



Final Management Report

Commission on Sustainable Agriculture Intensification

CoSAI Secretariat, May 2022



Contents

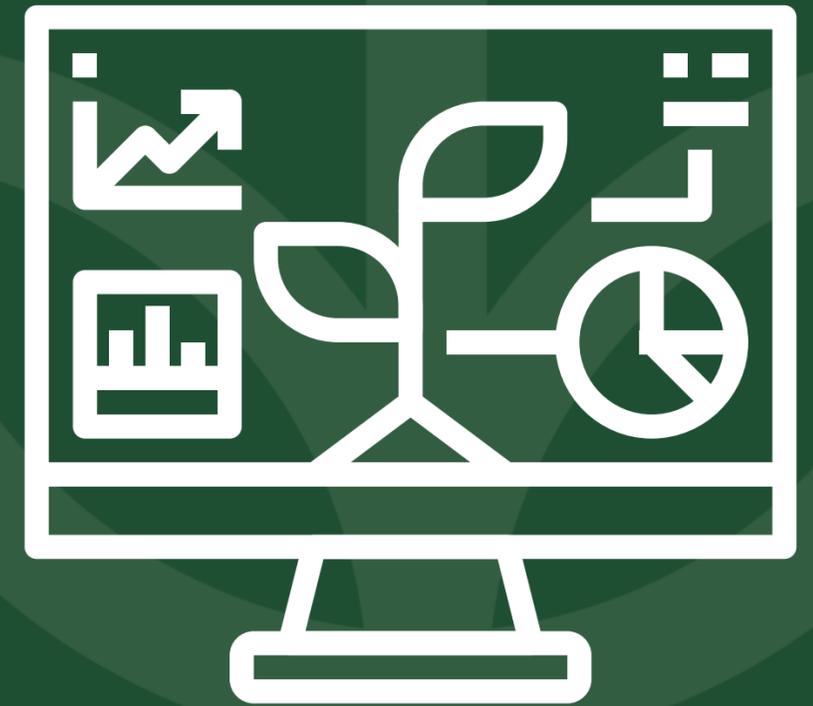


For more information, see the
CoSAI website:
wle.cgiar.org/cosai

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Summary



Background and purpose

This brief final management report summarizes the history, contributions and management lessons from the Commission on Sustainable Agriculture Intensification (CoSAI), a CGIAR-initiated global Commission.

CoSAI was initiated and supported by the CGIAR Research Program on Water, Land and Ecosystems (WLE) (2012-2021). WLE was supported by the [CGIAR Trust Fund](#) and other donors. CoSAI had [21 Commissioners](#), chaired by Dr Ruben Echeverría, and was facilitated by a Secretariat based at WLE's headquarters at the International Water Management Institute ([IWMI](#)) in Sri Lanka. The full Commission ran for approximately 1.5 years (June 2020-December 2021).

The expected audience for this report is:

- Funders, managers and oversight groups for CoSAI. These include former managers and Independent Steering Committee members of WLE and IWMI, as well as the CGIAR System Organization and its funders.
- Other readers, inside and outside CGIAR, interested in the products of CoSAI and the lessons from managing CoSAI.

The aim of CoSAI was to 'promote more and better innovation to support rapid transformation of agri-food systems'. The main target audience was 'direct investors in agri-food innovation'; defined as research and innovation organizations, and their direct funders, both public and private.

The Commission used broad [definitions](#) of both innovation and Sustainable Agriculture Intensification (SAI).

- Innovation was defined as any 'new to the context' change in agri-food systems – in policy, finance and social institutions, as well as science and technology.
- CoSAI's definition of SAI went beyond the concept of 'producing more food with less environmental damage'. For CoSAI, SAI referred to the transformative changes in agri-food systems that are urgently required to meet rapidly increasing global needs for affordable, nutritious, safe and healthy food, while protecting and improving the natural environment and promoting resilient livelihoods and social equity.

Key findings and recommendations

CoSAI commissioned work in eight areas to understand current investments in agri-food innovation and make recommendations for improvement.

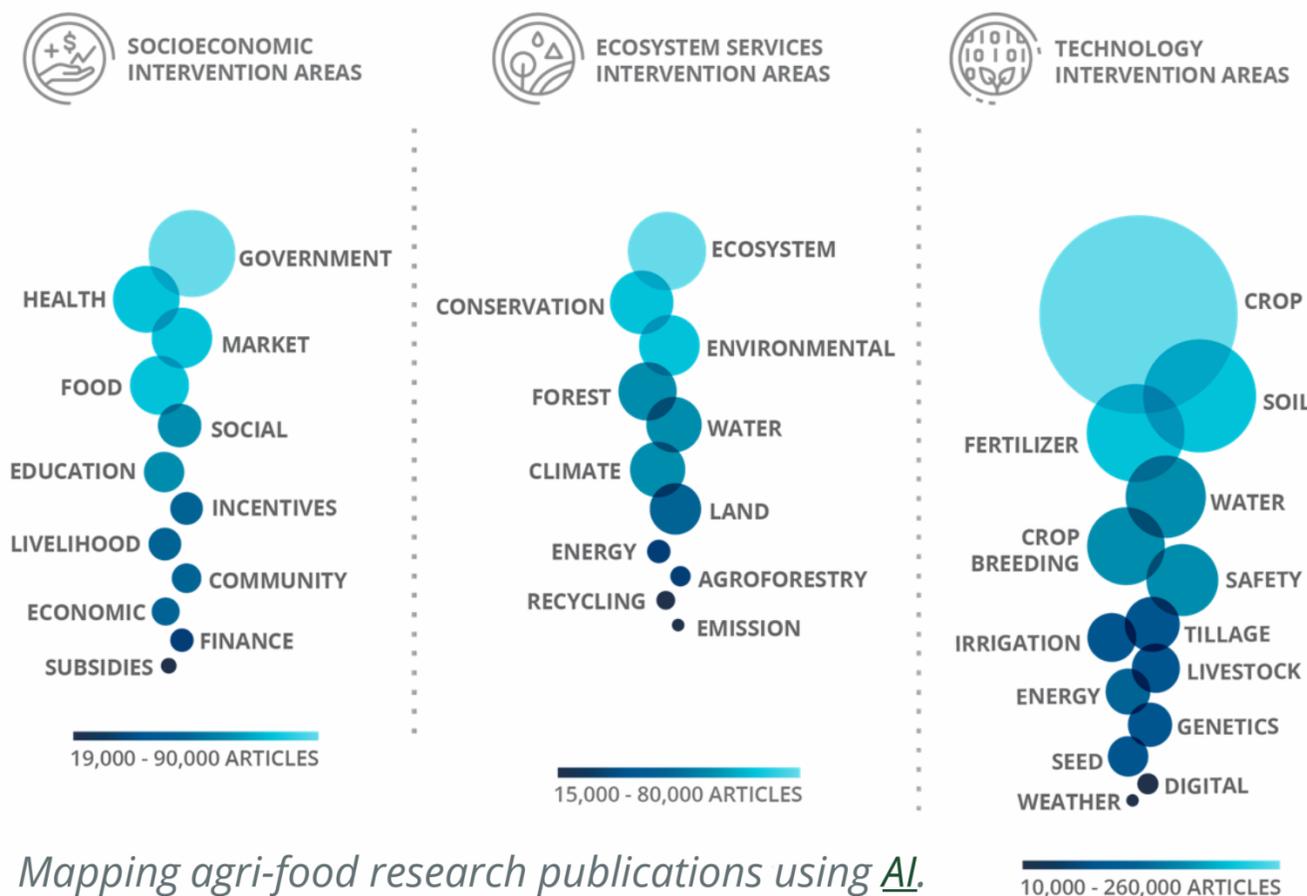
Key recommendations include:

- 1. More investment is needed in agri-food research and innovation for the Global South.** The agri-food sector is globally critical for tackling climate change and environmental decline, poverty and inequity, and hunger and nutrition. Despite this, current levels of investment as a proportion of output are estimated at only two thirds of those in the energy sector. A CoSAI study estimated that an additional \$15.2 billion dollars per year would be the minimum investment in research and innovation needed to attain critical global goals, with complementary support to infrastructure, finance and extension.
- 2. Specific areas where more innovation investment is needed include:**
 - **Post harvest issues**, critical for tackling waste and climate change, which get less than one tenth of the funding for innovation in agricultural production.
 - **Farmer-saved and local seed systems**, used by most farmers in low-income countries, get less than half a percent of investment in seed systems.
 - **Improved, more equitable financial instruments for supporting farmer-stewards to protect and restore nature:** better payment mechanisms will be critical to make good use of large amounts of new funding to this area.
 - **Urban and peri-urban agriculture**, with up to 80% of global food consumption expected to be in urban areas by 2050. With 40% of global cropland located within 20 km of urban areas, there is much potential for innovation in the circular economy, including in policies like city planning, as well as in technical areas like Controlled Environment Agriculture.

Key findings and recommendations *(continued)*

3. **Innovation must be reoriented to transform food systems.** A CoSAI [study](#) found that less than 7% of current investment has tangible environmental aims, with only about half of this also having social aims. A [second study](#) found that less than 10% of research publications in this area included social outcomes.

One key conclusion was that **transparent global tracking of agri-food research and innovation is critically needed** for identifying gaps and for incentivizing more effective, sustainable and equitable investments. Eight **Principles for Agri-food Research and Innovation**, developed by an international task force initiated by CoSAI, can help researchers, innovators and investors orient their work and track their progress to develop more sustainable and equitable innovations.



4. CoSAI studies on **Innovation Pathways, Approaches and Instruments** (such as innovation funds, platforms and networks) demonstrate that these need sustained attention and investment to transform agri-food systems. They also provide specific recommendations, e.g., about the importance of identifying and nurturing leadership for innovations to be taken up at scale.

