

Building 21st Century Agricultural Research and Extension Capacity in Africa

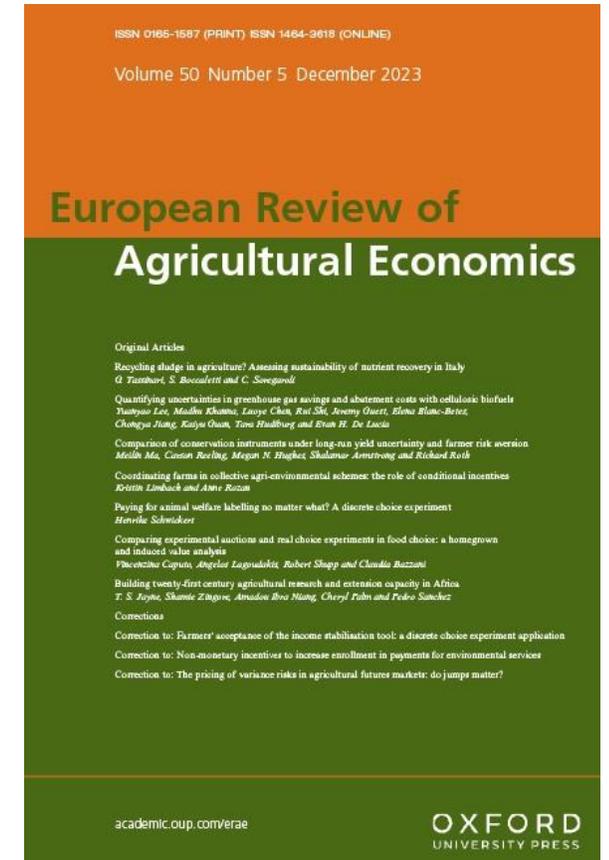
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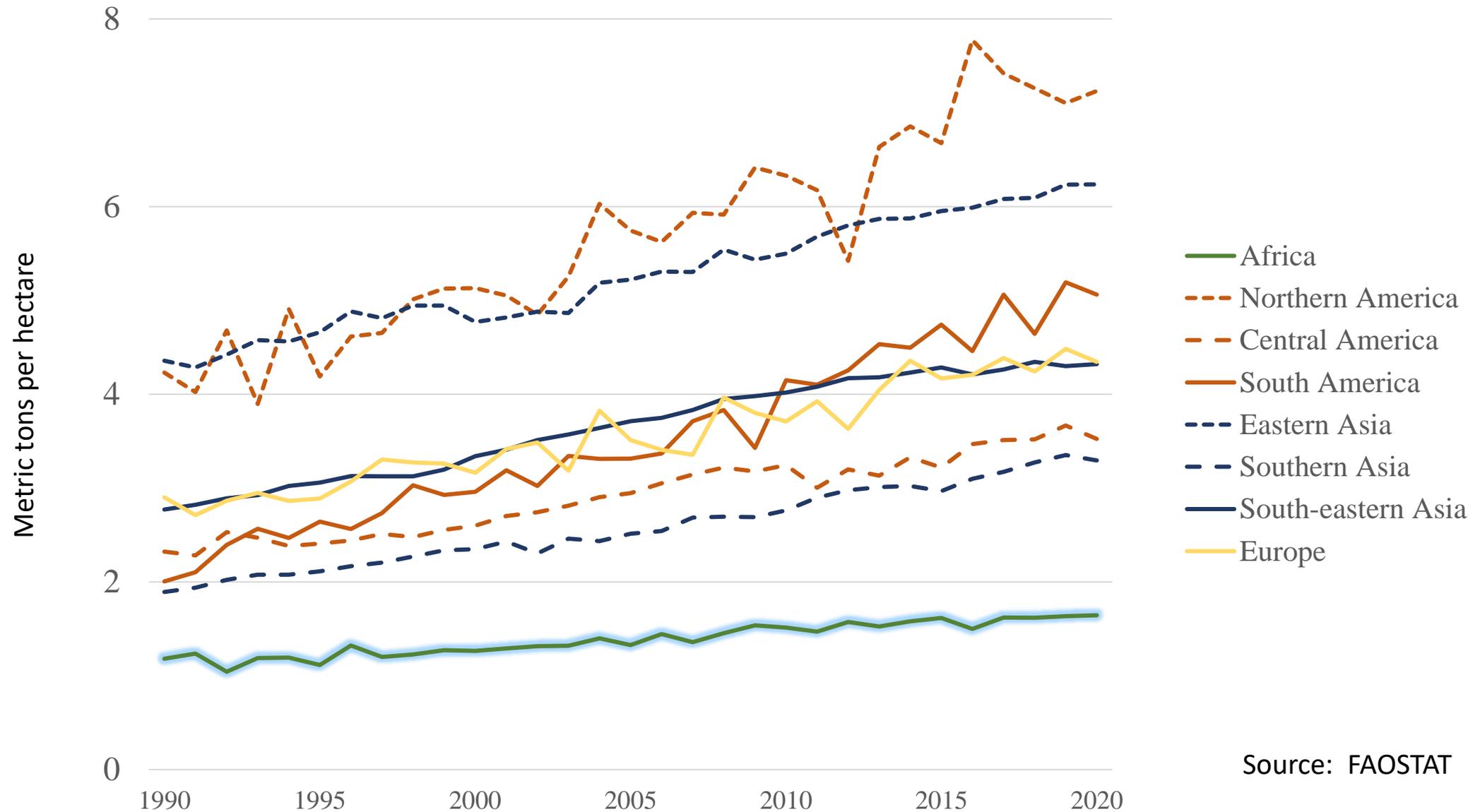
Flow of presentation

1. Briefly summarize why the achievement of many national policy goals depend on the performance of international - regional - national R&D&E systems
2. Objectives
3. Five main conclusions
4. Policy actions – who needs to do what?

