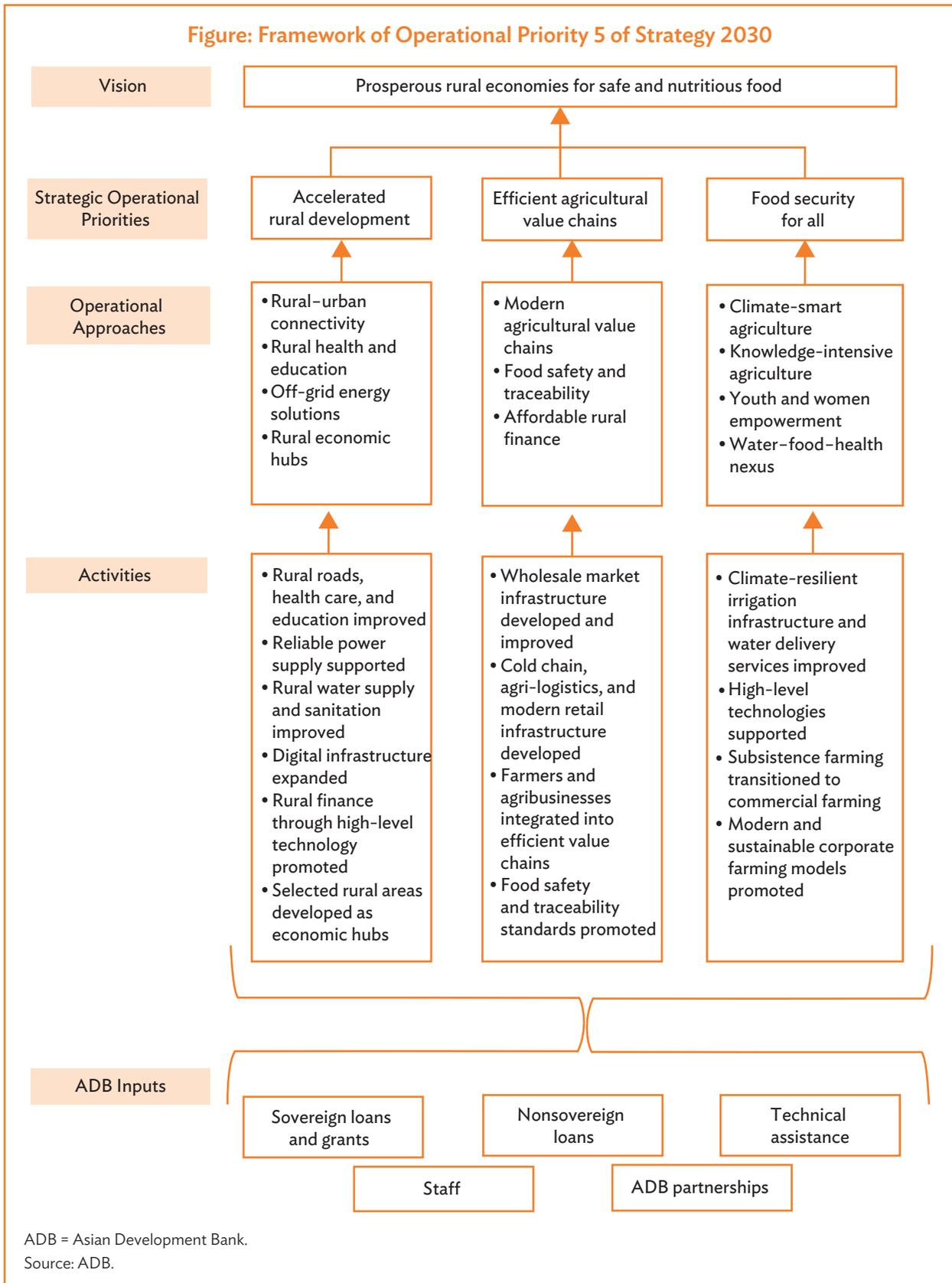
18. **Rural development.** ADB operations will focus on improving rural services, attracting private sector investments, and generating jobs in rural areas. These can be achieved by

- (i) strengthening rural–urban connectivity;
- (ii) providing reliable power supply, including off–grid solutions;
- (iii) expanding access to water supply and sanitation, and managing solid waste;
- (iv) strengthening cost-effective health and education services;
- (v) promoting ecotourism; and
- (vi) creating rural economic hubs.

19. **Agricultural value chains.** ADB will strengthen its operations in distributing food efficiently from farmers to consumers, reducing postharvest losses; improving farmer profitability; and providing sufficient, safe, nutritious, and affordable food. Investments in PPPs will focus on:

- (i) modern wholesale and retail market and cold chain infrastructure development;
- (ii) off-grid energy solutions for cold chains including waste-to-energy solutions;
- (iii) integration of farmers, agribusinesses, and consumers into efficient and sustainable value chains;
- (iv) local value addition for both domestic and export markets;
- (v) food safety and traceability systems development;

Figure: Framework of Operational Priority 5 of Strategy 2030



- (vi) scaling up dissemination of good agriculture practices through digital agriculture services, including on-the-ground applications of technology solutions to reduce water, energy, waste, and GHG footprints of agribusiness and postharvest activities;
- (vii) sustainable and safe biotechnology solutions;
- (viii) improved access to rural finance; and
- (ix) agribusiness development for value addition.

20. **Food security.** Achieving food security requires building food systems to sustainably produce more with less resources while addressing malnutrition. ADB will support and promote:

- (i) improved irrigation infrastructure and water delivery services;
- (ii) climate-smart and low-carbon food system solutions;
- (iii) better-quality farm inputs and mechanization;
- (iv) modern, sustainable, and responsible corporate farming models;
- (v) youth and women empowerment in modern agriculture;
- (vi) knowledge-intensive agriculture; and
- (vii) focus on water–food–health nexus to address prevalent malnutrition.

1. Accelerated Rural Development

21. **Rural–urban connectivity.** ADB will work to facilitate access to markets and digital technologies to promote trade and generate employment: (i) invest in rural roads for improved market access; (ii) support expansion of modern ICT infrastructure to rural areas; and (iii) integrate consumers into food systems and services in rural areas thereby creating rural income and employment.

22. **Rural health and education.** ADB will promote cost-effective services: (i) telehealth and tele-education by connecting urban-based hospitals and colleges with their satellite branches in the rural areas; and (ii) e-learning programs for technical and vocational education and training on modern farming, agribusiness, and digital agriculture services (e.g., agribusiness marketing and trade, value-chain finance, precision farming advisory with real-time and predictive data, drone-based soil assessment and input spraying services, machine equipment rental, and cold chain logistics).

