

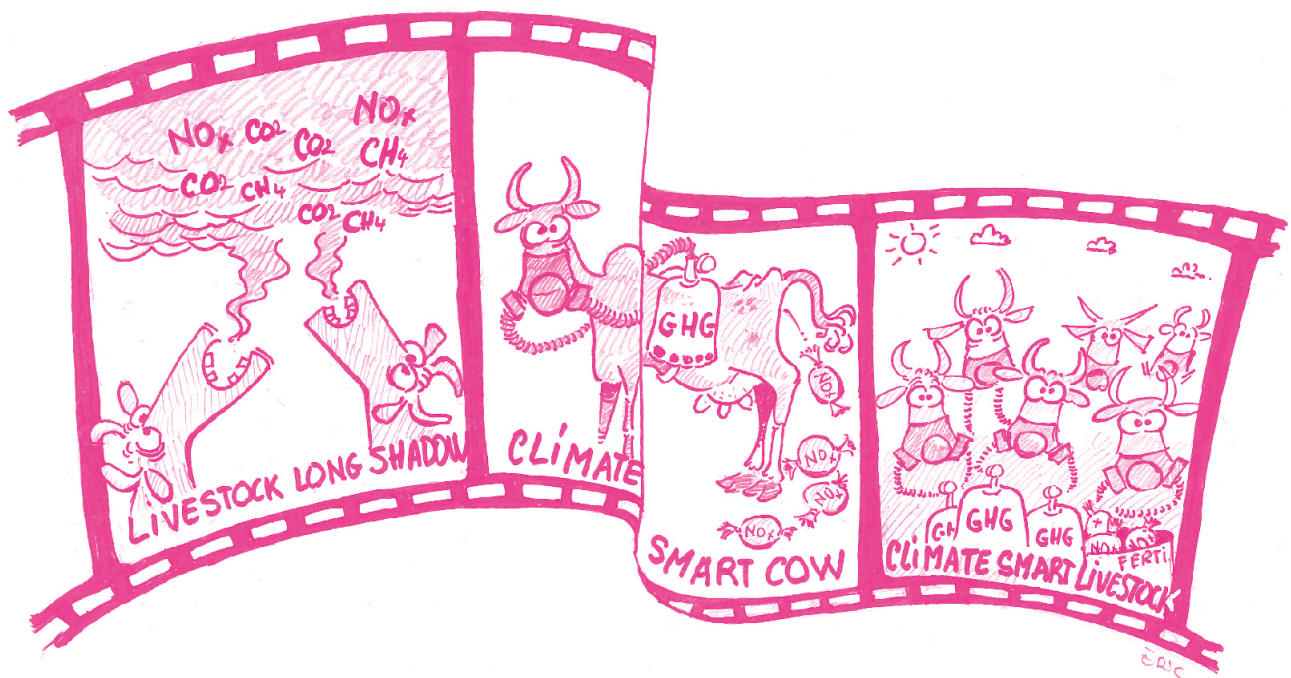
IMPRESS *EX ANTE*

AN APPROACH FOR BUILDING *EX ANTE* IMPACT PATHWAYS IN DEVELOPMENT- ORIENTED RESEARCH

ImpresS *ex ante* Methodological Guide (Second version)

Authors of the ImpresS team involved in drawing up and editing
this Guide: Genowefa Blundo Canto and Aurelle de Romémont

Hainzelin E. • Faure G. • Monier C. • Triomphe B. • Barret D. • Vall E. (illustrations)



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ISBN: 978-2-87614-767-6
EAN: 9782876147676
<https://doi.org/10.19182/agritrop/00147>

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To cite this document

Blundo Canto G. and de Romémont A., Hainzelin E., Faure G., Monier C., Triomphe B., Barret D., Vall E. (illus), 2020. ImpresS ex ante methodological guide to *ex ante* co-construction of development-oriented research impact pathways (second version) Montpellier, France; CIRAD, 74 p. ISBN: 978-2-87614-767-6. EAN: 9782876147676.
<https://doi.org/10.19182/agritrop/00147>

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Things you always wanted to know about the ImpresS *ex ante* approach (FAQ/frequently asked questions)

1. ImpresS *ex ante* is not for me—I'm a researcher...

Both laboratory and field research lead to the production of outputs (knowledge, methods, processes, training, expertises, technologies, networks, etc.) to benefit other actors (including researchers, public stakeholders and farmers). In these different contexts, the ImpresS *ex ante* approach is useful to share a common reflective posture (**Chapter 1**), analyze the intervention context, and the actors who could be targeted, while involving them from the outset in formulating the intervention so as to jointly identify existing opportunities and issues and develop an intervention that addresses existing demands.

2. ImpresS *ex ante* is only useful to build a project ...

ImpresS *ex ante* is useful for designing both projects and other types of interventions that could benefit from strategic planning developed from a reflection on targeted impacts. The approach has been successfully applied in CIRAD initiatives such as Partnerships for Research and Training (CIRAD dPs), and agricultural value chains (**Chapter 6.2**)

3. Getting involved in this is time-consuming and extra work...

It does take time to implement the ImpresS *ex ante* approach just like any participatory, iterative or intervention-based process. However, investing time prior to the intervention to elucidate and collectively define the targeted impacts, the proposed pathway to generate them, and the intervention design will likely save time later on in implementing and setting up a monitoring and evaluation system that will allow managing the intervention in an adaptive way (**Chapter 5.3**). Furthermore, time spent elucidating and clarifying the expected outcomes and impacts of the planned activities, in terms of capacity building, appropriation of outputs by the actors involved, quality of the relationship between operators, etc., is useful to enhance the overall process and save time later on for other activities. Finally, the approach is adaptive and can be tailored to the available timeframe (**Chapter 6.1**).

4. I may only do this for the donor's sake, to be able to insert a nice diagram in the impact section of a project proposal...

If the aim of mobilizing the approach is largely geared towards addressing a donor and displaying a nice diagram, there is no point in mobilizing people through an *ex ante* ImpresS approach to that end. Yet, the benefits listed in points 2 and 3 above may add relevance to the approach and bring real added value to your proposal and be appreciated by a donor. The approach aims to enhance the plausibility of the intervention, encourage learning (especially collective learning), develop or strengthen the partnership, and question conventional wisdom.

5. My work packages are already set, I don't see why and how I could be concerned...

The ImpresS *ex ante* approach is ideally implemented from the outset of the reflection to structure an intervention. Yet, the approach is adaptive and can be mobilized at different intervention stages (from the idea of the intervention to a well-structured intervention) (**Chapter 5.2.2**). The intervention impact pathway can be reconstructed subsequent to the reflection on the work packages. In such

case, mobilization of the approach may hamper a throughout exploration of what is possible, but it will enable critical review of the overall logic, improve the consistency between the inputs and strategies in line with the objectives, and facilitate the identification of overlooked dimensions or obstacles.

6. I am already using a logical framework approach and that's sufficient...

The *ex ante* ImpresS approach facilitates formulation of the intervention logic, which can then be translated into various project management and formalization tools, such as logical framework and concept notes (**Chapter 5**). ImpresS *ex ante* may therefore complement existing project management tools while helping guide the intervention management. It represents more of a process than a specific stage or output.

7. I want to use ImpresS *ex ante* for an *ex ante* impact assessment...

The ImpresS *ex ante* approach is not an *ex ante* assessment method to estimate quantitatively potential impacts. It is an approach to co-construct an intervention logic based on the targeted impacts, using a systemic analysis of the intervention context.

8. ImpresS *ex ante* and foresight—it's the same thing...

Anticipation approaches, such as the participatory co-elaborative scenario building approach (CSB) developed at CIRAD, are not the same as the ImpresS *ex ante* approach. Anticipation approaches explore the future to shed light on the present situation, whereas ImpresS *ex ante* enables strategic intervention planning based on a vision of the targeted future as an objective. Yet, these two approaches are very complementary, and methodological research is underway to test their possible linkages (**Box 2**).

Glossary

Actor – An individual, a group of individuals, an institution or an organization. The ImpresS *ex ante* approach distinguishes between three categories of actors: actors who have a major role in the intervention process, actors who intentionally or unintentionally influence the intervention without being actors directly involved in the intervention process, and actors who are positively or negatively impacted by the intervention. Impacted actors can be major actors (involved in the intervention) or not (impacted without having been involved).

Ambition scope – Expected final influence generated directly through the intervention, which is bounded by the outcomes that the intervention team aims to generate and upon which it believes it will have sufficient leverage and influence.

Ex ante, in itinere, ex post – An impact pathway (or *ex ante* reflection on impacts) is formulated during the intervention development and planning phase. It is not an *ex ante* evaluation of the intervention impacts. Rather, it deals with building the architecture of an intervention based on the formulation of the impacts that it aims to contribute. An *in itinere* evaluation is carried out while the intervention is underway, and can be included in the monitoring and evaluation system or conducted on an ad hoc basis. An *ex post* evaluation is conducted after completion of the intervention whose impacts are to be analyzed. The time-frame for characterizing and measuring the *ex post* impacts varies. However, it is often necessary to wait for a few years following completion of an intervention before assessing the long-lasting impacts.

Impact – The long-term effects—positive and negative, intentional and unintentional, direct and indirect—to which changes in practices, behaviors, interactions (outcomes) generated by an intervention contribute. Impacts are what remains after an intervention is completed. Impacts may be of different types: economic, social, environmental, political, health-related, territorial, etc.

It should be noted that the interpretation of input, output, outcome and impact concepts differ across disciplines, authors and institutions. Outcomes may be split into ‘intermediate outcomes’ and ‘long-term outcomes’, and bundled sometimes with the impacts. Moreover, it is not always easy to distinguish between outcomes and impacts because an impact observed by one actor can become an outcome that will generate an impact for another actor interacting with the first one. This definition is not normative but must be interpreted and adapted by the team defining the intervention in order to be able to discuss and agree on the intervention goal, and the transition from outcomes to impacts. It is important for an intervention team of work on the choice of common definitions, to create **a shared vision and language**, and subsequently tailor and translate them into the definitions used by other actors if necessary.

Impact pathway – The description of the logic underlying an intervention. It highlights causal links between resources mobilized by the intervention (inputs), the intervention’s products (outputs), the changes in the actors associated with the adoption of these outputs (desirable changes or outcomes) and the impacts to which these outcomes contribute. Thus, **it outlines a theory of why and how the intervention will contribute to the outcomes and impacts, for whom, and in what context** (theory of change).

Indicator – A quantitative or qualitative summary information that characterizes a resource or process and its patterns.

Input/resource – All the resources and means (e.g. human and material resources, research budget, information, tacit and/or prior knowledge, technologies, products or processes existing prior to the intervention) that enable to undertake an intervention and thereby generate research outputs.

Intervention – A set of actions structured around a common objective or intention. An intervention can be developed for different types of actions and at different scales: a project, program, network or partnership platform, project cluster, etc. The ImpresS *ex ante* approach is therefore applicable at different levels and for various subjects to design research or development-oriented research interventions. The term is increasingly used in project management and evaluation sectors (see, for instance, the revised OECD/DAC evaluation criteria: <https://www.oecd.org/dac/evaluation/revised-evaluation-criteria-dec-2019.pdf>).