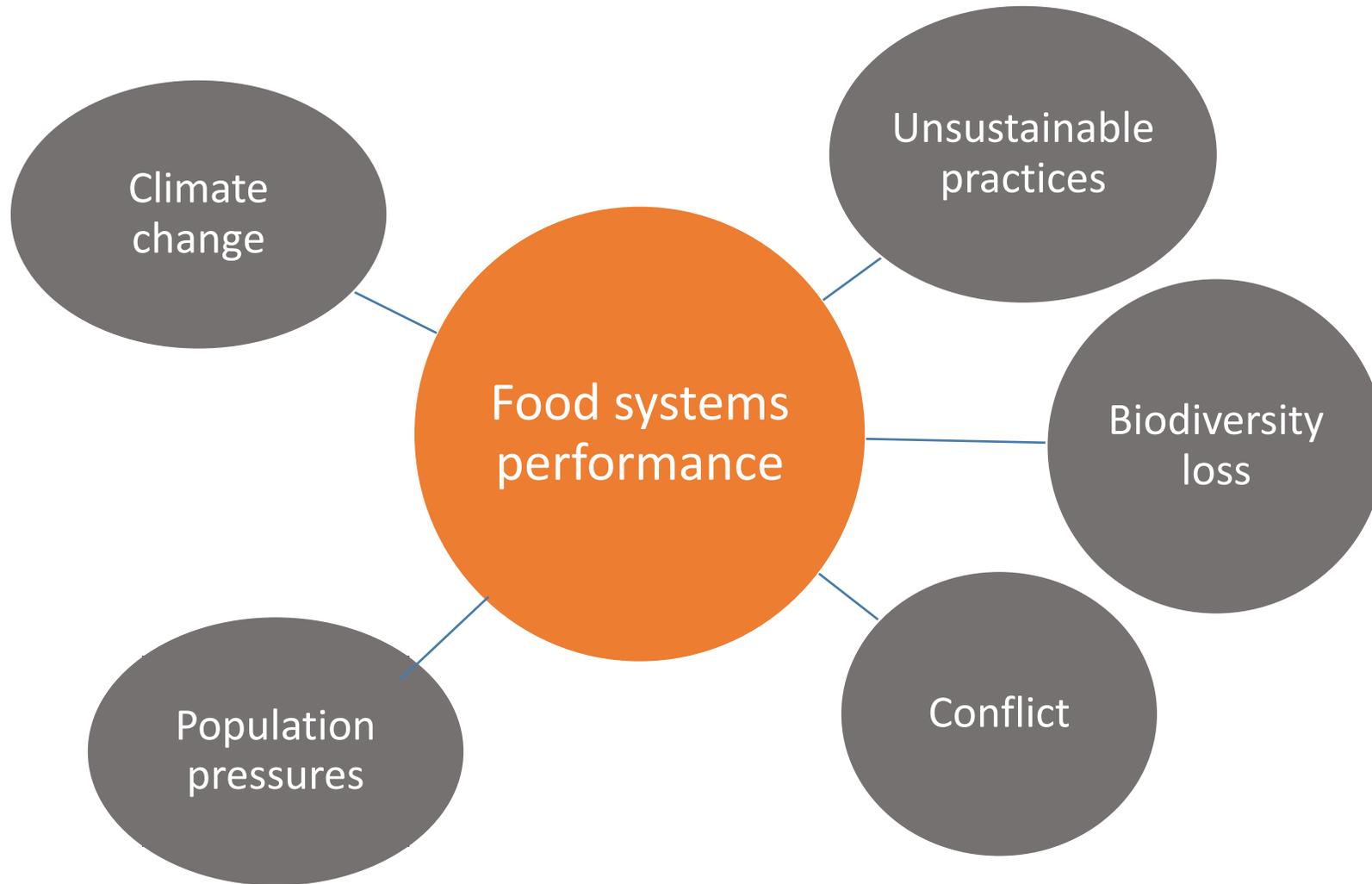
What is the Problem?

1 km

Cereal yield trends by region (metric tons per hectare), 1990 to 2020



Source: FAOSTAT



Warning: Global changes happening faster than our ability to adapt and respond to them

Strong international consensus that:

- Humanity must innovate: become more sustainable, resilient, and productive.
- But how can humanity do this?
 - Investments in R&D&E – both science/technology (including traditional knowledge) and social science
- In developing regions, agricultural R&D has consistently generated the greatest impact on agricultural growth and improved living standards of all types of public agricultural expenditures (Fuglie et al., 2020; Alston et al., 2021, Fuglie, 2023)

“We cannot in the third world simply borrow or buy science from those ahead of us. Pure science we can take as it comes, but much of applied science we have to make for ourselves.”

— Arthur Lewis, Nobel Banquet address, 1979



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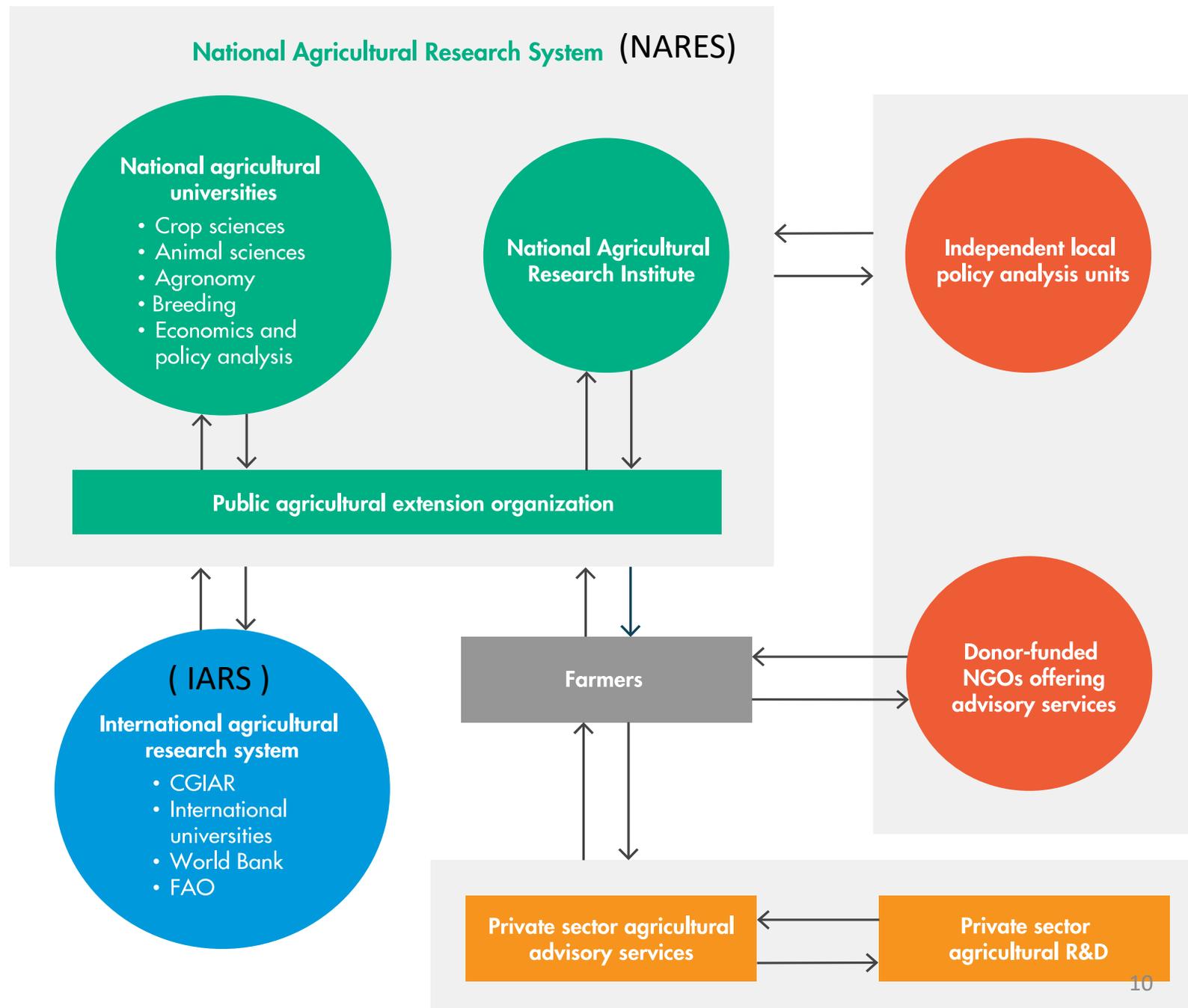