23. **Rural development and economic hubs.** ADB will work to create an enabling environment for rural development to (i) study emerging rural consumer markets and distribution networks in DMCs; (ii) promote sustainable ecotourism development; and (iii) strategically invest in road and utility services (reliable power supply including off-grid solutions, water supply and sanitation, rural waste management) and high-speed internet infrastructure to support efficient business transactions, mobilize private investment in agri- and non-agri enterprises, and generate jobs in rural areas. In selected rural areas, ADB will support rural economic hubs (Box 2). ADB will support rural e-connectivity for managing farm-based operations. Internet-based devices to semi-automate production processes by controlling irrigation or minimizing the use of inputs will also increase efficiencies and reduce waste. However, the cost-effectiveness of applying internet of things (IOT) devices, such as sensors, drones, satellite-controlled irrigation, and monitoring outbreak of plant disease need economies of scale.

Box 2: Rural Economic Hubs

Some rural areas, due to their strategic location and access to relatively better infrastructure, slowly transition into marketplaces, business and services centers, and estates for cottage industry and small and medium-sized enterprises. These areas present good potential to further develop into vibrant rural economic hubs. With proper planning, supported by enabling policies, regulatory frameworks, and infrastructure development, developing member countries can further develop and expand these areas into centers of economic activity by offering fiscal (tax holidays) and nonfiscal incentives to private investors. These growth centers are set amid sizeable hinterland for agricultural production where developing agribusinesses would positively impact growth and value addition.

These rural economic hubs can integrate expertise across sectors and themes to address complex challenges of rural development. Further investments in affordable housing, access to finance, and investments in digital infrastructure can create plentiful good nonfarm jobs and reverse the urban pull factors. Fourth industrial revolution technologies—information and communication technology, internet of things, drones, robotics, artificial intelligence—and access to low-cost or free satellite imagery can create high-level technology jobs not only to service farm operations but to also meet the needs of businesses in rural as well as urban areas. Upgrading rural growth centers into economic hubs would also reduce pressure of migration on urban areas. This transformation is well suited around secondary cities and small towns that have potential to grow into sustainable cities instead of promoting densities in already existing large urban areas.

Source: Asian Development Bank.

2. Efficient Agricultural Value Chains

24. **Improved market connectivity and value-chain linkages in rural areas.** Cold chains and agri-logistics centers help reduce postharvest losses. High-speed internet connectivity, ICT, IOT, and high-level technologies can modernize supply chains. ADB will support access to ICT to develop web-based skills transfer for farm and nonfarm job creation. The widespread use of smartphone, satellite tracking and imaging, and blockchain technologies can provide efficient and timely food handling, tracking food safety, trade logistics, e-payments, insurance claims, and consumer feedback, all of which are part of the nonfarm economy. Addressing rural market connectivity and mobility between urban and rural areas helps integrate consumers into food systems through agritourism, which increases rural income and generates employment. ADB will help link producers, distributors, wholesalers, and retailers to boost rural-urban, transboundary, and global trade. Efficient rural finance, e-payments, and online banking will help redress gender imbalances, while entrepreneurial training and ICT skills will promote women's empowerment.

25. **Modern agricultural value chains.** ADB support will move food efficiently from farm to market to increase farmers' profits and provide sufficient, safe, nutritious and affordable food to consumers (i) invest in modern wholesale markets, agri-logistics, cold chain and retail infrastructure; (ii) aggregate produce through efficient farmer cooperatives/groups; (iii) integrate fragmented food markets, farmers, and agribusiness into the modern food system through digital technologies; and (iv) support reduction of water, energy, and GHG footprints of agribusiness by adopting resource-saving practices and technology solutions.

26. **Off-grid energy solutions.** The main constraint to developing cold chain infrastructure in rural areas is the lack of reliable and affordable power supply. ADB will support enabling environment to attract private investments to promote (i) solar energy to power SMEs, cold chains, and cooling and packing centers; and (ii) agricultural waste management including waste-to-energy production and other energy solutions to support smart farming.

27. **Food safety.** ADB will support food safety and traceability standards and certification development: (i) assess prevailing situation, dialogue with governments to improve policy and regulatory frameworks; (ii) invest in modern testing laboratories and strengthen staff capacity; (iii) support food processors and distributors on supply chain traceability, and pilot-test blockchain for big-data management; and (iv) disseminate good agriculture practices and sustainable biotechnologies to minimize chemical residue in food items (e.g., biochemical, microbial, pheromone-based pesticides) and avoid soil and water pollution.

28. **Affordable rural finance.** Access of smallholder farmers and agribusiness SMEs to financing means remains limited. ADB will (i) increase, access through e-commerce, blockchain, and mobile phone-based microfinance; (ii) invest in emerging financial services on ICT platforms (e.g., credit profiling of farmers for input finance, digital finance for SMEs with no collateral); (iii) support risk reduction for agribusinesses through credit risk participation (partial credit guarantee, co-investment with value-chain partners and financial institutions, crop insurance) and agribusiness transaction-based lending to farmers and SMEs (e.g., warehouse receipt financing, establishing link with supply chain finance); and (iv) promote rural finance sector (e.g., institutional capacity building, policy reforms, financial literacy, and risk mitigation tools) to build capacity and add value to rural development.

3. Food Security for All

29. **Climate-smart agriculture.** ADB will strengthen climate resilience to increase farm productivity, reduce GHG emissions, and mobilize private green investments to (i) sustainably increase farm productivity and incomes; (ii) strengthen resilience of food systems to climate change (e.g., adopting crop varieties that can withstand drought and submergence, invest in water use efficiency and resilient structures of water and market infrastructure to withstand extreme weather events); (iii) promote low-carbon approaches and reduce agriculture's contribution to GHG emissions through improved farming and livestock practices; and (iv) invest in carbon sinks such as sustainable forestry and coastal ecosystem management, and a credible GHG emission monitoring system to attract private green investments.

30. **Enhanced water service delivery and efficiency.** ADB will promote irrigation modernization with upgraded infrastructure, and operation and maintenance systems to optimize crop production and water productivity, while meeting the water delivery service requirements. ADB will (i) invest, based on rigorous analysis, sustainable asset and resource management plans, and consultations with farmers and key stakeholders; (ii) promote applications of high-level technology, such as remote sensing for improved water productivity and accounting, automated gate control systems, prepaid smart card water control systems, micro irrigation, and fertigation; laser land-leveling equipment; and geographic information system-based asset management systems; and (iii) support resilience building against natural resource depletion and climate risks (e.g., drainage systems to reclaim waterlogged lands, soil salt leaching, and saline land management).

