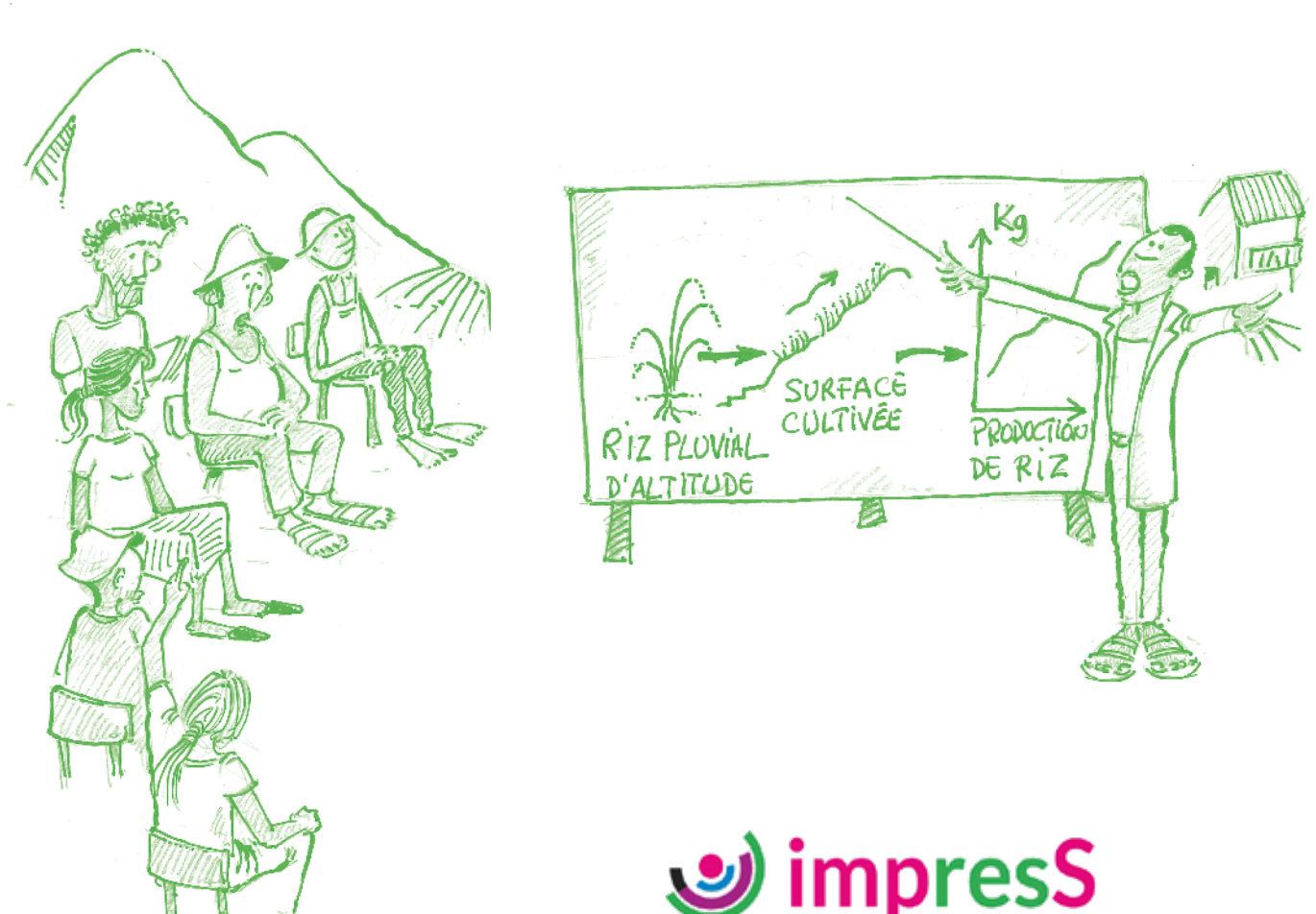


IMPRESS METHODOLOGICAL GUIDE

METHODOLOGICAL GUIDE TO *EX POST* IMPACT EVALUATION OF AGRICULTURAL RESEARCH IN DEVELOPING COUNTRIES

Barret D. • Blundo-Canto G. • Dabat M.H. • Devaux-Spatarakis A. • Faure G.
Hainzelin E. • Mathé S. • Temple L. • Toillier A. • Triomphe B. • Vall E.



.....
IMPRESS METHODOLOGICAL GUIDE
.....

METHODOLOGICAL GUIDE TO *EX POST* IMPACT EVALUATION OF AGRICULTURAL RESEARCH IN DEVELOPING COUNTRIES

Barret D. • Blundo-Canto G. • Dabat M-H. • Devaux-Spatarakis A. • Faure G.
Hainzelin E. • Mathé S. • Temple L. • Toillier A. • Triomphe B. • Vall E.

© CIRAD, March 2018
ISBN: 978-2-87614-736-2
<https://doi.org/10.19182/agritrop/00006>

French Editing: Sylvie Albert
Translation: Kim Agrawal
Illustrations: Eric Vall, UMR SELMET, CIRAD
Layout: Jean-Marie Forgue, Alter ego communication, 34150
Coordination: Patricia Doucet, CIRAD Communication Service



This article is provided under
the terms of the Creative
Commons License CC-BY 4.0:
Attribution 4.0 International

<https://creativecommons.org/licenses/by/4.0/deed.en>].

To cite this document

Barret D., Blundo-Canto G., Dabat M.-H., Devaux-Spatarakis A., Faure G., Hainzelin E., Mathé S., Temple L., Toillier A., Triomphe B., Vall E. (illus.), 2018. *ImpresS ex post*. Methodological guide to ex post impact evaluation of agricultural research in developing countries. Montpellier, France, CIRAD, 96 p. ISBN: 978-2-87614-736-2.
<https://doi.org/10.19182/agritrop/00006>

Summary

This guide describes the ImpresS (IMPact of REsearch in the South) *ex post* impact evaluation method developed by CIRAD. This methodology was developed as part of a strategic “Innovation to Impact” task force with the ultimate objective of building an impact evaluation framework adapted to the research activities CIRAD undertakes with its partners, and to develop an “impact culture” within the institution.

ImpresS is based on extensive bibliographic research, a critical assessment of experiences and learnings about impact evaluation in other organizations (in particular CGIAR, FAO, WUR and INRA), CIRAD’s own work undertaken by successive internal working groups since 2011, results and lessons of two methodological workshops organized in October 2014 and February 2015, and feedback from the *ex post* impact evaluation of research in 13 case studies carried out between 2015 and 2016 at CIRAD.

While ImpresS was primarily developed for internal use by CIRAD and its partners, we believe the method is generic enough in its aim and in its design to be of interest and use by any research organization interested in a participatory and semi-quantitative impact evaluation method.

Adopting a pragmatic stance based on learning from experiences on the ground, this guide proposes:

- a conceptual framework and key tools;
- a five-phase evaluation method;
- a cross-analysis approach.

The conceptual framework used as reference is the Impact Pathway (IP). Theoretical IP models analyze how innovations are built and how actors appropriate them. The impact pathway permits the determination of cause-and-effect relationships. It allows the identification of research outputs; outcomes that correspond to an appropriation and/or transformation of research outputs by actors interacting with the research community; 1st level impacts that affect actors interacting directly or indirectly with the research community and/or its partners; and 2nd level impacts that concern the change of scale (scaling) of the innovation. Impacts are characterized on the basis of descriptors that make sense to the actors who are impacted. The impacts are assessed with the help of a limited number of quantitative or qualitative indicators that reflect a change between a reference situation and the situation prevailing by the time the study is undertaken. The method is participatory as it is based on the perception actors have of the impact of research.

The ImpresS method is sub-divided into five operational phases:

1. preparation of the case study:

- define the scope of the case study in temporal and spatial terms, and identify the different actors and research and development projects involved in the innovation,
- develop impact hypotheses based on the expectation of change formulated by the research team involved,
- draft a first “narrative of the innovation” that leads to the impacts;

2. dialogue with the actors:

- define and fine-tune hypotheses with actors through discussions on the narrative of the innovation and the nature of the impacts [1st participatory workshop];

3. construction of the narrative of the innovation and of the impact pathway:

- systematically document the inputs, outputs and outcomes,
- pay special attention to learning situations and interactions with public policies;

4. characterization and measurement of the impacts:

- describe and quantify the 1st level impacts using a multi-criteria method based on surveys and/or focus groups,
- characterize and quantify some 2nd level impacts using various methods (in particular the collection of secondary data);

5. validation with the actors:

- validate all the results with the actors (2nd participatory workshop),
- conclude the study (narrative of the innovation, impact pathway, quantification of impacts).

The results are fed into a generic database to (i) harmonize and archive the data collected in each case study, (ii) allow a cross-analysis across case studies, and (iii) facilitate the construction of *ex ante* evaluations approaches (those undertaken before the start of the projects).

Contents

Summary	3
Introduction – The contribution of research to impact	5
1 The ImpresS methodological approach to characterize the contribution of research to impact	7
1.1 Guiding principles	13
1.1.1 An evaluation based on case studies	13
1.1.2 An approach based on the participation of actors	14
1.1.3 A method that can be adapted to every situation	14
1.2 The five phases of the ImpresS method	16
1.2.1 The phase of preparation of the case study	17
1.2.2 The phase of dialogue with the actors	18
1.2.3 The phase of construction of the narrative of the innovation and of the impact pathway	19
1.2.4 The phase of the characterization and measurement of impacts	20
1.2.5 The phase of validation with the actors	21
2 Preparation of the case study	23
2.1 Defining the scope of the case study	24
2.2 Developing the first hypothesis of the innovation's impacts	26
3 Key tools to characterize the contribution of research to impact	29
3.1 The mapping of actors	30
3.2 The narrative of the innovation and its chronology	32
3.3 The impact pathway	35
3.3.1 Why an impact pathway?	35
3.3.2 Identification of inputs mobilized by the research community	36
3.3.3 Identification of research outputs	37
3.3.4 Identification of research outcomes	37
3.3.5 Identification of impacts	39
3.3.6 Constructing the impact pathway	41
3.3.7 Tracing the causal links	41
4 The characterization of capacity building in the impact pathway	45
4.1 Why the interest in capacity building?	46
4.2 Evaluating capacity building	47
4.2.1 Learning situations	47
4.2.2 Identifying and characterizing learning situations	47
4.2.3 Positioning capacity building on the impact pathway	48
4.2.4 Delving further	49
5 The characterization of interactions with public policies on the impact pathway and the impact on public policies	51
5.1 Why the interest in public policies?	52
5.2 Evaluating the role of public actors in the innovation process and the impact of research on public policies	52
5.2.1 Appreciating the institutional context and identifying the public actors in the research environment	52

5.2.2 Studying the public actors' interactions with the other actors of the innovation process.....	52
5.2.3 Studying the impacts of these interactions on the capacity of public actors and on public policies.....	53
5.2.4 Methods of collecting and analyzing the data required	55
6 Measurement of impacts	57
6.1 Characterizing impacts and their indicators.....	58
6.2 Assigning values to indicators for 1st and 2nd level impacts.....	59
6.3 Characterizing changes in scale and the contribution of research	61
6.4 Drawing a radar by impact domains	62
7 Methodological differences for <i>in itinere</i> case studies	66
7.1 Steps for <i>in itinere</i> case studies	66
7.2 Hypothesis of innovation impacts	66
7.3 The narrative of the innovation.....	67
7.4 Links between inputs, outputs and outcomes	67
7.5 Collecting impact descriptors	67
7.6 The measurement phase.....	67
7.7 Validation.....	67
8 Data collection and processing methods	69
8.1 Interviews	70
8.2 Focus group	71
8.3 Workshops.....	72
8.4 Individual surveys.....	73
8.5 Data processing	74
8.5.1 Constructing the database	74
8.5.2 Final report	74
Bibliography	76
Glossary	79
List of boxes	82
List of figures	82
List of tables	83
APPENDICES	85
Appendix 1: List of case studies evaluated using the ImpresS approach (2015-2016).....	86
Appendix 2: Summary table of the phases, objectives and actors of the ImpresS method for <i>ex post</i> cases	87
Appendix 3: How to score the intensity of capacity building's contribution to the impacts?.....	89
Appendix 4: Example of table of impacts for the case study "Adding value to produce from family farms in Brazil: investigating geographical indications (GI) in Santa Catarina State"	91
Appendix 5: Format of the case study report.....	93

Introduction – The contribution of research to impact

All research organizations with a “Research for Development” mandate, aim to bring about innovations and changes which will ultimately have a significant, positive impact on development in the economic, social and environmental spheres. To do so, they usually conduct research in partnership with a diversity of actors from developing countries. The effects of such research on development have to be analyzed, demonstrated and even measured. Beyond an internal institutional learning objective, the generic goal is to foster an evidence-supported discourse – intended for the public, policymakers, donors and partners – on the impact of research.

For its part, CIRAD decided to increase its efforts about impact evaluation by creating an “Innovation to Impact” task force in 2014, as a part of its scientific and partnership strategy objectives (CIRAD, 2014). It led, over the 2014–2018 programming period, to the construction and deployment at the institutional level of analytical frameworks, an approach, methods and tools pertaining to innovation processes in which research, conducted by CIRAD in partnership with a diversity of actors from developing countries over long time spans, is involved. These efforts aim to develop an “impact culture” within the institution. For CIRAD, this impact culture, at the individual and collective level, depends on a better understanding of the complex mechanisms that are involved in creating and supporting innovation processes that generate long-term impacts. It relies as much on rigorous analytical tools as on a willingness to work in a better way with the actors involved in an innovation (Box 1). It takes form not only through the capitalization of collective experiences and the continuous improvement of research practices, but also by taking impact into account in the planning and evaluation mechanisms of the actions undertaken.

While research can generate impacts, it does not do so all on its own. Many different actors, regardless of whether and how they interact with the research community, also play a key role in innovation processes and in the production of impacts. Innovation is a complex, systemic and uncertain process that encompasses technical and organizational dimensions. In this perspective, causal attribution of a given impact solely to research (or any other actor taken in isolation) can be misleading. Assessing the contribution of research to innovation is therefore difficult. Specifically adapted methods, based on the demonstration of proof, are therefore required to do so.

In order to analyze the contribution of research to impact, it is necessary to establish causal links between, on the one hand, research work and the changes it has on actors’ representations and practices and, on the other, its effects in economic, social, and environmental terms. Drawing from methods developed by CGIAR¹ centers (De Janvry *et al.*, 2011) and by Inra² (Colinet *et al.*, 2013), the ImpresS method relies on the concept of impact pathway (Douthwaite *et al.*, 2003). It is a matter of understanding the relationship between research outputs and the changes resulting from the appropriation of these outputs by the actors (outcomes), with these outcomes being finally translated into impacts. This analysis of the contribution of research can be undertaken *ex ante* (before the start of research activities, in a planning perspective), *ex post* (after the undertaking of research activities and the observation of impacts), or *in itinere* (while the innovation is being rolled out and the impacts are still not evident). This guide deals with *ex post* and *in itinere* impact evaluations of research. A separate document proposes an approach for dealing with the *ex ante* perspective (see “ImpresS *ex ante*: a proposal for an *ex ante* approach to build impact pathways”).

1. Consultative Group on International Agricultural Research.

2. Institut national de la recherche agronomique (French National Institute for Agricultural Research).

The *ex post* impact evaluation of research using the ImpresS method applies to case studies which allow to understand innovation processes and measure their impacts³. The methodological framework was developed and improved in an iterative manner by a working group⁴ and then progressively validated, relying also in part on advice from CIRAD's scientific council in June 2014. This framework has drawn on the work undertaken previously by CIRAD, such as the initial state-of-the-art used for evaluating the impact of research (Saint-Martin *et al.*, 2011) and, in particular, four case studies carried out between 2012 and 2013 (Alami *et al.*, 2013; Temple *et al.*, 2012). The ImpresS method was developed based on bibliographic research, learnings from other organizations (in particular CGIAR, FAO, WUR⁵ and Inra), CIRAD's own work undertaken by internal working groups since 2011, results of two workshops on methodology organized 2014 and February 2015, and feedback from the *ex post* impact evaluation of research in 13 case studies between 2015 and 2016⁶ (Triomphe *et al.*, 2015; Temple *et al.*, 2016).

Box 1: But what is Innovation?

In the field of agricultural research for development, innovation is no longer seen as a process of merely transferring research outputs to actors of development, but rather as a process of interaction between different actors. Invention* is an idea, a concept, or a technique designed in a public or private laboratory. Innovation is the use of the invention by actors. It can be characterized in diverse ways: product vs. process, incremental vs. radical, or technical vs. organizational. Indeed, innovation always results from the synergy between three dimensions: technical, organizational and institutional. Thus Smits [2002], echoed by Klerkx *et al.* [2010], posits that an innovation combines the implementation of new techniques and practices (hardware), new knowledge and ways of thinking (software), and new institutions and organizations (orgware). Therefore, by its very character, it is socio-technical (Flichy, 1995).

Innovation is a complex process which can sometimes be perceived as haphazard and unpredictable, and one that is difficult or even impossible to steer (Akrich *et al.*, 1988a, 1988b; Leeuwis, 2004). Consequently, every innovation process includes phases of acceleration, slowdown, and crisis. Furthermore, not all innovations are viable and a process of selection takes place (Nelson, 1993). Innovations can emerge in niches (favorable local context, new market, innovative companies, etc.) that allow their maturation (or elimination), and can then grow in magnitude (spread in their original form or in a new form) and modify dominant socio-technical regimes (Geels and Schot, 2007). The institutional landscape therefore plays an

important role through rules, norms and values that anchor the dominant socio-technical regime or, instead, allow niche innovations to bloom.

Innovation can also be analyzed within the larger framework of national, regional or sectoral innovation systems, in which organizations dedicated to innovation play a larger role (Lundvall, 1992). An analysis in terms of innovation systems makes it possible to question not only development processes but also innovation policies (Touzard *et al.*, 2014). In this perspective, innovation results only partially from the application of the outputs of scientific research, and involves many back-and-forth iterations between the activities of researchers and actions undertaken by their partners, until one or more innovations are adopted, i.e. implemented by end-users (farmers, firms, institutions).

Innovation originates from interactions within a collective of actors that make it possible to mobilize different forms of knowledge (scientific, lay), knowing that this knowledge is distributed, and to use it to create new knowledge. Some actors play a driving role during certain phases of the process. Some innovations may emerge without any research, and sometimes may even run counter to the orientations of the research community or public or private R&D orientations (e.g. agro-ecology or organic farming in its initial stages in France, direct sowing in Brazil). Other innovations emerge mainly from research activity: new varieties, new agricultural inputs, etc. The role of the various actors, including of the research community, in a given innovation process varies in nature and intensity over time.

* Innovation can be defined, at the level of the entrepreneur, as a new product, a new process, a new way of accessing services or a new way of marketing products or services. In general, it can also be defined as an idea that has been implemented (see the European Union's definition of innovation in the European Innovation Partnership). It involves actors who have an expectation of change, is part of a context that is always specific and always includes technical, organizational, institutional and social dimensions.

3. <https://impress-impact-recherche.cirad.fr/>

4. "Methodology" working group led by Guy Faure and consisting of Marie-Hélène Dabat, Agathe Devaux-Spatarakis, Syndhia Mathé, Ludovic Temple, Danièle Clavel, Danielle Barret, Bernard Triomphe and Aurélie Toilier.

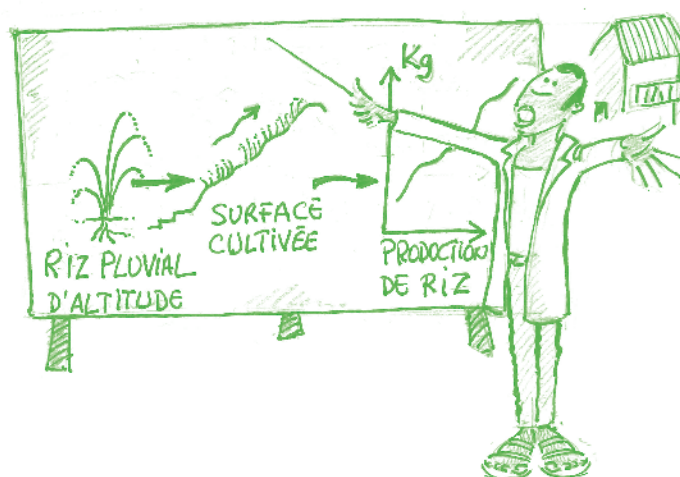
5. FAO: Food and Agriculture Organization of the United Nations; WUR: Wageningen University & Research.

6. <http://impress-impact-recherche.CIRAD.fr/resources/fostering-impact-culture-in-agricultural-research/>

The aim of this methodological guide is to help evaluate the impact on development of research activities of CIRAD and its partners based on case studies. Despite the diversity of innovation processes that case studies may encounter, using a common conceptual and methodological framework helps implement a rigorous evaluation process that demonstrates the causal links between research activities and development impacts at different analytical levels [local, national, even global]. This guide also aims to facilitate cross-analysis and comparisons between cases.

The guide consists of the following eight parts:

- (i) the presentation of the ImpresS methodological approach to determine the contribution of research to impact,
- (ii) a description of the preparation of the case studies,
- (iii) a presentation of the main analytical tools to characterize the contribution of research to impact,
- (iv) a focus on capacity building,
- (v) a focus on interactions with public actors and public policies,
- (vi) a proposal to measure the impacts,
- (vii) a reflection on *in itinere* case studies, and finally
- (viii) elements for data collection and processing.



1

The ImpresS methodological approach to characterize the contribution of research to impact



Box 2: Some definitions⁷

Impact Pathway – Description of an innovation process that highlights the causal relationships between the inputs mobilized by research, the outputs of research, the outcomes – which materialize directly at the level of those who use the outputs of the research – and the 1st and 2nd level impacts.

Research input – This term encompasses all the means (interventions and resources) that make it possible to undertake a research activity (human and material resources, research budget, information, tacit or preexisting knowledge, other research activities, etc.) and thus generate research outputs. In the method described in this guide, these inputs refer to the investments made and resources mobilized *prior* to the start of the case study *or during the period* of the case study (funding or recruitment of a researcher can take place during the period of the case study and is still considered an input).

Research output – The output is the product resulting from conducting research or from interactions of researchers with the actors of the project(s). It can take the form of scientific or non-scientific knowledge (publication, report, database, method, etc.), professional or academic training, expertise, technology, network or other forms of products. Research outputs can contribute to the emergence of innovation when they are appropriated by the actors of society. In the method described in this guide, the research outputs (knowledge, prototypes, etc.) developed before the start of the case study are considered inputs while those developed during the case study period are considered outputs.

Outcome – An outcome is the appropriation of a research output by actors interacting directly or indirectly with the research community, leading to new practices (agricultural or managerial), new organizations, or new rules.

Impacts – Impacts are long-term effects that can be positive or negative, intentional or unexpected, direct or indirect, induced by a development action. The impacts are what remain after the project/program is completed. They can be of different types: economic, social, territorial, environmental, political, health-related, etc. They are measured by indicators.

1st level impacts (or impacts 1) – 1st level impacts are measured on actors interacting directly or indirectly with the research community and/or major actors of the innovation, and can be evaluated with these actors. Their measurement pertains to two criteria: the intensity of change and the magnitude of change.

2nd level impacts (or impacts 2) – 2nd level impacts result from spillover effects (indirect impacts) or changes of scale: horizontal (scaling out) and vertical (scaling up). They can be evaluated according to the criteria of intensity of change and magnitude of change, but in a

more approximate and less detailed manner than 1st level impacts.

It should be noted that the notions of inputs, outputs, outcomes, and 1st and 2nd level impacts have different interpretations depending on disciplines, authors, and institutions. Indeed, some authors occasionally split outcomes into “intermediate outcomes” and “long-term outcomes.” Conversely, others do not break down impacts into 1st and 2nd level impacts. Furthermore, the distinction between outputs and outcomes is not always straightforward, especially in the case of participatory research. Some classify as outcomes what others consider outputs, and vice versa. Similarly, it is not always easy to distinguish outcomes from impacts, because an impact at the level of an actor can become an outcome that will generate an impact for another actor who interacts with the former.

Actor – An individual or organization involved in an innovation process. The ImpresS *ex post* evaluation approach distinguishes between three categories of actors: the actors who play a major role in the innovation process; the actors who intentionally or unintentionally influence the innovation without being actors of the innovation process; and actors, if any, who are positively or negatively impacted by the innovation but who are not major actors in the innovation process. This last category can include actors of the two first categories.

Descriptors – Expression of impact by actors in their own words and describing changes as they perceive them.

Indicator – Quantitative or qualitative summary information that characterizes a resource or process or helps decision-making.

Radar – Graphical representation that summarizes the data pertaining to the different impacts identified. The ImpresS method proposes to represent impacts after grouping them into 11 “impact domains.”

Narrative of the innovation – This is the history of the innovation, therefore of all the major actors of the innovation. It encompasses the major phases of the history of the innovation, with its advances, its setbacks, and the external factors that influence it. It is a matter of recounting and dating “what has happened,” from the beginning of the innovation process to the present day.

Chronology – A graphical representation that shows the narrative of the innovation in its temporal dimension by specifying the significant events.

Project cluster – All research projects, research and development projects, and development projects, as well as interventions that have not been formalized as projects, pertaining to the studied innovation. Defining the scope of the case study in temporal and spatial terms will result in a project cluster.

7. See also complete glossary at the end of the guide.

The conceptual framework of the ImpresS approach is the Impact Pathway (IP), whose theoretical models analyze how innovations are created and how actors appropriate them. The impact pathway helps establish cause-and-effect relationships in order to distinguish: research outputs; outcomes that correspond to the appropriation and/or transformation of research outputs by actors interacting with the research community; 1st level impacts that affect actors interacting directly or indirectly with the research community and/or its partners; and 2nd level impacts that concern the change of scale (scaling) of the innovation. In this first section, the basic principles of the ImpresS approach, its participatory and adaptive character, and, finally, its sequential conduct in five phases are described.

Box 2 provides the definitions of a few terms used in the rest of the document.

1.1 Guiding principles

1.1.1 An evaluation based on case studies

The ImpresS approach applies to case studies (Yin, 1994): this enables a comprehensive analysis of innovation processes, as well as identifying and measuring research impacts. The unit of analysis is the innovation process from the beginning of the actions of a research team, organization or consortium, until the innovation's impacts are perceived (at the time the evaluation is conducted).

The use of a common method for all the case studies allows future comparisons between them and a capitalization in the form of lessons drawn from all of them. These lessons are useful for the development of research practices.

The questions users of this guide should ask themselves before conducting the evaluation of a case study with the ImpresS method are:

- Can the scope of the case study be defined easily so that it can be studied with the available human and financial resources, and in the allotted time?
- Is there sufficient time to undertake the case study (about four months in the field with adequately experienced staff to apply the method, and four months for analysis and documentation)?
- Are the actors who contributed to the innovation process available and easily reachable (this is necessary since ImpresS is a participatory approach)?

Box 3 describes the constitution of the team in charge of evaluating a case study (or case study team) as part of the studies conducted in 2015–2016.

Box 3: Constitution of the evaluation team

The evaluation team includes the leader of the case study, a co-leader, interns or junior researchers, and a methodological referee. The leader is responsible for implementation of the whole case study, up to final analysis and reporting. S/he is a researcher who is familiar with the case study and may have been involved in the research. S/he works with one or more co-leaders

(in particular from partner institutions from the country in which the case study is located, whenever possible). One or more interns or junior researchers complement the team to collect data and participate in the analysis. The methodological referee accompanies the case study to support the implementation of the ImpresS method.