Historical division of labor between CGIAR and NARES:

CGIAR manages international gene bank, generates improved technologies/know-how, and transfers them to NARES

NARES interact with farmers to adapt technologies/practices to local conditions

Components of agricultural R&D&E systems in Africa



Flow of presentation

- ✓ 1. Summarize importance of effective international and national agricultural research and extension systems (IARS and NARES)
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Objectives

1 km

Objectives

1. To identify the most important factors limiting the performance of African NARES
2. To identify actions to effectively strengthen the capacities of African NARES
 - African continental development organizations
 - African national governments
 - International agricultural research system
 - International development partners

An aerial photograph of a rural landscape. A river flows through the center, winding between green fields and a town. The fields are divided into various shapes and colors, including green, brown, and dark green. The town is a dense cluster of buildings and structures. The overall scene is a mix of natural and human-made elements.

Methods and data

1 km

Methods

- Please refer to article for details
- Key Informant (KI) interviews of 29 senior officials of NARES (n=13) and IARS (n=13), and three donor organizations (n=3)
- 10 open-ended questions, semi-structured interviews by the author team.



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An aerial photograph of a rural landscape. A river flows from the top left towards the bottom center. The landscape is a patchwork of green fields, some of which are brown, possibly indicating different crops or soil types. A small village or town is visible in the lower-left quadrant, with a dense cluster of buildings. The overall scene is a mix of natural and human-made elements.

Main conclusions

1 km

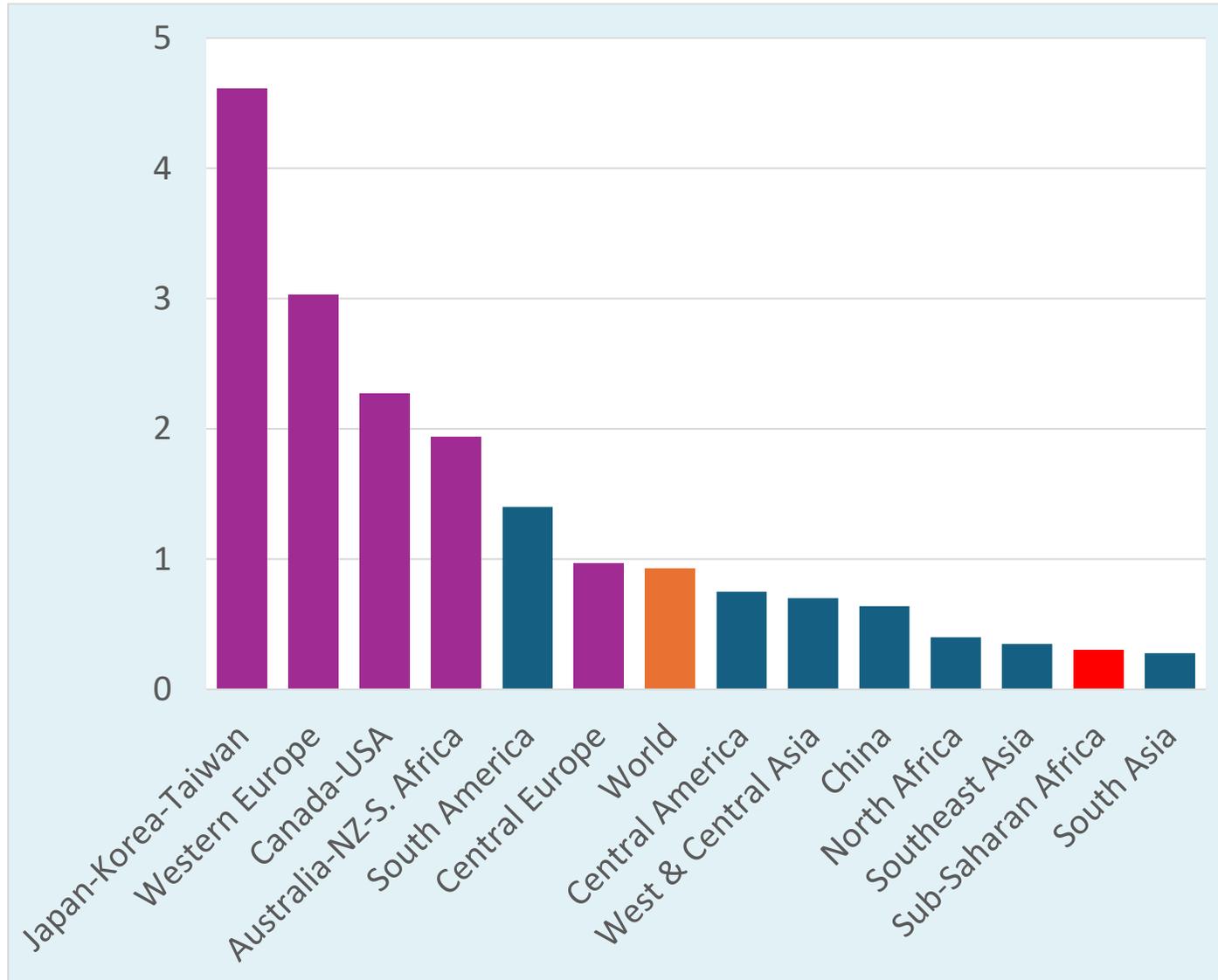
Conclusion 1: Building strong NARES will initially require a regional approach for many countries