31. **Food security and agricultural productivity.** Increased productivity will be supported by knowledge-intensive agriculture and climate-resilient crop technologies, promoting better-quality farm inputs, mechanization, and improved irrigation. Increased productivity will provide sufficient, safe, and affordable food to the poor. Well-designed policies supported by value chain infrastructure will stabilize food prices and improve management of buffer food stocks. ADB will support cash transfers, school feeding schemes, and food fortification to tackle malnutrition.

32. **Enhanced food safety.** Food safety and quality are essential to ensuring adequate supply of safe and nutritious food to an increasing urban and globally connected population.²⁴ This priority is intended to ensure that food is safe for the consumer and leads to a nutritionally balanced diet essential to a healthy and productive life. The use of modern ICT-based tools, such as radio frequency identification tags and quick response machine-readable codes that can be read by smartphones and electronic readers or cameras, can improve food traceability, and ultimately, food safety. ADB's role will be to build ICT-based capacity for laboratories and making testing data available through shared ledgers in government agencies and links with private sector traceability applications. ADB will support effective food safety systems in DMCs through

- (i) establishment and enforcement of mandatory regulatory systems and certification;
- (ii) investment in safety and quality control infrastructure and facilities;
- (iii) ICT-based tools; and
- (iv) training and education, community outreach programs, and voluntary compliance involving stakeholders—farmers, agribusinesses, and consumers.²⁵

33. The protection of consumers from foodborne diseases requires an integrated approach to ensure that effective quality assurance measures and checks are carried out at production, processing, transportation, wholesale, and retail stages of the food value chain. In addition to the supply of safe food, increasing attention to addressing nutrition-related illnesses, malnutrition, undernutrition, and obesity is an essential element of food security interventions.

34. **Water–food–health nexus.** ADB will address prevalent malnutrition (e.g., chronic undernutrition observed by high stunting rate among children and increasing obesity and diabetes due to changing dietary intake) by (i) investing in diversification of food supply with good nutrient balance and support distribution of biofortified staple crop varieties, and (ii) strategically linking food production investments with clean water supply and sanitation and public health, particularly targeting pregnant women and children (Box 3).

35. Irrigation, drainage, flood control, and salinity prevention will entail infrastructure investments, thus aligning with the Strategy 2030 priority for continuing infrastructure investments but with a greater focus on food security and rural development. Innovative crop insurance models will be developed to reduce risk to farmers trying out new crops and technologies as well as to protect farmer income losses from catastrophic weather events. ICT, IOT, and satellite technology will enable monitoring and tracking of the environment, watersheds, and agriculture runoff in streams and water bodies; this will improve water quality diagnostics downstream and enable payments for ecosystem services upstream. Compost making, biochar, and carbon finance in agriculture, including carbon credits for soil carbon sequestration in the future, will be initiated to mitigate climate change while enhancing productivity and system resilience.

²⁴ With rapidly increasing disposable income, urbanization, and changing consumption patterns, the processed food market in Asia has grown quickly reaching \$260 billion in 2013. It is expected to grow by another 70% to \$440 billion by 2018 (Euromonitor data. <http://www.euromonitor.com/>). Affluent urban consumers now demand food safety and quality.

²⁵ FAO and World Health Organization. *Assuring Food Safety and Quality: Guidelines for Strengthening National Food Control Systems*. Rome.

Box 3: Water–Food–Health Nexus

There is an intrinsic connection among water, food, and health. Without adequate and safe water, food production, processing, and trade are hampered leading to rising prices, price spikes, shortages, and adverse market interventions that can lead to social instability and riots. Therefore, developing member countries (DMCs) with high food security risks must work on water security to increase food production. Climate change impacts affect water availability by prolonging periods of dry days, spells of drought, or intense and extreme weather events that cause damage to crops, ultimately affecting food availability as well as disposable incomes to buy food.

Good health depends on nutritious food intake. Stunting, wasting, and cognitive disabilities in children are caused by malnutrition. Although most DMCs produce abundant grains and staples (and most are affordable except during times of price spikes), rising and erratic fruit and vegetable prices hinder regular access to nutritious food especially by low-income households. Undernourished children become less productive workers and remain sickly most of their lives.

Water–food–health nexus has become increasingly critical in achieving food security and balanced nutrition as resource scarcity intensify across Asia and the Pacific. Technological developments can help monitor water use and quality and reduce waste.

Source: Asian Development Bank.

36. Agricultural productivity and food security will also be supported by ADB’s nonsovereign agribusiness operations by financing agriculture input manufacturers and distributors; sponsors engaged in climate-smart agriculture and sustainable forestry, livestock, and fishery; and food processors and distributors embracing environmentally responsible practices. Food safety will be promoted through nonsovereign financing for sponsors across the food value chain focusing on quality standards; traceability; and the production of sufficient, safe, nutritious, and affordable food for urban and rural consumers.

4. Cross-cutting Operations

37. **Youth and women empowerment in modern farming.** To attract youth and empower women farmers in modern farming to lessen pressure on urban migration, ADB will work to (i) invest in digital agriculture and mechanization services; (ii) support business development for entrepreneurs and vocational skills training programs for agribusiness; and (iii) provide women farmers with access to machinery and equipment services, irrigation, and other productive assets and enable them to successfully manage farm business and close gender yield gaps.

38. **Knowledge-intensive agriculture.** ADB support will promote best practices and technologies to produce more food with less resources sustainably: (i) invest in development and use of new crop varieties, (ii) scale up digital agriculture advisory services in a cost-effective manner; (iii) invest in responsible corporate farming models (e.g., greenhouses and intensive orchards with fertigation system), postharvest technologies, and supporting infrastructure (e.g., marketing, storage, logistics, and processing), and agricultural input companies that apply sustainable and safe biotechnology for environmental sustainability.

39. **Improved land utilization and farm modernization.** Small and fragmented landholdings need to be consolidated into larger blocks to bring about economies of scale. ADB will test various models

using land-lease arrangements through a special vehicle that provides a fair lease fee to smallholder owners, as well as access to finance for young entrepreneurs to take up farming, launch agriculture service enterprises, or take up agriculture input supplier functions. Land consolidation, automating mundane and repetitive production steps, and access to satellite-guided irrigation, real-time market information, and online banking and trading can lead to cost savings, reduction of waste, increased efficiencies, improved food safety, better and timely return to producers, and women's empowerment.