Mapping agri-food research publications using [AI](#).

CoSAI contributions

CoSAI's findings have been shared and debated in numerous global and regional meetings. The timeframe was short: there were only a few months between finalizing studies and the wrap-up of CoSAI. It is tricky to attribute the direct influence of CoSAI on specific actions, since CoSAI was operating in an international environment of constant debate and exchange of ideas on sustainable agri-food systems, including through the major global events of UNFSS and COP26, held in 2021. Nonetheless, there are already some indications of the uptake of ideas and evidence from CoSAI, and some early changes. These include:

- Two major global initiatives on supporting agri-food innovation to tackle climate change started up in 2021: ClimateShot and AIM for Climate. CoSAI's evidence, particularly on the need for more innovation investment and reorienting current investments for sustainability, has been repeatedly cited.
- The Food and Agriculture Organization of the United Nations (FAO) is currently developing an Agri-food System Technologies and Innovations Outlook (ATIO) to track agri-food innovation. As this work develops, it is hoped that ATIO would also track uptake of the Principles for Agri-food Research and Innovation.

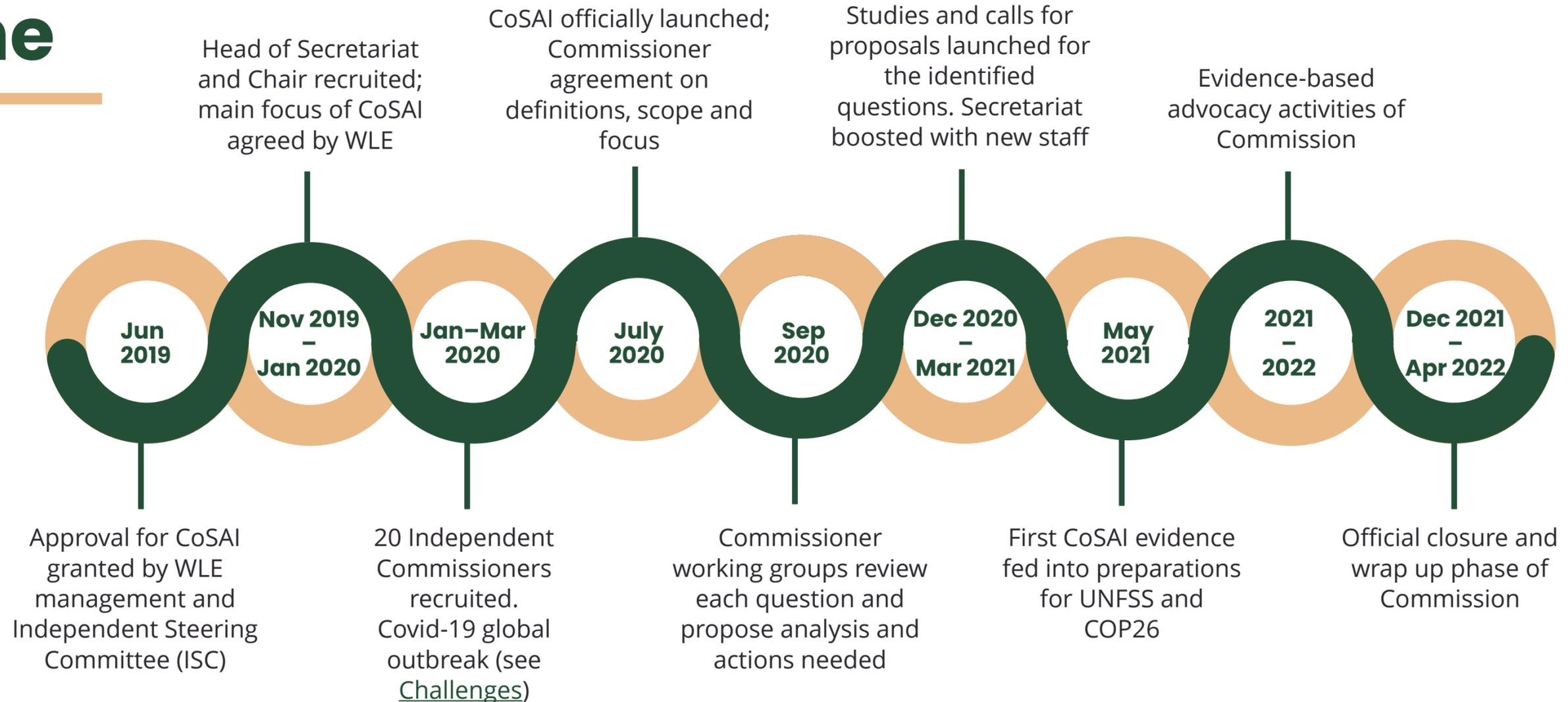
CoSAI's approach

- All 21 Commissioners originated from the Global South
 - CoSAI commissioned a portfolio of studies to answer questions raised by Commissioner working groups
 - From start-up, CoSAI mixed advocacy with collection of new evidence and discussions on emerging findings
 - Formal partnerships were developed with key organizations, including regional networks
-
- Organizations of the Principles Task Force members are moving towards being early adopters of the Principles for Agri-food Research and Innovation. For example, the Asia-Pacific Association of Agricultural Research Institutions (APAARI) is initiating capacity development work to support some of its member countries in adopting the Principles.
 - CoSAI has two policy briefs to be discussed by G20 leaders in 2022: Tracking innovation and Innovation for urban and peri-urban agriculture.
 - Longer term: CGIAR top leadership is actively discussing how to integrate CoSAI findings into the OneCGIAR reforms, including pathways and instruments for innovation and broader social equity issues. The Good Food Finance Network and ClimateShot Impact Investing Coalition have shown interest in CoSAI findings on financial instruments.
 - Finally, CoSAI has initiated a research topic on agri-food innovation in Frontiers in Sustainable Food Systems to collect rigorous research.

Management lessons

- 1. A Commission was an effective mechanism** for raising important questions, discussing evidence collected, and spreading the word. Considerable time, however, was required for set up and to reach mutual understanding among a diverse group. Form should follow function, so clarity on objectives should precede decisions on a mechanism. Given the large number of [agri-food initiatives](#) and [science-policy interfaces](#), setting up a Commission is not a decision to be taken lightly.
- 2. A focus on the Global South**, and recruitment of a range of Global South Commissioners and researchers, was effective in bringing together people who were not the 'usual suspects', and led to increased levels of interest and trust in many stakeholders. On the other hand, the effects of globalization and changes in economies mean that it is increasingly difficult to make a binary distinction between Global North and South, and many agri-food system problems are global. CoSAI's work increasingly moved to reflect this over time, e.g. the Principles for Agri-food Research and Innovation are global in scope.
- 3. Governance** worked well in practice, but a general lesson is that objectives and responsibilities of different management and governance bodies need to be clarified and agreed early on.
- 4. A large Commission worked well**, with an active core and working groups – given multiple and often-unexpected other demands on volunteer Commissioners, this mitigated risk. The final (virtual) Secretariat complement of a head, deputy, four project officers and a contracted team of communications consultants was found to be the minimum needed for effective work. The team needed a range of skills including technical knowledge, good organization, verbal and written communication – and above all, flexibility and dedication to deliver a changing set of demands at high speed.
- 5. A virtual Commission and Secretariat mostly worked well and increased efficiency.** An early face-to-face meeting would have helped with cohesion, commitment and agreement on approach, but was not possible due to the pandemic.
- 6. Commissioning a portfolio of studies was a useful approach**, as it spread risk, reflected the varied interests of Commissioners, and enabled CoSAI to start campaigning on findings from early studies before others emerged. However, procurement, management, oversight and publicity for the studies demanded significant time and resources. Competitive tender pays back the extra time invested but takes 2-3 months. A formal CoSAI preference for Global South researchers worked out well.

Timeline



CoSAI was originally conceived as a two-year Commission, which turned out to be a realistic minimum time needed (with planning and wrap-up). A lesson for future Commissions is to allow enough elapsed time at the start for group formation, including agreement on definitions, scope and work planning. Commissioner diversity can be a huge strength, but it adds to the time needed for group formation, as does online working.

Similarly, ample elapsed time should be allowed for partnerships and advocacy. Few people read reports or briefing papers. A single publicity event may make headlines, but real changes in attitudes and practice need repeated interactions for mutual learning, including opportunities to talk through issues. Taking advantage of partners' own events and public events is an efficient use of advocacy resources, but can spread out the time needed. A four-month wrap-up extension period for the Secretariat was welcome and fully used.

Acknowledgments

Many thanks for all the contributions from:

CoSAI Chair and Commissioners: Ruben Echeverría (Chair), Akissa Bahri, Alice Ruhweza (2020), Ayşegül Özkavukcu, David Simon, Grethel Aguilar, Haris Gazdar, Irene Annor-Frempong, Jennifer Baarn, Jianguo “Jack” Liu, Julio Berdegú, Madiodio Niasse, Maurício Lopes, P.V. Vara Prasad, Pablo Tittonell, Rasheed Sulaiman V, Rodomiro Ortiz, Sara Mbago-Bhunu, Shenggen Fan (2020), Uduak Igbeka, Uma Lele, Varad Pande, Ximena Rueda

CoSAI Secretariat staff (S), interns and consultants: Julia Compton (Head)¹ David Shearer (Deputy)², Andrew Noble, Charlie Worthington, Eduardo Alves, Josefina Achaval-Torre (S)², Jonathan Wirths (S)², Marah al Malalha (S), Nienke Beintema, Scarlett Crawford (S)², Rebecca Blevins, Yicong Luo. (¹ *Lead author of this report ² Co-authors)

Researchers for CoSAI reports: Agroicone (Brazil), Council on Energy, Environment and Water (India), Centro de los Objetivos de Desarrollo Sostenible para América Latina (Colombia), Dalberg Advisors (India), Gordon Prain (UK), Institute of Natural Resources (South Africa), International Food Policy Research Institute, Havos Inc. /Cornell (USA), Juan Forero (Sri Lanka), Oxford University ECI Food Systems Transformation Group (UK), RUAFA Global Partnership on Sustainable Urban Agriculture and Food Systems, Resource Plan (Kenya), Strategy and Scale (USA).

