Science & technology needs & options for poverty eradication & socio-economic development

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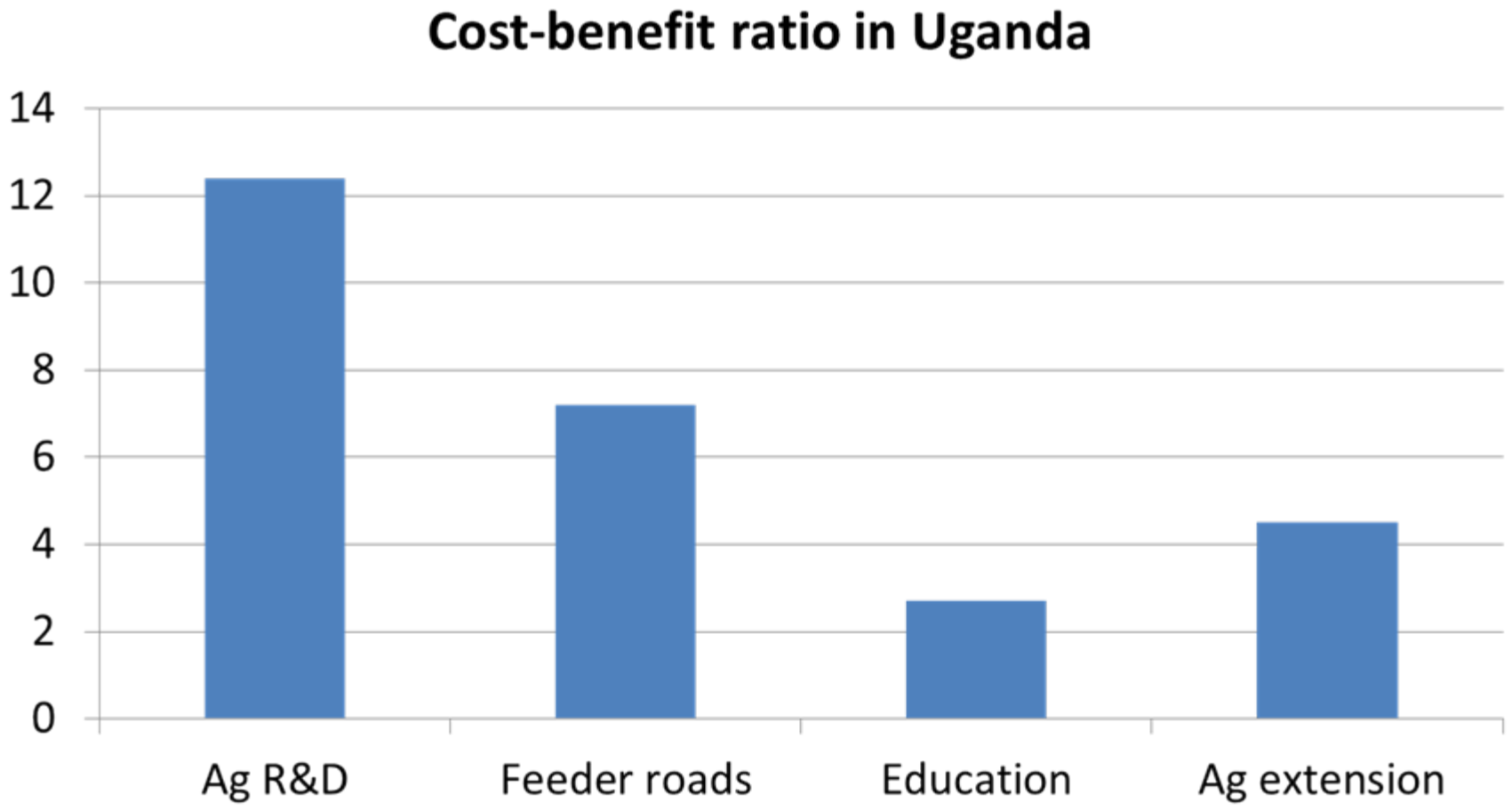
Ag science & technology key to poverty reduction

