



INTERNATIONAL FOOD
POLICY RESEARCH INSTITUTE
sustainable solutions for ending hunger and poverty

Overview of Findings from the Past and Ongoing Agri-food Value Chain Studies: Preliminary Thoughts on Implications for the ADB Interventions

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**“The Midterm Project Workshop on Innovative Financing for
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28-29, 2015, Manila, Philippine**



2014-2015

GLOBAL FOOD POLICY REPORT



IFPRI

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

Kevin Chen

China Program Leader

MAY 29, 2015 | Manila

Food policy in 2014: Mixed results

PROGRESS	VULNERABILITIES	HOPE
<ul style="list-style-type: none">✓ Higher priority for nutrition✓ Greater understanding of role of WASH✓ New commitments on trade and climate✓ Increased attention to resilience✓ Focus on family farming	<p>ES</p> <ul style="list-style-type: none">! Persistent conflicts! Re-emerging zoonotic diseases (e.g. Ebola, Avian flu)! Continued extreme weather shocks (e.g. Typhoon Hagupit)! Rising food safety scandals! Higher prices of nutritious foods	<ul style="list-style-type: none">★ SDGs—refining goals★ China-US climate deal—making real advances★ Lima GHG accord—realizing more progress in Paris★ Global Alliance for CSA—driving greener production★ ICN2 sequel—sustaining action on nutrition

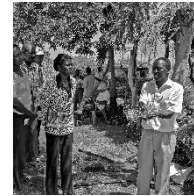
2014-15 GFPR overview



**Reaching the
Missing
Middle**



**Water,
Sanitation &
Hygiene Matter**



**Moving
Smallholders Up
or Out**



**Social Protection
for Rural Poor**



Food Safety



**Conflict and
Food
Insecurity**



**The Rise of
Aquaculture**



**Regional
Development
s**

**+ Food
Policy
Indicators**

**2014-2015 Theme
IFPRI - WFP collaboration**



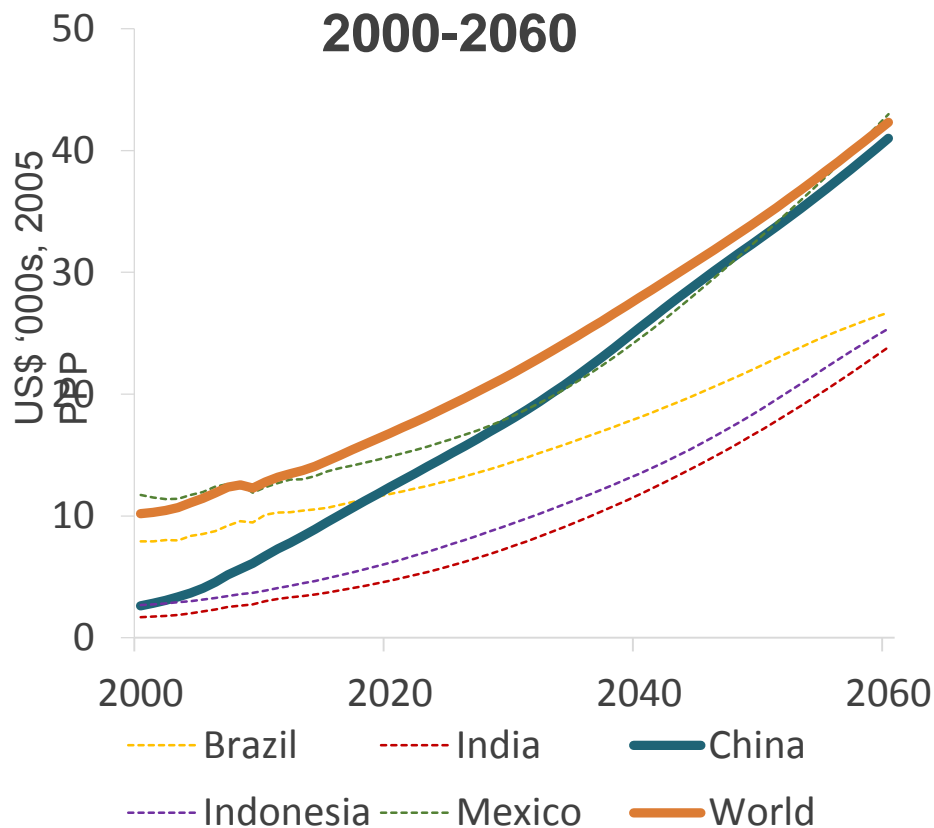
MICs, incl. China, should not be neglected

- **Global economic powerhouses**
- **BUT home to nearly half of the world's hungry**
- Can help end hunger and malnutrition
 - Within own countries
 - In other countries via investments, trade and sharing experiences

