

# Case Study: CGIAR investment in innovation for sustainable agricultural intensification



## About this Case Study

**The CGIAR is the leading global agriculture research institution working towards creating sustainable agricultural practices a reality through research and innovation.** The CGIAR 2030 Research and Innovation Strategy states that the “CGIAR will contribute to collective global targets for transformation of food, land, and water systems across local, regional, and global levels.<sup>1</sup> In action, CGIAR plays a unique role in forming global research partnerships to work directly with national agricultural research systems to research and develop technologies to address challenges in agriculture.

The following analysis is based on data from the current CGIAR Research Programs (CRPs). A critical caveat is that data from three important CRPs: MAIZE, WHEAT AND RICE were used for the analysis of Sustainable Agriculture Intensification funding, but not for innovation stage analyses (e.g., innovation stage and value chain) – due to insufficient data available on these CRPs. Collectively these three CRPs represent an estimated 19% of CGIAR funding in 2018 and 2019.<sup>2</sup>

This case study accompanies the report: *Funding Agricultural Innovation for the Global South: Does it Promote Sustainable Agricultural Intensification?* The full report can be found on the CoSAI website: <https://wle.cgiar.org/cosai/innovation-investment-study>

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<sup>1</sup> CGIAR, [CGIAR 2030 Research and Innovation Strategy](#) (2020)

<sup>2</sup> CGIAR, [Funder analysis](#) (2021)

# 1. Summary

CGIAR invests<sup>3</sup> about USD 966 million annually<sup>4</sup> in agricultural innovation<sup>5</sup>; an estimated 27– 35% of CGIAR funding specifically promotes Sustainable Agriculture Intensification (SAI)<sup>6</sup>. This translates to about USD 260-340 million in annual funding in SAI during the period 2017 – 2019. Analysis across innovation stages and value chain stages (Figure 1) reveals that:

- **Projects that drive adoption of innovations receive the most funding.** 60% of CGIAR project funding is tagged to growth/adoption of innovations and 43% to research/development. The ratio of SAI funding is also the highest in the growth/adoption stage (27%), followed by research/development (14%) and pilot/testing (16%).<sup>7</sup>
- **Crops receive the highest share of funding.** Across value chains, about 58% of CGIAR project funds get tagged to crops, followed by cross-cutting projects (30%).<sup>8</sup> Expectedly, CRP's funding across the value chain is relevant to its areas of focus, for e.g., Grain Legumes and Dryland Cereals (GLDC) and Roots, Tuber and Bananas (RTB) fund crops, LIVESTOCK in livestock, dairy, and poultry and FISH in fisheries and aquaculture disproportionately. The share of projects promoting SAI is generally similar between crops, livestock, fisheries and cross cutting projects (29-31%).

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<sup>3</sup> 'Investment' refers to the funds allotted to projects (rather than expenditures) throughout this document and is used interchangeably with the term 'budget'

<sup>4</sup> For the years 2011 - 2019 at constant 2019 USD value

<sup>5</sup> Agricultural innovation is defined in the main report as projects falling into one or more of the following sub-types: Basic science and research, new product or service development, Process innovation, Marketing or behavioural innovations, Business model innovations, Systems innovation, Policy innovation, Knowledge or educational innovations, and Financial innovation. Given the nature of work that CGIAR does, and the broad definition of innovation we are using, we have assumed that 100% of funds used by CGIAR is towards innovation.

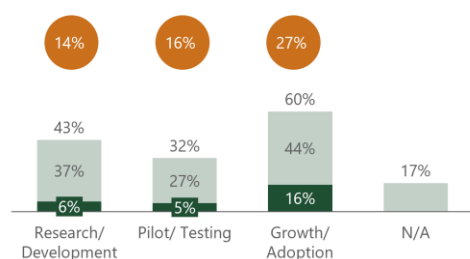
<sup>6</sup> SAI is defined in two ways in this study. The 'broad' definition refers to funding that aim to produce gains in productivity, at the same time being environmentally sustainable. The 'narrow definition refers to funding that aim to produce gains in productivity, at the same time being environmentally sustainable as well as sustainable on the human or social front. The two definitions lead to the SAI range presented in the study. For more details, refer to the methodology document.

