

# Better instruments and approaches are needed to transform agri-food systems research and innovation



Transforming food systems requires more effective and efficient research and innovation approaches – for example, to efficiently co-create innovations with end-users. A study commissioned by CoSAI compared 12 approaches and instruments intended to improve agri-food research and innovation, including innovation platforms, prizes, incubators and farmer field schools.

Photo: Brigid Letty

## Actions needed

- **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 labor 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 of different instruments.

## The challenge: Transforming food systems requires effective and efficient instruments for research and innovation

Meeting the [Sustainable Development Goals](#) and [international climate targets](#) will require major and rapid changes in agri-food systems. Research and innovation will be essential for making this transformation.

However, there is concern that current research and innovation systems have not shown themselves to be effective or efficient at finding appropriate solutions for the millions of small-scale farmers who dominate production systems in the Global South. Among the concerns now being raised are the need to [co-create innovations with farmers](#) and other end-users (or at minimum [involve them](#)) and to [bundle innovations](#) in farming practice with innovations in finance, policy and institutions. Traditional top-down agricultural research and extension systems are often not good at either of these.

In response, a range of newer approaches and financial instruments have been tried out to stimulate and support innovation in agriculture, and to resolve interlocking constraints to uptake of innovations at scale. These include accelerators, incubators, innovation hubs, innovation funds and prizes, results-based contracts, innovation platforms, living labs, farmer research groups and networks, and farmer field schools. The [CoSAI study](#) compares the use, design and performance of 12 of the most common.

## Select the most appropriate combination of instruments to support research and innovation

The [study](#) provides advice and tips for researchers and innovators on the selection of appropriate instruments, based on the limited evidence available. The choice depends on the context, the target end-user (e.g., small or large farms, food processors) and the type of innovator being supported (e.g., farmers themselves, start-up companies).

One finding is that a single instrument is often insufficient to meet all the complex needs of getting innovations to scale. For example, instruments that promote farmer innovation (e.g., [farmer research networks](#)) don't always link farmers to markets, which can be a disincentive to make major changes in practices. Sometimes this results in the evolution of an instrument over time (e.g., a [farmer field school](#) may start to bring in other stakeholders and start to look more like an [innovation platform](#)). In other cases, instruments may be combined; for example, an [innovation fund](#) for small-scale farmers could, be combined with the establishment of a [climate-smart village](#).

The study is accompanied by a [database on instruments](#) and approaches used in agri-food innovation in the Global South, which provides examples and potential inspiration.

## Design innovation instruments with care – especially for social inclusion

Selection of an instrument is only the first step. The study found a number of cases where instruments were used in name only, while in practice there had been only minor shifts away from traditional technology transfer. The devil is in the details of the design: everything from the selection process for participants to the transfer of funds must be carefully scrutinized. The [study](#) contains many practical recommendations on this.

The transaction costs incurred by farmers and other participants, and the risks that they face (including in co-creation processes), must not be overlooked. Time spent attending meetings and engaging in experimentation can have a high opportunity cost. Often, too, small-scale farmers must bear the entire risk of testing new practices on land that is already in short supply, or developing products for uncertain market conditions.

It must not be forgotten that in nearly any context, innovation has winners and losers. If social inclusion is an objective, it is even more important to design innovation instruments carefully and monitor their effects. Issues such as risk, time requirements, literacy or the possession of a mobile phone can particularly affect the participation of women and the poor.

## Plan for institutional and financial sustainability of innovation instruments

To transform agri-food systems, innovation instruments need to be used at large scale. A striking finding from the [CoSAI study](#) was how many of the instruments reviewed were externally funded, within projects or programs with limited coverage and fixed timeframes. Relatively few were institutionalized within national innovation systems, raising questions about the reasons why.

Examples of instruments that have been successfully integrated in national systems include farmer-managed funds used by [national extension services in Uganda](#), an incubator embedded within a [Brazilian university](#), and a [national grassroots innovation award](#) in India.

When an instrument is introduced by an external project, early consideration needs to be given to anchoring

instruments within permanent organizations, and planning for financial sustainability, within the national policy environment. Future partners need to be involved from the start in the design and implementation of the instruments, rather than being brought in at the end as part of an exit strategy.

## Use MEL to build systematic evidence on the effectiveness of innovation instruments

There is still a lack of strong evidence on the effectiveness and in particular the design of most of the instruments, especially when implemented at scale or in national systems. Research and innovation organizations should institute systematic monitoring, evaluation and learning (MEL) on innovation instruments and approaches as a high priority.

### Systematic evidence building is badly needed for innovation instruments

Evidence of effectiveness in achieving four objectives

| Instrument  | Accelerate large-scale uptake of innovation | Support integration of innovation in value chains | Involve innovation users in design or co-creation | Promote socially inclusive outcomes |
|---|---|---|---|-------------------------------------|
| <b>Instruments that support entrepreneurs</b>                     |   |   |   |                                     |
| Incubator   |   |   |   |                                     |
| Accelerator   |   |   |   |                                     |
| Innovation hub  |   |   |   |                                     |
| <b>Instruments that primarily finance innovation</b>              |   |   |   |                                     |
| Challenge funds   |   |   |   |                                     |
| Innovation funds and grants                                       |   |   |   |                                     |
| Innovation funds for smallholder farmers                          |   |   |   |                                     |
| Prizes and awards   |   |   |   |                                     |
| Results-based contracts   |   |   |   |                                     |
| <b>Instruments that support innovation in a real-life context</b> |   |   |   |                                     |
| Innovation platforms  |   |   |   |                                     |
| Living labs   |   |   |   |                                     |
| Farmer research structures  |   |   |   |                                     |
| Farmer field schools  |   |   |   |                                     |

Strong evidence of effectiveness (in most or all cases)

Weak evidence (in a few cases, and/or poor evidence)

Moderate evidence (in some cases, when appropriately designed)

No evidence found

Factors that need to be recorded more systematically include financial costs, transaction costs (including for farmers and partners), numbers and types of participants, and measures of effectiveness (that will vary by innovation process). A large information gap also exists around how the choice of instruments can affect environmental and social objectives of innovation (e.g., instruments for co-creation).

MEL of an innovation instrument faces a number of challenges. The most critical challenge is disentangling the effects of the instrument itself from other internal or external factors that may have affected the uptake or success of an innovation, such as the instrument's design or market prices. It can also be difficult to separate out the costs and transaction costs for a particular instrument from those of the wider program in which it operates. These challenges call for more concerted efforts and experience sharing on MEL.

## Conclusions

Transforming agri-food systems requires more effective and efficient research and innovation to address urgent global problems.

CoSAI's study reviewed experience with a range of instruments that provide financial and non-financial support to innovation, for example innovation platforms, prizes, incubators and farmer field schools. Many instruments have the potential to support more inclusive and relevant development of innovations – such as new technologies, crop varieties, land management practices, marketing systems and organizational arrangements – that can strengthen agri-food systems in the Global South. Some instruments can facilitate farmers' own innovation, or enable co-creation of innovations. The study provides guidance on selection and design of instruments, and a database of cases.

However, the study also highlights the lack of critical information (such as costs) for many instruments, and calls for urgent investment in monitoring, evaluation and learning, as well as a stronger focus on embedding instruments in national innovation systems.

For more information, see the full report at: <https://hdl.handle.net/10568/119411>



Supported by:



CoSAI is supported by the CGIAR Research Program on Water, Land and Ecosystems and is facilitated by a Secretariat based at the International Water Management Institute headquarters in Colombo, Sri Lanka. WLE is supported by the CGIAR Trust Fund and other donors. CoSAI Commissioners are independent.