MICs, incl. China, should not be neglected

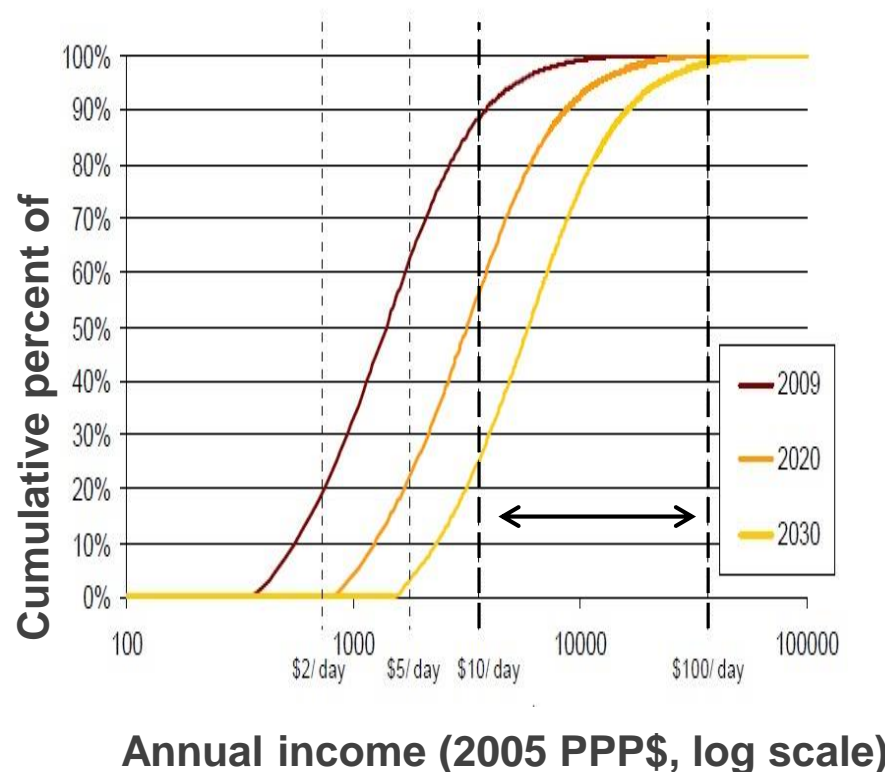
Global economic powerhouses

**GDP per capita in MICs,
2000-2060**



Source: OECD 2015

China's growing middle class

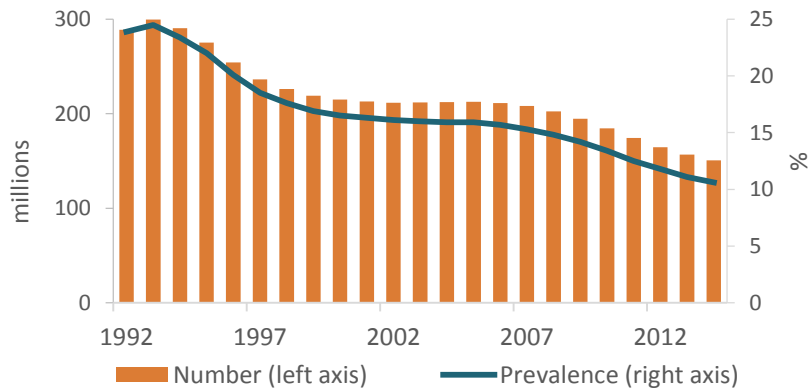


Source: OECD 2010

Multiple burdens of malnutrition in China

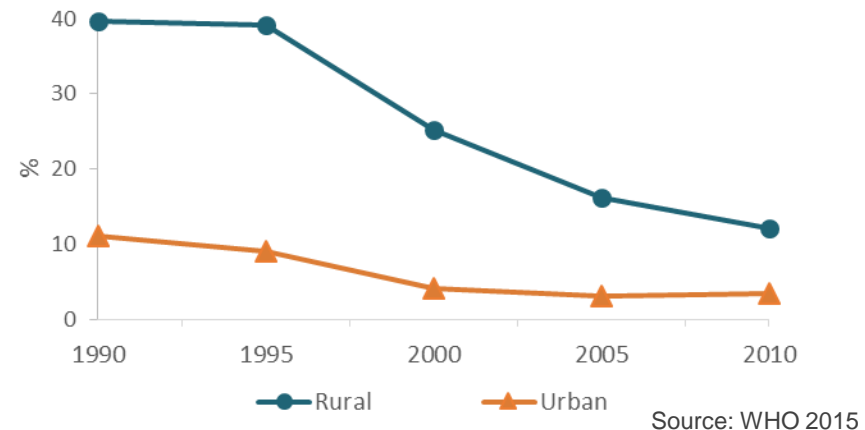
Tremendous progress made...

**Undernourishment in China
1992-2014 (3 year avg.)**



**Limitations to FAO hunger estimates
but good overview of trends**

**Stunting in children <5 years in China
1990-2010**



**Higher undernutrition rates among rural
residents, migrants, poor, and elderly**

...BUT overweight and obesity on the rise

- 26-44% of population overweight/obese (Gordon-Larsen et al. 2014)
- 1.5-2 times higher than 1991 levels



Common features in China and MICs

Progress in reducing hunger and undernutrition, but

- Rising inequalities
- Urbanization and changing consumer preferences
- Lack of focus on nutrition, poor targeting in safety nets

Key Past and Ongoing VC Projects Supported by the ADB

- TA-3689 RETA 13 Agriculture and Natural Resources Research at International Agricultural Research Centers (done)
 - TA-6489 Writing a Book on Quiet Revolution (done)
 - TA-7648 Rice Value Chains in China, India, Lao PDR, and Viet Nam: 2012 Survey Results, Interpretations, and Implications for Policy and Investment (done)
 - TA-7996 Innovative Financing for Agriculture and Food Value Chains: Bangladesh, China, and India (ongoing)
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What Did We Do Differently?