Intervention ecosystem – All past, current or known future interventions linked to the proposed intervention or to its central issue.

Intervention narrative – A hypothetical narrative of an intervention shared by the major actors. It takes the prevailing situation into account and presents the strategic choices made by the intervention team to outline the central issue, scope, actors and impact pathway of the intervention.

Outcome/desirable change – All changes in practices, behaviors and/or interactions targeted by an intervention and resulting from the appropriation (i.e. use, adaptation, transformation) of an intervention's output by actors. A distinction is made between **final outcomes**, targeting changes in practices, behaviors and interactions, and **intermediate outcomes**, targeting changes in knowledge, capacities and motivations necessary to generate the final outcomes.

Output/product – All products generated by an intervention, including scientific or non-scientific knowledge (including publication, report, database, etc.), methods, processes, professional or academic training, expertise, technology, networks, etc.

Plausibility – The plausibility of an intervention impact pathway is hinged on the relevance and soundness of the proposed actions in relation to the hypotheses put forward and the collective knowledge of the intervention context. The plausibility of the proposed impact pathway is strengthened by the collective elucidation of these hypotheses, striving to avoid 'miracle hypotheses', as well as by the elucidation of the processes and causal links to generate the desirable outcomes.

Strategy – A set of coordinated resources and actions to overcome obstacles and/or leverage opportunities in a systemic way to achieve a goal. Based on hypotheses on how a change is generated and taking existing obstacles and opportunities into account, the intervention team draws up plausible strategies to elucidate the causal links between the different elements of the impact pathway.

Vision of the future – This corresponds to the collective formulation of the "ideal" future situation to which the intervention aims to contribute in the medium term (+10 years)—its overall objective. This projection into the future gives an overall direction to the intervention. Note though that this future situation cannot be achieved solely through this particular intervention, as it is beyond its scope of influence.

Zones of control, influence and interest – The reflection undertaken through the ImpresS *ex ante* approach prompts the intervention team to define its ambition by explaining the extent to which the given intervention will have: (1) **a high level of control** (especially over the elaboration of outputs), (2) no direct control but a **possible influence** on outcomes/desirable changes, and for which it could be responsible/liable by the end of the intervention, and (3) little control and/or influence, which includes the societal and environmental medium and long-term impacts to which the intervention **aims to contribute and has an interest**. These zones can evolve between the beginning and the end of the intervention formulation process and throughout the negotiations and deliberations among members of the intervention team, for defining the zone of influence, and therefore the ambition line that separates it from the zone of interest. Intervention strategies can be geared towards increasing the zone of influence, though for instance involving new actors who could enhance the influence of the intervention, and thus increase the plausibility of the outcomes.

Foreword

This guide is the second version of the ImpresS *ex ante* Methodological Guide that formalizes a reflection process that has been ongoing in CIRAD for several years on the building of *ex ante* impact pathways for research for development interventions¹. This guide is useful for researchers, project building support teams, and partners involved in development-oriented research when building their interventions with and for a range of different actors, while focusing on the desirable changes that they aim to generate, for whom and how.

The Guide outlines—in a pedagogical way—the four stages of the approach, which design can be adapted to address a large variety of situations and contexts:

1. **Building the intervention narrative** based on a collective vision;
2. **Mapping the desirable changes (outcomes) and building the intervention strategy.** This step involves identifying the outcomes that the intervention aims to generate and the underlying hypotheses on the strategies and mechanisms that could generate these changes (with special attention on capacity building and interactions with public stakeholders);
3. **Consolidating the impact pathway** or the intervention logic;
4. **Translating the shared vision** and impact pathway into **different outputs** addressing different objectives: a finalized narrative, an intervention architecture, an outcome-oriented monitoring and evaluation system for adaptive management, and/or new research questions.

Throughout the Guide, boxes describe the key concepts. Tools are also proposed to facilitate implementation of the approach (note that methodological experimentation is ongoing to assess different tools and to supplement this Guide). The approach involves frequent iteration loops between the different stages and tools: reflection at a given stage can prompt changes in what was proposed in a previous stage—potential iterations between the different stages are indicated along the text.

The **ImpresS *ex ante* approach is not a ready-made recipe** but it helps set in motion a structured reflection process within a team. It can be tailored to all intervention needs, according to their objectives and the types of interaction and participation planned with and for the actors. Last, this is not a mandatory approach.

Acknowledgements

The editorial team would like to sincerely thank the following people for their contributions to the design, writing and proofreading of this second version of the ImpresS *ex ante* Methodological Guide: Sélim Louafi, Damien Conaré and Sylvain Perret, as well as the ImpresS methodological committee for their constructive contributions towards improving the approach and its description.

1 Blundo Canto G., Barret D., Faure G., Hainzelin E., Monier C., Triomphe B., Vall E. (illus.), 2018. ImpresS *ex ante*. Une proposition de démarche pour construire ex ante les chemins de l'impact. Montpellier, France: CIRAD, 64 p. ISBN : 978-2-87614-734-8. <https://doi.org/10.19182/agritrop/00010>

Chapter 1. ImpresS *ex ante*: objectives, principles and stages of a participative, iterative and adaptive approach

Introduction

Research is increasingly called upon to evidence the impacts it contributes to generate. This does not simply imply filling in the 'impact' section of a proposal or tender. Instead, it is meant to enhance the design, rationale, and positioning of interventions to which research contributes in relation to their capacity to meet societal and environmental needs. Their potential positive and negative impacts must therefore be examined as early as during the intervention formulation.

CIRAD's history along with the recent institutional will to develop an 'impact culture' has fueled this questioning. Within a research institution, this impact culture—which reflects at both individual and collective levels—is based on a greater understanding (or even questioning) of the role of the scientific community and its contribution to long-term impacts. It materialized in equipping members of the organization with adequate tools to gain insights into and improve this contribution, while implementing strategies to enable this culture to flourish [Blundo *et al.*, 2018]. This reflection enables to better meet individual and organizational responsibility of research to contribute to societal impacts [Von Schomberg, R., 2013]. To this end, since 2013, CIRAD has opted to “steer research beyond impact promises” [Hainzelin *et al.*, 2017] so as to develop an **impact culture** within the institution, and involving its partners. This initiative translated first into the development of an *ex post* impact evaluation method called ImpresS *ex post* (IMPact of REsearch in the South), which allows to retrospectively assess the contribution of research to societal impacts in long-term innovation processes [Barret *et al.*, 2017].

CIRAD has capitalized on ImpresS *ex post* experience [Faure *et al.*, 2018; Temple *et al.*, 2018; Faure *et al.*, 2020] and developed the structured **ImpresS *ex ante* approach**: a tool for elucidating a **collective and shared vision** of an intervention logic through the construction of an **impact pathway** underpinned by a **theory of change**². The approach is inspired by different theoretical frameworks: action research in partnership [Faure *et al.*, 2010], participatory impact pathway analysis [Douthwaite *et al.*, 2007], outcome mapping [Earl *et al.*, 2001], theory of change [Alvarez *et al.*, 2014; Mayne, 2015], logic models and 'program theory' [Funnel & Rogers, 2011; Weiss, 1995], and stakeholder power and network analysis [Mayers, 2005; Schiffer & Hauck, 2010]. Conceptually, it is close to 'system thinking' and complexity theories [SETIG, 2018].

The **impact pathway** is **pivotal** to the ImpresS *ex ante* approach. It describes the **logic of an intervention by elucidating the causal relationships** between the inputs mobilized, the outputs produced by the intervention, the desirable changes (outcomes) that the intervention aims to generate as a result of the appropriation of these outputs by different actors, and the societal and environmental impacts to which these outcomes contribute. The ImpresS *ex ante* approach is actor-centered, i.e. it focuses on changes in

² The theory of change underpinning the impact pathway elucidates hypotheses on the causal links between elements of the impact pathway (inputs, outputs, desirable changes and impacts) and the role of contextual factors. The two definitions are often used in complementary ways.

practices, behaviors and interactions for specific actors that the intervention aims to generate through the appropriation (use, adaptation, transformation) of its outputs. Prior analysis of the potential obstacles and opportunities to appropriation, and the skills, motivations and knowledge required for this appropriation helps build sound systemic intervention strategies with more plausible impacts. Moreover, the construction of an impact pathway can be a keystone to facilitate a deliberation and negotiation process, thereby helping elucidate the implicit positions and hypotheses borne by each individual and/or institution in the team formulating the intervention. Ideally, this construction and elucidation is undertaken during the intervention design or inception phase (prior to its implementation) with the actors that could potentially be involved (e.g. researchers, private and public development actors, civil society).

Ultimately, the **participatory building process is the key result of the approach, where different views are exchanged, and where the focus of the reflection is on the role of different actors and on the outcomes the intervention aims to generate**, while explaining the logic that would lead to these outcomes, for whom and why.

The ImpresS *ex ante* approach can be implemented in a complementary way with other participatory approaches such as ComMOD approaches and tools, which enable the co-construction of collective visions of complex or wicked problems (Daré *et al.*, 2009; Etienne *et al.*, 2014), or anticipation approaches for co-elaborative scenario building (Bourgeois *et al.*, 2017; Miller, Poli & Rossel, 2018).

A serie of workshops was conducted to develop the ImpresS *ex ante* approach with CIRAD researchers and partners, including an “école-chercheur” held in June 2017 where nine project teams tested the first version of the approach. Several training sessions were also organized in 2018 and 2019 (looking a but like project incubator training). The implementation of the approach has been tested at different scales on various topics, scales, as well as for formulating strategies for partnership platforms (dP), dP clusters, and value chain roadmaps (palm oil, dessert banana, plantain, cocoa, etc.). This experimentation time helped refine the approach and led to the production of this second version of the ImpresS *ex ante* Guide.

The ImpresS *ex ante* approach is fully embedded into what is the ambition of establishing a **culture of impact** at CIRAD. This culture is nourished by interdisciplinary dialogue and exchange on visions, interactions, and practices, by the formalization of these practices in the organization’s strategy, the diversity of the different agents’ profiles, and by the support for this culture of impact through various resources (human, financial, etc.) at different levels of the institution (Blundo *et al.*, 2018). The culture of impact is therefore embodied in learning, research practices, and capitalization of collective experiences. The ultimate aim is to boost the capacity of research-driven interventions to generate long-term impacts.

Objectives of the approach

The ImpresS *ex ante* approach can be used to meet different objectives:

- (1) supporting the **building of projects/programs** by supporting the formalization of their logic, architecture, and plausibility via shared visions of change leading to their appropriation;
- (2) defining the objectives and the **strategy** of interventions such as partnership platforms, networks, or value chains, **beyond the ‘project’ framework and timeframe**;
- (3) facilitating the design of **‘outcome-oriented’ monitoring and evaluation systems**³, thereby facilitating adaptive intervention management in complex settings, fostering learning and reflexivity, and capitalizing on lessons learned.

It can also give rise to **new research questions** by helping to identify knowledge gaps on the plausibility of some of hypotheses of change, or on the approaches, methods and tools used.

