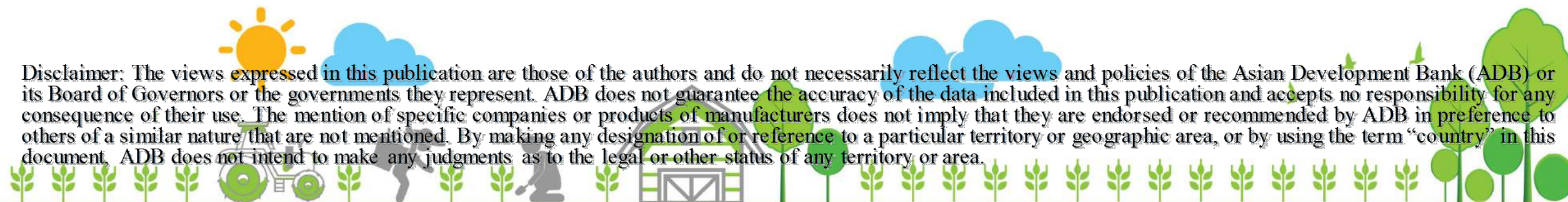




ADB's Approach to Promoting Sustainable Food Security in Asia and the Pacific

16 May 2018, 9:30-11:30
Marzia Mongiorgi Lorenzo

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Outline

- A. Global Demand on Food Systems
- B. ADB Operational Plan for Food Security
- C. The potential of Agribusiness Value Chains
- D. Project Spotlights
- E. Strategy 2030 and Beyond





A. Global Demand on Food Systems

Global Situation: Poverty



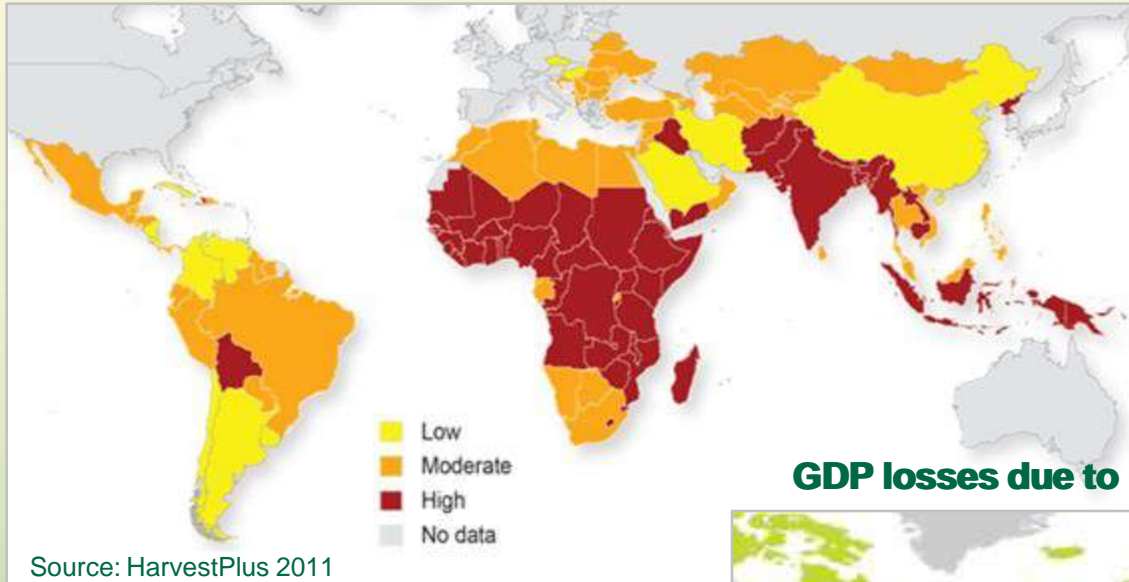
- **2010:** 1990 poverty rate was cut in half—achieving MDG 1 five years ahead of schedule
- **2012-2013:** Reduction in extreme poverty driven mainly by East Asia and Pacific (71 million fewer poor, notably in PRC and INO) and South Asia (37 million fewer poor, notably in IND)
- **2013:** 10.7% of world population lived on less than US\$1.90 a day, compared to 12.4% in 2012 (down by 35% from 1990); 1.1 billion people have moved out of extreme poverty since 1990
- **2016:** 815 million people globally are undernourished (up from 777 million in 2015); almost 500 million in Asia and the Pacific still suffer from hunger
- **2050:** Population will increase by 1/3 (additional 2 billion people in developing countries, most in cities); 60% increase in agricultural production is needed





2 Billion + People Suffer from Hidden Hunger

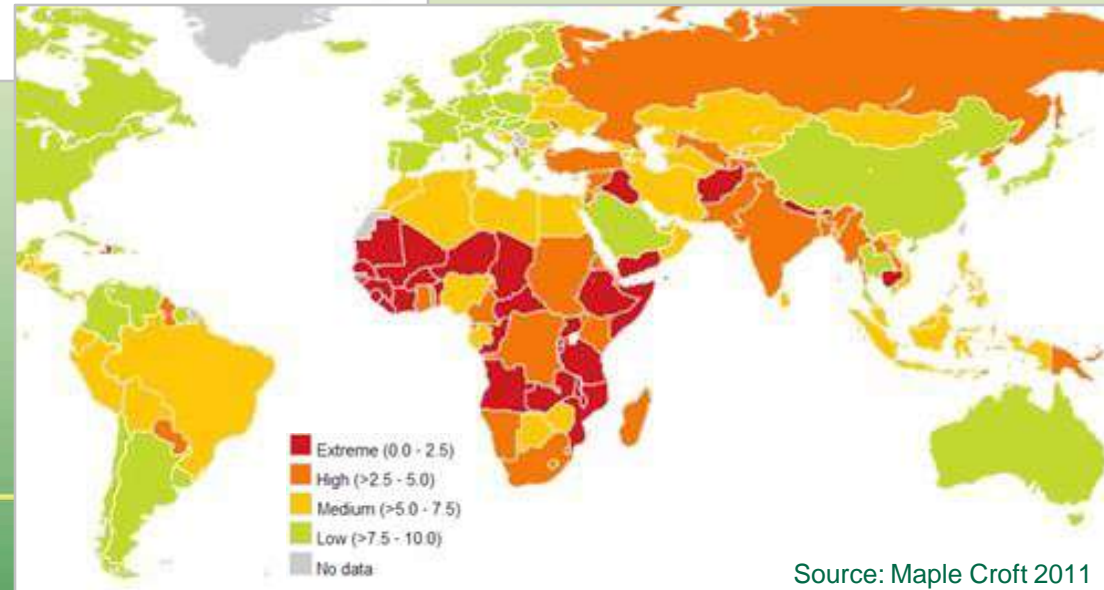
Prevalence of micronutrient deficiencies



Source: HarvestPlus 2011

Cost of undernutrition is very high!

GDP losses due to micronutrient and vitamin deficiency



Source: Maple Croft 2011

Economic cost of micronutrient deficiencies in India =

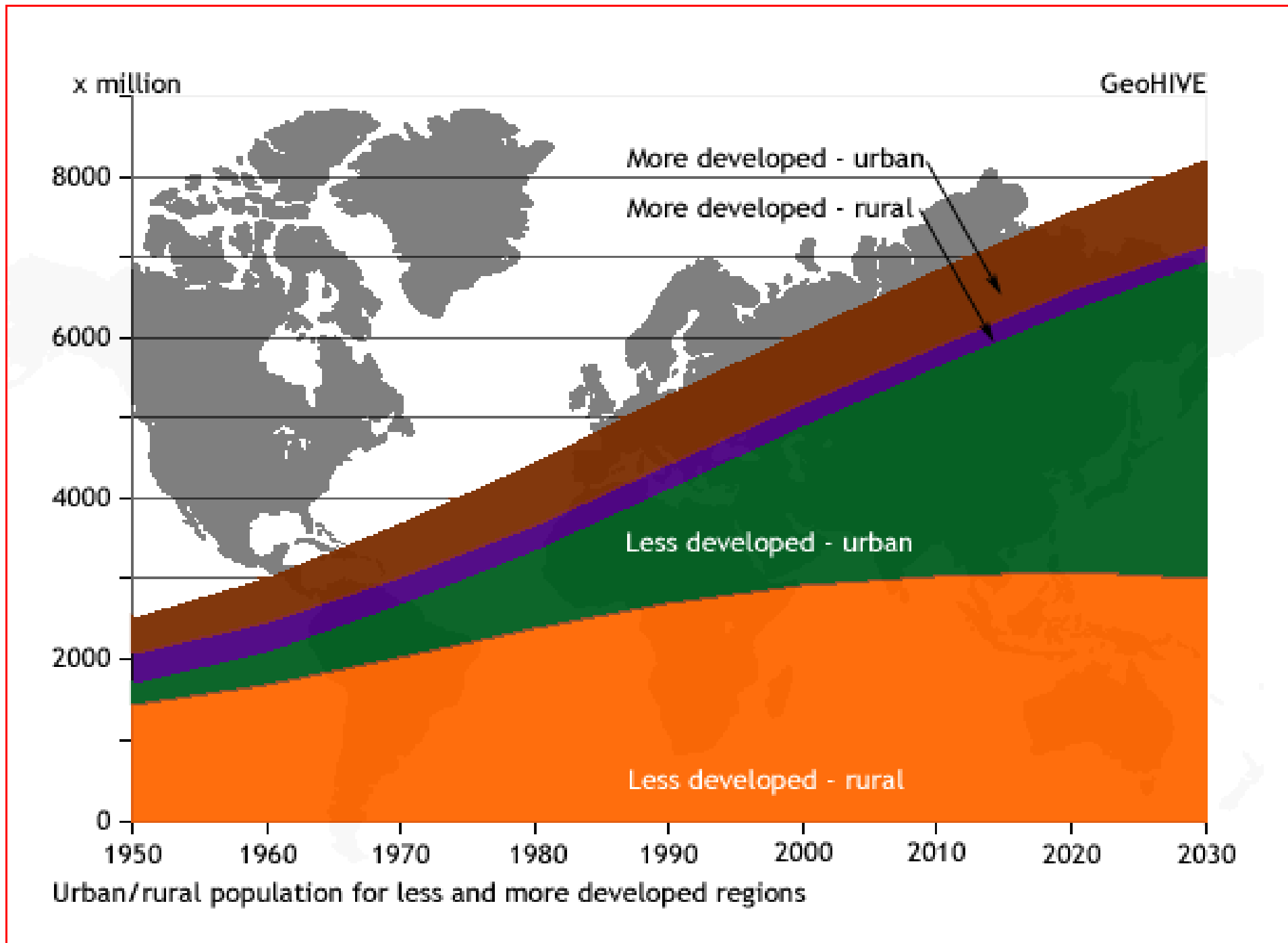
- US\$17.3 bil. (2004 dollars) or
- 2.5% of GDP

(Stein and Qaim 2007)

Global Situation: Food Systems

- Main drivers for increased production:
 - Population growth
 - Affluence
- Main challenges for agri-food systems
 - Natural resource limitations
 - Energy (finite and renewable)
 - Climate Change





x million

GeoHIVE

8000

More developed - urban

More developed - rural

6000

Less developed - urban

4000

2000

Less developed - rural

0

1950

1960

1970

1980

1990

2000

2010

2020

2030

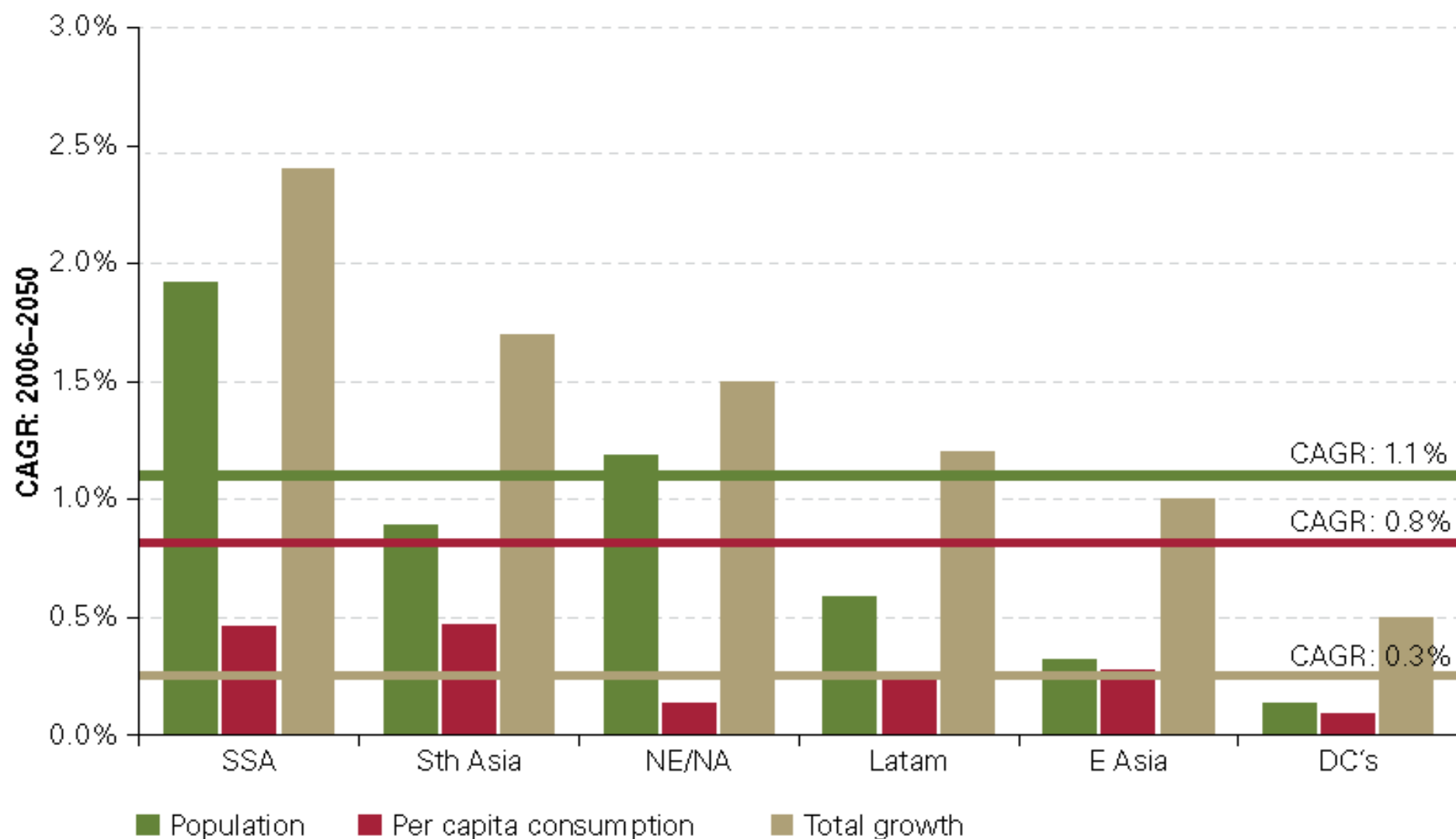
Urban/rural population for less and more developed regions

Population Growth & Affluence

- The food system, currently feeding 7 billion people, will need to feed 8 billion by 2030, and 9 billion by 2050
- The percentage of urban versus rural population will increase
- More people will be wealthier, raising the demand for higher quality diets (increasing food production costs)
- Much of the increase in population, and affluence, is expected to happen in Asia



Figure 8: Growth in food demand: 2006-2050



Source: N Alexandratos and J Bruinsma, 2012, *World Agriculture Towards 2030/50: the 2012 revision*, ESA Working Paper No. 12-03, Rome, FAO

Challenges for agri-food production systems - LAND

- 24% of agricultural land is already degraded, mainly through erosion
- Last 40 years agricultural land has expanded by 8% but production has increased by 115%



Challenges for agri-food production systems - ENERGY

- Global energy demand estimated to double by 2050
- Agriculture disproportionately to be affected through impact on fuel prices, cost of production and transport to markets, manufacturing of fertilizers



Challenges for agri-food production systems - WATER

- Agriculture consumes 70% of global blue water
- Demand by 2030 likely to be 30% higher
- Some regions depending on mining aquifers for irrigation (depletion), other on extracting surface water