1. At least 20 countries have historically allocated so little public resources to their NARES that they essentially lack a viable national agricultural R&D&E program
2. Highly varied national capacities. Some national systems have had some success (e.g., Ethiopia, Kenya, Malawi)
3. Stads et al (2021) propose organizing agricultural R&D investment by agro-ecological zones rather than political boundaries, at least for relatively small African countries

Conclusion 2: African governments must commit to building strong NARES

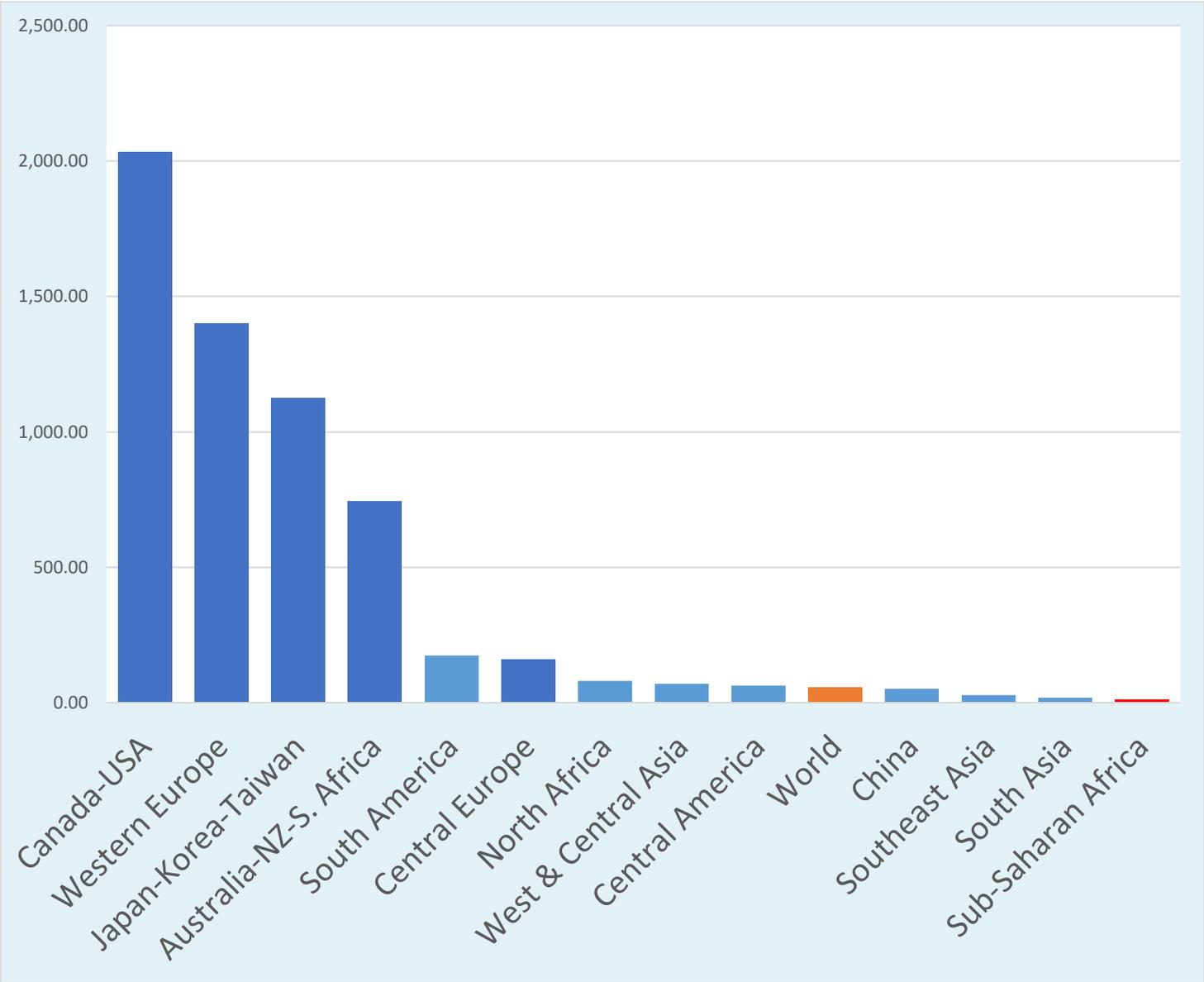
1. Through their Maputo and Malabo Declaration commitments, African leaders have pledged that agriculture is a critical engine for economic development, job creation, and poverty reduction (Africa Union Development Agency, 2016).
2. Yet by most metrics, SSA governments continue to spend relatively little on agricultural R&D