<sup>7</sup> The WHEAT, MAIZE and RICE CRPs are excluded in the analysis on tagging by innovation stage and value chain due to inadequate project descriptions

<sup>8</sup> Ibid

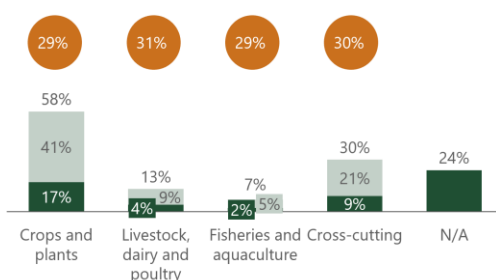
### CGIAR projects tagged by innovation stage

%, annual average budget over 2017 - 2019



### CGIAR projects tagged by value chain

%, annual average budget over 2017 - 2019



Investment towards innovation in Agriculture  
Investments towards SAI (narrow)  
Share of projects that promote SAI (narrow)




Note: 1) A project can be tagged on more than one dimension and thus total can be more than 100% for both innovation stage and value chain; 2) These analyses were conducted using project budget data, not expenditure; 3) The WHEAT, MAIZE and RICE CRPs were excluded in these analyses due to inadequate details in project description; 4) Projects tagged as N/A include administrative spending like salaries and organizational level function, like project management unit

**Figure 1. CGIAR projects tagged by innovation stage and value chain.**

Across the agriculture sector funding and innovation canvas, CGIAR innovation funding prioritizes the ‘Macro Systems’ and ‘Production Systems’ layers<sup>9</sup>; the share of projects tagged as SAI is higher in projects promoting innovation in ‘Production’ and ‘Water and soil management’ (Figure 2). CGIAR funds the most for ‘Research, knowledge and education systems’ and ‘Agriculture governance systems and policy’ support in the macro layer in agricultural innovation. Similarly, the focus on ‘Inputs’ and ‘Production’ remains high. The ‘Water & soil management’ and ‘Forestry & biodiversity management’ focus areas received the most funding in the ecosystem services and natural resource management (NRM) layer, but the total funding in this layer is substantially lower compared with other innovation focus areas.

The share of SAI funding is the highest in projects focused on ‘Production’ (46%) and on ‘Water and Soil management’ (63%). Projects focused on ‘Agricultural financing systems’ (32%) and ‘Collaboration & trade systems’ (24%) also have a higher SAI focus. This is likely due to the Policies, Institutions, and Markets (PIM) CRP focus on projects targeted for high-level decision-makers - for instance, the PIM ‘Decision Support Systems for R&D’ project informs policymakers on impact, cost, and benefit of sustainable intensification funding, and the ‘Asian Regional Policy Engagement’ project offers capacity building for governments on collaborative research and shared resources for climate smart agriculture and SAI.

<sup>9</sup> The ‘Macro Systems’ refers to actors, their activities, and innovations in the fields of agriculture policy, regulation, agriculture financing, education, research and development. The ‘Production Systems layers’ refers activities within the actual agriculture production process across the lifecycle (inputs, production, post-production, processing, and cross-cutting). ‘Ecosystem Services and NRM’ refers to activities that preserve and maintain the underlying natural resources for agriculture. For more details, please refer to the Inception Report.

	Area of Focus	Sub-Area of Innovation	Total Innovation budget in million USD	SAI in million USD (narrow definition)	SAI % of total innovation budget
	<b>Level 1 : Macro Systems</b>	Agriculture governance systems & policy support	116	15	13%
		Research, knowledge & education systems	201	45	22%
		Agriculture financing systems	42	14	32%
		Collaboration & trade systems	52	12	24%
	<b>Level 2 : Production systems layer</b>	Inputs	150	38	25%
		Production	131	60	46%
		Post-production	0.72	0.62	87%
		Core-processing	0	0	
		Farm-level cross cutting systems	8.71	1.76	20%
	<b>Level 3: Production factors &amp; NRM</b>	Water & Soil Management	31	20	63%
		Forestry & biodiversity Management	33	9	27%
		Land use, and rights management	0.54	0.12	23%
		N/A	111	11	10%

Note: 1) A project can be tagged on more than one dimension and thus total can be more than 100%; 2) These analyses were conducted using project budget data, not expenditure; 3) The WHEAT, MAIZE and RICE CRPs were excluded in these analyses due to inadequate details in project description. The average annual CGIAR project budget analysed is 486 million USD

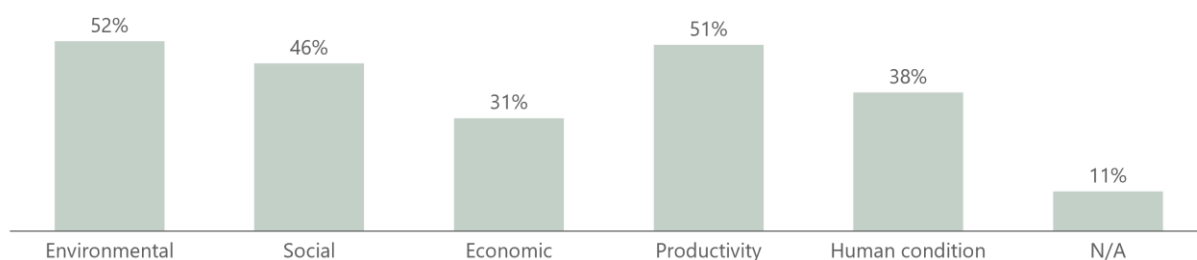
**Figure 2. CGIAR project tagged by agriculture sector funding and innovation canvas.**

