Would Regional Agricultural Research Organizations Fill the Gap?

Ruben G. Echeverria
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Regional agricultural research organizations (**ROs**) are effective by addressing shared agricultural research objectives that transcend national boundaries. They complement global and national research activities. In this paper, ROs are broadly defined to include networks, consortia, forums, platforms, subregional and regional associations of national research institutes, thematic networks, and commodity research alliances. In general, ROs promote access to scientific and technical information and support knowledge sharing among members. They also coordinate research, capacity development, fundraising, and project implementation. In addition, ROs build partnerships with international centers and advanced research institutes, and they support advocacy and joint policy formulation.

The paper discusses the role of a broad set of ROs in addressing common agricultural issues across countries.[2] This study is not a comprehensive review or an evaluation of these organizations. Instead, it highlights the importance of collaboration among national research systems. It also briefly explores the evolution of ROs. Traditional regional networks may have lost visibility due to funding fatigue, limited results, or because other organizations have taken up their space. At the

[1] This working paper is the result of a brief desk study that I conducted at the Bellagio Center of the Rockefeller Foundation in 2025. I thank the Rockefeller Foundation for that opportunity, and the Gates Foundation, for allowing me to take time to conduct this review as part of my current work-related activities. Preliminary ideas for this work originated from discussions held at the CGIAR@50 Conference held at the Bellagio Center in November 2021. I thank the following colleagues for their comments while I was preparing this study: Mario Allegri, Jock Anderson, Walter Baethgen, Nienke Beintema, Julio Berdegue, Derek Byerlee, Patrick Caron, Fernando Chaparro, Santiago Alba Corral, Botir Dosov, Achim Dobermann, Howard Elliott, Ismahane Elouafi, Javier Ekboir, Cesar Falconi, Guy Faure, Karen Garrett, Elisabetta Gotor, Aggrey Agumya, Steven Were Omamo, Thom Jayne, Willem Janssen, Josey Kamanda, Awais Khan, Manfred Kaufmann, Ravi Khetarpal, Hildegard Lignau, Christophe Larosse, John Lynam, Adiel Mbabu, Tshilidzi Madzivhandila, Yona Masheti, David Nielson, Patrick Okori, Rodomiro Ortiz, Phil Pardey, Raj Paroda, Fabricio Peres, Carl Pray, James Quilty, Emmanuel Ramde, Han Roseboom, Rachid Serraj, Rida Shibli, David Spielman, Francois Stepman, Abdou Tenkouano, Greg Traxler, Eduardo Trigo, Eliane Ubalijoro, Michael Victor, Paul Vlek. All views, comments and conclusions are of the author and should not be attributed to the Gates Foundation, the Rockefeller Foundation nor to any other organization or individual.

[2] Although the study refers to several kinds of regional research partnerships (long-term cooperative arrangements between organizations; networks, alliances, research consortia of international and national research organizations including civil society and private sector entities) it does not attempt to include all agricultural ROs nor the more specialized research centers such as ICBA (International Center for Biosaline Agriculture), CATIE (Tropical Agricultural Research and Higher Education Centre), CARDI (Caribbean Agricultural Research and Development Institute), ICIPE (the International Centre of Insect Physiology and Ecology) and many others. It focuses on the less formal arrangements. Furthermore, the study does not go back to regional commodity research networks that originated during colonial times, particularly in Africa.

same time, new forms of collaboration and funding are emerging, including innovation hubs and multistakeholder platforms.

This paper examines why ROs seem to be less prominent today despite their potential advantages. This issue is particularly salient for smaller countries. While the challenges facing public agricultural research are intensifying, funding for national and global public research in the Global South has -in most cases- declined in real terms. These trends suggest that ROs could play a role in helping to address the agricultural research financing gap.

Evolution and challenges of regional agricultural research organizations

Most international public agricultural research is done through partnerships. These partnerships sometimes involve hundreds of scientists across several countries. Collaboration can be informal, but it is often supported by structured arrangements. Regional institutional mechanisms (networks, centers, and cooperative programs) can play a key role in sharing knowledge, results, and research capacity. They can lower research costs and help create the critical mass needed to work with more advanced research institutes. They can also build on complementarities among national and international agricultural research efforts.

The rationale for international public agricultural research relates to public goods and to nonmarket-type scientific activities (e.g., conservation of the world's crop biodiversity). It also relates to the scale of research, which can go beyond what a single country can finance or benefit from. Several factors shape the division of labor among global, regional, and national public research; civil society organizations (including farmers' organizations and NGOs); and private sector companies. The agricultural economics literature has long discussed who should fund and implement such research, and which funding mechanisms are most effective.[3] As markets expand, and private sector research continues to grow globally (currently representing 50% or more of total global agricultural research funding), the sources of agricultural technologies have changed. New actors include start-ups, biotechnology-related firms, and civil society organizations. These shifts may affect how traditional public research networks operate.

Networking in agricultural research is an effective mechanism for cooperation. It facilitates information exchange and allows members to benefit from synergies and economies of scale and

[3] See Echeverria R. and N. Beintema. 2009. Mobilizing financial resources for agricultural research in developing countries, trends and mechanisms. GFAR; and Janssen, W. and T. Braunschweig. 2003. Trends in the Organization and Financing of Agricultural Research in Developed Countries. Implications for Developing Countries. Report 22, ISNAR, The Hague.

scope across geographies and themes. It can also help organizations use scarce research resources more efficiently, which is particularly important for small national systems working in similar agroecologies.[4] When they complement the work of national and international organizations, ROs can improve national, regional, and global coordination. The dramatic expansion of communications technologies has also strengthened collaboration across countries. Researchers can now connect virtually with peers at almost no cost. In many cases, informal research networks intensify collaboration over time and gradually evolve into formal ROs.

Regional research efforts can facilitate collective action and resource sharing. This can strengthen national agricultural research systems. Despite this potential, many ROs face persistent challenges. These include difficulties in defining common research priorities, showing tangible results, and securing adequate funding over time. As a result, some networks struggle to achieve their objectives. When funding for public agricultural research declines, competition can also become more common than collaboration. ROs in the Global South therefore need to adapt to changing global, regional, and national circumstances.

