

# **Assistance to agricultural development in Africa: Decline and Reversal**

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# Plan of presentation

- Agricultural transformation and development
- Agricultural transformation in Africa
- Finance and agricultural transformation
- The productivity and finance gaps
- Financial flows from governments to agriculture
- Financing needs (“social lending gap”) for smallholder based agriculture development
- Traditional models of rural finance
- Recent rural financial innovations

# Agriculture in transformation and development

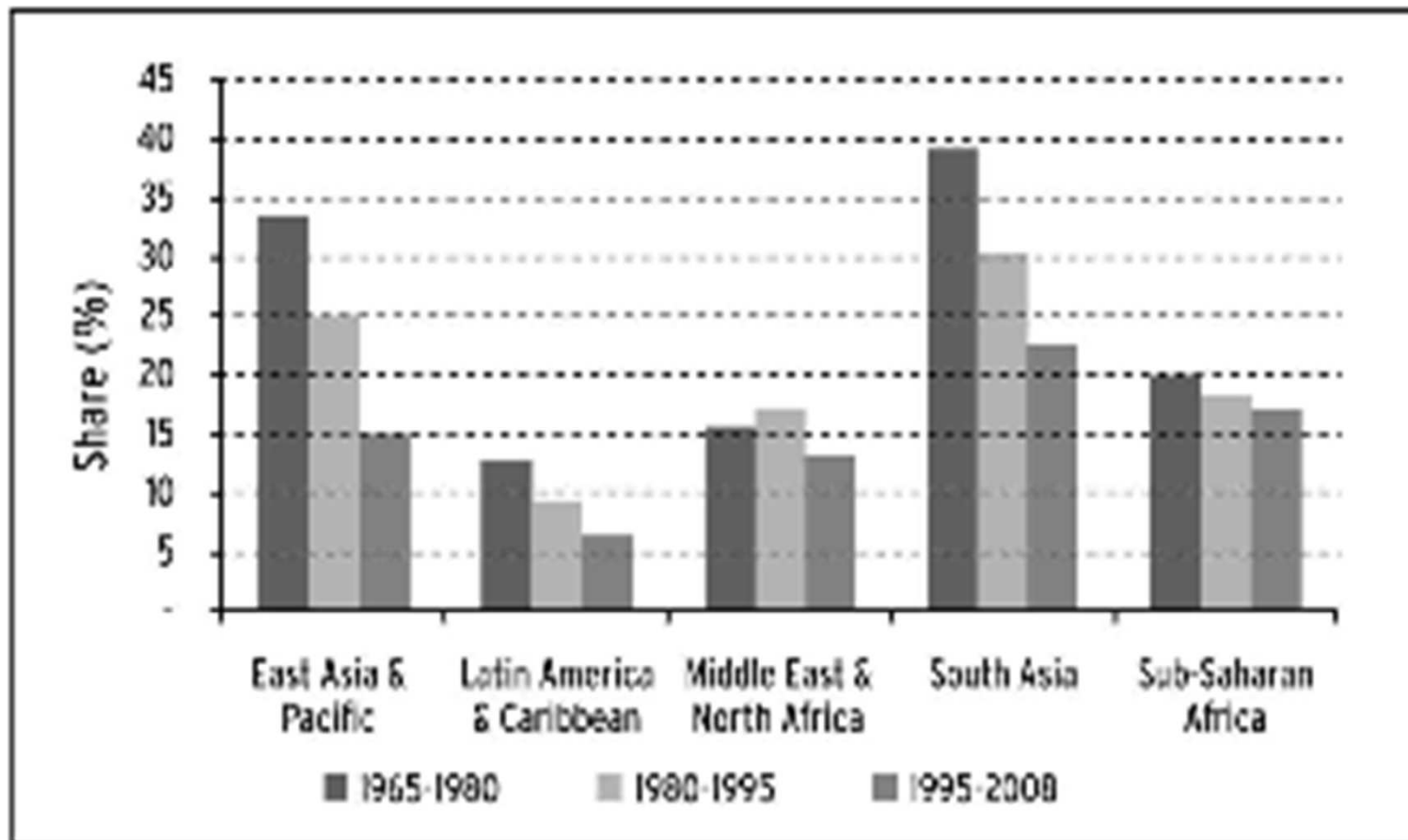
- **Four phases**

- 1) Beginning phase: agricultural labor productivity starts to increase
- 2) Agricultural surplus: agricultural productivity growth generates surplus towards the development of the non-agricultural sector (Lewis)
- 3) Integration: agriculture becomes increasingly linked to the rest of the economy through improved infrastructure and market development (Mellor)
- 4) Industrialized: integration is successful and the role of agriculture diminishes to just one of the many major sectors of the economy

Currently most LICs in Africa are in phase 2 (some in phase 1) and LMEs are in phase 2 or 3.

# Evolution of agriculture's share in GDP

Average share of agriculture in GDP



Sources: WDI 2009.

# Essentials of agricultural transformation

Productivity, particularly of labor is the centerpiece of agricultural transformation: The basic cause and effect of the structural transformation is rising productivity of agricultural labor. There are three ways to raise labor productivity in agriculture (and the first two are usually linked):

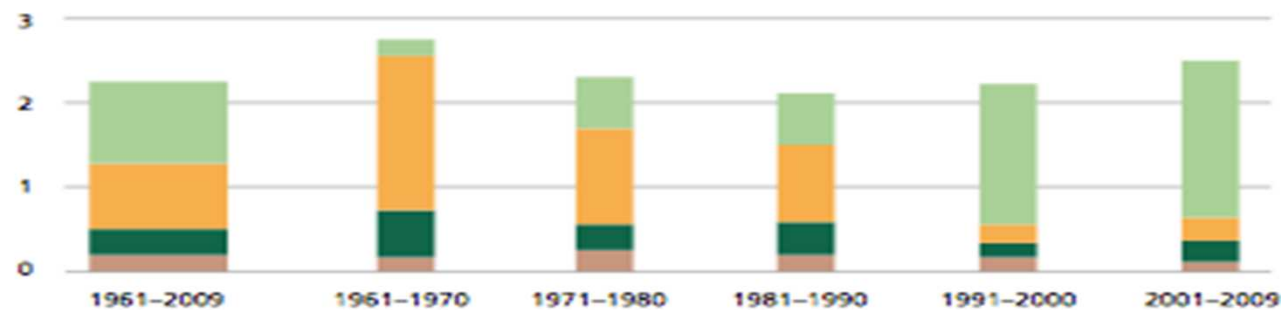
- 1) Use new technology to produce more output for a given amount of labor (an agricultural revolution).
- 2) Let agriculture workers migrate to other occupations, without lowering output, thus sharing the output with fewer rural people (the classic Lewis model of development, leading to an industrial revolution)
- 3) Through higher prices for agricultural output (make it worth more in real economic terms), which may well be happening in the current economic era, but is a reversal of historical trends. This would be a price revolution based on scarcity rather than surplus).