Principles and Metrics Task Force: Preetmoninder Lidder and Vara Prasad (chairs) and full Task Force, listed [here](#).

CGIAR Research Program on Water, Land and Ecosystems (WLE): Stefan Uhlenbrook (Director), Claudia Ringler (Deputy Director), Izabella Koziell (former Director), Adam Hunt, Amali Dommanige, Bevan Pearson, Bryce Gallant, Emma Greatrix, Fabrice Leclerck[#], Pay Drechsel, Roseline Remans, Sharon Perera.

WLE Independent Steering Committee: Ann Tutwiler (Chair), Brent Swallow, Diane Holdorf, Jyotsna (Jo) Puri, Sasha Koo-Oshima

International Water Management Institute: Mark Smith (Director General), Anne Heese, Janitha Godmuduna, Nilantha Sangapalaarachchige, and many more.

Communications: Scriptoria, Samantha Collins, Cultivate, Fresh Spectrum

... and all the CoSAI partners.

* Responsibility for any errors or incorrect interpretations in this report rests with the lead author

[#] Fabrice’s advice from experience with other global Commissions was particularly valued.

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Three workstreams (pages [21](#), [26](#) and [27](#)) and the wrap-up phase of CoSAI were co-funded by the USAID Bureau for Resilience and Food Security/Center for Agriculture-led Growth under the Cooperative Agreement # AID-OAA-L-14-00006 as part of Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification (SIIL).

Any opinions, findings conclusions, or recommendations expressed are those of the authors alone.





- Conception and start-up
- Agreeing overarching aims
- Chair and Commissioners
- Agreeing definitions, scope and focus
- Working groups and 'big questions'

History and activities



Conception and start-up

CoSAI was initiated by the CGIAR Research Program on Water, Land and Ecosystems ([WLE](#)). [CGIAR](#) is a global research partnership; WLE was a cross-CGIAR Research Program (CRP) that ran from 2012 to 2021. In the second phase of WLE, the WLE Independent Steering Committee proposed that the program should initiate an international Commission on Sustainable Agriculture Intensification (SAI) – CoSAI for short.

The inspiration for the Commission came from the 2019 Chair of the Steering Committee, Prof. Johann Rockstrom, who had been involved in the [EAT-Lancet Commission](#) and, as a result of the gaps identified by that Commission, had helped to start up a set of related global Commissions, including the Earth Commission, the Blue Foods Commission and the Food Economics Commission. It was initially envisaged that CoSAI and all these new Commissions would follow a broadly similar pattern to EAT-Lancet: a global group of experts would examine a problem and publish a single, globally significant report, with the aim of provoking change in global discourse and action on the topic.

Izabella Koziell, the Director of WLE from Oct 2016-Jan 2021*, and the members of the new Independent Steering Committee (below) agreed to start off a new Commission in June 2019. They recruited the Head of Secretariat# and the Chair of CoSAI (Ruben Echeverría), who started in November 2019 and January 2021, respectively.

Ann Tutwiler

Ann Tutwiler is the current Board Chair of the WLE steering committee.



Senior Fellow, Meridian Institute

Brent Swallow

Brent Swallow is Professor of Agricultural and Environmental Economics at the University of Alberta, Canada. He is a member of the WLE Steering Committee and specializes in payment for ecosystems services.



Claudia Ringler

Claudia Ringler is Deputy Program Director for WLE and is an ex-officio member of the WLE steering committee. She co-leads WLE's research theme on Managing Resource Variability and Competing Use. Claudia is Deputy Division Director of the Environment and Production Technology Division at the International Food Policy Research Institute (IFPRI).



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Dr. Stefan Uhlenbrook is the Program Director for the CGIAR Research Program on Water, Land and Ecosystems (WLE) and is an ex-officio member of the WLE steering committee. He is also the Strategic Program Director – Water, Food & Ecosystems for the International Water Management Institute (IWMI).



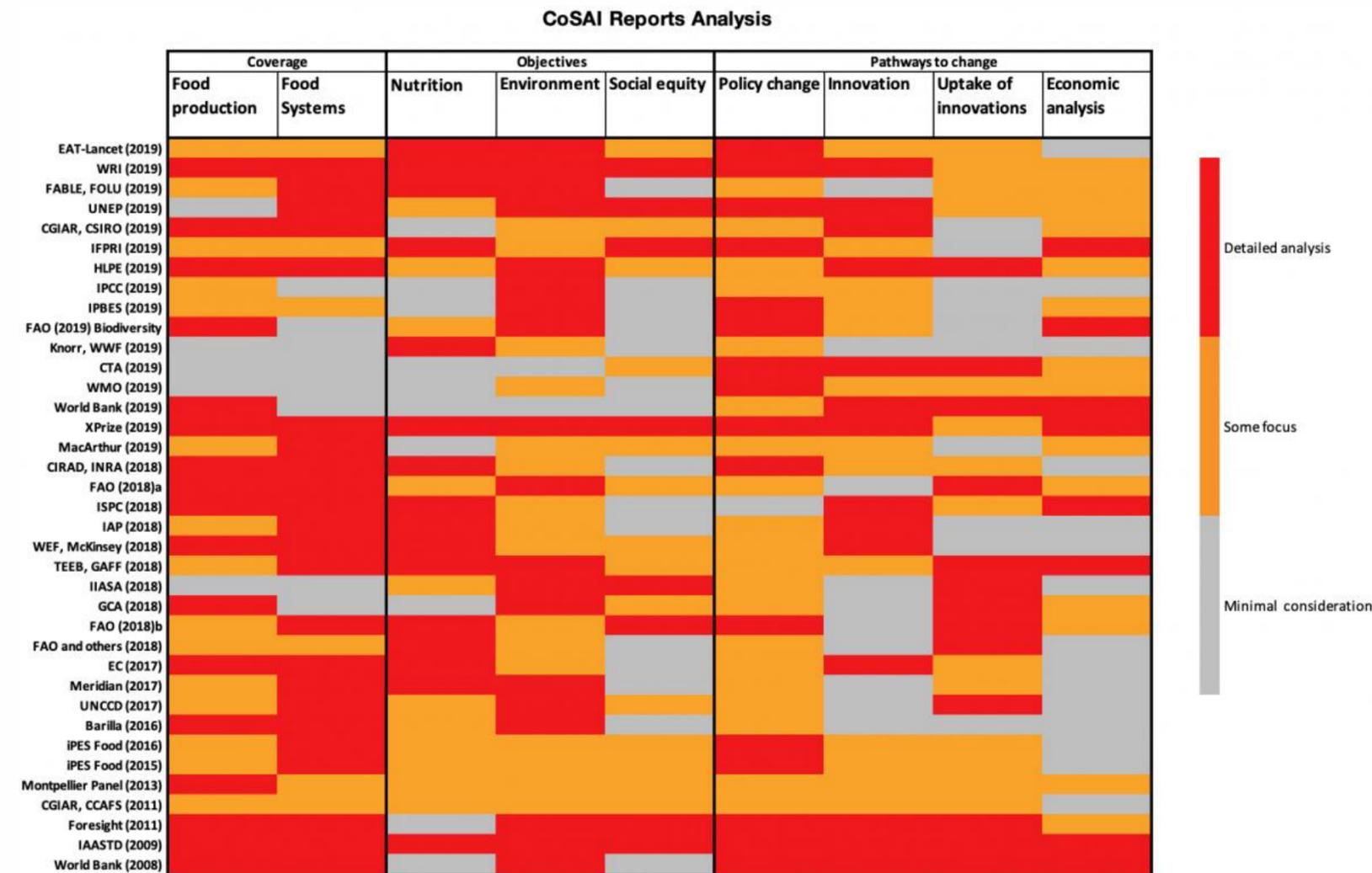
** Stefan Uhlenbrook took over as WLE Director, responsible for CoSAI, in March 2021*

Names of Secretariat Staff can be found in the [acknowledgments](#).

Agreeing overarching aims

The first challenge for CoSAI was to define its main aim and focus. In late 2019, the Secretariat reviewed previous and existing global initiatives in this area. At that time, there were already over 26 related global reports published in the preceding 3 years, with more planned for 2020-2021. CoSAI did not want to duplicate these. Moreover, sustainable agriculture and SAI is a complex and contested area, and very context-specific, so CoSAI looked for an entry point that would add value at a global level.

The WLE Steering Committee looked at several options for CoSAI. It approved a focus on research and innovation – a key area that (at that time) was relatively neglected in the global debate. **The agreed aim of CoSAI was to promote 'more and better' investment in innovation to underpin a rapid transformation of agri-food systems.** Due to the limited timeframe for CoSAI, it was decided not to focus on improving innovation *systems* (a broader challenge involving infrastructure and supportive policies). Instead, the aim was to influence the attitudes and *practices of direct investors in agri-food innovation: i.e., research and innovation organizations and their funders.*



Source: <https://wle.cgiar.org/cosai/context-cosai>

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The 21 CoSAI Commissioners, who all hailed from the Global South, were independent of WLE, and all volunteers (apart from the Chair, who worked approximately 1 day a week). They represented a wide diversity of backgrounds, knowledge and expertise. Two additional Commissioners who were active in the beginning of CoSAI are not shown here: Shenggen Fan and Alice Ruhweza.