To tackle large public agricultural research challenges, countries need more funding and better institutional coordination. Coordination is needed both in how research is funded and how it is executed. Research alliances can increase collaboration across countries and reduce transaction costs. They can also improve outcomes by pooling resources and talent around a shared agenda. This approach can reduce duplication and benefit countries with limited research capacity. This logic aligns with the economies-of-size argument (i.e. the "small country problem"). Below a certain capacity threshold, it is very difficult to achieve significant outcomes.[5]

[4] According to G. Banta (1982. The Asian Cropping Systems Network. CCSEAS-IFEAS Joint International Conference, Singapore) a research network can be defined as "a voluntary association of research organizations with sufficient common objectives to be willing to adjust current research programs and invest resources in network activities in the belief that they will meet their objectives more efficiently than conducting all research alone." Alders, C.et al.(1993. Linking with farmers, Intermediate Technology Publications: London) define a 'network' as a group of individuals and/or organizations who, on a voluntary basis, exchange information or goods or implement joint activities and who organize themselves for that purpose in such a way that individual autonomy remains intact. See Ozgediz, S. and A. Nambi (199. Partnerships and Networks, Definitions, Forms, Critical Success Factors. CGIAR Secretariat, Washington DC) for a very comprehensive analysis of agricultural research networks, particularly related to the CGIAR. See also J. Nelson (1994. Information Exchange Networks and Agricultural Development. Agricultural and Food Sciences, Business Outlook on Agriculture); and CGIAR (1983. Integrative Report on Networking. CGIAR Secretariat, Washington DC) for a sound historical chapter on agricultural research networks.

[5] See Fuglie, Keith O. and Rada, Nicholas. 2016. Economies of size in national agricultural research systems. In Agricultural research in Africa: Investing in future harvests. Lynam, John; Beintema, Nienke M.; Roseboom, Johannes; and Badiane, Ousmane (Eds.). Chapter 3. Washington, D.C.: IFPRI.

Formal and informal ROs have been created and organized at different times, responding to different needs from national and subregional contexts. The paper looks at several types of ROs depending on their focus: **geographic** (regional and subregional) alliances of public research institutes (e.g. FARA, FONTAGRO, APAARI); **thematic**, problem-oriented cooperation networks (e.g. FARNPLAN, CSISA); and **commodity-based** associations conducting research and capacity development around a value chain (e.g. PABRA, FLAR).

There is ample –historic- literature showing the benefits of regional agricultural research collaboration.[6] Particularly considering the challenges confronting small countries and the evolution of science demanding significant investments in infrastructure and human capacities. Hence, there have been multiple attempts to strengthen regional research capacity during the past decades.[7] However, there have not been recent studies focusing on the strategic roles of networks in connecting national agricultural research systems (NARS), CGIAR, advanced research institutes, universities, producer associations and private companies, in a much more effective/efficient manner.[8] It seems that ROs have been relatively neglected as key elements of the global agricultural research architecture regarding their potential to finance joint research across common themes and national borders to reduce the long-term instability in financing research.[9]

How have ROs been established, organized, and evolved over time? Are such mechanisms still key

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[6] See Pardey, P., J. Roseboom, and J. R. Anderson. 1991. *Agricultural research policy, international quantitative perspectives*. Chapter 7. Regional Perspectives on National Agricultural Research. ISNAR, The Hague. And Piñeiro, M. 2005. *Strengthening research for developing capacities: National, Regional and Global Science Capacity*. CGIAR Science Forum. Marrakech.

[7] For instance, the International Development Research Centre (IDRC) among several other organizations have supported ROs for a long time at a regional and global level, including with CGIAR. See Faris D.G. 1991. *Agricultural research networks as development tools: views of a network coordinator*. Ottawa, IDRC, and Patancheru, ICRISAT; and Ker A.D.R. 1985. IDRC Involvement with Agricultural Research Networks. IBSRAM Inaugural Workshop for an Acid Tropical Soils Management Network, Brasilia. Another example of IDRC promoting ROs has been the creation -in conjunction with the Inter-American Development Bank and several countries- of the Regional Fund for Agriculture Technology (FONTAGRO) in Latin America and the Caribbean.

[8] Mrema, G.C. 2005. *Recent Developments in and Key Challenges Facing the Regional and Sub-Regional Organizations of Agricultural Research in the Developing Countries*. CGIAR Interim Science Council. FAO, Rome. See also Moock, J.L. *Network innovations: building the next generation of agricultural scientists in Africa* a paper prepared for the ASTI/IFPRI–FARA Conference "Agricultural R&D: Investing in Africa's Future: Analyzing Trends, Challenges, and Opportunities," held in Accra, December 5–11, 2011.

[9] Financing international public research has been a long-term challenge; see Eponou, T., 1998. *Financing research through regional cooperation*. In Financing Agricultural Research: A Sourcebook Ed. by Steven R. Tabor, Willem Janssen and Hilarion Bruneau. ISNAR, The Hague.

to bringing social actors together around shared agendas enabling the successful execution of actions at regional, subregional, national, and sub-national levels? Could strong regional collaboration mechanisms be sustained over time without strong members, sound governance, effective management and external financing?

Most ROs have been either set up or fully supported by external funding. And that has played a role in the apparent decline of some networks as donors' priorities changed over time. To reduce dependence on donor funding, would it be possible for ROs to collect membership fees and/or to explore sustained funding from multilateral organizations? For instance, during the 1990s the World Bank promoted the development of ROs via grants in Africa, creating incentives for countries to come together. Could regional development banks use similar mechanisms today? Could they promote regional agricultural research competitive funds such as the Inter-American Development Bank did with member countries when creating FONTAGRO three decades ago?

Recent literature suggests new dimensions and mechanisms for collaboration, innovation systems networks and platforms.[10] Perhaps these new mechanisms -plus the utilization of new information technologies – are gradually reducing transaction costs of collaboration and taking the space where traditional ROs worked in the past. For instance, agricultural universities in the Global South have been growing in the past decades and creating their own networks (RUFORUM) complementing traditional activities of national research institutes.

