

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

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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 propose a novel approach tailored to agricultural research in partnership with stakeholders in developing countries.

Our first hypothesis was that the impact-pathway approach needs to be used to take into account the interactions between the diverse actors involved in innovation processes. The second hypothesis focussed on the role of institutional and organizational components, features, drivers in the transformation of research outputs by stakeholders. A participatory case-study approach was used to assess research impact.

This work was produced by CIRAD's ImpresS task-force, launched in January 2014 on the basis of 3 years preliminary works, to improve agricultural research for development (ARD)' capacities to assess its impacts on development. This taskforce's goal is to develop an "impact culture" within Cirad and more widely to contribute to raise awareness among applied research institutions on this issue, in particular as regards their research planning and programming.

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 explanations that link inputs, outputs, outcomes, first-level and second-level impacts, and the internal and external factors that contribute to the impacts. This process and the resulting causal chains are complex, nonlinear, 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 on-going (actual impacts still forthcoming as of 2016). Inclusion of the on-going cases made it possible to consider initial outcomes and emerging impacts and to formulate impact hypotheses and impact-pathways scenarios. This was seen as a useful contribution to better supporting on-going 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.

Main Findings

We analyzed the results generated by the case studies 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 coming from research activities. In some cases they consisted of prototypes developed in laboratories or research stations. In other cases, they were coproduced out of interactions between the researchers and other stakeholders. In fact, some of these 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 analyze 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 nonresearchers 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-level 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 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 results presented above confirm the usefulness of a systemic model for assessing the impacts of research. The structure of such a model is based on interactions between its various components, namely 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. By gaining a better 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 throughout the research process.

The results of our work might concern several different stakeholders with the following recommendations.

-As regards agricultural research institutions, research programming should better take into account the societal demands and the institutional contexts shaping the innovations' pathways

-As concerns institutions supporting the innovation process, intermediary systems or platforms sharing research results with stakeholders have a diverse but major role in achieving impact

-As for the scientific community in charge of evaluation, the quantification tools should be better integrated in comprehensive approaches processes to measure the impacts

-As regards the research managers and donors, the existing methodological frameworks should be renewed, diversified and adapted to research activity's specificity.

At last, this work calls all stakeholders to giving access to the databases available in different structures in order to enrich the comprehension of causal links between research and development.

Related Resources

Joly, P. B., Gaunand, A., Colinet, L., Larédo, P., Lemarié, S., & Matt, M. (2015). ASIRPA: A comprehensive theory-based approach to assessing the societal impacts of a research organization. *Research Evaluation*, 24(4), 440-453.

Temple L., Biénabe E., Barret D. & Saint-Martin G. (2016). Methods for assessing the impact of research on innovation and development in the agriculture and food sectors, *African Journal of Science, Technology, Innovation and Development*,

<http://dx.doi.org/10.1080/20421338.2016.1219484>

Impact of Research in the South (ImpreS). The [ImpresS website](#) provides background, case studies, and additional resources.