The case studies can belong to two main categories: *ex post* case studies (research activities have been completed, and a number of different or consecutive projects, i.e. "project clusters," may have been involved over time, thus allowing to take into account a rather long trajectory) and *in itinere* case studies (research activities are still in progress, and usually linked to a smaller number of projects). In the first case, it is possible both to analyze the innovation process and to observe impacts. In the second case, it is possible to analyze the innovation process but it is not always possible to observe impacts, which most often remain in the form of hypotheses to be confirmed in the future. They can sometimes be identified, but can rarely be measured. Nevertheless, the *in itinere* case studies remain relevant because applying the ImpresS methodology to them may lead to developing concrete ways to orient and steer them towards better and more definite impacts. In that sense, *in itinere* case studies contribute to an impact culture. Section 7 of the guide covers *in itinere* case studies.

In all case studies selected, ImpresS makes the hypothesis that researchers were or still are one of the key actors in the innovation process. This is therefore likely to include a bias that must be accepted: selection of cases that have succeeded (or are liable to do so) over those that have failed (or are expected to fail) and selection of situations with a strong involvement of the research community. Box 4 illustrates the selection and conduct of the 2015–2016 case studies.

Box 4: Case studies of the ImpresS project in 2015–2016

The case studies were selected from a group of 77 projects or project clusters identified by directors of CIRAD units. All 77 constituted potential case studies. Following an initial selection, interviews were conducted in April 2014 with resource persons for 58 of them, in order to gather information about the type of innovation (whether more technological or organizational), the role of research, the geographical area concerned, or the types of impacts identified. A typology was subsequently developed, on the basis of which 13 case studies were selected (Appendix 1) which allowed a broad diversity of cases with respect to type of innovation; research units from CIRAD's three departments; the availability and interest of unit directors and project leaders for conducting an evaluation.

The case studies were carried out from February 2015 to February 2016 with dedicated resources (trainees, visits to case study sites). An initial workshop ["école-chercheur"], in February 2015, led to the development and fine-tuning of a first iteration of the ImpresS method with the case study leaders. A second workshop was held in April 2016 to present, discuss and capitalize on the results of the case studies, undertake the first comparative analysis across cases, and gather critical feedback on the ImpresS method from those who implemented it. A junior researcher was hired for a period of 18 months to help coordinate and support the project's methodological group in monitoring the implementation of the case studies and the comparative analysis of cases.

1.1.2 An approach based on the participation of actors

The ImpresS method belongs to participatory evaluation methods (see Box 5). The benefits of participatory evaluation in the ImpresS method include ethical and operational aspects: (i) taking into account the different points of view of the actors involved in the innovation process and the complexity of the links between research products and impacts, (ii) compensating for the lack or reduced reliability of secondary data in some countries, and (iii) reducing the cost and duration of the evaluation process by avoiding the use of complex surveys on large samples.

In the case of the ImpresS method, participation is used in a strategic manner by first seeking to improve the understanding of the complex and multi-actor innovation process as well as data collection. It also focuses, albeit to a lesser extent, on helping actors, especially the researchers, to improve the management of change.

The actors' participation in the evaluation process occurs at different points during the case study and with varying intensity: (i) participation of the research partners all through the evaluation process, (ii) participation of major actors of the innovation first in a start-up workshop to fine-tune certain choices, and second in a final workshop to validate the results at the end of the case study, and (iii) participation of certain actors in focus groups or during quick surveys to describe descriptors and quantify impact indicators.

1.1.3 A method that can be adapted to every situation

The purpose of this guide is to show how to implement ImpresS for any case study by tailoring it to each specific situation (theme addressed, project cluster involved, degree of maturity of the innovation, diversity of actors involved, richness of the existing documentation, estimated nature of the impacts, etc.) and to the specific working conditions and constraints of the case study team (composition and experience of the team members in charge of the evaluation, resources available to them, etc.).

However, certain principles must be adhered to in order to not only ensure that the evaluation is of good quality, but also allow a subsequent comparison with other cases:

- recognize the participatory nature of the evaluation. It is through participation that the narrative of the innovation and the impact pathway will be constructed, and impacts identified and validated. Conversely,

- without active participation, the point of view of the researchers about impact will pre-dominate, which could potentially be biased;
- consider all the proposed dimensions of evaluation (narrative of the innovation, impact pathway, capacity building, interaction with public policies, measurement of impacts). However, some dimensions will be, by the very nature of the case itself, more important than others. Thus, a case study in which the “training and learning of actors” dimension is predominant in the innovation process will, in principle, have more information on the “capacity building” dimension;
 - retain a certain degree of flexibility in the implementation, in the form of variations in the number of activities (e.g. the number of interviews, the number of focus groups), the implementation schedule, or even the data collection tools used. It is however important to ensure that such variations or deviations do not detract from the desired objective and the rigor of the evaluation;
 - review regularly the progress made in the evaluation process and the possible methodological problems encountered. The aim is to anticipate difficulties and make necessary adaptations, especially in terms of the schedule of activities, the participation of the actors, etc.;
 - if it appears necessary to adapt some parts of the method, make sure to clearly discuss the changes with all members of the case study team, or with the ImpresS guide’s authors, in order to understand the pros and cons of the proposed changes;
 - going beyond the ImpresS method’s proposals regarding certain points is always possible, either because they represent a particular interest for the team or its partners, or because the team has human or financial resources to allow additional investment in certain themes or issues.

Box 5: Participatory evaluation

Participatory impact evaluation approaches are meant for those situations in which the subjects of the evaluation are also the actors carrying out the evaluation. They were developed in the 1970s and were tried out in local experiments in the 1980s. They address the need to move beyond the evaluation of results and impacts alone, to help explain processes, and to take cognizance of a plurality of viewpoints. These approaches combine qualitative and quantitative evaluation elements and are generally multi-criteria in nature, i.e. they identify different dimensions that make sense for the different participants in the evaluation. Furthermore, these approaches demand support for learning processes, empowerment of actors, and the building of common values.

Several terminologies can be used to characterize the participatory approach to evaluation: participatory evaluation, pluralistic evaluation, co-produced evaluation and co-constructed evaluation. The participatory approach involves carrying out the evaluation with civil society in order to consider the various interests involved in a reasoned manner and to assemble the diversity of points of view on the action or process to be evaluated. These approaches can be used both *ex ante* (to discuss the opportunities for undertaking an action or for taking into account the social demand), *in itinere* (to reorient or fine-tune the action in progress) or *ex post* (to take a look at what has transpired). Participation can help (i) identify or clarify the impacts of an intervention through the sharing of experiences with participants, (ii) improve the relevance and quality of data collected to characterize these impacts, (iii) es-

tablish or validate causal relationships from the actors’ point of view, and (iv) develop the actors’ capacities to carry out a reflexive exercise on their own actions and to be actors of their own development (Guijt, 2014).

Those responsible for implementing participatory approaches need to consider the importance and objectives of the evaluation for the different types of actors, some of whom participate in the evaluation. The ethical issues of participation need to be carefully considered. The degree of participation depends on the purposes of the evaluation, especially considering the risks that participants are exposed to (Patton, 1990). The use of a participatory approach is not systematic, and a poorly conducted participatory evaluation can have counter-productive effects and runs the risk of not being able to attain the benefits intended with this type of approach.

Nevertheless, there exists a variety of practices that depend on four characteristics (Ridde, 2006):

- moments or depth of participation during the evaluation process;
 - diversity of participating actors;
 - forms of participation (from consultation to co-decision);
 - role of the evaluator (expert, mediator, facilitator).
- Some actions may be conducive for setting up and undertaking an effective and acceptable participation:
- inform, motivate and train actors to participate in the evaluation;
 - allow actors to build a shared vision;
 - ensure conditions for a dialogue that is perceived as balanced by the participants.

1.2 The five phases of the ImpresS method

The ImpresS method proposes a five-phase approach to carry out a case study (Figure 1):

- (i) preparation of the case study,
- (ii) dialogue with the actors,
- (iii) construction of the narrative of the innovation and of the impact pathway,
- (iv) characterization and measurement of the impacts,
- (v) validation with the actors.

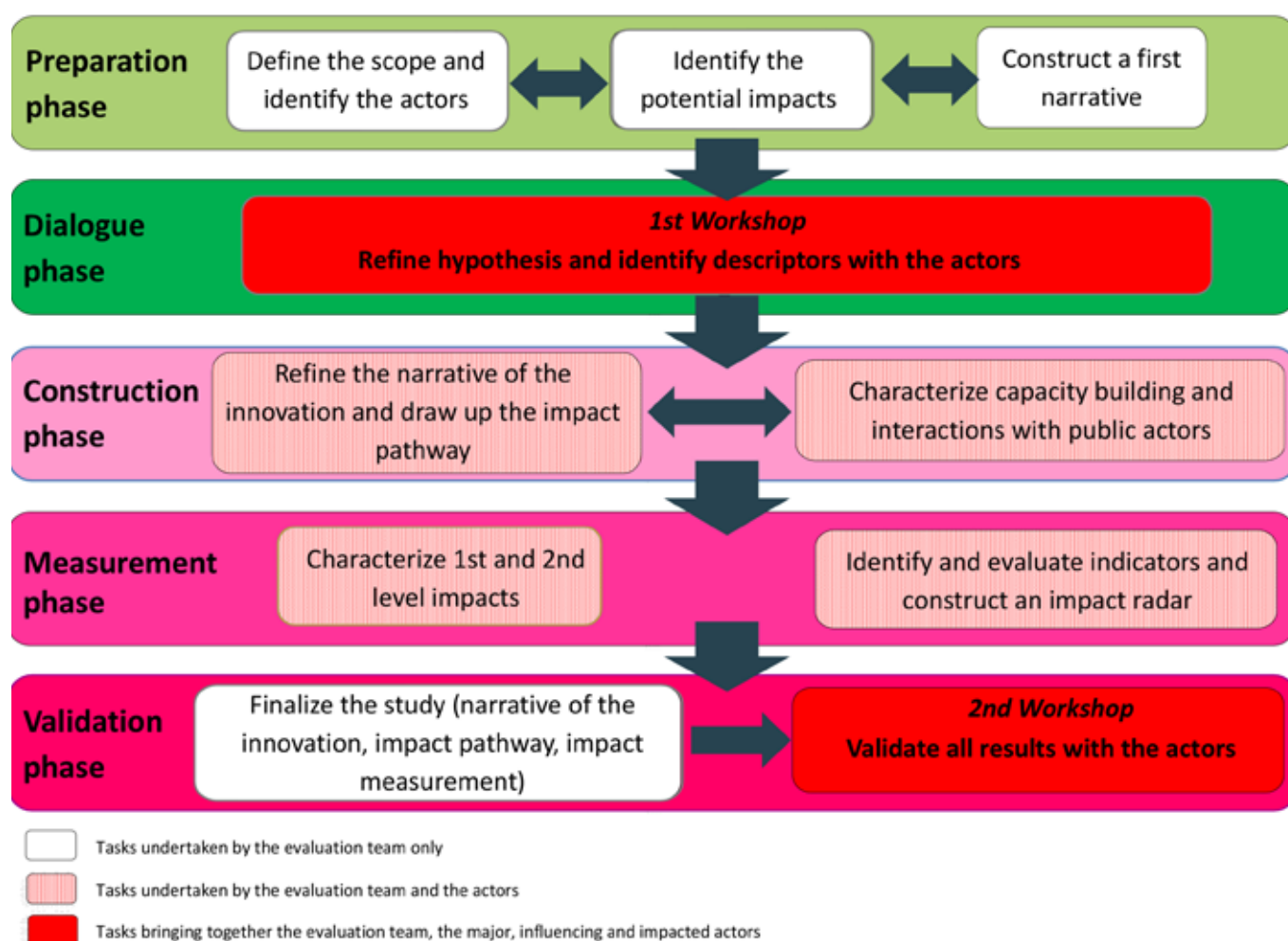


Figure 1: The ImpresS approach.

This presentation of the method's five phases brings forward the main stages of the evaluation, highlighting those that will require interactions with the actors, and distinguish the work on the analysis of the innovation process from that on measurement of impacts. In addition, the analysis presented in this guide is an iterative process. The results of one phase will lead to the re-examination and fine-tuning of the work of the preceding phases. One has to plan for ongoing back-and-forth interactions between hypotheses and field results, which may lead to the necessity of collecting additional information to address new or reformulated hypotheses.

1.2.1 Phase 1: Preparation of the case study



The preparation phase is crucial for a smooth running of the evaluation. The case study team must devote the time necessary for a stabilization of the evaluation baseline prior to the start of the evaluation. The objective of this phase is to:

- define the scope of the case study, which involves characterizing the type of innovation as well as the geographical and temporal scope of the case study;
- identify and map the actors involved in the innovation process into three categories (major, influential, impacted);
- identify, on the basis of available information, research, R&D and/or development projects, as well as take into account interventions that are not formalized into projects (project clusters);
- propose, on the basis of available documents (including project reports and gray literature) and the knowledge/experience of the case study leaders, the first hypotheses of the impacts of the innovation (by referring to the 11 impact domains identified in the case studies conducted in 2015–2016, see section 2.2), in an attempt to differentiate the impacts expected or hoped for by the research team from unintended ones that may have appeared;
- develop a first hypothesis of the narrative of the innovation, by going back up the causal chains from the impacts. This first narrative can be based on a chronology, summarizing the temporal sequence of what has happened.

Phase 1 deliverables

- Scope of the case study
- Map of actors
- List of project clusters and interventions taken into account
- First hypothesis of the impacts of the innovation
- First narrative of the innovation

1.2.2 Phase 2: Dialogue with the actors



The evaluation's second phase continues the process by engaging with the concerned innovation's main actors. Before embarking on detailed surveys, the evaluation team should organize an initial participatory workshop with the participation of key scientific and development partners involved in the innovation. This phase's general objectives are to share the expectations of the evaluation, refine the first hypotheses and the working method with the actors, ascertain the knowledge on hand and identify the resource persons who can be mobilized for the evaluation. The actors describe, in their words (using descriptors), the changes they have observed or experienced as a result of the development of the innovation.

The specific aims of the dialogue phase are to:

- inform actors and share with them the aim of the impact evaluation and the issues concerned;
- seek their opinions regarding the usefulness of the evaluation and its deliverables;
- share with them the impact analysis methodology and adapt it based on their inputs;
- adjust/complete a first version of the scope of the case study and the narrative of the innovation (in particular, by presenting an initial hypothesis of the case's chronology);
- collect the initial impact descriptors and seek suggestions for the indicators;
- define the subsequent steps to take (in particular, identifying persons to interview and to invite to focus groups).

Phase 2 deliverables

- Report of the first participatory workshop
- Details of the timetable and the tools selected to conduct the evaluation
- Fine-tuned map of actors
- Fine-tuned narrative of the innovation
- Fine-tuned list of impacts
- First list of impact descriptors

1.2.3 Phase 3: Construction of the narrative of the innovation and of the impact pathway



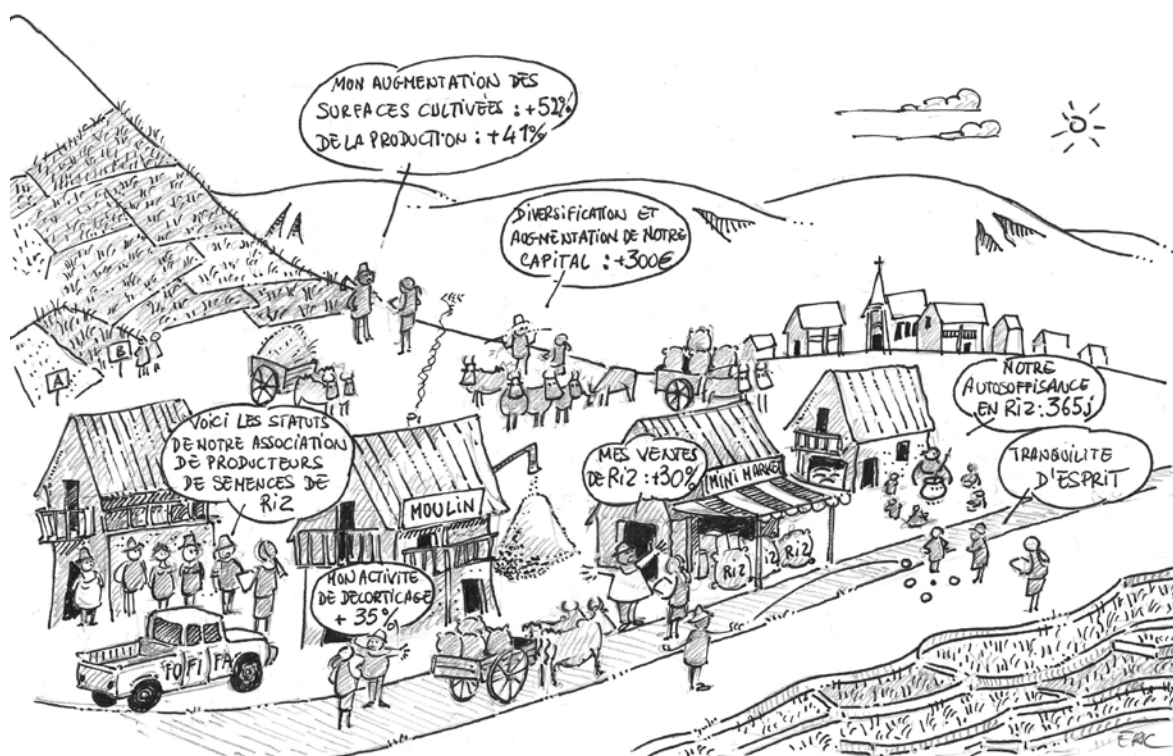
In this phase, the aim is to gather and summarize all the data pertaining to the innovation process being studied. It allows to complete the narrative of the innovation and the impact pathway. The objectives of this phase are to:

- systematically document information that is useful for revising the narrative of the innovation and for orienting the analysis of the impact pathway (inputs, outputs, outcomes and impacts) to establish cause-and-effect links. In the course of this work, actors formulate impact descriptors and often impact indicators;
- identify situations and learning processes that have built up the human and social capital, and characterize the potential contribution of research;
- identify key moments and mechanisms of interaction with public policies that have been beneficial to the innovation.

Phase 3 deliverables

- Completed narrative of the innovation
- Chronology of the innovation
- Completed impact pathway
- Characterization of learning situations
- Characterization of interactions with public policies
- Analysis of the contribution of research to the impact of the case study
- Feeding the database: impact pathway, actors

1.2.4 Phase 4: Characterization and measurement of impacts



In this phase, the aim is to conclude the work started in the first workshop (dialogue phase) and continued in the phase of construction of the narrative of the innovation and of the impact pathway in order to characterize and classify the impacts (and associated indicators), as well as to collect the data needed to assign values to indicators and score the impacts.

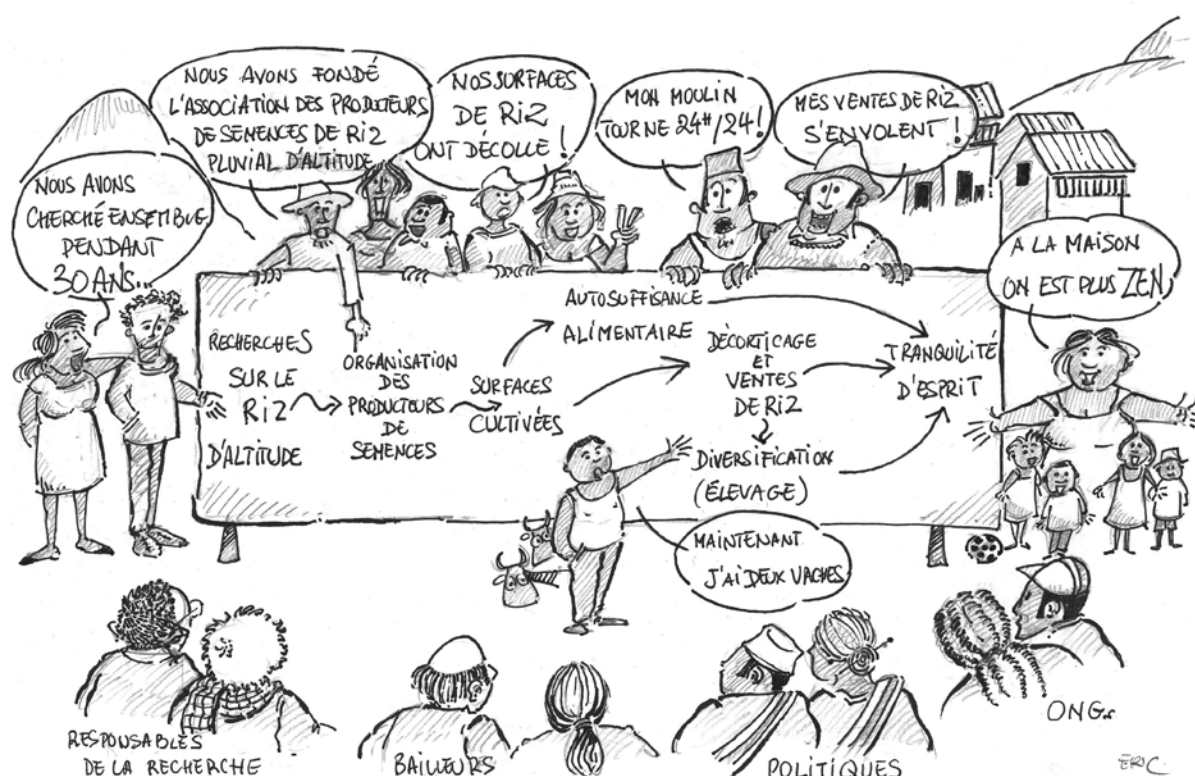
More specifically, the aim is to:

- complete the characterization of 1st level impacts by using the descriptors collected earlier from the actors;
- complete the characterization of 2nd level impacts by finding evidence of scaling out, scaling up and/or of indirect impacts (spillover) from the descriptors collected earlier;
- identify impact indicators and characterize the intensity and magnitude of each impact on the basis of the results of the workshop, focus groups, interviews and surveys;
- assign values to indicators using various methods (focus group, survey, interview, collection of secondary data);
- group 1st level and 2nd level impacts according to the 11 impact domains (see section 2.2), and note down a score for each impact domain, assigned by expert actors (focus group or survey) in terms of magnitude and intensity (drawing of a radar).

Phase 4 deliverables

- Case study report
- Table of 1st and 2nd level impacts with their indicators
- Radar of impacts of the case study
- Feeding the database: impacts, indicators

1.2.5 Phase 5: Validation with the actors



The purpose of this phase is to organize a final workshop with the same participants who took part in the first workshop to validate/improve the results of the analysis in consultation with these actors and formulate/validate the conclusions.

The aims of the workshop are to:

- present and discuss the final version of the narrative of the innovation and the impact pathway;
- validate and/or amend the 1st level impacts. Discussions can focus on indicators for which there were significant divergences in the evaluations;
- validate and/or amend the 2nd level impacts. Discussions can center on scaling mechanisms;
- validate and comment on the radar of impacts;
- draw up recommendations jointly with the actors on both the impact evaluation method and the conduct of the innovation process.

Phase 5 deliverables

- Report of the validation workshop
- Validated narrative of the innovation
- Validated impact pathway
- Validated radar of impacts of the case study
- Case study report taking into account modifications made during the validation workshop

2

Preparation of the case study



In this section, the preparation of the case study, is presented in more detail. This crucial and challenging exercise plays a determining role in the success, relevance and quality of the evaluation.

2.1 Defining the scope of the case study

Identifying and clearly demarcating the scope of the case study is a sensitive step. Several key elements are involved in doing so and they must be addressed together. The information collected during one step influences the contents of the other steps. Do note that the scope of the case study can evolve in the course of the study depending on the information that the actors may provide as it progresses (see some examples in Box 6).

First, it is a matter of defining the history – involving the researchers – that has to be told. This history or narrative recounts an innovation process that leads to a solution to a problem confronting the actors or allows an opportunity to be seized. Innovation is the result of interactions between these actors, who together create usable and actionable knowledge and mobilize resources. In time, innovation leads to multiple impacts.

Second, it is a matter of defining this narrative's temporal dimension, by specifying:

- the start date of the narrative of the innovation (i.e. the first actions undertaken to solve an identified problem or seize an opportunity and which initiate the innovation process). This start date is usually not that of the project the researcher is engaged in. This is because it is important to include the prior events (and earlier projects) that make it possible to understand the innovation at the stage at which it is being studied;
- an end date of the narrative of the innovation. Indeed, this date is more difficult to determine because the study can concern situations in which actions are still in progress. In such a case, the end date must be set as the start date of the evaluation. This avoids the necessity of modifying the evaluation report if new events occur during the course of the evaluation.

Third, it is necessary to specify the geographical area of intervention of the innovation's major actors. This area can be local (a set of villages, a sub-region), national, regional (a set of countries) or global. But if there exist several specific and separate stories of the innovation (one per country, for example), it may be necessary to restrict the study area. It would make more sense and be more realistic to describe the innovation in a country (by focusing the evaluation just on that country, especially for the narrative of the innovation and 1st level impacts) and then to consider what happens in other countries as changes in scale, allowing changes there to be considered as 2nd level impacts.

Fourth, it is a matter of identifying the actors participating in the innovation: researchers, producer organizations, advisory organizations, NGOs, private companies, local authorities, etc. (see section 3.1). Some actors are drivers of the innovation process, with clearly announced intentions and acting accordingly. Others play minor roles or even oppose the innovation. The innovation will emerge from the interaction between these actors by generating new knowledge, new ways of thinking, new rules and methods of organization or coordination, or new technical or managerial practices.

Fifth, it is a matter of listing the research projects, the research-and-development projects and the development projects connected to the innovation being studied. All these projects taken together form a project cluster that needs to be understood before the innovation process itself can be apprehended. The research community mainly intervenes in the form of projects in developing countries. The demarcation of the case study's scope makes it possible to identify projects undertaken by the research community or by its partners (actors of development) that actually contribute to the innovation. Outcomes of some research projects may be considered as prior learning on the start date of the innovation (accumulation of knowledge, development of methods, etc.). They are part of the conditions that precede the innovation and create a context that is propitious to the start of the innovation process. This prior learning is considered an input.

Table 1 provides information on projects that are considered important for the case study. It is not integrated into the ImpresS database, but allows you to better define the scope of the case study.

Table 1: Identification of projects of various kinds connected to the case study.

Name of the project	Objectives of the project	Start/end dates	Importance of the project (funding/ sponsor, population covered)	Contribution to the innovation under study (knowledge, support/ advice, training, experimentation, etc.)	Project leader (researchers, other actors)	Other actors involved

Figure 2 highlights (i) the temporality of the case study, which is different from that of any particular project, and (ii) the necessity of thinking in terms of project clusters that are linked in one way or another to the research in order to understand its contribution to innovation. Almost without exception, a project does not create any impact on its own!