The ImpresS *ex ante* approach helps make strategic choices and collectively develop the intervention **strategic planning and implementation** through a participatory intervention design process. It facilitates

³ The French term ‘systèmes de suivi-évaluation orienté changement’ was borrowed from the French Fonds pour Évaluer, Échanger et Éclairer (F3E), which has worked on outcome-oriented approaches and monitoring-evaluation systems in the framework of the PRISME program (https://f3e.asso.fr/wp-content/uploads/F3E_-AOC-%E2%80%93-Suivi-e%CC%81valuation.pdf). It is close to English Participatory Monitoring, Evaluation and Learning (PMEL) approaches that are focused on participation and learning through a monitoring and evaluation process.

the explicitation of strategies through which a team intends to contribute to specific impacts and why, and identification of the changes in practices, behaviors, and interactions needed on different actors to contribute to those impacts. This supposes to, at individual and collective levels, know or explore the context and system in order to identify potential outcomes (desirable changes) and the hypotheses underlying the emergence of these outcomes. It is essential to involve, as much as it is possible, key actors (or resource people) in this reflection so as to increase the plausibility of the hypotheses while also fostering the appropriation of the intervention logic through a participatory collective building process.

This structured reflection to build a shared vision of the desirable outcomes, through collective negotiation and elucidation among the different actors also feeds **a collective reflection on the role and legitimacy of the different actors** (including research) in the emergence of societal impacts, including their respective contributions and modes of collaboration.

Furthermore, the approach aims to support researchers **better communicate** on their interventions and their plausibility. It also helps provide a more convincing response to calls for proposals from donors, particularly on the issue of contribution to impacts, which has become a discriminating evaluation criterion. It facilitates the development of a rigorous and substantiated discourse on the impact of development-oriented research interventions for civil society, policy actors and partners, in a prospective manner (*ex ante*), by replacing the intervention within longer trajectories contributing to the same change process.

Finally, the ImpresS *ex ante* approach is not normative—it is meant to be **flexible and adaptive** to enable users to tailor it to their objectives, resources, timeframe, and expectations. The products of the approach are ‘convertible’ into different languages and tools (e.g. concept notes, logical frameworks, monitoring and evaluation systems, action plans) depending on the target audience (producers, donors, researchers, public stakeholders, NGOs), and the level and scope of the selected intervention.

The posture

The ImpresS *ex ante* approach relies on ethics and values that facilitate dialogue and the construction of a shared vision of an intervention logic. These choices are based on:

- **Actor participation** in the intervention formulation by sharing different viewpoints to build a common vision, enhance the plausibility of an intervention and promote its appropriation by members of the collective (rather than a remote and unexplained desk-based formulation) (see last paragraph of this chapter);
- **The analysis of the roles, interactions, and power relations** between the key actors that could influence the desirable outcomes;
- **Questioning the postures and practices of the actors** involved in an intervention at research and development levels, their role and legitimacy, as well as on the partnerships to be built/strengthened, to ensure this legitimacy and/or to have greater impact. This questioning aims to highlight the diversity of skills and postures necessary for the implementation of an intervention geared towards addressing complex societal issues.

Ex ante reflection is ideally undertaken in the framework of a **participatory** process involving the core actors of the intervention. The approach should be considered as a **medium-term iterative dialogue process** to explain and elucidate the collective’s shared vision of an intervention, strategy, or research issue. This reflection process helps formulate and periodically review an initial theory of change for subsequent use as a participatory monitoring and evaluation tool (**Chapter 5.3**).

This work can be initiated and carried out by a small, sound, and stable core team for the formulation/design of the intervention, and can gradually be extended to wider circles of major partners/actors, while taking their postures, interests, and potential existing power games into account. Note that this construction does not necessarily achieve the representativeness of all viewpoints or actors in a given context but it strives to represent a shared vision of the intervention logic by the actors who built it.

In practice, it is rare for partners to have sufficient resources to implement this participatory process in a way that ensures optimal participation of all actors from the outset of the reflection, as the approach is often implemented prior to the project launch when project funding is not yet available. Yet, the approach

can be still be implemented prior to submitting a funding proposal. It may be initiated remotely. Participatory activities can then be organized for tailoring the formulation to the intervention objectives when launched, so as to involve the actors and foster their appropriation of this intervention logic.

Core principles

The ImpresS *ex ante* approach is based on three core principles:

- **Elucidation of desirable changes in practices, behaviors and interactions** (outcomes) resulting from the actors' appropriation (use, transformation, adaptation) of the intervention outputs, **and of the ways the intervention intends to generate these outcomes along an impact pathway**;
- Reflection on the impacts beyond the scope of an isolated intervention, to consider the "ecosystem" to which the intervention belongs as well as the trajectory (past and future) that will contribute to these impacts in the **long term**;
- Elucidation of the **intervention narrative**, describing an *ex ante* hypothetical but plausible impact pathway underpinning the intervention logic. These plausible impact pathways will gradually be adjusted and transformed during the intervention implementation phase into actual pathways, documented through a monitoring and evaluation system oriented towards the follow up of intervention outcomes. The impact pathway is in this case used for adaptive management of the intervention.

ImpresS *ex ante* approach: a four-stages process

In accordance with the core principles stated above, the ImpresS *ex ante* approach proposes a structured iterative four-stages reflection process (see Figure 1: Stages of the ImpresS *ex ante* approach):

- 1) **Building a shared vision of the intervention narrative (Chapter 2)**;
- 2) **Mapping the desirable outcomes and building the intervention strategy**. This stage identifies the outcomes that the intervention aims to achieve and the hypotheses underpinning the generation of these outcomes. This includes a special focus on capacity building and on interactions with public stakeholders) **(Chapter 3)**;
- 3) **Consolidating the intervention impact pathway or logic (Chapter 4)**;
- 4) **Translating the impact pathway** into the adequate tools and languages to fulfill the objective of the exercise. This can be a finalized narrative, an intervention architecture, a roadmap, or an outcome-oriented monitoring and evaluation system (to enable adaptive management of the intervention, address reporting needs, and even answer research questions related to the hypotheses tested in the intervention) **(Chapter 5)**.

This process is iterative (not linear) and the following diagram should help guide readers through each stage:

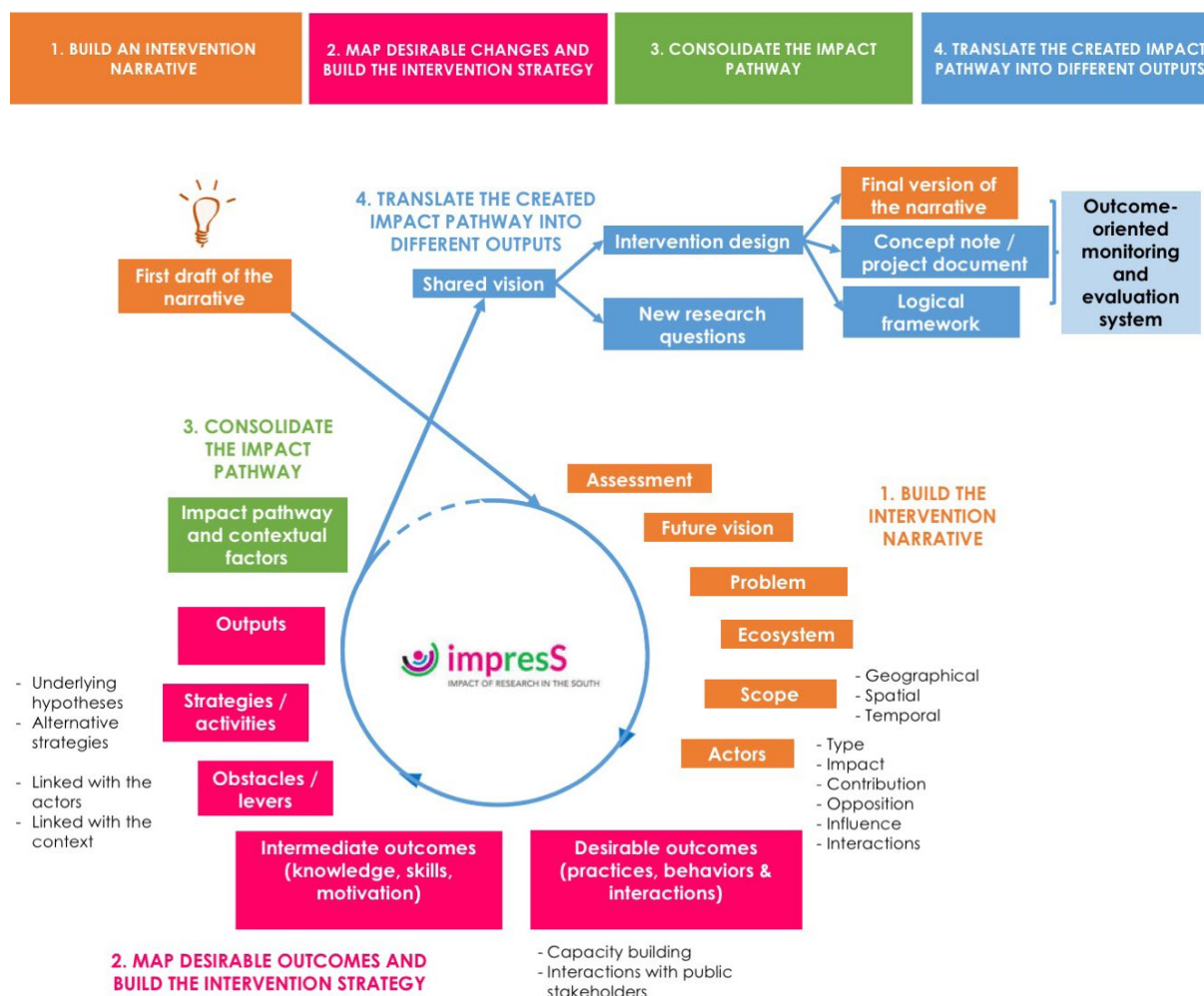


Figure 1: The four stages of the ImpresS *ex ante* approach

Impact pathway concept

The approach uses the **impact pathway** concept to characterize the intervention logic and articulate the causal links and their visual representations. According to Douthwaite *et al.* (2007), we assimilate the impact pathway concept to the ‘theory of change’ concept, where the impact pathway is a visualization of the corresponding theory of change⁴. This theory specifies the hypotheses underlying the causal links in the impact pathway and the role of contextual factors [Chapter 4].

An impact pathway (Figure 2) represents: (i) the inputs mobilized, (ii) the intervention outputs, (iii) the desirable outcomes, including changes in practices, behavior and interactions, and finally (iii) the impacts, i.e. positive or negative effects of this appropriation on communities and the environment. It also highlights the causal links between these different elements by explaining the hypotheses on the ways outcomes are generated and upon which the strategies for generating them are based.

⁴ As defined by Funnel & Rogers (2011), program theory (which can refer to a project, program, strategy, initiative or policy) consists of a theory of change and a theory of action. The theory of change elucidates the change processes sought for individuals, groups and communities, while the theory of action explains how an intervention is constructed to elicit these changes.