40. **Disaster risk reduction and protection of the environment, natural resources, and productive assets.** While modernizing farming and markets, attention will be paid to sustainable systems, disaster preparedness and risk mitigation, and adaptation to climate change. Rural infrastructure needs to be climate-proofed and built in ways that reduce carbon dioxide emissions. Use of renewable energy, where feasible, will be considered. ADB will promote use of climate-smart and sustainable agriculture practices, including flood- and drought-resistant crop varieties and appropriate irrigation methods. ADB will undertake land reclamation, reforestation, and watershed management to reduce soil erosion, land degradation, and improve biodiversity. Supporting agro-biodiversity is important to enhance flora and fauna diversity for improved crop varieties and quality of agriculture.

41 **Ecotourism and environmental management.** Tourism is one of the fastest-growing sectors in Asia and the Pacific. Most of the sought-after tourism destinations in the region are in and around the natural resources, i.e., forested, coastal, and marine areas. Fast-paced development of tourist infrastructure both by the private and public sectors has largely not considered the impact on the natural resources. Infrastructure and management for roads, water supply, wastewater treatment, and solid waste disposal are not well-developed and maintained in many DMCs, and are degrading natural resources. Ecotourism provides a sustainable model of development. ADB will provide technical assistance to help develop sustainable business models and showcase best international practices, from within and outside Asia and the Pacific, to emulate in DMCs. ADB projects will provide financing for both public- and private sector-led initiatives for ecotourism development.

42 **Private sector financing.** ADB's nonsovereign operations will contribute to the three pillars of operational priority 5 through a multisector approach. Market connectivity and agriculture value-chain linkages will be supported by ADB's nonsovereign financing in infrastructure, finance, and agribusiness sector operations. Infrastructure operations will focus on growing private sector investment in transport, telecommunications, and energy distribution in rural areas. Rural SMEs and farmers will also be supported by targeted credit lines to financial intermediaries, as well as through ADB's trade and supply chain finance programs. ADB will continue to target the entire agriculture and food value chain including farm inputs, farming, processing, storage, and distribution, and particularly through direct support to private agribusiness clients, linking smallholder farmers to markets and adding value to produce for local consumption and export. ADB will also use debt and equity instruments to provide long-term financing to established food and agribusiness companies expanding into new geographies, introducing new technologies, or moving into new segments of the value chain. Working capital facilities may also be required to help clients finance inventories and agricultural inputs for farmers. ADB will also look for opportunities to make an impact in the fast-growing branded food, modern retail, and e-commerce sectors driven by the emergence of urban middle class. In the more challenging and underserved markets, use of donor funds and provision of blended concessional finance will be considered to de-risk investment projects financing on private sector terms. ADB will also pursue selective nonsovereign operations in the case of public nonsovereign support for market infrastructure development.

43. **Skills transfer and extension services.** Provision of high-speed internet in rural areas opens a new world of skills transfer possibilities, such as web-based learning, digitally operated coaching and extension via smartphone apps, and certification courses in collaboration with regional and international private and public sector educational institutions. Introduction of ICT and IOT will require appropriate training. ADB will support these initiatives.
44. **Governance and capacity building.** Governance in rural areas often lack clarity. The distribution of power, voice, and access to information and resources is unequal among stakeholders. Implementation of rural development programs will require an enabling environment, capable local governments and decentralized supervision, fiscal and nonfiscal incentives to attract and retain investors, and collaboration of civil society organizations and consumer protection and social safeguards groups to watch over social protection. This will require investments in local government capacity building and support for nongovernment and civil society organizations. ADB will support e-government systems to cut red tape, speed up bureaucratic processes, and provide a platform for feedback and improvement of local government performance. These will help improve collection of data and provide public access to such information for monitoring, evaluating, and future planning at the local level.

B. Expected Results

45. The lending pipelines for 2020 and 2021 will be reviewed to identify synergies and links across regions, subregions, DMCs, and sectors that can be packaged and sequenced under the rural development umbrella. This will require a cross-sector approach. While retrofitting is cumbersome and may not always have the desired results, ADB will assess the current pipeline with a view to implement Strategy 2030. The current agriculture and natural resources lending pipelines provide a good basis to transition to operational plan 5.
46. Implementation of this operational plan will require a set of criteria for geographic selection across regions. Recent ADB project designs show a mix of sector investments benefiting multiple sectors in the same geographic location, thus bundling assistance to reach a higher impact; well-defined projects with specific goals contributing to the higher outcome and impact are equally pertinent. Under rural development, sector projects, agriculture sector investments, and digital connectivity can be geo-locational and sequenced to achieve the economic hub effect, thus fulfilling the prerequisites for investments to take place.
47. Investments in rural development and food security will be undertaken using both public and private sector initiatives. Private sector initiatives will play a major role across the entire food and agribusiness value chain, such as in management and maintenance of market infrastructure, business startups, high-tech services, and educational and skills transfer services. In short, both farm and nonfarm job creation will be the role of the private sector.
48. ADB will conduct policy dialogues with DMCs to promote an enabling environment for investments in rural development and food security. Policies will be needed to provide a framework for attracting investors to rural areas; fiscal incentives will be needed to encourage young entrepreneurs to take up ICT- and IOT-assisted farming, agriculture service provision, agroprocessing, value addition, logistics, and marketing. Investments in rural areas will widen possibilities of farm- and nonfarm-based

income and employment generation. ADB will assist DMCs with policy advisory support to establish enabling frameworks.

49. **Country focus, country groupings, and regional cooperation.** Focused country approach is necessary to ensure proper assessment and understanding of the specific DMC situation; country ownership; appropriate and mutually agreed interventions, including knowledge solutions; and global, regional, national, and local partnerships. Selectivity is important to have a successful establishment of rural growth hubs—three pilots will be considered in Central Asia, Greater Mekong Subregion, and South Asia.

50. Countries in fragile and conflict-affected situations need considerable and sustained support where the primary focus will be on institutional strengthening. Essential policy dialogues, reforms, and capacity building may be combined with the introduction of smart technology for monitoring. Small island developing states are vulnerable to climate change and disaster-related shocks; these will need specific attention in strengthening disaster-coping mechanisms and non-climate-related needs for rural development and food security. Low-income countries and lower middle-income countries may need a substantial investment in rural development and food security to bring a large portion of their rural populations out of the risk of falling below the poverty line. Upper middle-income countries share some challenges with lower middle-income countries, but these differ in intensity and complexity. They are also vulnerable to cyclical economic downturns, as they are more integrated with global markets and international trade.²⁶ Upper middle-income countries are the key drivers of the regional economy and will increasingly play a lead role in second-generation regional cooperation and integration interventions and regional public goods.