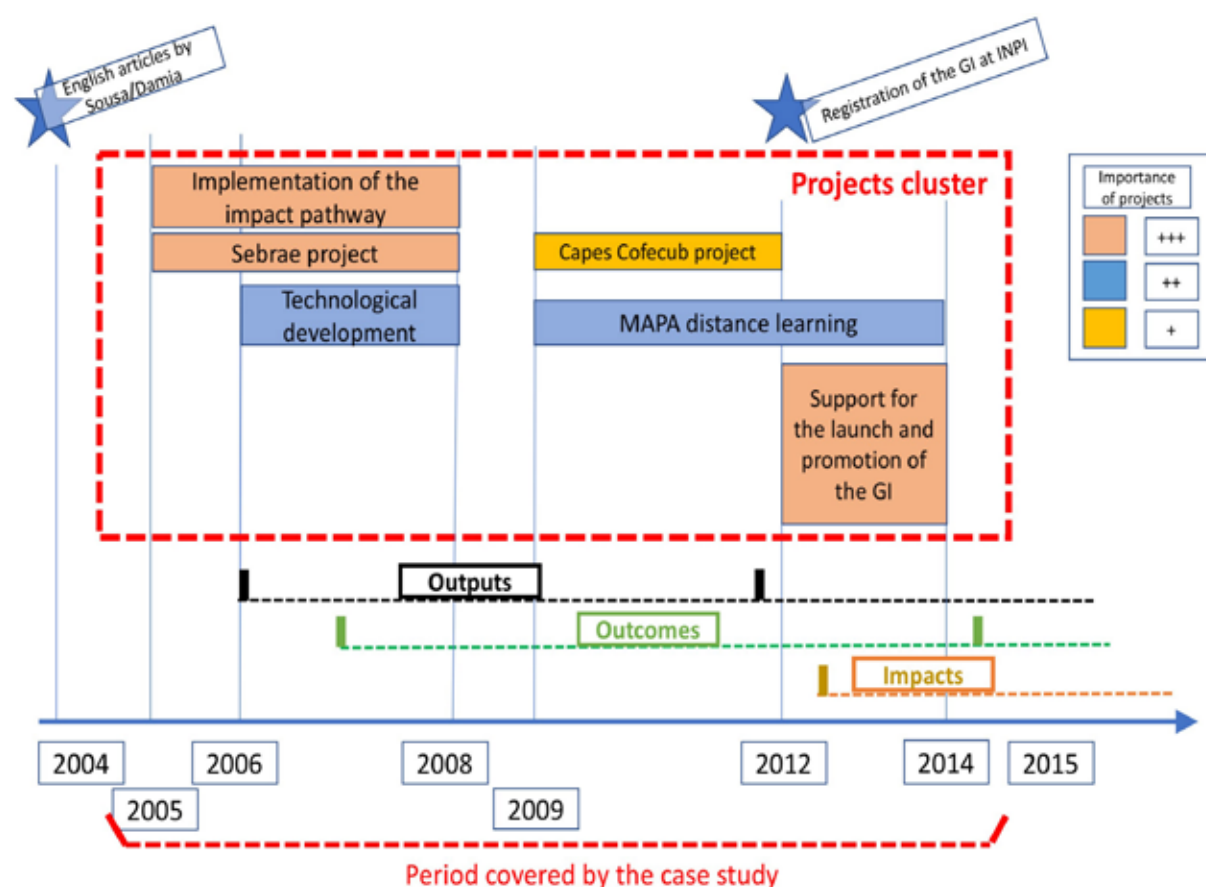


Figure 2: Example of the identification of project clusters for the case study "Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State."



Box 6: Examples of the scopes of case studies undertaken in 2015–2016

Local level – Participatory breeding of sorghum in Burkina Faso

The geographical scope selected for this case study consists of two of the three areas where successive projects concerning participatory breeding of sorghum took place: the *Boucle du Mouhoun* region, in particular the Banwa, Kossi and Mouhoun provinces, and Sanmatenga province in North-Central Region of Burkina Faso. These two regions represent two distinct agro-ecological zones, differentiated by their rainfall and their production systems. The temporal scope (or timeframe) considered for the study extends over 20 years, from 1995 to 2015, divided into three phases: launch phase (1995–2001), growth phase (2002–2007) and consolidation phase (2008–2015). At the heart of the innovation process are three research organizations (Inera, CIRAD and Icrisat) and two producer organizations (UGCPA and AMSP), all of which are major actors. Producers who did not participate in the participatory breeding but who acquired improved seeds subsequently are impacted actors.

Regional level – Biological control of the white grub *Hoplochelus marginalis* in Reunion

This innovation was developed by all the stakeholders of the sugar cane sector in Reunion (FDGDEC, SPV, Inra, Reunion University, CIRAD, farmers, industrialists, SUAD, SICA, SCEP Botanica, Betel Reunion, Chamber of Agriculture, FGDON). Rice sporized with the entomopathogenic fungus *Beauveria* and the betel produced

by a local company were applied in all of the island's municipalities, irrespective of their altitudes, in all the farms, irrespective of the sizes, and on all plots, irrespective of their infestation levels. In the period between the time the white grub appeared in Reunion and the present day, the process of innovation can be divided into three phases: 1981–1987, first actions leading to the discovery of the fungus exhibiting the potential to fight the white grub; 1987–1997, design of the innovation with the actors and beginning of the dissemination of the technology; 1997–2007, maturity phase of the innovation and large-scale adoption of the technology.

Global level – PI@ntNet, Collaborative Plant Recognition Platform

The PI@ntNet project began in 2009, with the setting up of a CIRAD/IRD/Inria/Inra consortium, and the involvement of the Tela Botanica collaborative network in creating an image sharing and retrieval application for the identification of plants (the PI@ntNet app). Originally, the PI@ntNet repository covered only French metropolitan flora and, by extension, European flora. However, the innovation's goal is a global coverage of species, as shown by the launch of the system to recognize Reunion flora, with possibilities of extension to French Guiana and the West Indies in the near future. Furthermore, in addition to the voluntary use of PI@ntNet, the system has been officially adopted in many other countries (US, Brazil, etc.).

2.2 Developing the first hypothesis of the innovation's impacts

In the case of an *ex post* analysis, a hypothesis should be formulated right from the start on the impacts (expected and unexpected, positive or negative, direct or indirect) of the innovation process. The group of researchers involved in the case under study hopes, at the start of the innovation process, to produce change to solve an existing problem (to fight against a disease with a new variety in a given country, to eradicate the tsetse fly in a region, etc.) in order to achieve a goal (to increase producer incomes, to improve human and animal health, to combat land degradation, etc.).

These goals make it possible to formulate a hypothesis of positive and negative impacts at the case study's initial stage itself. It is important to remember that while an innovation can lead to a win-win situation, it can also generate losers, damage existing relationships and reconfigure others. The drafting of a first impact hypothesis, based on the research team's perceptions, orients the analysis of the case study and prevents it from losing focus and direction.

The evaluation team should refer to the 11 impact domains identified by the application of the ImpresS methodology in the 13 case studies (with a total of 108 impacts) undertaken in 2015–2016 (see Box 4 and Appendix 1). Grouped into four broad dimensions reflecting the United Nation's Sustainable Development Goals (SDGs), the 11 impact domains constitute a suitable framework for CIRAD to analyze its projects (Table 2). It is therefore incumbent on the evaluation team to rely on this table in order to determine the hypothesis of the impacts of the innovation under study.

Table 2: The 11 impact domains identified within the framework of the ImpresS approach.

Impact domains (11)	Impact dimensions (4)	Concerned SDG	
Culture and living conditions	Human development and food security	End poverty in all its forms everywhere	SDG 1
Food security and product quality		End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	SDG 2
Household and farmer incomes			
Environment, natural resources and biodiversity	Conservation of the environment	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss	SDG 15
Animal health			
Economic opportunities for firm and employment	Economic activity	Ensure sustainable consumption and production patterns	SDG 12
Production and productivity			
Quality of services			
Institutions and public policies	Institutions and sustainable partnerships	Strengthen the means of implementation and revitalize the global partnership for sustainable development	SDG 17
Access and use of information			
Capacity to innovate			

This first impact hypothesis is subject to fine-tuning and even modification (in particular by incorporating impacts not anticipated by the researchers or their partners) during the course of the study, due to additional information obtained from participatory workshops, interviews, surveys or bibliographic sources (scientific documentation, reports, media). These impacts will be documented through indicators. Even though at this point, the researcher may have already identified available indicators and sources of information to quantify them, they will be identified systematically only in the later phases.

In order to improve the first impact hypothesis during the phase of dialogue with the actors, we suggest that the hypothesis formulated by the researchers should not be presented directly or used as a basis for discussions. Instead, the actors should be encouraged to express their perceptions of changes. Such an indirect approach will help reveal impacts that were not foreseen originally and highlight the diversity of perceptions of impacts according to actor category. It is therefore important to let the actors who are involved or impacted describe the impacts as they perceive them. Typically, actors do not formulate impacts as such, but instead use descriptors (Box 7) which can reveal positive or negative impacts.

There exist different methods to elicit these descriptors during the participatory workshop: forming small groups by actor category and encouraging them to discuss amongst themselves the changes and impacts, or asking each participant to write on a card the descriptors that best characterize for him or her the changes and impacts. A set of descriptors makes it possible to characterize an impact. In some cases, actors may even supplement descriptors with accompanying indicators that they have identified or even measured. At this workshop, these indicators will be collected but no attempt will be made at exhaustiveness.

Box 7: Examples of descriptors

- I saw the weeds disappear from my field.
- My income has increased.
- Women have lost their sources of income.
- I was able to bring together other producers for joint action.
- I spend less time in the field.
- Competition is tougher.
- My expenses have increased but my income has increased even more.
- I was able to improve my knowledge of support methods.
- We have been able to put a system in place to compensate for negative effects.
- Small operators have been squeezed out of the market.

3

Key tools to characterize the contribution of research to impact



Even though each case study is unique, the fundamental aspects of the ImpresS method must be respected in order to be able to compare case studies in the future and capitalize on the results. It is therefore a matter of finding a balance in the methodology between a standardization on the use of the proposed tools (to guarantee a rigorous approach) and flexibility in implementation (to adapt to every situation). The ImpresS evaluation method is organized around the use of key tools that are flexible enough to be adapted in the course of a case study. These tools are: the map of actors, the narrative of the innovation, the chronology of the innovation process, the impact pathway, the characterization of learning situations, the characterization of interactions with public policies, the table of impacts and the radar of impacts.

Information is collected using a system of surveys that should be carefully designed. The aim is to gather information useful in documenting the narrative of the innovation, identifying impacts, constructing the impact pathway and measuring impacts. This information can be obtained from existing secondary data, through semi-structured interviews, in the course of meetings of focus groups, during workshops involving a larger number of actors, and through surveys of samples of individuals. The same activity can be used to gather information for different aspects of the evaluation. For example, a semi-structured interview of a manager of a producer organization – which allows her/ him to express her or himself about her/his activities, about how s/he experienced a particular situation, and about her/his perceptions and opinions of it – can be used to gather a set of data necessary for different analyses and measurements that form part of the ImpresS method. It is up to the interviewer to regroup and sort the data collected in this manner and then distribute them to the narrative of the innovation, the analysis of the impact pathway and the identification of impacts and their indicators, or even the measurement of these latter.

3.1 The mapping of actors

Identifying actors prior to organizing participatory workshops helps determine who should be involved in the evaluation, and in what way. However, additional actors can be identified in the course of the evaluation (workshops, interviews, etc.). The list of actors will be frozen when no additional actors are identified during the initial participatory phases.

The following actor categories can be distinguished:

- **Major actors:** Actors having a major role in the innovation process (researchers, producer organizations, producer groups, NGOs, local authorities, State services, companies, etc.).

A reasonable number of major actors must be identified. They are mainly those who interact with the research community as well as others who appropriate research outputs and take part in developing outcomes. In the case of a large organization, the actor is not necessarily the organization in its entirety, but could be one of its departments or even an individual in one of its departments (a person belonging to an organization can play a leading role in an innovation with or even without the approval of his/her organization). Major actors may or may not be formally or officially part of the innovation process. They may instead be merely in contact with other actors through the networks they belong to. Major actors can intervene at different points in the innovation process.

- **Influential actors:** The actors who influence the innovation (intentionally or unintentionally) without playing a direct role in the innovation process.

This category of actors mainly consists of policymakers and donors. However, in some cases, the latter can also be considered major actors if they are actually involved in activities of the innovation process. In this category, some actors may promote the innovation while others may unintentionally, hinder or obstruct it. Indeed, some may do so intentionally if they believe it disrupts their established practices or clashes with their interests.

- **Impacted actors:** The actors who are positively or negatively impacted by the innovation (farmers who adopt a new variety, processors who will benefit from the improvement of the quality or the stability of an agricultural product, etc.), who may or may not be major actors in the innovation process.

Impacted actors often emerge in the scaling up/out phases of the innovation.

Examples of actors from three ImpresS case studies are shown in Table 3.

Table 3: Major, influential and impacted actors in three case studies.

Case study	Major actors	Influential actors	Impacted actors
Eradication of the Tsetse Fly with the Sterile Insect Technique in Senegal	Research community (CIRAD-ISRA) Senegalese public actors (DSV)	FAO-IAEA-African Union Mubarqui Company US State Department	Livestock breeders Consumers Veterinarians Government of Senegal Veterinary services from other countries
Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion Is.	Research community (CIRAD) Public actor (DAAF) Chamber of Agriculture Betel-producing industry Experimental farmers Association (FDGDON)	University General Council Media	Other farmers Betel factory Private distributors
Fonio hulling equipment in West Africa	Research community (CIRAD and partners from developing countries: IER, IRAG) Experimental processors Equipment manufacturers in Bamako	NGO IRSAT Government of Burkina Faso	Fonio producers Urban processors of Mali and Burkina Faso Service providers

These three broad categories of actors are not always clearly defined. For example, in innovation processes with a strong dimension of participatory research, some farmers will be considered major actors of the innovation because they are participating in research activities, while other farmers will be perceived as impacted actors because they adopt a new technology. In contrast, in an innovation process that includes research activities without the participation of the ultimate beneficiaries, the farmers will be considered only as impacted actors. Actors can appear or disappear during the innovation process. Some actors can be major in one phase of the narrative of the innovation while only influential in another phase. It is therefore possible to define several actor tables, one for each phase of the innovation.

However, mapping of actors entails more than just drawing up the list of actors. It is also important to know the specific role each actor plays in the innovation process. This information can be recorded in a table (Table 4).

Table 4: Information on the actors of the innovation process.

Actor	Category of actor (major, influential, impacted)	Type of actor (organization, department of an organization, individual)	Contribution to the innovation (production of goods, support/advice, training, management of a platform, etc.)	Other actors with whom the actor interacts in connection with the innovation: information flows, material flows, financial flows, etc.

The relationships between actors are also important to characterize. They vary in strength, thus resulting in different types of interactions, which generate knowledge and pool skills. These relationships are part of networks that need to be understood to know how they are mobilized /modified during the innovation process. Power relations of varying intensities may also exist between actors. It is thus necessary to create maps of actors, even, if required, different maps of actors for different phases of the innovation process (Figure 3).

Should the evaluation team want to expand on the actors' roles, they and their relationships can be represented by a sociogram which provides more information than the map of actors. Actors are represented by nodes in the sociogram and links are drawn between the nodes to symbolize the relationships between actors. Actors can be specific individuals acting within an organization or organizations themselves. It is possible to represent one or more types of links between the actors, and to illustrate their intensity by varying the thickness of the arrow. It is also possible to represent these links over time to show how they

become deeper during the innovation process. The links can symbolize exchanges of information, knowledge, material, or funding. In addition, these links can represent different interactions of collaboration or rivalry of various intensities (cooperation, competition, conflict, etc.). Open source software, such as Pajek⁸, can be used to depict networks of actors graphically.

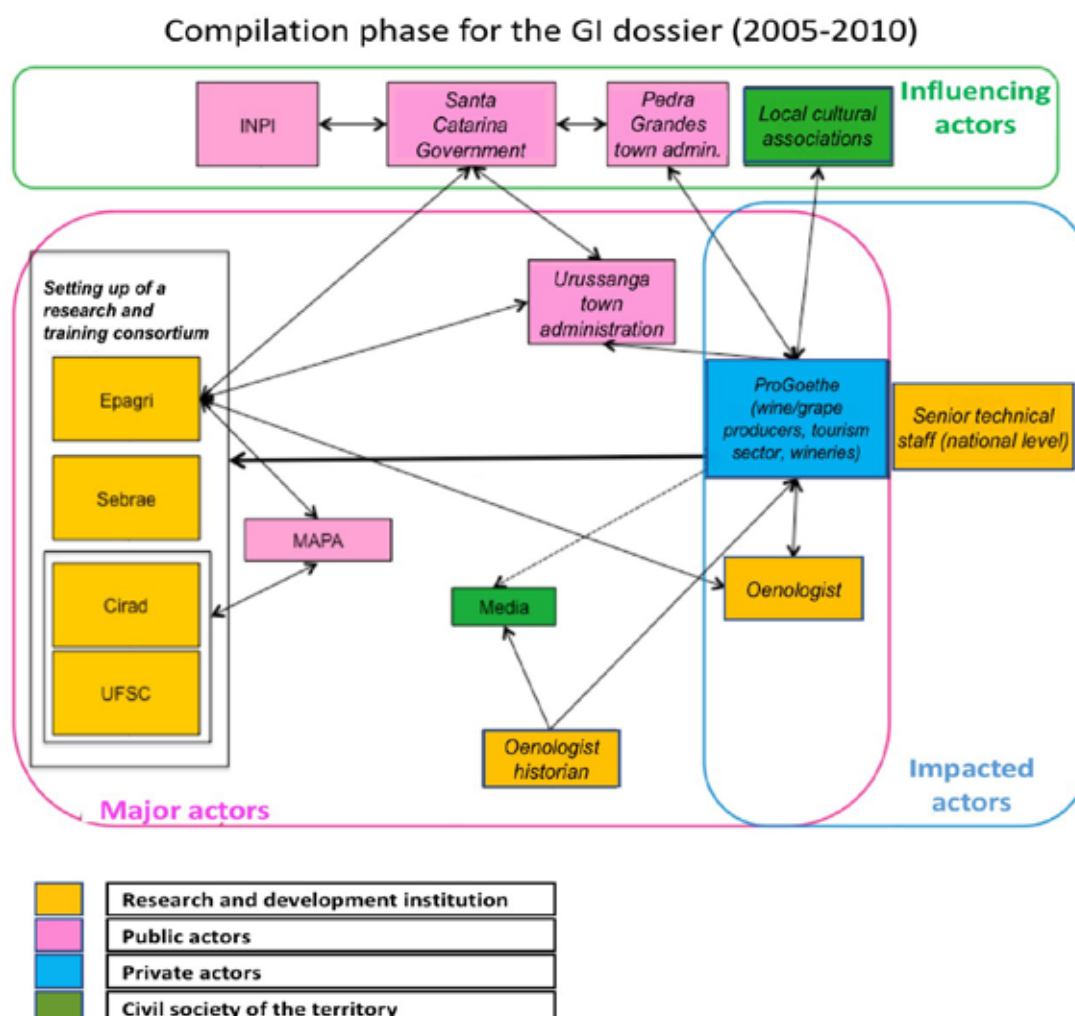


Figure 3: Map of actors [for the period 2005–2010] for the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State.”

3.2 The narrative of the innovation and its chronology

The narrative that has to be written is not that of the researcher’s activity or his/her projects. This narrative is about the innovation concerned, and thus of all its major actors, as well as of the contributions of actors who influence the innovation and the effects on the impacted actors. It encompasses the major phases of the history of innovation with its progress, crises, and external influencing factors. To write a narrative is to tell a story that gives an account of what has happened by highlighting certain elements over others. The narrative is therefore a recounting of successive events that not only involves actors – which it always does –, but also the other elements (policies, standards, funding, technical objects, etc.) associated with the innovation. It also portrays a succession of states, the processes of their transformation, and breaks corresponding to a series of parallel and relatively interconnected stories. Indeed, it is a matter of identifying and putting dates to “what has happened” from the very beginning of the innovation process to the present day. It is a question also of qualifying the moments of doubt, of contestation or

8. http://f.hypotheses.org/wp-content/blogs.dir/22/files/2011/06/Pajek_Introduction_Beauguitte_Merckle.pdf

galvanizing argumentation, of uncertainty, of debate, and of change in organizational models, since these moments could have led to reorientations or strengthening of the process.

It is important to cross-reference and compare the narratives of the different actors, as each has his own account of the innovation process. The case study leader, who has his own narrative, must be ready to listen to and blend the various other narratives. The ultimate aim is to create a single narrative from several points of view and accounts. This narrative must be plausible and has to be finally acceptable to the actors.

In order to avoid a dissipation of efforts, it is important to focus on the expected or already observed impacts while writing the narrative of the innovation; only those events and facts that will lead up to or have led up to these impacts should be retained. It is necessary to describe the stages which were part of the journey from what was just a hope for a change at the beginning to the actual impact: What were the major events [projects, interventions of different actors]? What were the different phases [start, extension, regression, end]? What were the external events [economic crisis, disease outbreak, new regulations] that influenced the innovation process? What were the determining contributions of each actor, including assenting and dissenting opinions about these contributions? What agreements were entered into between actors that were conducive to the development of the innovation or to its scaling? The analysis makes it possible to highlight the temporal phases that are important to the narrative. This narrative is continually improved throughout the case study, from when information is initially collected to the validation phase with the major players.

Box 8 can help identify the information needed to construct the narrative of the innovation.

Box 8: Elements to be collected for the narrative of the innovation

External events influencing the innovation

- Change in policy, regulatory context, etc.
- Economic event [changes in markets, in prices, in subsidies, etc.]
- Event concerning the biophysical environment (extreme climatic event, environmental degradation, depletion of a natural resource)
- Other: epidemics, migratory flows, etc.

Actions of actors of the innovation affecting the innovation

- Entry of an actor into or exit of an actor from the innovation process,

- Availability or creation of knowledge or technology
- Major organizational change concerning an actor
- New partnership between actors for undertaking activities
- Conflicts or tensions between actors

For each event or action, it is necessary to specify the actors concerned, the relevant date/period, the controversies that arose, and the implication for the innovation with its level of importance.

A narrative can be drafted on the basis of qualitative and quantitative data by mobilizing secondary data (statistics), as also by trying to quantify some elements that are considered important [dates and durations, number of training sessions organized, etc.].

It is easy for the case study leader to introduce a bias by influencing information collection: his/her presence during certain sensitive interviews, choice of interviewees, etc. To minimize this bias, it may be necessary to ask a third party (e.g. an intern or final-year student) to conduct certain interviews. While it is not possible to define *a priori* the number of interviews that have to be conducted in order to construct a narrative, but two interviews (one-to-one or in focus groups) per major actor and a few interviews of external actors should suffice to create a coherent narrative. As the interviews proceed, the amount of information they bring to light diminishes because the later interviews only provide information that confirms or disproves a narrative that is already gradually getting refined. A good rule to determine if the number of interviews is sufficient is to stop the interviews when you do not learn anything new (saturation principle).

A chronology is drawn up to visualize the narrative of the innovation in its temporal dimension. It must contain information on (i) the different phases of the innovation process, (ii) actors who have intervened over time, (iii) actions implemented by the actors or the milestones of the innovation process, (iv) external events that influenced the process, and, finally, (v) controversies that led to changes in these actions.

In the example of the chronology of the case study (page 34) “Biological control of the white grub *Hoplochelus marginalis* in Reunion” (Figure 4), the legend illustrates these five subsets with different colored blocks placed on either sides of a line demarcating the time limit of the case study.

3.3 The impact pathway

This subsection presents the concepts that underpin the impact pathway, shows how to characterize its different elements and, finally, explains how to identify the causal links between these elements. The concept of the impact pathway, which originates in the management sciences, has been expanded and enriched progressively to address the complexity of the links between an innovation and its impacts (Box 9).

3.3.1 Why an impact pathway?

In order to analyze the contribution of research to impact, it is necessary to establish causal links between the contributions of research, the changes these contributions entail for the actors and, subsequently, the economic, social, environmental and other impacts that the changes produce. The drawing up of the impact pathway makes it possible to trace these causal relationships. Given the likely extent of abstraction that this work involves, it has to be done in the office, and subsequently discussed during the validation workshop.

Note that the impact pathway (Figure 5) is not another version of the narrative of the innovation. Instead, its main purpose is to demonstrate the extent of the contribution of research to impact by highlighting causal relationships between the research inputs mobilized, the research outputs, the outcomes which materialize directly for the users of the research outputs, and the impacts. These impacts are evaluated by a series of indicators. We distinguish here the 1st level impacts, which affect the first users of the research outputs, and 2nd level impacts, which arise from scaling or spillover mechanisms.

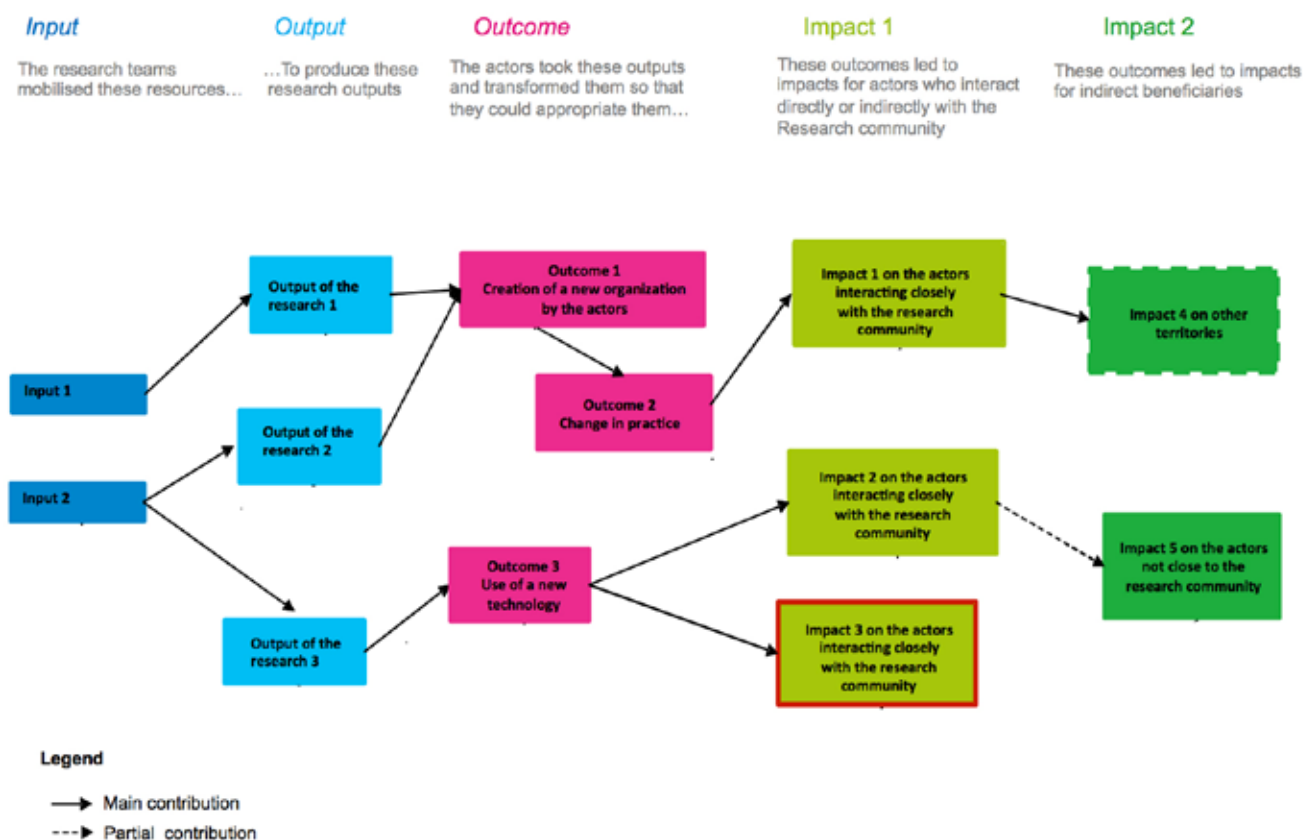


Figure 5: Generic description of an impact pathway.