There are good examples of commodity-oriented research networks well connected to markets that have been successful, and financially sustainable. Among others, the Pan African Bean Research Alliance (PABRA), and the Regional Fund for Irrigated Rice in Latin America (FLAR) are examples of strong commodity-based ROs. As well as communities of practice such as the

[10] For instance, the following six references cover well such recent literature: (1) Hermans, F., Klerkx, L. and Roep, D., 2015. *Structural conditions for collaboration and learning in innovation networks: using an innovation system performance lens to analyze agricultural knowledge systems*. The Journal of Agricultural Education and Extension, 21(1), pp.35-54; (2) Klerkx, L., Aarts, N. and Leeuwis, C., 2010. *Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment*. Agricultural systems, *103*(6), pp.390-400; (3) Lamers, D., Schut, M., Klerkx, L. and Van Asten, P., 2017. *Compositional dynamics of multilevel innovation platforms in agricultural research for development*. Science and Public Policy, 44(6), pp.739-752; (4) Schut, M., Klerkx, L., Sartas, M., Lamers, D., Mc Campbell, M., Ogbonna, I., Kaushik, P., Atta-Krah, K. and Leeuwis, C., 2016. *Innovation platforms: experiences with their institutional embedding in agricultural research for development*. Experimental agriculture, 52(4), pp.537-561; (5) Schut, M., Klerkx, L., Rodenburg, J., Kayeke, J., Hinnou, L.C., Raboanarielina, C.M., Adegbola, P.Y., Van Ast, A. and Bastiaans, L., 2015. *RAAIS: Rapid Appraisal of Agricultural Innovation Systems* (Part I). A diagnostic tool for integrated analysis of complex problems and innovation capacity. Agricultural Systems, *132*, pp.1-11; and (6) Hermans, F., Sartas, M, van Schagen, B. van Asten, P, Schut, M. 2017. Social network analysis of multi-stakeholder platforms in agricultural research for development. Opportunities and constraints for innovation and scaling. PLoS ONE 12(2).

CIFOR/ICRAF led Green Tree Commodities Initiative, a partnership that catalyzes green growth in Africa through tree commodities. Furthermore, specific thematic and farmer-lead networks such as the IDRC led Andean Production Systems Network and the Latin American Rural Development Center (RIMISP) have successfully been able to implement regional research.[11]

Large middle-income countries with strong agricultural research organizations such as India, China and Brazil (the so called 'mega NARS') have also been part -and led in many cases- regional research networks. A great opportunity for the smaller size lower-income countries to take advantage of those bigger national systems in the Global South and coordinate collaboration in an effective manner.

Two global platforms are worth mentioning as mechanisms for promoting agricultural research partnerships via ROs. The Tropical Agriculture Platform (TAP) was initiated by the G20 in 2012 to develop national capacities for agricultural innovation in tropical regions to facilitate agricultural innovations for small farmers and agribusinesses.[12] The Global Forum for Agriculture and Innovation Research (GFAiR), established in 1996 to enhance cooperation between NARS and the CGIAR system is an example of a platform for public, private, and civil society organizations and networks, facilitating collaboration among a diverse set of actors.[13]

In addition, several US Land Grant Universities are part of global agricultural research thematic and commodity networks in the Global South. European research stakeholders have promoted networks such as the European Forum for Agricultural Research for Development (EFARD) to contribute to poverty alleviation, food security and nutrition in developing countries.[14] Among other strong European research organizations, the French Agricultural Research Centre for

[11] Richardson, M., R. Coe, K. Descheemaeker, B. Haussmann, K. Wellard, M. Moore, J. Maland Cady, P. Gubbels, F. Tchuwa, R. Paz Y., and R. Nelson. 2022. *Farmer research networks in principle and practice*. International Journal of Agricultural Sustainability, 20:3, 247-264.

[12] TAP -led by FAO- has formed a coalition of over 40 partners, including national agricultural institutes, civil society groups, and farmers' organizations. Since 2015, TAP partners have worked on a Common Framework for Capacity Development in Agricultural Innovation Systems.

[13] One key initiative of GFAiR is the Global NARS Consortium (GNC), which focuses on strengthening NARS through five pillars: global representation; collaborative research partnering with global experts; knowledge sharing; capacity development; and policy support through advocacy.

[14] The EU has significantly supported agricultural research and promoted ROs in the Global South. See Engel, P., Slob, A., Laanouni, F., et al., 2022. *EU support to sustainable agri-food systems in partner countries 2014-2020*. European Commission, Directorate-General for International Partnerships; and Mackie, J., Engel, P., Bizzotto Molina, P., Deneckere, M., Spierings, E., Tondel, F. (et al.). 2016. *Evaluation of EU support to Research and Innovation for development in partner countries (2007-2013)*. European Commission, Brussels.

International Development (CIRAD) based on its vast experience is part of more than twenty research and training platforms.[15]

Examples of ROs with a geographic and thematic focus

An elaborate organizational architecture of subregional and regional agricultural research organizations has been set up in the Global South for at least three decades.[16] For instance, the World Bank played a major role in setting up ROs in Africa during the 2000-2015 period under the CAADP process; adding to the existing subregional associations of national institutes such as ASARECA connected with COMESA, CORAF with ECOWAS and CCARDESA with SADC. By 2010, the World Bank and other funders were providing significant support to those subregional organizations as well as to FARA and promoted the creation of two regional centers of excellence, the West Africa Productivity Program (WAPP) and the East Africa Productivity Program (EAPP) complementing with grants to these subregional programs the traditional agricultural research country loans.

The Forum for Agricultural Research in Africa (**FARA)** was established in 2001 to promote and coordinate agricultural research across Africa, succeeding the World Bank's SPAAR program. FARA aims to mobilize resources, manage knowledge, and strengthen research management in African institutions. FARA led the CGIAR SSA Challenge Program (2005-2015) and coordinates several regional programs like the Long-term Europe-Africa Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture project and the DeSIRA-funded SISTA program to enhance agricultural productivity and food security.

The West and Central African Council for Agricultural Research and Development (CORAF/WECARD) is a sub-regional organization established in 1987, comprising the national agricultural research systems of 23 West and Central African countries. Its mandate is to coordinate and facilitate innovative research to unlock the agricultural potential of the region by working with national systems and regional centers to address regional challenges, focusing on

[15] Also, the International Joint Laboratories supported by the French National Research Institute for Sustainable Development (IRD) are examples of international outreach. These innovative IRD led partnerships around the world aim to strengthen operational units managed by the partner country to develop joint research projects using a common platform, reinforcing the link between education and research at master's and PhD level.

[16] See Roseboom, J. and Flaherty, K. 2016. *The evolution of agricultural research in Africa: key trends and institutional developments*. In Agricultural Research in Africa, Investing in Future Harvests. Ed. by J. Lynam, N. Beintema, J. Roseboom, and O. Badiane. ASTI-IFPRI, Washington DC; and Roseboom, J., P.G. Pardey, and N.M. Beintema.1998. *The changing organizational basis of African agricultural research*. EPTD discussion paper no. 37. IFPRI and ISNAR.

coordination, capacity building, technology scaling, and knowledge management. CORAF's members include mainly French-speaking countries, and from its beginning has been closely associated with three France-based organizations (CIRAD, ORSTOM, and INRAE). It receives financial support from France and the EU.

