Assessing impacts of agricultural research for development in countries of the South

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1 Context

The ImpresS (Impact of Research in the South) project was developed within CIRAD (French Agricultural Research Centre of Cooperation for International Development) to explore the methodological frameworks underpinning the assessment of research impacts. The objective was to develop a novel approach tailored to agricultural research in partnership with stakeholders in developing countries.

We assumed at the outset that the impact-pathway approach would be a key element of our approach as it accounts for interactions among diverse actors involved in innovation processes. The second building block was the role of institutional and organizational components involved in the transformation of research outputs by stakeholders. The development and testing of the approach to assess research impact utilized a participatory case-study approach.

CIRAD's ImpresS task force was launched in January 2014 after three years of preliminary work to develop a methodology suitable for assessing the development impact of agricultural research. Through this methodology and its application, the task force sought to cultivate an "impact culture" within CIRAD and more widely, to contribute to raising awareness among applied research institutions on how their research planning and programming impact development outcomes.

2 Empirical Approach

An impact pathways approach — ImpresS relies on a contribution analysis of the causal relationships between research inputs and impacts, structured around the iterative construction of impact pathways. The impact-pathway approach proceeds by

inference to reveal causal relationships linking inputs, outputs, outcomes, and first-level and second-level impacts, and the internal and external factors that contribute to those impacts. This process and the resulting causal chains are complex, non-linear, and not necessarily chronological, with interactions and feedback between outputs, outcomes, and impacts. This contrasts with the classical impact-pathway framework, which largely fails to account for such feedback.

A participatory approach – A participatory approach to evaluation helps to account for the opinions of the various stakeholder groups (those who benefit from innovation or those who are excluded) and often identifies impacts not identified by the major innovation players and leaders. The stakeholders are asked to characterize the impacts using their own descriptors, which usually consist of short statements that reflect impacts they have felt or observed.

A case study approach — Thirteen case studies were analyzed. They came from four continents (eight cases in Africa, two in Latin America, two in Asia, and one in Europe), and tackled a variety of innovation types and processes. Nine cases were *ex-post* case studies and four were ongoing (actual impacts still forthcoming as of 2016). Inclusion of the ongoing cases made it possible to consider initial outcomes and emerging impacts and to formulate impact hypotheses and impact-pathway scenarios. This was seen as a useful contribution to better supporting ongoing innovation processes and to creating the basis for a future impact culture within the community involved in this project. Learning situations were studied in each case.

3 Main Findings

We analyzed the generated the case study results in terms of four interactions that structured the impact pathways.

The interactions giving rise to the research outputs — A first step was to properly characterize the outputs of research activities. In some cases, outputs consisted of prototypes developed in laboratories or research stations. In other cases, they were coproduced by interactions between researchers and other stakeholders. In fact, some of the outputs related to ways of facilitating interactions between the actors to coproduce the outcomes, which were routinely developed as part of CIRAD's research partnership approach.

These results illustrated the need to analyse the system of actors as soon as the research outputs were developed. At that point, the iterative and multi-actor process allowed researchers to interact with those involved in the innovation process, to adapt their action, and to anticipate potential risks and obstacles.

Contribution of research to the outcomes of the innovation process — The results suggested that a systemic assessment model needs to be built and gradually refined and fine-tuned. In this model, we defined outcomes as resources building on research outputs and employed by non-researchers at different stages of the innovation process — rather than at the diffusion stage as proposed in the linear model. Outcomes arise from a research activity and therefore, at least in part, from a research intention.

These outcomes may generate feedback effects in the generation of some outputs, in the adoption and transformation of technologies by actors, and in the processes leading to first-and second-level impacts. The systemic model used by ImpresS shows that research is necessarily involved in the generation of these outcomes, and so must be evaluated from that point of view. The outcomes can also help structure institutional and policy environments that affect technological development policies. The weight that outcomes play in the innovation process varies across the case studies, and in particular depends on the importance of the technological dimension, the type of partnerships between research and other actors, and the institutional context. The study of these learning situations highlights the production of a major outcome — development capacity.

The analysis of the case studies confirmed the usefulness of a dynamic model for assessing research impacts. The structure of such a model is based on interactions between the inputs, outputs, outcomes, and impacts. The results show how the outcomes generated become key resources that enable impact generation in particular *via* learning situations. Through an improved understanding of how impacts emerge from different types of outcomes, researchers should be better able to frame research questions, implement research protocols, and anticipate the prerequisites and interactions of targeted research. CIRAD is keen to develop an impact culture among its scientists and partners to improve their ability to sustain fruitful interactions and results throughout the research process.

The results of our work provide various insights that may be useful to different stakeholders. The following list summarizes our main recommendations :

— For agricultural research institutions, research programming should take full account of the societal demands and the institutional contexts shaping innovation pathways ;
— For institutions supporting the innovation process, intermediary systems or platforms that share research results with stakeholders have a diverse and important role in achieving impact ;
— For the scientific community in charge of evaluation, the quantitative methods should be better integrated with qualitative approaches that can assess impact pathway processes to measure impacts ;
— For research managers and donors, the existing methodological frameworks should be renewed, diversified, and adapted to the specificity of research activities ; and
— All stakeholders should be given access to available databases to enrich our comprehension of the causal links between research and development.

Related Resources

The Impact of Research in the South (ImpreS) Website provides background, case studies, and additional resources. `http://impress-impact-recherche.cirad.fr/impress/what-is-impress`

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