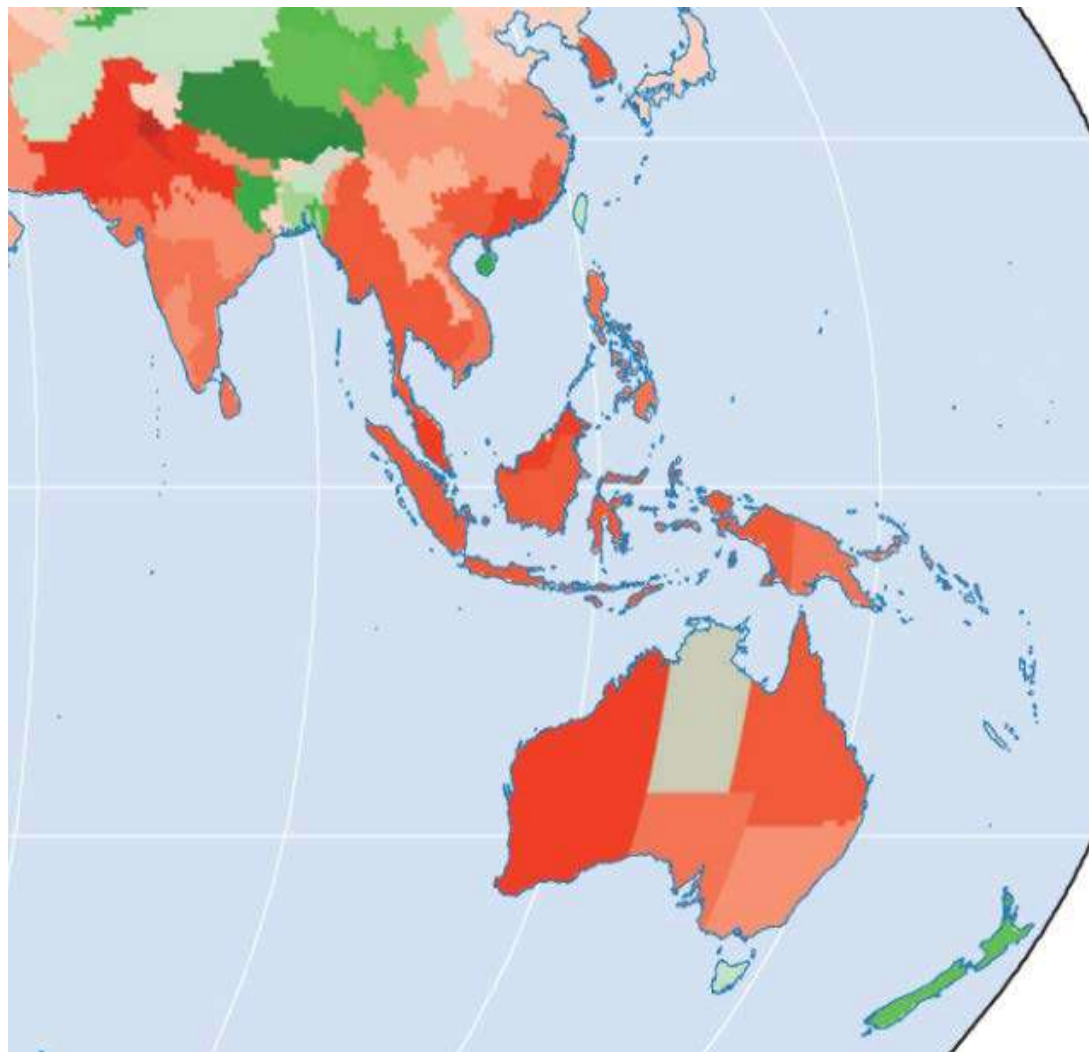
Challenges for agri-food production systems – CLIMATE CHANGE

- Climate change: more erratic weather patterns are likely to increase external shocks to agriculture
- At current agronomic inputs, climate change scenarios are likely to negatively affect agri productivity in most of ADB's countries, leading to food deficits

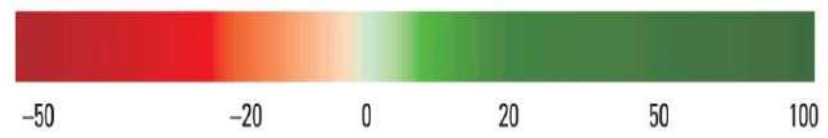


A: Yield of 11 crops by 2050

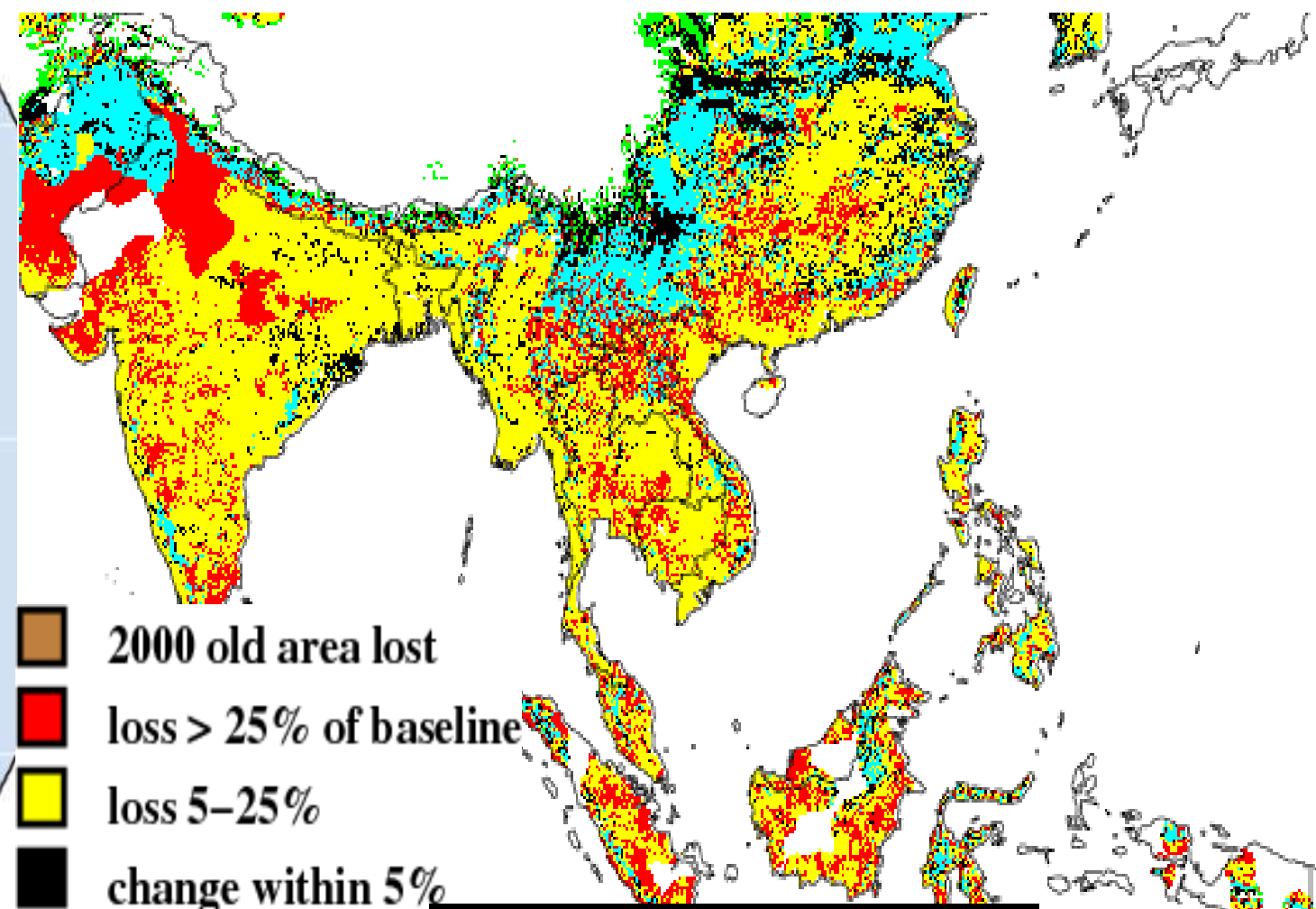
B: Yield of irrigated rice by 2050









Percentage change in yields between present and 2050



No data



-  2000 old area lost
-  loss > 25% of baseline
-  loss 5-25%
-  change within 5%
-  gain 5-25%
-  gain > 25%
-  2050 new area gained

Challenges



- Prevailing unfair terms of trade for agriculture in most DMCs
- Widening disparity in income opportunities between rural and urban areas
- Diminishing interest by youth in farming
- High post-harvest losses due to disintegrated supply chains: inadequate infrastructure and inefficient market access which pose risks to food safety
- Continuing competition for land and water resources by other sectors—prime agricultural lands are being used for urbanization, industrialization, and infrastructure
- Climate change and extreme weather events
- SDGs 1, 2, 12, 13 and 15 may be difficult to achieve

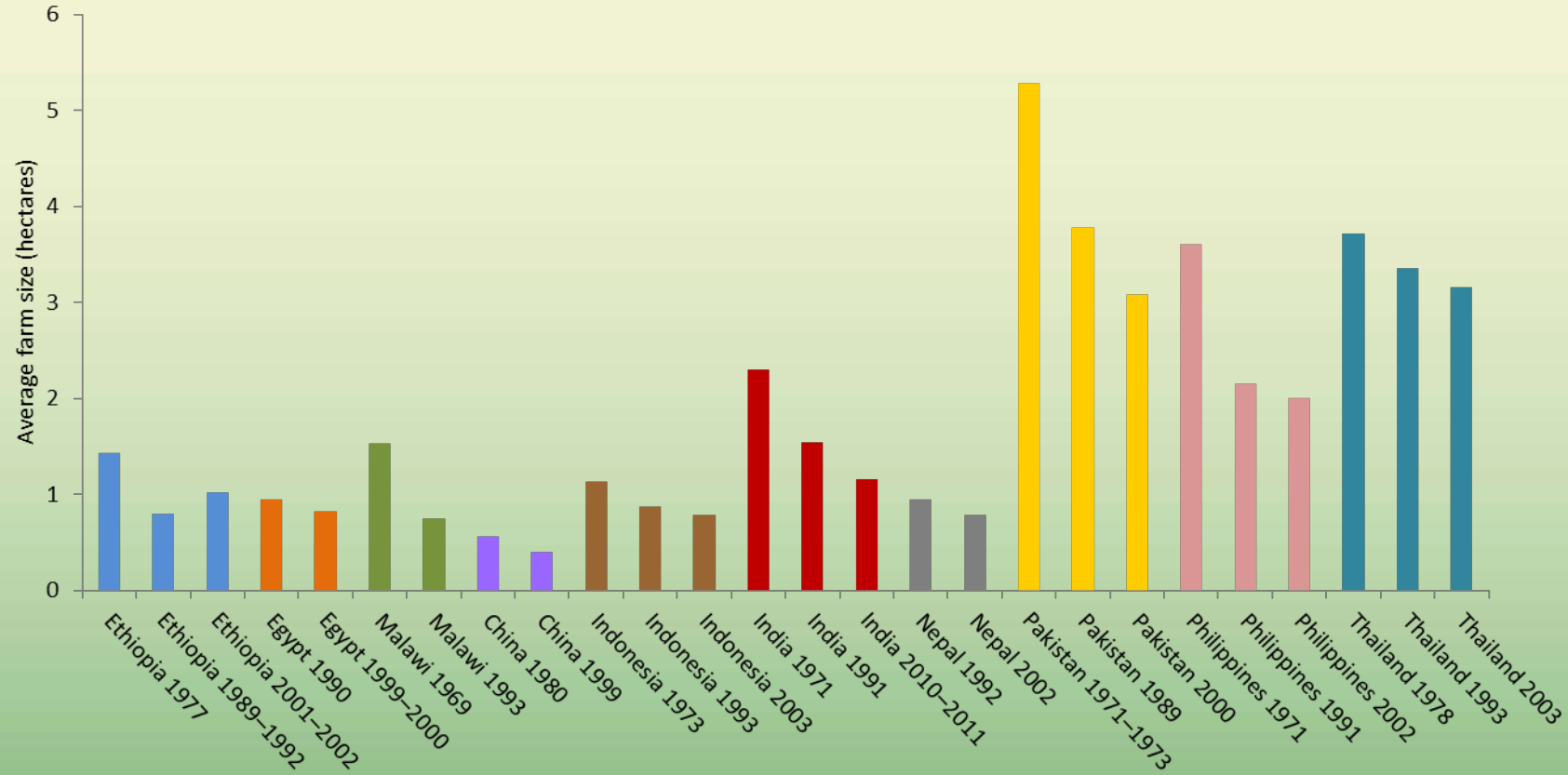


Fragmented Agriculture Value Chains

- Price discoveries remain elusive
- Price instability
 - ✓ Reduces farmers' income,
 - ✓ discourages private investment in farming, and
 - ✓ causes large production losses
- Farmers' share in consumers' dollar at less than ¢10 in DMCs (versus ¢40-¢60 in developed countries)
- Post-harvest losses in DMCs at 30-50% (versus 10% in developed countries)



Trends in Farm Size in Selected Developing Countries



Source: IFAD 2008



Demand ↑

- World population predicted to increase to 9.1 billion by 2050, 5.2 billion in Asia – 70% increase in food production required to feed us
- By 2050, Asia will represent 50% of world's GDP – income growth strongly correlated with growth in caloric intake
- By 2050, 70% of Asians will reside in urban centers, most will belong to the middle class
- Changes in diet: more meat, dairy, fruits & vegetables



**Opportunity
to invest
in processing
and food
brands to
capture large
share of
demand**



Supply ↓

- Decreasing arable land – 43% of South Asia's arable land is degraded
- Slowdown in yield growth – climate change may even cause a drop in yields
- Increasing water stress – 80% of Asia's freshwater is consumed by irrigation
- Small cultivated land size – 0.5 hectare on average per farmer in Asia
- High post-harvest losses
- Fragmented supply chain



**Opportunity
to invest
in
production
and supply
chain
efficiency**



Prices ↑

- Two food price spikes in recent years : 2007–2008 and 2010–2012
- Food prices increasingly interlinked with feed, energy, and other commodity prices
- Still undervalued on a long-term trend compared to other commodities (e.g. gold), pointing to potential for further price increase
- Rising food prices projected to be the “new norm” (OECD-FAO Agricultural Outlook: 2013-2022)