Today this context is complicated by globalization, integrated value chains, rapid technological and institutional innovations, and environmental constraints

## Growth in global agricultural output, by source of growth and time period

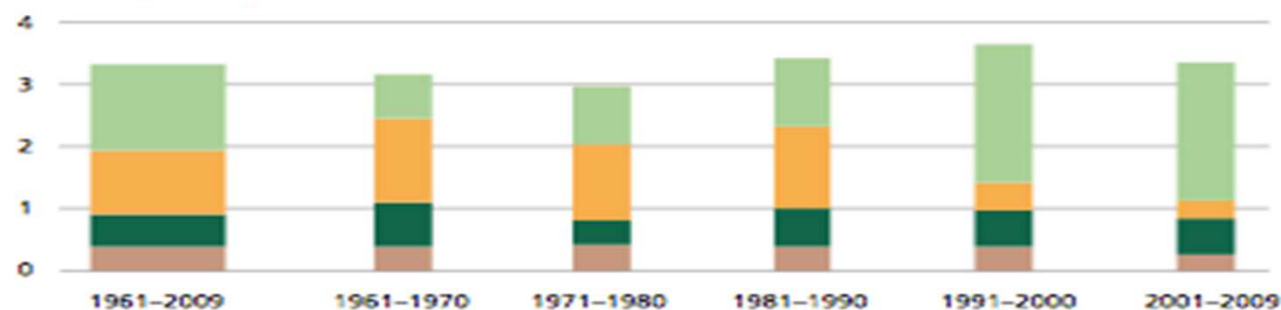
### A - Global agricultural output

Percentage change



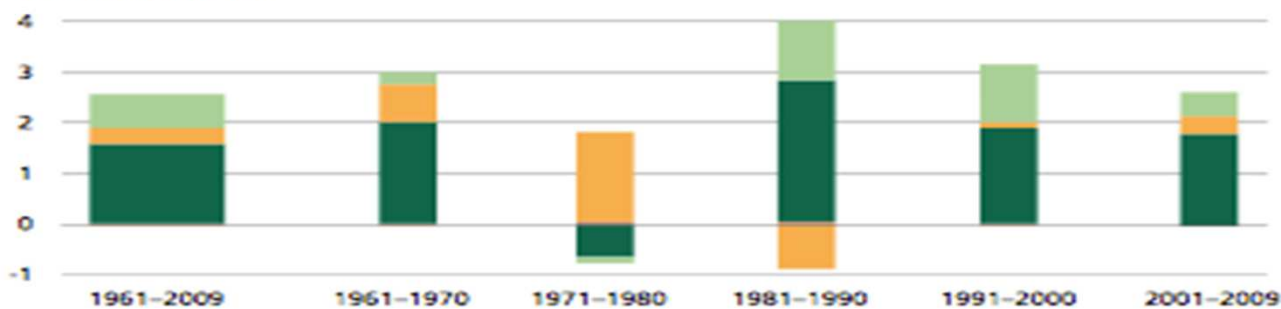
### B - Developing countries

Percentage change



### C - Sub-Saharan Africa

Percentage change



Irrigation

Inputs per hectare

New land

Total factor productivity

## **Agriculture in Africa**

- Extensive cultivation patterns. Subsistence farming prevalent.
- Excess land, allows shifting cultivation.
- Community rights to land and water
- Low productivity as technology mostly traditional, scarcity of labor at peak times.
- Net result virtually constant level of output and labor productivity

## Agricultural productivity gaps world wide

	GDP		Ag Productivity *		
	<i>bill \$</i>	<i>% growth</i>	<i>Ag Value Added/worker</i>		<i>% Growth</i>
	<i>2008</i>	<i>2000-08</i>	<i>1990-92</i>	<i>2003-05</i>	<i>1990-05</i>
World	60,587	3.2	731	908	24.2
Low Income	569	5.8	222	268	20.7
Middle-Income	16,827	6.4	470	650	38.3
Low MI	8,377	8.3	359	499	39.0
Upper MI	8,445	4.6	1998	2721	36.2
Low & Middle Income	17,408	6.4	432	577	33.6
East Asia and Pacific	5,658	9.1	295	438	48.5
Europe and Central Asia	3,861	6.3	1749	2076	18.7
LA & Caribbean	4,247	3.9	2125	3044	43.2
ME & NA	1,117	4.7	1583	2204	39.2
South Asia	1,532	7.4	335	406	21.2
Sub-Saharan Africa	987	5.2	263	279	6.1
High Income	43,190	2.3	15906	25500	60.3