R&D expenditures are % of GDP



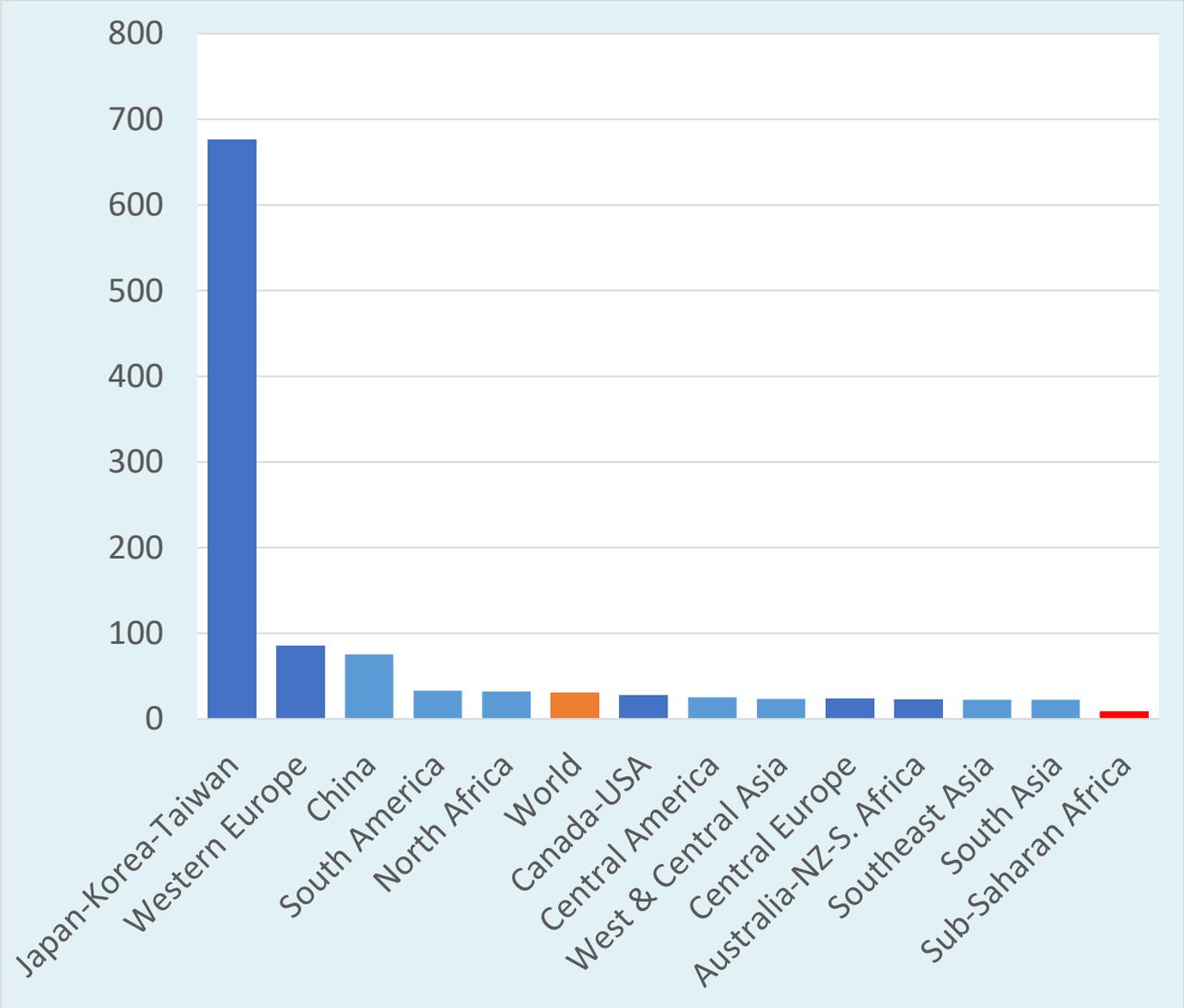
Source: Fuglie et al, 2020

R&D expenditures (US\$) per farmer



Source: Fuglie et al, 2020

R&D expenditures (US\$) per hectare of cropland

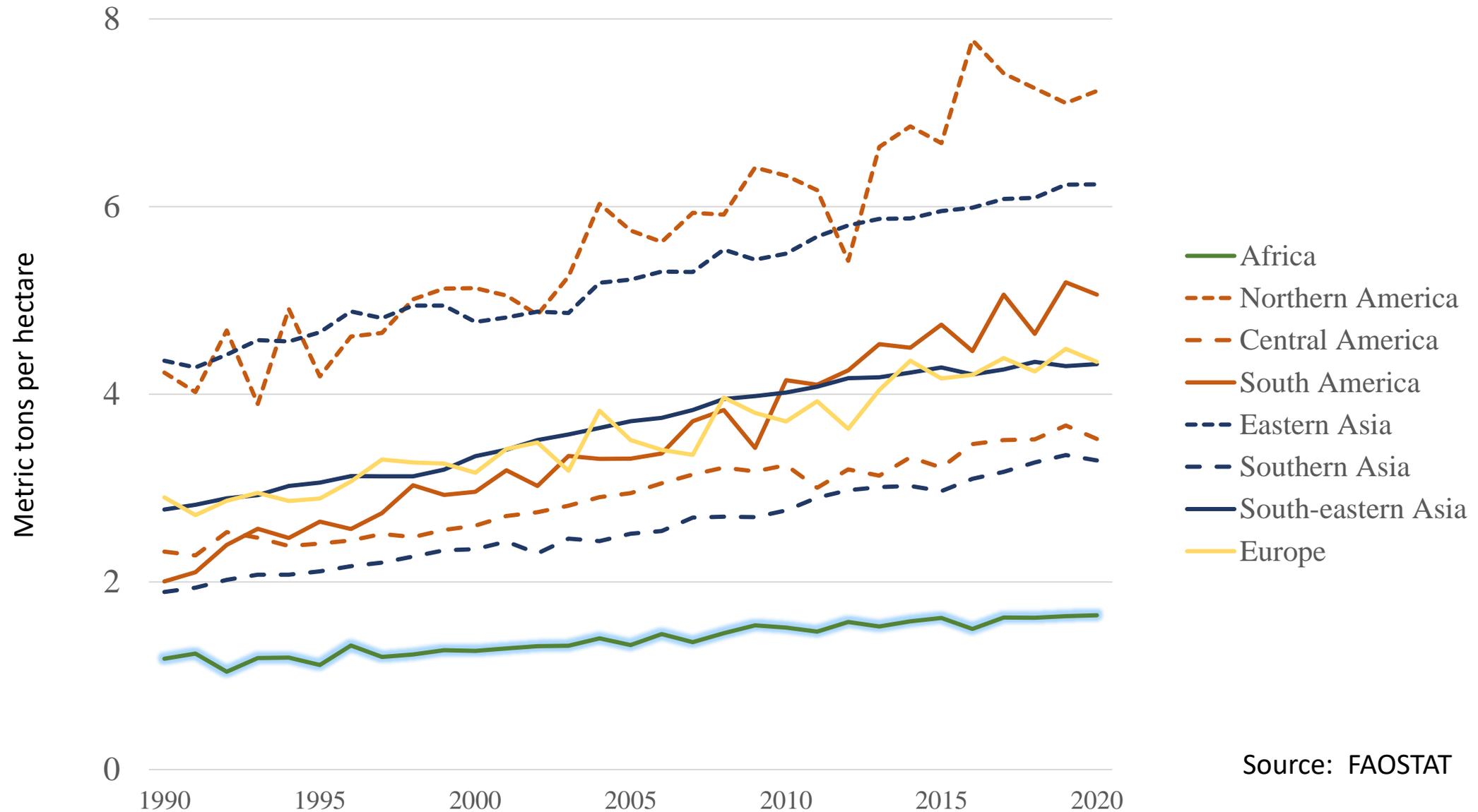


Source: Fuglie et al, 2020

Public agricultural research and development expenditures by region

Region	% increase in public agricultural R&D expenditures (1980 to 2016)	Public agricultural R&D intensity in 2016			
		R&D/GDP (%)	R&D/cropland (\$)	R&D/farmer (\$)	
Developing Regions	Central America	44.9	0.75	25.22	62.86
	South America	88.7	1.40	33.04	174.61
	China	1,018.2	0.64	75.20	51.67
	Southeast Asia	229.8	0.35	22.54	27.68
	South Asia	441.4	0.28	22.30	18.63
	West & Central Asia	174.0	0.70	23.40	69.27
	North Africa	164.2	0.40	32.09	79.85
	Sub-Saharan Africa	64.6	0.30	8.31	10.55
Developed regions	Central Europe	35.6	0.97	23.18	157.78
	Western Europe	61.0	3.03	84.89	1,398.30
	Canada-USA	32.4	2.27	27.78	2,034.01
	Australia-NZ-S. Africa	-21.7	1.94	22.59	742.03
	Japan-Korea-Taiwan	94.8	4.61	676.03	1,125.44
World	130.2	0.93	30.45	55.23	

Cereal yield trends by region (metric tons per hectare), 1990 to 2020



Source: FAOSTAT

Conclusion 3: International donors and research organizations can be doing more to build the capacity of African NARES

- Distinction between *individual* and *institutional* capacity development
- Strong KI consensus that IARS have strengthened *individual* capacity
- 74% of KIs viewed *institutional* capacity development activities of IARS as inadequate or counterproductive for NARES

A few illustrative quotes from KIs:

- “big brain drain from the NARES to the IARS”. After receiving training, many African researchers are hired into positions within the IARS, building the institutional capacities of the IARS and widening the capacity gap between international and African research organizations”
- “the CGIAR is moving too far into the territory that national research and extension systems should be covering”
- “CGIAR and NARES should have a more clear division of labor, but because NARES have been weak, the international system has naturally encroached”
- “the CGIAR has still not developed a compelling vision for how to work with the NARES, though there are some notable exceptions like [two specific CGIAR organizations], but in general, the CGIAR is not really helping build capacity of the NARES.”

- Many KIs in African and IARS stated that organizations in IARS claim that capacity building is among their primary mandates and use that mandate to seek donor funding but then, after grant funds are received, do little to build institutional capacity within the NARES.
- Most KIs in NARES pointed to varying treatment by international partners
 - some being sincerely supportive
 - others offer to engage with African organizations mainly on their terms
- Vicious cycle whereby weak NARES provide the rationale for organizations in the IARS to continue being the prime grantees of donor funding; IARS use the resources to strengthen their own position
- Some KIs believe that the overall impact of the CGIAR has been to attenuate the development of the NARES.

- These views are consistent with findings in several evaluations of CGIAR capacity development efforts, e.g.,