Box 9: Origin of the impact pathway

The concept of the “impact pathway” comes from *ex ante* logical frameworks of evaluation used to improve the effectiveness of development or research projects, especially those undertaken by CGIAR. The logical framework has its methodological origins in the management sciences and concerns issues of planning, and more concretely, in guides developed by GTZ (one of the main funders of CGIAR centers) for an improved assessment of organizational conditions that structure the impacts of research projects (Douthwaite *et al.*, 2003). It therefore presupposes a basic structuring of research programs into “projects” – which is however not always the case. The aim is to understand the relationship between the appropriation of research outputs and change resulting from their use by the actors (outcomes), which ultimately translate into impacts. This framework refers to theoretical models used to analyze how innovations are created and disseminated. It can be used with a linear and hierarchical model of the relationship between research and development, or to differentiate itself from diffusion of innovation models (Rogers, 1995).

The concept of the “impact pathway” took shape in the 2000s in CGIAR, in particular by CIAT and CIP (special issue of the *Agricultural System* journal on the evaluation of the impact of research, published in 2003). The impact pathway approach uses a “theory of change” and tools to help plan research projects by attempting to identify opportunities and avoid failures (Springer-Heinze *et al.*, 2003, p. 278). This approach has been validated by CGIAR’s scientific body (ISPC)

and has been systematized by all CGIAR Research Programs (CRP) in their plan documents. The impact pathway has also been used by Inra to assess the impact of its research programs (ASIRPA² project, Gaunand *et al.*, 2015) and by FAO (IMPRESA project³), both for *ex post* analyses.

The impact pathway is used in two different ways (Douthwaite *et al.*, 2003):

- *ex ante* to analyze the “output-to-outcome” relationship, and hence in a planning objective (for a project, for example): the CRP programs have, in this respect, developed the explanation of the theory of change, which is a hypothetical impact pathway to justify the methodological choices of a research team in pursuit of the impact it expects from its research efforts. CIRAD has also developed the *ImpresS ex ante* method to help researchers and their partners determine the underlying mechanisms and strategies to increase the contribution of research to outcomes, and thus the contribution to impacts.
- *ex post* (relationship between the end of the research project and its consequences on development) to analyze the “outcomes-to-impacts” relationship.

While the term “innovation” was rarely used in the early articles on the impact pathway, it is now increasingly employed following the theoretical renewal resulting from the development of the concept of the innovation system (IS). There is also a semantic shift in the evaluation objective from the relationship between research and development to the relationship between innovation and development.

1 Innovation can be defined, at the level of the entrepreneur, as a new product, a new process, a new way of accessing services or a new way of marketing products or services. In general, it can also be defined as an idea that has been implemented (see the European Union’s definition of innovation in the European Innovation Partnership). It involves actors who have an expectation of change, is part of a context that is always specific and always includes technical, organizational, institutional and social dimensions.

2 ASIRPA: the ASIRPA project (Socio-economic Analysis of Impacts of Public Agronomic Research) was launched by Inra in January 2011 (Joly *et al.*, 2015). Its objective was to design and propose a method to analyze, in all their diversity, the socio-economic impacts of agronomic research carried out within a public targeted-research organization such as Inra. The project also had an operational objective, since the proposed approach had to be applicable in a practical manner to Inra in order to apprehend the impacts of the research conducted there. ASIRPA is carried out by a team comprising of researchers from IFRIS (Institute For Research and Innovation in Society), Inra’s SenS unit (Science in Society) and Inra’s GAEL joint research unit (Grenoble Applied Economics Lab). <http://www6.inra.fr/asirpa>.

3 Impresa: Impact of Research on EU Agriculture. http://cordis.europa.eu/project/rcn/110944_en.html.

3.3.2 Identification of inputs mobilized by the research community

We refer here only briefly to the inputs mobilized by the research community, since it is difficult to attribute inputs to the innovation (the inputs could be shared by different research activities or by different partners). The inputs will be entered in the *ImpresS* database as shown in Table 5.

Table 5: Characterization of inputs mobilized by the research community.

Name of input	Input category	Participating actors	Date of emergence/ period concerned	How was the input identified
				(Interviews, case study team, workshops, etc.)

The input categories identified from the analysis of the 13 case studies conducted in 2015–2016 are listed in Table 6.

Table 6: Input categories identified from the 13 case studies conducted.

Input category	Example
Previous research results within the context of the case study	Knowledge on the functioning of farms and the role of manure pits in Burkina Faso (for the case study "Innovative management of organic manures in agro-pastoral systems of western Burkina Faso")
Previous research results from other situations	Research gains on the modalities of implementation of geographical indications
Results from non-scientific knowledge	Local knowledge of the region's history and tourism assets
Pre-existing technology	Existing models of hullers already tested (fonio and other cereals)
Pre-existing partnerships	The Promecafé regional network, promoter of integrated pest management and funder
Material and financial resources	Access to local infrastructure (experimental plots, stock, etc.), funding
Human resources	Number of researchers, doctoral students, trainees involved in the latest case study projects

3.3.3 Identification of research outputs

It is a matter of characterizing the different research outputs that allow an innovation to emerge and that determine its structuring. The information to be collected must characterize the diversity of the research projects' outputs as indicated by the columns in Table 7. This information will be integrated into the ImpresS database.

Table 7: Characterizing the research outputs.

Name of the output	Output category	Participating actors	Date of emergence/ period concerned	How was the output identified
				(Interviews, case study team, workshops, etc.)

Table 8 lists the output categories identified from the analysis of the 13 case studies conducted in 2015-2016.

Table 8: Output categories identified from the 13 case studies conducted.

Output category	Examples
New formalized knowledge	Characterization of the target tsetse population, articles
Support for popularizing new knowledge	Technical data sheets for starting production of organic manure in the field and at home
Training modules designed by the research team	Organization of wine tasting tests with producers
New process or method of intervention	Integrated control of the coffee berry borer (Dominican Republic)
New technology	Development of a trap for the coffee berry borer (BROCAP)
Formalization of a new research method	Generic methodology of co-construction of innovations with farmers
New organization for actors managed by the research team	Multi-actor consultation platform for breeding of sorghum varieties (Burkina Faso)

3.3.4 Identification of research outcomes

Outcomes correspond to the appropriation of a research output by actors interacting directly or indirectly with the researchers concerned, which leads to new practices (agricultural or managerial), new organizations, or new rules. The information we want to obtain concerns the use of outputs by actors who are part of the innovation process and interact with the researchers, as well as the effects induced at the level of these actors.

For each of these outcomes, we must:

- describe the outcome rigorously, specifying the research outputs that contributed to it (by establishing the causal link(s));
- identify the actors concerned (those who appropriate research outputs, who change their practices, etc.);
- specify the period concerned (in reference to the phases presented in the narrative of the innovation);
- note the geographical extent (e.g. local, regional, national, supply chain segment);
- describe any change concerning the actors involved (change of vision, practice, organization, knowledge, capacity) that will lead to 1st level impacts by establishing the cause-and-effect link.

Information on outcomes, as presented in Table 9, will be integrated into the ImpresS database.

Table 9: Characterizing the research outcomes.

Name of the outcome	Outcome category	Participating actors	Geographical extent	How was the outcome identified
				(Interviews, case study team, workshops, etc.)

The outcome categories identified from the analysis of the 13 case studies conducted in 2015–2016 are listed in Table 10.

Table 10: Outcome categories identified from the 13 case studies conducted.

Category of outcomes	Examples
Adaptation and implementation of a technology or process (new farming or management practices)	Application of a product for biological control by farmers using their own techniques ("Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion")
Mechanism or set-up for training, raising awareness or promoting the innovation	Dissemination of new seeds using mini sachets (sorghum); production of films and videos
Creation or strengthening of an organization for production, marketing, or territorial management	Manufacture of hullers by two equipment manufacturers (fonio in Bamako); production and marketing of seeds by producers (groundnuts in Senegal)
Creation or strengthening of new coordination and/or monitoring organizations	Strengthening village consultation committees for experimentation ("Innovative management of organic manures in agro-pastoral systems of western Burkina Faso"); creation of a new water management body for the Kapilaler irrigated area (Danone case study in Indonesia)
Creation or strengthening of multi-actor partnerships and/or networks	Networking of stakeholders in a sector: producer organizations, input sellers, certifiers, buyers ("Participatory breeding of Sorghum in Burkina Faso"); partnerships between the research community, NGOs, and extension agencies ("Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State")
Contribution to the development and/or implementation of standards or public policies	Certification of new varieties resulting from participatory breeding (sorghum in Burkina Faso)



3.3.5 Identification of impacts

Recall that 1st level impacts (or impacts 1) are the impacts on actors interacting directly or indirectly with the researchers and/or the major actors of the innovation. On the other hand, 2nd level impacts (or impacts 2) are the impacts arising from changes of scale (scaling out or scaling up). Indirect impacts (spillovers) are also 2nd level impacts (Box 10).

Box 10: Change in scale and indirect impacts

One of the special features of the ImpresS approach is that it takes into account changes in scale and indirect impacts (spillovers) by characterizing 2nd level impacts.

Scaling mechanisms can be understood at the geographical or community level. In such cases, the innovation spreads from the local to the regional or to the national, with an increase in the number of users of the innovation, dissemination to other contiguous or discontiguous territories, access to new markets for the beneficiaries, etc. This is horizontal scaling (or scaling out).

Scaling mechanisms can also be understood at the organizational level, with the involvement of new stakeholders in the innovation process (new producers, new communities, intermediaries, development structures, political actors, etc.), as also through increased coordination between actors, new rules or policies to support innovation that also allow the broadening of the impact. This is vertical scaling (or scaling up).

A large body of scientific literature exists on changes in scale and reflects a diversity of points of view. For example, Douthwaite *et al.* [2003] identify:

1. Scaling out: a process of dissemination of an innovation from producer to producer, from community to community, within the same group of stakeholders;
2. Scaling up: Institutional reorganizations (including changes in grassroots organizations, development organizations, at the level of policies or other stakeholders) that play a key role in building an enabling or necessary environment for large-scale changes (for example, to create a regulatory framework conducive to the agro-ecological transition and concrete mechanisms to support this transition);
3. Spatial scaling up: widening of the scale of the operation, for example from an experiment in one field to an entire region.

Indirect impacts (spillovers) correspond to unexpected effects, run-on effects, or repercussions of an innovation on actors not involved in the innovation process being analyzed. These effects can be positive or negative. For example, the introduction of a new mango variety can lead to an increase in local expertise on the grafting of mango trees, allowing the emergence of horticultural nurseries that can be used in other sectors and value chains, and thus engendering local development.

Impacts are formalized using descriptors collected from actors at different occasions (see section 2.2):

- at the stage of dialogue with the actors (1st participatory workshop with, however, a very real risk of under-representation of the impacted actors, such as producers);
- during interviews for constructing the narrative of the innovation and the impact pathway.

The task of identifying impacts can be complemented by a bibliographic review. The impacts identified can be categorized in the 11 impact domains defined by ImpresS and listed in section 2.2, given that a particular case studies may not display impacts in one domain but may include several in other domains. However, we recommend limiting the number of impacts per domain to a reasonable number (between 5 and 10), so as not to have too much information to collect to document them all.

It should be emphasized that the actors can mention or refer to impacts without differentiating them into 1st and 2nd levels. It is incumbent upon the evaluation team to separate the impacts into these two levels. When there is a clear change of scale in the innovation process, the same impacts are observed in the 1st and 2nd level impact categories. On the other hand, for spillover phenomena (indirect impacts) or impacts on public policies, 2nd level impacts may be different in nature from those of the 1st level.

Figure 6 shows how 1st level impacts differ from 2nd level impacts and identifies the categories of actors affected by each of them. The distinction between the two levels is not unequivocal because there are no clear boundaries and there are areas of overlap.

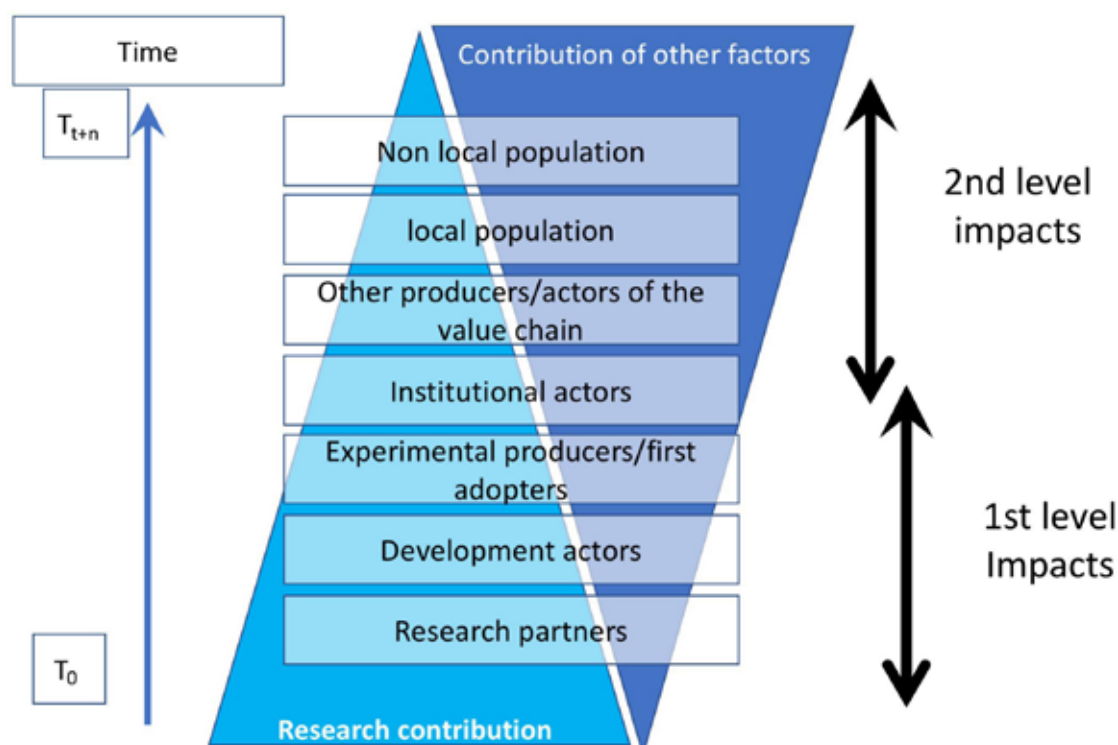


Figure 6: 1st and 2nd level Impacts.

Table 11 provides an illustration using an imaginary example.

Table 11: Distribution of impacts between 1st and 2nd levels.

Impact	1 st level	2 nd level	Actors impacted
Increase in farmer incomes	Yes: changes in farming practices are observed among farmers who are actors interacting with the researchers and their partners	Yes: changes in farming practices are observed among farmers who do not belong to the immediate circle of actors interacting with the researchers and their partners	Farmers
Increase in field biodiversity	Yes: new practices allow trees to regenerate on the farms of those participating in the experiment	No: change in scale not observed as yet	Farmers
New public policy on biodiversity	No: no change observed among farmers	Yes: advisory services are entrusted with a national mission on biodiversity (indirect effect)	Advisory service

Once the impacts have been identified in a definitive manner, they are entered into the ImpresS database. Two tables, to be subsequently integrated into the database, are to be filled in, one for 1st level impacts [Table 12], the other for 2nd level impacts [Table 13].

Table 12: Characterizing 1st level impacts.

Name of the 1 st level impact	Impact domain	Impacted actors	Date/period of emergence	Geographical extent	How was the impact identified
					(Interviews, case study team, workshops, etc.)

Table 13: Characterizing 2nd level impacts.

Name of the 2 nd level impact	Impact domain	Type of 2 nd level impact	Impacted actors	Date/period of emergence	Geographical extent	How was the impact identified
		{scaling out, scaling up, or spillover}				{Interviews, case study team, workshops, etc.}

3.3.6 Constructing the impact pathway

Once the inputs, outputs, outcomes and impacts have been identified and the narrative of the innovation is written, the evaluation team can construct the impact pathway. It is possible to do so by working backwards from the impacts, by conjecturing how these impacts could have been generated by the innovation. It is thus possible to focus on the essential elements that lead to impact without diluting the reflection process. In this process of construction of the impact pathway, some outputs may be linked (one output generating another output) and some outcomes may be linked, too (one outcome generating another outcome).

Note that the impact pathway is not a chronology; it only shows the causal relations. Thus, in the context of an innovation process meant to encourage the adoption of agro-ecological production systems, an impact on farmer incomes can very well materialize fairly rapidly thanks to changes in the practices of farmers due to the adoption of a new variety (outcome), while the research activity continues on other dimensions (e.g. organic fertilization) producing other outputs.

Although the impact pathway is constructed by researchers, it is discussed with the actors and can thus evolve during the evaluation and as reflection unfolds. It can also change depending on the elements that one wishes to highlight to explain the contribution of research to impact.

3.3.7 Tracing the causal links

Once the different boxes of the impact pathway have been identified and characterized, the arrows connecting these boxes can be drawn, with each arrow representing a causal relationship between the two boxes it connects (Box 11). It is incumbent upon the evaluation team to undertake the task of determining these causal links with rigor. Only then will the impact pathway truly represent the innovation process and only then will it be possible to show the effective contribution of research to innovation and thus to the observed impacts. To provide more details on the causal relationships between the boxes, each arrow can be numbered and the corresponding causal relationship explained in a separate table. As example, see the impact pathway and the table in Figure 7 for the case study “Biological control of the white grub *Hoplochelus marginalis* in Reunion.” Both were made at the end of the case study.



Box 11: How to establish causal links?

Particular attention must be paid to causal links, especially those connecting outputs to outcomes, and those connecting outcomes to impacts. A causal link is identified through its two components: (i) the causal relationship (A causes B) and (ii) the mechanism explaining how A leads to B. These two components can be identified by triangulating information [verification of information by cross-checking sources, debate, opinions, observations] provided by actors or obtained from documentary data. We can proceed in a descending way, i.e. going from the outputs to the impacts, or in an ascending way (back linking or backward reasoning), moving from impacts to outputs. In the ImpresS methodology, we proceed in an ascending way to demonstrate the causal links, i.e. we start from the impacts and retrace our steps back to the causes taking into account the different actors who were impacted and those who influenced the process.

Causal links mentioned by actors during the start-up workshop, interviews or focus groups, are validated in three steps: (i) verify that the event mentioned actually took place (by cross-checking the information), (ii) verify that the cause is tangible (the development of a technique by a researcher, a training activity, etc.), and (iii) characterize the causal link in different ways by asking questions such as:

- Why do you think this event is due to this cause and not something else? For example: intervention of a broker or intermediary, implementation of specific funding, organization of a training program which

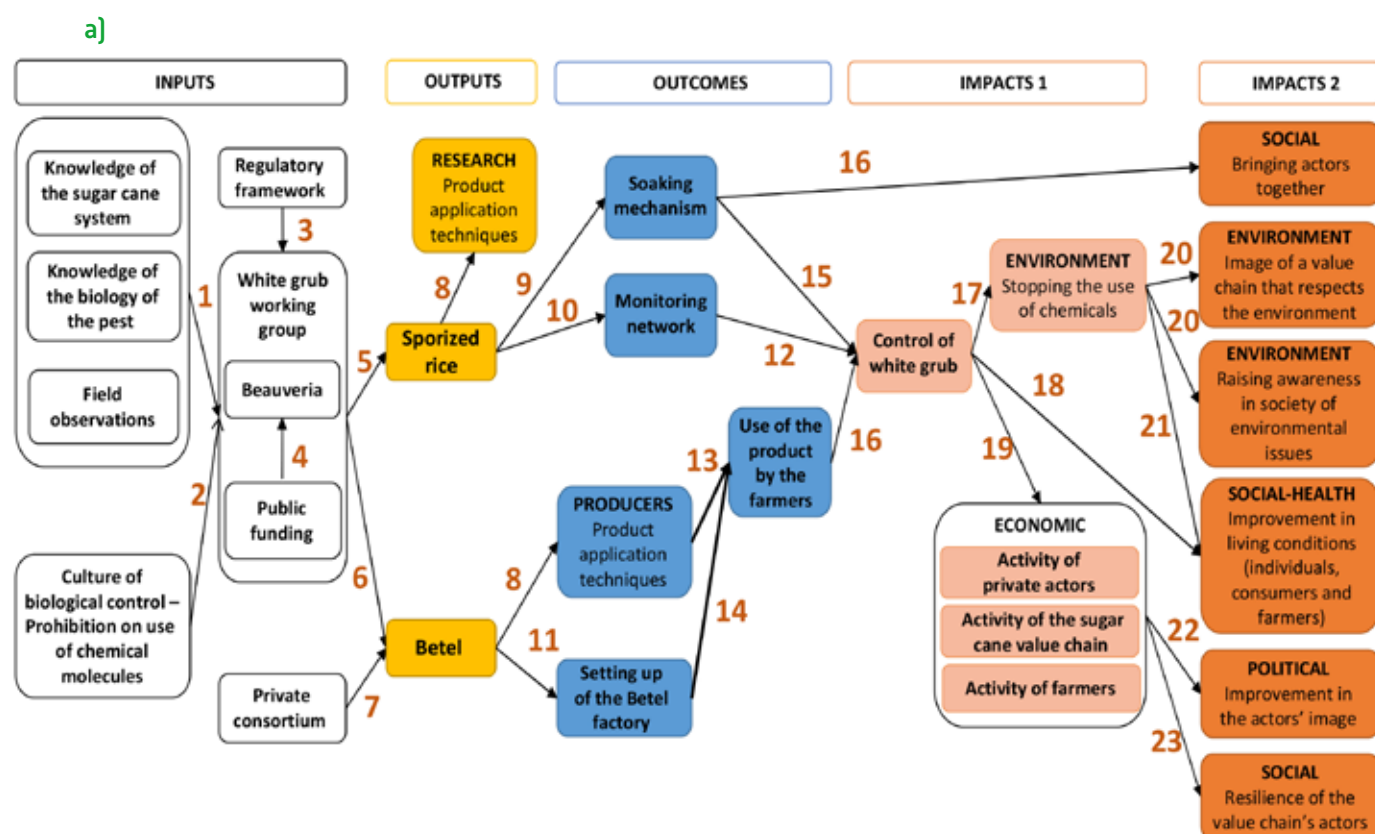
triggered something, (re-)invigoration of a network following an intervention, intervention by a key actor who authorized something, etc.

- If the previous event [the cause] had not taken place, what would have happened (the same thing, something else)? Are there alternative explanations (the higher the number of alternative explanations, the less plausible the causal link is)?

Researchers have a fairly good idea of the causal links that allow the transition from inputs to outputs, and from outputs to outcomes. However, causal links between outcomes and impacts [1st and 2nd levels] and between the 1st level impacts and 2nd level impacts must be determined by involving a wider circle of stakeholders. The causal mechanisms may be a little more complex to elucidate. Indeed, in the case of the link between an outcome and a 1st level impact, there are several different mechanisms that can be responsible, including those pertaining to learnings of various types. For transitions from a 1st level impact to a 2nd level impact, scaling up/out mechanisms are usually involved though some transitions result from spillover mechanisms.

Two difficulties can arise in *ex post* case studies which span a wide time scale: first, the disappearance or unavailability of certain key actors, and second, the fact of having to rely on the memory of actors for events in the distant past, especially when they have moved on from the issue.





b) Arrow	Explanation of the causal links of the impact pathway of the "Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion" case study
1	Capitalization of knowledge and observations to take the most appropriate decisions
2	Influence in the orientation of the proposed pest control approach
3	Adaptation of the regulatory framework to facilitate the dissemination of the technology
4	Funding of pest control actions based on the decisions taken by the working group
5	Legal, operational and political framework for the sporized rice innovation by the "white grub" working group
6	Legal, operational and political framework for the Betel innovation by the "white grub" working group
7	Investment in the capital of the factory
8	Limits in the application of the product (small quantities to apply)
9	Decision to create the soaking mechanism to apply the product
10	Monitoring the effectiveness of the application of sporized rice
11	Transfer of the process to a structure allowing the dissemination of the product all over the island
12	Development and supply of white grub infestation indicators to guide pest control efforts
13	Facilitating the application of the product by farmers
14	Dissemination of the product through sales
15	Increase in the rate of mycotic larvae
16	Increase in frequency of meetings between stakeholders
17	Decision taken by the "white grub" working group following the control of the white grub

Figure 7: Impact pathway [a] and table of causal relationships [b] for the "Biological control of the white grub *Hoplochelus marginalis* in Reunion" case study.

4

The characterization of capacity building in the impact pathway



4.1 Why the interest in capacity building?

Capacity building can be considered the “backbone” of the impact pathway. It is only because individuals, communities and organizations acquire or develop new capacities and skills that changes can occur – changes in policies, practices, products – that will ultimately contribute to development. CIRAD, by conducting its research activities in partnership, helps build capacity of its partners, with the goal of helping researchers from developing countries and their institutions – as also actors of development (farmers, representatives of producer organizations, technical agents of NGOs, managers of private companies, officers of public institutions) – respond better to the challenges confronting them. This section on capacity building covers both technical capacities (knowing how to develop and use technologies) and functional capacities (knowing how to manage an organization, how to collaborate, organize, communicate, etc.) [Box 12].

The ImpresS method requires the analysis and documentation of technical- and functional-capacity building of the main actors involved in the innovation process. These actors can be, for example, research partners, other partners in the sphere of development, farmers or potential users of the innovation, policy makers, etc. Capacity building can take place during any of the different phases of the innovation (beginning, development, scaling). Researchers may carry out activities specifically and intentionally to build capacity. But capacity building can be also an indirect result of the multiplicity of learning processes that take place at the individual and collective levels. Capacity building is intentional, for example, when it is a key component of a project to achieve development objectives (for example, through organized training sessions).

In the ImpresS method, capacity building can be shown on the impact pathway in a number of ways: either as an outcome or an impact, or as a causal link between outputs and outcomes or between outcomes and impacts. By convention, it is the capacity to innovate, as a result of all the technical and functional abilities acquired along the way, that is considered an impact. The constituent capacities are acquired in stages and are represented as outputs or outcomes.

Box 12: Capacity building of researchers and other actors involved in the innovation

Capacity building involves a process of acquisition and accumulation of knowledge, know-how and social skills, followed by their application by individuals or organizations in order to carry out their functions and achieve their objectives (Morgan, 1998). It is possible to identify a wide range of enhanced capacities.

Technical capacities: mastering a new technology, mastering new processes.

Management capacities: knowing how to analyze one's situation and environment; knowing how to plan one's activities; knowing how to monitor and evaluate one's activities and results; knowing how to mobilize resources (financial and non-financial); knowing how to manage people and processes; knowing how to evaluate the performance of innovations in terms of one's own criteria (diagnosis).

Capacity to experiment and learn: knowing how to experiment and to adapt; knowing how to mobilize scientific and lay knowledge; knowing how to formalize

new knowledge to solve other problems; knowing how to share knowledge and skills with peers and partners.