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) was established in 1994, a subregional nonprofit organization comprising National Agricultural Research Institutes (NARIs) from 15 countries in Eastern and Central Africa. It aims to promote cross-border collaboration in agricultural research for development. The member countries include Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Somalia, Sudan, Tanzania, Uganda, Zaire, Cameroon, Central African Republic, Democratic Republic of Congo, Republic of Congo, and South Sudan. ASARECA coordinates regional projects and supports capacity building through training and partnerships.

The Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) was established in 2010 by SADC Member States to coordinate regional agricultural research and development. It's predecessor, the Southern African Centre for Cooperation in Agricultural Research (SACCAR), was established in 1984. It prioritizes country-commodity combinations (cowpea in Botswana, green coffee in DRC, wheat in Eswatini, sorghum in Madagascar, sugar cane in Mauritius, beef in Namibia, citrus in south Africa, rice in Tanzania and horticulture in Zimbabwe); and has established Regional Centers of Leadership for innovation, research, and capacity building (cassava in Angola, maize in Malawi, rice in Mozambique and legume systems Zambia. The Center also engages with the private sector to strengthen seed systems development and commercialization for instance with the South African Citrus Growers Associations, the Mauritius Sugar Syndicate and private seed companies in Zambia and collaborates with international research organizations like CGIAR centers and FAO for technical support.

The West African Science Service Centre on Climate Change and Adapted Land Use, WASCAL, based in Accra, Ghana is an example of a subregional research organization focusing on climate change and land use pooling the expertise of 12 African countries. Funded by the German Federal Ministry of Education and Research (BMBF), WASCAL started in 2012 promoted by Ministries under the ECOWAS umbrella and in addition to research implements capacity building activities including graduate programs in strong connection with several universities. The service center is a successful example of a regional network, initiated as a German government (Ministry of Science) initiative focusing on addressing three key challenges: (1) train experts on climate change via a network of African universities, graduate students; (2) build data and meteorological analysis capacity and (3) an applied research component on land management.

The West Africa Productivity Program (WAPP) and the East Africa Productivity Program (EAPP), both supported by regional stakeholders and the World Bank, are ambitious examples of research regionalization. **WAAPP** was created with a broad mandate "to make agriculture more productive and sustainable, to improve the conditions of life of consumers through the provision of agricultural products at competitive prices, and to support regional cooperation in agriculture in West Africa in accordance with action plans for agricultural policy managers of ECOWAS/ECOWAP and the NEPAD/CAADP." The program started in 2008 under the auspices of ECOWAS. CORAF/WECARD coordinated it at the subregional level, and the World Bank financed it as a ten-year effort (US$80M). The program focused on generating and promoting adoption of improved technologies in priority areas aligned with subregional priorities. In addition to regional coordination, WAAPP established National Centers of Specialization. Each center was expected to evolve into a Regional Center of Excellence serving the subregion. Centers were established for irrigated and rain-fed rice for lowlands and plateaus in Mali; mangrove rice in Sierra Leone; roots and tubers in Ghana; fruits and vegetables in Burkina Faso; plantain in Côte d'Ivoire; maize in Benin; dried cereals in Senegal; livestock in Niger; and aquaculture in Nigeria. Despite its achievements[17] and its efforts to push the frontiers of regionalization through subregional centers of excellence, the program ended in December 2019.

EAPP was a similar large program in East Africa (Ethiopia, Kenya, Tanzania, and Uganda). It also received substantial World Bank support (US$120M) and started in 2009. Its objective was "to enhance regional specialization in agricultural research and to facilitate increased sharing of identified agricultural technologies across national boundaries." Like WAAPP, EAPP aimed to upgrade national agricultural research institutions into Regional Centers of Excellence. It supported regional research, training, and dissemination activities. ASARECA played a key role in the program. Kenya was identified as the center of excellence for dairy, Uganda for cassava, Ethiopia for wheat, and Tanzania for rice. As in the case of WAAPP, the program ended in 2019.

Both WAPP and EAPP were conceived as an institutional experiment to expand regionalization of research across relatively similar agroecologies, promoting a clear division of labor across member countries and organizations. If successful, this would not only use scarce national research resources more efficiently and effectively but promote a new regional framework to conduct agricultural research for development. As mentioned earlier in this paper, a key aspect of reaching sustainable institutional set ups has been how to diversify funding sources, avoid donor fatigue and produce clear outcomes. Despite the US$200 million invested by the World Bank and other

[17] See Yiriyibin Bambio, Anurag Deb, Harounan Kazianga. 2022. *Exposure to agricultural technologies and adoption: The West Africa agricultural productivity program in Ghana, Senegal and Mali.* Food Policy, Volume 113. Elsevier; and Gert Jan Stads and Nienke Beintema. 2017. The West Africa Agricultural Productivity Program. ASTI Report. IFPRI

funders including national institutes of the regions involved, both WAPP and EAPP could not continue as the World Bank funding ended after a decade of activities.

The Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) established in 1985 to boost research, technology development, and collaboration promoting the exchange of scientific and technical information. The association focuses on knowledge transfer, networking with small farmers, women, and youth. AARINENAs budget comes from membership and other sponsors and is organized with a general assembly and an executive secretary of two people.

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is a pan-African network established in 1997 to provide evidence-based policy analysis and advocacy in the agriculture sector. Initially focused on southern and east Africa, FANRPAN expanded its mandate in 2010 to cover the entire continent. The network supports policy development through research, advocacy, and capacity building, engaging both state and non-state actors in policy processes. FANRPAN also works to enhance the capacity of stakeholders at the national level through partnerships and training programs. and coordinating research in priority policy areas as defined by the regional economic and continental bodies. Apart from generating evidence to support efforts aimed at policy harmonization, FANRPAN translates research findings and related reports into policy options that can be implemented to aid sectoral transformation and articulate the interests in important agricultural and food policy debates such as the national and regional commitments in the Malabo Declaration.[18]

The Africa Network of Agricultural Policy Research Institutes (ANAPRI) includes 16 national agricultural policy research centers located in 15 countries (including English, French, and Portuguese speaking countries) working closely with other global partners and stakeholders. As a regional think tank, it coordinates activities across the region promoting evidence-based policymaking in support of CAADP and the African Union, sharing data, approaches, methods and information. ANAPRI focuses on four key themes: agricultural transformation, climate change, markets and trade and domestic and regional agricultural outlook.