\* 2000 dollars

Source: World Bank Development Indicators, 2010 report



## **Constraints on rural development in world agriculture**

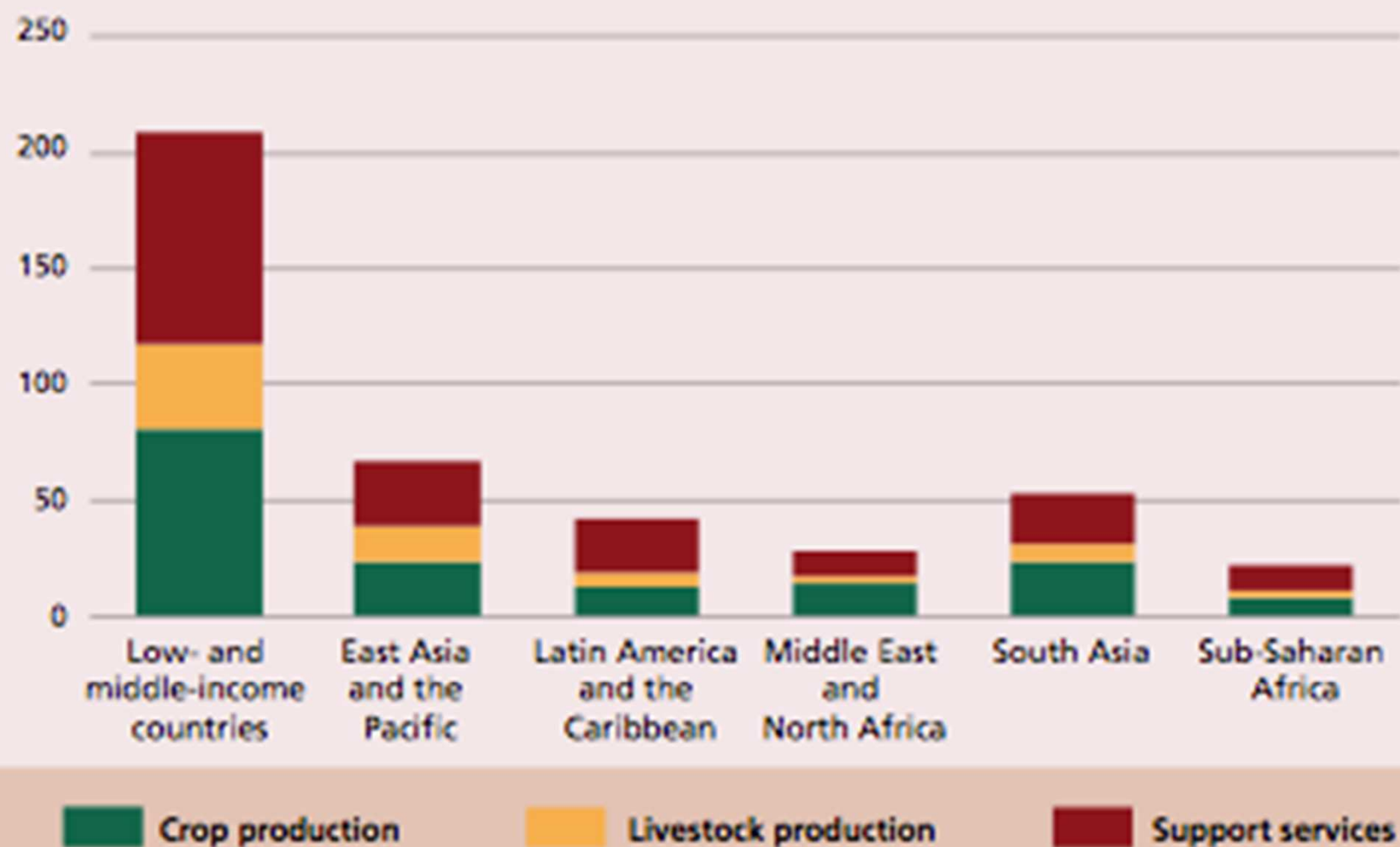
- Small size of farms limits productivity growth of labor
- Reduction of land size parcels due to inheritance tends to increase tenancy
- Weak local or regional markets
- Expensive inputs unless subsidized by government
- Considerable non-diversified and non-insured risks in production and incomes
- Lack of finance for production and consumption

## Level and change in agricultural capital stock per worker, by region

INCOME GROUP/REGION	AVERAGE AGRICULTURAL CAPITAL STOCK PER WORKER, 2005-07	AVERAGE ANNUAL CHANGE (1980-2007) IN:		
		Agricultural capital stock	Number of agricultural workers	Agricultural capital stock per worker
	(Constant 2005 US\$)	(Percentage)		
High-income countries	89 800	0.2	-2.9	3.0
Low- and middle-income countries	2 600	0.9	1.2	-0.3
East Asia and the Pacific	1 300	1.8	1.1	0.7
East Asia and the Pacific, excluding China	2 000	2.1	1.4	0.7
Europe and Central Asia	19 000	-1.0	-1.7	0.7
Latin America and the Caribbean	16 500	0.7	0.0	0.7
Middle East and North Africa	10 000	1.8	0.9	0.9
South Asia	1 700	1.4	1.4	0.0
South Asia, excluding India	3 000	1.4	1.6	-0.1
Sub-Saharan Africa	2 200	1.5	2.1	-0.6
WORLD	4 000	0.6	1.1	-0.5