 - Stern, E., de Vaccaro, L., Lynam, J., & Immonen, S. (2006). Evaluation and Impact of Training in the CGIAR. Consultative Group on International Agricultural Research Science Council. Science Council Secretariat, <https://www.fao.org/3/a0671e/a0671e00.pdf>

- In opposition to this dominant view, 26% of the KIs felt that the CGIAR has faithfully worked with NARES to strengthen their capacity
- Six KIs could point to specific examples of success in improving the capacity of NARES. One KI from an African R&D organization stated “In my own experience, “I think individual scientists from the NARES really enjoy working with the CG; it really gives them exposure to new tools, methods.”

Fundamental difference between *individual*
and *institutional* capacity development

Indicators of institutional capacity

“Core” support donors

- Ability to make “core investments” that enable the institute to function (vehicles, office, data generation, equipment, computer hardware/software, etc)
- Resources to set up governance structure and operations (e.g., strategic plan, work plans, finance office, communications, Board of Directors, etc)

Internally-facing management

- Success in attracting and retaining high-performing staff
- Inclusive/equitable work environment: place where staff want to build a career
- Producing international-quality research output
- Success in passing financial audits

Externally-facing management

- effective relationships with public & private sector stakeholders
- effective policy outreach and engagement
- effective research & outreach partnerships
- success in attracting sustained funding

Conclusion 4: The effectiveness of the IARS depends on the performance of the NARES

1. Consensus among KIs that international research organizations are not well-suited to scale-out technical innovations across highly varied agroecological conditions in Africa, nor do they have the resources to do so.
2. Hence strong national and regional partners on the ground are needed to raise the impact of the IARS

Conclusion 5: Confront the issue of donor creation of organizations that duplicate activities of the NARES

- Some donors are reluctant to directly partner with public sector entities and create new organizations that largely duplicate activities carried out by organizations in the NARES.
- These donor-created organizations may adversely affect the capacity of organizations in the NARES, as the hiring practices of donor-created organizations often draw upon the best talent within the NARES, thereby weakening and marginalizing them.
- Roughly half of the KIs spoke of resentment and negative impacts on NARES resulting from donor creation of new organizations to carry out tasks that overlap with their mandates

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An aerial photograph showing a wide river valley. The river flows from the top left towards the bottom center. The valley is filled with a patchwork of green agricultural fields, some of which are irrigated. A town or village is visible in the lower-left quadrant, with a dense cluster of buildings. The surrounding landscape is hilly and also covered in green fields. The overall scene depicts a rural, agricultural region.

Priority actions: who must do what?