**Opportunity
to invest
in farming to
benefit
from a
structural
“long”
position**



B. ADB Operational Plan for Food Security



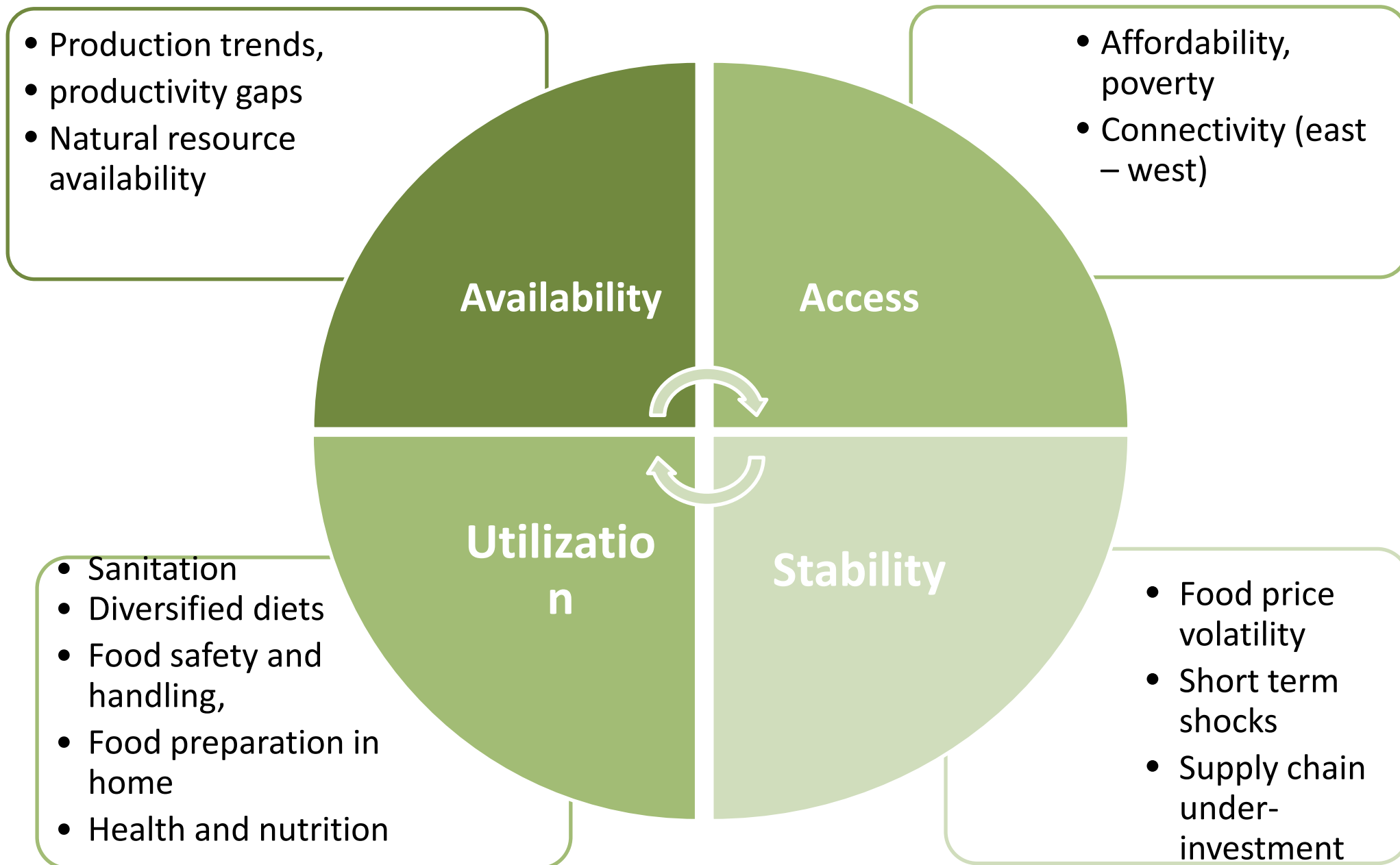
Definition of Food Security



Food security exists when all people at all times have physical, social and economic access to sufficient and nutritious food that meets their dietary need and food preferences for a healthy and active life. [FAO]



Key Dimensions of Food Security



Agribusiness & ADB's strategic agenda

Strategy 2020 (2008)

- Support for agriculture and rural areas is an underlying component of **the inclusive growth strategy**
- The majority of the poor still live in rural areas, and agriculture remains a source of productivity improvement, seasonal employment, and income growth—especially when **connected to urban, industrial, and export markets**

Midterm Review (2014)

- ADB will increase its support to inclusive business, such as **agribusiness development that connects farmers to local and global food markets**
- ADB will aim to increase the productivity of agriculture (including through investments in R&D, water infrastructure, and **agribusiness**)

Operational Plan for Food Security (2009)

- **Expanded partnership with the private sector** will be actively sought to attract more direct investments in productivity enhancement, **agro-processing, agro-retailing**, and other nonfarm rural business





Status of Food Security

- ✓ Malnutrition is still unacceptably high, despite global hunger reduction
- ✓ Asia still has the highest number of undernourished, 2/3 of the total, or 13% of the regional population



Operational Plan 2015-2020

1. Increasing the productivity and resilience of ANR and food systems

2. Improving connectivity among producers, agribusiness and national and international market

3. Enhancing food safety, nutrition, and quality

4. Enhancing renewable natural resources management



Operation Plan Directions

Differentiated country / region approach:

Low income countries vs. middle income countries; Country food security assessment; Policy dialogues and planning; Short-term (2014-16) vs. medium-term (2017-20) measures



PPP and private sector operations



Regional cooperation and integration



Multi-sectoral linkages:

Food – Water – Energy Nexus ; Agriculture – Food Security – Nutrition Nexus; Rural – Urban



Partnership (financing, implementation, M&E, policy and knowledge solution)





Increased productivity and reduced food losses

Improved market connectivity and value chain linkages

Enhanced food safety, quality and nutrition

Enhanced management and climate resilience of natural resources

Action Areas



Agricultural Value Chains



High-Level Technologies



Climate-Smart Agriculture

Operational Support



Technical Inputs



Knowledge Sharing and Learning

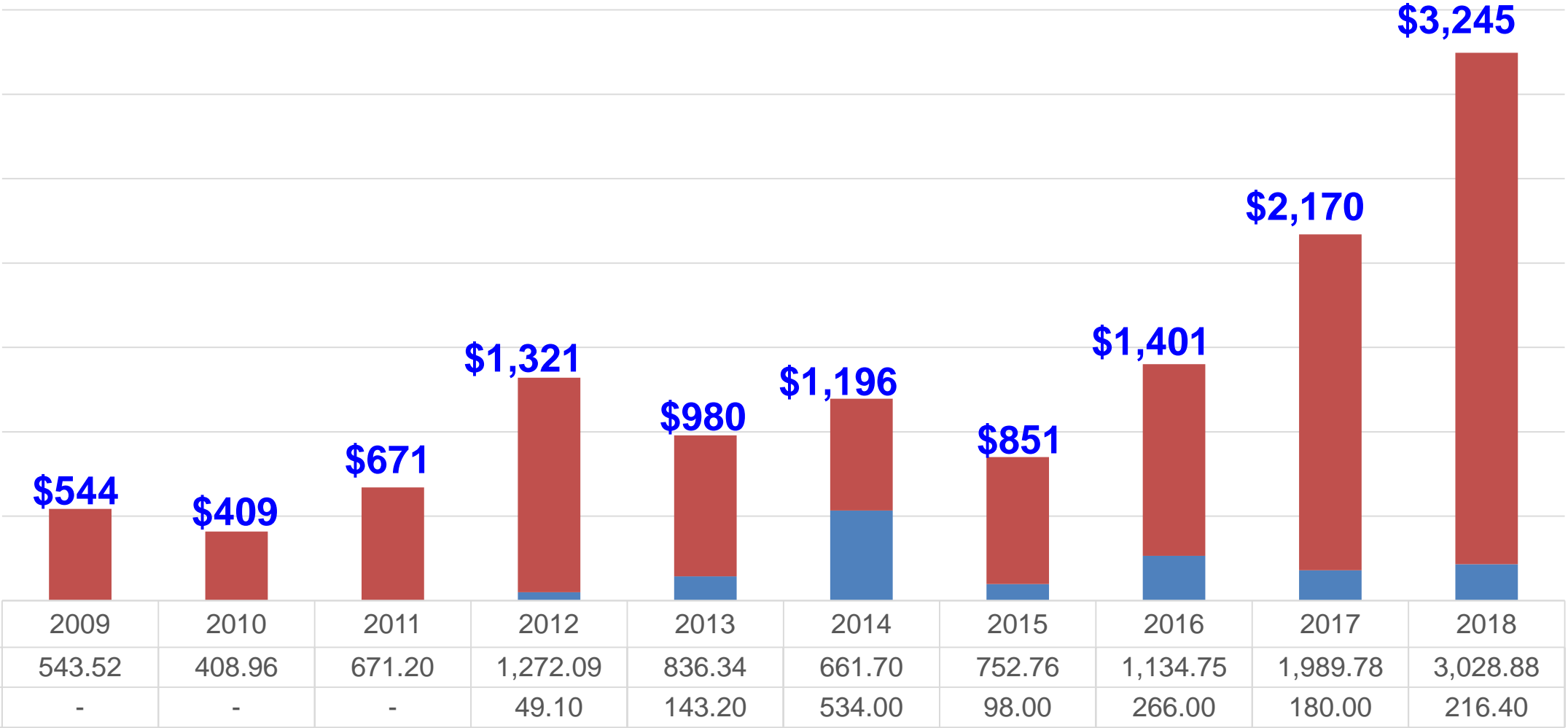


Partnerships and Cross Synergies

Outcome

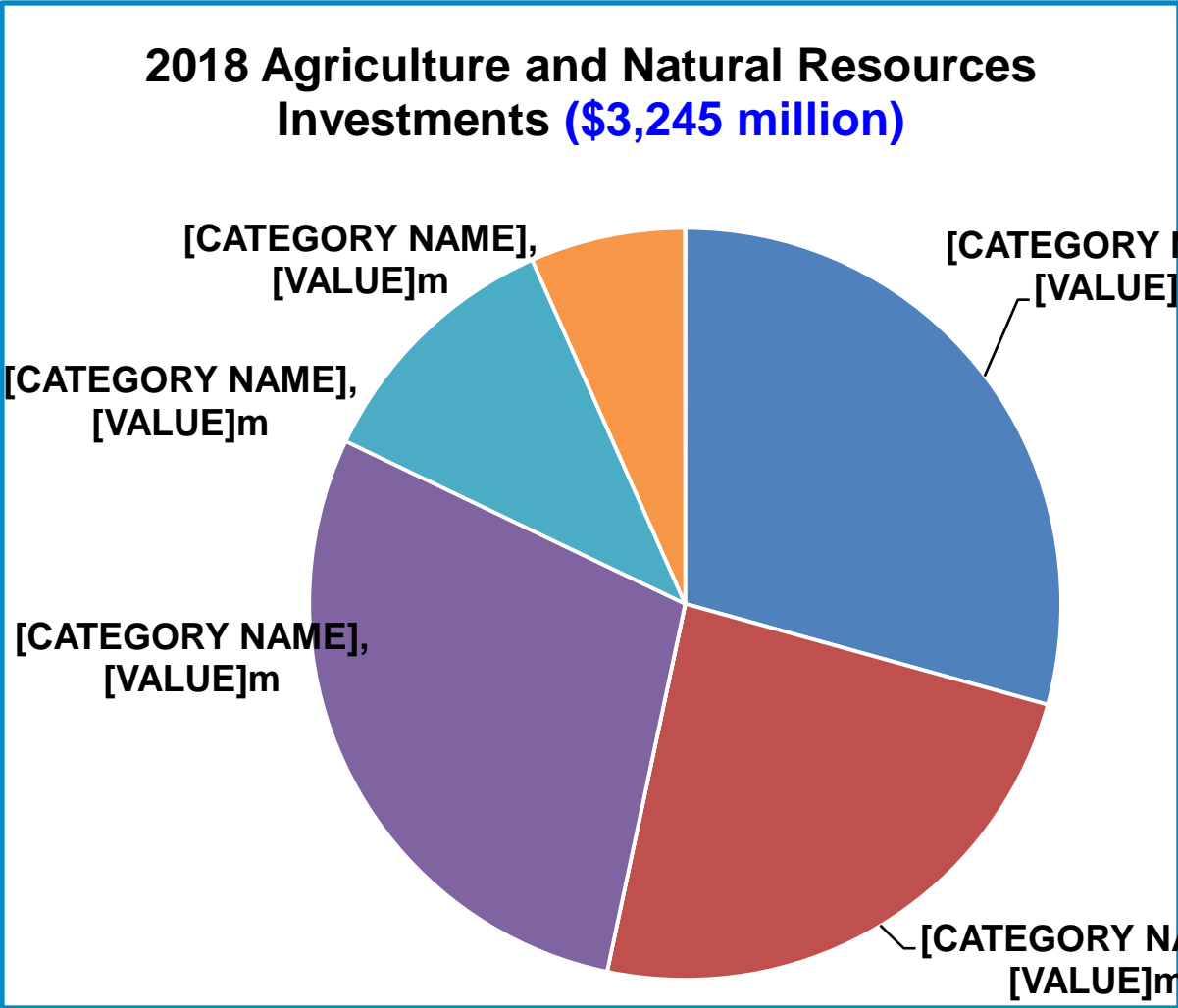
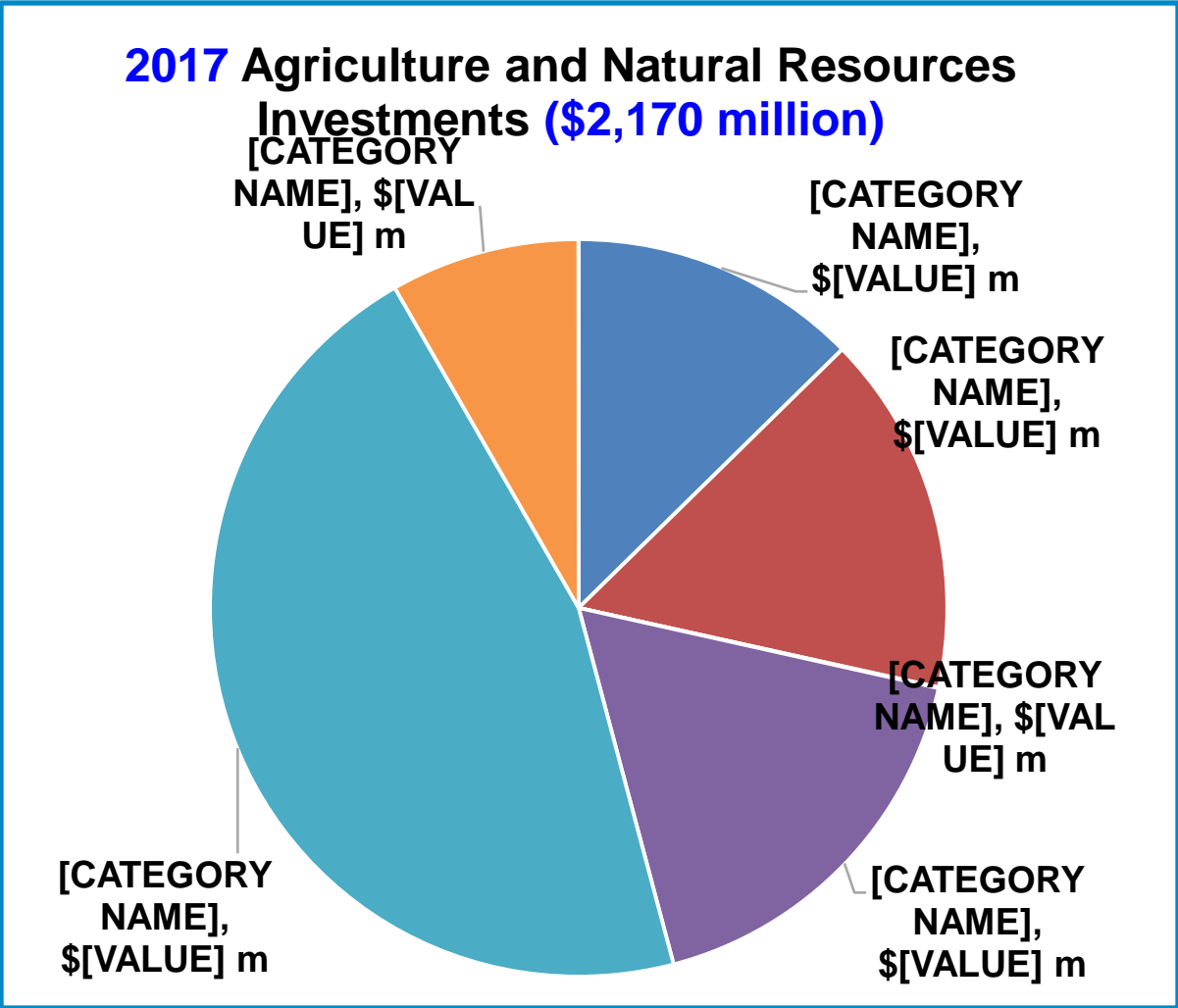
Safe,
nutritious,
and
affordable
access to
food for
all

2009-2017 Agriculture and Natural Resources Investments and 2018 Project Pipeline (\$million)*