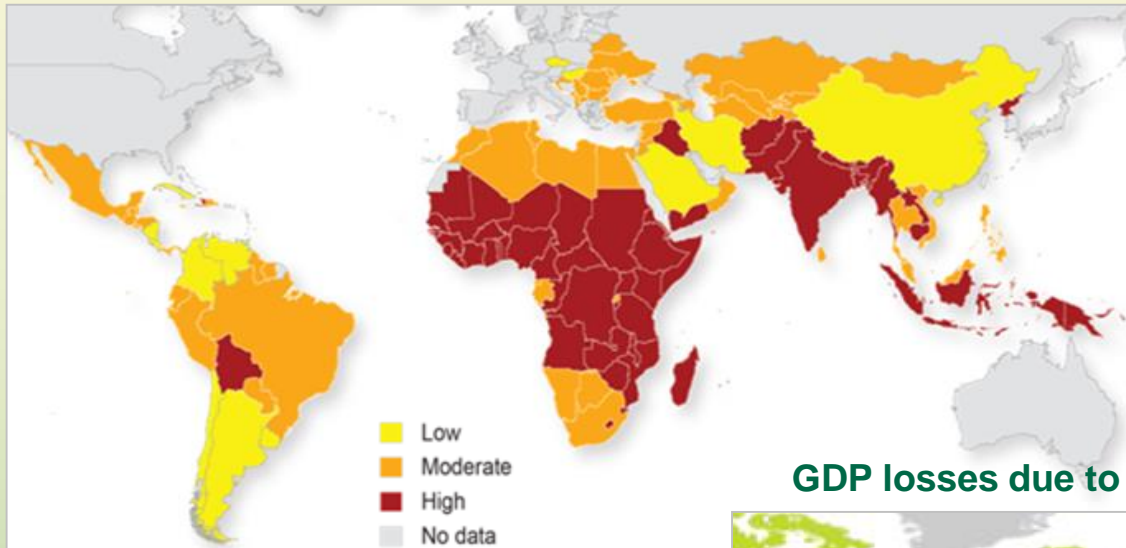
- Focus on changes in staple food value chains
 - Rather than on the impact of modern retail and high-value crops
 - Use representative sample surveys at each segment of the value chain
 - Rather than usual case and key informant-based approach
 - Adopt similarly structured surveys and sample methodologies in different countries
 - Rather than usual single country study
-

Major Transformation in Asia

- **Urbanization**
 - An urban share was 45% in 2011; to 56% by 2030
 - Expansion of nonfarm labour market
 - **Agricultural Industrialization**
 - Importance of post-farm gate segment
 - Capital intensification
 - Factor market development (land, fertilizer, machine, irrigation water, and seed)
 - **Sustainability**
 - **Technological Advance** – particularly ICT
 - **At the same time, persistent poverty, hunger, and inequality**
-

2 Billion + People Suffer from Hidden Hunger

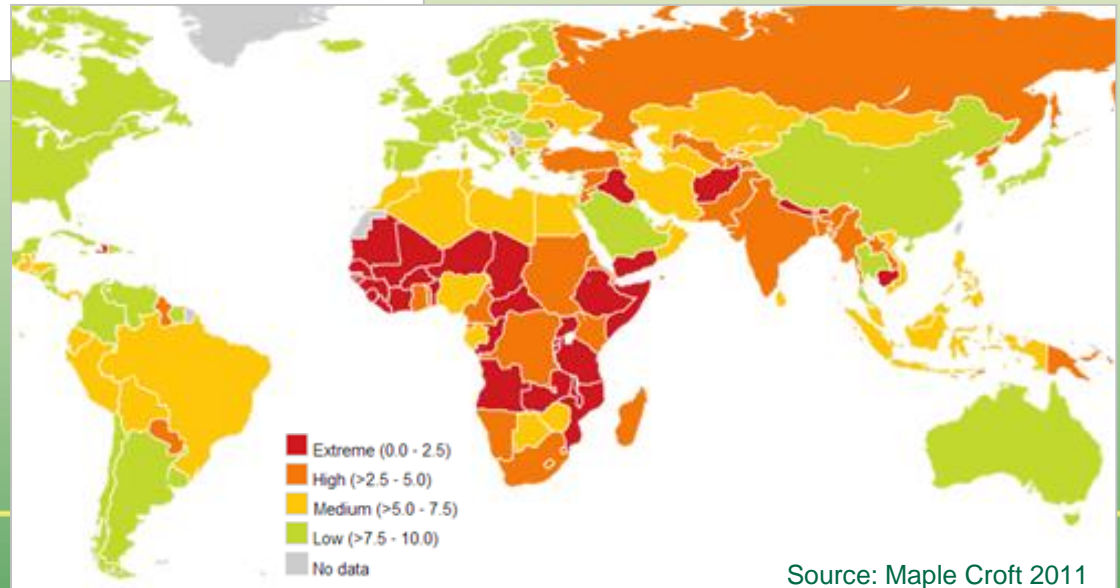
Prevalence of micronutrient deficiencies



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)

Post-farmgate Share of the Rice Retail Price

	Dhaka	Beijing	Delhi
Fine Rice	62%	52-59%	35%
Common Rice	31%	37-40%	31%

Drivers of Change

- **Demand side**
 - Dietary change
 - Growing importance of food safety, quality, and other technical requirements
 - **Supply side**
 - New organizational forms and structure
 - Labour shortage and rising rural wages
 - Agricultural technologies
 - Energy price shocks
 - Water stress, land degradation, and climate change threats
 - **Increasing role of information and logistical technologies**
-

New Focus for the Food Security?