The Pan African Bean Research Alliance (PABRA) is a consortium of more than thirty NARS, three common bean (Phaseolus) networks (WECABREN, SABRN and ECABREM), a CGIAR Center

[18] There are several other agricultural policy related organizations such as AKADEMYA2063, a relatively new pan-African knowledge organization combining data, analytics, and policy advisory to support African governments, regional bodies, and development partners in designing and implementing policies that drive structural economic transformation, enhance food and nutrition security, and promote inclusive growth; and the CGIAR Climate Policy Hub, a recent successful example of a thematic research network.

(CIAT, part of the Alliance of Bioversity International and CIAT) and donors, established in 1996. Includes more than 600 partners from farmer associations, NGOs, private sector, financial services providers. The Alliance is one of the most successful and sustainable commodity research network where the CGIAR plays a key strategic role in articulating partnerships and providing improved germplasm. It has a strong value chain focus and very integrated with seed companies, processors and traders.

The **West African Rice Development Association (WARDA)** created in 1971 as a regional association of rice research stations and governed by member countries, was unique within the system of agricultural research initiatives that emerged in the post-colonial era. It has successfully transformed into the current CGIAR Africa Rice Center.

Latin America and the Caribbean has served as an important testing ground for a wide range of regional agricultural research organizations with specific mandates, including several initiatives led by civil society. [19] In addition to major regional research centers such as CATIE (Tropical Agricultural Research and Higher Education Center) and CARDI (Caribbean Agricultural Research and Development Institute), as well as leading regional agricultural universities (e.g., Zamorano in Honduras and EARTH University in Costa Rica), the region pioneered the creation of subregional networks of national agricultural research institutes. These include PROCISUR in the Southern Cone and other initiatives such as PROCIANDINO, PROCITROPICOS, and PROCINORTE, many of which have since lost prominence or ceased operations.

The creation of the Regional Agricultural Technology Fund (**FONTAGRO**) by several countries of the region and the Inter-American Development Bank three decades ago has provided a regional platform to identify common priorities and cofinance regional and subregional public and private research consortia. The Fund has set up an endowment (US$100M) as a more sustainable funding mechanism and has a small technical secretariat currently supported by the Inter-American Institute for Cooperation on Agriculture (IICA). In addition to organizing an annual competitive process to support regional priority research initiatives, leveraging other sources of funding, FONTAGRO has been able to provide an effective regional platform bringing together key stakeholders to share information about key technological developments and institutional practices.

The Subregional cooperative program of 5 Latin America southern cone national research institutes (Programa Cooperativo para el Desarrollo Tecnológico Agroalimentario y AgroIndustrial

[19] See Trigo, E., N. Mateo, C. Falconi. 2013. *Agricultural Innovation in Latin America and the Caribbean: Institutional Scenarios and Mechanisms*. Inter-American Development Bank Technical Note 528. Washington DC.

del Cono Sur, **PROCISUR**) launched in 1980 with the support of the Inter-American Development Bank (IDB) and managed by the Inter-American Institute for Cooperation on Agriculture (IICA) is a good example of a long-term active subregional RO. The Program has been co-funded by the NARIs of Argentina, Brazil, Chile, Paraguay, and Uruguay and IICA and has constantly evolved in its organization and strategy to adapt to political, economic, social and scientific-technological regional and global challenges. Having one of the few 'Mega NARS' (EMBRAPA-Brazil) as a member, PROCISUR connects over 5,000 researchers, many centers and experimental stations, units, and laboratories in the subregion.

The Forum for the Americas on Agricultural Research and Technology Development (**FORAGRO)** -established in 1997 by the Inter-American Board of Agriculture Ministers and coordinated by IICA- is a regional mechanism (like FARA in Africa) that promotes dialogue and partnerships to strengthen science, technology and innovation. Other regional R+D+I collaboration mechanisms include the Ibero American national agricultural research institutes network (INNOVAGRO) as well as commodity-based research organizations such as PROMECAFE on coffee and FLAR on irrigated rice.

The Latin American Fund for Irrigated Rice (FLAR) is a public-private partnership that seeks to improve the competitiveness and sustainability of rice production systems, with an eco-efficiency approach. Perhaps one of the best examples of a long term and impactful commodity research network that brings together various organizations linked to rice in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, the Dominican Republic, Trinidad and Tobago, Uruguay and Venezuela, as well as the International Center for Tropical Agriculture, CIAT (a CGIAR center part of the Alliance of Bioversity International and CIAT), as a strategic research partner. Two key elements that explain the relevance of FLAR are the significant involvement of the private sector and the upstream research conducted by the rice program of CIAT. A truly global, regional, national value chain focused partnership.

Asia has also several key examples of regional research organizations, some organized by a consortia of national research institutes and others around a common theme.

The Asia-Pacific Association of Agricultural Research Institutions (APAARI) is an inter-governmental, multi-stakeholder organization created on FAO's initiative in 1990 to encourage collaboration among Asian countries (22 members including Australia) to address regional agricultural challenges and promote sustainable practices. Its purpose is to catalyze collective action through knowledge exchange and needs-based capacity development in agri-food research and innovation systems. APAARI contributes to research and capacity building at the individual, organizational and institutions levels through the coordination of training, the

facilitation of exchange and resource sharing and the provision of information, guidelines and databases. Based in Bangkok, APAARI is now becoming an international governmental organization well connected with universities and CGIAR centers; funded by a small membership fee with an annual budget of approximately US$1.3M. Bangladesh, Sri Lanka, Samoa, Papua New Guinea, South Korea, and the Philippines, along with Vignan University (India) from the higher education sector have recently joined the Association.

The Central Asia and the Caucasus Association of Agricultural Research Institutions (CACAARI) was established in 2000, when leaders of eight national agricultural research systems came together under the aegis of the CGIAR Central Asia and the Caucasus Program, facilitated by the International Center for Agricultural Research in the Dry Areas (ICARDA). CACAARI promotes regional cooperation in agricultural research for development by providing a neutral platform for the exchange of ideas and experiences. Membership is open to research institutions, universities, NGOs, and farmer associations in Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Associate members also include international research centers such as ICARDA, IFPRI, CIMMYT, and the World Vegetable Center. Like many regional organizations, CACAARI has faced resource mobilization challenges, and its Secretariat currently operates largely on a virtual basis.