**Improving environmental (52%) and productivity (54%) are the most common impact intentions of CGIAR projects; followed by social (46%), and human condition (39%).<sup>10</sup>** All CRPs have funded projects across the five-sustainability impact dimensions but fund 1-2 impact intentions disproportionately. For e.g., projects in RICE focus on environmental, human condition and productivity outcomes, however projects with productivity intentions receive higher funding. Similarly, projects in MAIZE have a focus on social, environmental and productivity outcomes, with productivity outcomes receiving higher funding. There are exceptions like GLDC and PIM that spread funds almost evenly across social, economic, productivity and human condition dimensions. However, such fund allocations across impact intention do not necessarily lead to high SAI funding since CRPs could be funding only productivity or environmental outcomes, leading to a lower fraction of projects supporting SAI.

<sup>10</sup> 11% of funding is not tagged with any of the five SAI domains, these could be administrative funding, like salary or other internal project, like monitoring and evaluation

### CGIAR projects tagged by impact intention

%, annual average budget over 2017 - 2019



Note: 1) A project can be tagged on more than one dimension and thus total can be more than 100%; 2) This analysis was conducted using project budget data, not expenditure; 3) Projects tagged as N/A include administrative spending like salaries and organizational level function, like project management unit

**Figure 3. CGIAR projects tagged by SAI domains.**

**Approaches to promote SAI vary significantly across CRPs.** The SAI funding approach varies between the Agri-Food Systems CGIAR Research Programs (e.g., MAIZE, RICE, RTB, FISH, LIVESTOCK), which adopt an integrated, agricultural systems approach, and the Global Integrating Programs (e.g., WLE, PIM, CCAFS)<sup>11</sup>, which drive innovation through cross-cutting agro-ecological systems. Many CRPs under the Agri-Food System, like RICE, MAIZE, WHEAT, and RTB, include sustainable intensification as research flagships with supporting clusters of activities, guiding the funding towards SAI outcomes.<sup>12</sup> They tend to have a higher funding towards SAI outcomes, given the focus on productivity as well as other impact intentions. On the other hand, the CRPs under Global Integrating Programs focus heavily on impact intentions other than productivity. For instance, WLE predominantly funds projects focused on environmental and social outcomes, CCAFS on environmental (climate change) outcomes, and A4NH on Human condition (nutrition and health) outcomes.

## 2. Conclusion


As the leading agriculture research institution globally, **CGIAR allocates a significant funding (27– 35% of its annual funding) into projects that specifically promote SAI. This is substantially higher than other actors** analysed as part of this study. Projects that drive adoption of innovations and those within the crops value chain receive the highest share of funding. Across the agriculture sector funding and innovation canvas, CGIAR innovation funding prioritize the ‘Macro Systems’ and ‘Production Systems’ layer; share of projects tagged towards SAI is higher in projects promoting innovation in ‘Production’ and ‘Water and soil management’. However, approaches to promote SAI vary significantly across CRPs and Centers.

There remains an opportunity to build **a common framework for SAI across future research programs within the new strategy.** . Presently, some CRPs and Centers have a clear priority for SAI and supporting frameworks have been developed accordingly. For instance, CIMMYT has derived and adopted a multi-criteria sustainability assessment for sustainable intensification to track and compare productivity, economic, social, and environmental outputs from projects.<sup>13</sup> Similarly, IFPRI is the lead

<sup>11</sup> For more information on the grouping of CRPs, please refer to the [CGIAR Research Portfolio](#) page

<sup>12</sup> PIM and WLE under the Global Integrating Programs also have flagship around sustainable intensification

<sup>13</sup> CIMMYT, [What is sustainable intensification?](#) (2020)



center for PIM which has a flagship for technological innovation and sustainable intensification. However, a common framework for SAI is lacking, and if adopted can ease tracking of SAI funding. Such a framework could be a useful tool for the One CGIAR and implementation of the 2030 CGIAR Research and Innovation Strategy (2020).

**Such a common framework can also help unlock gains in SAI across the future portfolio of CGIAR projects.** As noted in Figure 3, CGIAR has a good mix of projects focusing on the five sustainability dimensions. However, projects often operate in silos, focusing only on one or two dimensions. A common framework could help align these efforts, promote coordination across teams and improve tracking and reporting of outcomes across the five sustainability dimensions.



The Commission on Sustainable Agriculture Intensification (CoSAI) brings together 21 Commissioners to influence public and private support to innovation in order to rapidly scale up sustainable agricultural intensification (SAI) in the Global South.

For CoSAI, innovation means the development and uptake of new ways of doing things – in policy, social institutions and finance, as well as in science and technology.

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