- The focus of the food security debate in Asia has usually been on the farm level but now
 - A close to half of population are in cities in Asia.
 - Farms are now high commercialized, with for example marketed surplus rates of 70-90% over Asia.
 - In this new situation, post-farm gate segments of the food supply chains form a large share (around 50 to 70%) of costs of food to consumers, and two-thirds of the food is consumed by consumers in cities who are thus paying farm and post-farm gate costs.
 - New focus on post-farm gate segment for food security debate.
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Improving Performance of Agri-food Value Chain

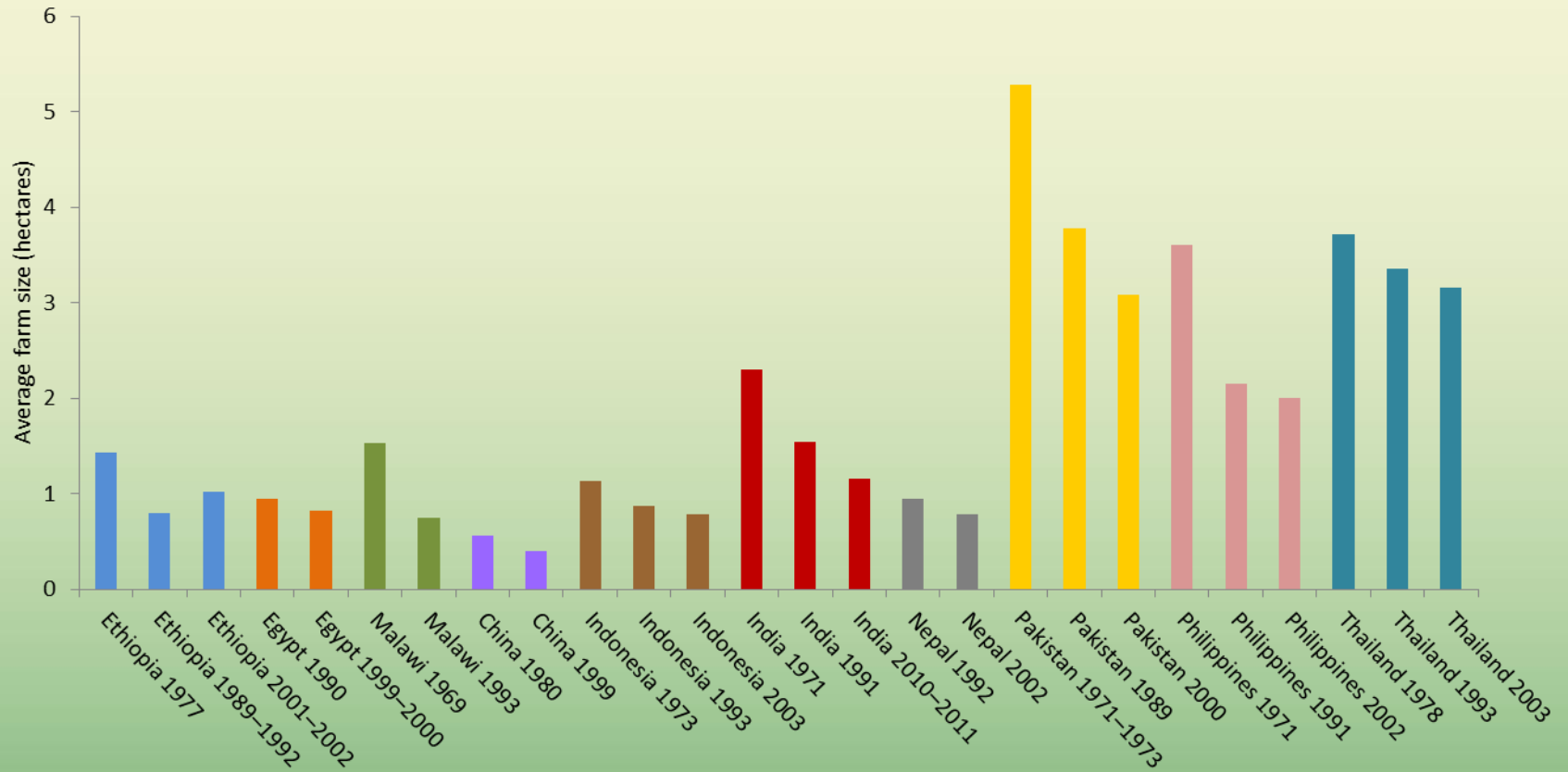
- Increasing the quantity
 - Improving the nutrition and safety of products
 - Reducing the time needed to reach the customer
 - Minimizing transaction costs
 - Improving the capacity of chain actors to follow and assimilate technology and market developments
-

Transformation of Agri-food Value Chains in Asia

- Massive expansion of the non-rice VCs
 - In terms of consolidation per segment of VC
 - Rise of supermarkets
 - Large processors
 - Wholesale markets and specialized modern wholesalers
 - Logistics firms
 - Fast food chains
 - Modern input manufacture and distribution companies
-