- In least developed countries, investment in agriculture pulls most people out of poverty than investment in other sectors
- Countries using low technology and exporting raw agricultural products have remained poor

Returns to investment



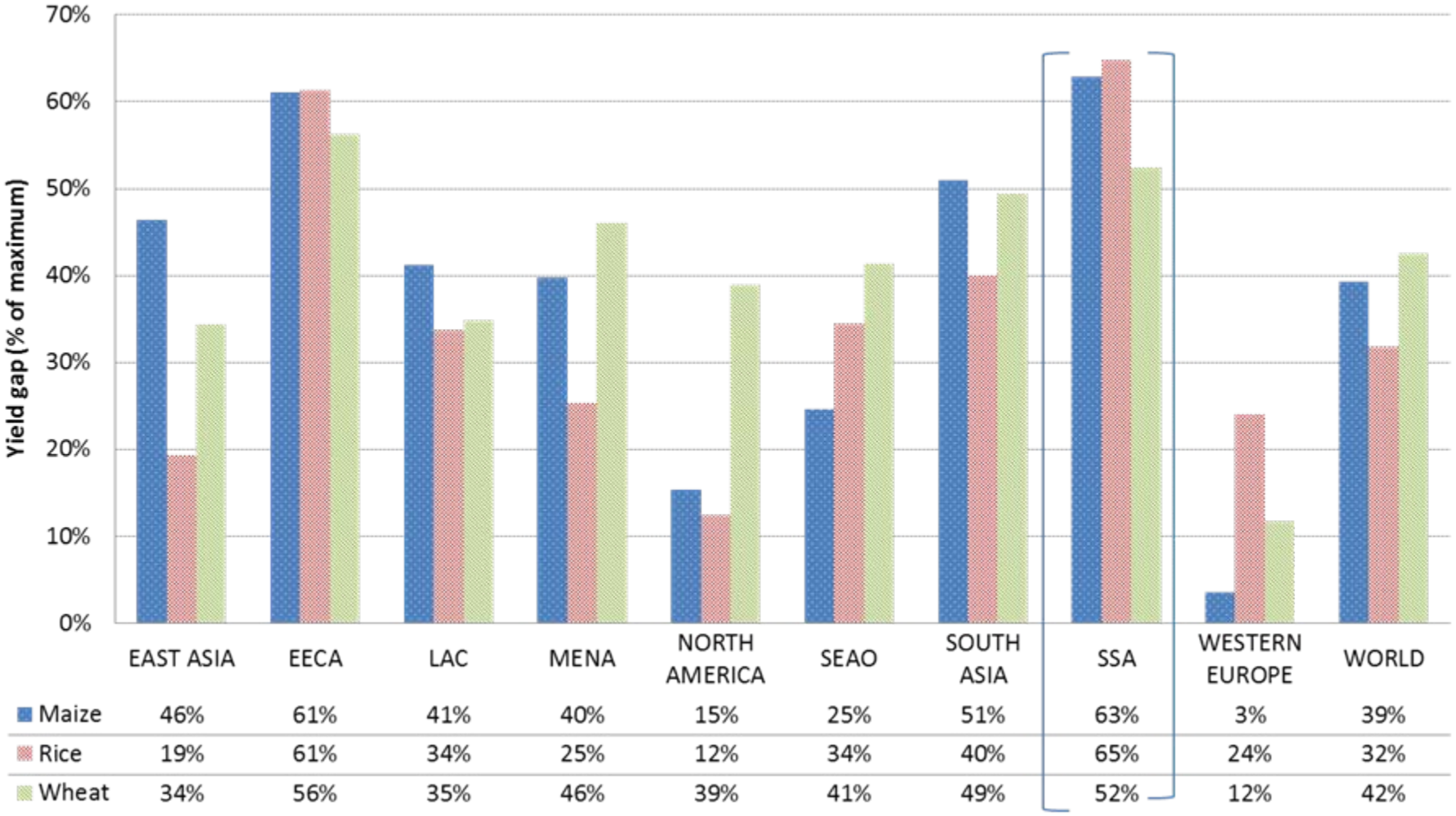
Science & technology needs

- Locally produced science & technology or well-adapted foreign technology
  - This requires investment in R&D.
- Technology should reach farmers
  - Extension services for technical advisory services