Capacity to interact with others: knowing how to work together to design and implement an innovation; knowing how to act collectively to design and set up an organization and engage in a political process; knowing how to interact with other actors in the innovation system (State, companies, markets, etc.).

All of these various capacities build the capacity to innovate.

The following capacity building strengthens the power to act: building up self-confidence; changing one's perception of a problem and solutions; becoming proactive; strengthening one's role in innovation systems (especially women and marginalized groups).

In an innovation process, all the actors can build their capacities: the farmer as also the technician, the researcher!



4.2 Evaluating capacity building

The evaluation of capacity building requires the analysis of learning situations considered as key by the actors of the innovation process, including the determination of these situations' locations on the impact pathway. Such an analysis helps identify causal links, outputs, outcomes and impacts. Depending on the case study, the capacity building analysis can be more or less thorough.

4.2.1 Learning situations

A learning situation [Toillier, 2012] is defined as a set of conditions and circumstances that can lead a person, a collective or an organization to build new knowledge and to apply it to solve problems, seize opportunities or improve ways of doing things. Learning results in new capacities. A learning situation can be organized or informal, intentional or indirect. Dedicated learning situations (information sharing, training, facilitation, support, coaching, advice, networking, capitalization activities, experimentation mechanisms) are therefore distinguished from learning situations that are not dedicated to learning as such but which play an important role in building new knowledge and capacities depending on the actors involved (such as steering committees, co-design workshops, informal exchange opportunities and spaces, etc.).

For example, in the case study "Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State," a learning situation took the form of organized and regular sessions of interaction between wine producers and experts, with a number of iterations between observations in the cellars and vineyards and instances of sharing of technical knowledge. In this expert-producer exchange mechanism, the expert learned about the realities of production and the producer's constraints, and the producer learned about the technical regulations on geographical indications.

4.2.2 Identifying and characterizing learning situations

There are three ways of identifying a learning situation:

1. On the basis of the narratives of innovation, identify changes in the actors' activities and professional practices by ascertaining the nature of the capacities that have improved (know-how, social skills, knowledge). Then identify the situations that led to these learnings;
2. Ask the actors in what situations they have "learned the most" (when, what, how), and ask them to characterize these learning situations;
3. Use targeted surveys to determine the effects of learning situations identifiable *a priori*, especially when projects have explicitly included capacity-building activities (such as an action-research mechanism, training sessions, field schools, etc.).

The focus should be on analyzing learning situations involving researchers in order to best determine their contributions, as well as to identify the situations considered most important and those that have been repeated in an identical and systematic manner. In general, it is possible to identify and characterize between five and ten different learning situations in every case study.

Answers to the following questions can help characterize a learning situation:

- Where did it take place?
- When? How many times?
- Who participated (researchers, technical agents of NGOs, representatives of producer organizations, company employees, public service agents, farmers, etc.)? Why?
- What was the researchers' role in this learning situation (expert, trainer, speaker, scientist, entrepreneur, or simply learner)?
- What were the main types of learners (individuals, organizations or communities)?

4.2.3 Positioning capacity building on the impact pathway

A learning situation can allow to go either from an output to an outcome or from an outcome to an impact. To determine which of these two options actually took place, one has to identify the researchers' role or the research outputs in the learning situation. The following questions can help do so:

- Does the learning situation concern a mechanism that is considered an intervention product involving research activity? In this case, it is part of the outputs;
- Does the learning situation concern the use of research outputs? In this case, it is part of the outcomes.

A table of questions should be drawn up to identify the contribution of capacity building to the impact pathway. It is a way of verifying if there has been a change in practices, either at the individual level or at the level of a collective or an organization. The data collection method (interviews, observations, analysis of minutes of meetings or operational documents, etc.) should therefore be suitably adapted by including questions relevant to the information that one wishes to obtain. Here are some sample questions:

- What knowledge, know-how or social skills did you acquire by being involved in the project activities and do you regularly use it in your work?
- What are the specific capacities that you have acquired (technical capacity, management skills, ability to experiment and learn, to interact with others)?
- What are the main changes for your group or organization caused by capacity building actions that were part of external interventions, in terms of practices, activities, innovation or interactions with the environment?

All the data collected can first be summarized in a table [Table 14]. The impact pathway corresponding to the case study "High-altitude rainfed rice in Madagascar" shown in Figure 8 illustrates how to position capacity building situations on the impact pathway.

Table 14: Criteria for characterizing learning situations.

Situation	Characteristics	Role of researchers	Phase of the impact pathway	Main actors who learn	Capacities acquired and used	Changes (activities, practices, etc.) arising from capacities acquired
Title situation 1	When? Where? Who? What?	What are their activities in this situation?	Output to outcome	Actor 1	Capacity 1	Change 1, change 2
					Capacity 2	Change 3
			Outcome to impact	Actor 2	Capacity 3	Change 4, change 5
Title situation 2	...					
Example: meetings between experts and producers	Monthly frequency, in the pilot farms to encourage the exchange of knowledge and know-how	Organizer of the approach	Outcome to impact	Expert	Knowledge of local production constraints	Fine-tuning of recommendations to winemakers
					Social skills required to listen to producers	New ways of organizing meetings
				Wine grower	Know-how to harvest and vinify, knowing how to express one's problems	New organization of harvests and investment in winemaking equipment

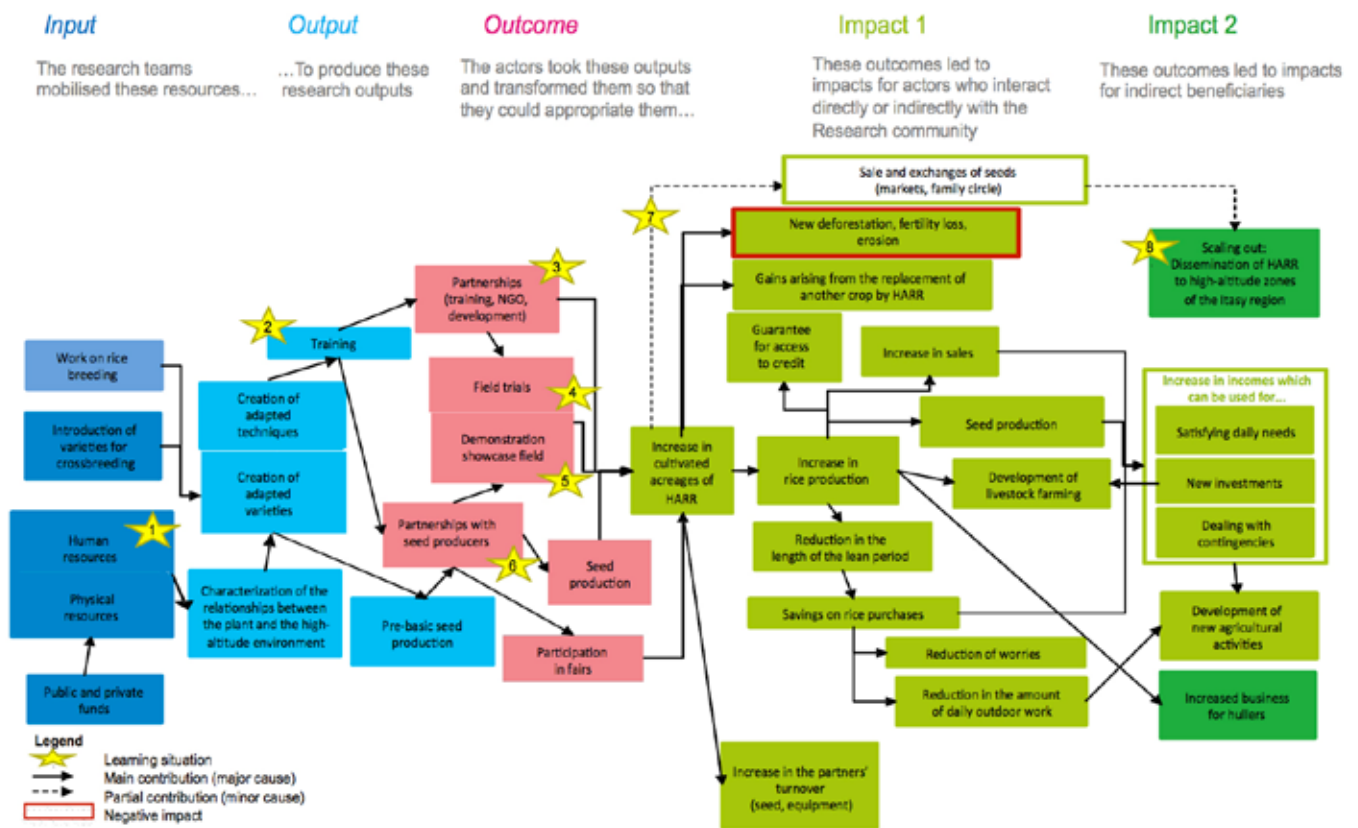


Figure 8: Location of key learning situations that helped build capacity on the impact pathway for the “High-altitude rainfed rice in Madagascar” case.

4.2.4 Delving further

For a more in-depth study of capacity building, see Appendix 3, which provides guidance for evaluating and scoring capacity building in the production of outcomes and impacts. One can also study the role of certain actors and the type of learning in greater detail. For example, the following initiatives can be taken:

- Exploring the role of researchers, especially in learning situations, by recreating life stories of individuals that trace the paths, acquired skills, roles played in innovation processes or in the production of impacts. The stories of trained researchers from developing countries and of the impacts they have had on their organizations (research or otherwise) could be particularly useful. In addition, it may be useful to spell out how the capacities of researchers from developed countries were enhanced by conducting this research;
- Understanding learning processes by identifying single-loop learning (change of practices without any change in values, leading to incremental innovations), double-loop learning (change of practices linked to a change in values, leading to radical innovations) and triple-loop learning (learning to learn), and by identifying the factors (if any) that restrict or encourage the use of new knowledge, know-how and social skills acquired by participating in a project’s activities, etc.;
- Analyzing the dissemination of knowledge through socio-professional networks (what knowledge, know-how, social skills do you transmit to others?).

5

The characterization of interactions with public policies on the impact pathway and the impact on public policies



5.1 Why the interest in public policies?

Research activities have to interact with public policies (Box 13) in order to be able to contribute in any meaningful way to societal impacts. Research activities form part of an institutional context, shaped by past and present public policies, which can be more or less conducive and favorable to innovation. The emergence of certain priorities in political agendas, either over the long term or in response to a crisis, can orient the choices and modes of intervention of researchers and the ability of their research to have an impact. Public policy actors, through very diversified means, have a leverage effect that can make it possible for research to have a substantial impact. By interacting with public actors, especially when some of them are included in a participatory research process, researchers build up the capacities of these public actors and thus play a role in the development of public policies. But when the purpose of the research does not explicitly concern helping public actors in their decision-making, the researchers rarely communicate with them or seek their opinion. In addition, public actors in developing countries are sometimes not very receptive to the work of researchers. Understanding the role of public actors and researchers in the innovation process should not only help improve the research-policy link but also increase the ability of research to contribute to impact.

Box 13: Definition of a public policy

A public policy (Knoepfel *et al.*, 2007) is defined as “a series of intentionally coherent decisions or activities taken or carried out by different public – and sometimes private – actors, whose resources, institutional links and interests vary, with a view to resolving in a targeted manner a problem that is politically defined as collective in nature. This group of decisions and ac-

tivities gives rise to formalized actions of more or less restrictive nature that are often aimed at modifying the behavior of social groups presumed to be at the root of, or able to solve, the collective problem to be resolved (target groups) in the interest of the social groups who suffer the negative effects of the problem in question (final beneficiaries).”

5.2 Evaluating the role of public actors in the innovation process and the impact of research on public policies

We propose a three-phase approach:

1. appreciating the institutional context in which the research is inserted and which may have an influence on the implementation of the research and its impact. This phase requires the identification of public actors and the main public policies, and the determination of how receptive the main public actors are to research;
2. studying the public actors' interactions with the other actors of the innovation process: when, in what situations and by what means that are available to them can public actors facilitate the innovation process all through its many phases leading right up to the impact;
3. studying the impacts of these interactions on the capacity of public actors and on public policies.

5.2.1 Appreciating the institutional context and identifying the public actors in the research environment

This first phase can be divided into three stages.

First stage: identification of public actors in the researchers' environment and their roles in relation to the innovation and its impact.

This identification should not be limited just to local public actors, but should include those working at other scales and whose decisions are likely to influence the impact of the research. Four categories of actors can be involved in the development and implementation of public policies:

– national public actors (the State, ministries, central services, etc.);

- deconcentrated State services (administrations, prefecture/sub-prefecture, etc.) which are the representations and vehicles of action of national public actors;
- local public actors in local authorities (actors administratively and politically independent from the State, even though they are largely financed by the State, such as regions or municipalities);
- international organizations and other public actors outside the country where the research is taking place (donors, bilateral or multilateral cooperation agencies, etc.), who follow their own political strategies and influence the behavior of governments in developing countries.

The ImpresS method's "impact pathway" analysis framework makes it possible to characterize the different roles played by these public actors, alongside, upstream or downstream of the researchers and their partners in the processes that lead up to the impact.

Second stage: identification of elements in the content of the main public policies that can influence the innovation process and the research impact.

Public policies that concern the innovation process and that can stimulate or inhibit innovation can be of several kinds:

- scientific, research, innovation and training policies, which determine the human, technical and financial resources allocated to research and the priority accorded to the issues to be addressed;
- policies which have no direct connection with the problem the innovation is intended to address, but which can facilitate its impact by promoting the dissemination or appropriation of certain changes in practices (agricultural or management) pertaining to the deployment of the innovation. Examples include credit policies, land policies, infrastructure policies, energy policies, etc.;
- development or sectoral policies which research projects are directly involved in supporting: agricultural policies, food policies, health policies, land policies, agrofuel policies, etc.

Third stage: analysis of the main public actors' openness and receptiveness to research at the beginning and at the end of the project (Table 15).

The following typology of five levels of receptiveness can be used: (i) clear demand from the public actor (from the government in particular), (ii) interest of the public actor but a lack of leadership, (iii) interest expressed in research by the public actor but inadequate capacity, (iv) clear need for research but no interest on the part of the public actor, and (v) public actor who is not interested in research or is even hostile towards it. The main actors whose receptiveness is to be assessed can be chosen on the basis of the definition of major actors and influential actors (see section 3.1).

Table 15: Public actors' receptiveness to research.

Public actor	Receptiveness at the start of the research	Receptiveness at the end of the research	Why the change? ⁽¹⁾
Public actor 1			
Public actor 2			
Public actor 3			
...			

(1) For example: emergence of a problem to be solved, sudden or gradual increase in interest of the public actor, communication by the researchers, role played by a particular individual, unexpected event, support of certain actors, etc.

5.2.2 Studying the public actors' interactions with the other actors of the innovation process

In this second phase, the significant interactions between actors of the innovation process, and in particular between researchers and public actors, are identified, described and characterized.

One has to be aware of the modalities of public action (funding, design of the research activity, removal of impediments, support for dissemination, etc.) and of the occasions at which public actors are likely to interact with the others actors of the innovation to facilitate (or hinder) the process leading to the impact.

The ImpresS method's "impact pathway" analysis framework makes it possible to identify the occasions during which the intervention of public actors is of strategic importance in generating the impacts.

Public actors can have a leverage effect on innovation (creation, implementation, dissemination) during the various phases of the impact pathway:

- as regards investments (inputs): public funding, putting in contact with other actors, etc.;
- as regards research outputs: contribution of public actors to multi-actor participatory research;
- as regards the creation of outcomes: mobilization of actors, establishing standards and rules, creation of consultation or management structures, financing of communication operations, technical activities, etc.;
- as regards impacts: financial incentives, creation of an environment that is favorable to the innovation, facilitation of scaling up/out.

In the ImpresS method, the interactions with the public actors are highlighted in different ways: by the arrows between different boxes of the impact pathway to indicate causal links; by some outcomes when interactions with public actors have been identified as enabling or facilitating the innovation's deployment (for example: adoption of a standard that permits experimentation); and, finally, by the impacts when a new public policy allows and facilitates scaling up or out of the innovation.

5.2.3 Studying the impacts of these interactions on the capacity of public actors and on public policies

The impacts of research in the domain of public policy translate, as one would expect, into coherent and coordinated decisions or activities to address a collective problem (see Box 13 for a definition of public policy). In addition, there are instances in which public actors also participate in a learning situation. The participation of public actors in innovation processes and, in particular, their collaboration in multi-actor participatory research build up their capacity to interact with researchers and other actors in the innovation system and to facilitate the impacts of research in a durable way.

This third phase can be divided into two stages:

First stage: identification of tangible impacts on public policies in the form of strategies adopted and the policy instruments implemented.

This stage consists of identifying the activities and the decisions of the actors of the innovation that find resonance in public policy texts (objectives, strategies, policy documents, laws, etc.), which may additionally be accompanied by instruments (standardization/homologation, regulation, pricing/taxation, licenses, etc.) that promote or can block the innovation.

This analytical work also consists of assessing whether the impacts on the policy are limited to merely engendering a certain number of decisions or whether these decisions have additionally been implemented (decrees to apply a law, public expenditure for an investment decision, etc.), and what effects (1st and 2nd level impacts) they have produced. There is a surfeit of policy documents that announce changes but which are not implemented due to a lack of resources. It is also important to understand who are the sponsors of the policy initiatives, as they are often the ones who fund reforms and investments.

In this first stage, the time step over which the policies were impacted has to be determined: short-term impact, i.e. during the undertaking of the research; medium-term impact at the end of the research project, which can contribute to the sustainability of the impact; or an impact more down the line, giving enough time for ideas to percolate down.

Second stage: identification of more diffuse but lasting effects of interactions between the actors of the innovation system – especially researchers – and public actors. These effects can take the form of changes in perception of policymakers, building up of institutional capacities, circulation of ideas, informing of debates, construction of new arguments, etc.

This analysis can be facilitated by asking the following questions: (i) Has the capacity of public actors increased (raising their level of knowledge)?, (ii) Have new horizons opened up for these actors (introduction

of innovative ideas)? (ii) Has there been any influence on the way decisions are taken (modification of programs, procedures or policies)?

5.2.4 Methods of collecting and analyzing the data required

The analysis is based on a combination of methods (narrative approach with the main stakeholders in the innovation, individual interviews with some of the actors, interviews with the decision-makers, interviews with external resource persons who are not researchers or decision-makers) in order to gain information on the "research – innovation with public actors – impact on policies" relationship. These analyses can be undertaken using a participatory process incorporated within the participatory evaluation of the different types of impacts and/or on the basis of expert assessments, or by emphasizing the role of researchers' contribution in changing policy and by the extent of the change brought about.

All the data collected can be summarized in Table 16, which allows interactions with public policies to be positioned on the impact pathway, by using a specific symbol, which will be indicated in a legend.

Table 16: Characterizing interactions with public actors.

Interaction	Characteristics	Role of researchers	Main public actors	Effects on the innovation process	Effects on policies (texts, instruments) due to interactions	Phase of the impact pathway
Title of interaction 1	When? Where? Who? What?	What are their activities in this interaction?	Actor 1 Actor 2	Effect 1 Effect 2	Effect 1 Effect 2 Effect 3	Output Outcome Impact
Title of interaction 2	...					
Example: local water management policy	Researcher interacts with a private operator and then with the local authority for better management of water supply to villages and for irrigation	Organizer of the approach	Local authority Local government	New water distribution quotas Additional investment by the private operator	New water management rules	Outcome: production of new water management rules Impact: building up capacity of the local authority

Some questions that can help the analysis are:

- What is the political context of the research being undertaken?
- Are the problems that are being addressed by the research projects in line with the development issues, constraints and opportunities that are priorities for public actors?
- Have the public actors made a request to the researchers (request for solution to a problem)? Did this request correspond to a clear consensus (no contradictory tendencies amongst concerned entities in the administration)?
- Have public actors been involved in the various stages of the research and the innovation process? Have researchers maintained continuous interaction with public actors? If yes, in what form: feedback, dialogue, other types of collaboration?
- What legitimacy do the researchers have in interacting with public actors?
- How has the trust between researchers and public actors been established?
- Have certain groups, networks or individuals played a role in the circulation of outcomes and in the discussion of ideas that have changed public policy?
- To what audience have the researchers or their representatives/intermediaries/mediators communicated about their research: networks, communities, political leaders, etc.?

- Who are the public users of the research (policymakers, civil society, media, NGOs, etc.) and how is the available information used?
- How has knowledge circulated? How was scientific knowledge transmitted to public actors?
- How did the researchers communicate (format, style, schedule, type of events, blogs, interviews, discussion, debate, training, etc.)? What efforts have researchers made to make their outputs available and appropriable by public actors?
- How have scientific results contributed to the debate of ideas, the incorporation of new knowledge by public actors, the development of strategies, the dissemination of information to the general public, the conveying of ideas by the media?
- Have changes at the State level or in public opinion, or a conducive moment or event, gained the attention of the public actor?
- Was the research used to formulate, implement or instrumentalize policies (texts, fiscal measures, market access, etc.)? Did it influence the modification of regulations or laws? Have these been implemented and have they changed the practices of public actors (central level, local level)?
- What are the tangible indicators that allow you to assess the impact of your research on public policies?
- Do you think your research results arrived too early/too late to be used by public actors?



6

Measurement of impacts



The preceding sections have explained how descriptors can be used to characterize 1st and 2nd level impacts [see sections 2.2 and 3.3.5]. In this section, we go one step further and measure these impacts. To do so, it is necessary to characterize each impact by indicators and to specify the change of scale between level 1 and level 2 impacts. The case study's "profile" can then be depicted in the form of a radar graph, which shows the different impacts identified in a compact and understandable way. This result is obtained by grouping similar impacts and their initial indicators on the basis of impact domains and having them scored by a panel of experts according to a predetermined method.

6.1 Characterizing impacts and their indicators

The evaluation team identifies or constructs indicators for each impact on the basis of the 1st and 2nd level impact table (Box 14). While these indicators can be identified by the actors during workshops and interviews, they can also be proposed by the evaluation team. The indicators must report on a change from a reference situation, which is the situation that prevailed either before the innovation or without the innovation. The indicators must report, in a simple and synthetic way, the two following criteria which characterize an impact:

- Intensity, which reflects the degree of change attributed to the innovation and observed for a given impact (increase in yield, change in farm income, etc.);
- Magnitude, which reflects the extent or spread of the change (acres or portion of the territory affected by the change, number of producers affected by the change, etc.).

An indicator can be quantitative or qualitative. We must give priority to the indicators that have been mentioned by the actors and, as far as possible, those that can be assigned values via databases, statistics, etc. It is recommended to define two or three intensity indicators and two or three magnitude indicators for each impact.

Box 14: What is an impact indicator?

An impact indicator is defined as data that reports or quantifies an impact. It only makes sense to measure the impact indicator in relation to a reference situation and to an actor's objectives in a given context. It can be measured for one or more categories of actors.

A good indicator is one that is:

- **specific**: the indicator must come as close as possible to the impact it characterizes. For example, for the "income improvement" impact, a quantitative indicator can be "change in farm production" or "change in yield" and a qualitative indicator can be "families' perceptions of the improvement in children's well-being;"

- **measurable** (and **robust**): the indicator must be quantified or qualified, and measured in the same way in different situations. The indicator is considered all the more robust when its value is obtained from an existing reliable database;
- **acceptable**: the indicator should be easy to understand, share, and must be interpretable in the same way by different observers;
- **relevant**: the indicator must be realistic and relevant to the impact;
- **temporally defined**: the indicator has to be part of a clearly defined temporal dimension, i.e. it has to be defined in time.

Table 17 shows how impacts can be measured. In the fictitious example mentioned above, following the participatory workshop, interviews and focus groups, three impacts were identified, with several indicators per impact (intensity indicators, magnitude indicators). It is the farmers who are impacted by the innovation [dissemination of a conservation agriculture cropping system] and the NGOs who have supported the farmers (training, advice).



Table 17: Example of descriptors, impacts, impact domains and indicators.

Descriptors	Impact	Impact domain	1 st or 2 nd level impact	Intensity indicator(s)	Magnitude indicator(s)
1 2 3	Impact 1: improvement in producer incomes	Farmer and household incomes	1 and 2	Change in yield	Percentage of families affected by improvement in yields in the project area; acres affected by the improvement in yields in new areas
4 5	Impacts 2: increase in field biodiversity	Environment, natural resources and biodiversity	Only 1	Increase in number of species in the fields	Number of farmers affected by the increase in the number of species
6 7 8	Impacts 3 : new public policy concerning biodiversity	Public institutions and actions	Only 2	Increase in funding for biodiversity- promoting advisory mechanisms	Ratio between number of producers receiving the biodiversity- promoting advice and the total number of producers

See Appendix 4 for examples of indicators for the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State.”

6.2 Assigning values to indicators for 1st and 2nd level impacts

After indicators of intensity and magnitude of impacts have been identified, the data to measure them must be collected. Several solutions exist to assign values to the indicators:

- the indicator is quantitative and data are available from databases, statistics (permanent agricultural surveys, surveys on household living conditions or consumption budgets, market price data from information systems, seed supply data from an agricultural research center, etc.), or reports. The preferred option is to assign values to indicators from these sources;
- the indicator is qualitative, or quantitative but no reliable database or statistics are available (which is often the case):
 - . the best option – if time and funding are available – is for the team to undertake a survey to assign a value to the indicator for a sample (different sampling techniques exist, to be chosen according to the team’s resources and the context) which reflects the diversity of the impacted actors (producers, companies, etc.) [Box 15];
 - . another option – more realistic if time or money is lacking – is to convene multi-actor focus groups or by actor category. The data necessary to estimate the value of the indicator, which indicates a change in absolute value or in percentage, is arrived at on the basis of the actors’ perceptions. If the participants are unable to estimate an indicator as an absolute value or as a percentage, a score between –5 and +5 can be assigned to the change in intensity (–5 corresponding to a highly negative change; 0 to no change; +5 to a highly positive change);
 - . a final option is the collation of information obtained from interviews with a limited number of experts. There exist survey techniques that can improve the validity of data collected in this way, including having each expert estimate a probability for the data he or she provides.

In this critical step of assigning values to indicators, two aspects need to be considered:

- Each indicator’s purpose is to measure a change between a reference situation (prevailing before the innovation, or without it) and the situation after the deployment of the innovation. This change can be estimated as an absolute value or as a percentage. The actors thus need to know the situation before the innovation (or reconstruct it when the innovation process started long ago). They can draft a brief description of the “before” situation to help analyze the results. In the field, actors can also refer to the situation of neighbors who have not been involved in or who have not adopted the innovation (thus corresponding to a reference situation). At the start of some case studies, baseline data characterizing

the situation at the start (reference situation) may have been collected and may also help evaluate participants' responses. Given the difficulty in measuring this type of indicators of change, it is important to proceed in a rigorous and thorough manner during interviews and surveys, with a well-thought-out interview guide, relevant and unbiased questions, and a process conducted impartially.

- When the information is gathered on the basis of the actors' perceptions, the answers can vary depending on the type of actors. For example, following the introduction of a new sorghum variety, a producer may estimate that his income has increased little, while technicians, on the other hand, may believe that it has grown substantially. In some cases, it is possible that an exchange of points of view may lead the actors' responses to converge towards a consensus. In other cases, such a process might even lead their responses to diverge. In such a case, the diversity of the responses can, if deemed necessary, be presented according to the type of actors.⁹

Table 18, constructed for the previous fictitious example, illustrates the type of data that must be obtained for each case studied before the impacts can be discussed with the actors.