The Cereal Systems Initiative for South Asia (CSISA) builds on the achievements of the earlier Rice–Wheat Consortium (RWC) for the Indo-Gangetic Plains, established in 1994 as a CGIAR Ecoregional Program. The RWC emphasized decentralized, participatory research in rice ecosystems and rice–wheat systems across Asia and played a pivotal role in promoting wheat zero tillage by introducing prototype seed drills, facilitating farmer-led testing, and working with manufacturers to develop locally adapted designs. CSISA has since expanded its geographic scope and strengthened public–private partnerships, targeting four regions—three within the Indo-Gangetic Plains and one in South India. Through these efforts, CSISA provides a platform for the ecological intensification of South Asia's most intensively managed cereal and livestock systems.

The Asia-Pacific Common Microbial Biotechnology Platform (CMBP) is a regional network established in 2019 to promote the use of beneficial microorganisms and agroecological approaches for improved soil health and sustainable farming systems. CMBP represents a collaborative alliance among CGIAR, CIRAD, and local universities, with a technical hub in Hanoi and more than 70 member institutions across 20 countries. The platform supports research projects, seminars, university courses, and student training at the BSc, MSc, and PhD levels. Its activities cover a wide range of microbiology and molecular biology techniques, including the isolation, purification, and storage of microbial strains; strain characterization and identification; production of high-quality inoculants; laboratory-based inoculation experiments; assessment of

arbuscular mycorrhizal fungi root colonization; DNA extraction from soil, roots, and other materials; characterization of microbial communities' genetic and functional diversity; and the identification of soil health indicators.

Beyond PABRA, FLAR, and other examples discussed earlier, four rice-focused research networks (associated with the CGIAR International Rice Research Institute) as well as examples from banana and tree commodities merit particular attention.

The **Sustainable Rice Platform** (SRP) is a global public–private alliance aimed at transforming the rice sector by promoting resource efficiency, sustainable practices, and improved livelihoods for smallholder farmers. Established in 2011 by IRRI and the United Nations Environment Program (UNEP), SRP has fostered closer collaboration between public and private actors to support the adoption of best management practices and to facilitate consensus around common sustainability standards. [20] The **Hybrid Rice Development Consortium** (HRDC) represents another public–private partnership, initiated more than two decades ago with strong engagement from private companies to accelerate the development and dissemination of hybrid rice technologies. The **International Rice Informatics Consortium** (IRIC) complements these efforts by providing advanced information and computational tools to support global rice improvement, including the promotion of germplasm diversity through the discovery of gene–trait associations and accelerated breeding. Finally, the **Irrigated Rice Research Consortium** (IRRC), established in 1997, focused on improving crop and resource management technologies in Asia's lowland irrigated rice systems. Although its operational lifespan was relatively short (approximately 15 years), IRRC generated several influential innovations, including direct-seeded rice, site-specific nutrient management, and alternate wetting and drying techniques for water savings.

ProMusa originally established in 1997 as the Global Program for Musa Improvement is a banana research network supported by the CGIAR (Bioversity International) to share knowledge and facilitate collaboration among scientists and other stakeholders.[21] Face-to-face interactions are combined with online resources and tools such as an electronic newsletter, an online compendium of banana knowledge (Musapedia), a bibliographic database (Musalit), an image bank (Musarama) and a contacts database (Musacontacts).

The **Green Tree Commodities Initiative** led by CGIAR CIFOR/ICRAF Centers includes work on

[20] Zeigler, Robert S. and Achim Dobermann. 2019. *A new public –private interface for staple crops: the Sustainable Rice Platform*. In Sustaining Global Food Security. The Nexus of Science and Policy. Edited by: Robert S Zeigler. CSIRO Publishing.

[21] The network is composed of more than six hundred members, including researchers, academics, people from the commercial sector, extensionists, and other, from Africa, Latin America, Asia, Europe, North America and Oceania.

Cocoa, Coffee, Cashew, Rubber, Oil Palm, Wood, Shea, Gum Arabica, Baobab, Macadamia, Avocado, Mango, Citrus, Neem, Moringa and other local fruit tree species. As a partnership platform convenes partners across private, public and civil society, with emphasis on connecting with SMEs, cooperatives and farmer organizations. The initiative catalyzes interdisciplinary science for tree commodities, including foresight, impact assessments, and scenario development, and facilitates cross-sectoral action in tree commodity systems through a portfolio of projects.

Agricultural universities in the Global South have developed extensive thematic and regional research networks and may increasingly be occupying—at least in part—the space once filled by traditional ROs.

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), established in 2004, is a network of more than 160 African universities across 40 countries. Its mission is to strengthen university capacities in training high-quality scientists and fostering agricultural innovation. RUFORUM supports research and capacity development at both individual and institutional levels through programs that include research grants, fellowships, awards, an SME hub, and university capacity assessments. The network is coordinated by a Secretariat hosted by the Government of Uganda at Makerere University in Kampala. RUFORUM facilitates collaboration among member universities, promotes engagement with communities and the private sector to support technology uptake, and encourages regional and global networking.

A recent example of an African agricultural university strengthening regional and global research networks is the **Mohamed VI Polytechnic University (UM6P)** in Morocco. Established in 2023, the College of Agriculture and Environmental Sciences serves as a hub for interdisciplinary research, education, and innovation, and is emerging as a leading center for agricultural education and capacity development.[22] UM6P's membership in networks such as the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the African Research Universities Alliance (ARUA) further reinforces its role in advancing agricultural research and innovation across Africa. As the first North African member of ARUA, UM6P seeks to strengthen linkages among researchers, graduate training programs, and shared research management practices.

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) is a non-profit organization established in 1966 by the Southeast Asian Ministers of Education Organization. It coordinates research on emerging agricultural issues in the region and conducts applied research, policy analysis, and technical assistance for governments, ASEAN

[22] Serraj, R. E. Garwe, M. El Bouhssini, A. Chehbouni and B. Gerard. 2025. Transforming African Agriculture, Water, and Climate Resilience – The Vision Behind Establishing UM6P (Berenguir, Morocco) College of Agricultural and Environmental Science. Forthcoming, Journal of Agriculture.

bodies, and multilateral partners. SEARCA also manages a regional fund for research and training and supports a visiting research fellows program.

An Asian example of a university-based regional network is the **ASEAN University Network (AUN)**, established in 1995 by ministers responsible for higher education in ASEAN countries. AUN was created to foster collaboration among the region's leading universities on sustainable food systems, with a focus on resilient and sustainable production, natural resource risk and vulnerability, nature-positive system transformation, youth and gender inclusion in agribusiness, digitalization, and sustainable management.