51. The expected outcomes of the operational plan are

- (i) climate-resilient rural development integrating producers, agribusinesses, and consumers in efficient value chains promoted;
- (ii) disaster risk mitigation and preparedness for protecting environment, natural resources, and rural productive assets improved;
- (iii) access to safe, nutritious, and affordable food for all improved; and
- (iv) inclusive, innovative, resilient, and sustainable private sector investments in rural areas increased.

52. These outcomes are responsive to recent international calls for revisiting development strategies and rural revitalization programs launched by DMCs (e.g., the People's Republic of China's rural revitalization strategy and Uzbekistan's Presidential Decree on Obod Quislock Program 2018).²⁷

²⁶ ADB. 2015. *Clients-Contributors-Collaborators: A New Partnership with Upper Middle-Income Countries*. Manila.

²⁷ United Nations Economic and Social Commission for Asia and the Pacific. 2017. *Prospects for Poverty Reduction in Asia and the Pacific: Progress, Opportunities and Challenges, Especially in Countries with Special Needs*. W/ESCAP/CMPF(1)/L.1. Bangkok. 28 September; C. Dahlman. 2016. A New Paradigm for Rural Development. In Organisation for Economic Co-operation and Development (OECD). *Debate the Issues: New Approaches to Economic Challenges*. Paris. pp. 131-135; and ADB and Government of the People's Republic of China. 2018. Memorandum of Understanding between the National Development and Reform Commission and Ministry of Finance, People's Republic of China and Asian Development Bank on Support for Rural Vitalization in the People's Republic of China. https://www.adb.org/sites/default/files/related/122921/NDRC-MOF-ADB_Rural%20Revitalization%20MoU%20%28Signed%29.pdf.

53. In the long term, ADB seeks to (i) scale up rural economic hubs in at least three DMCs, bundling and sequencing cross-sector investments under a sovereign and nonsovereign collaboration umbrella; (ii) reach all DMCs through nonsovereign assistance in the sector; and (iii) reach targets of Strategy 2030 and Sustainable Development Goals 1 and 2 in DMCs.

C. Major Outcomes and Activities

54. In the short term (2019–2024), the following outcomes are envisaged under the operational plan:

- (i) design and initiation of two pilot projects in selected DMCs to establish rural economic hubs that contribute to operational plan outcomes;
- (ii) scaling up of food safety and phytosanitary measures in one selected area, contributing to enhanced regional integration and trade;
- (iii) design and implementation of disaster risk mitigation and environmental protection measures in two DMCs, reducing land degradation, enhancing watershed functions, and improving agrobiodiversity; and
- (iv) expansion of nonsovereign agribusiness operations project count to reach at least one-third of ADB operations in rural development and food security.

55. Any adjustments will be incorporated in rolling country programs from 2019 to 2024 and indicated in country operations business plans. Major changes may entail formulating an interim country partnership strategy. For DMCs creating new strategies for 2019–2024, this will be done as part of the country partnership strategy exercise. Capturing knowledge, testing, and pushing boundaries of rural development solutions will be documented in knowledge products.

56. The main activities are to

- (i) agree with thematic and sector groups such as transport, energy, water, finance, gender, and social development; the Private Sector Operations Department (PSOD); and the regional departments on selection criteria and scope of programs and projects to be implemented;
- (ii) review country partnership strategies and country operations business plans to identify how the operational plan may fit into the existing pipelines;
- (iii) select suitable project ideas and concepts for detailed design and initiation;
- (iv) provide support during the preparation and implementation of projects that fit under operational priority 5; and
- (v) monitor and report on the implementation of the operational plan.



IMPLEMENTATION

A. Interdepartmental Cooperation

57. Regional departments will

- (i) ensure that operational priority 5 is adequately reflected in individual country programs, starting with the 2020 country programming exercise;
- (ii) review sector road maps and re-assess balance among sectors in light of Strategy 2030 priorities for new country strategies in 2019–2024 and lending programs beyond 2024;
- (iii) identify opportunities for intersectoral coordination and cooperation to maximize benefits of increased rural development and food security activities (Appendix 1);
- (iv) monitor rural development and food security investments in all country programs; and
- (v) ensure implementation, monitoring, and coordination in governance and capacity development initiatives, in ADB and other development partner activities.

58. ADB, through its private sector operations, will continue to increase private sector investments and financing, as well as promote business models that are inclusive, innovative, resilient, and sustainable. It will continue to work with strong agribusiness sponsors and financial intermediaries to support rural development and food security in the region. The agribusiness investment team housed in PSOD will continue to grow and build up ADB's operations across Asia and the Pacific, with a strong focus on underserved markets, sustainable job creation, and inclusion of smallholder farmers in value chains.

59. To maximize developmental outcomes, PSOD will provide capacity-building assistance through technical assistance activities. PSOD will work with other development institutions, banks, and investors that have recognized agribusiness expertise. In addition, the Office of Public–Private Partnership will provide transaction advisory services for public–private partnerships on rural development and food security.

60. The Rural Development and Food Security Thematic Group, as indicated in Appendix 2, will

- (i) assist project officers working on revised country strategies, road maps, and programs, including participation in missions as necessary;
- (ii) conduct peer reviews and provide technical guidance in the design of rural development and food security investments;
- (iii) monitor changes in country strategies and programs to address operational priority 5 on a regional basis;

- (iv) monitor organizational effectiveness and efficiency in operationalizing rural development and food security along with assessing staff resources; and
 - (v) coordinate partner inputs to business development, including design of innovative or complex projects in emerging areas of rural development and food security.
61. The Rural Development and Food Security Thematic Group secretariat will
- (i) support the group in carrying out its activities as described above, in its capacity as secretariat for the thematic group;
 - (ii) ensure that the operational plan 5, its implementation arrangements, and implications are fully understood by regional departments and PSOD through seminars, meetings, and workshops;
 - (iii) provide regular guidance to regional departments, PSOD, and resident missions on the implementation of the operational plan 5;
 - (iv) facilitate ADB-wide mobilization of expertise for implementing the operational plan 5; and
 - (v) consolidate the actual approval of technical assistance and investments to ascertain whether planned targets are being met, and report on rural development and food security investment achievements.

B. Strategic Partnerships and Coordination

62. ADB will strengthen partnerships in finance, implementation, monitoring and evaluation, and policy and knowledge solutions. These will range from upstream partnerships with development and research communities in view of the international and policy context, academia, and applied research institutions, to downstream project partnerships with cofinanciers and local entities including civil society organizations.