## Average annual investment needs in low- and middle-income countries, by region

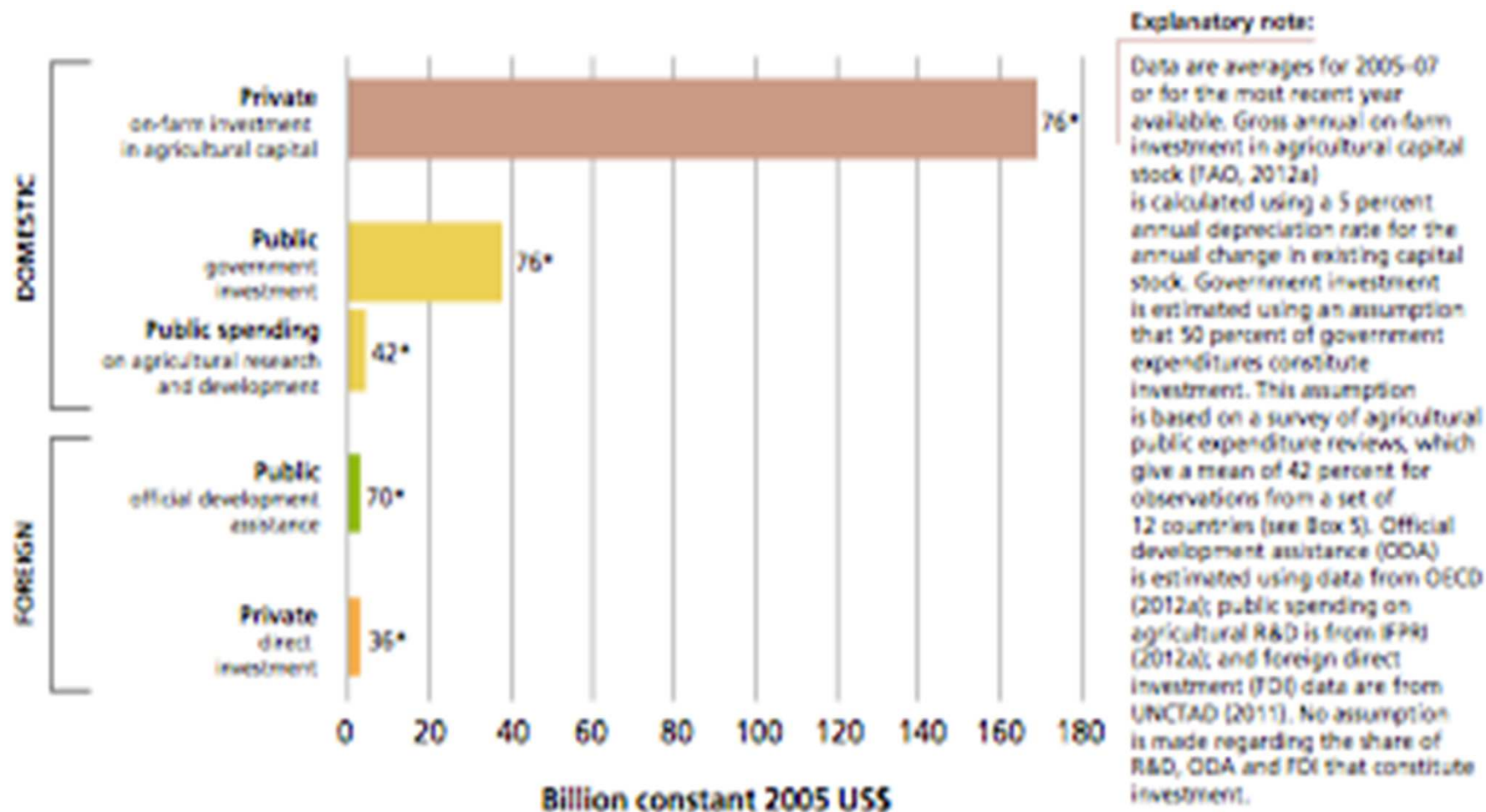
Billion constant 2009 US\$



Note: The figure presents average annual needs over the period 2005-07 to 2050.

Source: Schmidhuber, Bruinsma and Bödeker, 2009.

# Investment in agriculture in selected low and middle income countries by source



# Public spending on agriculture per worker in low- and middle-income countries, by region

REGION	1980-89	1990-99	2000-04	2005-07
<i>(Constant 2005 PPP dollars)</i>				
East Asia and the Pacific (8)	48	69	108	156
Europe and Central Asia (9)		413	559	719
Latin America and the Caribbean (10)	337	316	309	341
Middle East and North Africa (7)	458	534	640	677
South Asia (7)	46	50	53	79
Sub-Saharan Africa (10)	152	50	51	45
<b>Total (51 countries)</b>	<b>68</b>	<b>82</b>	<b>114</b>	<b>152</b>

Notes: Calculations include 51 low- and middle-income countries. The number of countries included in each group is shown in parentheses. For countries in Europe and Central Asia estimates are from 1995 to 2007.



# Public expenditures on agricultural research and development as a share of agricultural GDP, by region

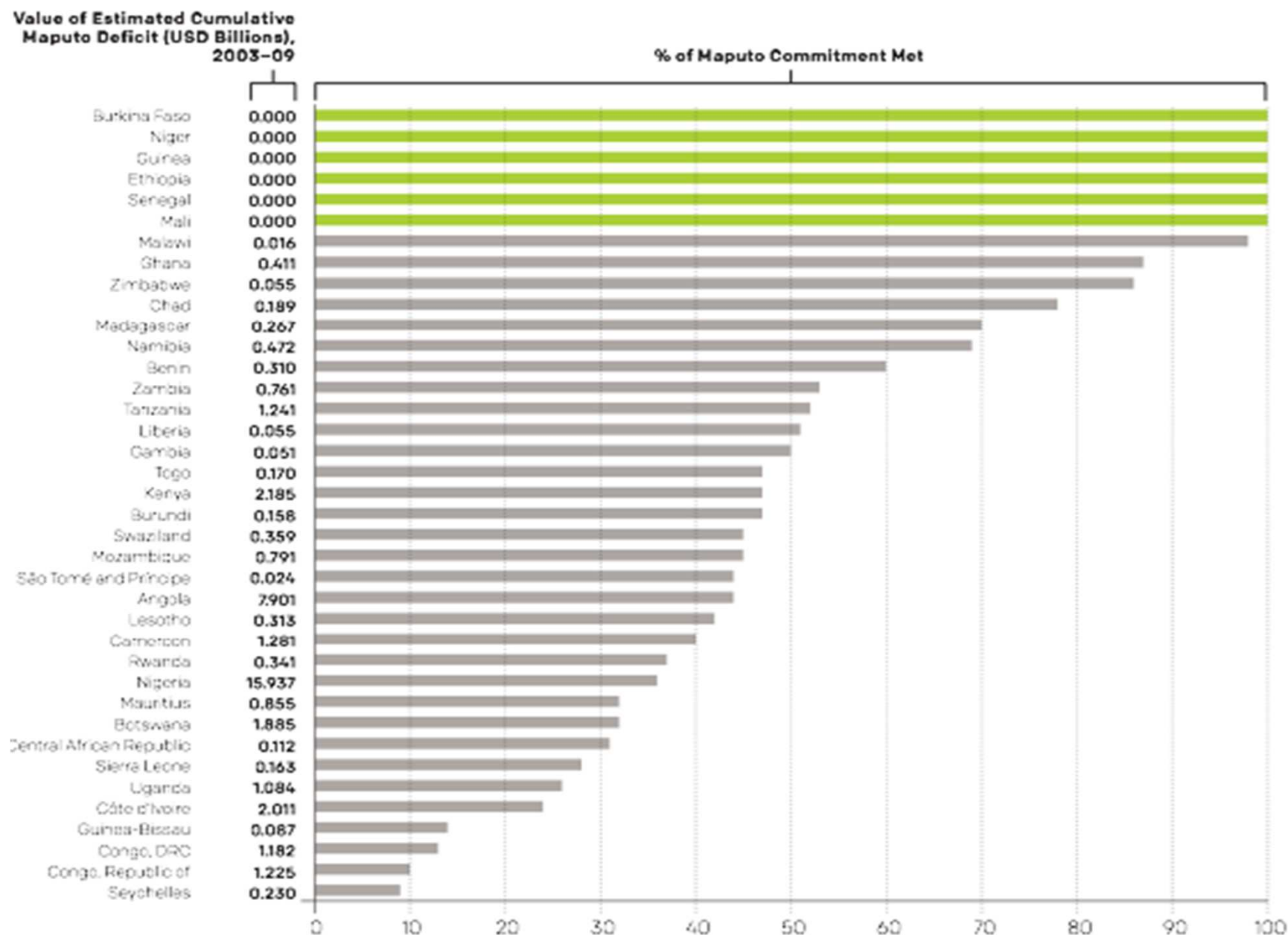
COUNTRY CATEGORY	1981	1991	2000	LATEST YEAR
(Percentage)				
Low- and middle-income countries (108)	0.55	0.54	0.54	..
Sub-Saharan Africa (45)	0.75	0.61	0.55	0.61 (2008)
East Asia and the Pacific, excluding China (19)	0.41	0.51	0.51	0.57 (2002)
China (1)	0.38	0.34	0.38	0.50 (2008)
South Asia, excluding India (5)	0.37	0.39	0.31	0.25 (2009)
India (1)	0.22	0.29	0.39	0.40 (2009)
Latin America and the Caribbean (25)	0.90	1.08	1.21	1.18 (2006)
West Asia and North Africa (12)	0.60	0.59	0.74	..
High-income countries (32)	1.53	2.11	2.37	..
Total (140)	0.91	0.98	0.97	..