Agricultural universities play an important role in regional research activities. However, questions remain about whether universities have sufficient incentives and institutional capacity to continue expanding this role and to manage large, complex regional networks over time. Teaching mandates, internal incentive structures, and competing priorities may constrain such expansion. In this context, it is also worth asking whether academic performance and career advancement systems adequately recognize these emerging "extension-like" roles, relative to more conventional expectations around research output and teaching.

Before turning to the role of the CGIAR in supporting and partnering with ROs, it is important to consider whether geographic and thematic networks are themselves evolving in response to the digital revolution. Are these networks becoming lighter, apex structures that primarily connect members, or do they continue to rely on more traditional mechanisms for knowledge exchange? This distinction is central to assessing their long-term sustainability, particularly given the multiple and interacting forces they face, including donor fatigue, rapidly evolving communication technologies, and the proliferation of new sources of knowledge.

The role of the CGIAR in scaling impacts via research networks

Commodity-based research networks stand out as some of the most effective and sustainable forms of collaboration, reflecting their strong value-chain orientation. Many were established under the CGIAR through regional and global crop improvement initiatives dating back to the 1960s. [23] These initiatives pioneered globally coordinated research by deploying international nursery systems, enabling CIMMYT and IRRI to test improved wheat and rice varieties across more

[23] From its inception in 1971 the CGIAR founders indicated that there was agreement that a consultative group on international agricultural research (CGIAR) "should be formed and that its primary purpose should be to serve as *a forum for discussion of needs and for coordination of financial and technical support for international agricultural research and training activities"*. See Ozgediz, Selcuk. 2021. *A Historical Perspective on Partnerships in the CGIAR*. Presentation at the CGIAR @ 50 Conference. Bellagio Center. Rockefeller Foundation.

than 70 countries. International cassava and banana networks offer further examples of how research partnerships have scaled impact. [24]
Two of the CGIAR's core activities, international research and scientist training, have been implemented largely through research networks, which underpin most documented CGIAR crop-related impacts.[25]

A key factor underlying the success of CGIAR led commodity-based networks has been their capacity to adapt to evolving priorities and partnerships. At least three elements help explain their impact: a sustained focus on a major global commodity across the entire value chain—from research to consumers; strong engagement of the private sector; and the strategic involvement of CGIAR and national public research institutions, particularly in areas such as breeding, agronomy, and related disciplines.

CGIAR funders have long recognized that a network-based approach to research can increase impact, reduce costs, and minimize duplication, leading to broad consensus on the importance of regional organizations as complements to the global research system.[26] However, both the modalities and intensity of regional engagement have evolved over time, shaped in part by fluctuations in CGIAR funding. There have been at least three major efforts to rethink the CGIAR's regional and subregional engagement.[27] In the 1980s, the CGIAR played a pivotal role in

[24] On cassava see Nestel, B.L. & Cock, J. 1976. *Cassava. The Development of an International Research Network*. IDRC-059e Ottawa, Canada. The Bioversity International support to national banana germplasm collections, train experts, and foster scientific collaboration also provide a good historical example. The International Network for the Improvement of Banana and Plantain (INIBAP) was established in 1985 to promote the conservation and safe exchange of banana genetic resources in support of improvement of that crop (underpinned by an in vitro gene bank in Leuven, Belgium); to disseminate information in support of research and extension efforts (based on an information and documentation service in Montpellier, France); and to strengthen coordination and capacity building through four regional networks – the Plantain and Banana Research and Development Network for Latin America and the Caribbean (MUSALAC), based in Costa Rica, the Banana Asia Pacific network (BAPNET), based in the Philippines, Musa research for West and Central Africa MUSACO1, based in Cameroon; and the Banana Research Network for Eastern and Southern Africa (BARNESA), based in Uganda.

[25] See Fuglie, K.O. and R.G. Echeverria. 2024. *The economic impact of CGIAR-related crop technologies on agricultural productivity in developing countries, 1961–2020*. World Development. Volume 176.

[26] The CGIAR has played a central role in strengthening regional collaboration and linking advanced research institutes with NARS in the Global South. Several CGIAR centers were originally established with explicit regional mandates—including IITA, ICARDA, WARDA (now AfricaRice), and CIAT—linking national and international research organizations in key geographies.

[27] See Lynam, J., Byerlee, D. and J. Moock. 2024. *The organizational challenge of international agricultural research: The fifty-year odyssey of the CGIAR*. Food Policy 124, for a recent review of such challenges; and Janssen, W. T.

establishing several successful regional commodity-based research networks, while during the 1990s it promoted a more explicit regional approach through the creation of systemwide research programs.[28]

There have been no recent comprehensive studies of CGIAR-related research networks since the CGIAR Secretariat's 1990 review, which noted that networking became a prominent approach to promoting research in the 1970s and 1980s, particularly in the agricultural sciences, reflecting both the field's interdisciplinary nature and the broad recognition among scientists and donors of the value of collaboration.[29]

In the early 2000s, the CGIAR portfolio included a Sub-Saharan Africa *Challenge Program* with a region-wide research mandate. Using a systems approach, the program sought to integrate several key research priorities within a regional framework. It came to an end following yet another revision of the CGIAR research portfolio, driven by shifts in funding and institutional priorities. One lesson from this experience is the importance of strengthening early and sustained engagement with the private sector and farmer organizations. The effectiveness of scaling efforts is closely tied to the active involvement of these stakeholders.[30]

In the late 2000s, the CGIAR established a set of *Research Programs*, several of which had a strong regional mandate and operated for roughly a decade until a subsequent portfolio revision. The following CGIAR Portfolio (2020–24) offered a renewed opportunity to strengthen regional engagement through the introduction of *Regional Integrated Initiatives*, designed to better link regional and national priorities. These initiatives achieved mixed results and were discontinued in 2024 during preparation of the CGIAR 2025–30 Portfolio. The current portfolio introduces a new *Scaling for Impact* Program with a regional focus, emphasizing stronger regional and national

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Braunschweig. 2003. *Trends in the Organization and Financing of Agricultural Research in Developed Countries Implications for Developing Countries*. ISNAR, The Hague.

[28] CGIAR 2002. *Progress Report on Regional Approach to Research*. Interim Science Council. FAO, Rome. CGIAR 2002. *Lessons learned in the Implementation of Systemwide Programs*. Interim Science Council Perspectives. FAO, Rome. CGIAR 2007. *Meta-Review of CGIAR Systemwide and Ecoregional Programs*. Review Panel: Seme Debela (Chair), Ian Bevege, Paul Egger. Science Council. FAO, Rome.