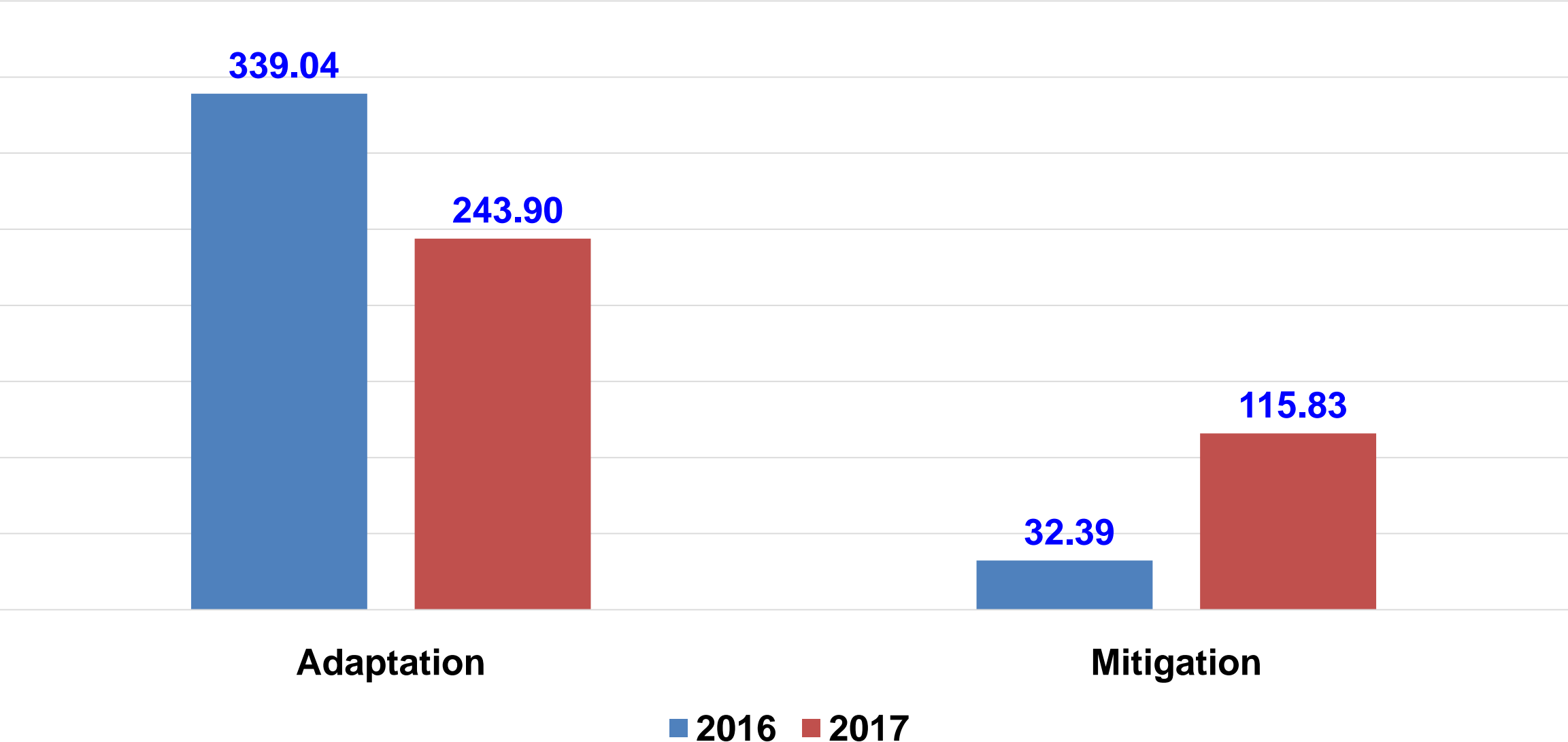
*Based on project approvals

2017 ADB Investments and 2018 Project Pipeline by Subregion (\$million)*



*Based on project approvals

2016-2017 Climate Finance Investments (\$million)



*Based on project approvals



C. The Potential of Agribusiness Value Chains

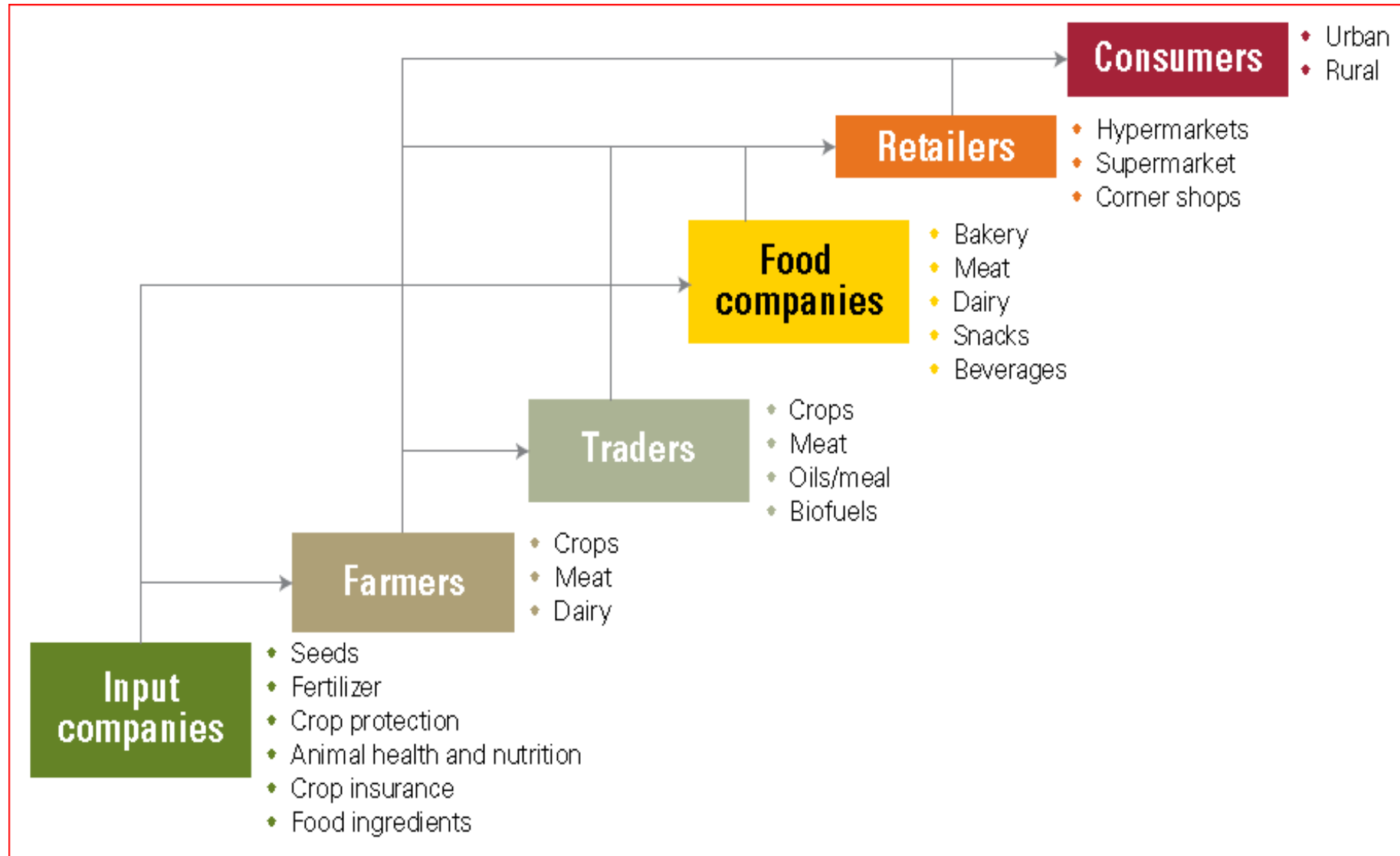
Agribusiness can.... improve global food security

- ✓ ... improve global food security
- ✓ ... smoothen the supply and demand divergences
- ✓ ... increase food safety and quality of food
- ✓ ... reduce inefficiencies and waste, and add value for all the actors of the agriculture value chain, from farmers to consumers, resulting in efficiency and wealth gain
- ✓ ... add value through grading, processing, conservation, packaging , branding
- ✓ ... make food affordable, safe and nutritious





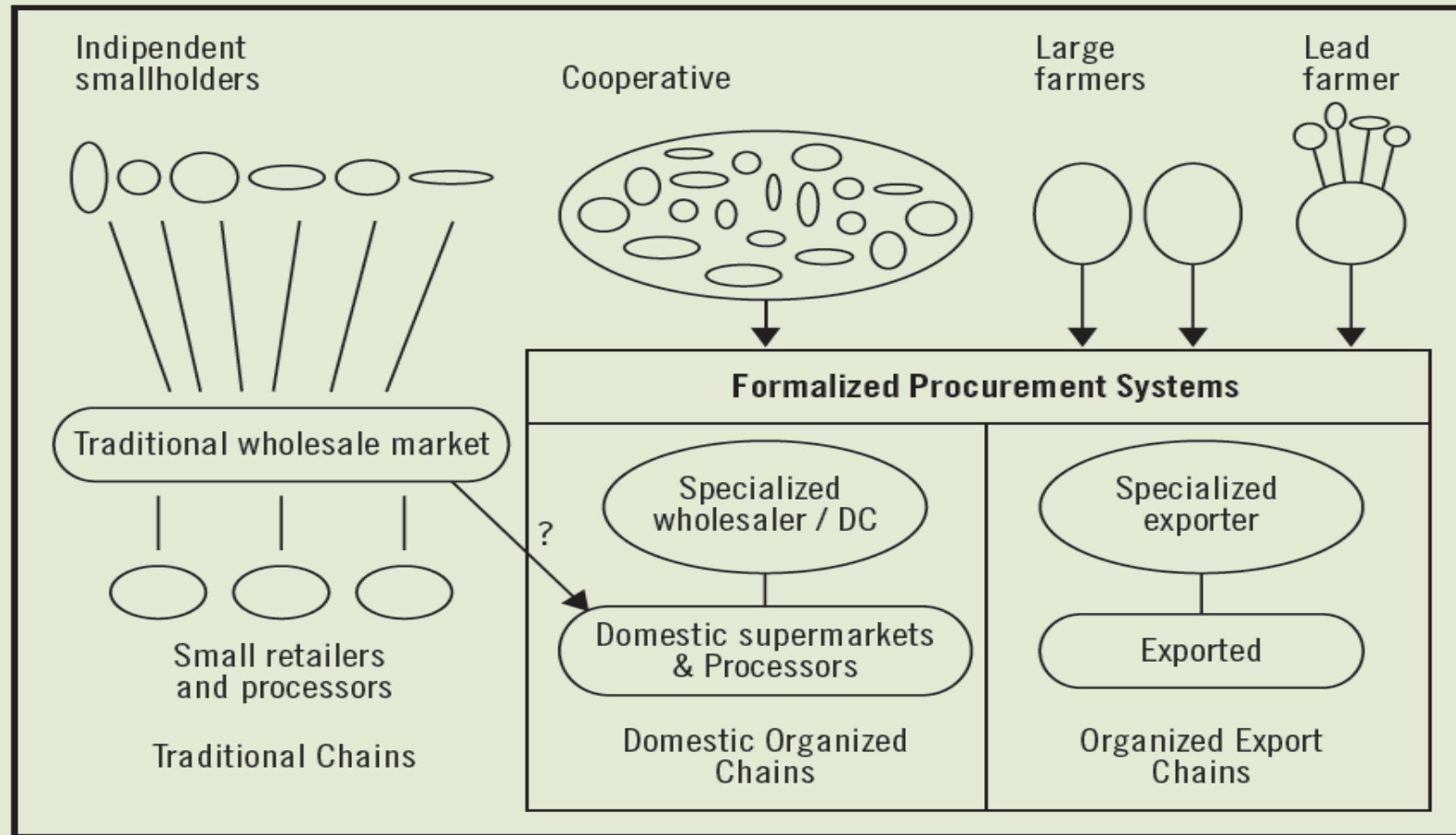
Agribusiness Value chains





Traditional vs Modern

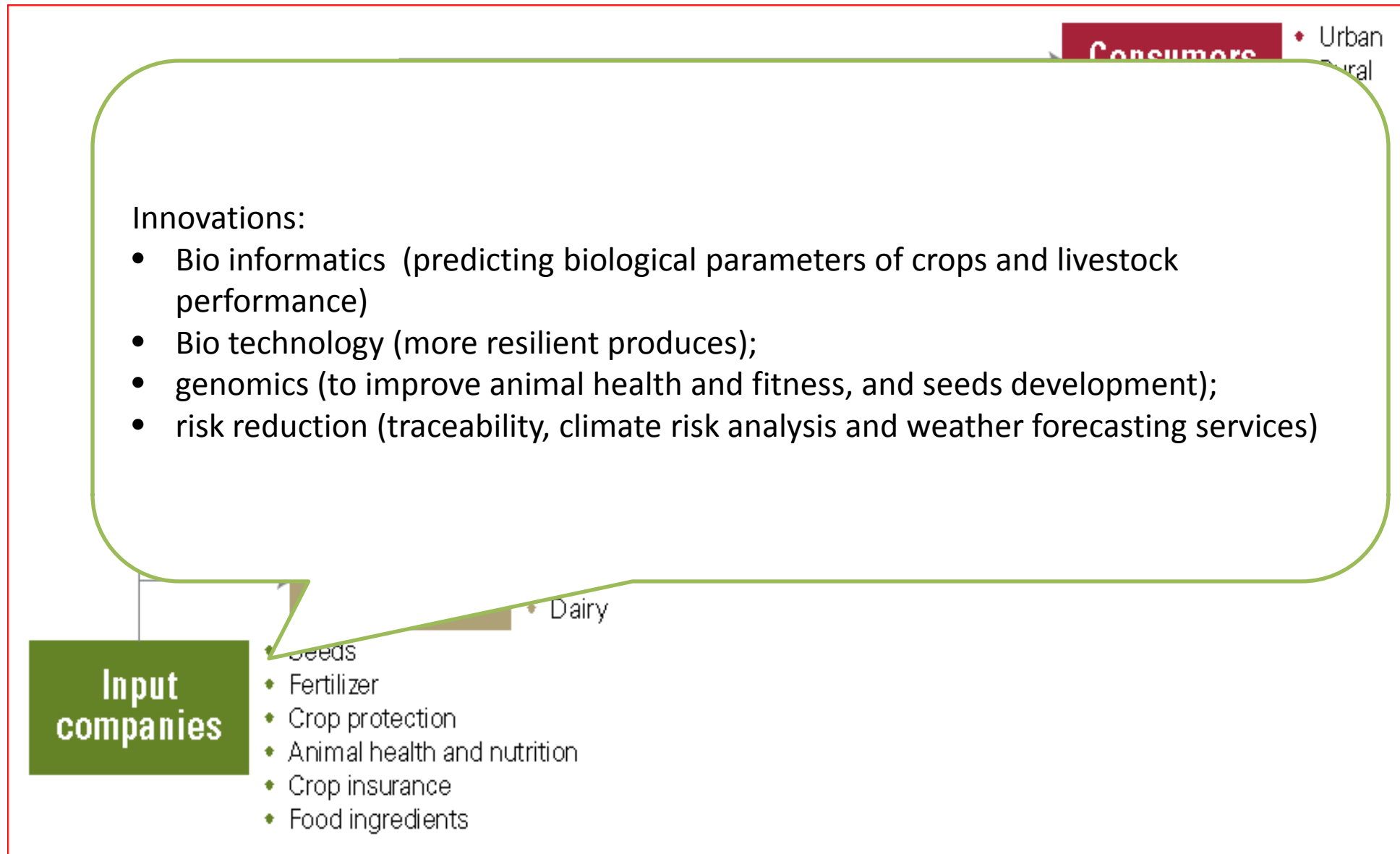
FIGURE 1 Traditional / modern value chains in food systems



Source: E.B. McCullough, P.L. Pingali and K.G. Stramoulis, eds. 2008, *The transformation of Agri-Food Systems*, FAO and Earthscan, London, p. 17.