Notes: Table excludes 31 countries in Eastern Europe and the former Union of Soviet Socialist Republics, because of data unavailability.

.. = data not available.

Sources: Data on public expenditures on agricultural research and development are from IFPRI (2012a). Data on agricultural GDP are from the World Bank's *World Development Indicators* (2012). See Annex table A6.

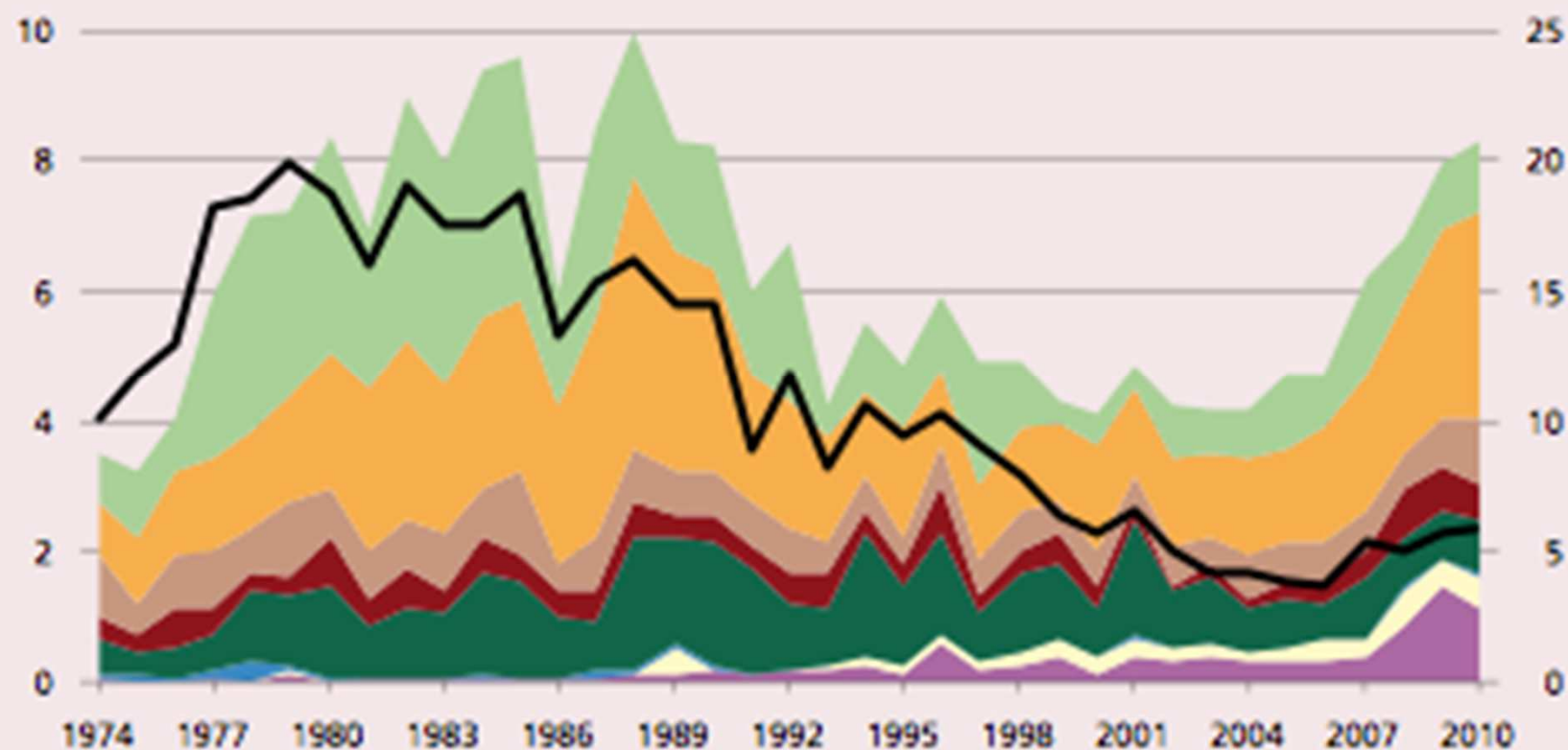
## African government agricultural expenditures 2003-9 compared to Maputo declaration target of 10% of total public spending