- Market access & incentives for farmers so that there is an incentive for using the technology
- Supporting policies that enhance backward & forward linkages

What is wrong with current science & technology? The case of SSA

- Low investment in agriculture
- SSA has the widest yield gap
- SSA has the fastest loss of per capita arable land
- Market access the lowest➔ very expensive inputs, low farmer prices

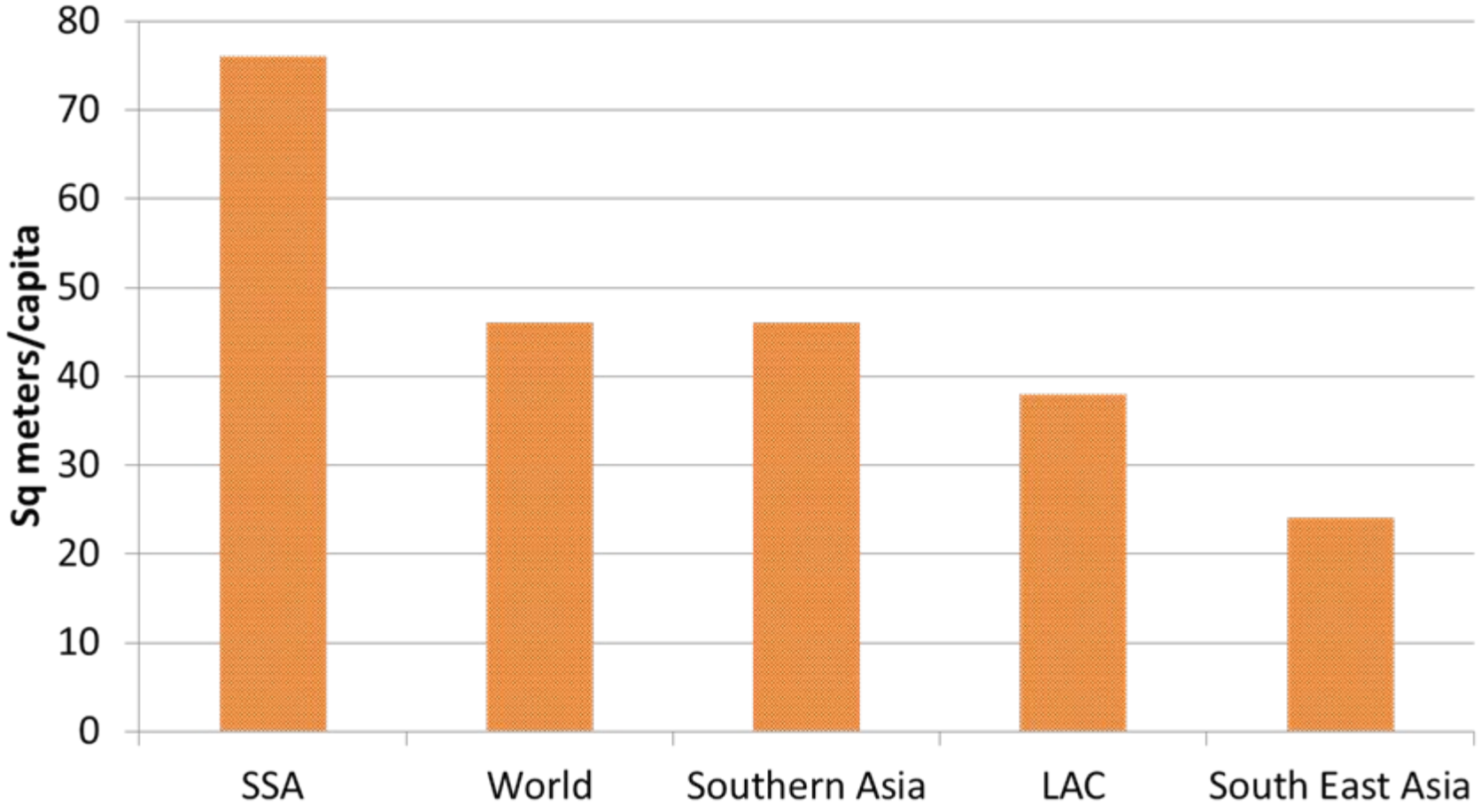
SSA has the widest maize & rice yield gap