63. ADB will continue to coordinate and share development responsibilities with the World Bank, especially on policy matters. ADB has also worked with the European Union and its member states in cofinancing agriculture and natural resources projects and coordinating such activities. ADB will deepen its key partnerships with the Food and Agriculture Organization of the United Nations and International Fund for Agricultural Development, which have proven beneficial over past decades for DMCs in mobilizing cofinancing and skilled expertise as well as knowledge sharing. ADB is also working with World Wildlife Fund on ecosystem conservation in the region, and is a co-convenor (with the European Bank for Reconstruction and Development) of the Multilateral Development Bank Working Group on Food and Water Security. Further, it is coordinating food security efforts in highly vulnerable food-insecure DMCs with the World Food Programme, as well as mobilizing funds for agriculture research and new technology development in partnership with members of the Consultative Group on International Agriculture Research, such as the International Food Policy Research Institute, International Rice Research Institute, International Water Management Institute, WorldVeg, and WorldFish, the private sector, and civil society organizations.

64. ADB will continue supporting research and development and innovations in the agriculture and natural resources sector that have enhanced productivity and reduced crop losses; and improved value chains, food quality and safety, and climate change management. To ensure increased long-term technical support to rural development and food security, the level of research and development funding should be commensurate with the complexity and volume of work.

C. Emerging Areas

65. Emerging areas requiring increased expertise and knowledge include food value chain development and (financial and nonfinancial) risk analysis for expanding both sovereign and nonsovereign investment portfolios. These have high growth potential for ADB operations. Digital technologies application to agriculture and natural resource management, digital finance, and blockchain present potential for adoption under ADB projects. But these technology packages require further analysis to assess suitability, cost, and digital data security. Embracing circular economy is key to meet climate challenges. About half the clothes produced worldwide use cotton fibers. Cotton production requires significant amount of water and pesticides. Industrial fibers and recycled garments are replacing cotton. Plant-based ‘meat’ has been recently introduced in the market for human consumption. This has potential to significantly reduce demand for beef, which requires significant amount of soil and water resources to produce, and the livestock account for 14% of global GHG emissions. Although these emerging areas of cotton and beef alternatives present significant potential to save water and soil resources and contain environmental degradation, they require robust life cycle analysis to assess net benefits. Antimicrobial resistance is the ability of a microbe to resist the effects of medication that once could successfully treat the microbe. Excessive and unauthorized use of antibiotics in livestock rearing by DMC farmers is widespread. Experts fear that microbes are slowly becoming resistant to antibiotic medicines. This can pose serious threat to human health. Zoonotic diseases—that normally exists in animals but can infect humans—are increasingly posing threat to human health. Zoonosis also poses threat in Asia and the Pacific. Rural/regional development planning is a cross-sectoral effort and requires extensive analytical rigor. In some of these emerging areas, ADB has already contributed to analytical work and capacity building through its technical assistance projects. However, for other areas, such as life cycle analysis of resource use, antimicrobial resistance, zoonosis, and rural development planning, ADB needs to take initiatives.

D. Knowledge Priorities

66. The Rural Development and Food Security Thematic Group will focus on (i) leveraging internal as well as capturing external knowledge and know how; (ii) identifying and incubating relevant policies, technological, and financing innovations; (iii) taking initiatives on some of the emerging areas; and (iv) supporting proof of concept initiatives in areas relevant to operational priority 5 to enable ADB regional departments, PSOD, and DMCs to conceptualize and operationalize innovative rural development and food security policies and investments.

IV

STRATEGY 2030 OPERATIONAL PRIORITY RESULTS

67. The following are the Strategy 2030 operational priority results under the Operational Plan. These will be monitored under ADB’s corporate results framework²⁸ and will be reported annually in the Development Effectiveness Review.

Pillar	Description	Indicator with Achievement Rate Target	Sub-pillars
1	Rural Development Enhanced	People benefiting from increased rural investment (number)	<ul style="list-style-type: none"> Rural infrastructure assets established or improved Companies providing new or improved nonagricultural goods and services Health care, education, and financial services established or improved Rural economic hubs supported
2	Efficiency of Agricultural Value Chains Improved	Farmers with improved market access (number)	<ul style="list-style-type: none"> Wholesale markets established or improved Storages, agri-logistics, and modern retail assets established or improved Agribusinesses integrating farmers in efficient value chains Food safety and traceability standards improved
3	Food Security Increased	Land with higher productivity (number)	<ul style="list-style-type: none"> Land improved through climate-resilient irrigation infrastructure and water delivery services Farmers using quality farm inputs and sustainable mechanization Commercial farming land supported Modern knowledge-intensive corporate farming models introduced

²⁸ ADB. 2019. *ADB Corporate Results Framework, 2019-2024*. Manila.

APPENDIX 1

CONTRIBUTION OF SECTOR AND THEMATIC AREAS TO THE OPERATIONAL PLAN

Sector and Thematic Group	Contribution to Operational Priority 5
Education	<p>Enhance productivity and modernize agriculture, and develop skills linked to the agriculture value chain.</p> <p>Ensure equity and improve the quality of rural education institutions and connectivity.</p> <p>Develop entrepreneurship opportunities and cross-sector skills through partnerships.</p>
Energy	<p>Enable the use of modern technologies to access energy to improve rural education, health, and other social services.</p> <p>Increase deployment of renewable energy technologies in agriculture and off-grid, mini-grid, and micro-grid systems to facilitate and rural development and to help ensure food safety and security.</p>
Finance	<p>Promote value-chain finance and access to diverse financial services to smallholder farmers, women entrepreneurs and youth, and use of blockchain.</p> <p>Provide rural finance and e-banking, especially products to promote women empowerment in rural areas.</p> <p>Design and offer financial risk protection solutions to cover crop losses from disasters or climatic factors.</p>
Health	<p>Assist in promoting and tracking production and sale of safe and nutritious food.</p> <p>Raise awareness, promote intake of nutritious foods, and improve nutrition security.</p> <p>Improve access to health services in rural areas especially with high-level technologies such as telemedicine.</p> <p>Monitor improved nutritional status, particularly reduced chronic undernutrition of children.</p>
Transport	<p>Provide rural roads to improve connectivity.</p> <p>Promote accessibility and decreased cost of rural transport.</p> <p>Reduce losses through transport system improvements and logistics.</p> <p>Contribute to achieving Sustainable Development Goal 9.1.1: Proportion of the rural population who live within 2 kilometers of an all-season road.</p>
Urban	<p>Assist in rural revitalization and rural-urban integration by planning and implementing in rural areas high-level services that are generally provided in urban areas.</p> <p>Assist with investments in decentralized water supply and sanitation systems, including innovative rural toilet systems that transform waste into fertilizer.</p> <p>Enhance rural-urban connectivity through investments in connector roads from inner towns to main roads, and port and logistics facilities to strengthen access to country and regional markets.</p>
Water	<p>Promote irrigation system efficiency, integrated flood risk management, innovation and technology, sustainable resource management, and waste recovery and reuse to ensure rural development and food security.</p> <p>Expand work on the water-food-energy nexus.</p>