Agribusiness Value chains





Agribusiness Value chains

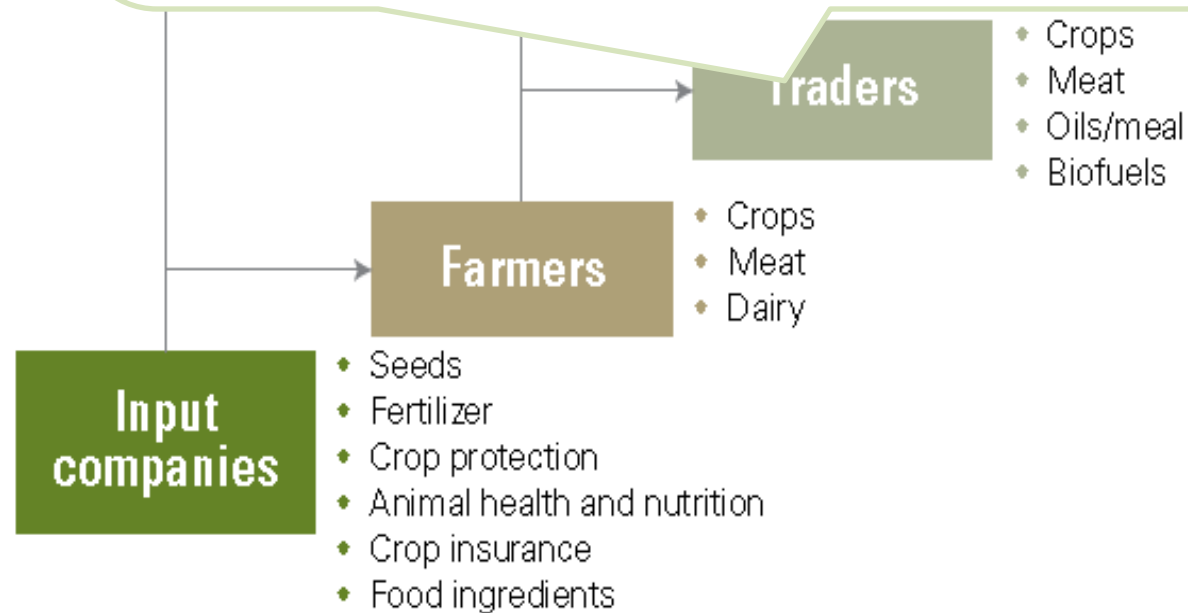
- System of Rice Intensification (100% increase in yield; 90% reduction in seeds; 50% water saving);
- precision agriculture, including automated agrochemical application (for food safety and environmental benefits),
- irrigation with weather monitoring,
- satellite imagery,
- micro-mapping, and
- smart agriculture machineries





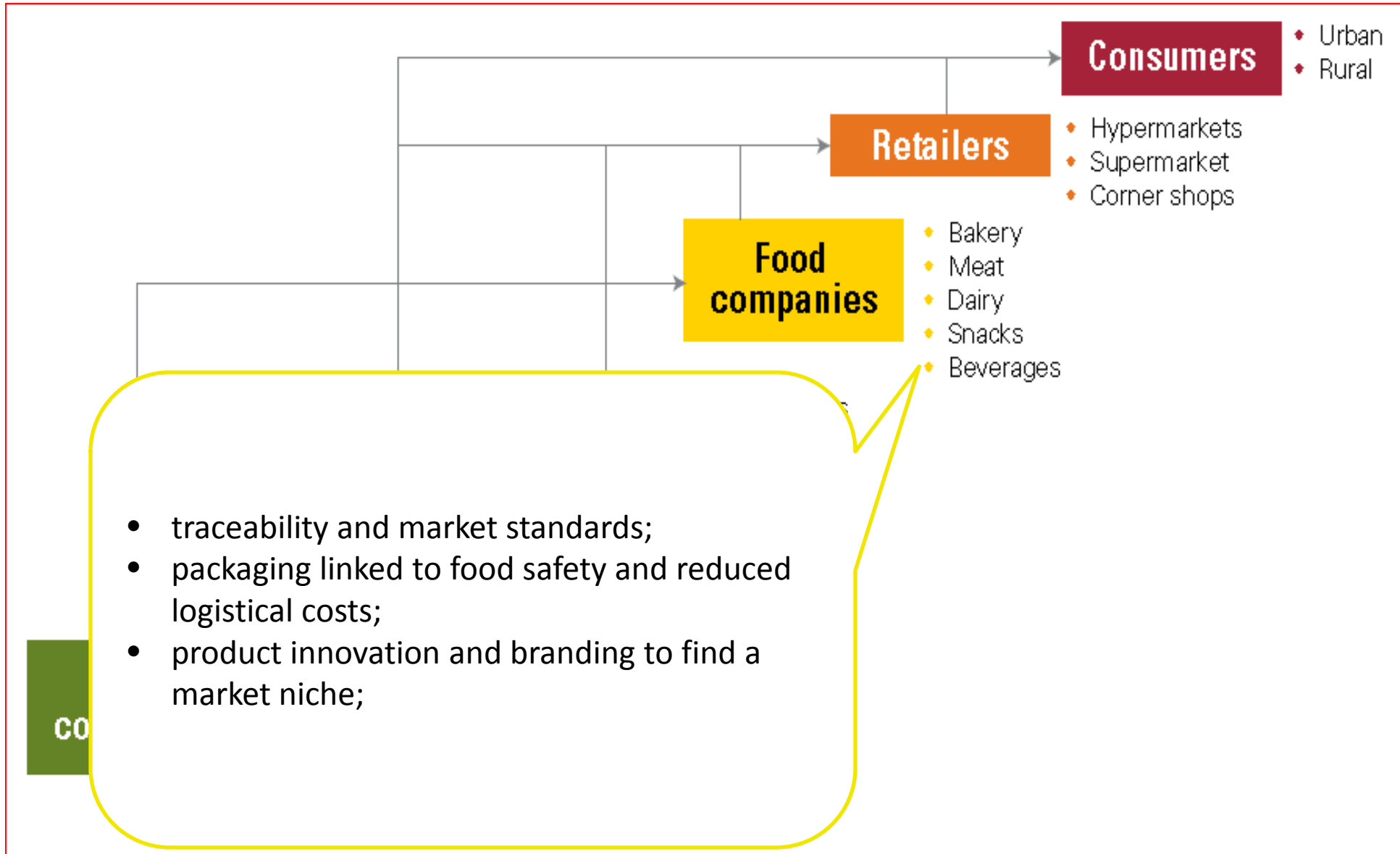
Agribusiness Value chains

- traceability linked to food safety (examples are 'animal passports', real time tracking, automated monitoring);
- market standards (local, national, international);

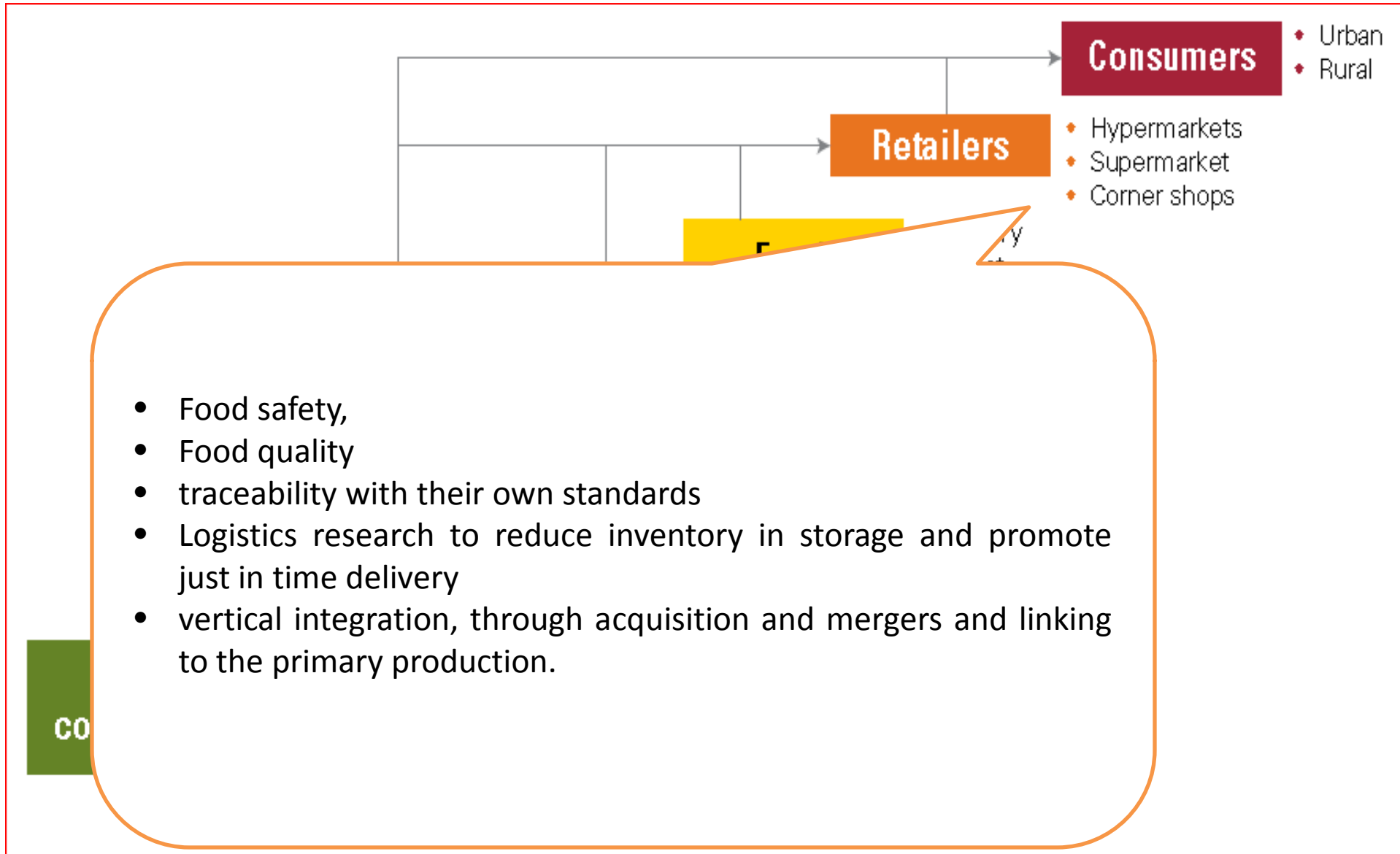




Agribusiness Value chains



Agribusiness Value chains





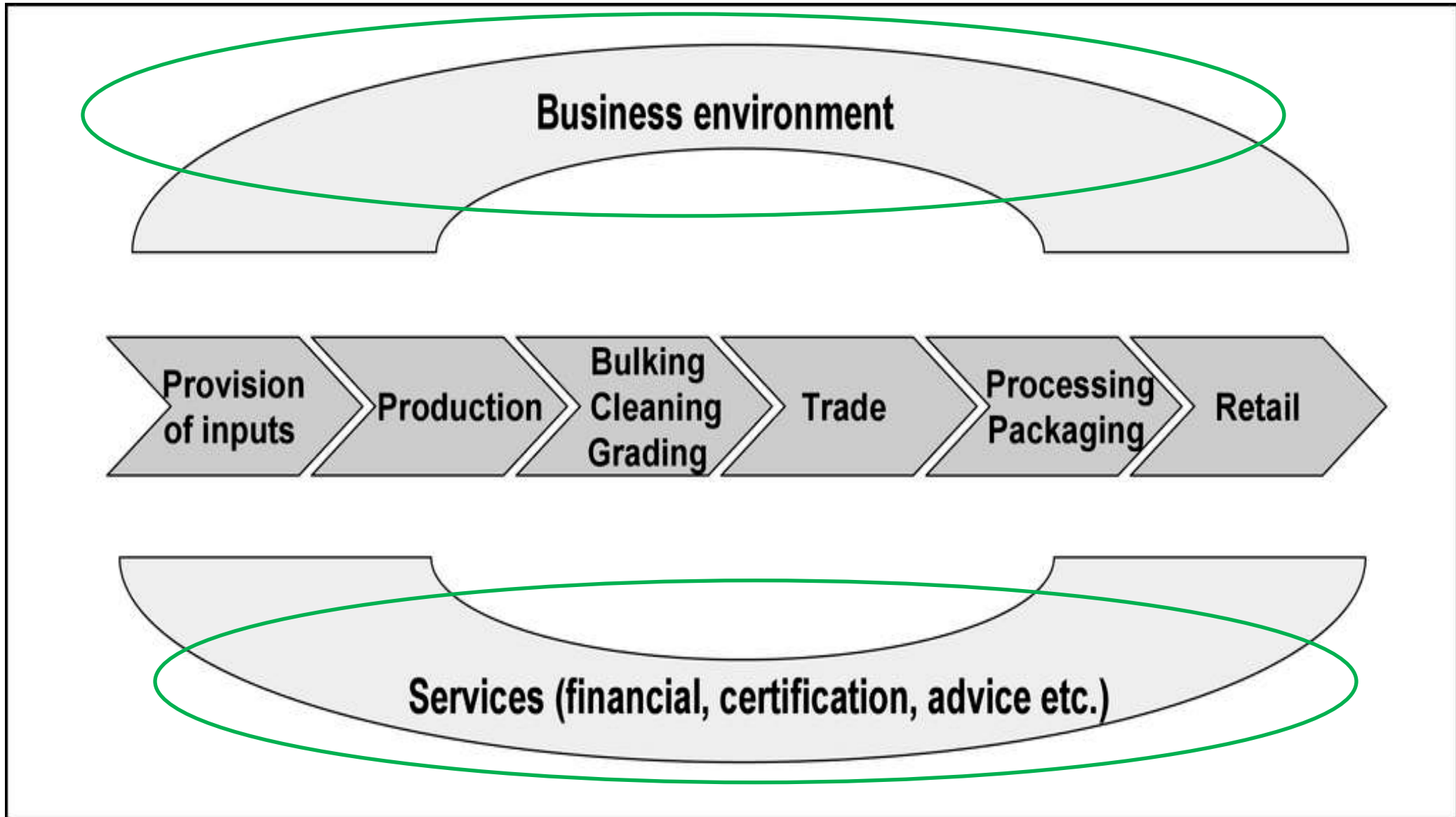
ADDRESSING SMALLHOLDER NEEDS ALONG THE VALUE CHAIN



- ✓ Raise productivity through R&D, technology transfer, and access to inputs
- ✓ Integrate the chain through partnerships and business contracts
- ✓ Improve the regulatory and institutional environment



Private vs Public Sector





Investments along the value chains

Inputs and logistics

- Irrigation
- Seeds
- Fertilizers
- Crop protection
- Farm equipment
- Cold storage
- Warehouses
- Transport and logistics

Farming

- Crop farming
- Plantations (cocoa, sugarcane, coffee, tea, etc.)
- Horticulture (fruits and vegetables)
- Livestock farming
- Dairy farming

Processing

- Flour
- Rice
- Sugar
- Edible oil
- Cocoa, Coffee
- Poultry, meat, fish
- Dairy products
- Ingredients
- Food packaging

Food Brands

- Bread
- Biscuits
- Coffee
- Tea
- Fruit juices
- UHT milk
- Canned food
- Frozen food
- Food retail/ supermarkets



Agribusiness Companies Have a Major Role to Play

Agribusiness Contribution

- ▶ **Capital on the ground**
Strong sign of long-term commitment
- ▶ **Vertical integration**
Shortcutting middlemen; making supply chain more efficient
- ▶ **Technical assistance**
One of ADB's clients in India is assisting 1,400 chili contract farmers with pest control management



Impact on the Poor

- ▶ **Direct job creation**
c.10 jobs for every \$1 million invested, one job for every 20 hectares of land
- ▶ **Rural infrastructure**
ADB's client repaired a 50-km public road in rural Cambodia
- ▶ **Stable market to contract farmers**
Not necessary higher prices for farmers, but more stable demand
- ▶ **Higher yields, improved quality**
The main benefits of contract farming according to many studies
- ▶ **Poverty reduction**
Chili contract farmers have seen their income increase by 50% since engaging with ADB's client (a spice exporter) and were lifted above the extreme poverty line of \$1.25 a day



Impact on the poor as...	Impact description	Example	Potential number of poor beneficiaries until 2020
Suppliers	<ul style="list-style-type: none">• Farmers benefiting from guaranteed offtake from agribusinesses• Farmers benefiting from better infrastructure (e.g. cold storage)	Under the project financed by ADB, Akay will provide assistance and livelihood to 5,000 spice farmers in India and Cambodia	375,000 farmers , assuming contract farming opportunity for at least 250 farmers for each \$1 million invested by ADB*
Employees	<ul style="list-style-type: none">• Food processing, food logistics, and food services are highly job intensive segments• Many women can be employed in food processing and services	PRAN in Bangladesh will directly employ 1,000 people (30% women) in its food processing facilities financed by ADB	65,000 employees , assuming at least 50 direct jobs created for each \$1 million invested by ADB
Distributors	<ul style="list-style-type: none">• Distributors of agricultural inputs and distributor of food products in rural areas typically employ poor people	Champion Agro, a distributor of agricultural inputs in India, employs more than 200 people in its agro malls in rural areas	65,000 distributors , assuming at least 50 job created in the distribution and supply chain for each \$1 million invested by ADB
Consumers	<ul style="list-style-type: none">• To reach scale, food companies are also targeting the “bottom of the pyramid”, contributing to enhance food security and food quality for the poor	By providing coolers to retail shops in rural areas, RG Brands gives access to UHT milk to underserved consumers in Kazakhstan	Millions of consumers assuming that the “bottom of the pyramid” will be targeted by most ADB’s agribusiness investments