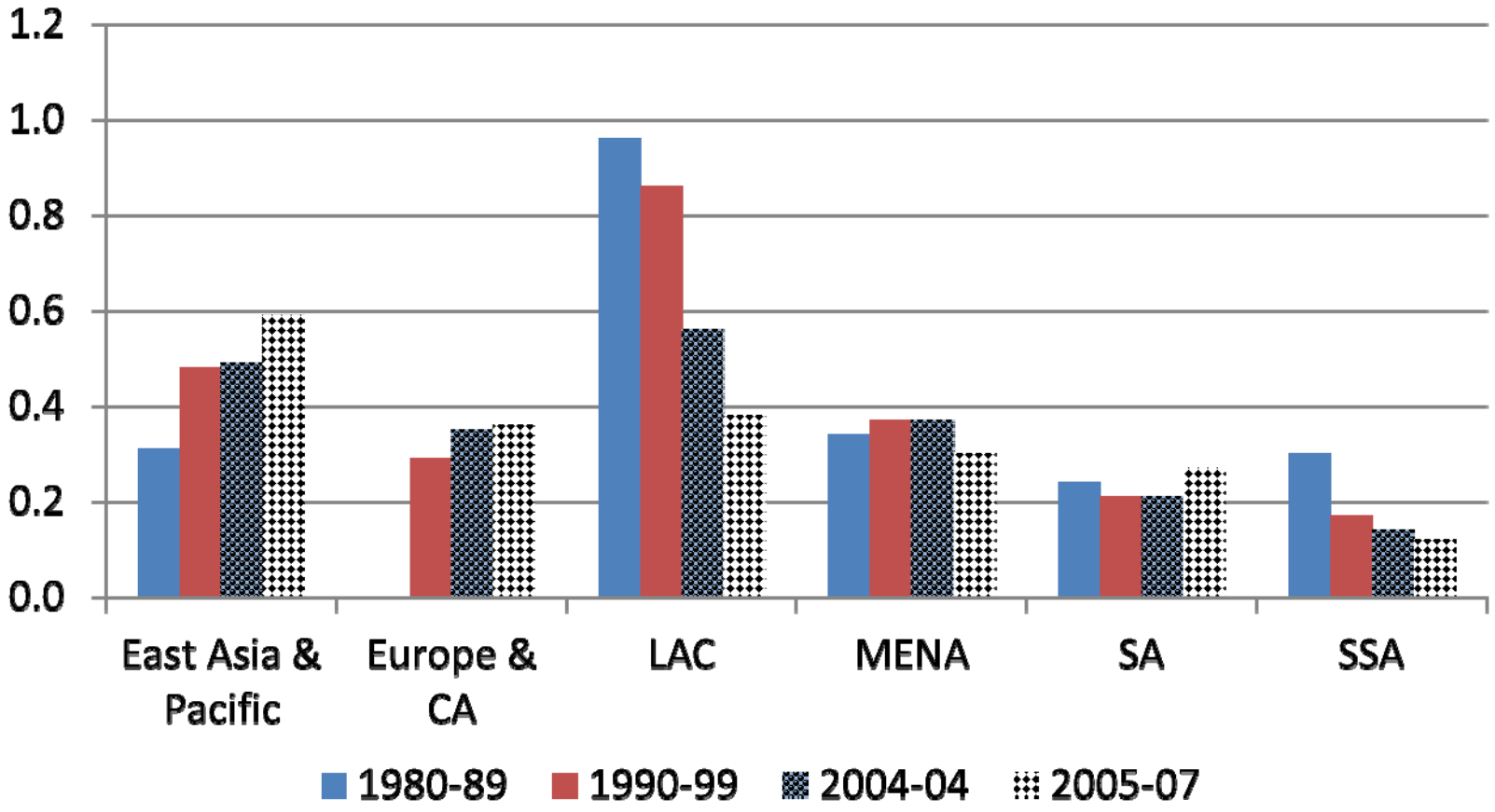
	EAST ASIA	EECA	LAC	MENA	NORTH AMERICA	SEAO	SOUTH ASIA	SSA	WESTERN EUROPE	WORLD
Maize	46%	61%	41%	40%	15%	25%	51%	63%	3%	39%
Rice	19%	61%	34%	25%	12%	34%	40%	65%	24%	32%
Wheat	34%	56%	35%	46%	39%	41%	49%	52%	12%	42%