## Level and share of official development assistance committed to agriculture, by region

Billion constant 2005 US\$

Percentage



Unspecified/Regional

Europe and Central Asia

High Income

East Asia and the Pacific

Middle East and North Africa

Latin America and the Caribbean

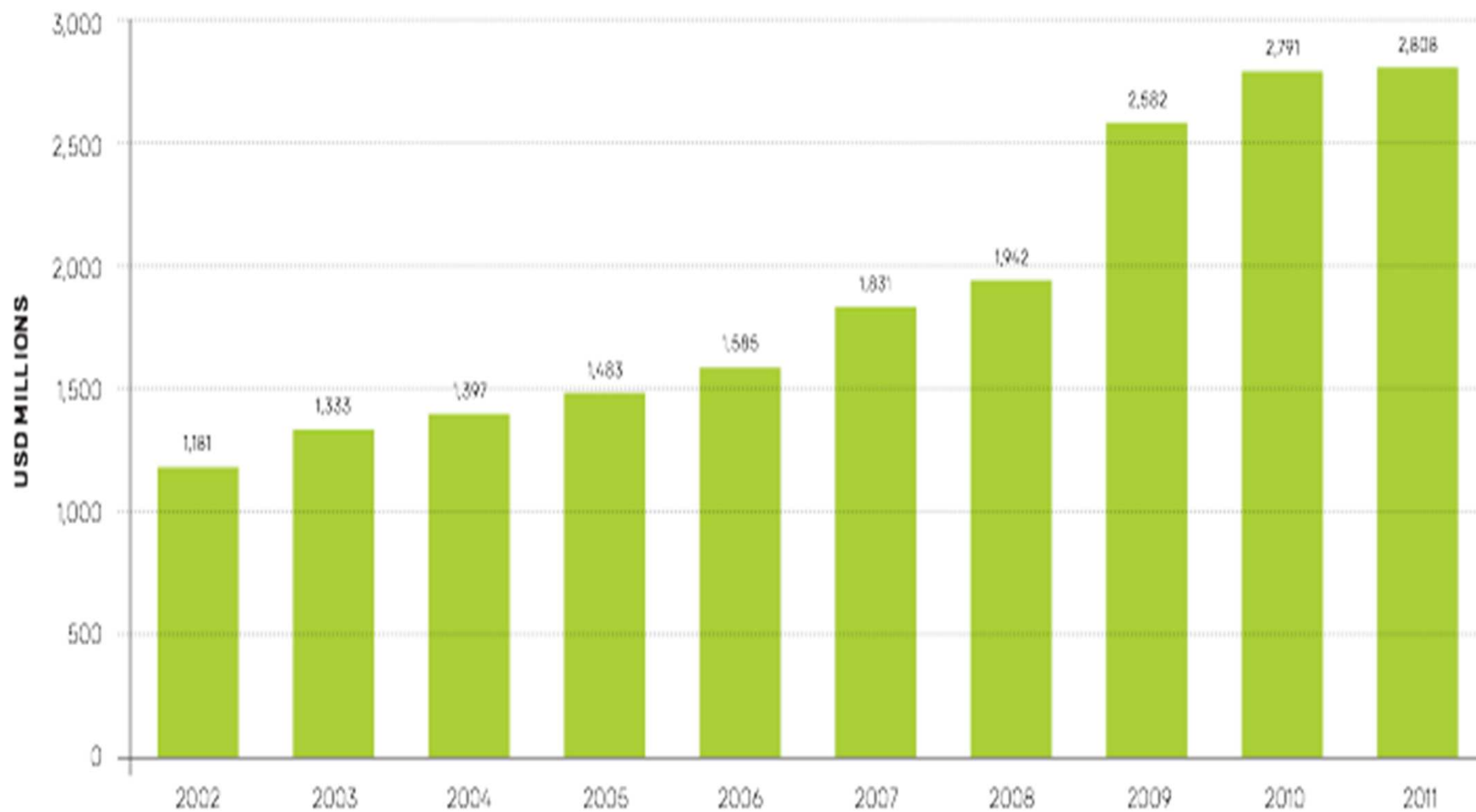
Sub-Saharan Africa

South Asia

Agricultural share of ODA



## Donor assistance for agriculture in Sub-Sahara Africa 2002-11



Sources: OECD DAC Creditor Reporting System Database and ONE calculations

## Main recipients of agricultural aid 2007-8

	<i>mil \$</i>	<i>Share, %</i>
Afghanistan	368	7.0
India	322	6.1
Morocco	233	4.4
Ghana	231	4.4
Iraq	155	3.0
Mali	183	3.5
Indonesia	169	3.2
Colombia	109	2.1
China	108	2.1
Vietnam	114	2.2
Other	3260	62.1
Total	5252	100.0