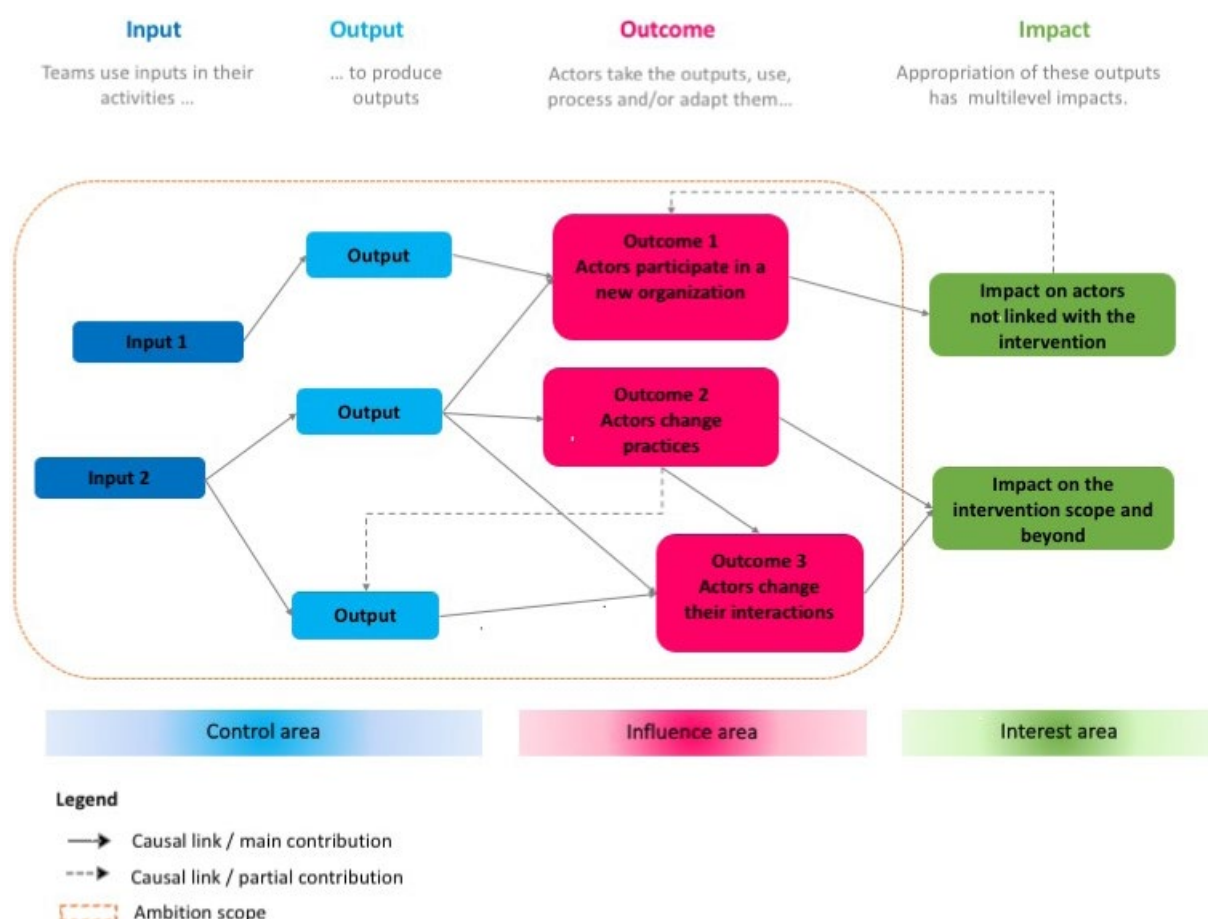


Figure 2: Generic description of an impact pathway

This elucidation highlights the intervention logic: **who will do what differently at the end of the intervention and why?** What will be the consequences for the actors involved and others? Why and how should the planned actions lead to the desirable outcomes? What obstacles will the intervention overcome? What existing opportunities are to be seized to achieve these outcomes?

This reflection leads the team formulating the intervention to define and negotiate the intervention ambitions (see Figure 13: Mapping the outcomes of the CerealSecure project, and **Chapter 3.6**), while also outlining the strategies by identifying over what the intervention will have substantial control (outputs), the changes upon which it will not have direct control but an influence (outcomes), and the societal and environmental effects to which it aims to contribute, without having direct control or influence (medium and long-term impacts).

Causal hypotheses

The ImpresS *ex ante* approach aims to **elucidate the hypotheses** underlying the causal chain represented by the impact pathway. This involves to collectively discuss the causal links, and the choice and plausibility of the defined causal hypotheses, which indicate why and under what conditions the different relationships of the impact pathway will supposedly lead to the desirable changes.

This involves answering the following questions (Mayne, 2015; 2017):

- What **events and conditions** are required for each link in the causal chain to work as intended?
- What **factors are critical** to this causal process?

This work is iterative throughout the formulation of the theory of change, which may evolve over time. Indeed, the participation of different partners and types of actors in its formulation may elucidate or offer

new viewpoints on some of the hypotheses and their plausibility. Following the analysis of causal links, the monitoring and evaluation system may be implemented to test the plausibility of the underlying hypotheses and to adapt the theory of change accordingly (adaptive management).

Elucidating these hypotheses and their plausibility also helps identify potential intervention risks if the changes are not those intended. In presence of a great deal of uncertainty about how the outcomes are generated and could be influenced by the context, it is essential to have a reflexive and adaptive monitoring and evaluation system to assess the validity of the hypotheses over time.

Minimum conditions to apply the *ex ante* approach and possible adaptations

The approach is not mandatory nor imposed. It relies on co-construction and reflexivity. It would also be counterproductive to apply it in a mechanistic way in the aim of having a ‘nice-looking’ impact pathway to please a donor or partner. The participatory building process and elucidation of different viewpoints and postures (particularly on the underlying hypotheses) is key to foster appropriation of the approach and the collective vision by a team. **This common vision is often the most important result of the process.**

Regardless of the purpose of carrying out this exercise, formulating an intervention necessitates a number of minimum conditions to ensure the quality and success of the process and its appropriation by the actors:

- The presence of a **committed leader**: the core of the approach being a collective reflection and elucidation process, changes in the leading position and lack of consistency in the group composition during the formulation process may disrupt the co-constructed logic and vision. Building a common vision without the leader/facilitator/coordinator of the intervention is likely to be counterproductive. Furthermore, the approach does not suit delegation of this reflection to third parties because of the importance of collective learning;
- The presence of a **core team** that includes the future partners, in order to enable the different actors to produce and convey this logic to other actors. Ideally, this is done by bringing together the different types of actors potentially involved in and concerned by the intervention;
- A willingness to work on **explaining and articulating the desirable changes** (outcomes) as well as the hypotheses on the generation of these outcomes so as to identify the most plausible and suitable strategies.

These minimum conditions are essential. They may constrain a little the implementation of the approach (due maybe to lack of means to mobilize partners before the start of projects, or difficulty in finding a project leader), but meeting these points enable the approach to be implemented in a constructive way by a sound and motivated group.

The approach is **iterative**: each stage feeds the following ones, and the narrative is fueled throughout the reflection process by the results of the other steps via feedback loops, thereby generating a consistent and plausible narrative.

The approach is totally **adaptive and flexible**. Users don’t have to deploy it entirely. They can adapt it by specifically delving deeper into some of the steps. The overall process aims, however, to generate a more constructed narrative, more plausible impact pathways or intervention logics with more strategic planning and implementation. The intensity of the iterative process depends on the nature of the intervention and inputs (time, financial and human capital) that can be mobilized by the researchers and their partners **(Chapter 6.1)**.

The approach can be applied to different types of interventions, at different levels and on different topics. This includes a project, program, network, partnership platform, roadmap or project cluster. Regardless of the case, the team conducting the reflection has to define, in a consistent manner, the scope of the reflection underlying the construction of this theory of change, while reflecting on possible interactions with other interventions **(Chapter 6.1)**.

Checkpoints on facilitation and participation

In this process, the facilitation of the reflection stages (especially participatory workshops) is crucial. Ideally, the facilitator should be neutral to the process, i.e. without any agendas to defend or promote in the discussions. He should also be knowledgeable about theory of change formulation approaches, able to ensure adequate balance in the discussions and allocation of speaking time, and able to tailor the process to the team's needs. An alternative is also for the intervention team to get skilled on the approach so as to be able to mobilize it autonomously, even if they won't be as neutral as an external facilitator.

Just like any participatory supporting process, the formulation of a theory of change/impact pathway through the ImpresS *ex ante* approach requires a high level of vigilance throughout the process. It is essential to involve the actors who will be associated with the intervention formulation process and/or targeted by the intervention so as to build the intervention logic as convincingly as possible.

Box 1: Supporting the formulation of an intervention impact pathway at CIRAD

CIRAD aims to develop a culture of impact within the organization by encouraging research teams to get familiar with the approach.

The ImpresS team can help research teams by providing methodological support to facilitate implementation of the overall process, but it does not bear the responsibility for these processes. Beside the ImpresS team's involvement, CIRAD project development officers are particularly well positioned to support the

teams in tailoring the implementation of the ImpresS *ex ante* approach to the donors' expectations, if the formulated intervention is a project. They may in particular support the ImpresS team in organizing regular training sessions for groups to 'incubate' their project ideas by mobilizing ImpresS *ex ante*.

Specialist consultants may also be called upon, if there is a need to delve deeper in the reflection, for instance.

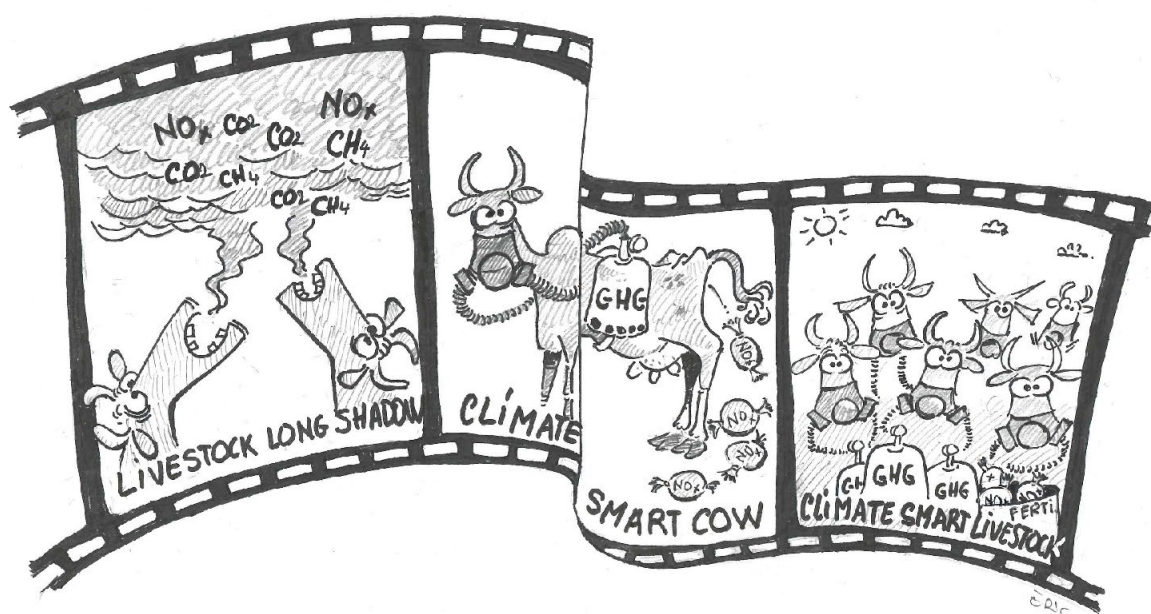
The participation or level of participation of actors in a process may differ across the exercises and disciplines (Arnstein S., 1969). A number of dimensions need to be highlighted to ensure that the exercise is as rich and rigorous as possible:

- The **composition** of the group(s) must be planned so as to gather all actors who will participate in or be concerned by the intervention, but also the actors who could provide expertise and a unique view of the context. This will enhance the plausibility of the hypotheses formulated and foster participation/co-construction of the intervention with these actors. Ensuring openness and representativeness is essential to take existing power games into account, and limit them if needed. The group composition and size may change along the process. For instance, some stages may be carried out by a specific type of actor, who therefore face similar issues, while other stages, conversely, may be geared towards sharing viewpoints between different actors' categories;
- The formulation of the theory of change involves reaching an agreement to formulate, collectively, a common vision/common objectives/common intervention. However, this process **should not overlook divergent viewpoints between actors**, non-consensual visions, or potential conflicts. Yet, by taking these divergent viewpoints into account, this process must facilitate the identification of potential mutual convergent views between actors of the team so as to generate a vision that is '**acceptable by everyone**' (we will talk about a quest for collective consent, rather than a quest for consensus⁵). It is up to the team to discuss the stakes of these divergences, their consequences with regard to the future intervention, and define a convergent scope for mutual work.
- **Facilitation** of the impact pathway development process is essential (this includes skills of both the group facilitation itself and the methodological skills). Facilitation must enable the actors to outline their interests and issues in a balanced way, while recognizing the subjectivity and biases of each actor, enabling the process to be tailored to the needs of the group. This means tailoring the stages to the objectives of the team, stumbling blocks, etc., and ensuring a certain amount of kindness and constructive exchange, fostering the 'ethical dimension of debates';

5 For a presentation (in French) of the difference between consensus decision making and consent decision making see, for instance "Prendre des décisions par consensus ou consentement, Enjeux et mode d'emploi", Juliette Picardeau, Léna Silberzahn, Association EcoRev, 2019/1 N° 47 | pages 46–51. <https://www.cairn.info/revue-ecorev-2019-1-page-46.htm>

- Finally, a key point is to promote **transparency** in the team, with all partners, throughout the entire process, in communicating on the progress of the process and on the gradual changes in the intervention vision.

Chapter 2. Building the narrative



The Impress *ex ante* approach aims to build a convincing and plausible intervention narrative that reflects the shared explicit vision of the intervention logic. This approach starts with a first draft of the narrative, and the final output is a simple, short convincing narrative that outlines the targeted intervention outcome and the first actions' terms and conditions, and takes the different actors' roles, interests, and influence into account.

This narrative draws on previous interventions that helped solve a related problem. It is mainly based on the actors' knowledge of the context and past research and/or development interventions. The narrative is not a series of overlapping arguments or stages to achieve. It is the result of an exercise that ensures consistency of actions that the intervention proposes to implement to overcome obstacles or take advantage of opportunities and generate change. It also enables communication of a plausible and convincing intervention argument to different audiences.

This first stage consists of a rapid initial assessment to help formulate a vision of the 'ideal' future to which the intervention aims to contribute. Based on this future vision, the team defines the central issue (which elucidates what prevents the future vision from becoming reality in the current situation), outlines the potential intervention reach (choosing the problems to address), and identifies the actors having a role and/or impacted by these problems.

The elements that make up the first version of the narrative will serve as a starting point for mapping desirable outcomes in the next stage.

2.1 What is the initial assessment?

To begin the reflection process, a rapid assessment should be carried out to collect and analyze information on a situation, issue, or context (e.g. social or political issues) around the intervention theme/idea. This is the first situational review phase which the following stages will help clarify and enrich.

This first stage may be completely open or limited to a well-known issue or an emerging opportunity. This will depend on the analysis of existing information or initial consultations with key actors to gain insights on past experiences and build the intervention on this basis. It is also an opportunity to identify constraints and available resources and find out about other on-going or past projects (and their impact pathway if it has been formalized) on the same theme.

2.2 What is the future vision to which the intervention wishes to contribute?

On the basis of this initial assessment, it emerges a first idea of the intervention and impacts to which we wish to contribute. The next stage is to elucidate a 10–15 year vision of the future on the basis of the following questions: what is the targeted future to which we seek to contribute via the intervention idea we are beginning to formulate? In 10–15 years time, well beyond the end of the intervention, to what ideal situation will it have contributed?

While answering these questions, we outline the first hypotheses of the impacts targeted by the intervention, which are further specified in later stages.

Formulation of this vision of the future by the team may be oriented by the needs or objectives expressed by local actors or partners, scientific issues, expected impacts included in a call for tenders to which we intend to respond, or by societal expectations as formulated in policy or foresight documents (see Box 2).

As mentioned above, the exercise of formulating the vision of the future—the starting point of the approach—must take the divergent viewpoints within the group into account, and allows identifying potential mutual focal points between the actors, to come up with a vision that is ‘acceptable by everyone’. A few examples are presented in Box 3.

Box 2: Linkages between participatory co-elaborative scenario building (CSB) and the ImpresS *ex ante* approach [Collectif Anticipation – ImpresS *ex ante*, 2020]

CSB and ImpresS *ex ante* are two 'tools' available within a broader range of approaches, including anticipation (for CSB) and program theory and theory-based evaluation (for ImpresS *ex ante*).

- **Anticipation** is defined as any effort to 'know' the future, in the sense of 'thinking about' and 'using' the future (Miller, Poli & Rossel, 2018). The ambition of the anticipation discipline is to study the relationship humans have with the future in the present while seeking to improve conscious use of the future in the present (Rossel, 2010). This research field is focused on the theories, concepts, and practices of 'using the future'. Beyond the unconscious (implicit) use of the future, the anticipation discipline distinguishes three main types of conscious use of the future. When the future is a specific objective to achieve, it may be used for preparation or planning in the present. This is the most common use. When the future is not an end but rather an intermediate object, it may serve for novelty emergence in the present (Miller, Poli & Rossel, 2018).
- **Program theory** (Funnel & Rogers, 2011) is an approach for developing an explicit theory (or explicit model) of how an intervention (project, program, strategy, initiative, policy) contributes to a chain of outcomes, which specifies the expected change process, the actions to generate it, and the underlying hypotheses. It can be used prior to intervention building process (*ex ante*) by imagining the future pathway that the intervention logic will define, or during its implementation to monitor its progress and guide its management (*in itinere*), or post the in-

tervention to evaluate it once it has been completed (*ex post*). We refer to the *ex ante* program theory in the approach we discuss here. In this sense, it reflects on or uses the future and relates it to the present, so it is thereby an anticipation process with an explicit planning ambition.

These two theoretical approaches have provided the basis of research carried out at CIRAD, which has led to the development of more specific tools and support approaches that can be implemented in a complementary manner:

- **Participatory co-elaborative scenario building (CSB)** (Bourgeois *et al.*, 2017) is a localized anticipation approach geared towards the building of exploratory scenarios that are representations of the future linked to representations of the present. It has a dual capacity building and agency/empowerment objective to boost local actors' awareness of their capacity to be agents of change by enabling them to feel and make sense of the present via use of the future.
- **ImpresS *ex ante*** (Blundo *et al.*, 2018) is a structured approach for building a program theory based on a vision of the future and desirable changes shared in the intervention team and translated into a plausible impact pathway. Its application is oriented towards interventions involving research (projects, programs, partnership arrangements, roadmaps etc.). Its dual objective is to: (1) orient and strategically plan actions by integrating the actors of change in the planning phase, and then in its monitoring, evaluation and reorientation, but also to (2) build shared visions of why and how an intervention works.

Box 3: Examples of future visions formulated for a partnership platform, program, and project

"The 10-year vision of CaribVET focuses on contributing to reduce vulnerability and increase resilience to disasters of its member countries by setting the stage for the implementation of a shared strategy that addresses the entire DRRM cycle based on minimal-standard national level core capacities and regional support mechanisms". **CaribVET partnership platform (dP), 2019.**

"The sustainable and legal exploitation of wild animal populations by rural actors in key wildlife conservation landscapes, as well as the diversification in the supply of alternative proteins from domestic livestock,

ensures sufficient and quality meat for the food and nutritional security of communities, while reconciling food security and wildlife conservation in African, Caribbean and Pacific countries". **Sustainable Wildlife Management Programme, 2018.**

"Disruptions in the socio-ecosystem balance and interaction dysfunctions (including insufficient/inefficient coordination) between different territorial components are under control and health threats in the territory have been dealt with". **AFD Santé Territoire Project, 2020.**

2.3 What is the central issue?

The analysis of an issue in the ImpresS *ex ante* approach can be carried out with different tools and approaches, depending on the team's choices. Here we propose to use an adaptation of the *problem tree* as a tool to define the central issue of an intervention and its underlying causes, define the intervention reach, and pre-identify the key actors.

2.3.1 What is the central issue corresponding to the formulated future vision?

Formulating the vision of the future has helped elucidate the actors' expectations. The next question is: what is the main problem that explains why this vision is not yet fulfilled?

This stage consists then of identifying the central issue and the underlying causes to this problem, and finally collectively choosing those the intervention will address. *Problem tree analysis* [Chevalier & Buckles, 2008, p. 121] helps systematically define the problems by considering the system complexity and multiple interactions, and their underlying causes and consequences [the 'lower' and 'higher' branches of the tree serve to prioritize the problems] (Figure 3).

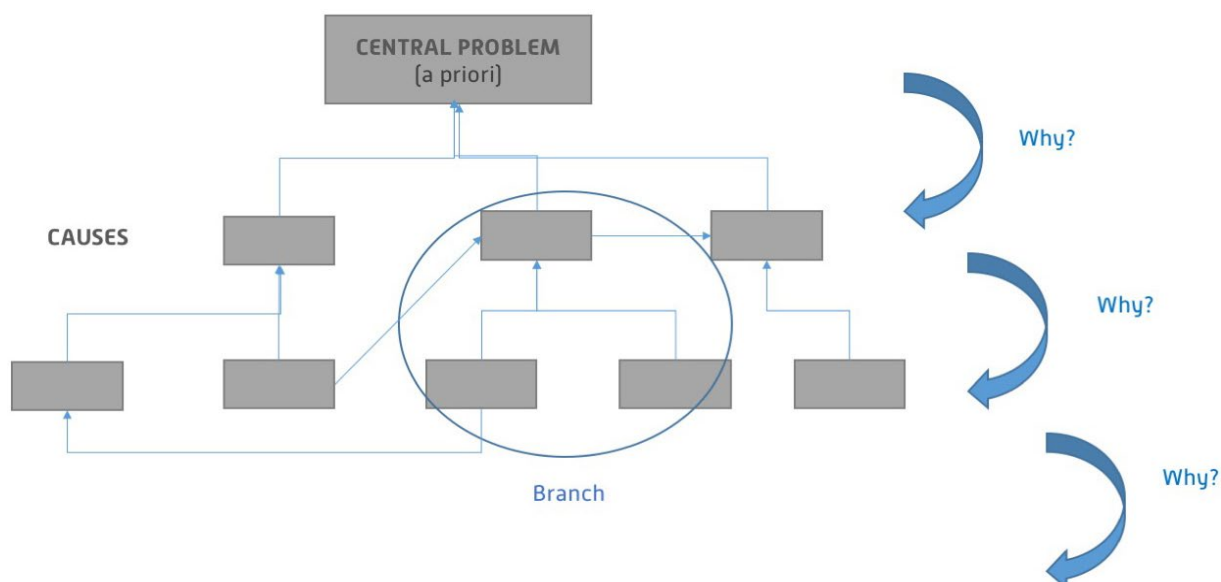


Figure 3: Problem tree building approach (CIRAD project development training course support material)

Starting from the central issue, we seek to identify the different underlying causes of this problem. The team therefore asks themselves "why" at each stage. The causes at the bottom of the figure will therefore be the 'root' causes of the central issue. After completion, the tree is read upwards from the bottom: the 'root' causes elucidate the 'higher' causes, thus giving rise to a systemic characterization of the causes of the central issue.