EECA = East Europe and Central Asia; LAC = Latin America and Caribbean Countries;
MENA = Middle East and North Africa; SEAO=Southeast Asia and Oceania; SSA = Sub-Saharan Afri
Source: Licker et al 2010.

Annual loss of arable land per capita, 1961-2009



Agricultural orientation index (% ag expenditure/%agGDP)



Transport, energy & water prices, SSA vs other developing countries

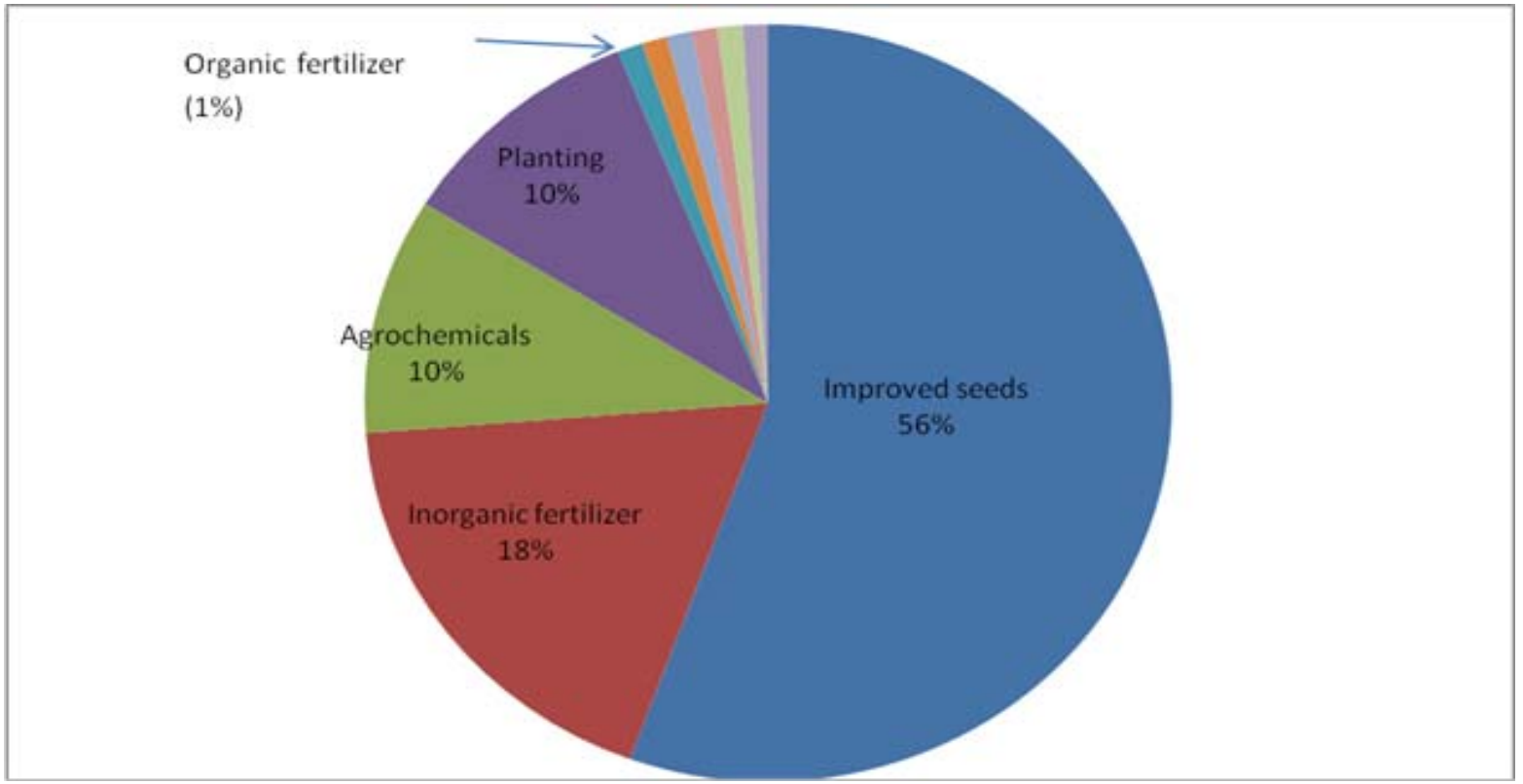
	Africa	Other developing countries
Paved road density (km/km^2 of arable land)	0.34	1.34
Population with access to electricity (%)	14	41
Population with access to improved potable water (%)[a]	61	72
Power tariffs ($/kilowatt-hour)	0.02–0.46	0.05–0.1
Transportation cost ($/ton/km)	0.04–0.14	0.01–0.04
Tariffs of urban potable water ($/m^3)	0.86-6.56	0.03-0.6