Agreeing definitions, scope and focus

Commissioners met several times at the beginning of the Commission to agree on definitions: What do we understand by Sustainable Intensification? What do we mean by innovation? And scope, e.g.: Food or Agri-food Systems, or a narrower focus on agriculture? Food only, or other agricultural products?



Lessons on process

Agreeing definitions and scope is important, but can potentially be time-consuming and suck enthusiasm from Commissioners – even when the Secretariat takes on the main drafting burden. In CoSAI, having a specific proposal for a Commission activity (a study) ready to debate at start-up, alongside the general discussions, helped maintain group energy, as did the formation of working groups.

Diversity in Commissioner backgrounds and experience proved very beneficial. However, for future Commissions it is worth reflecting how much diversity is the ideal mix with respect to *understanding of and views on key controversial issues*. While differences can be stimulating and productive, they can also potentially result in group disharmony, or (implicit) dominance of a particular view. In theory, in-depth discussions in the group could overcome some differences. but in practice not all Commissioners have time for this. CoSAI resolved this problem by a group focus on 'common denominator' topics where there was broad consensus, but this did mean that some areas of potential controversy were avoided.

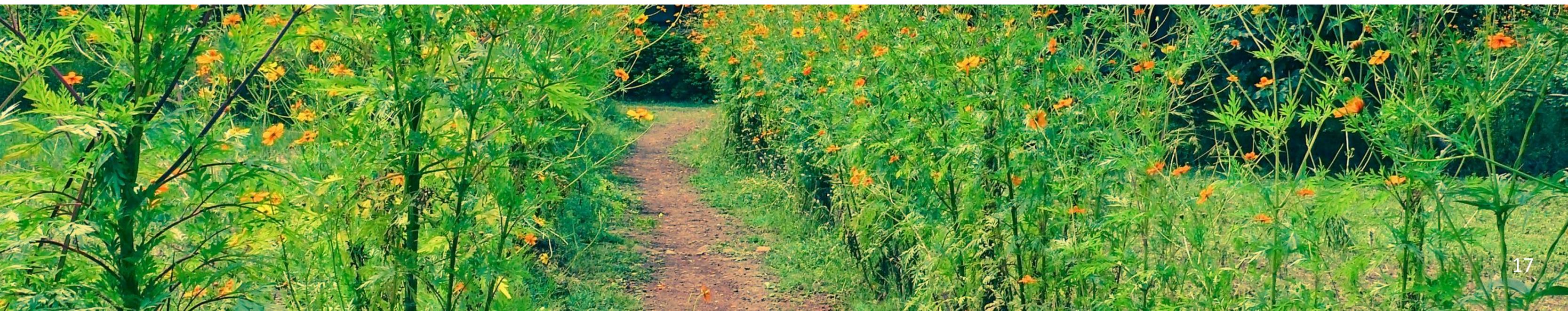
Agreeing definitions, scope and focus *(continued)*

CoSAI Commissioners agreed on broad definitions of both Sustainable Agricultural Intensification (SAI) and innovation, which were incorporated into [Frequently Asked Questions \(FAQs\)](#).

For CoSAI, SAI goes beyond "producing more food with less land and inputs" and refers to the transformative changes in agriculture and food systems that are urgently required to meet rapidly-increasing global needs for affordable, nutritious, safe and healthy food, while protecting and improving the natural environment and promoting resilient livelihoods and social equity.

Innovation was broadly defined as doing things in new ways (for the particular location) and covered innovation in policy, finance and social institutions, as well as science and technology.

CoSAI's original focus was on agricultural systems (supply side) rather than the whole agri-food system (including the demand side). However, over time this became flexible; e.g., the Principles for Agri-food Research and Innovation address agri-food systems as a whole.



Working groups and 'big questions'

The Commission agreed on six 'big questions' to explore through a range of commissioned studies and stakeholder engagement. Six virtual working groups were set up to explore the following questions:

- 1. Future of food and innovation:** What will future agricultural systems in the Global South require in terms of innovation in sustainable agriculture intensification (SAI), and how might this be affected by different future scenarios, reflecting drivers such as climate change and COVID-19?
- 2. Innovation investment priorities:** What are the current priorities for the major investors in innovation in SAI for the Global South, and how do they need to change?
- 3. Pathways for innovation:** What are the lessons from successful pathways to the generation and wide uptake of innovations in SAI in the Global South, and how can constraints be overcome?

- 4. Innovation and environment:** How can innovation best help achieve the diverse environmental objectives of SAI?
- 5. Innovation and social and human objectives:** How can innovation best help achieve human objectives of SAI – poverty reduction, equity and nutrition?
- 6. Principles and metrics:** What are the principles and metrics needed to guide future innovations in SAI for the Global South?

Each working group had a Commissioner chair or co-chairs* and was supported by the Secretariat. Each working group took its own path: some ended up exploring more restricted or slightly different questions. Most groups identified evidence gaps that were then filled by CoSAI studies ([see Evidence slides](#)).

* Many thanks to (co)-chairs David Simon, Haris Gazdar, Maurício Lopes, Rasheed Sulaiman, Rodomiro Ortíz, Sara Mbago-Bhunu, Vara Prasad and Ximena Rueda.



CoSAI evidence

Introduction

Funding innovation

1. Investment landscape
2. Investment gap

Investment priorities

3. Mapping research publications
4. Paying for nature
5. Urban and peri-urban agriculture

Doing innovation better

6. Principles for Agri-food Research and Innovation
7. Approaches and instruments
8. Innovation pathways

Introduction: Building an evidence portfolio

Based on issues identified in [working groups](#), CoSAI commissioned a range of studies. The studies identified investment trends, calculated investment gaps, and estimated the returns that higher investments could generate for agricultural productivity, food security, and climate adaptation and mitigation.

CoSAI set up Oversight Groups for studies. These were voluntary committees, chaired by Commissioners and partners*, that reviewed Terms of Reference and draft reports, and recommended technical selection of bids#. They provided opportunities for group learning and debate.

* Thanks are due to chairs Donald Menzies (FCDO), Irene Annor-Frempong, Maurício Lopes, Rasheed Sulaiman, and Vara Prasad.

All contracts followed [IWMI](#) procurement rules. The IWMI procurement committee made final decisions. It was independent of CoSAI.

CoSAI also set up a global [Task Force](#) of 30 voluntary experts, chaired by CoSAI Commissioner Vara Prasad, the head of the USAID Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification at Kansas State University, and Preetmoninder Lidder from the Food and Agriculture Organization of the United Nations (FAO), to work on Principles for Agri-food Research and Innovation that promote sustainable agri-food systems, together with guidance and metrics to support these Principles.

Key findings of the studies and of the Task Force (outlined in following slides), have informed a series of recommendations targeting the mobilization of investments in innovation and their application across the Global South.

1. Investment landscape

What is the current pattern of innovation investment? How much promotes sustainable and equitable agri-food systems?

CoSAI commissioned [Dalberg Asia \(2021\)](#) to review the current landscape of agricultural research and innovation for the Global South. Key findings included:

- Funding for agricultural research and innovation for the Global South is about \$60 billion per year. About 60% of this is from Global South governments (half of that from China), about 30% from the private sector, and about 10% from aid and development partners.
- Only 7% of all funding has tangible environmental aims, and only half of that also has social aims.
- Important areas that appear underfunded include farmer-saved and local seed systems and post-harvest issues.
- Six case studies cover seed systems, financial innovation, USAID, IFAD, Brazil, India and Kenya.

Recommendations:

- **Funders and innovators should reorient research and innovation to include sustainability and equity aims**, adopting common international principles to track innovation intentions and implementation.
- **Funding bodies should increase funding for agri-food systems innovation as an immediate priority.** Research and innovation have long lead times for their major payoffs, and they need upfront investment to meet global goals.
- **The global community should address critical innovation gaps.** Innovation in policy, institutions and finance is vital, but rarely addressed systematically. Other underfunded areas identified in the study were post-harvest issues, local seed systems and natural resource management.
- **International agencies should join together to track global funding flows for research and innovation**, including the proportion of funding that promotes sustainability and equity aims. (CoSAI organized a technical meeting on this in January 2022, bringing together providers and users of innovation tracking information.)

Further information: [Policy Brief on Innovation Funding; Full Report, Case Studies and Data](#)

2. Investment gap

How much needs to be invested annually in agricultural innovation for the Global South?

CoSAI and [FCDO](#) commissioned a modelling study to determine how far away innovation investment is from helping agri-food systems achieve zero hunger goals and the Paris Agreement while reducing impacts on water resources in the Global South. The results ([Rosegrant et al, 2021](#)) show that the world can come much closer with some well-placed investments.

A complementary study ([Nin Pratt, 2021](#)) modelled investment in agricultural extension and access to finance. It concluded that bringing up the level of all countries to that of best-performing countries in the Global South would reduce the risk of hunger and poverty by about a third relative to innovation alone.

Further information: [Policy Brief on Investment Gap](#)

Recommendations:

- The international community should help get SDG2, SDG6, SDG13 and the Paris Agreement back on track by **closing an investment gap of US\$15.2 bn for agricultural innovation** – modest in light of the US\$700 bn spent every year on agricultural subsidies.
- **Investors should put a further US\$4 bn a year into national and international R&D, private R&D, and higher research efficiency** to approach zero hunger in the Global South by 2030.
- **National and international investors should deploy US\$6.5 bn a year for climate-smart technical mitigation options in farming** to reduce and sequester emissions on a path to less than 2°C of global warming.
- **Investors should improve water resource management with US\$4.7 bn a year** for innovation to rein in agricultural blue water use by 10% in 2030.
- **Public and private investors should make complementary investments** in finance, agricultural extension and infrastructure.