Box 15: Examples of data collection in order to assign values to indicators

In the case study of the innovative management of organic manure in agro-pastoral systems in western Burkina Faso, a specific survey of a sample of farms was undertaken to measure indicators such as the rate of adoption of certain farming practices, changes in yields or changes in incomes.

In the case of the high-altitude rainfed rice (HARR) study in Madagascar, it was possible to detect rice cultivation above a certain altitude through remote sensing. This rice was necessarily HARR and the impact outside the areas targeted by the research projects

(scaling) could be identified. But it is also possible that varieties have spread below 1500 m, and other means would have to be used to measure their impact (basic seed production, surveys of seed distributors, etc.). If in a focus group, the actors say that the new high-yield varieties of sorghum or rainfed rice have allowed them to increase their yield by x% and to store their harvested cereals in the granaries six months instead of the usual three to four, and if the geographical distribution of the new varieties is otherwise known, it is possible to calculate an increase in production at the regional level and a food security ration.



9. For more information on the methodology applied, see Sackman (1975) and Listone and Turoff (2002).

Table 18: Examples of indicators for impacts 1 and 2.

Impact	Perception/ point of view	Value of intensity indicators	Value of magnitude indicators	Information source used to assign a value to the indicator
Impact 1: improvement in producer incomes	of farmers	I1: change in yield of + 15 q/ha I2: families' perceptions of the improvement of children's well- being: + 3 in intensity (elimination of lean months)	M1: number of farmers in the project area affected by the increase in yields: 20% M2: acreages affected by the increase in yields in new areas: 1000 ha M3: families' perceptions of the improvement of children's well-being: +3 in magnitude (most families are affected)	I1, M1 and M2: statistics I2 and M3: focus group with the farmers
	of NGOs	I1: change in yield of + 50 q/ha I2: NGOs' perceptions of the improvement of children's well-being: +1 in intensity (they agree that there are lean months have been eliminated but food ration availability remains uneven)	M1: number of farmers in the project area affected by the increase in yields: 20% M2: acreages affected by the change in yields in new areas: 1000 ha M3: NGOs' perceptions of the improvement of children's well-being: +2 in magnitude (a modest number of families are affected)	I1, M1 and M2: already obtained from statistics I2 and M3: focus group with NGOs
Impact 2: increase in field biodiversity	Farmers and NGOs share the same point of view	I3: increase in number of species in the field: +2 species on the average I4: perception of farmers of changes in the tree landscape: +2 in intensity (several new species were observed)	M4: number of farmers affected by the increase: 50% M5: perception of the farmers of the changes in the tree landscape: +2 in magnitude (only some areas affected)	I3 and M4: survey conducted by the evaluation team I4 and M5: focus group with farmers and NGOs
Impact 3: new public policy on biodiversity	Farmers, NGOs and public actors all share the same point of view	I5: Change in funding for biodiversity-promoting advisory mechanisms: +1 million Euros	M6: Ratio between number of producers receiving the biodiversity-promoting advice and the total number of producers: 1/5000	I5: report M6: expert assessment

It should be emphasized that the ImpresS method does not seek to prioritize the impacts amongst themselves or to assign weights to them according to their relative significance as perceived by the researchers or other actors. However, there do exist methods that allow the prioritization and weighting of impacts; they require more time to undertake. It is also possible to account for the diversity of actors' points of view on impacts in this prioritization and weighting. However, these operations only make sense for impacts that are similar in type to each other and therefore to those belonging to the same impact domain (for example, it is hardly useful to attempt to prioritize between an economic impact and a health impact).

6.3 Characterizing changes in scale and the contribution of research

Recall that 2nd level impacts concern the spread of impacts beyond the initial users who interact directly or indirectly with the researchers and their development partners. They pertain to the scaling of impacts or of indirect effects. 2nd level impacts have to be observed over a long time frame, which also helps to determine the impacts' sustainability. Indeed, a project can have significant short-term impacts through, for example, the setting up of a producer organization, but if this organization collapses, the impacts too disappear. Conversely, the same project may have little short-term impact, but its capacity-building actions may eventually allow some actors to develop innovations with very high impacts several years after the end of the project. Furthermore, since factors other than the research community and development projects tend to contribute more to the creation of 2nd level impacts (in comparison with 1st level impacts), the problem of clearly identifying the contribution of research to 2nd level is exacerbated. Finally, as this

type of impact is more difficult to characterize with indicators because the information required is harder to collect and often less reliable, it is important to document the change in scale as accurately as possible.

The change in scale is usually complex and relies on the following mechanisms that can be qualified and studied:

- Increase in the number of innovating actors, geographical extension: To how many regions in the country and countries has the innovation spread? What acreages are affected? Is it possible to quantify the populations concerned?
- Enlistment of new actors in the innovation process: Who are the new actors/intermediaries and new organizations that have been created for and/or have played a role in the scaling of the innovation? What is the involvement of advisory and support organizations, companies, professional structures?
- Development of new mechanisms for coordination between actors: Are there platforms, steering committees, etc.? Have any new rules been formulated for managing relationships, synergies, competition, conflicts, etc.?
- Modifications in the institutional framework: Who are the political actors involved in the change of scale? What are the new regulations, incentives, taxes that favor a change in scale?

The research community may or may not be involved in the scaling process. Thus, after having worked with the actors on an innovation's development at a limited geographical scale, the research team can contribute to institutional change by participating in coordination efforts (platforms, professional networks, etc.) or by informing the debates on regulatory frameworks or policies.

6.4 Drawing a radar by impact domains

Once the impacts have been measured by indicators and the changes in scale determined, it becomes possible to visualize all the impact domains of a case study using a radar graph. This graphical representation makes it possible to summarize the results obtained in a simple form. The method proposed by ImpresS [scoring method] groups impacts according to the 11 impact domains identified earlier (see section 2.2). The scores are assigned on the basis of all the indicators of the different impacts (whether level 1 or 2) identified by the actors and which belong to the same impact domain.

The radar is drawn in the following manner:

1. Group 1st and 2nd level impacts by impact domain (an impact can belong only to one impact domain);
2. Divide indicators into two categories by impact domain:
 - a. indicators that specify the intensity of the change,
 - b. indicators that specify the magnitude of the change;
3. For each impact domain, construct a table with the list of impacts, the list of intensity indicators and their respective values (from the case study), the list of magnitude indicators and their respective values (from the case study);
4. Assign a value to the quality of the measurements by impact domain (based on the opinion of the case study's leaders): low, medium or good;
5. For each impact domain, create an interpretation grid that will give a final score:
 - a. from -5 to +5 for the intensity of the change,
 - b. from 0 to +3 for the magnitude of the change.

This grid can be adapted to the context and is thus specific to each case study. This is a task to be undertaken by the evaluation team with care in order to obtain an explicit and usable grid;

6. Constitute an expert panel (researcher, technician, producer, etc.) for each case study, which scores each impact domain (intensity and magnitude) with the help of the scoring grid. This can be done either by bringing together the experts, for example, at a participatory workshop, and asking them to arrive at

a consensus on the scores, or through a survey (mail, interview) if it is impractical for the expert panel to meet.

In the end, each impact domain is evaluated by two scores (intensity and magnitude) and is accompanied by an assessment of the quality of the measurement. Table 19, which uses the fictitious example used earlier, summarizes the information needed to allow the experts to assign a score.

Table 19: Example of scoring of an impact domain on the basis of several indicators.

		Intensity				Magnitude			
		Indicator name	Indicator value	Scoring grid	Intensity score	Indicator name	Indicator value	Scoring grid	Magnitude score
Impact domain: household and producer incomes	Impact 1: increase in income	Ind. I1: increase in yield	+50 q/ha	-5: incomes fell drastically after the innovation	+3 (good quality)	Ind. M1: number of farmers affected by the increase in yield in the project area	20%	0: not affected +1: 25% of the farmers are affected	+1 (medium quality)
		Ind. I2: improvement in children's well-being	+2	0: no change in incomes		Ind. M2: acreages affected by the change in yields in new areas	1000 ha	+2: between 25% and 75% of the farmers are affected	
				+5: incomes increased substantially		Ind. M3: families' perception of the improvement in children's well-being	+3	+3: 75% or more of the farmers are affected	

It then becomes possible to graphically summarize the scores attributed to a case study's impacts in the form of a radar graph that shows both values (intensity and magnitude) of the impact domains. The generic radar consists of 11 branches showing the 11 impact domains. Domains belonging to the same dimension and pertaining to a same SDG (UN Sustainable Development Goal¹⁰) are depicted in the same color. The length of the spoke indicates each impact domain's intensity (scale from -5 to +5), and its thickness the impact domain's magnitude (0 to +3). An example of a radar is shown in Figure 9. It should be emphasized that while the radar allows an easy visual reading of the different impacts of a case study, it remains a graphic tool strictly specific to each case. It would be misleading to compare the intensity and magnitude scores obtained in one or another domain across case studies, since the scoring method remains *ad hoc* and is not based on a universal metric.



10. Of the 17 SDGs, CIRAD's activities concern mainly five (see section 2.2).

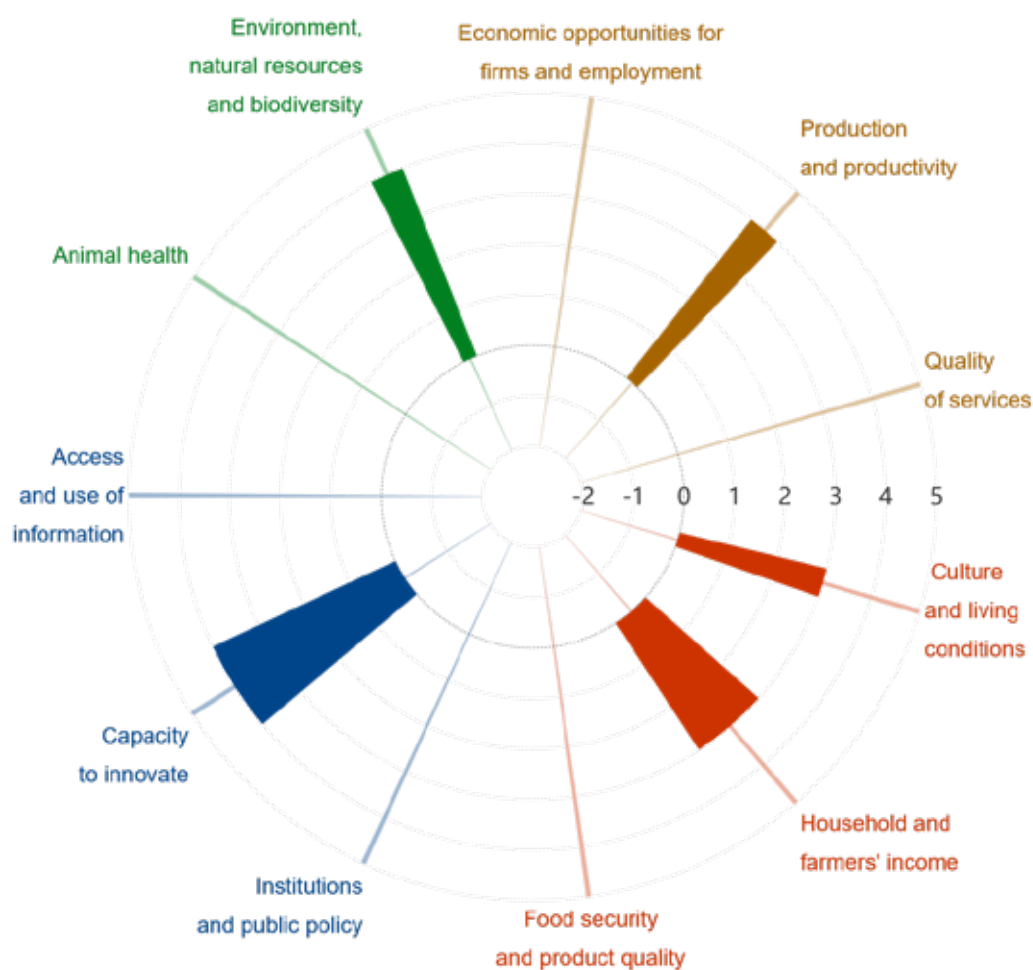


Figure 9: Radar of impacts for the case study "BROCAP, coffee berry borer trap in the Dominican Republic."



7

Methodological differences for *in itinere* case studies



The ImpresS methodology can be adapted to *in itinere* case studies, i.e. studies for cases in which research activities, and thus the innovation process, are still in progress when the evaluation takes place. Although most actions in the method's five phases are similar for *ex post* cases and *in itinere* cases, there are, however, some methodological differences between the two. They are discussed in this section.

7.1 Steps for *in itinere* case studies

Table 20 presents the different steps of the ImpresS methodology for *in itinere* case studies.

Table 20: Summary table of the phases, objectives and actions of the ImpresS method for *in itinere* case studies.

Phase	Objectives	Actions	Remarks
1-Preparation	<ul style="list-style-type: none"> – Demarcating the scope of the case (time, space, actors) – First narrative of the innovation (researcher) – 1st hypothesis of the expected impacts (researcher) 	Time: <ul style="list-style-type: none"> – same start date as for <i>ex post</i> cases – end date = forecast (several possible options) 	The researcher starts from an expectation of change for a purpose
2-Dialogue with the actors	1 st participatory workshop: <ul style="list-style-type: none"> – validation of the narrative – 1st development of the hypothesis of impacts (actors) 	<ul style="list-style-type: none"> – Identify actors' descriptors that can help improve the first narrative and initiate the emergence of a hypothesis of impacts – Through exchanges, identify the actors who can form part of focus groups to discuss the expected changes 	The narrative clearly has two main phases: <ul style="list-style-type: none"> – the first phase consists of the events that have already taken place (see <i>ex post</i> cases) – the second consists of the future events that the major actors in the innovation process must imagine
3-Construction of the narrative of the innovation and the impact pathway	<ul style="list-style-type: none"> – Collecting information to improve the narrative – Constructing a future narrative – Connecting inputs, outputs, first outcomes and expected impacts with causal links 	<ul style="list-style-type: none"> – Construct the narrative of the innovation by analyzing the past and the present and then construct a future narrative using foresight – Construct the impact pathway on the basis of already existing outputs and outcomes – Construct two or three scenarios (and the corresponding impact pathways) for the future 	For <i>in itinere</i> case studies, some outputs and outcomes belong to the future
4-Characterization of the impacts	<ul style="list-style-type: none"> – Identifying the descriptors to construct the expected impacts and indicators; – Validating potential 1st and 2nd level impacts 	<ul style="list-style-type: none"> – Drawing up a table of impacts 1 and 2 with indicators 	No measurement of impacts in <i>in itinere</i> cases
5-Validation of results	2 nd participatory workshop: validation of hypotheses and impact pathway scenarios		

7.2 Hypothesis of impacts of the innovation

For *in itinere* case studies, a hypothesis of intended and expected impacts has to be drawn up at the beginning of the analysis, in contrast to a hypothesis of observed impacts when analyzing case studies *ex post*.

7.3 The narrative of the innovation

For *in itinere* case studies, the narrative has to be written, but it is not completed as in *ex post* case studies. To start with, the beginning of the narrative is constructed on the basis of all the events that have already taken place (see *ex post* cases). Then the possible futures have to be conjectured with the major actors of the innovation. It is difficult to construct these scenarios on the basis of interviews; one or more focus

groups should be organized with representatives of major actors of the innovation, as well as with individuals who may have different or contrasting visions. It is a question of constructing an *ex-ante* theory of change, to use CGIAR terminology, and therefore of answering these questions:

- What must be done to achieve the impacts (what are here the expected impacts)?
- What are the difficulties that have to be overcome (at different times, for different categories of actors)?
- What are the levers of action?

7.4 Links between inputs, outputs and outcomes

In *in itinere* case studies, some outputs and outcomes still belong to the future. We have suggested (above) holding one or two workshops (or focus groups) with major actors of the innovation and individuals with contrasting or even contradictory visions to construct future scenarios. These events should also be used to identify the outputs and outcomes likely to lead to the expected impacts. As the future is inherently unpredictable, it will be necessary to draw up two or three scenarios that form the basis for a theory of change. See CIRAD's *ImpresS ex ante* guide¹¹ for pointers on organizing and facilitating these workshops or focus groups.

7.5 Collecting impact descriptors

The collection of descriptors may prove to be more difficult than in *ex post* case studies. The actors have to predict the consequences of a possible change. What would be the consequences of a world free of one or more specific diseases (trypanosomiasis caused by tsetse flies, bird flu), of a world without effluents (waste management), or one in which the PI@ntNet application to identify plant species did not exist?

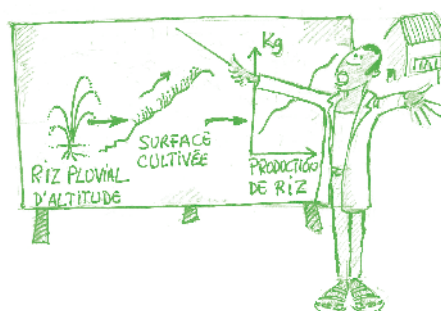
For example, a good knowledge of livestock–farmer strategies for managing the presence of the tsetse fly (choice of pasture areas, choice of brood stock, etc.) can help build hypotheses of changes concerning the eradication of the tsetse fly and can stimulate a debate with groups of livestock farmers.

7.6 The measurement phase

The steps to measure impacts, as proposed for *ex post* case studies, are not relevant for *in itinere* case studies since the impacts have not yet materialized at the actor level. However, it is possible to use simulation models when the innovation and data permit. Thus, a simulation of impacts at 15 years was conducted in the case study “Eradication of the Tsetse Fly with the Sterile Insect Technique in Senegal.”

7.7 Validation

The case team should draw up recommendations on the impact evaluation method as well as on the conduct of the innovation process. This latter objective is especially important for *in itinere* case studies, since the actors engaged with researchers expect the evaluation to “have some practical use.”



11. Blundo Canto G. et al. 2018. *ImpresS ex ante*: a proposal for an *ex ante* approach to build impact pathways

8

Data collection and processing methods



This section presents different methods and tools for collecting and processing data for case studies.

Different information collection tools are available: interviews, focus groups, surveys, etc. The choice of the combination of methods to use varies from case to case and depends on the interest and the availability of the actors, the relationships between actors, and the resources available for the study. See Table 21 for suggestions on the choice of the method to use to collect the data necessary to assign values to indicators.

Table 21: Choosing a data collection method.

	Multi-actor focus group	Mono-actor focus group	Individual interviews and surveys
Cases where the actors meet often and cooperate with each other	Preferably use this method		Use this method to collect additional information
Cases where there exist strong tensions or highly asymmetrical relationships between actors		Preferably use these methods	
Cases where the actors have little time or are otherwise unavailable			Preferably use this method
Limited resources to undertake the evaluation	Preferably use this method		

8.1 Interviews

A semi-structured interview of an individual or a group of individuals can be used to gather opinions through open questions. Some key elements have to be considered while developing an interview guide that will be best at eliciting information necessary for constructing the narrative of the innovation, the impact pathway and even for the measurement of impacts. Such an interview guide:

- has to be based on strong hypotheses on the narrative of the innovation and the impact pathway developed by the leaders of the case study, and subsequently amended during the first participatory workshop;
- has to be specific to a particular actor category: it must therefore be adapted to this type of actor, and must be intelligible (especially if the interview is conducted via an interpreter);
- has to be a multi-objective instrument: it has to satisfy several information requirements at the same time, i.e. to complement the narrative of the innovation, to shed light on the impact pathway, to characterize (or even quantify) the impact;
- must be adapted to the modalities of the interview: it should be more comprehensive (more far-reaching) for interviews with individuals, and simpler for focus groups.

Given the objectives of the ImpresS method, a good interview guide will most likely contain the following three thematic sections (in addition to a section used to identify the interviewee): (i) the roles played by the actor, (ii) the interactions between actors, and, finally, (iii) the analysis of the impacts. A good interview is one that gets the interviewee to describe actions (by insisting on the why and the how) and to place them in time (What happened at that time?). The questions should be formulated to reflect the existing hypotheses about the narrative of the innovation (dates, stages, stakeholders), the impact pathway, and the nature of the impacts.

As in any semi-structured interview, the interviewer must be able to use the questions flexibly to initiate the dialogue (Box 16), steer his or her interviewee as appropriate, explore avenues unveiled by certain responses, and incorporate the information provided by the interview to formulate new questions, etc. [See for example the site on qualitative survey methods developed by CIRAD, IAMM and Montpellier Sup-Agro: <http://entretiens.iamm.fr/>]. Particular attention must be paid to the ethical aspects of this type of interaction, especially the requirement to share the results with the persons interviewed.

Box 16: Suggestions of questions to include in an interview**Lead questions about the interviewee's own role**

- What was your role, or, if you played more than one, what were your roles in the innovation process (or in certain of the pre-identified stages of the process)?
- Did this role change over time? Why? At what point(s) did you play what role(s)?
- What specific knowledge or resources did you contribute during the innovation process? At what time(s), in what form(s)?

Lead questions about interactions between actors

- With which other actors did you have “significant” interactions during your activities concerning this process? When and for what reasons? (List the different interactions.)
- In what contexts did these interactions take place?
- What was the nature of these interactions?
- Did any of these interactions result in “significant” disagreements, tensions or conflicts? If yes, why and how were they resolved or addressed? What conse-

quences have these tensions had on the innovation process?

- On the whole, what was the concrete result (effect) of these interactions on the process?
- How have these interactions been meaningful from your point of view in developing the innovation and in leading to impact?

Lead questions about the impacts (*Questions to be asked if the interviewer thinks that the actor being interviewed has been impacted by the innovation or has an expert opinion on the impact on other actors. In this case, the interviewer has to be asked to provide descriptors.*)

- What concrete effects did the innovation(s) have for you?
- How do these effects manifest on your farm (or in your organization or daily life)?
- How are these effects important to you?
- Are these effects positive for all farmers (or other actors)? Do you know of other actors for whom this impact may have been different, perhaps negative?

8.2 Focus group

A focus group is a discussion group (of between 3 and 10 people typically) that complements or replaces individual interviews and surveys in order to obtain information/data through the group's perspective. A well-managed focus group can provide information that is consensually validated, but may obscure individual opinions, mask conflicts, etc. (Box 17). Depending on the desired objectives, a focus group can have a homogeneous (mono-actor) or heterogeneous (multi-actor) composition in terms of the participants' social status or professional category. An interview guide can be used as part of a focus group. The ImpresS method proposes to conduct several focus groups. A focus group does not necessarily mean high costs or lost time; it is simply another way of conducting surveys.

Box 17: How to organize and facilitate a focus group?**Principles of action**

1. Allow time for the case team to identify/select participants.
2. Prepare the focus group properly and have a plan B.
3. Think about the issue of language and translation/interpretation.
4. Think about who should facilitate the focus group (avoid being judge and jury, even though it may not always be possible to do so!).
5. Provide a good introduction to the focus group and clarify rules of interaction.
6. Present clearly the objective, structure (stages) of the meeting and the future use of the results.
7. Plan for between one and two hours of active work, plus delays, introductions, conclusions. It is better to

plan several focus groups than one long one (do not attempt to do too much!).

8. Steer the focus group to avoid deviations from the objective but without introducing a bias. Remain as close as possible to the objective (identifying descriptors, prioritizing impacts, or measuring indicators, etc.).
9. Do not forget to make a closing statement at the end of the focus group.

Tips and tricks

10. Should the discussions be recorded? Ask the participants and respect their decision.
11. How to manage disruptive participants? Anticipate!
12. Know the participants' motivations and incentives for participating in order to be able to respond positively to them, if necessary.

8.3 Workshops

The ImpresS method recommends holding two workshops: the start-up workshop and the results validation workshop. Workshops should include representatives of the major actors of the innovation (research community, private firms, professional representatives, etc.) as well as representatives of actors who are impacted by the innovation (farmers, businesses, etc.). The number of participants must be conducive to group work (ideally between 20 and 30 people). It is important to allow some flexibility so that participants find it easy to express themselves (Boxes 18 and 19).

It is also important to eliminate or reduce as far as possible any selection bias in choosing the participants. For example, at least one representative from each of the major actors and one each from groups impacted by the innovation process should be invited to participate, even if there exist controversies and even if some of the actors have been negatively affected. Only then will the workshop become a space for participatory analysis of the innovation process and its impacts.

Box 18: Some aspects to consider when organizing the start-up workshop

Before the workshop: ask the following questions

1. What are the specific objectives to be achieved during this workshop? (Start from the proposal of the guide and fine-tune or modify as deemed necessary)
2. Who are the participants who should be invited (for the different categories of actors)? Who will invite them and how? What are the most common pitfalls to be avoided?
3. What can motivate participants to participate and spend time on this workshop and this evaluation project?
4. What conditions (material, content, etc.) must be met for the workshop to be productive? And, conversely, what should be avoided?
5. What should be the optimal duration of the workshop? Where is the best place to hold it? What is the optimal number of participants? How many will be too many?
6. Make a precise proposal of the schedule and agenda: plenary sessions, group work, specific dynamics for each session (including clear terms of reference for group work).
7. Identify session facilitators, resource persons, material to present/prepare, etc. Who does what and how?
8. Where to find a good facilitator and what should be his/her profile (skills of different types: for example, participatory methods, language(s), knowledge of the case, knowledge of the concepts, etc.)?
9. Assign roles with care (case team members, facilitator, local staff): who does what and how?
10. Think about the language of the discussions (Will translation/interpretation be necessary?) Ensure

that the concepts, especially that of impact, will be well understood).

During the workshop

11. Ensure that logistical aspects are well taken care of (welcome, badges, coffee breaks, meals, stationery for taking notes, sitting arrangements, spaces for group work, flip charts, etc.).
12. Ensure good facilitation (maintain the predetermined schedule, understand the mood of the participants, etc.).
13. Ensure conditions for a balanced participation of the various points of view (identify areas of disagreement).
14. Facilitate effective note-taking.
15. Do not forget to summarize briefly what was achieved at the end of the workshop and to clarify the next steps.

After the workshop

16. Write a summary report on the basis of the notes as soon as possible (within days following the workshop), highlighting the results obtained on the narrative of the innovation, the impact pathway and the impacts, and the questions and doubts that arose during the discussions.
17. Incorporate these results into the formulation of the hypotheses on the narrative of the innovation, the impact pathway and the impacts, and take them into account for the drafting of the survey guides and for the data collection from different sources.
18. If the workshop did not achieve the expected results, understand why and develop a plan B based on individual interviews or focus groups.

Some online resources for helping organize a workshop:

<http://www.kstoolkit.org/La+facilitation+de+groupe>

<https://www.shareweb.ch/site/Learning-and-Networking/home-sdc-km-tools/designing-an-event>

http://betterevaluation.org/en/plan/approach/participatory_evaluation

<http://ctb.ku.edu/en/table-of-contents/leadership/group-facilitation/facilitation-skills/main>

Box 19: Example of the participatory start-up workshop*

Objectives of the participatory start-up workshop

The evaluation team, after having drafted a narrative of the innovation and formulated a hypothesis of the impact pathway, conducted the participatory start-up workshop with the aim of widening the circle of validation of the hypothesis of the impact pathway among the main actors of the innovation.