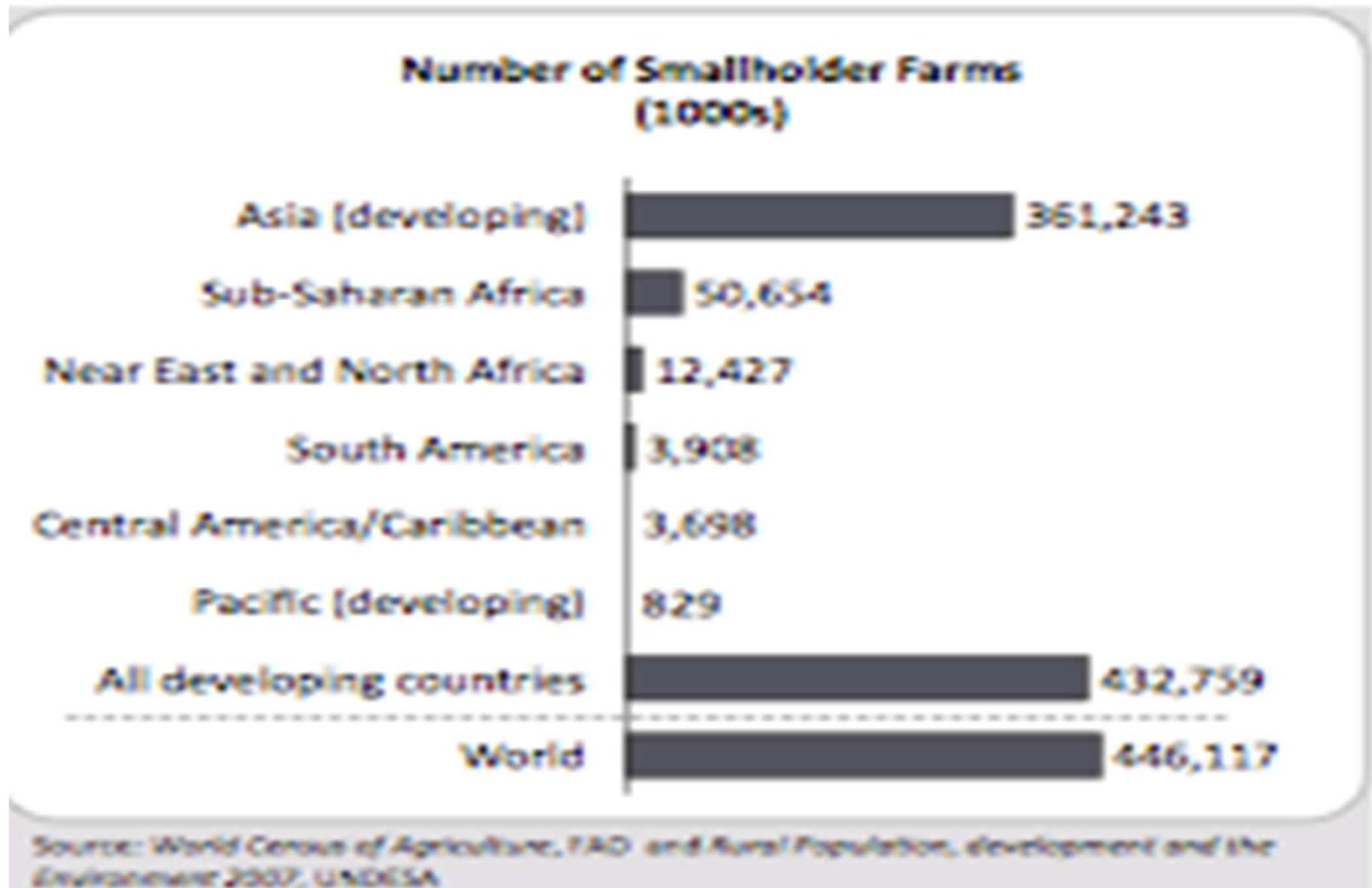
*Source: Measuring Aid to Agriculture, OECD, DAC, April, 2010*

**Aid to agriculture by sector 2003-8**  
**(average annual commitment, mil \$ constant 2007 prices)**

	Average annual commitments,		
	<i>Constant 2007 \$</i>		
	2003-04	2005-06	2007-08
<b>DAC Countries</b>			
Agriculture/Forestry/Fishing	2763	3388	4713
Rural Development	622	729	776
Development food aid	1358	1053	1204
Emergency food aid	1967	2131	2284
<b>Total DAC Countries</b>	<b>6710</b>	<b>7301</b>	<b>8977</b>
<b>Multi-lateral Agencies</b>			
Agriculture/Forestry/Fishing	2308	1961	2521
Rural Development	253	216	224
Development food aid	823	1159	393
Emergency food aid	109	180	157
<b>Total Multi-lateral agencies</b>	<b>3493</b>	<b>3516</b>	<b>3295</b>
<b>Total</b>	<b>10203</b>	<b>10817</b>	<b>12272</b>

*Source: Measuring Aid to Agriculture, OECD, DAC, April, 2010*

# Global distribution of smallholder farmers



# Finance and agriculture

- Financial market imperfections that limit access to finance key to agricultural and overall development
- Access to finance not easy to measure. Financial access by agricultural households is limited in LICs EMEs and barriers to access are common
- Different financial services required by different groups of farmers. Risk management and mitigation of paramount importance for poorest.
- Insurance cannot be separated from credit
- Access to finance both pro-growth and pro-poor. Spillover effects of financial development are likely to be significant
- Provision of financial services to the poor will require subsidies
- For the rural smallholders (about 450 million worldwide) credit not the only service needed, but also savings and payment systems
- Multinational buyers increasingly rely on smallholders for procurement of supplies. Chief obstacle is large and largely unmet need for formal value chain finance.



# Typologies of agricultural value chains

Value Chain Typology	A) Exportable cash crop	B) Captive global buyer value chain	C) Organized local staple	D) Un-organized local staple
Aggregation Point	Producer organization (e.g., cooperatives or associations)	Contract or out-grower organization (e.g., processor or buyer)	Warehouses or local traders	No Aggregation
Value Chain Power	Supplier power (at producer organization)	Buyer power	Light buyer power (or government regulated)	None (likely regulated by government)
% of farmers	Less than 10% of farmers are in typology A or B*		Vast majority are in typology C or D	
Market Characteristics	<ul style="list-style-type: none"> <li>• Export</li> <li>• No alternative market</li> </ul>	<ul style="list-style-type: none"> <li>• Export</li> </ul>	<ul style="list-style-type: none"> <li>• Organized local market</li> </ul>	<ul style="list-style-type: none"> <li>• Limited formal markets</li> </ul>
Crop Characteristics	<ul style="list-style-type: none"> <li>• Price incentives for quality</li> </ul>	<ul style="list-style-type: none"> <li>• May be perishable post-harvest</li> </ul>	<ul style="list-style-type: none"> <li>• Durable post-harvest</li> </ul>	<ul style="list-style-type: none"> <li>• No price incentive for quality</li> </ul>
Examples	Coffee, Cocoa	Fruit & Vegetables, Cotton, Dairy	Tree nuts (in India), Maize (in Kenya)	Rice (in Nigeria)
Financing Models	Direct to producer orgs. (e.g., social or commercial lending)	Internal value chain financing (e.g., through buyer or processor)	Warehouse financing or local trader financing	Agriculture microfinance