Comment: Food systems modelling is critical to predict results at scale. It needs to be transparent, iterative and ideally collaborative ([AgMIP](#) is an example) to look squarely at different options and assumptions, and ensure the implications are widely understood.

3. Mining the gaps: Mapping research publications

What are the gaps and potential areas for investment in research and innovation for the Global South?

The evidence base on agri-food systems is growing exponentially. A CoSAI-commissioned study ([Porciello et al, 2021](#)) applied **artificial intelligence to mine more than 1.2 million publications** for data, creating a clearer picture of what research has been conducted on small-scale farming and post-production systems from 2000 to the present, and where evidence gaps exist.

The study used Havos AI machine learning models to extract information from each publication based on a series of modular questions. Graphical maps of the data provide policymakers and funders with a more nuanced view of the information available, which can help them to prioritize and coordinate international funding and research efforts.

Recommendations:

- **Research and innovation for agri-food systems should routinely integrate measurements on social equity and health outcomes.** Only a fraction of publications focus on outcomes related to people, such as health and nutrition. The gaps are starkest around social equity and inclusion outcomes, such as for women and elderly, indigenous and poorest, covered in less than 10% of publications analyzed.
- **Research and innovation organizations should prioritize programs that go beyond measuring farm- and household-level outcomes.** There has been relatively little attention to landscape or macro-level analyses that are especially important for the natural environment.
- **Research organizations should fast-track research on ecosystems, biodiversity, and climate change in various climate zones.** Research on ecosystem services is limited compared to research on technological and socio-economic innovations.
- **Funders should invest in opportunities to increase global research efficiency through identifying and sharing research.** South–South cross-learning increases efficiency and the speed of innovation. Better platforms and toolkits using machine learning will help researchers and decision-makers use existing data better.

Further information: [Policy Brief on Mining the Gaps](#)

4. Paying for nature: Innovation in farm reward mechanisms

How can farm-level reward mechanisms support a transition to sustainable and equitable agriculture?

CoSAI held [public debates with experts](#) and commissioned a global review of financial instruments used for payment to farmers, undertaken by the SDG Center for Latin America and the Caribbean (CODS) ([Moros et al, 2022](#)). Examples include payments for ecosystem services, REDD+ and voluntary standards, and sustainable agriculture investment projects.

The key finding was that **investment is badly needed to innovate improved farm-level payment mechanisms to support farmer-stewards to protect and restore nature.** Otherwise, the lack of effective channels is likely to be a bottleneck in the uptake of the trillions of dollars of new financing coming to this area from the public and private sectors.

Recommendations:

- **Public and private investors who want to deliver environmental outcomes should invest sufficient resources into innovating fair and effective farm payment mechanisms that support farmers** to protect and restore nature and tackle climate change in agri-food systems of the Global South.
- **Investors should work with farmers, communities and local governments to innovate and monitor payments and payment mechanisms** to ensure they are practical and relevant to local conditions and to jointly address policy constraints.
- **Investors should develop credible systems to monitor investment impact** and ensure no one is left behind, e.g. rural workers with little or no land. Badly designed payments can make the poor poorer.
- **Governments and international development partners need to invest sufficient public finance to reach public goals**, including for financial innovation, technical assistance to farmers, and fixing underlying conditions for success such as land and subsidy policy.

Further information: [Policy Brief on Paying for Nature](#)

5. Priorities for innovation in urban and peri-urban agriculture

How can towns and cities be fed sustainably? And what does urban growth mean for innovation priorities?

By 2050, it is projected that nearly 70% of the global population will live in urban areas and 80% of food consumed will be in urban areas. 40% of cropland is within 20 km of an urban area. With support from and in conjunction with the [WLE Program on Rural-Urban Linkages](#), a CoSAI commissioned study of urban and peri-urban agriculture ([Prain, 2022](#)) addressed priorities for innovation. A complementary study on Controlled Environment Agriculture (CEA) ([Halliday et al, 2021](#)), conducted by the RUAFA Global Partnership, considered different technologies available and options for innovation.

Further information: [Policy Brief on Innovation in Urban and Peri-urban Agriculture](#); [Policy Brief on Controlled Environment Agriculture](#)

Recommendations:

- **Innovations in land use policy through land use and food mapping, introducing zoning, incentives and allocation of public plots for farming**, can protect and boost agricultural spaces around and within cities.
- **Innovations in the safe reuse of solid and liquid wastes in UPA and provision of other ecosystem services** can support climate change mitigation and adaptation and the transition to an urban circular bioeconomy.
- **Innovations in the repositioning and diversification of local food markets, vendor enterprises and institutional markets** can increase the density of short value chains with local food producers, promote healthier food consumption and generate decent employment.
- **Innovations in institutional management** of food production, marketing and consumption across city regions, working through stakeholder consultations, participatory planning and national food policy frameworks, can strengthen the resilience of city region food systems.
- **Innovations in cross-sectoral engagement and building of partnerships and support networks**, including engagement of 'development brokers', can strengthen horizontal and vertical integration of efforts to make food policy and UPA central to sustainable urban development.

6. Principles for Agri-food Research and Innovation

How do you know if an investment 'counts' as likely to promote environmental or social sustainability?

A Task Force of voluntary experts set up by CoSAI has developed a clear set of eight Principles (and sub-principles) for innovations and research, and innovation processes that promote sustainable agri-food systems, together with guidance and metrics to support these Principles ([Zurek et al, 2022](#)).

Following pilot testing in early 2022, **the Principles can now be used by investors and managers of research and innovation to plan, guide and monitor progress against sustainable agri-food systems objectives.**

Further information: [Policy Brief on Principles](#); [Principles, Metrics and Guidance Documents](#).

The eight main principles:

1. Set out a clear theory of change towards intended impacts, based on a food systems perspective and reflexive learning
2. Design transparent and evidence-based innovation processes
3. Conduct innovation processes in an inclusive and ethical manner
4. Address potential trade-offs, synergies, efficiencies and unintended effects
5. Consider contribution to improved food and nutrition security and health
6. Consider contribution to sustainable and circular management and utilization of natural resources
7. Consider contribution to a viable economy and sustainable livelihoods
8. Consider contribution to an ethical, equitable and adaptive agri-food system for current and future generations

7. Approaches and instruments for research and innovation

What lessons can help innovators and investors make choices about funding approaches and instruments?

A range of public and private instruments have been used to stimulate and support innovation in agriculture, e.g., innovation platforms and networks, grants and prizes, accelerators and innovators. A CoSAI-commissioned study ([Letty et al, 2021](#)) critically compares and evaluates the effectiveness of different instruments at realizing economic, environmental and social objectives.

Key findings of the study were that these newer instruments have much potential, but that they have not been used much at scale or in national systems. One reason for this is a widespread lack of key data, e.g., on costs and transaction costs.

More information: [Policy Brief on Instruments for Innovation](#)

Recommendations:

- **Researchers and innovators should carefully select the innovation approaches and instruments appropriate for their objectives**, making use of the decision questions and tips in the CoSAI study. Often, a combination of instruments will be needed.
- **Innovation instruments need to be carefully designed, particularly for social inclusion.** Otherwise, it is easy for factors such as labour costs, travel, the timing of meetings or complex form-filling to exclude key participants, such as women or the poorest farmers.
- **Funders and innovators should plan for sustainability of innovation instruments.** Early consideration needs to be given to anchoring instruments within permanent organizations and planning for financial sustainability. Instruments will only work at scale when embedded in national innovation systems.
- **Research and innovation organizations should institute systematic monitoring, evaluation and learning on innovation instruments and approaches.** Data such as costs, numbers and types of participants, transaction costs for all parties, and measures of outputs and outcomes must be systematically recorded to build evidence on the effectiveness and efficiency of different instruments.

8. Pathways for agri-food innovation at scale

What are the factors shaping successful innovation pathways that could be applied around the world?

Three country case studies led by Agroicone in Brazil ([Chiodi Bachion et al, 2022](#)), CEEW in India ([Khandelwal et al, 2022](#)) and Resource Plan in Kenya ([Mati et al, 2022](#)) systematically reviewed agri-food innovation success stories at scale. The reports examine which factors led to success and how the cases measure up in terms of meeting environmental, social and economic objectives, and managing the trade-offs between them.

The country case studies are complemented by a global synthesis of case studies ([Kohl, 2022](#)).

Further information: [Policy Brief on Innovation Pathways](#)

Recommendations:

- **Private investors and innovators should seek opportunities** where they align on the level of outcomes and larger vision, where they can form synergistic partnerships, and where they can tailor context-specific packages.
- **Investors with risk appetite must lead the way for transformative change**, with their willingness to invest in long-term ideas, deploy innovative financing and stay flexible.
- **Public innovators should invest in enhancing social capital and social organizations to facilitate multiplier and spillover effects.** Government support can facilitate innovation in a concerted manner as part of the state agenda, and connect with broader agendas like climate action.
- **All innovators need to understand and address bundles of factors affecting scaling** including technology, policy, finance and institutions. **Individual and organizational leadership** is a critical issue in bringing these together, and needs to be developed and supported.
- **Public and private actors should review and adapt innovations over time** to meet producer and market needs, and invest in the continuity and quality of extension and advisory services.



- Objectives
- Partnerships
- Key events
- Capacity development

CoSAI advocacy and capacity development



Advocacy objectives and approach

The focus of CoSAI's advocacy efforts was to engage key decision makers with the evidence portfolio to support investment behavior change. The main approach was to use the network and global standing of the Commissioners, as well as partner-delivered and CoSAI-delivered events, and publicity such as [Op-Eds](#), to highlight the CoSAI evidence to support this investment behavior change. 2021 saw engagement with both UNFSS and COP26 processes – the key food and climate events of the year – through several channels and discussion groups.