The specific objectives of the workshop were:

- presenting the objectives and the method,
- discussing a first narrative,
- collecting the expression of the impacts from the actors (descriptors),
- improving the first hypotheses of the impacts.

At the end of the workshop, the impact pathway was reconstructed, shared, validated by the representatives of the main actors of the innovation (producers who were organized in an association, researchers and other stakeholders: advisors, trainers, elected officials, farmer organizations, etc.).

Preparatory work

The case team approached the president of the producers association and two of its members. Together, they decided on a two-stage workshop: (i) discussion of and work on the narrative of the innovation, (ii) group work (by category of actors) on perceived changes. An invitation to participate was extended to the association members and various actors of the territory. The workshop was called “2004 to 2015 retrospective of *Vales da Uva Goethe*: changes after the Geographical Indication.”

Before the workshop, the case team, the president and the members of the association invited the main representatives of the research and development communities (UFSC, Sebrae, Epagri), to whom they presented in detail the ImpresS method’s objectives and the expected results.

Holding of the workshop

The participatory workshop was held on 2 June 2016 at the offices of the Progoethe association, starting with an official introduction by the representatives of Epagri and the Progoethe association. There were about 30 participants: grape and wine producers, representatives of cultural associations, tourism agencies, representatives of the municipal government, actors of the research and development communities, and university personnel.

The case team decided not to talk about the impact pathway in this first workshop to avoid the risk of rejection with an overly abstract concept. The first task was therefore to tell the story of the innovation and of the projects, and to represent this story on a timeline displayed on the wall. As the presentation progressed, the actors provided complementary information, commented and interjected corrections. At the end, the narrative was completed. In this way, the participants understood the richness of the journey. This positive observation helped participants take part in the group work in a constructive atmosphere.

In the second stage, actors grouped by category (producers, wineries, tourism sector, representatives of public services and the research community) identified descriptors on card files. Each descriptor (file) was then discussed in plenary and classified according to its domain (economic, social, etc.) and its intensity.

Once all the cards had been presented, the facilitators asked the participants to identify indicators that could inform these descriptors. A final exercise undertaken in this workshop was to indicate with a red mark the changes that seemed most significant.

At the end of the workshop, the facilitators took the time to listen to and note down the difficulties that the association was facing.

*organized as part of the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State” in 2015–2016

8.4 Individual surveys

In some cases, it is necessary to carry out individual surveys using closed questionnaires (quantitative numerical answers, multiple-choice answers, etc.). This questionnaire can be administered by a surveyor or self-administered. Traditionally, the interviewer asks questions face-to-face and notes down the answers. This approach requires certain qualities on his/her part. Ideally, s/he should be able to convince respondents of the importance and relevance of the survey, have good social skills, have listening and communication abilities, and possibly have received training in undertaking individual surveys.

Different techniques can be used to choose the individuals to survey:¹²

- probabilistic sampling, which involves drawing random samples of the entire target population;
- convenience or availability sampling, which consists of selecting people arbitrarily and intuitively to collect information;

12. See also: www.cairn.info/revue-d-economie-du-developpement-2012-4-page-27.html; http://pagesped.cahuntsic.ca/sc_sociales/psy/methosite/consignes/echantillon.htm.

- reasoned sampling, which consists of choosing the sample according to the respondents' ability to provide reliable answers;
- quota sampling, which consists in determining a sample population according to quotas based on pre-determined criteria.

This survey method is relatively expensive, but it allows quality control of the responses received. As in any survey, the ethical aspects must not be ignored:

- Making sure to ask the interlocutors for their agreement to share individual results.
- Do they agree to disclose information on condition of anonymity?
- Do they give their permission to be quoted?
- etc.

8.5 Data processing

8.5.1 Constructing the database

Feeding the data collected in a given case study in a [generic] database can be useful for a number of reasons, including for facilitating the triangulation of information collected through various tools, for moving away from locally formulated categories [of actors and their relationships, of impacts] and towards more generic formulations, or for comparing one's results with results obtained in other case studies.

CIRAD did build such a database for its own learning and analysis purposes¹³. This database is a semi-quantitative generic database constructed in Access; Its aims include (i) archiving and harmonizing the data collected from case studies conducted by CIRAD researchers and their partners, (ii) correlate the information collected by the various tools, (iii) allow a comparison between case studies implemented using the ImpresS approach and conduct cross-analyses, and (iv) ultimately build a record of the contribution of research to innovations.

The CIRAD database is divided into five parts: case ID, impact pathway, actor mapping, capacity building and research activities.

The case ID provides information on the name of the case, its status (*ex post*, *in itinere*), the department and the research unit responsible for the case study, the start date of the case study, etc.

For the "impact pathway" part of the database, each box (input, output, outcome, impact 1 and impact 2) of the graph is entered into the database in the form of a table.

In the "actor mapping" part, the corresponding table includes information on all the actors of the innovation process: type of actor, category of actor, type of participation in the innovation process. Each actor has a role, with roles defined in a separate "actor role" table, and linked to the different phases of the innovation process of each case study.

For the "capacity building" part, the "learning situation" table describes the learning situation in terms of location, duration, nature of the learning situation, etc. The "acquired skills" table lists all the different skills acquired or that can be acquired by each learning actor.

The "research activities" part lists the main research activities carried out by different actors along the impact pathway, supplemented by miscellaneous information (activity, period, etc.). The "link activities of research actors" table is a join table that is used to link research activities to the actors who carried out them out.

8.5.2 Final report

The case study process concludes with the drafting of a case study report of the evaluation process and the different results from this analysis. CIRAD has developed a pre-established generic format to facilitate cross-analyses of case studies in which it has been involved. (see Appendix 5 for a more detailed outline). A summary is presented here:

13. if you are interested in it, or want to contribute to enriching it, please contact the ImpresS team at: Impress@cirad.fr

Executive summary

1. Presentation of the case

- Contexts (context of the development of the research problem and the general context of the case)
- Scope of the case study
- Summary of the adaptation of the ImpresS protocol to conduct the study

2. Narrative of the innovation

- Chronological narrative of the innovation
- Impact pathway
- Research inputs
- Going from outputs to outcomes
- Going from outcomes to impacts (1 and 2)

3. Building capacity

- Presentation of the identified learning situations

4. Measuring impacts

- 1st level impacts
- 2nd level impacts

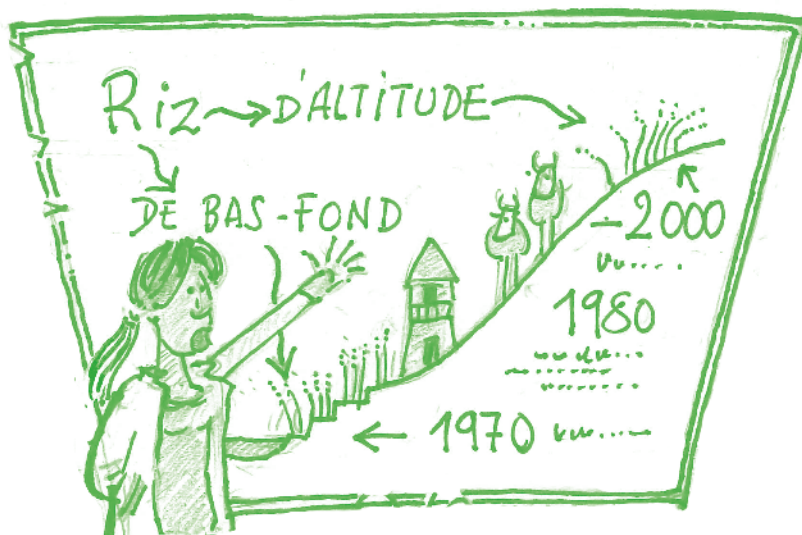
5. Transversal theme: evaluation of the impact on public policies

6. Other themes that were studied during the study

7. Feedback

- On the ImpresS evaluation method
- Recommendations for undertaking similar innovation projects or for the continuation of the ongoing project

Bibliography



Bibliography

References cited in the guide

- Akrich M., Callon M., Latour B., 1988a. À quoi tient le succès des innovations ? Premier épisode : l'art de l'intéressement. Gérer et comprendre, *Annales des Mines*, 11, 4-17.
- Akrich M., Callon M., Latour B., 1988b. À quoi tient le succès des innovations ? Deuxième épisode : l'art de choisir les bons porte-parole. Gérer et comprendre, *Annales des Mines*, 12, 14-29.
- Alami S., Barret D., Biénabe E., Temple L., 2013. Synthèse d'études de cas sur l'évaluation d'impact de la recherche agronomique dans les pays du sud. Rapport final de la cellule impact, CIRAD, Montpellier, <http://halshs.archives-ouvertes.fr/cirad-00904862>.
- CIRAD, 2014. Objectifs de stratégie scientifique et partenariale (OSSP) : le développement par la recherche en action, CIRAD, Montpellier, 36 p.
- Colinet L., Gaunand A., Hocdé A., Joly P.B., Lemarié S., Matt M., Larédo P., 2013. Une approche multidimensionnelle de la mesure des effets de la recherche publique agronomique : le cas de l'Inra. In: *Penser la valeur d'usage des sciences* [O. Glassey, J.-P. Leresche, O. Moesnier, eds.], éditions Archives contemporaines, Paris, 49-76.
- De Janvry A., Dustan A., Sadoulet E., 2011. Recent Advances in Impact Analysis Methods for Ex-post Impact Assessments of Agricultural Technology: Options for the CGIAR, report SPIA, CGIAR ISPC, University of California at Berkeley, USA, 36 p.
- Douthwaite B., Kuby T., van der Fliert E., Schulz S., 2003. Impact pathway evaluation: an approach for achieving and attributing impact in complex systems. *Agricultural Systems*, 78, 243-265.
- Flichy P., 1995. *L'innovation technique. Récents développements en sciences sociales. Vers une nouvelle théorie de l'innovation*, collection Sciences et société, La Découverte, Paris, 256 p.
- Gaunand A., Hocdé A., Lemarié S., Matt M., de Turckheim E., 2015. How does public agricultural research impact society? A characterization of various patterns. *Research Policy*, 44, 849-861.
- Geels FW., Schot J., 2007. Typology of sociotechnical transition pathways. *Research Policy*, 36, 399-417.
- Guijt I., 2014. Participatory Approaches, Methodological Briefs, Impact Evaluation 5, UNICEF Office of Research, Florence, 23 p.
- Joly P.-B., Gaumand 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, 440-453.
- Klerkx L., Aarts N., Leeuwis C., 2010. Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural Systems*, 103 (6), 390-400.
- Knoepfel P., Larrue C., Varone F., Hill M., 2007. *Public Policy Analysis*, Policy Press, Bristol, 346 p.
- Leeuwis C., 2004. *Communication for Rural Innovation*, Blackwell Publishing Ltd, Oxford, 424 p.
- Linstone H. A., Turoff M., 2002. *The Delphi method: Techniques and Applications*, Murray Turoff and Harold A. Linstone Editions, Portland, 618 p.
- Lundvall B.-A., 1992. *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning*, Pinter, London, 342 p.
- Morgan P., 1998. Capacity and Capacity Development – Some Strategies. Note prepared for the Political and Social Policies Division, CIDA Policy Branch, Hull, Quebec, 13 p.
- Nelson R., 1993. *National Innovation Systems. A Comparative Analysis*, Oxford University Press, New York/Oxford, 560 p.
- Patton M., 1990. Designing Qualitative Studies. In: *Qualitative evaluation and research methods* Beverly Hills, CA, Sage, 169-186.
- Ridde V., 2006. Suggestions d'améliorations d'un cadre conceptuel de l'évaluation participative. *The Canadian Journal of Program Evaluation*, 21 (2), 1-23.
- Rogers E.M., 1995. *Diffusion of Innovations, 4th edition*, The Free Press, New York, 518 p.
- Sackman H., 1975. *Delphi Critique: Expert Opinion, Forecasting, and Group Process*, The Rand Corporation, Lexington Books, Lexington MA, 125 p.

- Saint-Martin G., Alami S., Arvanitis R., Barret D., Bertrand B., Colinet L., Delarue J., Faure G., Letourmy P., Mourzelas M., Pallet D., Temple L., Vagneron I., 2011. *Évaluation de l'impact de la recherche au CIRAD, Rapport du groupe de travail, CIRAD, Montpellier*, 44 p.
- Smits R., 2002. Innovation studies in the 21st century: questions from a user's perspective. *Technological forecasting and social change*, 69 [9] 861-883.
- Springer-Heinze A., Hartwich F., Henderson J.S., Horton D., Minde I., 2003. Impact pathway analysis: an approach to strengthening the impact orientation of agricultural research. *Agricultural Systems*, 78 [2], 267-285.
- Temple L., Saint Martin G., Tazi Alami S., Barret D., 2012. *L'évaluation d'impact de la recherche agronomique : des limites de la quantification aux innovations méthodologiques au CIRAD*, GEMDEV-UNESCO, Paris, 14 p.
- Temple L., Barret D., Dabat M.H., Devaux-Sparatakis A., Faure G., Hainzelin E., Mathé S., Toillier A., Triomphe B., 2016. A systemic method for assessing the impacts of agricultural research for development. Communication presented at the conference: *The Transformation of Research in the South: Policies and Outcomes*, 21-22 January 2016, OECD, Paris.
- Toillier A., 2012. Contributions méthodologiques à l'évaluation de l'impact de la recherche menée au CIRAD. Cas du CEF au Burkina Faso, document technique et de recherche, CIRAD, Montpellier, 26 p.
- Touzard J.M., Temple L., Faure G., Triomphe B., 2014. Systèmes d'Innovation et communautés de connaissances dans le secteur agricole et agroalimentaire. *Innovations*, 43 [1], 13-38.
- Triomphe B., Barret D., Clavel D., Dabat M.H., Devaux-Sparatakis A., Faure G., Hainzelin E., Mathé S., Temple L., Toillier A., 2015. Towards a generic, comprehensive and participatory approach for assessing the impact of agricultural research in developing countries. Working paper presented at the conference: *Impacts of Agricultural Research – an Approach of Societal Values*, 3-4 November 2015, Inra, Paris.
- Yin R.K., 1994. *Case Study Research: Design and Methods*, Sage, Thousand Oaks, 171 p.

References for additional reading

- Alene Arega D., Coulibaly O.C., 2008. The impact of agricultural research on productivity and poverty in sub-Saharan Africa. *Food Policy*, 34 [2], 198-200.
- Alston J.M., 2010. The benefits from agricultural R&D, innovation and productivity growth, OECD Food, Agriculture and Fisheries Papers 31, OECD Publishing, Paris, 27 p.
- Callon M., Foray D., 1997. Introduction : Nouvelle économie de la science ou socioéconomie de la recherche scientifique ? *Économie industrielle*, 79, 13-35.
- Callon M., Lascoumes P., Barthe Y., 2001. *Agir dans un monde incertain. Essai sur la démocratie technique*, collection La couleur des idées, Le Seuil, Paris, 358 p.
- Carlson B., 2006. Internationalization of innovation system: A survey of the literature. *Research Policy*, 35, 56-67.
- Douthwaite B., Gummert M., 2010. Learning selection revisited: How can agricultural researchers make a difference? *Agricultural Systems*, 103 [5], 245-255.
- Duflo E., Glennerster R., Kremer M., 2008. Using Randomization in Development Economics Research: A Tool Kit. In: *Handbook of Development Economics* (T. Schultz, J. Strauss, eds.), Elsevier, Amsterdam and New York: North Holland, 4, 3895-3962.
- Kruss G., Gastrow M., 2012. Global innovation networks, human capital, and development. *Innovation and Development*, 2 [2], 205-208, DOI:10.1080/2157930X.2012.724885.
- Laurent C., 2009. Pourquoi s'intéresser à la notion d'« evidence-based policy » ? *Revue Tiers Monde*, 200, 853-873, DOI:10.3917/rtm.200.0853.
- Lundvall BA., 2007. National Innovation System – Analytical Concept and Development. *Tool Industry and Innovation*, 14 [1], 95-119.
- Maredia M.K., Raitzer D.A., 2010. Estimating overall returns to international agricultural research in Africa through benefit-cost analysis: a "best-evidence" approach. *Agricultural Economics*, 41 [1], 81-100.
- Maredia M.K., Raitzer D.A., 2012. Review and analysis of documented patterns of agricultural research impacts in Southeast Asia. *Agricultural Systems*, 106, 42-58.
- Naudet J.D., Delarue J., Bernard T., 2012. Évaluations d'impact : un outil de redevabilité ? Les leçons tirées de l'expérience de l'AFD. *Revue d'économie du développement*, 26, 27-48.

- Nederlof E.S., Roling N., van Huis A., 2007. Pathways for agricultural science impact in West Africa: lessons from the Convergence of Sciences programme. *International Journal of Agricultural Sustainability*, 5, 247-264.
- Omamo S.W., Lynam J.K., 2003. Agricultural science and technology policy in Africa. *Research Policy*, 32 [9], 1681-1694.
- Pal S., 2011. Impacts of CGIAR Crop Improvement and Natural Resource Management Research: A Review of Evidence. *Agricultural Economics Research Review*, 24, 185-200.
- Parayil G., 2003. Mapping technological trajectories of the Green Revolution and the Gene Revolution from modernization to globalization. *Research Policy*, 32 [6], 971-990.
- Pedersen S.M., Boesen M.V., Baker D., Larsen A., Pedersen J.L., 2011. Evaluation of research projects. Perspectives for applied research in food and agriculture. *Food Economics – Acta Agriculturae Scandinavica*, 8 [3], 127-141. DOI:10.1080/16507541.2011.644438.
- Penfield T., Baker M.J., Scoble R., Wykes M.C., 2014. Assessment, Evaluations, and Definitions of Research Impact: A Review. *Research Evaluation*, 23 [1], 21-32.
- Raina R.S., 2003. Disciplines, institutions and organizations: Impact assessments in context. *Agricultural Systems*, 78 [2], 185-211.
- Renkow M., Byerlee D., 2010. The impacts of CGIAR research: A review of recent evidence. *Food Policy*, 35 [5], 391-402.
- Romme A.G.L., van Witteloostuijn A., 1999. Circular organizing and triple loop learning. *Journal of Organizational Change Management*, 12 [5], 439-453.
- Ruane J., 2014. Approaches and Methodologies in Ex Post Impact Assessment of Agricultural Research: Experiences, Lessons Learned and Perspectives. Background document to the FAO e-mail conference: *Approaches and methodologies in ex post impact assessment of agricultural research: Experiences, lessons learned and perspectives*, 5 May-1 June 2014, FAO, Rome, www.fao.org/docrep/019/as549e/as549e.pdf.
- Smith S., Ward V., House A., 2011. 'Impact' in the proposals for the UK's Research Excellence Framework: Shifting the boundaries of academic autonomy. *Research Policy*, 40, 1369-1379.
- Spaapen J., van Drooge L., 2011. Introducing 'productive interactions' in social impact assessment. *Research Evaluation*, 20 [3], 211-218.
- Stern E., Stame N., Mayne J., Forss K., Davies R., Befani B., 2012. Broadening the range of designs and methods for impact evaluations, Working Paper 38, DFID, London, UK, 91 + 24 p.
- Sumberg J., 2005. Systems of innovation theory and the changing architecture of agricultural research in Africa. *Food Policy*, 30 [1], 21-41.
- Temple L., Kwa M., Tetang J., Bikoi A., 2011. Organizational determinant of technological innovation in food agriculture and impacts on sustainable development. *Agronomy for Sustainable Development*, 31 [4], 745-755, DOI:10.1007/s13593-011-0017-1.
- Temple L., Touzard J.M., Boyer J., Requier-Desjardins D., 2015. Comparaison des trajectoires d'innovation pour la sécurisation alimentaire des pays du Sud. *Biotechnologie, Agronomie, Société et Environnement*, 19 [1], 53-61.
- Ton G., 2012. The mixing of methods: A three-step process for improving rigor in impact evaluations. *Evaluation*, 18 [1], 5-25, DOI:10.1177/1356389011431506.
- Van Kerkhoff L., Lebel L., 2006. Linking knowledge and action for sustainable development. *Annual Review of Environment and Resources*, 31, 1-33.
- Vanloqueren G., Baret P.V., 2009. How agricultural research systems shape a technological regime that develops genetic engineering but locks out agroecological innovations. *Research Policy*, 38, 971-983.
- Walker T., Maredia M., Kelley T., La Rovere R., Templeton D., Thiele G., Douthwaite B., 2008. Strategic Guidance for Ex Post Impact Assessment of Agricultural Research, Report prepared for the Standing Panel on Impact Assessment, CGIAR Science Council, Rome, 100 p.
- Walker T., Ryan J., Kelley T., 2010. Impact Assessment of Policy-Oriented International Agricultural Research: Evidence and Insights from Case Studies. *World Development*, 38 [10], 1453-1461.
- Weick K.E., Sutcliffe K.M., Obstfeld D., 2005. Organizing and the Process of Sensemaking. *Organization Science*, 16 [4], 409-421.
- Woodhouse P., 2010. Agricultural Research, Livelihoods and Poverty: Studies of Economic and Social Impacts in Six Countries. *Journal of Agrarian Change*, 10 [2], 294-297.

Glossary

1st level impacts: Impacts concerning the actors interacting directly or indirectly with the research community and/or the major actors of the innovation. They can be evaluated with the actors, and can be identified and quantified. Two criteria are used to measure them: the intensity of change and the magnitude of change.

2nd level impacts: Impacts that correspond to spillover effects (indirect impacts) and to the change of scale in two dimensions: horizontal (scaling out) and vertical (scaling up). They can be evaluated according to the criteria of intensity of change and magnitude of change, but in a more approximate and less detailed manner than 1st level impacts.

Actor: An individual or organization involved in an innovation process. The ImpresS approach distinguishes between three categories of actors: the actors who play a major role in the innovation process; the actors who intentionally or unintentionally influence the innovation without being actors of the innovation process; and actors, if any, who are positively or negatively impacted by the innovation but who are not major actors in the innovation process. This last category can include actors of the two first categories.

Adoption/appropriation: Derivation of value by an individual or a collective from knowledge acquired or a technique learned through exchanges with other actors. This concept implies that the user has undergone a learning process and is an active participant in the innovation's design or its adaptation.

Capacity: Ability to perform functions, solve problems, set and achieve goals.

Capacity building: Actions undertaken by a third-party actor with the aim of helping the actors engaged in innovation acquire new capacities or enhance existing ones.

Capacity to innovate: The knowledge, know-how, and social skills needed by an individual or a group to effectively use, master and improve existing resources or to create new ones in order to innovate.

Chronology: A chart that allows the visualization of the narrative of the innovation in its temporal dimension by specifying the significant events and milestones.

Coordination: Mechanism for the harmonization of various activities involving different actors for the sake of efficiency or for regulating relationships. Coordination is based on rules that are flexible and not necessarily defined by particular bodies, and which can be based on formal contracts or informal arrangements.

Descriptor: Expression of an impact by actors in their own words and describing changes as they perceive them.

Dissemination: Mechanism by which an innovation spreads in time and space using different methods (imitation, circulation in networks, collective learning, training, etc.).

Ex post/ex ante/in itinere evaluation: Determination of the outputs, outcomes and impacts of project or program activities after the activities have been carried out (*ex post* evaluation), before the activities are carried out (*ex ante* evaluation), or while the activities are being carried out (*in itinere* evaluation). These evaluations can be external, and thus carried out by a third-party actor, or participatory, i.e. with participation of the actors engaged in the activities.

Focus group (or interest group): A discussion group generally created in a research or transformation project, bringing together individuals belonging to the same social group or confronted by the same situation, in order to determine this group's position regarding a problem, proposals for actions or the development of innovations.

Human capital: The set of productive capacities that an individual acquires by accumulating general or specific knowledge, know-how, social skills, etc. The notion of capital expresses the idea of an intangible stock assigned to a person that can be accumulated and used. Human capital can be built up by training or through experience.

Impact: Long-term effect, positive or negative, intentional or unintentional, direct or indirect, induced by a development action. The impacts are what remains after the project/program is completed. Impacts can be of different types: economic, social, territorial, environmental, political, health-related, etc. They are measured by indicators.

Impact indicator: It allows the information that describes an impact to be expressed in a simple way. It is obtained by translating descriptors into a quantifiable indicator or one that can be assessed qualitatively. The measurement of an impact indicator only makes sense in relation to a reference situation.

Impact pathway: Description of an innovation process that highlights the causal relationships between the inputs mobilized by the research, the outputs of the research, the outcomes – which materialize directly at the level of those who use the outputs of the research – and the 1st and 2nd level impacts.

Indicator: Quantitative or qualitative summary information that characterizes a resource or process or helps decision-making.

Innovation: At the entrepreneur level, an innovation can be defined as a new product, a new process, a new way of accessing services, or a new way of marketing products or services. In a very general way, an innovation can also be defined as an idea implemented by actors who desire change [see the European Union's definition in the European Partnership for Innovation].

Innovation process: Complex, interactive, sometimes haphazard and unpredictable process, highly influenced by its environment and which is difficult or even impossible to manage. It consists of phases of acceleration, slowdown, and crisis, and involves many back-and-forth interactions between the research community and actions undertaken by its partners until the adoption and implementation of innovations by end-users.

Innovation system: All the actors who interact to innovate by producing knowledge and mobilizing resources. A first meaning of the term refers to organizations dedicated to innovation (research, education, advisory) and their interactions with other actors. In such a case, one can refer to a national, regional or sectoral innovation system. A second meaning refers to all the actors involved in innovation and their interactions. In this case, there is an innovation system by type of innovation studied.

Intermediary: Person or organization playing a facilitating role in an innovation process (networking of actors, coordination between actors for the implementation of actions and the alignment of services, conflict resolution, support for the identification of resources, etc.). This role can also be shared among different actors at different points in the innovation process.

Invention: Novelty of a technical nature created by researchers in laboratories or in test plots, or by farmers and tested on part of their farms. It is only when the invention is appropriated and implemented by users, often after a process of adaptation, that we can speak of an innovation.

Leader of the case study: Coordinator or "orchestra conductor" of the case study evaluation, thus responsible for its successful completion (including the final report). He may have been involved in the research process of the case study or not. He/she chooses the modalities of support necessary for the smooth conduct of the case and is responsible for the methodological choices though without deviating from the essentials of the ImpresS approach. He/she manages the partnership aspect of the case (including by quickly identifying a co-leader in the developing country concerned) and manages the budget.

Learning: The process of acquiring knowledge, know-how or social skills by an individual or a group through observation, exchange between individuals, and implementation into practice.

Learning situation: All conditions and circumstances that can lead an individual to construct knowledge or apply and transform knowledge into know-how and skills. Such a situation may arise spontaneously or be organized in a systematic or informal manner. It acts on the learner by presenting him with an observation, meeting or event that represents a problem and challenges his or her representations. In these situations, learning is made possible by an activity.

Linear innovation model: The innovation process is represented as a succession of obligatory stages; the outputs of one stage constitute the inputs of the next. Tasks are performed sequentially. These stages consist of, for example, the activities of scientific research, development, production, and marketing. They are perfectly foreseeable. The origin of the innovation process is the activity of scientific research.

Multi-criteria evaluation: Evaluation method that uses several criteria, often of a heterogeneous nature, to assess a project. The multi-criteria evaluation can optionally be based on a participatory approach. The method described in this guide makes it possible to account for the multiplicity of impacts of an innovation process by relying on a participatory approach.