ADB Support to Agribusiness Companies

Our Value Addition

▶ **Deep regional experience in emerging Asia**

We have successfully operated and invested in Asia's emerging markets since 1966

▶ **Unparalleled network on the ground in Asia**

ADB has over 3,000 employees in 30 offices throughout the region

▶ **“One-stop shop”**

Comprehensive financial solutions

▶ **A broadly recognized standard of excellence**

AAA rating, prudent transaction underwriting, and sophisticated E&S policies are highly recognized

ADB Products

▶ **Equity**

- in companies
- in private equity funds

▶ **Loans**

- USD loans
- Local currency loans

▶ **Guarantees**

- Commercial risk guarantee
- Political risk guarantee

▶ **Technical assistance**

- Project preparation
- Capacity development

▶ **Mobilization of third party funds**

- Commercial cofinanciers
- Donors (e.g. \$5m to agri project in Cambodia for climate adaptation)



ADB's value proposition to Agribusinesses

- ✓ **Stamp of approval** on your business / ADB's reputation
- ✓ **A long term partner** who will not impose financial burden in initial years, while the business is growing
- ✓ **Competitive market-based pricing** stemming from AAA rating
- ✓ **Expertise** in environmental and social risk management and corporate governance
- ✓ **Political risk mitigation** given ADB's sovereign lending and assistance to governments



ADB's products can address a wide range of needs

Instrument	Typical amount	Typical terms	When is it relevant?
Loan	\$50 – 100 million	<ul style="list-style-type: none"> • 7 years including 2 years grace • LIBOR/ ADB cost of fund in local currency + 1-4% (credit based) • Security on capex financed 	<ul style="list-style-type: none"> • Established company with strong balance sheet and strong operating cash flow
Equity	\$5 – 20 million	<ul style="list-style-type: none"> • 25% ownership maximum • Board seat • Minority protection rights • Put on the parent company 	<ul style="list-style-type: none"> • Growing company in a pre-IPO or pre-trade sale situation
Guarantee	50 – 100% of risk covered	<ul style="list-style-type: none"> • Political risk coverage • Credit risk coverage 	<ul style="list-style-type: none"> • In politically sensitive countries • If risk is an issue, but not liquidity
Technical assistance (TA)	\$0.5 – 1 million	<ul style="list-style-type: none"> • For project preparation TA, reimbursable at closing • For capacity development TA, non-reimbursable grant 	<ul style="list-style-type: none"> • For projects and companies in need of additional, concessional financial assistance



C. PROJECT

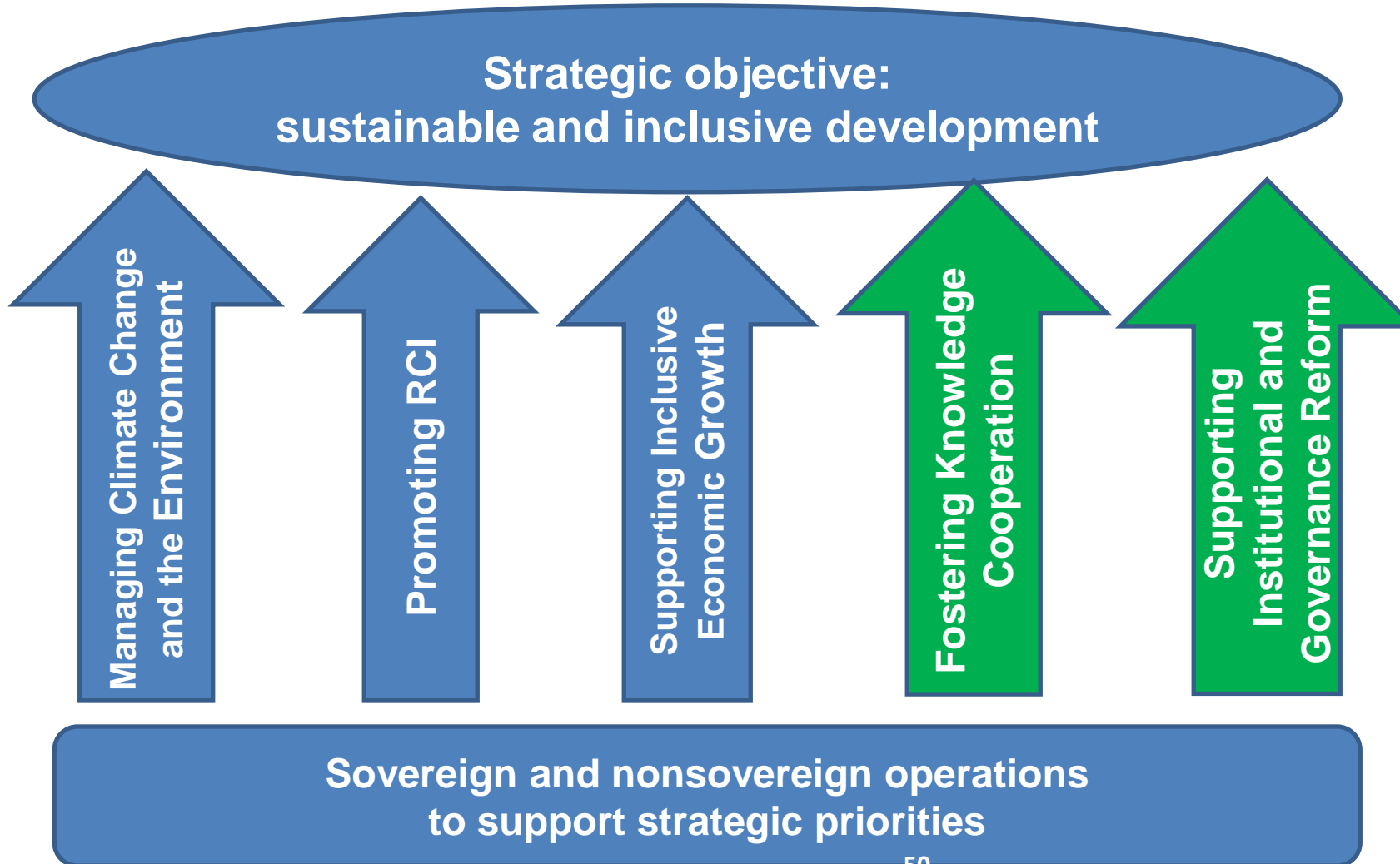
Spotlights





PRC Country Partnership Strategy 2016-2020

Strategic priorities





SDGs and Ecological civilization

- In October 2016, PRC translated the ambitions of the SDGs into national action plans and targets
- Shared motivations among the ecological civilization and SDGs ambitions
- But “Ecological civilization” is an overarching governing philosophy, founded on national identity

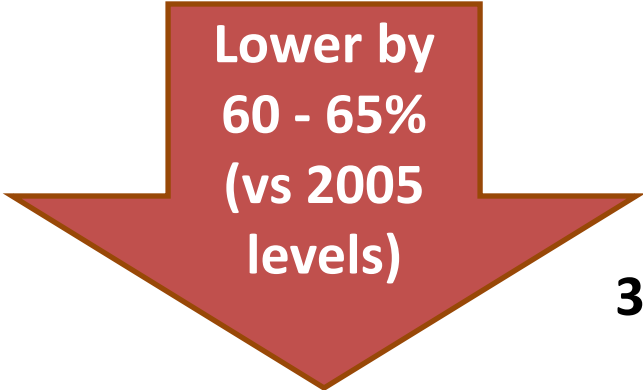
PRC's commitments to Climate Change MITIGATION

1. Peaking of CO₂ emissions



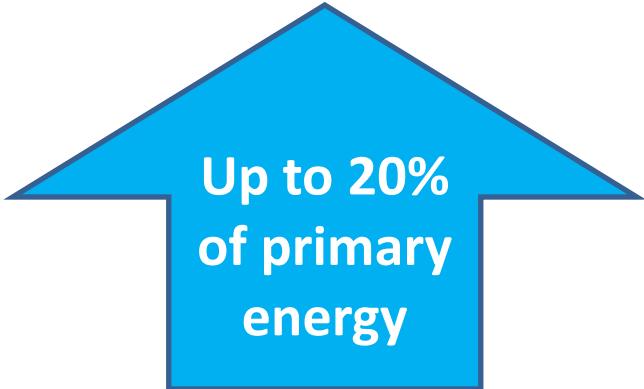
2. CO₂ emissions/unit of GDP

Lower by
60 - 65%
(vs 2005
levels)



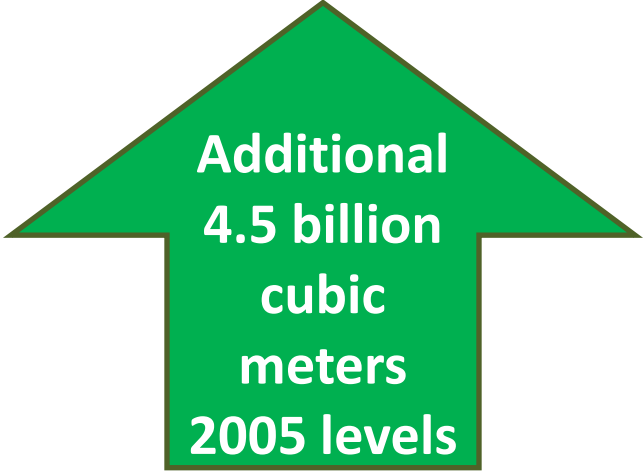
3. Share of renewables

Up to 20%
of primary
energy

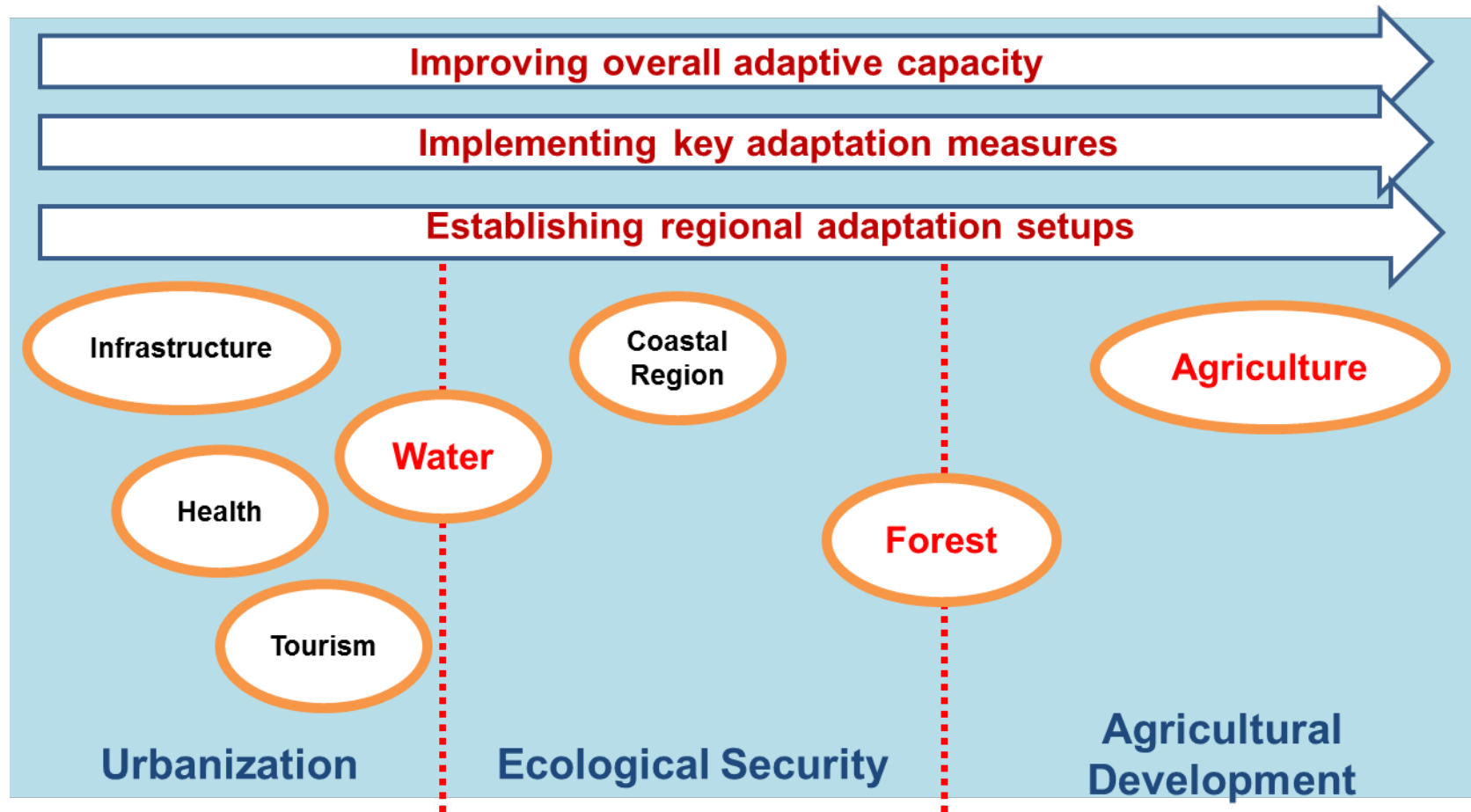


4. Forest stock volume

Additional
4.5 billion
cubic
meters
2005 levels



PRC's commitments to Climate Change ADAPTATION



PRC: Proposed Loan for the Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project (\$507.3 million; ADB Loan: \$300 million)



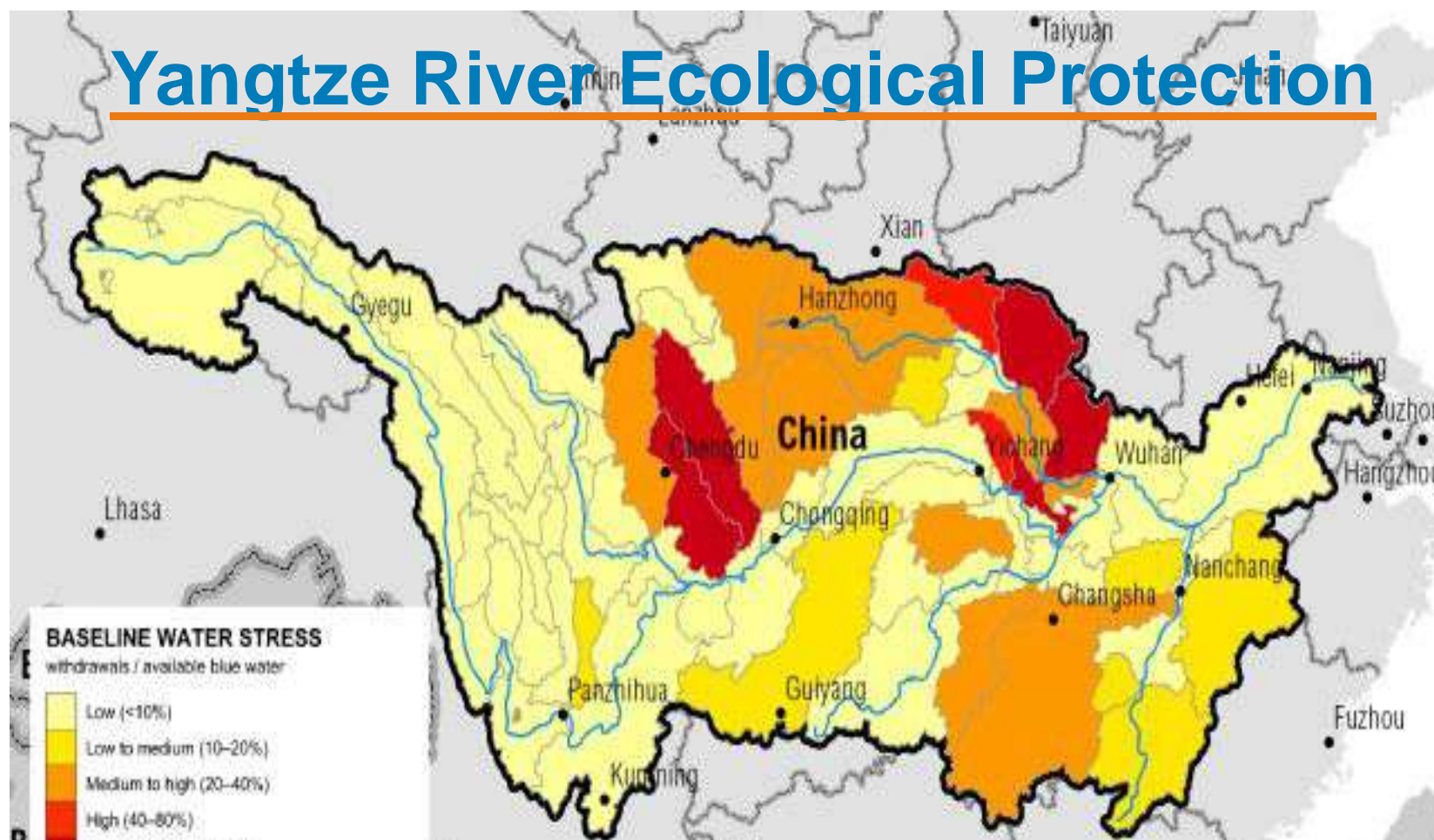
Objective: Promote sustainable and modern farming systems, reduce land and environmental degradation, and enhance agricultural productivity