Sector and Thematic Group	Contribution to Operational Priority 5
Climate change and disaster risk management	Review ADB pipeline investments to make them more climate-smart and climate-resilient through promoting ecosystem- and community-based adaptation, utilizing low-emission energy sources, identifying crop varieties with lower water demands, and integrating agroforestry principles for agriculture project investments that will improve resilience and reduce greenhouse gas emissions.
Gender	Support rural infrastructure and technology that reduce women's time poverty; enhance women's safety, mobility, and affordability concerns; and/or maximize marketing opportunities. Expand women's job opportunities in agribusiness value chains and access to finance therein. Improve productivity of women farmers through training and skills development in climate-smart agriculture technologies, practices, and crop varieties; improved access to rural finance, land, and other rural assets and productive resources; and participation in community-based groups to boost women's voices in natural resource management. Enhance women's voices in food security and safety decision making.
Governance	Promote sustainable use and management of natural resources in rural communities to enhance food safety and food security. Increase access to finance to develop micro, small, and medium-sized enterprises that help promote rural development. Increase access to basic services in rural areas.
Social development	Address the social dimensions of rural development. Strengthen rural livelihoods through inclusive business and cash-for-work or food-for-work programs. Promote food security through social assistance programs, which enable the rural poor to smooth consumption during slack agriculture seasons when prices are volatile and there is less demand for labor.
Environment	Promote sustainable and climate-smart agriculture and value chain interventions that integrate with global food systems and improve farmer incomes. Reduce soil erosion, improve biodiversity, and encourage sustainable rural infrastructure development incorporating nature-based solutions. Enhance food safety and certification programs to incentivize sustainable agricultural practices, using appropriate fertilizers and pesticides. Promote blue economy to support sustainable coastal and marine resources.
Regional cooperation and integration	Promote agricultural trade facilitation programs. Strengthen agribusiness value-chain projects. Undertake agriculture logistics projects. Promote agriculture cross-border e-commerce projects.
Public-private partnerships	Provide technical advice to regional departments in engaging and working with the private sector in developing projects in agriculture sector, agroprocessing, and agriculture value-chain infrastructure.

APPENDIX 2

INTERDEPARTMENTAL COOPERATION MATRIX

Activities of the Sector and Thematic Group	Areas of Cooperation	Cooperation With
The Rural Development and Food Security (Agriculture) Thematic Group will backstop and support the group in carrying out its activities in its capacity as secretariat for the Thematic Group on Rural Development and Food Security (Agriculture);	Assist agriculture and natural resources sector project officers working on revised country strategies, road maps, and programs, including participation in missions as necessary.	Operations departments and resident missions
(i) ensure that the plan, its implementation arrangements, and implications are fully understood by regional departments and Private Sector Operations Department (PSOD) through seminars, meetings, and workshops;	Review sector road maps and re-assess balance among sectors considering Strategy 2030 priorities for new country strategies in 2019–2024 and lending programs beyond 2024.	Operations missions and regional departments
(ii) provide guidance to regional departments and resident missions in the implementation of the operational plan on a routine basis;	Identify opportunities for intersectoral coordination and cooperation to maximize benefits of increased rural development and food security activities.	Operations departments
(iii) facilitate the mobilization of expertise throughout ADB for implementation of the operational plan; and	Monitor investments in country programs.	Resident missions, regional secretariats, operations departments
(iv) consolidate the actual approval of technical assistance and investments to ascertain whether planned targets are being met, and report on food security and agriculture and natural resource investment achievements.	Provide suggestions and guidance on public–private partnerships (PPPs) and private sector investment promotion in rural development and food security.	PSOD, PPP Thematic Group

APPENDIX 3

ADB SUPPORT FOR FISHERIES AND MARINE RESOURCE MANAGEMENT—LESSONS LEARNED AND WAY FORWARD

68. **State of fisheries in the Asia and Pacific.** Fish and seafood production are one of the oldest industries that continue to remain important in supplying animal protein, healthy lipids, and essential micronutrients to humans as well as providing income and employment to millions of people. Developing member countries (DMCs) are the largest fish and seafood producers as well as consumers in terms of both per capita consumption and percentage of animal protein derived from seafood. In 2016, global fish and seafood production reached an all-time high of 171 million tons, attributed to relatively stable capture fisheries production, reduced wastage, and continued aquaculture growth led by Asia and the Pacific. With wild caught fish relatively static since the late 1980s, aquaculture has been playing a significant role in ensuring fish supply for human consumption, increasing its contribution to 47% in 2016 compared to about 26% in 2000. Aquaculture (excluding aquatic plants) grew at 5.8% per annum during 2001–2016, faster than most other major food production sectors. In per capita terms, food fish consumption has grown from 9 kilograms (kg) in 1961 to 20 kg in 2015, at 1.5% per annum on average. The world trade in fish and fish products has also grown significantly, with exports rising from \$8 billion in 1976 to \$143 billion in 2016, at an annual growth rate of 8% in nominal terms and 4% in real terms.

69. Mass commercial fishing and ineffective management of the fishing industry have exhausted many seafood stocks suitable for human consumption. Continued degradation of critical habitats and ecosystems, such as coral reefs and mangroves, by bottom trawling have rapidly diminished commercial fish stocks. Stocks of 10 key species, which represents 30% of marine capture production, are fully harvested, while bottom species have become fewer in numbers and sizes. Low-value small pelagic fishes now occupy the marine space, revealing an imbalance in the food chain and the marine ecosystem. Aquaculture, on the contrary, is poised to overtake capture fisheries as the primary source of seafood for human consumption in the future; has grown faster than the human population growth; and proven to be less controversial in ecological, environmental, and climate change impacts.