Source: Foster and Briceno-Garmendia (2010).

Agricultural technology advisory services

- Production oriented – hardly any post-harvest & marketing advisory services
- Advisory services largely on seeds & fertilizer
  - Advisory services on organic input, climate change, and other important technologies aimed at Sustainable land management (SLM) limited

Type of technologies promoted by extension agents, Nigeria



Training offered to farmers, Tanzania

Zone	Crop intensity		Percentage change	Post harvest		Marketing and Agribusiness	
	Before ASDP	After ASDP		Before ASDP	After ASDP	Before ASDP	After ASDP
	Percent reporting						
Mwanza	56	78	22	0	0	0	0
Kilimanjaro	100	100	0	0	0	0	0
Dodoma	100	100	0	0	0	0	0
Morogoro	13	38	25	0	0	0	0
Mtwara	0	0	0	0	0	0	0
Mbeya	0	0	0	0	0	0	0

Technologies promoted by AEA, Uganda

	Male AEAs	Female AEAs
	Percent reporting	
Improved seed varieties	82.9	76.7
Agro chemicals	66.8	60.0
Plant protection techniques	22.6	20.0
Herbicides	27.6	23.3
Fertilizer	11.0	6.7
Organic fertilizer	13.2	20.0
Agro forestry	8.3	3.3
Soil conservation	2.8	0.0

Overall, no AEA reported to promote agricultural marketing

Sasakawa-Global 2000 problem

- Too much maize production due to high adoption rate of fertilizer & improved seeds
  - Farm prices fell significantly – discouraging farmers from using new technologies.
- Same experience observed elsewhere in SSA

So what?

- Investment in agriculture has to increase
- But this has to be accompanied by investment in other rural services
- Ag extension services needs to embrace the market to avoid the Ethiopia Sasakawa Global 2000 problem