It is important at this problem formulation stage not to limit ourselves to identifying problems for which we already have a potential solution, but rather to have more of an overview of the underlying causes of the problem. We then focus on delimiting and more precisely defining what the intervention will address specifically.

During this process, it is essential to formulate the content of the identified 'causes' accurately. This means to represent what the participants want to express and to keep a precise record of the content negotiated between the participants. Another point is that a problem should not be formulated as "a lack of...", but instead we should strive to specify the problem in terms of the actor and scope through a complete sentence. This will facilitate the next steps and make it easier to retain the content of each cause for consideration in subsequent steps of the approach where the problem tree will be re-examined.

The problem tree is a tool often used by CIRAD researchers and project development officers. There are several guides to serve its implementation and facilitation. A problem tree may be drawn up/visualized using PowerPoint, other software, or the online ImpresS tool⁶.

The problem tree is used to initiate the elucidation work and the strategic choices of the intervention team, and to begin outlining what the intervention will focus on. This problem tree should be seen as an intermediate object. It is not necessarily intended for use in documents that will be disseminated to different audiences at a later stage (e.g. donors, project documents). It can however be reused in subsequent ImpresS *ex ante* steps to check the overall consistency, to iteratively refine the intervention definition, and to maintain a systemic vision. Different teams may potentially produce different problem trees, hence the importance of building or validating these products with experts and 'concentric circles' of actors in an iterative manner (see Figure 4 on the next page).

2.3.2 What other present and future interventions are involved in the same change process? How to take the intervention ecosystem into account?

The time required to generate intervention-related impacts can be long (+10 years) and a research for development project—generally lasting 3-5 years—will rarely generate an impact on a significant scale on its own. A change process is often the result of a set of interlinked interventions (ideally consistently) that cumulatively contribute to generate an impact, over a specific (often long) time frame. We refer to this set as **the intervention ecosystem**⁷. The relevant scope to be taken into account when designing any new intervention includes past, current, and future interventions contributing to a common change process or innovation trajectory.

The **intervention ecosystem** can be defined during the initial assessment or in the process of building the problem tree when identifying problems that are/will be dealt with via other interventions and/or actors over the duration of the intervention. This will help identify synergy and collaboration opportunities, as well as potential competition with other interventions addressing a similar issue.

In practice, this means to complete the initial assessment:

- Is the intervention idea (or the opportunity being addressed) part of a **longer innovation trajectory or change process**?
- **Who has been working on the topic** (including non-organized actors, bottom-up and/or informal initiatives)?
- What **approaches and strategies have been implemented**, and through what **partnerships**?
- What **outputs and/or changes in practices, behaviors, and interactions have been achieved**?
- What can we **learn** from this experience in order to **build the narrative of the intervention** whose development is underway?

In addition to this retrospective analysis, we can carry out a **foresight** analysis based on the various interventions that deal/will deal with the targeted issue:

- Is the new intervention we are building part of an **ecosystem of interventions** that are currently or will be working on this issue in the same area, on the same theme, or on the same value chain?
- Is there a need for **coordination** with these other interventions to foster mutual learning or synergistic actions?
- How can the risks be reduced if these other projects/initiatives have **competing or diverging objectives** with regard to the new intervention?

6 The ImpresS interface is available for any CIRAD staff wishing to use it. <https://intranet-impres.cirad.fr>.

7 This concept has been identified as a project cluster in the ImpresS *ex post* approach.

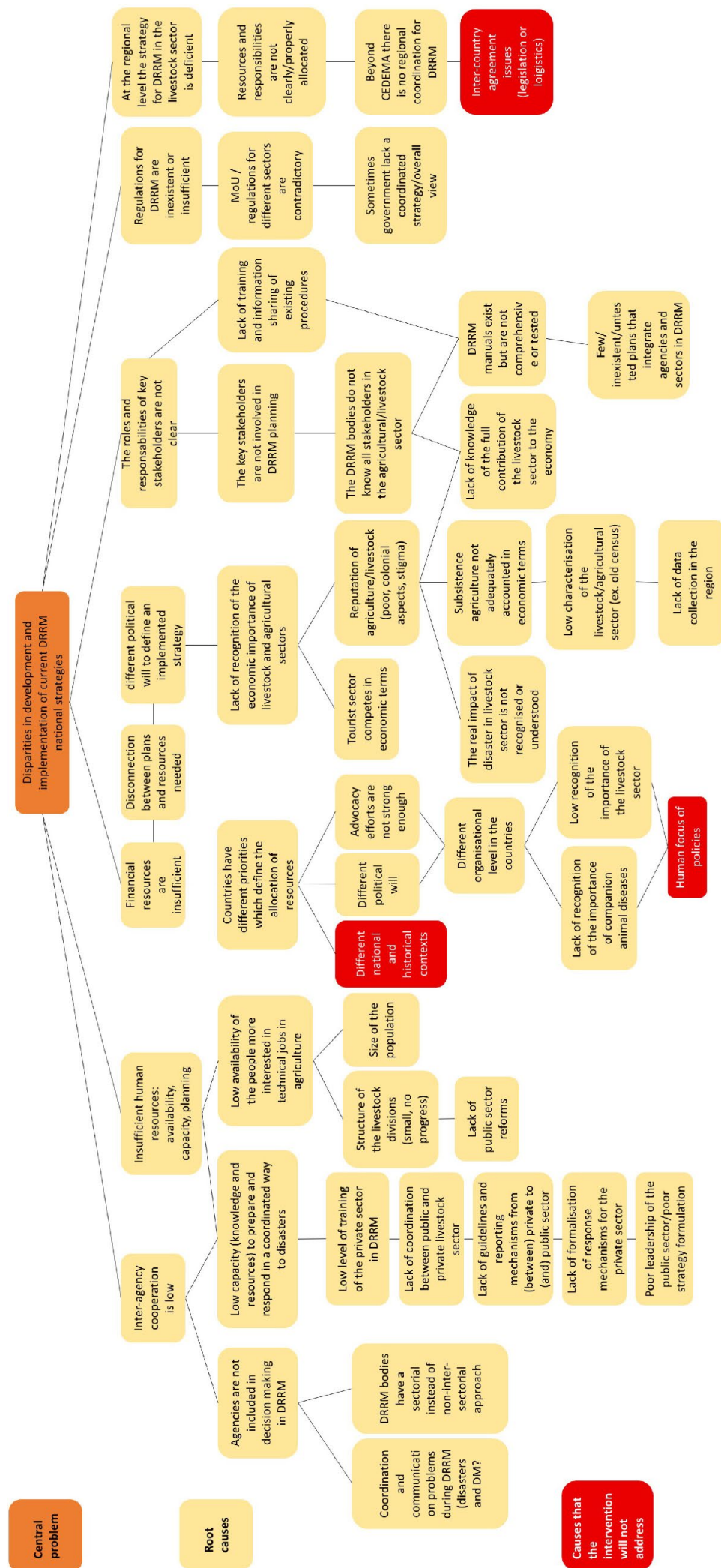


Figure 4: Example of a problem tree [CaribVET partnership platform [dP]]

2.3.3 What is the intervention reach and scope?

The intervention reach can be defined on the basis of the problem tree and the identified **intervention ecosystem**:

- What issues identified in the problem tree **will be addressed by the intervention** and why?
- Which issues can the current intervention team **legitimately** address?
- Should **other actors** be involved to work on some issues?

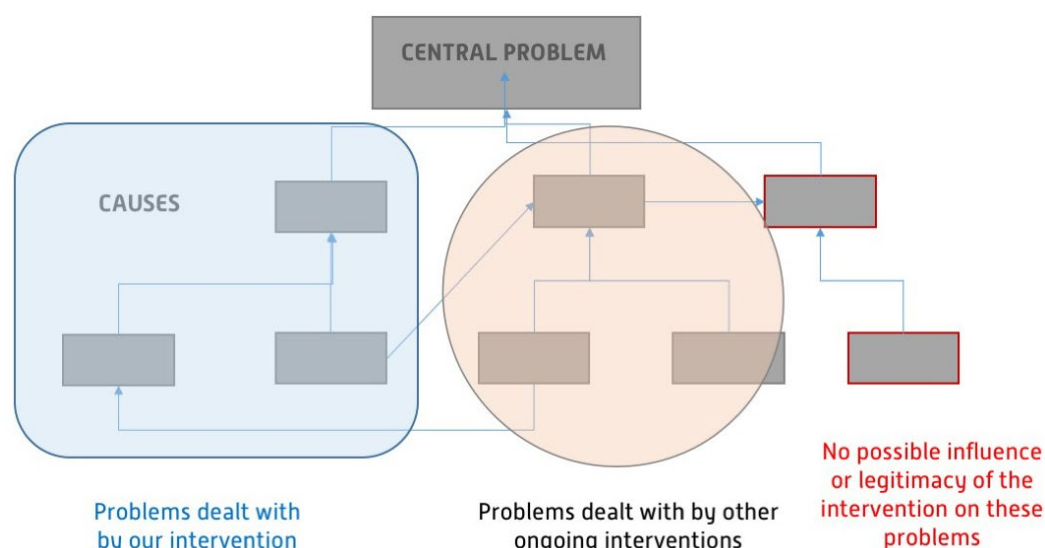


Figure 5: Definition of the intervention reach on the problem tree (CIRAD's 'project design' training support).

This work will therefore allow to identify issues that will not be dealt with by the intervention, e.g. those that the consortium does not have the legitimacy to deal with, or over which it has no possible influence. These unaddressed issues may hamper the success of the intervention and are important to highlight in a plausible intervention narrative.

The team will be able to specify the **scope of the intervention** once its reach is defined. The intervention scope may include areas and sites of where the intervention has a direct action, along with larger areas/sites that the intervention could/should impact through scaling (scaling up and scaling out). The scope is not solely geography-related (territory). It is also temporal (intervention duration), or can correspond to a project cluster, value chain, or agroindustrial sector.