Asian Agriculture is still Dominated by Small Farmers

Trends in Farm Size in Selected Developing Countries

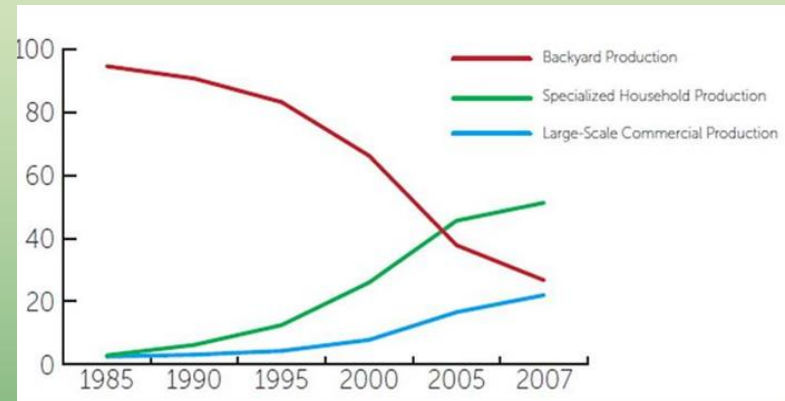
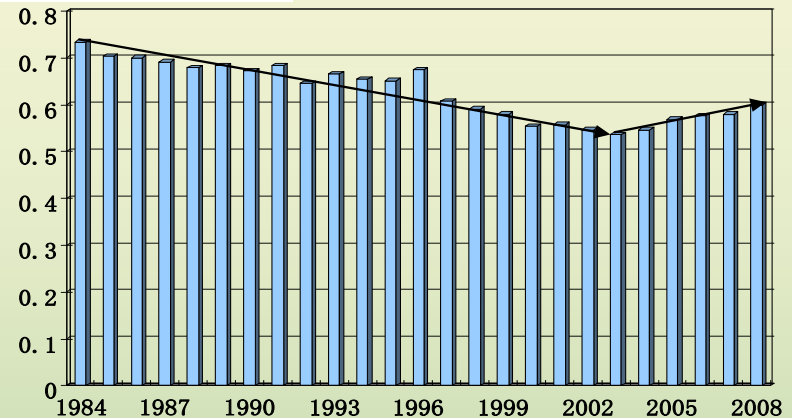


Source: IFAD 2008

China's Smallholder Agriculture

- China has more than 250 million smallholders
- Women and the elderly are left farming in the villages
- A typical smallholder farm is 0.6 hectares in size and has 6-7 plots

Average farm size (ha)



Is Small Still Beautiful?

- Studies have shown a strong inverse relationship between farm size and land productivity, with smaller farms generating higher per-unit farm output than larger farms (for a summary, see Heltberg 1998).
 - Multiple studies, however, have argued that larger commercial farms have an advantage in terms of finance, technology, and logistics and that the inverse relationship disappears above a certain farm size or after factors such as land quality are taken into account—but even these studies have been challenged (Helfand and Levine 2004; Barrett, Bellemare, and Hou 2010).
- ➔ Whereas small farms have an advantage over large farms in terms of labor supervision and local knowledge, larger farms gain the advantage as an economy shifts toward technologically advanced, capital-intensive, and market-oriented agriculture.
-

Policies on Farm Size

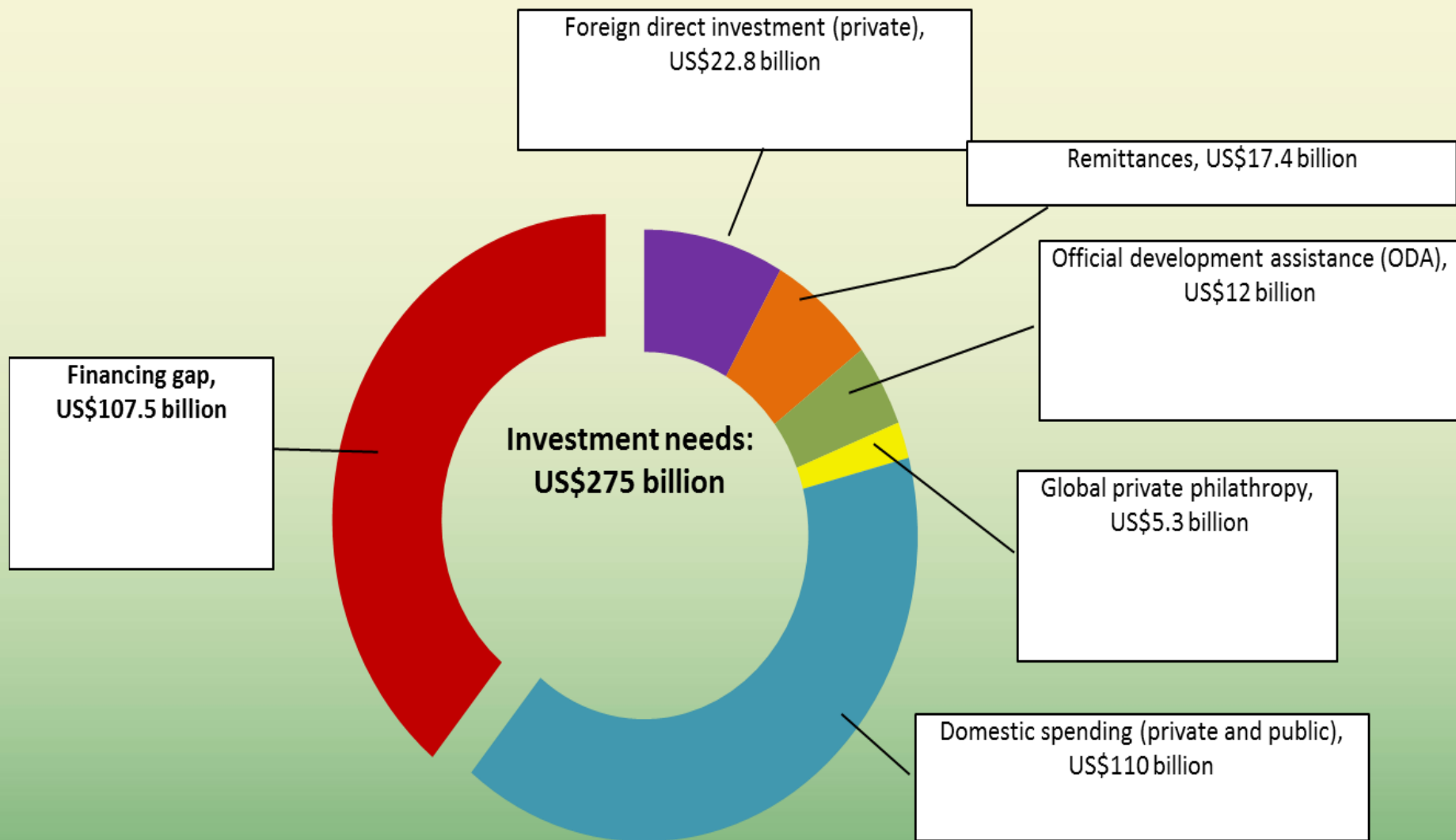
Potentially distortionary government policies:

- Ceilings on landholding size
(e.g. in Asian countries: Bangladesh, India, Pakistan, and the Philippines)
 - Artificial promotion of large-scale, commercial farms
(e.g. Africa south of the Sahara: post-independence Nigeria, Sudan, and Tanzania, Democratic Republic of Congo and Mozambique)
-

Challenges for Smallholders

- Most LICs are confronted with low agricultural productivity, weak institutions and underdeveloped markets
 - The majority of farmers in LICs are smallholders
 - Decades of underinvestment present small-scale producers with
 - Inadequate infrastructure (roads, electricity, irrigation and wholesale markets)
 - Lack access to technologies, skills and services (training, credit, inputs)
 - Highly vulnerable to energy price volatility, extreme weather
-

Inadequate Agricultural Investment



Source: Motes (2011)

Value Chain for Development

- To provide safer and nutritious foods at affordable price
 - To improve processes, products, productivity, and partnerships that can increase farmer incomes and ability to compete
 - To integrate smallholder farmers into higher-value, integrated markets
-



Book Launch on
10 December 2012
3:30-5:00 PM at Auditorium Annexes 1 & 2

The Quiet Revolution in Staple Food Value Chains

Enter the Dragon, the Elephant, and the Tiger

Thomas Reardon, Kevin Chen, Bart Minten
and Lourdes Adriano



What do Smallholders Need?

- Affordable specialized inputs
 - Input service sector
- Appropriate technologies
- Advisory services
- Access to financing
- Assured markets
- Risk management skills
- What if they want to quit farming?

Typology of Smallholder Farms and Appropriate Strategies and Interventions

		Characteristics	Strategies and interventions by country's stage of transformation		
			Agriculture-based countries	Transforming countries	Transformed countries
Subsistence farms	<i>With profit potential</i>	Soft constraints on land size and agricultural production: <ul style="list-style-type: none"> Limited access to markets and information Limited financial capital Limited access to infrastructure Limited access to smallholder-friendly technologies 	<ul style="list-style-type: none"> Productive social safety nets Investment in infrastructure, agricultural research, extension, and smallholder-friendly and climate-smart technologies Access to innovative financial services 	<ul style="list-style-type: none"> Flexible arrangements for land transfer Risk-reduction and management tools Access to market information (such as through information and communication technologies) Pro-smallholder, nutrition-sensitive value chains Social safety nets and improved access to housing, education, and health services for rural migrants Vertical and horizontal coordination to meet safety, quality, and quantity standards Larger role for farmers' organizations, particularly for women farmers 	<ul style="list-style-type: none"> High-value production Reduced trade restrictions and subsidies Flexible arrangements for land transfer Improved mechanization services More efficient and higher-quality production systems Vertical and horizontal coordination to meet safety, quality, and quantity standards
	<i>Without profit potential</i>	Soft constraints <i>plus</i> hard constraints on land size and agricultural production: <ul style="list-style-type: none"> High population density Low-quality soil Low rainfall and high temperatures Remote location 	<ul style="list-style-type: none"> Social safety nets Nutrition-focused crop production for own consumption Education and training for nonfarm employment Migration to urban centers and other agricultural areas with greater profit potential 	<ul style="list-style-type: none"> Social safety nets Improved access to housing, education, and health services for rural migrants Education and training for nonfarm employment Flexible arrangements for land transfer 	
Commercial smallholder farms		<ul style="list-style-type: none"> Soft constraints Limited access to capital, insurance, and other risk-reduction tools 	<ul style="list-style-type: none"> Vertical and horizontal market coordination to meet safety, quality, and quantity standards Smallholder-focused, climate-smart, and nutrition-enhancing technologies Investment in infrastructure, agricultural research and development, and extension 	<ul style="list-style-type: none"> High-value and nutrition-sensitive food chains Flexible arrangements for land transfer Improved mechanization services Links to urban and global markets Vertical and horizontal market coordination Larger role for farmers' organizations, particularly for women farmers 	<ul style="list-style-type: none"> High-value crops Flexible arrangements for land transfer Improved mechanization services Clear regulatory frameworks and intellectual property rights to link private sector with smallholders

Source: Fan et al (2013)

How Can the ADB Help Meet These Needs?