Narrative of the innovation: This is the story of the innovation, therefore of all the major actors of the innovation. It spans the major phases of the history of the innovation with its advances, its setbacks, and the external factors that influence it. It recounts and specifies the dates of "what has happened," from the beginning of the innovation process to the present day.

Outcome: It is the appropriation of a research output by actors interacting directly or indirectly with the research community, leading to new practices (agricultural or managerial), new organizations, or new rules.

Project cluster: A grouping of all research projects, research and development projects, and development projects (as well as interventions that have not been formalized as projects) pertaining to the studied innovation. Defining the scope of the case study in temporal and spatial terms will result in a project cluster.

Radar: Graphical representation that summarizes the data concerning the different impacts identified. The ImpresS method proposes to represent impacts after grouping them into 11 "impact domains."

Research input: It encompasses all the means (actions and resources) that make it possible to undertake a research activity (human and material resources, research budget, information, tacit or other knowledge, research activities, etc.) and thus to generate research outputs. In the method described in this guide, these inputs refer to the investments made and resources mobilized prior to the start of the case study or during the period of the case study (funding or recruitment of a researcher can take place during the period of the case study and is still considered an input).

Research output: It is the product resulting from the research or from interactions of the research community with the actors of the project(s). It can take the form of scientific or non-scientific knowledge (publication, report, data-base, method, etc.), professional or academic training, expertise, technology, network or other forms of products. Research outputs can contribute to the emergence of innovation when they are appropriated by the actors of society. In the method described in this guide, the research outputs (knowledge, prototypes, etc.) developed before the start of the case study are considered inputs while those developed during the case study period are considered outputs.

Scaling (or change of scale): Geographic extension of an innovation or increase in the number of its adopters (scaling out) or increase in the number of types of actors or arrangements between actors related to the deployment of an innovation (scaling up). Scaling implies a transformation of knowledge and techniques through the networks of actors involved in this change of scale, and the extension of learning processes. The scale can be local (village, municipality, etc.), regional (sub-national), national, regional (geographically contiguous supranational) or global (geographically non-contiguous supranational).

Semi-directive interview: Interview conducted by a person who allows the interviewee to express opinions through open questions and who offers the opportunity to the interviewee to express his perception of events and situations.

Social capital: The entirety of current or potential resources of an individual or a collective that are dependent on the existence of a durable social network of more or less institutionalized relationships of reciprocal knowledge and reciprocal recognition. This enables the individual or collective to undertake actions and achieve the desired objectives.

Spillover effects: Secondary effects, induced effects, indirect effects, and consequences on actors not involved in the design of the innovation. Spillover effects can be measured at the same level as 2nd level impacts.

List of boxes

Box 1: But what is innovation?	8
Box 2: Some definitions	12
Box 3: Constitution of the evaluation team as part of the 2015–2016 case studies	13
Box 4: Case studies of the ImpresS project in 2015–2016	14
Box 5: Participatory evaluation	15
Box 6: Examples of the scopes of case studies undertaken in 2015–2016	26
Box 7: Examples of descriptors	27
Box 8: Information to be collected for the narrative of the innovation	33
Box 9: Origin of the impact pathway	36
Box 10: Change in scale and indirect impacts	39
Box 11: How to establish causal links?	42
Box 12: Capacity building of researchers and other actors involved in the innovation	46
Box 13: Definition of a public policy	52
Box 14: What is an impact indicator?	58
Box 15: Examples of data collection in order to assign values to indicators	60
Box 16: Suggestions of questions to include in an interview	71
Box 17: How to organize and facilitate a focus group?	71
Box 18: Some things to consider when organizing the start-up workshop	72
Box 19: Example of the participatory start-up workshop organized as part of the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State” in 2015–2016	73

List of figures

Figure 1: The ImpresS approach.	16
Figure 2: Example of the identification of project clusters for the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State.”	25
Figure 3: Map of actors [for the period 2005–2010] for the case study “Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State.”	32
Figure 4: Chronology of the case study “Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion.”	34
Figure 5: Generic description of an impact pathway.	35
Figure 6: 1 st and 2 nd level Impacts.	40
Figure 7: Impact pathway [a] and table of causal relationships [b] for the “Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion” case study.	43
Figure 8: Location on the impact pathway of key learning situations that helped build capacity for the “High-altitude rainfed rice in Madagascar” case.	49
Figure 9: Radar of impacts for the case study “BROCAP, coffee berry borer trap in the Dominican Republic.”	64

List of tables

Table 1: Identification of projects of various kinds connected to the case study.	25
Table 2: The 11 impact domains identified within the framework of the ImpresS approach.	27
Table 3: Major, influential and impacted actors in three case studies.	31
Table 4: Information on the actors of the innovation process.	31
Table 5: Characterization of inputs mobilized by the research community.	36
Table 6: Input categories identified from the 13 case studies conducted.	37
Table 7: Characterizing the research outputs.	37
Table 8: Output categories identified from the 13 case studies conducted.	37
Table 9: Characterizing the research outcomes.	38
Table 10: Outcome categories identified from the 13 case studies conducted.	38
Table 11: Distribution of impacts between 1 st and 2 nd levels.	40
Table 12: Characterizing 1 st level impacts.	40
Table 13: Characterizing 2 nd level impacts.	41
Table 14: Criteria for characterizing learning situations.	48
Table 15: Public actors' receptiveness to research.	53
Table 16: Characterizing interactions with public actors.	55
Table 17: Example of descriptors, impacts, impact domains and indicators.	59
Table 18: Examples of indicators for impacts 1 and 2.	61
Table 19: Example of scoring of an impact domain on the basis of several indicators.	63
Table 20: Summary table of the phases, objectives and actions of the ImpresS method for <i>in itinere</i> case studies.	66
Table 21: Choosing a data collection method.	70

9

Appendices



Appendix 1: List of case studies evaluated using the ImpresS approach (2015–2016)

CIRAD department	Research unit	Name of the case study	<i>Ex post or in itinere</i>	Last name, first name of case study leader/co-leader	Last name, first name of co-leader from the developing country, his/her institution
BIOS	AGAP	Identifying the impacts of research on the breeding, production and seed organization of groundnut in Senegal	<i>Ex post</i>	Clavel Danièle	Diack Mateungue, UGB
BIOS	AGAP	Participatory breeding of Sorghum in Burkina Faso	<i>Ex post</i>	Trouche Gilles/Vom Brocke Kirsten	
BIOS	AMAP	Pl@ntNet	<i>In itinere</i>	Bonnet Pierre	
BIOS	BIOAGRESSORS	BROCAP, coffee berry borer trap in the Dominican Republic	<i>Ex post</i>	Dufour Bernard	
BIOS	CMAEE	Eradication of the Tsetse Fly with the Sterile Insect Technique in Senegal	<i>In itinere</i>	Bouyer Jeremy	Seck Momar Talla, ISRA
ES	AGIRS	Animal health surveillance in Southeast Asia	<i>In itinere</i>	Peyre Marisa/Goutard Flavie	Ton Vu Dinh, Agricultural University of Vietnam
ES	G-EAU	Danone Klaten: Integrated and Participatory Water Resources Management towards effective agricultural systems in Kali Pusur watershed (Indonesia)	<i>Ex post</i>	Lidon Bruno	Sosiawan Hendri, IAARD
ES	INNOVATION	Fonio hulling equipment in West Africa	<i>Ex post</i>	Ferré Thierry/Cruz Jean-François	Medah Ignace, IRSAT
ES	INNOVATION	Adding value to produce from family farms in Brazil: investigating geographical indications in Santa Catarina State	<i>Ex post</i>	Cerdan Claire	
ES	SELMET	Innovative management of organic manures in agro-pastoral systems of western Burkina Faso (in association with DP ASAP)	<i>Ex post</i>	Vall Éric	Koutou Mahamoudou, Cirdes
PERSYST	AïDA	High-altitude rainfed rice in Madagascar (in association with DP SPAD)	<i>Ex post</i>	Raboin Louis Marie/Ahmadi Nour	Ramanantsoanirina Alain, Fofifa
PERSYST	AïDA	Biological control of the white grub <i>Hoplochelus marginalis</i> in Reunion	<i>Ex post</i>	Goebel Régis/Martin Pierre	Roux Estelle, FDGDON
PERSYST	RECYCLING AND RISK/ GREEN	Waste recycling in Reunion	<i>In itinere</i>	Wassenar Tom/ Queste Jérôme	

Appendix 2: Summary table of the phases, objectives and actors of the ImpresS method for *ex post* cases

Phase	Objective	Actions	Methodology	Results
1 Preparation of the study	Defining the innovation and the scope of the case	Clearly specify the subject of the innovation	Documentary analysis	Purpose of the impact analysis
		Define the geographical scale	Documentary analysis	The geographical space of intervention of the major actors of the innovation
		Define the duration of the case study (include a cluster of relevant projects)	Documentary analysis	Start and end dates of the observation
	Identifying and mapping the actors	Classify the actors in three categories	Analysis of the links between each actor and the innovation (Tables 3,4, Figure 3)	Tables and figures characterizing the links between the actors and the innovation
	Identifying research and/or development projects	Determine the relevant projects to take into account	Graphical representation of the projects over the observation time scale (Table 1, Figure 4)	Table: List of projects that have contributed in a significant manner to the innovation (project cluster)
	Drawing up a first hypothesis of impacts	Conduct documentary analysis and/or obtain information from key actors (case study leaders, experts)	Filling in the "Impacts" table (Table 2) using the 11 impact domains	First hypothesis of the impacts
	Drawing up a first narrative that leads up to the impacts	Lay out and then represent the chronology of the narrative of the innovation	Developing a first narrative of the innovation (Follow the steps in Box 8)	Written narrative
2 Dialogue with the actors	Presenting and sharing the objectives and the methodology Adapting the methodology to the partners' expectations Discussing the first version of the scope and the first narrative Obtaining the first impact descriptors from the actors Fine-tuning the first hypothesis of the impacts	Identify the impact descriptors to be able to eventually determine the impacts Improve the methodology	Participatory workshop with the actors identified earlier (Box 18)	Workshop 1 Table: Descriptors/impacts Fine-tuned hypothesis of impacts
3 Construction of the narrative of the innovation and the impact pathway	Improving the narrative of the innovation	Identify actors and the sequence of their involvement	Drawing up a chronology of the innovation (Figure 4)	Narrative of the innovation and chronology
	Identifying research inputs	Identify the resources mobilized by the projects	Documentation Interviews (Table 5)	Table: Characterization of research inputs
	Identifying research outputs	Characterize the products/results of the projects	Documentation Interviews (Table 7)	Table: Characterization of research outputs
	Identifying the outcomes of research activities	Characterize the outcomes of research	Documentation Interviews (Table 9)	Description of outcomes
	Identifying the impacts	Characterize the 1 st and 2 nd level impacts	Documentation Interviews (Table 11, 12, 13)	Table : Characterizing 1 st and 2 nd level impacts
	Building the impact pathway	Draw up the impact pathway by determining causal links	Documentation Interviews Participatory workshops (Box 11, Figure 7)	Diagram of the impact pathway
	Identifying learning situations Evaluating the contribution of capacity building to the impact	Characterize learning situations Show the path of capacity building	Documentation Interviews (Table 14) Mapping of the links between capacity building and expected or achieved results (Figure 8)	Table: Characterization of learning situations Identification of Learning situations on the impact pathway
	Identifying mechanisms of interaction with public policy	Characterize and evaluate the role of public actors in the innovation process and the impact of research on public actors	Documentation Interviews (Table 16)	Table: Characterization of interactions with public actors

Annexe 2 (suite)

4 Characterization and measurement of impacts	Characterizing impacts and their indicators	Characterizing intensity and magnitude (descriptors / indicators)	Documentation Surveys Focus groups (Table 17)	Table : Descriptors, impacts and indicators of intensity and magnitude
	Identifying indicators of 1st and 2nd level impacts	Ensemble data to measure impacts	Focus groups (Box 15, Table 18)	Validation of indicators and impacts Table of impacts by level
	Characterize change in scale and the contribution of research Score the impacts and visualise them on an impact radar by impact domain	Characterize the type of change of scale: scaling out, scaling up, spillover Score of indicators of intensity and magnitude by actors (expert panel) Visualize the impact domains on a radar	Participatory workshop Surveys (Tableau 19) Drawing up a radar by impact domains (Figure 9)	Table of impacts by level and by ImpresS impact domain Impact radar Case study report
5 Validation and presentation of the case study	Validating the results of the evaluation in a final workshop	Validate all the results (especially the measurement of impacts)	Same participants as in the 1 st workshop	Report of the validation workshop Recommendations concerning the evaluation method
	Presenting the results of the analysis of the case	Draft a report of all the results of the study	Use the format included in this guide	Final report incorporating the modifications made in the validation workshop

Appendix 3: How to score the intensity of capacity building's contribution to impacts?

After the learning situations are characterized and positioned on the impact pathway (Figure 1), it becomes possible to assign a weightage to capacity building's contribution to impacts by using a scoring system.

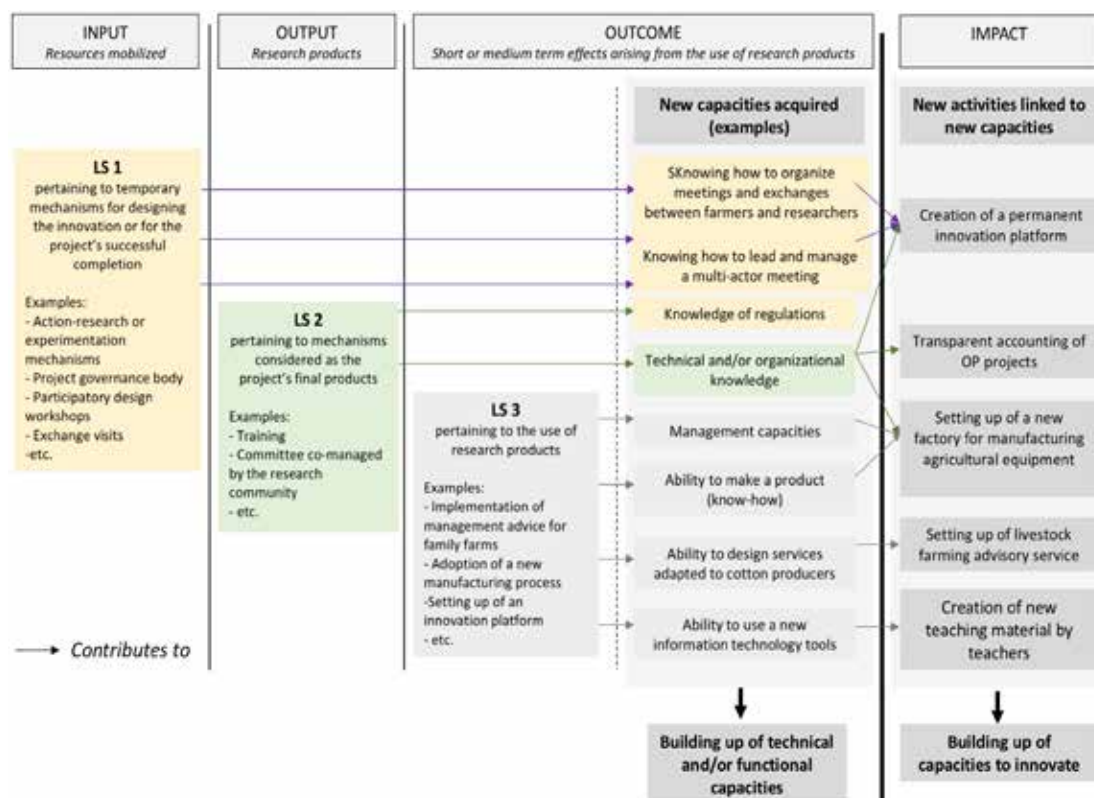


Figure 1: Determining capacity building's contributions to impact by analyzing learning situations

To estimate the degree of capacity building's contribution to impact, one can qualitatively rank the causal links that have been identified by answering the following questions:

Is the capacity built:

1. Neither necessary for the impacts nor sufficient on its own to generate them, but still has a positive effect on them?

If yes, it can be conjectured that the results would have been achieved even if there had been no capacity building. But it has nevertheless led to an acceleration of changes or to an increase in the impact's magnitude.

2. Necessary for the impacts but not sufficient on its own to generate them?

If yes, we can attempt a subjective assessment of the contribution to the obtained results (in %, for example).

3. Sufficient on its own to generate the impacts and producing significant benefits?

If yes, the impacts can be fully attributed to capacity building, i.e. all the changes that have occurred or new activities implemented are due to the mobilization of capacities acquired within the framework of this innovation or the project under consideration.

In order to represent the intensity of capacity building's contribution to impacts, we can score each causal links from 0 to 3 according to the preceding criteria and depict it on a radar showing the main impacts of the project/innovation under consideration or the main impacts expected (for *in itinere* cases) from research conducted at CIRAD (Figure 2).

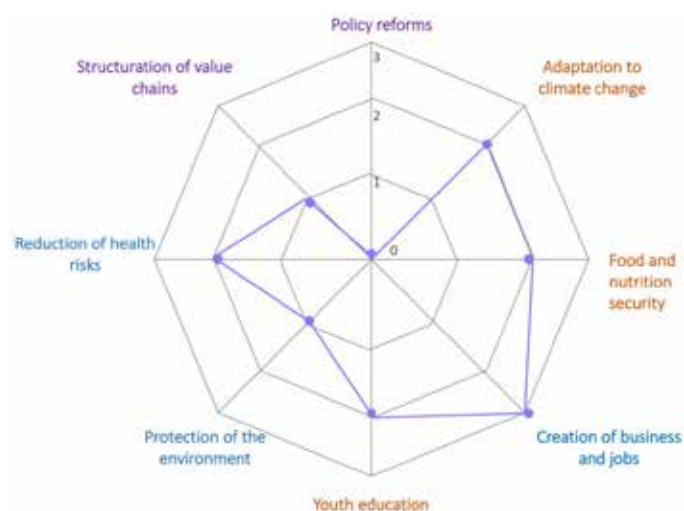


Figure 2: Representation in radar format of capacity building's contribution to impact (0: nil; 1: neither necessary nor sufficient but still improves the impact; 2: necessary but not sufficient; 3: sufficient).

Appendix 4: Example of table of impacts for the case study “Adding value to produce from family farms in Brazil: investigating geographical indications (GI) in Santa Catarina State”

Impacts	Impact level	Indicators
Professionalization and quality improvement, investment in vine and wine management	1	Change in production costs between 2005 and 2015 (since the GI)
		Payment for grape quality
		% of wine producers who changed their wine making practices
		% of producers who changed their agronomic practices (management)
		% of producers who have bought winemaking equipment
		Purchases of inputs (yeasts and enzymes)
		Continued application of a low level of chemical products compared to the cultivation of <i>Vitis vinifera</i>
Improvement in the incomes of Goethe wine and grape producers	1	Change in the selling price of Goethe/Cabernet grapes
		Change in the selling price of Goethe/Cabernet wines
		Change in the selling price of Goethe wines between 2005 and 2015
		% of GI price/Non-GI price
		% of grape producers who have increased their production of Goethe grapes since 2005
		% of producers who increased their wine production (2005–2015). Estimate of average production
		Change in the quantity of wine sold
Development of markets, direct and supermarket sales through wine tourism	1	Change in incomes due to new products
		Change in wine consumption in restaurants
		Change in the diversity of new products being sold
		% of winegrowers selling their products directly
		Development of new distribution channels for local wines
Revaluation of the winegrowing activity in the region	2	Integrating new social and economic activities around wine
		Change in the number of wine producers in the region
		Renewal of the vines
		Change in producers' professional pride
		Signs that local actors are promoting winemaking activity
		The theme of wine features in local photographic competitions and cultural festivals
“Agroconnect” agro-climatic information mechanism (State)	2	New tourist activities (harvest festival, cycle tourism in the vineyards, interactions between promoters of associations)
		Change in the average number of meteorological stations installed in the region
		Visitors to the Agroconnect website for meteorological information (number of visitors to the site and their region of origin)

Annexe 4 (suite)

Capacity building for the technical corps and the universities to assess and promote GI projects	2	Creation of a GI discussion forum in Brazil
		Creation of a GI forum in Santa Catarina State
		Review of the federal legislation on GIs
		Change in number of training courses organized by Epagri in the Urussanga region
		Recognition of Epagri for its expertise in soil climate characterization for GIs
Professionalization of artisanal and colonial producers and increase in their incomes	2	Change in the quality of wines at local competitions
		Number of visitors to the Urussanga wine fair in 2015
		Change in direct sales and in products sold by artisanal producers
Appreciation and conservation of the Goethe variety and GIs	2	New research project on Goethe wine
		Registration in the National Cultivars Registry (RNC) maintained by Brazil's Ministry of Agriculture, Livestock and Food Supply (MAPA)
		Change in sales of plants of the Goethe variety
		Renewal of Goethe vines
		Increase in the number of researchers and technicians involved in the production of Goethe grapes and wines
		Number of scientific articles and press articles on the Goethe variety
		Visibility of the approach for the conservation of the Goethe variety at national and international levels
		Local competitions for Goethe wine
		Recognition of the researchers involved in the Goethe GI project at national level

Appendix 5: Format of the case study report

Title: Case study: ...
Country: ...
Research unit: ...
Case study team (leader, co-leader, junior researcher, intern): ...

Executive summary (2 pages)

This section will be drafted after the case study is written. We will specify the elements to highlight later.

1. Presentation of the case (6–11 pages)

• Contexts (of the development of the research problem (0.5 page) and general context of the case (1–2 pages))

– In a short introductory section, describe the context that preceded the research work studied in this case and the reasons that initially led to the decision to work on this research problem in order to develop this/these innovation[s].

– Then describe (2 pages) the general context at the country or regional level (climate, infrastructure, issues, development challenges, public and private actors concerned), referring to the evolution of this context between the start date of the innovation and the present day. Note that the detailed “public policy” elements are reserved for part 5.

• Establishing the scope of the case study (2 pages)

Brief presentation of the innovation studied (note that the narrative of the innovation is covered later, in part 3):

- What innovation[s] is/are being studied? Which are the projects considered important for the case?*
- Start date and (if possible) end date of the history of innovation.*
- Geographic space/location.*
- First hypothesis of impacts: insert here the first impact pathway drawn up at the “école-chercheur.”*

• Summary of the adaptation of the ImpresS protocol for the study

Include the summary table with several columns: [1] tools proposed in the ImpresS v3 method, [2] tools actually used, and [3] explanations/justifications.

. Study conducted over which period?

. Who did what? Role of the different members of the case team.

. What data and information collection tools (gray literature; participatory workshops, specify the type of participating actors; interviews, specify the categories of actors interviewed; focus groups, specify the categories of actors who participated in the different focus groups; surveys, specify the type of actors surveyed, etc.) were mobilized to document what (narrative of the innovation, learning situations, impacts, etc.)? Specify the type of actors (refer to the appendix on the reports, list of people interviewed, met or who participated in the workshops focus groups).

. Explain briefly the reasons for deviations from the ImpresS methodological guide on ex post evaluation (another part, below, is dedicated to this topic).

2. The narrative of the innovation (10–16 pages)

• Chronological narrative of the innovation

- First, present the process of constructing the narrative: from the first narrative drafted during the preparatory phase to the final narrative validated by the actors (1 to 2 pages);
- the final narrative of the innovation (6 to 8 pages);
- the chronology (graphical representation of the narrative and legend) (see the ImpresS methodological guide on ex post evaluation);
- the mapping of actors (3–6 pages):
 - . present the mapping of the actors: diagrams + explanations/justifications of the choices made;
 - . explain the role of the innovation's major actors, influential actors and impacted actors (the "actors" tables should be included in the appendix to this report).

• Impact pathway (6–10 pages)

- First, introduce the process of constructing the impact pathway (starting from your initial hypothesis, how did you proceed to collect Inputs-Outputs-Outcomes-Impacts elements, how did you analyze them and draw up the impact pathway and establish causal links; mention the difficulties encountered and share any doubts that remain). It is allowed to include zoomed-in views of some parts of the impact pathway. At this point, who has validated this impact pathway? (1 page)
- For in itinere cases, distinguish what is already in the past from what is expected or forecast.
- Diagram of the impact pathway and different zoomed-in views of the impact pathway, if you think necessary.
- Text explaining the content of the diagrams (in particular, possible differences between or specificities of points of view of the various actors).

• Research inputs

Description of research inputs. If you have any relevant information on how they led to the outputs, you can include them here.

Insert the inputs table.

• Going from outputs to outcomes

Description of outputs and outcomes.

Specify the research contribution (in relation/contrast to the other identified contributors) in the transition from the outputs to the outcomes (estimate the importance of external elements or other projects in comparison with the importance of the research contribution).

Insert the table of outputs and outcomes.

• Going from outcomes to impacts (1st and 2nd levels)

Present the hypotheses for the transition from outcomes to 1st level impacts, and from 1st level impacts to 2nd level impacts (the measurement of impacts is presented below).

Specify the research contribution (in relation/contrast to the other identified contributors) in the transition from the outcomes to the impacts (estimate the importance of external elements or other projects in comparison with the importance of the research contribution).

For in itinere cases, mention here the expected impacts (the scenarios are to be presented in part 6).

3. Capacity building (2–5 pages)

For this part, refer to the section on capacity building in the ImpresS methodological guide for ex post evaluation.

- **Presentation of identified learning situations**

Define and characterize them.

Table characterizing learning situations.

Impact pathway of the capacity building.

4. Measurement of impacts (6–12 pages)

Summary table of identified impacts, indicators and sources used to inform them. If you have made a hierarchy of impacts amongst themselves, you can include it in the introduction.

For in itinere cases, present the exploratory work undertaken on the scenarios envisaged to go from the outcomes (those already observed and those expected) towards the expected impacts and the elements of the context or of other projects that could influence this process.

- **1st level impacts**

Trace the path of the measurement of each impact through the associated indicators and present the results of the data collection. For each impact, mention the sources of data (there may be more than one) and aggregate data for each indicator. Also estimate the reliability that you assign to these data on the basis of the quality of their collection, and their representativeness (according to the geographical zones or the types of actors impacted). It is important to assign values to all your indicators as far as possible. If you have been unable to do so via interviews, statistics data, or focus groups, suggest a value (or a value range), clearly indicating that it is an expert estimation (you + the team).

- **2nd level impacts**

The same as for 1st level impacts: describe the 2nd level impacts identified and indicate whether you have been able to collect data to inform them.

5. Transversal theme: evaluation of the impact on public policies

Explain the approach and present the results.

6. Other themes possibly studied during this study

Explain the approach and present the results.

7. Feedback (4–8 pages)

- **On the ImpresS evaluation method (2–4 pages)**

– *The tools that were found to be most suitable.*

– *Tools that were less suited to your case/field/resources, and an explanation of why you think so.*

– *Difficulties in applying the method and/or in using the tools and why; the consequences for the impact evaluation and, if applicable, the ways in which you overcame them.*

– *The functioning of the case team.*

– *Suggestions to improve the method or tools.*

- **Your recommendations for conducting similar innovation projects or for the remainder of the project (2-4 pages)**

- *Recommendations for the continuation of the project if it is still ongoing. For itinere cases, these recommendations are obligatory.*

- *Recommendations for conducting research and innovation projects of the same type.*

Bibliography

List of the main documents and sources used for this case study. Do not forget to include the reports consulted, including administrative reports (gray literature).



<https://impress-impact-recherche.cirad.fr/>