Unique Features and Benefits: Multifaceted approach in the following areas:

- **Agriculture production systems**—provision of infrastructure, farmland improvement, climate-smart agriculture practices, and extension services to build farmer awareness
- **Natural resources management**—creating green ecological corridors in 6 watersheds for better natural resources management
- **Institutional cooperation**—institutional and multi-agency cooperation for effective natural resources management
- **Policy environment**—supporting policy studies to streamline and enhance institutional cooperation
- **Technical assistance**—undertaking small-scale applied research to solve industry challenges

Role of the TG: Verified the (a) GHG emission estimation methodology and (b) climate investment (adaptation and mitigation) calculation for the project (CCAFS)

Yangtze River Ecological Protection



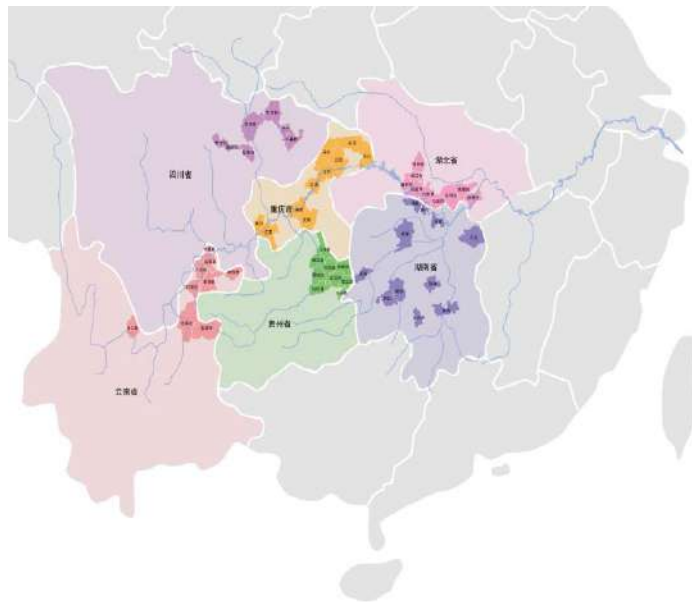
7 provinces + 1 municipality in the middle and upper reaches; ADB support \$2 billion (2017-2020)

1. Ecosystem restoration, environmental protection, and management of water resources
2. Green and inclusive industrial transformation
3. Construction of an integrated multimodal transport corridor
4. Institutional strengthening and policy reform



Agriculture Comprehensive Development Yangtze River Green Ecological Corridor Project

- River basin approach to promote ecological protection and watershed restoration
- Soil erosion, nonpoint source pollution, agriculture waste management, water resource management, low agriculture production efficiencies, and farmer organizations.



6 Provinces:
Hubei, Hunan, Chongqing, Sichuan,
Yunnan, and Guizhou

Key features:

Institutional strengthening

- Watershed-level farmer organization and local authorities
- Interagency cooperation along the Yangtze

Comprehensive approaches

- Eco-compensation for nonpoint source pollution reduction
- Improved agriculture systems for rural livelihoods and food safety
- Climate mitigation through climate-smart agriculture

CWRD

UZB: Horticulture Value Chain Infrastructure

Project (\$280 million; ADB Loan: \$197 million (Approval: 2018))



**Andijan
Agro-
Logistics
Center**

Objective: To strengthen horticulture marketing by establishing modern and holistic wholesale market

3 Agro-Logistics Centers (for Export and Domestic Distribution)

- **Strategic locations:** In vicinity of production areas with good transport connectivity
- **Facilities and services under one roof:** cold storage, auction, food safety certification, customs clearance, quarantine, etc.
- With **international standards** of hygiene, quality, and safety certification

Unique Features

- ADB's first project to provide modern and holistic wholesale market
- Country's first modern and holistic wholesale market
- Support capacity development for private sector for operation and maintenance, processing, and other needs
- Establish better linkage with production, post-harvest processing, and marketing by complementing ongoing ADB-financed UZB Horticulture Value Chain Development Project (Approved: 2016)
- Financial intermediation loan to private sector through local banks for developing intensive orchards, modern refrigeration, greenhouses, post-harvest processing, etc.)

Benefits

- Replace old and fragmental market facilities with modern, hygienic, and holistic wholesale market facilities
- Access to all post-harvest logistics under one-roof
- Increased volume of products with better quality
- Expected to be replicated in other parts of the country
- Support expanding horticulture exports

SARD

IND: Demonstrating Doubling of Small Farmers' Income Project in Andhra Pradesh, India (JFPR Grant: \$2 million)

Objective: To demonstrate and confirm if doubling of farmers' income can be achieved in one of the most developed states in India

Unique Features

- Introduction of digital agriculture platform and digital payment system to small holder farmers. This will enable collection of households' consumption data
- Provide quality agribusiness services and infrastructure (e.g., inputs, machinery, storage) based on household data analysis
- Facilitate entry of financial institutions (e.g., banks) to provide credit to smallholder farmers for agribusiness
- Collaboration with Japanese venture companies in JICA-supported irrigation project area

Role of the TG

- Participated in the scoping mission
- Surveyed private digitized agriculture service providers in the state
- Discussed potential partnerships with some of them to provide services for farmers to increase:
 - productivity (real-time cropping advisory, quality inputs, farm equipment rental and transport logistics services via mobile app and text messages)
 - access to formal credit (credit profiling and warehouse receipt finance)
 - market access and value chain linkages (contract farming and community storage and processing)



RETA 8163: Implementing the GMS Core Agriculture Support Program Phase II (CASPP II) (\$14 million)

Objective: To make the Greater Mekong Subregion (GMS) a leading global supplier of safe and environment-friendly agriculture products

Unique Features: Inclusive, sustainable and modern agricultural approach in 3 areas:

- value chain integration (linking farms to markets) involving smallholder farmers, rural women, and small and medium agro-enterprises
- promotion of climate- and environmental-friendly agricultural practices, innovation, and technology
- development of food safety and quality assurance systems through national policies

Benefits

- Local farm-level food certification systems (Participatory Guarantee Systems)
- GMS: Asia's Natural Hub with 35 SMEs and smallholders, 200 GMS products
- Mobile-ready agriculture information network services (AINS), social media network (WeChat for PRC, FB for other GMS)
- Reactivation of the GMS Agriculture Ministers' Meeting
- Endorsed the Strategy for Promoting Safe and Environment-Friendly Agro-based Value Chains in the GMS and Siem Reap Action Plan 2018-2022
- Cross-sectoral linkages with environment, tourism, trade facilitation, health and urban
- Enhanced engagement of private sector (i.e., with Food Industry Asia on laboratory capacity building and agri-food traceability using GS1 barcoding system)

Role of the TG

- Participated and chaired a session in the 2017 GMS Agriculture Ministers' Meeting and subsequent follow-up discussions
- Support concept development for investments linked to the Siem Reap Action Plan 2018-2022



PRC: Environmentally Sustainable Agriculture

Input Distribution (ADB Loan: \$50 million; Equity: \$30 million)

Objective: To set up 300 crop production centers (one-stop shops for farmers) and upgrade 10 fertilizer plants to make compound and specialty fertilizers and other environmentally sustainable agricultural inputs and services available to 3 million smallholder farmers in 8 provinces

Client: Kingenta Ecological Engineering Group (Kingenta) which established Kingfarm, an integrated solutions provider to farmers



Unique Features and Benefits

- ADB's first nonsovereign assistance to an agricultural input and service provider
- Reduction of soil and water pollution through the use of high-efficiency fertilizers
- Development of integrated pest and vector management plans to reduce reliance on synthetic chemical pesticides
- Delivery of inputs and services on precision farming (i.e., GPS, geospatial data processing analytics) to local farmers to address variability in farms' yield potential and input needs, and recommend specific applications of inputs

Role of the TG

- Conducted peer review and provided technical inputs on sustainability of fertilizers



ADB Private Sector: Agribusiness case study

Sustainable Dairy Farming and Milk Safety Project



ADB Assistance: \$125 million local currency loans

Borrower: Inner Mongolia Saikexing Breeding and Biotechnology Group (Saikexing)

Development Impact: reduce pollution, improve food safety, and expand the domestic supply of quality milk

STRICTLY CONFIDENTIAL

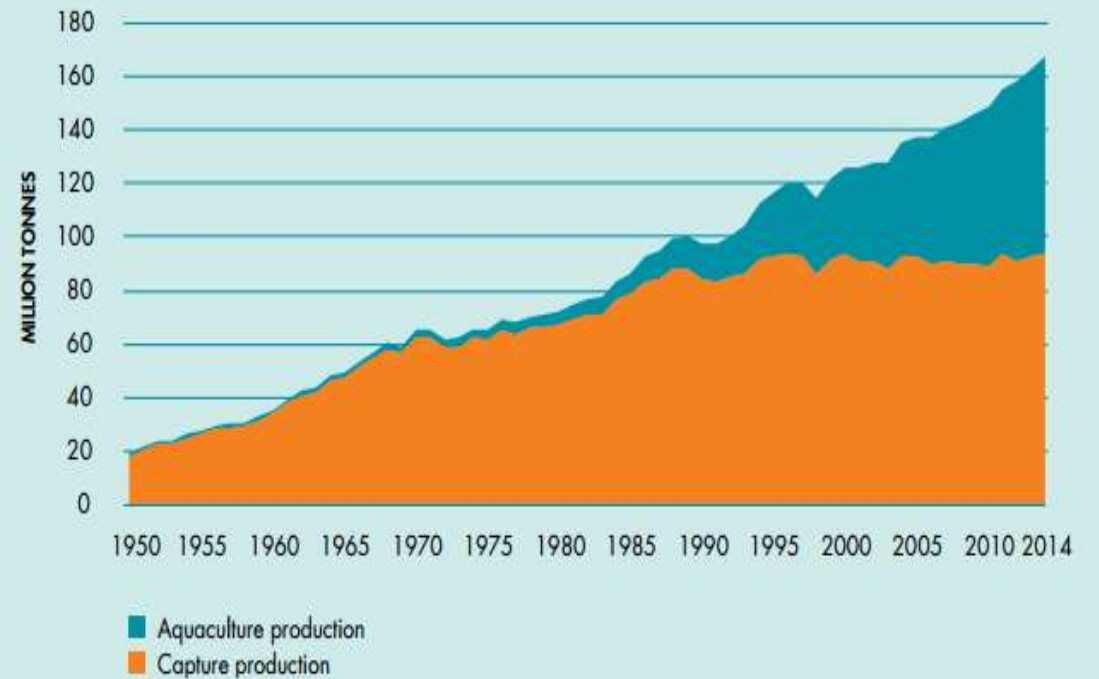


Aquaculture: the silent revolution



FIGURE 1

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION





STRATEGY 2030

and Beyond



STRATEGIC DIRECTIONS

	ADB should...
Region's fast-changing development landscape	Adapt fast to remain relevant
Growing diversity of ADB clients	Respond to emerging needs of clients
New global development agendas	Align with SDGs, Paris climate agreement
Expanding financing sources	Leverage funds and build partnerships
ADB's expanded lending capacity	Scale up and ensure quality of ADB financing



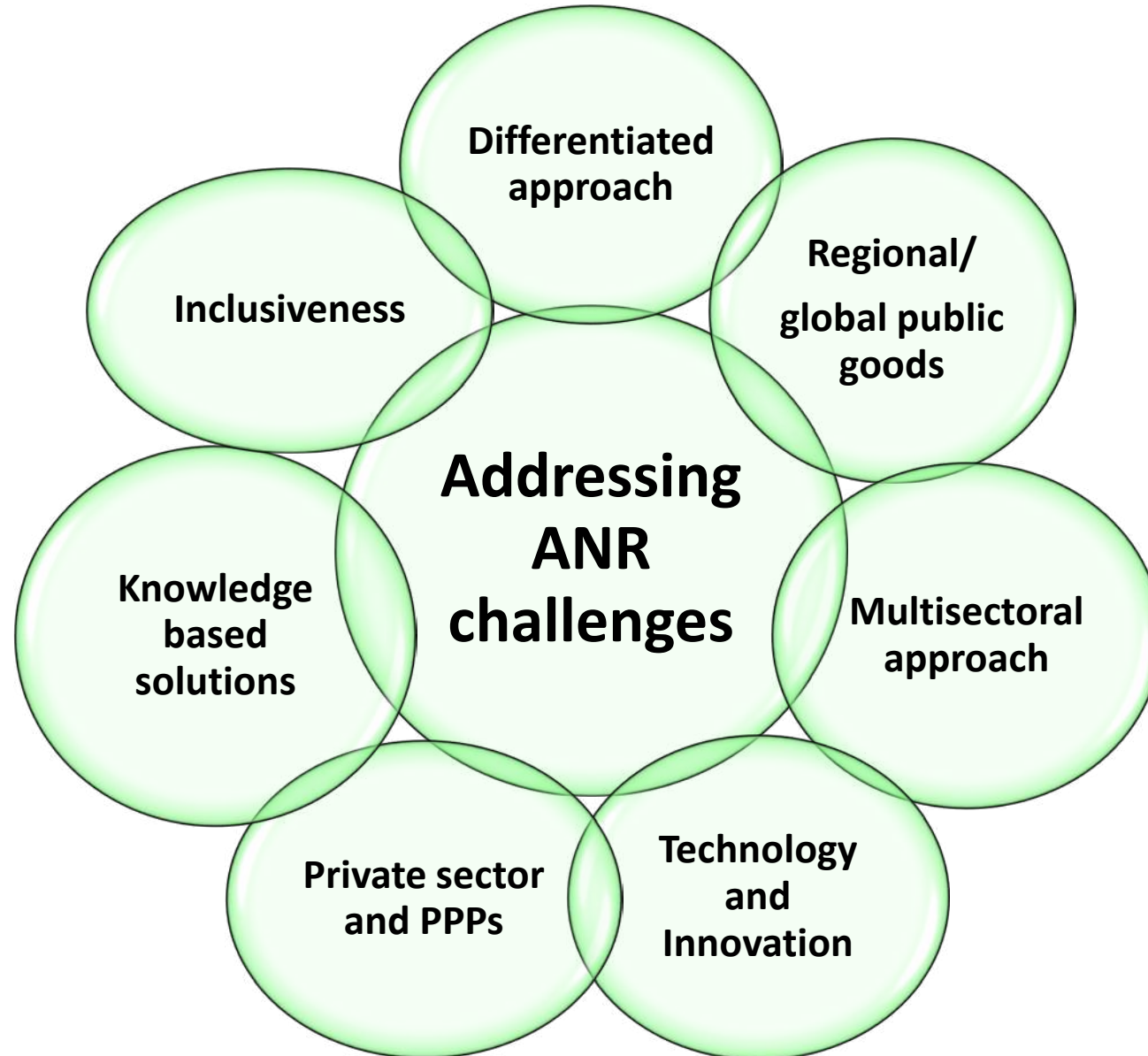
STRATEGIC DIRECTIONS



- **Improve farm productivity and efficiency**—knowledge work and adoption of latest technologies
- **Strengthen policy dialogues and partnerships**—formulate institutional and policy reforms that incentivize private investments in agriculture
- **Strengthen operations** in:
 - **Agriculture value chains**—build market infrastructure and market connectivity; improve supply chain efficiency
 - **Use of high-level technologies**—use of satellite- and drone-assisted applications, ICT for efficient resource management
 - **Climate-smart agriculture**—build climate-resilience and promote efficient use of water and energy
- **Formulate and implement food safety policies and standards**—build quality control laboratories, use ICT in food traceability and tracking
- **Establish ANR fund facility**—allocate ADB seed money to support research and technology applications