[29] CGIAR Study Paper 26. 1990. *International Agricultural Research A Database of Networks*. Prepared by Donald L. Plucknett, N.J.H. Smith and S. Ozgediz. CGIAR Secretariat. Washington DC; and Plucknett, D.L. & Smith, N.J.H. 1984. *Networking in International Agricultural Research*, Science, Vol. 225, pp.989-993, one of the original references about this study.

[30] Ndiritu, C., D. Karanja, and P. Vlek. 2006. *Report on The External Review of the CGIAR Sub-Saharan Africa Challenge Program (SSA-CP).* CGIAR Science Council, Rome.

partnerships and engagement with the three types of ROs discussed in this paper.

Alongside these recurrent shifts in regional research emphasis, there are growing expectations for CGIAR to contribute more explicitly to regional capacity development in collaboration with NARS, civil society, the private sector, and ROs, reflecting the long-standing recognition that CGIAR impact ultimately depends on strong connections to national realities.[31] In this regard, perhaps the evolution of CGIAR engagement with ROs should be seen not as instability, but as a gradual process of system maturation, in which CGIAR increasingly serves as a scientific backbone and catalyst, supported by clear transition pathways as regional capacity develops. Changes in CGIAR–RO partnerships should therefore be intentional and constructive, rather than cyclical. Since CGIAR is not intended to permanently implement regional programs—its core mandate being the generation of public goods and the strengthening of research systems—the ability of ROs and/or NARS to sustainably lead regional research coordination and scaling should be recognized as a measure of success. The long-term objective of CGIAR engagement is thus not enduring program ownership, but the development of regional and national institutions capable of assuming leadership.

The rapidly evolving agricultural research funding landscape presents an opportunity for the CGIAR and its funders to identify innovative, effective, and efficient ways to integrate ROs into a global CGIAR research portfolio, thereby advancing both scaling and capacity development. While CGIAR Centers have long maintained strong national and regional partnerships, only in recent years have more explicit organizational capacities and system-level structures been established to support the scaling of innovation through partnerships, both within individual CGIAR Centers and across the system.[32] In parallel, NARS in middle-income countries may not need to wait for the CGIAR to develop such capacities; instead, they could proactively connect around shared research challenges, pool resources, and engage more collectively to strengthen their voice in shaping research priorities with the CGIAR and other partners.

A complementary opportunity lies in a more deliberate role for the CGIAR as a broker of partnerships that link advanced research institutes, private-sector actors, and stronger national agricultural research systems with regional organizations—particularly as leading NARS expand

[31] See Lele, U. 1995. *Building on the NARS-CGIAR partnerships for a doubly green revolution. A framework for the IFAD-led Initiative*. The World Bank. Washington DC. See also CGIAR - IEA (2017), Evaluation of Partnerships in CGIAR, Rome, Italy: Independent Evaluation Arrangement (IEA) of CGIAR for a comprehensive evaluation of partnerships showing the evolution of partnerships with advanced research institutes and the private sector over time confirming that CGIAR is only one of many strong research partners.

[32] Marc Schut, Julien Colomer, Emma Proud, Enrico Bonaiuti, Iddo Dror, Edwin Kang'ethe, L. Esquivias, Cees Leeuwis. 2024. *Innovation portfolio management for responsible food systems transformation in the public sector: Lessons, results and recommendations from CGIAR*. Agricultural Systems 216.

their international engagement. At the same time, multilateral and bilateral development partners with a long history of supporting ROs could pilot regionally owned financing instruments, drawing on lessons from FONTAGRO, to provide more stable, incentive-based funding for cross-border research collaboration.

In sum, the CGIAR has made multiple efforts to address regional research engagement through successive portfolio approaches. A closer and more sustained connection with ROs may offer a more durable pathway forward, particularly if grounded in complementarities and the subsidiarity principle, and focused on strengthening research networks rather than primarily implementing regionally framed projects. The CGIAR's four decades of portfolio evolution—from Systemwide and Ecoregional Programs to Challenge Programs, CGIAR Programs, Research Initiatives, and more recently Science Programs—have generated important lessons. These lessons are expected to inform implementation of the current 2025–30 Portfolio, particularly its Scaling for Impact Program. In addition, the recently launched CGIAR Capacity Sharing Accelerator represents a timely opportunity to reinforce regional research partnerships and to foster new alliances within an increasingly diverse global research and innovation landscape.

Concluding remarks

Regional agricultural research organizations differ widely in mandate, governance, resourcing, and effectiveness. Some primarily facilitate information exchange, others coordinate research agendas, and a smaller group actively manages jointly conceived research programs focused on specific geographies, themes, or commodities. Important distinctions also exist between NARS-led networks and CGIAR-initiated partnerships, as well as between subregional and continental organizations, with the former often benefiting from clearer mandates and stronger member engagement.

Despite their demonstrated contributions, ROs have received limited attention in recent agricultural research-for-development literature. Yet they play a critical role in realizing economies of scale for small national systems, aligning research priorities across borders, and mobilizing resources for collective action. This role is particularly relevant as the CGIAR consolidates its portfolio and seeks to strengthen capacity sharing and partnerships to scale impact, despite representing a small share of global agricultural R&D investment.

Declining development assistance budgets may increase incentives for collaboration among complementary actors in the agricultural innovation system. Global and regional funders can help catalyze such collaboration by designing incentives that encourage alignment across national, regional, and global efforts. However, long-term sustainability remains a core challenge. Heavy reliance on external financing exposes many ROs to instability, underscoring the importance of

sound governance, clear comparative advantage, and effective management to attract and retain funding.

A recurring tension for ROs lies in balancing coordination and implementation roles. While coordination can be supported by relatively lean secretariats, project implementation often requires larger structures that risk competing with member institutions. Clarifying ownership and subsidiarity is therefore essential, particularly where ROs are constituted either as associations of research institutes or as intergovernmental bodies.

ROs also play a vital role in linking smaller and less-resourced NARS with stronger systems, enabling knowledge transfer and shared capacity. Sustaining this function requires at least a core group of strong members and diversified financing mechanisms. Lessons from models such as FONTAGRO suggest that regionally owned funding instruments could help reduce dependence on short-term external support.

Looking ahead, three strategic opportunities stand out: scaling effective commodity-based networks with strong CGIAR, NARS, and private-sector linkages; positioning agricultural universities as central actors in regional research networks; and piloting innovative financing mechanisms to strengthen ROs as complements to national and global research systems.