70. **ADB's past experiences.** In the early years of agriculture sector operations, ADB assisted DMCs expand their capacity in large-scale and commercial capture fisheries. ADB gradually recognized the role of small-scale fisheries and aquaculture in livelihoods, food security, and poverty reduction. From the late 1980s, capture fisheries entered a state of inexorable decline caused by decimation of fish stocks and degradation of ecosystems. In the 1990s, ADB's approach and development assistance in the fishery subsector expanded to encompass a wide range of environmental and social concerns. ADB's Policy on Fisheries, approved in 1997, expressed worry about widespread poverty among small-scale fishers, overexploitation of fisheries resources, and degradation of the natural resource base. The policy was designed to support the promotion of sustainable management of fisheries and aquatic resources. From 1968 to 2005, ADB approved 68 fisheries-related projects with a cumulative loan amount of \$1.4 billion: 9% of the agriculture and natural resources portfolio and 1.2% of the

cumulative ADB lending. In 2006, an Independent Evaluation Department evaluation recommended gradual winding up of ADB operations in fisheries, arguing that (i) ADB's fisheries portfolio had not performed well compared to other subsectors in the agriculture and natural resources portfolio; (ii) there would be limited demand in DMCs for fisheries projects in the future; and (iii) ADB's Medium-Term Strategy II (2006–2008), subsequently followed by Long-Term Strategic Framework, would guide ADB operations during the next 10 years. Deficiencies in project design, including inadequate fisheries resource assessment, insufficient research during project preparation, and use of untested technologies and approaches were principal reasons for unsatisfactory performance of ADB's fisheries projects. A few targeted and focused interventions, such as development and dissemination of genetically improved farmed tilapia generated significant long-term benefits to DMCs and remains one of the often-cited success stories of ADB's fisheries interventions.

71. After 2006, fisheries interventions were integrated in broader rural development projects for creating sustainable livelihoods, safeguarding the environment, and enhancing coastal resources management. Aquaculture was to be treated as part of agriculture subsector under Group III, which represented subsectors with limited demand for ADB operations. ADB was then poised to gradually wound up operations in Group III. This de-emphasis resulted in further loss of in-house staff capacity in fisheries and aquaculture. ADB sought partnership with other multilateral and bilateral agencies and civil society organizations to respond to the need for support for climate change and coastal and coral resources management in Southeast Asia and Pacific in a limited scale during the Medium-Term Strategy (2006–2008). ADB retired its Policy on Fisheries in 2007.

72. Key lessons learned from past ADB operations include (i) shifting the role of governments away from production activities, such as hatcheries, to extension, infrastructure, resource enhancement, and resource management that will pave the way for private sector investment in supply and value chains, such as new technologies, feed, seed, processing, logistics and cold chains; (ii) avoiding vertical integration of project components and linked project deliverables, and multi-agency implementation arrangement of projects; instead, engage private sector at the onset of the project for demonstration and uptake promotion of new technologies; (iii) developing infrastructure must involve adequate stakeholder participation and mostly done on build-operate-transfer basis or similar terms by private sector, along with provision of training and adequate flexibility in design for adaptation and changes due to transformation such as climate change.

73. **The case for ADB support for fisheries.** Strong demand for seafoods in emerging economies in the region is paving ways for private and public investment in seafood value chains comprising inputs, infrastructure, quality and safety, logistics, processing and value addition. Asia's dominance in production, consumption, and trade in seafoods requires a closer look by ADB. Support to DMCs in fisheries and aquaculture, to both public and private sectors, will be important in achieving key Sustainable Development Goals on poverty reduction, food security and malnutrition, and environmental management. Ecological constraints of ocean-based production system mean that traditional capture fisheries will not be able to increase its supply beyond historical levels, not much investment in fishing efforts will be warranted, except those that will improve sustainability, and biodiversity, and ecosystem recovery efforts. Nearly 3 decades of sustained growth in aquaculture in Asia and Pacific shows the potential of further investment in aquaculture and its allied industries. The region's need for meeting the sanitary and phytosanitary standards also requires ADB support. Therefore, aquaculture dominated by private sector should be supported to sustainably develop production and distribution systems to continue to offset the decline of capture fisheries and fill the gap between supply and demand.

74. Eight of the top 15 fish-producing countries in the world are in Southeast and East Asia with exports valued at \$136 billion. Asia and Pacific region accounts for 84% of all people employed in fisheries and aquaculture worldwide, and 68% of the global fishing fleet. The prospects for further and future development could be compromised as coastal ecosystems face increasing threats that diminish the ecological health, environmental resilience, and socioeconomic potential of these rich areas. While tackling marine pollution, erosion, salinization, flooding, and other effects of climate change on coastal and marine resources and competition for other economic activities of the coasts and oceans, such as port, shipping, marine transport, tourism, resorts, oil and gas, coastal manufacturing, and seabed mining may prove overbearing in coming years, there is a clear opportunity for impetuous for a blue economy development through balanced public and private investments.

75. **Scope of future ADB investments in fisheries.** DMCs with sizeable inland waters and coastal zones should be supported for freshwater and coastal aquaculture and mariculture using species suitable to local environment. The support should cover introduction of advanced technologies, training, and financing to attract private sector investment. ADB should invest in synergies and complementarities between capture fisheries and aquaculture and support private sector-led efforts to reduce dependencies of coastal aquaculture on wild supply of seeds and brood stock, and limiting the encroachment of aquaculture in biodiversity and marine ecosystems. In some DMCs, there is significant potential to develop fish exports. However, government policies and incentives should be used to balance tradeoffs between export value and local nutrition, especially in countries where fish appears high in animal protein consumption. In this regards, both inland freshwater aquaculture in fish for domestic markets, and high value shrimp, crustacean, seaweeds, and finfish for export and upscale markets, can be prioritized for ADB support using both private- and public sector-led projects.

76. **Sustainable management of blue economy-based coastal development.** ADB should consider policy driven public sector support for (i) developing dedicated zones for production along with secured rights and access to capital and technical assistance to accelerate uptake of sustainable aquaculture; (ii) ecosystem and biodiversity protection (e.g., corals, mangroves, seagrass beds, and spawning, feeding and migration habitats); (iii) promoting value chain and cross-sectoral linkages to develop coastal belt and blue economy, including spatial planning, mapping, and zoning of coastal and marine ecosystems for cross-sectoral use; and (iv) strengthening fisheries export growth potential, including supporting quality, safety, and traceability.

77. Many industries and sectors—such as processing companies, airlines, supermarkets, and hotels—rely on marine resources for their business. Sustainability of marine resources has now become material enough issue to be incorporated in their sourcing policy, like the issues of carbon footprint. ADB, along with development partners, can play an effective role in having marine sustainability-related policies and initiatives adopted by companies involved across seafood value chain through creation of sustainable seafood agreement. ADB's knowledge resources and knowledge management can play an important role in these initiatives.

Strategy 2030 Operational Plan for Priority 5

Promoting Rural Development and Food Security, 2019–2024

Promoting rural development and food security is one of seven operational priorities of the Asian Development Bank (ADB) under its Strategy 2030. This operational plan specifies the strategic approaches and implementation measures required to operationalize the priority. It is part of a series that includes an overview and operational plans for all seven priorities. The series was prepared by members of ADB sector and thematic groups following extensive consultations with internal and external stakeholders.

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.