ADDRESSING THE CHALLENGES





PARTNERSHIPS



Central Asia Regional Agriculture Cooperation	Food and Agriculture Organization	Global Agriculture and Food Security Program	International Food Policy Research Institute	International Fund for Agriculture Development	International Rice Research Institute	Ministry of Agriculture, Food and Rural Affairs, Korea
Promote regional cooperation in agriculture and natural resources (value chain)	Cooperation on climate-friendly agribusiness value chains, water security investment	Myanmar (\$27 million grant) – newly approved	Agriculture and natural resources sector investment assessment in high-level technologies and infrastructure	Ongoing Cofinancing (\$162 million) Knowledge sharing on access to smallholder financing	Knowledge partnership agreement work program reviewed Climate-smart agriculture - new rice varieties and practices	Memorandum of Understanding Staff Secondment Cofinancing



A GOOD SOLUTION SOLVES MORE THAN ONE PROBLEM, AND IT DOES NOT MAKE NEW PROBLEMS

Consumption Impact

- Food security
- Quality food
- Balanced diet

Economic Impact

- Private sector development
- Technology transfer
 - Inclusion in global economy

Social Impact

- Job creation
- Livelihood for farmers
- Women's inclusion

Environmental Impact

- Sustainable land use
- Sustainable water use
- Use of renewable power



APPENDICES

Supplementary Information

Use of Information and Communication Technology (ICT) in Agriculture

REG Technical Assistance (PAK and TAJ)—Following services will be launched for farmers through three smart phones applications:

1. **Wholesale market informatics** to provide real-time price data and price analytics. This will result in better price discovery and increase in farmers' incomes.
2. **Real-time and localized weather forecasts** linked to irrigation requirements and farm practices (i.e., sowing, harvesting, and application of fertilizers and chemicals). This will increase farm productivity, improve irrigation efficiency, save labor, and help farmers avoid losses by scheduling cultural practices.
3. **Virtual extension center** to advise farmers through call centers and short advisory videos through YouTube channel. Farmer advisory is the weakest link in DMC agriculture. This service will fill large gaps in farmers' technical knowledge.

MON: Precision Winter Greenhouse Technologies—Extend **growing season** from 3 months to 8 months; and apply **optimal water/input** (solar powered heating and ventilation systems, mechanized irrigation systems, and temperature control and monitoring system)

IND: Precision agriculture—Produce more with less, and lose less:

- **Biofertilizer and bio-pesticides** (higher quality produce, less input cost, access to export markets with less chemical residual, and environmental sustainability)
- **Real-time crop advisory via mobile app or texts** (public and sensor-generated data processed by Artificial Intelligence to advice when to sow, apply water, fertilizer and pesticides; and harvest)
- Timely and less costly input purchase via **e-platform**
- **Farming equipment rental service** via Uber-like mobile app

IND: Access to agriculture value chain finance

- Provide **crop credit** through credit profiling of farmers' groups and their crop viability assessment (satellite imaginaries, sensors, weather and price data stream)
- Offer **warehouse receipt finance**



Partnership with the International Rice Research Institute (IRRI)

Knowledge Partnership Agreement: 23 June 2016 to 31 December 2020 (\$707,923)

Activities: To pilot-test climate-smart production processes in BAN, CAM, and NEP:

- Test inter-cropping in rice-based system (from *rice-fallow-rice* to *rice-vegetable-rice*) in all three countries
- Use improved seed and new technology; alternate wetting and drying in Bangladesh and direct seeding in Cambodia and Nepal.
- Assess impacts on crop yield, use of water, use of labor, soil health, greenhouse gas emission
- Evaluate:
 - Farmers' perception about the new seeds and technology for scaling up
 - Suitability of the existing extension services for scaling up

Partnership with the International Food Policy Research Institute (IFPRI)

Consulting Contract: 22 March 2017 to 31 March 2019 (\$413,653)

Activities

- Estimate total investments required in the ANR sector in the Asia and the Pacific regions (disaggregated by ADB's operation regions) to end hunger by 2030
- Carry out projections of water demand by agriculture and other sectors, and assess impact of investments in irrigation on food security outcomes under different scenarios in INO
- Analyze investments needed for major ICT applications in agriculture including ICT infrastructure, logistics, capacity-building, marketing, and regulation, etc. in PRC

Partnership with the International Atomic Energy Agency (IAEA)

Technical Assistance (TA 9274): Regional Capacity Development Technical Assistance (R-CDTA) for Strengthening International Food Safety Standards in Agricultural Value Chains in the Central Asia Regional Economic Cooperation (CAREC) Member Countries (CWRD)

Objective: To improve public health and facilitate trade of food products in 11 CAREC member-countries (impact) through improved institutional systems for operationalization of international food safety standards (outcome).

Key Outputs

- Output 1: Regulations for meeting international food safety standards developed;
- Output 2: Laboratory rationalization and infrastructure requirements for international food safety standards identified;
- Output 3: Capacity of value chain actors to implement food safety to international standards strengthened; and
- Output 4: Holistic national and regional approach to international food safety standards developed.

Scope of Collaboration

- ADB and IAEA will work together to deliver outputs 3 and 4
- IAEA to provide technical advice and support in the Agency's areas of expertise, i.e., use of irradiation technology to increase shelf life of fresh produce, and food safety and traceability certification techniques, through expert missions, individual and group trainings, and workshops, and harmonization of analytical techniques
- IAEA inputs will help determine the needs for new and/or improved laboratory infrastructure including equipment and training.
- IAEA to provide in-kind contributions worth \$500,000

2017 Approved ANR Projects

Dept	Country	Project Title	Amount (\$million)
PARD	SAM	Agribusiness Support Project (Additional Financing)	0.75
SEER	CAM	Tonle Sap Poverty Reduction and Smallholder Development Project (Additional Financing)	60.00
SEER	INO	Integrated Participatory Development and Management of Irrigation Program	600.00
SEER	LAO	Northern Rural Infrastructure Development Sector Project (Additional Financing)	35.60
SEER	VIE	Basic Infrastructure for Inclusive Growth in Northeast Provinces Sector Project (BIIG I)	150.00
SEER	VIE	Basic Infrastructure for Inclusive Growth in Northeast Provinces Sector Project (BIIG II)	149.00
EAER	MON	Community Vegetable Farming for Livelihood Improvement	3.00
EAER	PRC	Shanxi Urban-Rural Water Source Protection and Environmental Demonstration	100.00
EAER	PRC	Guizhou Rocky Desertification Area Water Management	150.00
EAER	PRC	Shanxi Inclusive Agricultural Value Chain Development	90.00
SAER	IND	Sustainable Coastal Protection and Management Investment Program—Project 2	65.50
SAER	NEP	Rural Connectivity Improvement Program	100.00
SAER	SRI	Mahaweli Water Security Investment Program—Tranche 2	210.00
SAER	SRI	Northern Province Sustainable Fisheries Development	1.30
CWER	PAK	Jalalpur Irrigation	274.63
PSOD	REG	Olam: Agricultural Value Addition and Trade Project	100.00
PSOD	PRC	Kingenta: Environmentally Sustainable Agricultural Input Distribution	80.00
		TOTAL (Sovereign + Nonsovereign)	2,169.78

2018 ANR Project Pipeline

Dept	Country	Project Title	Amount (\$million)
SEER	CAM	Climate-Friendly Agribusiness Value Chains Sector Project	130.00
SEER	LAO	Climate-Friendly Agribusiness Value Chains Sector Project	70.50
SEER	MYA	Climate-Friendly Agribusiness Value Chains Sector Project	62.50
SEER	VIE	Water Efficiency Improvement for Drought Affected Provinces	101.10
EAER	PRC	Sichuan Ziyang Green Transformation and Development Project	200.00
EAER	PRC	Yangtze River Green Ecological Corridor Comprehensive Agriculture Development	300.00
EAER	PRC	Chongqing Longxi River Environment Comprehensive Treatment and Ecological Protection Demonstration	150.00
EAER	MON	Ulaanbaatar Air Quality Improvement Program (PBL)	130.00
SAER	BAN	Rural Infrastructure Maintenance Program	300.00
SAER	IND	Assam Integrated Flood and River Erosion Risk Management and Investment Program— Project 2	50.00
SAER	IND	Madhya Pradesh Irrigation Efficiency Improvement Project	392.00
SAER	IND	Karnataka Integrated and Sustainable Water Resources Management Investment Program— Tranche 2	70.00
SAER	SRI	Northern Province Sustainable Fisheries Development Project	121.70
CWER	AFG	Horticulture Value Chain Development Sector Project	74.58
CWER	KAZ	Irrigation Rehabilitation Project	250.00

2018 ANR Project Pipeline (continuation)

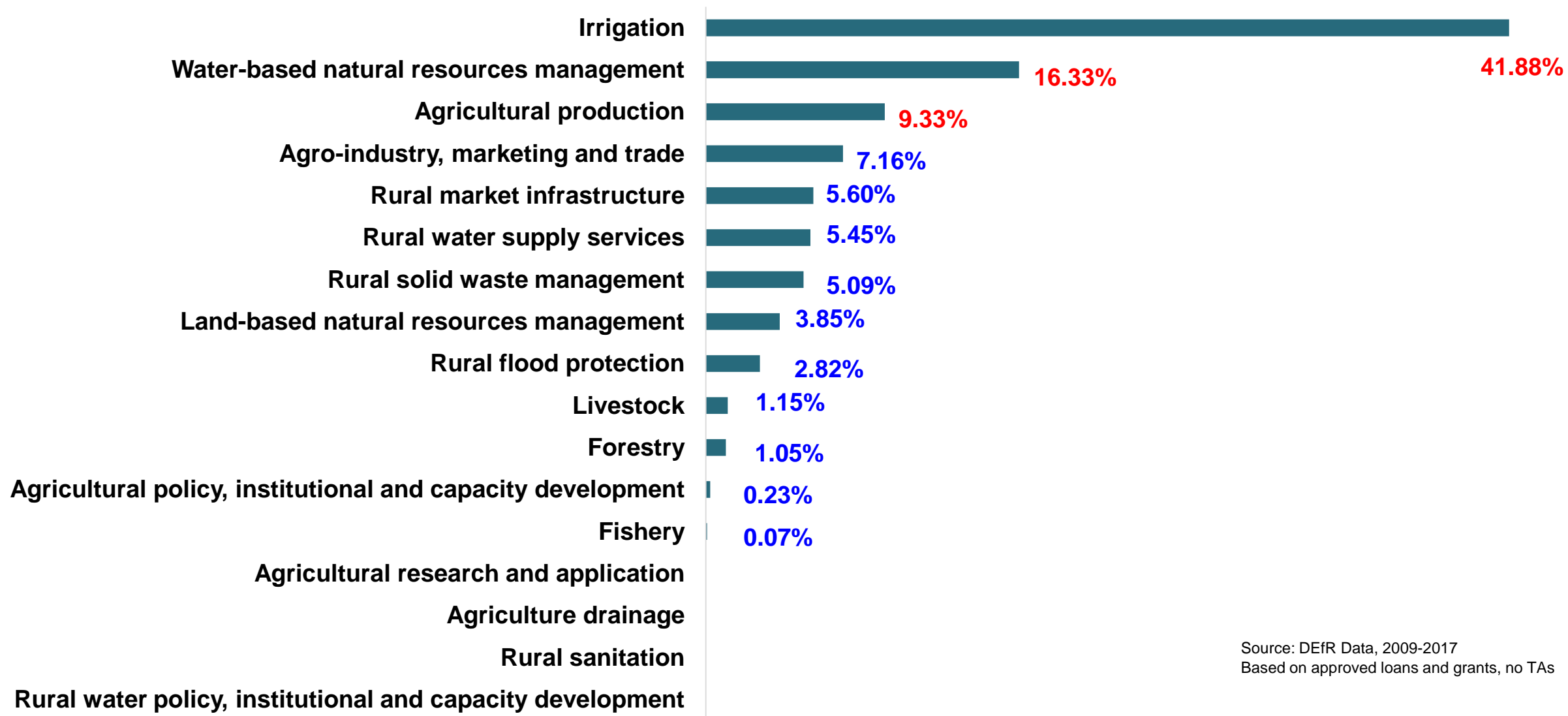
Dept	Country	Project Title	Amount (\$million)
CWER	KGZ	Climate Resilience & Disaster Risk Reduction in Water Resources Management	35.00
CWER	PAK	Balochistan Water Resources Devt Project	105.00
CWER	PAK	TA Loan for Punjab Irrigated Agriculture Investment Program	10.00
CWER	PAK	Trimmu and Panjnad Barrages Improvement Project (Additional Financing)	50.00
CWER	TAJ	Climate Resilient Dairy Value Chain Development	20.00
CWER	TAJ	Water Resources Management in the Pyanj River Basin Project (Additional Financing)	11.50
CWER	UZB	Horticulture Value Chain Development Project (Additional Financing)	198.00
CWER	UZB	Horticulture Value Chain Infrastructure Project	197.00
PSOD	ARM	Spayka: High Efficiency Horticulture and Integrated Supply Chain Project	32.00
PSOD	BAN	PRAN Agribusiness Project II	14.40
PSOD	MON	Gobi: Value-Added Cashmere Production and Export Project	20.00
PSOD	PRC	Agribusiness Project	50.00
PSOD	INO	Agribusiness Project	50.00
PSOD	IND	Agribusiness Project	50.00
		TOTAL (Sovereign + Nonsovereign)	3,245.28

2009-2017 Agriculture and Natural Resources Investments by Subsector (%)



Source: DEfR Data, 2009-2017
Based on approved loans and grants, no TAs

2017 Agriculture and Natural Resources Investments by Subsector (%)



Source: DEfR Data, 2009-2017
Based on approved loans and grants, no TAs

2017 Projects with Climate Finance Investments

Dept	Country	Modality	Adaptation	Mitigation
CWER	PAK	Project loan	Jalalpur Irrigation Project	
EAER	PRC	Project loan	Guizhou Rocky Desertification Area Water Management Project	
EAER	PRC	Project loan	Shanxi Inclusive Agricultural Value Chain Development Project	
EAER	PRC	Project loan	Shanxi Urban-Rural Water Source Protection and Environmental Demonstration Project	
EAEN	PRC	Project loan		Air Quality Improvement in the Greater Beijing-Tianjin-Hebei Region—Regional Emission-Reduction and Pollution Control Facility
SAER	IND	MFF-Tranche (Loan)	Sustainable Coastal Protection and Management Investment Program—Tranche 2	
SAER	NEP	Project loan	Rural Connectivity Improvement Project	
SAER	SRI	MFF-Tranche (Loan)	Mahaweli Water Security Investment Program—Tranche 2	
SEER	CAM	Project loan	Tonle Sap Poverty Reduction and Smallholder Development Project—Additional Financing	
SEER	INO	Results based lending	Integrated Participatory Development and Management of Irrigation Program	
SEER	LAO	Project loan	Northern Rural Infrastructure Development Sector Project—Additional Financing	
SEER	VIE	Project loan	Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project	
SEER	VIE	Project loan	Basic Infrastructure for Inclusive Growth in the North Central Provinces Sector Project	