- **Market-driven Policy Support**
 - Improving rural-urban linkages
 - Less distortionary agricultural policy support
 - **Targeted Interventions**
 - Enhancement on value addition along the chain
 - Wholesale market enhancement
 - Agricultural machinery service
 - Promotion on farmer cooperatives
 - Value chain financing
 - Agricultural insurance schemes
 - Rural feeder roads
 - E-commerce with farmers
 - **Public-Private Partnership**
 - Help farmers/VC stakeholders to meet food safety and nutrition standards
-

Promote Pro-smallholder Value Chains

- Institutional innovations for vertical and horizontal coordination among smallholders: group lending, rural marketing cooperatives, and producer associations.
 - Companies can use resource-provision contracts to address credit, input, or extension constraints among smallholders.
 - ICTs can offer smallholder farmers a wealth of opportunities to acquire real-time market information on, for example, prices, demand, quality standards, and weather.
 - Public and private investments in agriculture-based and transforming economies should reduce food loss along entire supply chains.
-

Smallholder-Friendly Financing and Investment

- Increasing capital flows toward rural areas requires innovation: including value-chain finance, rural leasing, loan-guarantee funds, and ethical and Islamic banking.
 - Medium- and long-term financing mechanisms to support commercially oriented capital investments by smallholders: machinery and storage facilities to increase productivity and modernize smallholder agriculture.
 - The public spending portfolio should offer a short-term cushion for coping with livelihood shocks and long-term productivity-enhancing or exit opportunities for smallholders to escape poverty and food insecurity.
-

Rice Value Chain Development

- First, several key changes have occurred during the semi-modernization (in most of the study areas) and incipient modernization (in the least advanced of the study areas):
 - Rice value chains have lengthened geographically in order to gather sufficient rice to feed massive and growing cities
 - Rice value chains have shortened intermedationally as the major traditional role of the village trader has been reduced and undermined
 - Rice value chain segments have changed structurally – with consolidation in the mill, wholesale, and retail segment
 - The rice value chain has moved from a sleepy traditional and semi-subsistence mechanism to a dynamic, commercialized market economy
- Second, the transformation is overwhelmingly a private sector led transformation.
- Third, the positive – and negative – roles the government – and donors like ADB – can play in the transformation of the system manifested themselves at every turn in our analysis.

Potato Value Chain Development

- In Bangladesh
 - The predominant method of storage has now become modern cold storage facilities (CSF).
 - Superstores – modern one-stop shopping facilities- have become very popular over the last several years and have become a part of urban life of upper middle class in Bangladesh.
- In India
 - Farmers sell their potatoes to the village traders, take it to the local primary wholesale market or sell it in Bangalore wholesale market.
 - Modern retailing is relatively recent phenomenon. While they have been growing very fast their share is still very small.
- In China
 - Midstream transportation distance increases
 - Development of supermarket sale of agricultural products

Investment opportunities and Policy Change for Potato Value Chain in India

Pace of Transformation	Constraints	Investment Opportunities			For Policy Dialogues
		Upstream (inputs and Farm)	Midstream (Post Harvest to Mills)	Downstream (wholesale, retail, supermarkets)	
Market power is getting concentrated in seed market	Restricted production requirement creates and cold storage creates market power	To provide information on conditions in upstream seed production	Potato sorting and grading	Modernizing wholesale markets	Quality control for seeds
Technology adoption is constrained	Uncertainty about technology is a barrier in value chain transformation	More participation of quality seed suppliers	Energy saving technologies, especially equipment with lower electricity use rates	Modern retail chains	Creating competition in the seed market
Production technology remains stagnant or deteriorating	Use of manures and reducing fertilizer applications	Production of manures and supply	Grade based e-trading platforms	Services: Transportation hub with modern information sharing system	Proper research and extension services to farmers on seed, pests and manure applications
Farmers are looking for off-farm jobs	Public research not able to resolve debate about technology	Developing variety resistant to late blight	Development of logistic services	Easier access to credit, to wholesalers	Policy on modernizing primary wholesale markets and introducing e-trading platforms
Output Market changes are slow to happen	Labor shortage at peak season, like seedling and, harvesting, etc	Adoption of quality seeds, and training farmers in discerning seed quality	Cold storage facilities	Easy access to e-trading platforms	Quality assessment and grade based transaction in the wholesale markets.
Modern retailing is yet to make its headway	Market reform requires strong political will and drastic changes in the process	Contract farming in potato production	Services: Access to formal credit for SME	Public research on consumer behavior and handling of potatoes	Introducing warehouse receipt system and e-trading would streamline output market
	Policy debate on FDI is still conclusive	Services: Quality seed production Better targeted extension services		Food safety and quality improvement programs by the government	Clearing FDI in retail
	Access to credit, especially for big infrastructure projects	New farm organizations such as Producer organization to procure good quality seed and increasing manure applications			Proper mechanism to settle disputes with regard to contract farming.
	Traders and wholesalers usurp large part of the margin	Making provision of credit easier			
	Quality improvement is not taking place in a big way.				
	Poor government information system				