2.4 Who are the actors of the intervention? Who are the major, influential, and impacted actors?

The main categories of actors directly or indirectly associated with the central issue may be identified once the problem tree has been built and the intervention reach defined. For each issue that the intervention will deal with according to the chosen reach, the actors involved and/or impacted by these issues may be identified. This will generate a list of actors, thereby providing a basis for the mapping process.

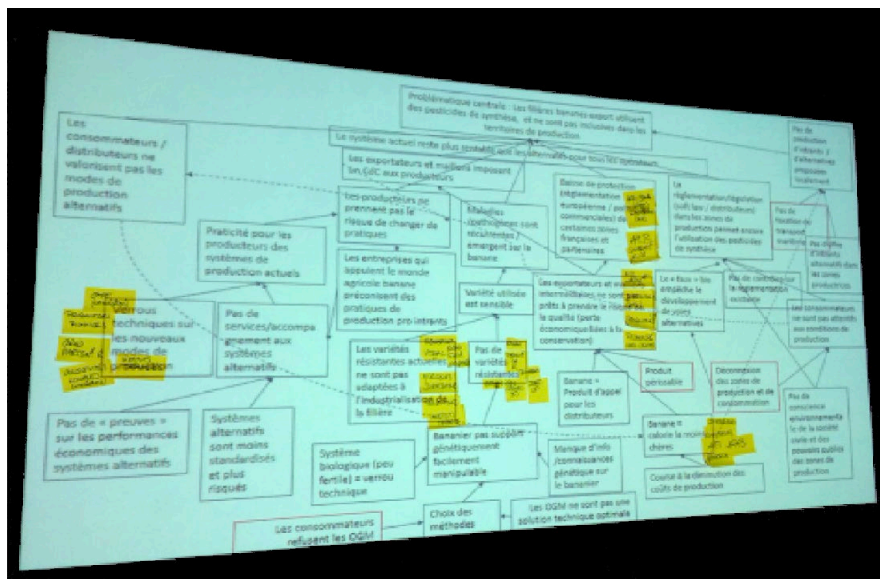


Figure 6: Building the problem tree for the dessert banana value chain and a list of actors; using post-its

We propose to differentiate the actors in three categories to understand their positioning regarding the intervention being built:

1. **Major actors**, who are crucial in the intervention and with whom it is essential to interact directly, regardless of whether or not they are formal/contractual intervention partners;
2. **Influential actors**, who are likely to positively or negatively influence the intervention (including with regard to the output appropriation and the generation of desirable outcomes) without having a direct or active role in the process;
3. **Impacted actors**, who are likely to be positively or negatively impacted by the intervention, whether they are major or influential or not.

If the boundaries between these three categories are blurred, an explicit decision must be made to frame the intervention. These categories are not mutually exclusive, and may evolve over time—some major and/or influential actors may also be impacted.

Actors extracted from the problem tree are characterized as follows:

- **Type**: are they major, influential, and/or impacted actors?
- **Heterogeneity**: does the actor have a homogeneous role/strategy with regard to the formulated problem or are their interests, strategies, and dynamics heterogeneous? For example, are we talking about farmers in the broadest sense, or do farmers (depending on their farm size or other features) have different strategies regarding the formulated issue? Should we consider a government as a whole, or rather specific ministries and their agencies? Is a ministry homogeneous in relation to the issue being addressed, or should we distinguish between certain departments that are unlikely to respond in a similar way?
- **Positively/negatively impacted** by the intervention: how is this category of actor likely to be positively/negatively impacted by the problem or intervention being built, or by the specific issue we are trying to solve?
- **Contribution**: with regard to the intervention idea and the formulated issue, what type of contribution could this actor make?
- **Opposition**: with regard to the intervention idea, what type of opposition or blockage could this actor implement in reaction to the intervention?
- **Interactions** with other actors (who?): with which other actors does he/she interact? With whom does he/she not interact at all?

This reflection can then be followed by **pre-identifying missing actors: would the creation/promotion of non-existing actors help** eliminate/solve problems? This question makes it possible to shift from a vision of a 'reform' of the existing system towards considering a potential new system that would associate new actors.

The definition of these categories of actors, their potential contributions and oppositions, and the positive or negative impacts that the target intervention could have on them, helps prepare the next stage of defining the sought-after changes (desirable changes/outcomes), particularly by reflecting upstream about the potential roles of these actors in the intervention, and the obstacles and constraints they could encounter or represent. The elements in the table 1 could, for instance, be used to specify the roles and attitudes of the actors regarding the intervention outputs.

The first 'actor map' obtained will not necessarily be complete at this stage. However, it will be more relevant if the actors involved in its elaboration have already worked on or participated in similar interventions in the same region. It is essential at this stage—as far upstream as possible in the intervention design process—to involve people who are familiar with the context and the actors, and who are able to provide detailed information on the prevailing dynamics and on the potential contributions and oppositions of each actor.

Table 1: Tool for analyzing the types and strategies of the various mapped actors

Actors	Type	Heterogeneity	Impacted +/-	Contribution / opposition	Interactions (with whom?)	Missing actors, who do not exist?



Figure 7: Example of a map of actors in the plantain value chain

Chapter 3. Mapping outcomes and building an intervention strategy



After a first phase of drafting the narrative based on an interpretation of the issue and identification of the actors involved, the Impress *ex ante* approach focuses on these actors and on their role as protagonists in achieving the desirable outcomes. The desirable outcome mapping process is the core of the approach and is focused on the actors and hypotheses underlying their potential changes.

Not all outcomes that are sought to achieve the future vision and solve the issues identified in the intervention reach belong to the intervention scope. Elucidating the intervention's plausible and legitimate scope of influence and ambition helps identify alternative strategies for leveraging change beyond the intervention scope, e.g. *via* synergy with other projects, networks and programs, or scaling strategies.

The desirable outcome mapping stage we here present enhances definition of the intervention scope of influence and ambition, and therefore its boundaries (reach/scope) and limits (iteration towards stage 2.3.3).

In this second stage, we proceed under reverse logic. On the basis of an analysis of the current situation (**Chapter 2.3**) and of the actors involved and impacted by the issues (**Chapter 2.4**), we define the final and intermediate outcomes that would contribute to this 'ideal' future vision. Once the desirable outcomes have been identified, we return to the present to identify existing obstacles and opportunities regarding these outcomes in the current situation. We then identify strategies required to overcome the obstacles or benefit from the opportunities, and that would help generate these desirable outcomes. Finally, these strategies are morphed into activities and products. The whole process enables outcome mapping or generation of 'outcome graphs'.

3.1 After the intervention, who would do what differently and why?

3.1.1 What outcomes are targeted or considered desirable?

Reflection on actors and on outcomes that would directly target them is pivotal to the ImpresS *ex ante* approach. We distinguish final from intermediate outcomes (**Chapter 3.1.3**). Final outcomes are defined as changes in practices, behavior, and interactions resulting from the appropriation of the intervention outputs and subsequent usage, adaptation or transformation by the actors.

The central issue of this stage is to define "**which actors would do what differently and why**" as an upshot of the intervention.

These changes in practices, behaviors, and interactions are formulated through transposition of the issues targeted in the problem tree (reach) in terms of the outcomes needed to solve them. We strive to transform the identified problems into plausible changes with regard to the actors. The aim is not to shift from an issue to an ideal situation or a 'mirror' solution of the issue – sometimes quite abstract. Instead, we reflect on systemic ways to solve the issues and their underlying causes in terms of actors by identifying potential changes for the actors that could help solve the issues in a specific context.

We thereby identify a first 'root' cause in the intervention reach, which we will analyze by trying to pinpoint the actors involved and/or impacted by this problem (a reflection already started in the actor mapping stage), and we then ask the following questions:

- What **changes in their practices, behaviors, and interactions** should be sought to solve this problem?
- What **changes in skills, knowledge, and motivation** are needed to achieve this final outcome (practice, behavior, interaction) by the end of the project?
- To formulate these outcomes, we determine "**which actors will do what differently**" by the end of the intervention.

Just like when defining the problem tree, it is important to be as specific as possible in this formulation (Figure 9 gives examples for the BioStar project).

It is important to formulate these outcomes realistically, but also ambitiously. This puts into perspective the fact that interventions are carried out for AND with the targeted actors. Moreover, even if the ambition of the program is to influence their practices, behavior, and interactions, interventions do not have a direct control over these actors (Earl *et al.*, 2001). The final outcome formulation should therefore represent the fact that the targeted actors behave as if the intervention has reached its optimal potential as a catalyst for change. There may be a tendency to formulate very ambitious outcomes at the outset, but the plausibility of these final outcomes should be iteratively questioned. The intervention team should therefore decide on the greatest outcomes that they feel they could intentionally generate.

In line with an iterative approach, we may systematically get back to the problem tree, assess whether the formulated outcomes could (or not) solve the targeted issue. If so, we could continue by identifying outcomes that could solve other problems noted on each branch of the tree. This systemic thrust avoids focusing on specific problems or solutions (technical, thematic, etc.), and the intervention is instead viewed as a consistent systemic system able to solve complex interlinked issues.

Research bodies and partners are full-fledged actors for whom changes in practice, behavior, and interactions may be necessary—research and intervention partners may be among the actors whose targeted outcomes should be the focus of all the questions presented.

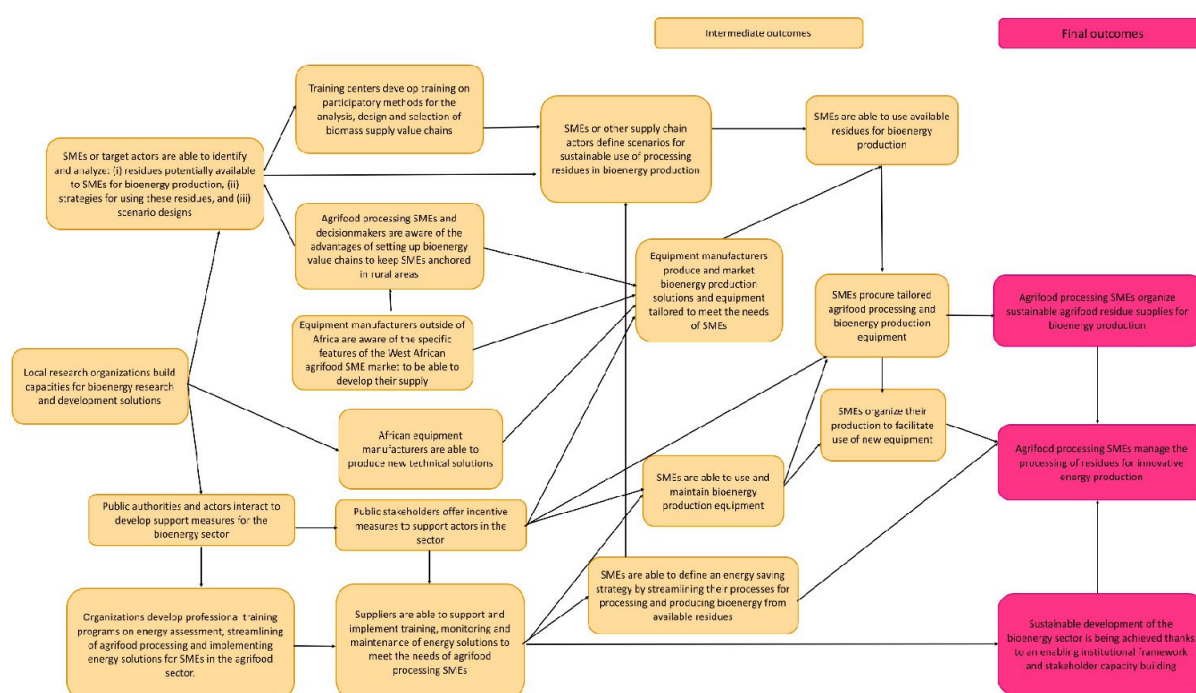


Figure 9: Example of final (pink) and intermediate (yellow) outcomes in the BioStar project

3.1.2 What outcomes could the intervention directly influence?

The reflection carried out through the *ImpresS ex ante* approach leads the intervention team to define the intervention ambition by clarifying: (1) over what it will have a **significant level of control** (notably in generating outputs), (2) over what it will not have control but could **influence** [outcomes] and be **responsible/liable for by the end of the intervention**, in the case of a project, and (3) societal and environmental effects to which it **hopes to contribute** (in which it has an interest), without having direct control or influence (medium- and long-term impacts) (Figure 10).