CoSAI also focused efforts with key regional bodies, including the Asia-Pacific Association of Agricultural Research Institutions (APAARI), the Forum for Agricultural Research in Africa (FARA), the Alliance for a Green Revolution in Africa (AGRA) and FONTAGRO – a co-financing mechanism and discussion forum for agricultural technology and innovation in Latin America, the Caribbean and Spain. Involvement from an early stage provided the opportunity for these regional bodies to develop ownership of the CoSAI evidence and the ability to continue utilizing it after CoSAI concluded.

CoSAI also worked with global bodies such as the Tropical Agricultural Platform (TAP), the Global Forum for Agricultural Research (GFAR) and the International Union for the Conservation of Nature (IUCN). CoSAI engaged regularly in several other working and steering groups: ClimateShot and its Impact Investing Coalition; Just Rural Transition and its Repurposing Public Support to Food and Agriculture Group; and others. CoSAI also partnered with the Innovative Food Systems Solutions (IFFS) Portal to share results.

Partnerships

CoSAI built partnerships with regional bodies, research and development agencies and the private sector to share knowledge and engage collectively to promote more and better-targeted innovation in sustainable agriculture intensification. A selection of partner and event logos is below.



GFAR



AGRF



**Just
Rural
Transition**



Events

CoSAI's findings have been shared and debated in numerous global and regional meetings and one-off presentations tailored for particular audiences. The majority were externally organized or co-organized events: a more efficient use of limited resources. A full list of events can be found in the [annexes](#).

Events were used by CoSAI for different purposes, e.g.:

- To collect views and spark interest in emerging topics, such as finance for farmers
- To launch and debate findings and recommendations of particular CoSAI studies
- To spark dialogue among different partners about how CoSAI evidence can be used in different contexts to improve innovations and their outcomes.



Dr Grethel Aguilar, Deputy Director General of IUCN and CoSAI Commissioner, and Ms Josefina Achaval-Torre, CoSAI Project Officer, take questions from the audience at the IUCN Congress.

Examples:

Collecting information on metrics and investment models

CoSAI organized two expert meetings in December 2020, to collect and share information on existing metrics for research and innovation and investment models, and to collect expert views on how to develop these areas of work. These resulted respectively in the [Principles and Metrics Task Force](#) and the [Investment Gap Study](#).

Debating Paying for Nature: how to improve finance for farmers

CoSAI teamed up with [IUCN](#) and the Latin America Center for the SDGs ([CODS](#)) to organize one global and several regional meetings to debate innovations needed in finance to support farmers to protect and restore nature. Presentations were made by a wide variety of experts including farmer unions, private and public sector financiers, green finance projects and researchers. The results were fed into a [CoSAI policy brief](#) and shared with organizations working on green finance.

Exploring approaches and instruments for research and innovation

CoSAI's study on approaches and instruments showed that there was a lot of potential in newer instruments (such as innovation platforms and networks and payment by results) but that these are rarely used at scale. It also highlighted major information gaps, e.g., on transaction costs that might discourage uptake. CoSAI organized three regional dialogues, one cross-regional dialogue (with [TAP](#) and [GFAR](#)), and meetings with [CGIAR](#) on the need for collecting better information and promoting successful instruments. Some partners have shown interest in taking this forward.

Capacity development

A key aim of building partnerships was to enable CoSAI's emerging evidence to support the capacity development of those partners, and their partners, to improve the impact of innovation investment and implementation.

In the concluding stages, CoSAI developed a Masterclass* focused on effective utilization of innovation in agri-food systems, using the CoSAI evidence base as the foundation of the Masterclass. The approach is to explore the evidence as a knowledge asset, in order to develop capacity for approaches that will enable the more effective use and sustainable impact of innovation in agri-food systems, considering the specific context in which the participants operate. The Masterclass explores innovation in science and technology, finance, policy and institutional development, with the aim of influencing the behaviour of both private and public investors and policy makers to ensure more sustainable and impactful public and private investment.

* Dave Shearer of the Secretariat conceived and developed the Masterclass, with support from FreshSpectrum and Scriptoria and inputs from selected CoSAI staff and researchers. Enquiries to david.shearer@anu.au.edu

The Crawford Fund and Asia-Pacific Association of Agricultural Research Institutions (APAARI) are investing in the piloting of the Masterclass in Asia in June 2022. An evaluation will be conducted to improve future Masterclasses. It is also likely that the Masterclass will be delivered at the African Green Revolution Forum (AGRF) 2022 in Kigali.

The learning objectives of the Masterclass are to:

- Understand the current investment landscape in innovation for agri-food systems: what are and where are the gaps, and what strategies can be considered to improve investment decision making?
- Build an understanding of tools that support investment decision making and innovation delivery and scaling on the ground, and how these can be used in various contexts.
- Gain insights on current and future challenges in global and agri-food systems, and how these need to be considered in public policy and private decision making to ensure equitable and sustainable future food systems.





- CoSAI contributions
- Challenges and responses
- Management lessons for similar initiatives
- Concluding remarks

Reflections



CoSAI contributions to global change

It is tricky to attribute the direct influence of CoSAI to specific actions, since CoSAI operated in an international environment of constant debate and exchange of ideas on sustainable agri-food systems, including through the major global events of UNFSS and COP26 held in 2021. However, and notwithstanding the relatively short timeframe, there are already some indications of the uptake of ideas and evidence from CoSAI, and potential for change as a result.

- Two major global initiatives on supporting agri-food innovation to tackle climate change started up in 2021: **Climateshot** and **AIM for Climate**. CoSAI's evidence, particularly on the need for more innovation investment and reorienting current investments for sustainability, has been repeatedly cited, including in the [Climateshot Action Agenda](#).
- The Food and Agriculture Organization of the United Nations (FAO) is currently developing an **Agri-food System Technologies and Innovations Outlook (ATIO)** to track agri-food innovation. As this work develops, it is hoped that ATIO would also track uptake of the Principles for Agri-food Research and Innovation.
- Some of the organizations of the members of the Principles and Metrics Task Force are moving towards being **early adopters of the Principles for Agri-food Innovation**. For example, the Asia-Pacific Association of Agricultural Research Institutions (APAARI) is initiating capacity development work to support some of its member countries in adopting the Principles.
- CoSAI has two accepted [T20](#) proposals for **policy briefs to be discussed by G20 leaders** later in 2022 for potential support on tracking agri-food innovation, and on innovation for urban and peri-urban agriculture.
- Longer term: CGIAR top leadership is actively discussing how to integrate CoSAI findings into the **OneCGIAR reforms**, including pathways and instruments for innovation and broader social equity issues. The **Good Food Finance Network** and **ClimateShot Impact Investing Coalition** have shown interest in CoSAI findings on financial instruments.
- Finally, CoSAI has initiated a research topic on agri-food innovation in [Frontiers in Sustainable Food Systems](#) to collect and showcase rigorous research in this area.

Challenges and responses

CoSAI had its share of challenges. Some are listed below, together with CoSAI responses.

- The global COVID-19 pandemic coincided closely with the start-up of CoSAI, and the pandemic lasted throughout the CoSAI period. This had several consequences, including moving CoSAI entirely online, with a virtual Secretariat and online Commissioner meetings. While virtual working was remarkably efficient on the whole, the lack of any face-to-face meetings, along with the wide range of time zones, made it more difficult to run a coherent Commission and working groups. While the majority of CoSAI Commissioners and Secretariat staff were well-engaged and responsive, at least in one of the working groups, some individuals were less engaged and productive than expected. Many Commissioners felt let down by the lack of an opportunity to meet face to face at least once. Moreover, agreeing on an 'impact pathway' to guide CoSAI proved difficult in a virtual world with asynchronous and sporadic participation, and many global uncertainties. A working group on *Making Change Happen* started with this aim, but eventually focused more on organizing partnerships and events.
- An initial idea for CoSAI was to manage critical and challenging online debates on existing evidence, including from other recent global reports. However, this vision was overtaken by events, as global and regional meetings on agri-food systems multiplied astronomically prior to UNFSS and COP26, both held in 2021. The global pandemic also led to widespread national lockdowns, and a massive increase in online meetings that rapidly induced 'zoom fatigue'. As a result, CoSAI turned its attention to generating new evidence to fill identified gaps.
- Designing the Commission for wide representation was challenging, as was getting all voices heard. Commissioners based in the Global North were often the most vocal in plenary sessions. It tended to be harder to persuade women to join CoSAI or to spend much time on it, due (they mentioned) to multiple work and family responsibilities. The division of labour into working groups was helpful, although this required considerable Secretariat resources to support.
- The Secretariat was slow to get adequate human resources, partly due to early uncertainty about the direction of CoSAI. A full team was recruited at the end of 2020, with a corresponding leap in productivity.

Management lessons

These lessons have been put together by the Secretariat, incorporating comments from Commissioners and others*.

- 1. Was a global Commission the best modality to tackle evidence and advocacy around increasing and improving investment in agri-food innovation?** A Commission was an effective modality for raising important questions, investigating the answers and spreading the word widely. The effects are a 'slow burn' – with individual Commissioners and Secretariat staff taking results forward in their own organizations and networks. CoSAI, however, only had a moderate global profile. A contrasting modality is shown by ClimateShot – a high-profile, focused, advocacy campaign that started in early 2021, led by another CGIAR Research Program (CCAFS) and FCDO, which effectively leveraged high level political commitment in COP26 to improve agri-food innovation. ClimateShot was run by a tight core with a wider 'steering group' (including representation by CoSAI) to give it legitimacy and buy-in. The campaign built on previous experience from CCAFS, and drew in some CoSAI evidence, but also contracted other short studies to get quick answers to key campaign questions. The main lesson is that form should follow function – clarity of objectives should precede decisions on a modality.