Investment opportunities and Policy Change for Potato Value Chain in China

Pace of Transformation	Constraints	Investment Opportunities			For Policy Dialogues
		Upstream (inputs and Farm)	Midstream (Wholesale)	Downstream (retail, supermarkets)	
Significant migration rate within a household	Labor transfer and migration, labor shortage and high labor cost	To provide information or create an information system for land rental markets and some the related legal services	PPotato storage technology upgrading	Multi modal transport system for food	Improve land rights policies and land circulation laws
Rapid mechanization and specialization	Poor quality transmission	Agricultural machinery outsourcing	Reduce the loss of transportation	Agricultural & supermarket docking	Lead the non-farm funds into the potato industry especially seed potato research and logistics industry
Increase in agricultural production inputs	Poor irrigation infrastructure and drought	Promotion new variety and technology ,adoption of quality seeds, and training potato farmers in discerning seed quality	Services:	Services:	Encourage and develop the value chain financial products
Midstream transportation distance increases	High inputs cost, such as high fertilizer cost, fuel cost, etc	Water saving technology, especially for non-irrigated potato area or hard to irrigate areas	Access to credit, especially for potato wholesalers to weather long waits for money from clients	Transportation hub with modern information sharing system	Removing pricing distortion along potato value chain for quality transmission
Specialization of traders	Less formal finance support, especially for midstream and downstream	Services:	Value chain finance	Value chain finance	Launch a potato futures
Development of supermarket sale agricultural products	Lack of new finance product support, such as transport insurance for each deal	New rural finance service such as agricultural insurance, value chain finance and contract farming	Wholesale market construction and perfect	Provide information connecting upstream and potato traders or supermarkets	Spur GMS potato value chain clustering
	Lack of price pre-warning system	Land transfer center	Trading platform construction		
	Wholesale market development is imperfect	Better agricultural machinery and mechanization services	Transport and storage to upgrade		
		New farm organizations such as cooperative, family farm, etc			

Dairy Value Chain Development

- In China
 - Firstly, China's dairy value chain is modernizing. This trend means an improved scale of operation, professional and mechanized production, a shortened dairy value chain and reduced components of the chain.
 - Secondly, the traditional agricultural financial supply is unevenly distributed across various entities in the value chain. Processing, circulation and retailing links develop stably under the guidance of core enterprises.
 - Thirdly, it is worth noting that medium-sized and small households also have intense demands for loans.
 - Finally, trading credits are still very important to various entities throughout the entire dairy value chain.

Investment opportunities and Policy Change for Dairy Value Chain in China

Pace of Transformation	Constraints	Investment Opportunities			For Policy Dialogues
		Upstream (inputs, Farm and MCC)	Midstream (Processor Mills)	Downstream (wholesale, retail, supermarkets)	
Up-scaling in upstream	High rent cost and labor cost	To provide information or create an information system for credit file	Energy saving technologies, especially equipment with lower electricity use rates	Multi modal transport system for food	Interactions between off farm employment and dairy value chain development
Rapid mechanization	Poor organization and infrastructure for small and medium scaled dairy farmers	New rural finance service such as agricultural insurance, value chain finance and contract farming		Cold chain transport system for low temperature dairy products.	
Widespread adoption of modern technology	Poor quality transmission along the chain	Mechanization, particularly on feed processing	Storage facility or warehouse upgrading	Agricultural (producer) and supermarket docking	Improve land rights policies and land mortgage and guarantee laws
Increase in agricultural production inputs cost	High input cost, such as high fertilizer cost, fuel cost, feed cost, etc	Adoption of quality feeds, and training dairy farmers in discerning feed quality	Services:	Services:	Removing pricing distortion along dairy value chain for quality transmission
Upgrading of MCCs	Access to credit, especially for dairy farmers	Fecal pollutant treatment technology	Access to credit for SME	Transportation hub with modern information sharing system	Encourage and develop the value chain financial products
Consolidation of mills	Less formal finance support, especially for upstream	Services:	Upgrading of processing technologies especially for medium and small processor mills	Access to credit, especially for wholesalers to weather long waits of money from clients	Lead the non-farm funds into the dairy industry especially cultivation of cow breeds
Supermarkets as outlets for dairy products		Credit information center			
		Better feed processing machinery			
Branding	Lack of price pre-warning system	Mechanization services	Brand approval and management service	Provide information connecting processors and traders or supermarkets	
	Access to high value markets	Better targeted extension services			
	Lack of consumer trust	New farm organizations such as cooperatives, family farms, etc			

What for Food Security Debates?

- The changing demands of consumers has led to important incentives for the private sector which has quickly adjusted to fill this gap
 - Policy initiative to upgrade value chains might not be well-targeted
 - The initiatives to improve liquidity constraints are likely to fail if fail to take into account that an active informal system is often already in place
 - There is untapped potential for expansion of E-commerce
 - Energy costs along potato, rice, and dairy value chains are significant
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Key Messages

- **Global economy is transforming rapidly**
 - **Global agriculture is at a turning point**
 - **New organizational forms and structure**
 - **Linking smallholders with markets through value chains**
 - **We need the right policies to manage this transformation**
 - **Service sector for developing commercially-oriented smallholder agriculture**
 - **The private sector needs to play a leading role in providing services and upgrading**
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