1 km

Priority Actions

For Continental African development organizations (AU, AfDB, NEPAD)

1. Encourage African governments to invest more in their own R&D&E systems
2. The AfDB is in process of establishing trust fund for this purpose (K. Urama ESS presentation)
3. Revive Maputo and Malabo Declaration commitments -- and put particular focus on strengthening the NARES in recognition of their pivotal role

Priority Actions (ii)

At national level:

- Mobilize *coalition of the willing* (public, private, NARES, and IARS) to advocate for a 21st Century model whereby African governments
 - take charge of how agricultural research is prioritized, implemented, and evaluated in their countries.
 - provide sustained and much greater funding, commitment, and accountability
 - Reallocate (partially) from AIP to agricultural R&D&E
 - Seek AfDB trust fund support

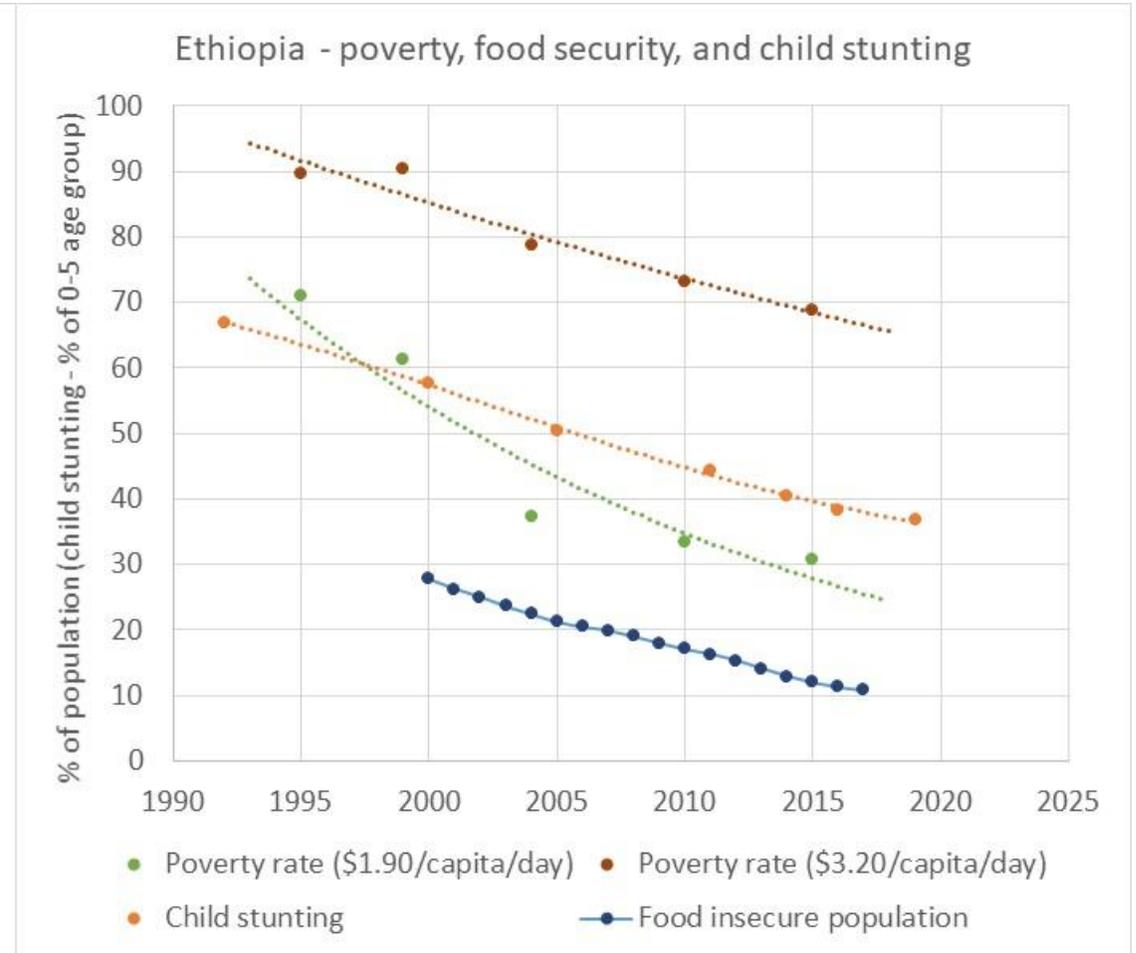
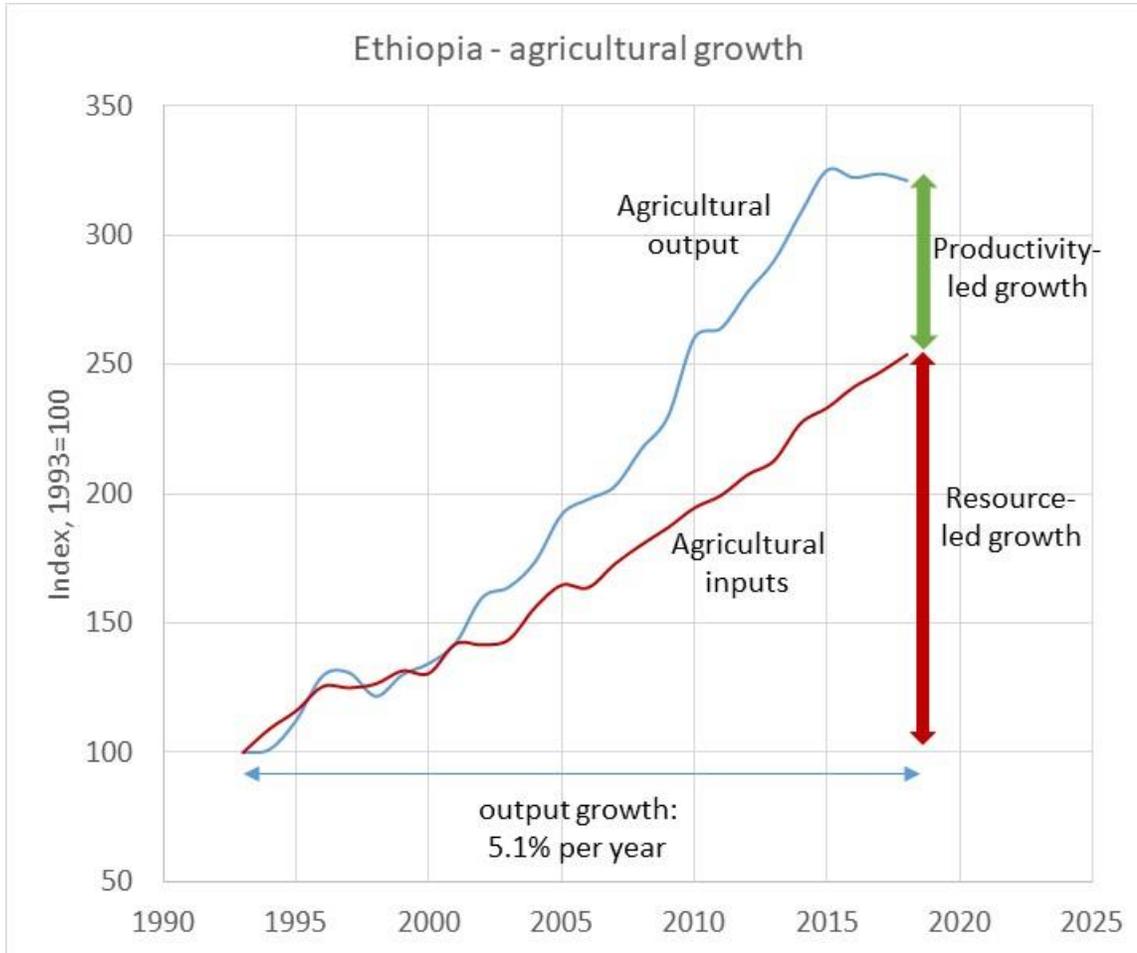
Priority Actions (iii)