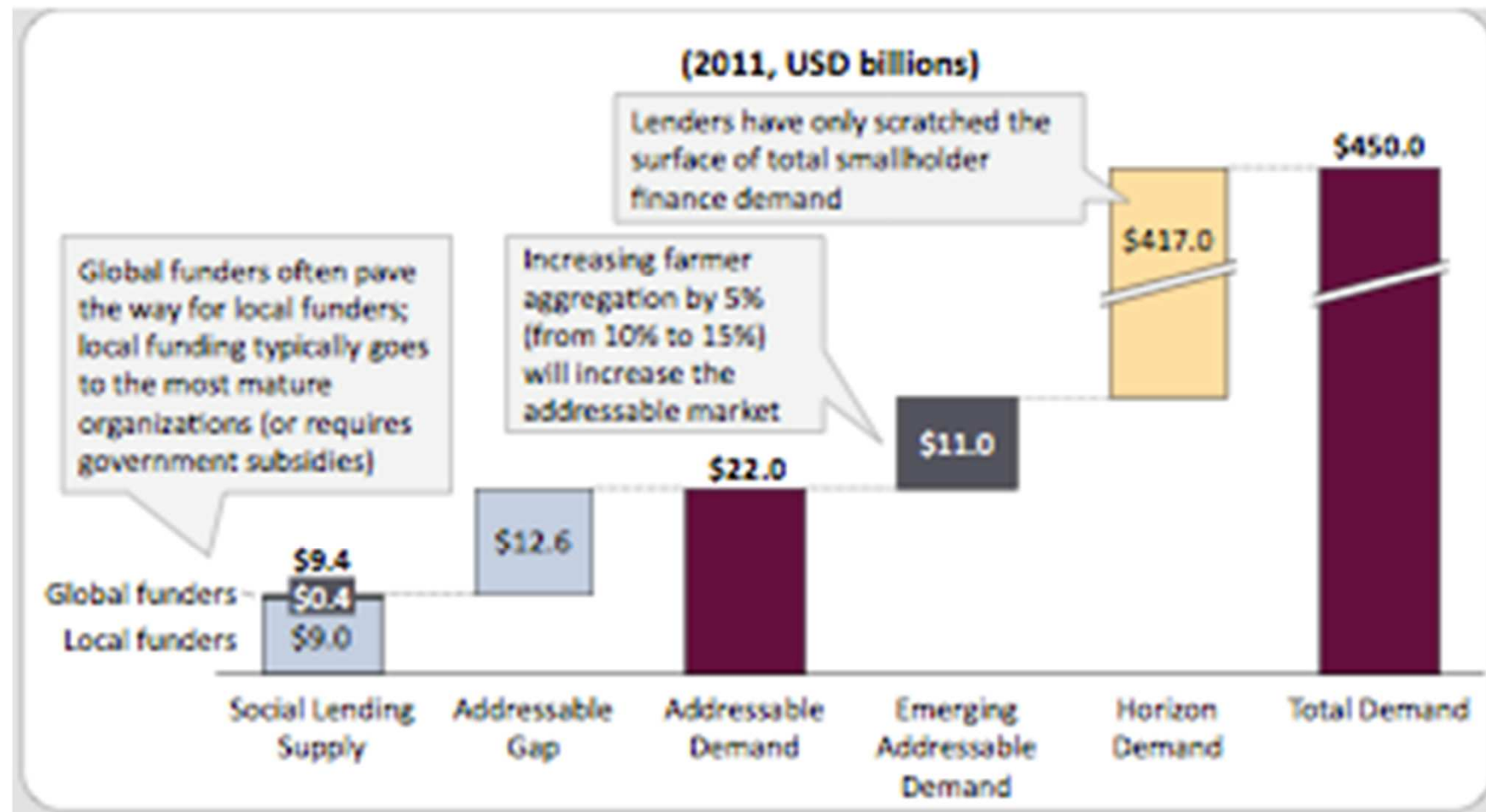
\* Estimated figure based on average ratio of agriculture export value to production value in select countries (FAO Stat)

Note: The chart above does not include farmers that produce primarily for on-farm consumption (i.e., only includes traded crops)

Source: Interviews with social lenders and technical assistance providers; FAO Stat; Dalberg analysis

# Estimates of the “social lending” (ie combination of market return and social impact) financing gap to agriculture (Source. Dahlberg)

About 90% of production involves local staples. Rest is exportable and other cash crops



# Social lending models

- Replicate and expand existing models (to new crops, new areas)
- Innovate into new financial products beyond short-term export trade finance
- Finance out-grower schemes of multinational buyers in captive value chains
- Finance alternative forms of aggregation (warehousing, procurement networks, input providers, etc.)
- Finance direct to farmer. Pertains to staple production, hence largest need. Variation of microfinance models, mobile banking, etc. Expensive model as farmers dispersed.



## **Existing models of rural finance**

- Family and friends network “informal” finance
- Interlinked credit (credit with labor, or credit with land sharecropping, etc.)
- Microfinance through group lending
- Input supplier finance (interlinked trade and short term credit)
- Trader finance (interlinked trade and short term credit)
- Cooperative finance
- Government finance via monopolistic purchasing and input supply parastatals

## **Recent rural financial innovations**

- Supply chain models (mostly linked to exports)
- Combining weather index insurance and rural credit
- Cereal banks
- Warehouse receipt systems
- Mobile banking

# Conclusions

- Agricultural transformation entails considerable financial needs
- Lack of finance can choke off agricultural development and poverty reduction
- Government financial flows into agriculture inadequate
- Donor flows small compared to needs
- Very large investment financing needs for agricultural transformation
- Most agricultural transformation and poverty reduction must be based on a smallholder model of development
- Large gaps in smallholder financing needs compared to existing flows
- Traditional rural financial institutions inadequate to meet needs
- Several promising rural financial innovations are emerging

**Thank You**