* Full responsibility for any errors and misconceptions rests with the [lead author](#) of this report.

CoSAI's approach

- All 21 Commissioners originated from the Global South. They were selected for diversity in background, expertise, gender and age.
- CoSAI commissioned a **portfolio of studies** to answer questions raised by Commissioner working groups.
- From start-up, CoSAI mixed advocacy with collection of new evidence and discussions on emerging findings.
- Formal partnerships were developed with key organizations, including regional research networks.

2. CoSAI came out of CGIAR, which has a historic emphasis on the Global South. Was a focus on the Global South appropriate? Past Global Commissions have often been dominated by the Global North, with a few 'usual suspects' from the Global South. Thus, it was effective for CoSAI to bring together a range of Global South voices. Having Commissioners from the Global South also appeared to increase levels of trust in many interlocutors.

On the other hand, the effects of globalization and changes in economies mean that the binary distinction between Global North and South is becoming harder to define, and many agri-food problems are global. CoSAI's work increasingly moved to reflect this over time; e.g., the Principles for Agri-food Research and Innovation are global in scope.

Lessons *(continued)*

3. What are the lessons for institutional location and governance? CoSAI had a funding base in the CGIAR, reported to the management and governance structure of WLE, and independent Commissioners – potentially leading to tensions between the priorities of different groups and individuals. In practice, WLE oversight was light-touch and helpful, but a general lesson is that objectives and responsibilities of different bodies need to be clarified and agreed early on, and this can take time to think through.

4. What are the lessons for design, resourcing and skills? Commissioners had Terms of Reference and received honoraria. The Commission size was chosen for balance between diversity and the size of a manageable online meeting. (It still lacked representation of some areas, e.g., Southeast Asia, as well as some gender balance.) Given the multiple and often unexpected demands on Commissioners – e.g., illness, new jobs – a large Commission with an active core and multiple working groups worked fairly well, to mitigate the risk of lack of engagement. This also worked well with the Principles Task Force (30 members).

The final Secretariat complement – of a head, deputy, four project officers and a contracted team of communications consultants – was found to be the minimum needed for effective support. The skills needed included technical knowledge (M.Sc. or even B.Sc. is adequate if a ‘quick study’), good organization, verbal and written communication, ability to work well with a wide variety of people,

and – above all – flexibility and dedication to deliver a changing set of demands at high speed. Assigning Secretariat Project Officers to particular areas of work enabled them to build up expertise; post-CoSAI, several have been recruited for positions that enable them to carry forward CoSAI recommendations.

5. Was a portfolio approach to evidence collection effective? Producing a portfolio of studies was a useful approach, as it spread risk, and enabled CoSAI to start campaigning on findings from early studies before others emerged. It also enabled the evidence gathering to reflect the varied interests of a diverse Commission. The recruitment of a diverse group of research teams to carry out studies also had spin-off benefits, as the researchers have carried CoSAI findings forward in their own networks (e.g., [Dalberg Asia](#)) and publications (e.g., [IFPRI](#)). On the other hand, managing a portfolio of reports and associated advocacy events, blogs and briefing papers needed significant resources.

6. What are the lessons for study procurement and management? CoSAI recruited external experts to address the identified questions, with Oversight Groups of Commissioners commenting on Terms of Reference and draft reports (final decisions rested with the authors). There can be a considerable learning curve for all involved, and the Secretariat needs to allow sufficient time for management. Competitive tender pays back the extra time invested, but takes 2 to 3 months. If sole contractors are used to save time, they should write full technical bids before recruitment to ensure they are on top of the material. A formal CoSAI preference for Global South researchers worked well. Extending Oversight Groups beyond Commissioners was valuable for wider learning.

See also: specific lessons on [Timeline](#) and [start-up process](#).

Checklist for setting up a new Commission



The following checklist of useful questions has been built from the experiences of CoSAI.

Planning and set-up

1. What is the objective of the proposed Commission in terms of a) clear question(s) to address; b) scope; c) desired outputs (e.g., reports, meetings, articles); d) desired outcomes (e.g., changes in knowledge, attitudes and practice (whose)? Are key definitions and aims clearly specified?
2. Who are the partners directly interested in setting up the Commission? What are their proposed roles, e.g., management, governance, funding? Do all partners agree on aims and definitions? If not, how will differences of views be accommodated?
3. Is a Commission the most effective set-up to achieve the aims? This will require discussion of an initial theory of change/impact pathway and the options to achieve the desired outputs and outcomes. Bear in mind that Commissioners and the Secretariat, once recruited, will bring their own ideas to the table.

If (3) = yes, then...

4. How will Commissioners, and the Chair, be recruited? What are the key criteria?
5. What are the responsibilities of Commissioners? (Agreeing a Terms of Reference is useful, even for unpaid volunteers.)
6. How (if at all) will the time of the Chair and Commissioners be remunerated? (Remuneration is recommended, particularly for the Chair, and to get a wider range of voices)
7. What resources will be needed for the Secretariat and for communications? (see Management Lessons)
8. What are the risks and how can these be managed? (e.g. Commissioner drop out or fatigue, global pandemic...)

Start-up

9. Once Commissioners and Secretariat are recruited, the following questions need to be revisited and agreed:
 - a) What is the scope and focus of the Commission? (e.g. Agri-food systems or agriculture? Global or Global South?)
 - b) What are the **specific** desired outputs and outcomes?
 - c) What could be the most effective ways to reach the outcomes (theory of change)? How will risks be managed?
 - d) What can Commissioners commit to doing to achieve this? (realistically – discourage over-commitment).

Concluding remarks – CoSAI Chair and Head of Secretariat

This report focuses on the *management* lessons from CoSAI. A more limited set of slides is available for former Commissioners and others who wish to take forward *findings and recommendations*. Further information is available on the [CoSAI website](#).

The [report's lessons](#) skirt around one critical issue: did CoSAI tackle the right question in the end? CoSAI was [originally conceived](#) as a 'traditional' global Commission of experts, investigating a pressing question of our time: how to tackle Sustainable Agriculture Intensification (SAI) – in the limited sense of how to produce more food and agricultural products with less land and inputs – and producing a single, definitive global report. Instead, CoSAI [evolved](#) a [more limited focus](#) – on promoting more and better research and innovation for agri-food systems in the Global South – while taking a [broader view](#) on sustainability and agri-food systems. CoSAI moreover featured [Global South Commissioners](#), and a [portfolio of studies](#), instead of a single report. CoSAI also evolved over time in response to opportunities and [challenges](#), including from Covid19.

No [counterfactual](#) is available. However, [the reasons](#) that CoSAI developed the above approach remain unchanged: the context-specificity of agri-food systems, the controversies around 'SAI' and the Commission modality. All that any short-term Commission can hope for is to influence the bubbling global and national debate, and this report contends that CoSAI's portfolio format, CoSAI Commissioners and partnerships [have helped to spark](#) discussion and action on several fronts – with hopes for lasting change.

Does this mean that the need to tackle the original concept behind setting up a Commission for SAI – producing more (nutritious and diverse) food with less land and inputs – has gone away? Far from it. [Current global food crises](#), along with the [destruction of nature](#) caused by the expansion of farming into natural habitats to increase production, have led even [former sceptics](#) to emphasize the crucial importance of productivity. However, this requires much more than a short-term global Commission; only long term partnerships between countries and multiple organizations can both spur the will to change and tackle the practical constraints. One example is the [Coalition on Sustainable Productivity Growth for Food Security and Resource Conservation](#) that “aims to accelerate...agricultural productivity growth that optimizes...sustainability across social, economic, and environmental dimensions”. Independent watchdogs will also be critical, to ensure that such initiatives live up to their aims – in particular the social equity dimension ([easily sidelined](#)).

What is certain is that *innovation* will still be a crucial factor for food systems transformation and needs [more and better investment](#). The [Principles for Agri-food Research and Innovation](#) should be widely adopted. While arguments over specific issues and technologies will continue to rage, countries and organizations will increasingly have to face tough trade-offs. Iterative, transparent and collaborative [modelling](#) of options will be important to ensure that numbers add up at scale, and that options and assumptions are widely understood. Far more attention will need to be paid to innovations in [finance](#), policy and social institutions, and to [develop the individual and organizational leadership capabilities](#) to put these together with technology to produce large-scale change. We have a small window of opportunity – let's not lose the sense of urgency.



- Publications and data
- Op-eds
- Events
- CoSAI working groups

Annexes





Publications: Policy briefs

1. [Reorienting funding for research and innovation](#) is an urgent step to transform agri-food systems
2. [Closing a modest investment gap](#) will put hunger, climate and water action back on track to meet global goals
3. [Mining the gaps: Using machine learning to map 1.2 million agri-food publications from the Global South](#)
4. [Better instruments and approaches](#) are needed to transform agri-food systems research and innovation
5. [Learning from agri-food innovation pathways](#) in Brazil, India and Kenya
6. [Eight research and innovation principles](#) for sustainable and equitable agri-food systems
7. [Innovation in farm reward mechanisms](#) is pivotal for transforming agriculture to protect and restore nature in the Global South
8. [Priority investments for innovation in urban and peri-urban agriculture \(UPA\) and food systems in the Global South](#)
9. [Controlled Environment Agriculture](#) for sustainable development: A call for investment and innovation

Publications: Full reports

Note: these are working papers that have not been formally peer-reviewed.