International Donors: Restructure the grant-making process

- Set the following key criteria for grant consideration:
 - Emphasize *institutional* -- not just *individual* -- capacity development of NARES
 - Proposals to be explicit about performance indicators and budgets that demonstrate commitment to institutional capacity development
 - involve NARES as grant co-awardees and co-directors – **in countries where national governments also show strong commitment**

Are there any African success stories to consider?

Evidence from Ethiopia



Key elements of Ethiopia's "success story"

- Ethiopia's expenditures on agricultural R&D tripled in real terms between 2000-2020.
- Ethiopia has roughly half of SSA's agricultural extension workers
- Ethiopia has enjoyed the highest rate of agricultural growth of any country in SSA since 2000.
- Each additional \$1 of agricultural value-added generated an additional \$0.29 in nonfarm GDP and hence contributed powerfully to the country's rapid economic transformation.
- Ethiopia's successes provide a powerful example for other SSA countries

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Concluding remarks

- Sub-Saharan Africa remains the only region in the world where the design and implementation of its agricultural development plans are largely driven by international organizations
- It's time to change this
- Today, there is much greater analytical and management capacity in Africa compared to three decades ago.

Concluding remarks (ii)

- The AUC's Agenda 2063 recognizes the need for African governments to be at the core of continental programs and an Africa which holds itself accountable for results (AUC, 2015).
- Transition to a 21st Century model of agricultural R&D&E in Africa long overdue!



Special thanks to:

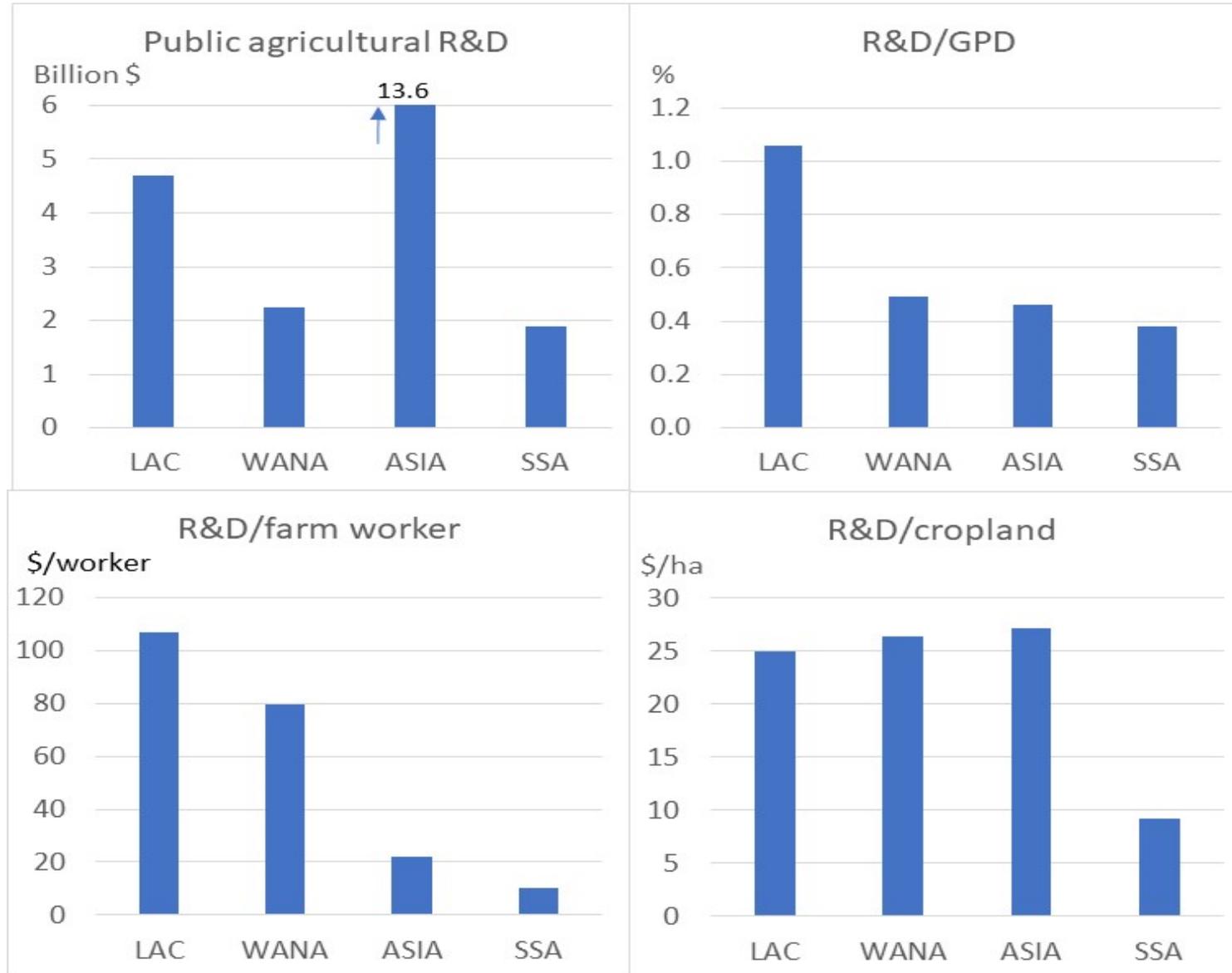
*National Planning Commission
LUANAR*

MwAPATA Institute

*Agricultural Transformation Initiative
USAID through PRCI*

All attendees today

Sub-Saharan Africa invests relatively little in agricultural R&D



LAC=Latin America & Caribbean
WANA = West Asia & North Africa
ASIA = East & South Asia
SSA = Sub-Saharan Africa

Agricultural growth is major driver of economic growth in Africa