Chiodi Bachion, L.; Barcellos Antoniazzi, L.; Rocha Junior, A.; Chamma, A.; Barretto, A.; Safanelli, J.L.; Araújo, M.; Takahashi, N.; Maule, R.; Martins, S.; Ranieri, S.; Alves, V. 2022. *Investigating pathways for agricultural innovation at scale: Case studies from Brazil*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 61p. <https://hdl.handle.net/10568/119442>

Dalberg Asia. 2021. *Funding Agricultural Innovation for the Global South: Does it Promote Sustainable Agricultural Intensification?* Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 57p. <https://hdl.handle.net/10568/114762>

Halliday, J.; Kaufmann, R. von; Herath, K.V. 2021. *An assessment of controlled environment agriculture (CEA) in low- and lower-middle income countries in Asia and Africa, and its potential contribution to sustainable development*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. CGIAR Research Program on Water, Land and Ecosystems (WLE). 86p. <https://hdl.handle.net/10568/117234>

Khandelwal, A.; Agarwal, N.; Jain, B.; Gupta, D.; John, A.T. 2022. *Investigating pathways for agricultural innovation at scale: Case studies from India*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 64p. <https://hdl.handle.net/10568/119440>

Kohl, R. 2022. *Supporting innovation pathways for sustainable agriculture intensification: Lessons from cross country evidence*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 76p. <https://hdl.handle.net/10568/119680>

Letty, B.; Hart, T.; Murugan, S.; Naidoo, T.; Rai, S.; Zake, J.; Thiam, D.; Corfe, M.; Pringle, D.; Naidoo, S. 2021. *Effective approaches and instruments for research and innovation for sustainable agri-food systems*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 119p. <https://hdl.handle.net/10568/119411>

Publications: Full reports (*continued*)

Mati, B.M.; Sijali, I.V.; Ngeera, K.A. 2022. *Investigating pathways for agricultural innovation at scale: Case studies from Kenya*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 46p. <https://hdl.handle.net/10568/119441>

Moros, L.; Puerto, S; Monroy, D.; Achaval-Torre, J.; Rueda, X. 2022. *How can economic incentives designed for environmental conservation support a transition to sustainable and equitable agriculture?* Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 42p. <https://hdl.handle.net/10568/119419>

Nin-Pratt, A. 2021. *The role of extension and financial services in boosting the effect of innovation investments for reducing poverty and hunger: A DEA approach*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 36p. <https://hdl.handle.net/10568/119681>

Porciello, J.; Bourne, T.; Lipper, L.; Lin, S.; Langleben, S. 2021. *Mining the Gaps: Using Machine-Learning to Map a Million Data Points on Agricultural Research from the Global South*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 22p. <https://hdl.handle.net/10568/119437>

Prain, G. 2022. *Potential of urban and peri-urban agriculture in the Global South: Priority investments for innovation*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 100p. <https://hdl.handle.net/10568/119438>

Rosegrant, M.W.; Sulser, T.B.; Dunston, S.; Cenacchi, N.; Wiebe, K.; Willenbockel, D. 2021. *Estimating the global investment gap in research and innovation for sustainable agriculture intensification in the Global South*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 75p. <https://hdl.handle.net/10568/114761>

Zurek, M.; Hebinck, A.; Wirths, J.; Al-Malalha, M.; Crawford, S. 2022. *Task Force on Principles and Metrics for Innovation in Sustainable Agri-food Systems: Final Report*. Colombo, Sri Lanka: Commission on Sustainable Agriculture Intensification. 54p. <https://hdl.handle.net/10568/119439>

Supplementary publications and data

Innovation investment study

- [Methodology report](#)
- [Brazil case study](#)
- [CGIAR case study](#)
- [Finance case study](#)
- [IFAD case study](#)
- [India case study](#)
- [Kenya case study](#)
- [Seeds case study](#)
- [USAID case study](#)
- [Data download: Government spending](#)
- [Data download: Government extrapolations](#)
- [Data download: Private corporations](#)
- [Data download: Institutional investors](#)
- [Data download: Bilateral and multilateral](#)
- [Data download: Private philanthropy](#)
- [Data download: Consolidated sheet](#)

Task Force on Principles and metrics

- [Principles for Agri-food Research and Innovation](#)
- [Step-by-Step Guidance for Principles for Agri-food Research and Innovation](#)
- [Metrics table for Principles for Agri-food Research and Innovation](#)
- [Scoring Template for Principles for Agri-food Research and Innovation](#)
- [Score Aggregation Template for Principles for Agri-food Research and Innovation](#)
- [Biobook Task Force Members](#)



Op-eds and external policy briefs

Op-eds

Koziell, I. 2019. Our Food Systems Are in Crisis: It's not just from climate change. *Scientific American*. [October 15, 2019](#).

Echeverría, R.G. 2020. Fixing the global food system after coronavirus. *The Hill*. [March 5, 2020](#).

CoSAI. 2021. Driving innovation investments for sustainable agriculture in the Global South. *UNFSS Medium*. [May 26, 2021](#).

Echeverría, R.G. 2021. How to Feed the World Without Starving the Planet is a \$15 Billion Question. *Inter Press Service*. [August 23, 2021](#).

Mathew, J. 2021. Only 4% of \$3 bn spend targets sustainable agri. *Fortune India*. [October 6, 2021](#).

Mbago-Bhunu, S. 2022. Kenya: Ongoing Drought Shows Why Kenya Must Invest in Scaling Up Agricultural Innovation #AfricaClimateCrisis. *All Africa*. [February 23, 2022](#).

Rueda, X. 2022. How innovation in farm payments can create a welfare system for the environment. *AgFunderNews*. [May 31, 2022](#).

T20 (G20) Policy briefs

Compton, C.; Stads, G-J.; Barrett, C.B.; Herrero, M.; Arndt, C.; Prasad, P.V.V.; Zurek, M.; Khetarpal, R. [2022](#). *Global tracking of agri-food research and innovation for meeting food security and Sustainable Development Goals*.

Simon, D.; Fauzi, D.; Drechsel, P.; Melati, K.; Prain, G.; Jintarith, P.; Cavalleri, S.A.E.; Kangogo, D.; Osborne, M. [2022](#). *Food waste minimization and circularity for optimizing urban food system resilience*.

Events

2020 Q3	Meeting: African Green Revolution Forum (AGRF) CoSAI-led Side Event on innovation in urban and peri-urban agriculture (topic of AGRF)
2020 Q4	Expert meetings: Two CoSAI-led meetings on approaches to modelling and metrics for research and innovation
2021 Q1	Meetings: Forum on African Agricultural Research (FARA) keynote; University of Alberta (Canada) Invited Bentley Lecture; inputs into UN Committee on Food Security side event on Transforming Agricultural Innovation
2021 Q2	Meetings: First and final webinars in ClimateShot Campaign pre-COP26 series on innovation; Dialogues: FONTAGRO Regional Dialogue; Chairing agri-food systems financial dialogue as part of UN Food Systems Summit (UNFSS)
2021 Q3	Conferences: International Association of Agricultural Economists; International Agriculture Innovation Conference (keynote); IUCN World Conservation Congress (CoSAI session on finance), AGRF (CoSAI side event on Instruments for Innovation); Swedish AGRI4D; Presentations to: FAO science and innovation leadership; World Bank Tracking Transformation meeting; CGIAR leadership
2021 Q4	Regional dialogues: Asia-Pacific Association of Agriculture Research Institutions (APAARI) (two) and FONTAGRO; Meetings: Side event at the Global Forum for Rural Advisory Services; World Food Prize side event; WLE closing seminar. Presentation to: CGIAR System Council
2022 Q1	Presentations to: Green Climate Fund; Climateshot Impact Investing Coalition; International Fund for Agriculture Research; Commission on Food Systems Economics (FSEC); FONTAGRO; and CGIAR Board members; Expert provider – user meeting on tracking innovation; Cross-regional research dialogue on approaches to research and innovation.

Insofar as possible, CoSAI took advantage of existing events or co-organized them with partners. As well as those listed, individual Commissioners and Secretariat staff also took opportunities to raise CoSAI issues at a variety of other events.

CoSAI working groups: Commissioners

1. Future food scenarios

David Simon – co-chair
Rodomiro Ortiz – co-chair
Julio A. Berdegué
Ruben Echeverría
Sara Mbago-Bhunu
Vara Prasad
Ximena Rueda
Ayşegül Özkavukcu

2. Innovation Investment Study (IIS) Oversight Group

Vara Prasad – chair
David Simon
Jennifer Baarn
Rodomiro Ortiz
Ruben Echeverría
Sara Mbago-Bhunu

3. Uptake pathways

Mauricio Lopes – chair
Rasheed Sulaiman V. – co-chair
Irene Annor-Frempong
Uma Lele
Grethel Aguilar
Ayşegül Özkavukcu
Maurício Lopes
Julio A. Berdegué
Jennifer Baarn
Uduak Edem Igbeka

4. SAI and environment

Ximena Rueda – chair
Jack Liu
Sara Mbago-Bhunu
Pablo Tittonell
Grethel Aguilar
Vara Prasad

CoSAI working groups: Commissioners (*continued*)

5. SAI and human objectives

Sara Mbago-Bhunu – chair
Haris Gazdar – co-chair
Madiodio Niasse
Uduak Edem Igbeka
Varad Pande
Ximena Rueda

6. Investment gap study

Donald Menzies (FCDO) – chair
Rachel Lambert (FCDO)
Anna de Palma (FCDO),
Dhanush Dinesh (CCAFS)
Jim Jones, University of Florida
Ruben Echeverria
Uma Lele
Vara Prasad

7. Principles and metrics

Vara Prasad – chair
Pablo Tiltonell
Rodomiro Ortiz
Ruben Echeverría

Making Change Happen

Ruben Echeverría – chair
Jennifer Baarn – co-chair
Haris Gazdar
Sara Mbago-Bhunu
Varad Pande
Ximena Rueda
Grethel Aguilar
Communications team



For more information,
visit the CoSAI website:
wle.cgiar.org/cosai/