The **ambition scope** represents the targeted **final intervention influence**, delineated by the final desirable outcomes that the team hopes to generate and upon which it believes it will have sufficient influence.

The definition of levels of control and influence is inspired by the circles outlined by Montague (2003), such as the operational circle (under direct control because the intervention will have direct authority over these activities), the behavioral circle (based on the intervention's capacity to influence actors over whom it has no direct control), and the state circle (of indirect influence, representing actors beyond the intervention's direct interaction).

These different levels of control are redefined for each intervention by the intervention team according to its ambitions, resources and constraints, as well as its power to act and legitimacy. The definition of these levels will markedly influence the formulation of the final outcome and the intervention architecture.

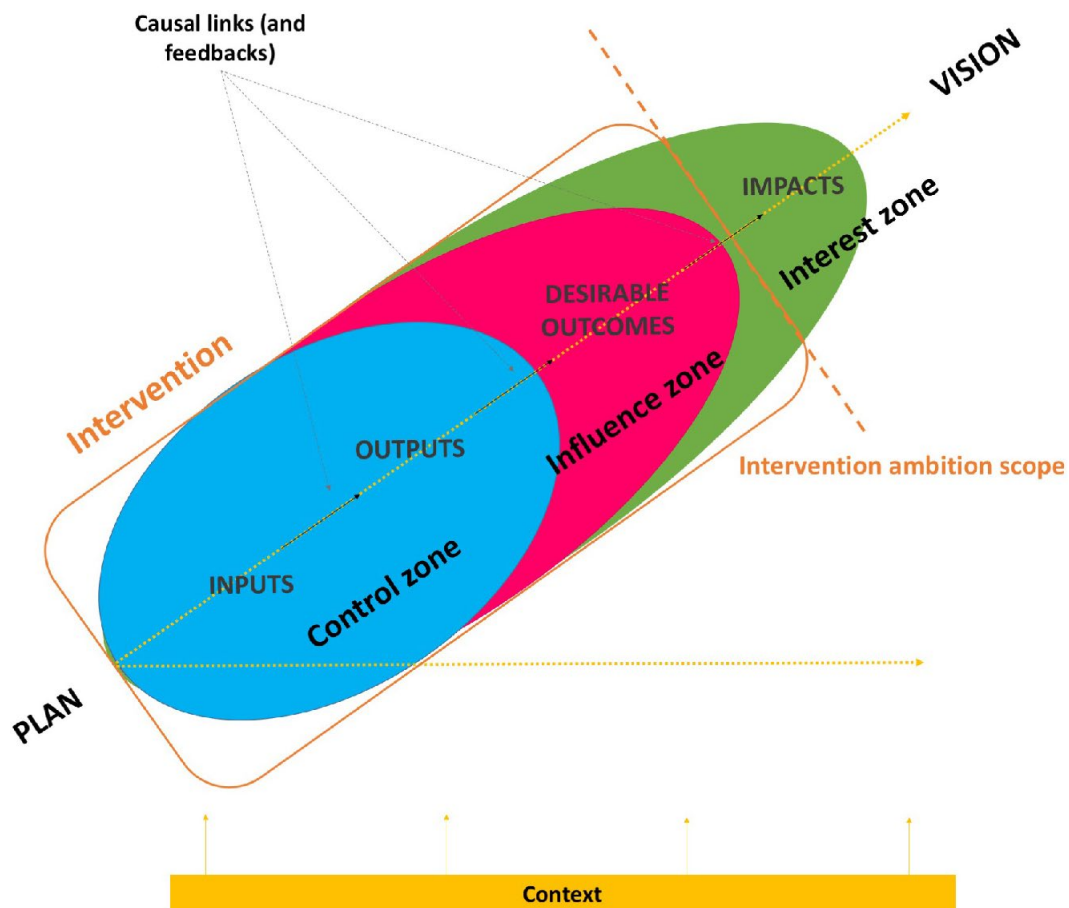


Figure 10: Zone of control, influence and interest of the intervention and its ambition scope [inspired from Boru Douthwaite and echoing Montague *et al.*, 2003]

The ImpresS *ex ante* approach seeks to get teams carrying out interventions (for CIRAD, teams involving researchers) out of their control zone (or researchers' comfort zone, output production zone), to think beyond, and integrate desirable outcomes as full-fledged intervention objectives.

3.1.3 What intermediate changes in knowledge, capacities, motivations could help generate desirable changes in practices, behaviors, and interactions?

Final changes in practices, behaviors and interactions generally require intermediate changes in the actors' **knowledge, capacities, and motivations to enable them to appropriate the intervention outputs**. For instance, farmers cannot be expected to use a new agricultural technique if they are not familiar with or have access to it, and if they are not motivated or know how to implement it.

Reflection on individual and/or collective capacity building and on the actors' motivations enables a more systemic and complex analysis of the needs and interests of actors. The aim is to help them appropriate and transform the different intervention outputs and ultimately change their practices, behavior, and interactions accordingly.

It also enhances **elucidation of hypotheses about how a desirable outcome would arise and thereby prevents 'miracle' outcome hypotheses**. A few questions may be asked to identify these intermediate outcomes:

- What **knowledge** is needed for actors to change their practices?
- What **individual or collective capacities** do they need to be able to appropriate the intervention outputs?
- Are the actors who are supposed to change **motivated** to do so?

We will then ask questions on knowledge, capacities, and motivations regarding all outcomes: what knowledge and capacities are needed by agricultural advisers (intermediate outcome) to be able to effectively support farmers in adapting their practices (outcome)? What capacities do farmers' organizations need to actively participate in decision-making within a national innovation platform?

These questions will then be taken up in the analysis of existing obstacles to these outcomes and opportunities to benefit them [Paragraph 3.2].

3.1.4 Targeting capacity building: what types of capacity and for which actor(s)?

In the ImpresS *ex ante* reflection, capacity building of key and impacted actors is a pivotal strategy for generating desirable changes (outcomes) and contributing to impacts. Capacity building is geared towards strengthening human capital (individuals) and social capital (organizations, relationships between individuals or organizations through formal or informal networks). A diverse range of capacities are strengthened: the *ex post* case studies have highlighted a wide variety of them—technical and managerial capacities to facilitate experimenting, learning and interacting with others—depending on the specific innovations being developed. Overall, they enable the actors concerned to develop a greater innovation capacity (Table 2).

Table 2: Types of capacity identified in ImpresS *ex post* case studies

Technical capacities	Management capacities	Capacity to experiment and learn	Capacity to interact with others	Capacity building that enhances empowerment
Mastering a new technology Mastering new processes	Ability to analyze the situation and environment Ability to plan activities Ability to monitor and evaluate activities and results Ability to mobilize resources (financial and non-financial) Ability to manage a farm and evaluate the performance of innovations in terms of the relevant criteria (assessment)	Ability to experiment and learn Ability to formalize knowledge to solve other problems Ability to share knowledge and skills with peers and other actors	Ability to work together to design and implement an innovation Ability to act collectively to design and set up an organization and engage in a political process Ability to interact with other actors in the innovation system (State, companies, markets, etc.)	Gaining self-confidence Changing one's perception of a problem and solutions Becoming proactive Increasing the decision-making power and participation of women or marginalized collectives in innovation systems

Other models exist to identify capacities that facilitate innovation. For instance, the FAO Tropical Agriculture Platform (TAP)⁹ has developed a common framework identifying core capacities to ensure effective functioning of agricultural innovation systems: capacity to navigate complexity, to collaborate, to reflect and learn, to engage in strategic and political processes, and to adapt and respond in order to fulfill the innovation potential (Tropical Agriculture Platform, 2016).

This categorization is arbitrary, and many other models of definitions of knowledge, skills, and competence can be used to formulate changes in knowledge, skills, motivation (COM-B¹⁰ Mayne, 2017), and the level of empowerment or the 'transformative and emancipatory' aspect of certain participatory activities or processes (Fetterman, 2017).

The key point is not to think linearly about changes in practices and behaviors, or in knowledge and associated skills, but to delve deeper into these outcomes to gain further insight into the mechanisms involved. Moreover, in many interventions, these intermediate changes are necessary so that actors can

⁹ <https://www.cabi.org/Uploads/CABI/about-us/4.8.5-other-business-policies-and-strategies/tap-synthesis-document.pdf>

¹⁰ Mayne points out that the COM-B model postulates that changes in behavior (B) occur as "the result of interaction between three necessary conditions, capabilities (C), opportunities (O), and motivation (M)".

participate at different levels of the change process (e.g. in innovation design, product development, the implementation of certain activities or scaling strategies).

Iteratively, by continuing the ImpresS *ex ante* reflection when formulating strategies (Chapter 3.3), it would be important to re-question capacity building's needs once the strategies have been formulated so that the intermediate changes to be achieved can be clarified/enriched to help generate final changes:

- What are the needs of farmers, farmer leaders, technicians, businesses with regard to capacity building?
- What are the most appropriate methods for building this capacity (classroom training, peer-to-peer exchanges, field visits, farmer trials, information access, etc.)?
- What are the most suitable times to conduct these capacity building activities?
- Who can legitimately support the capacity building process (researchers, technicians, educators, farmers with specific knowledge, training institutions, etc.)? What training mechanisms are available to support this capacity building in the medium/long term?
- Is research legitimate to design and participate in this capacity building? Can (or should) it build its own capacity to act?

3.1.5 *Special attention to the outcome formulation: interaction with public stakeholders*

It is important in the reflection on final and intermediate outcomes to give a special attention to the interactions with public stakeholders, which emerged in case studies carried out with the ImpresS *ex post* method as a crucial aspect (Dabat *et al.*, 2018).

Why targeting interactions with public stakeholders?

Researchers rarely decide to communicate with or solicit public stakeholders when the focus of a research-for-development intervention is not directly linked to these agents. Yet, their role is essential because the institutional context generally has a marked effect on the innovation process. One of the lessons learned from the ImpresS *ex post* case studies is that **interactions with public stakeholders are necessary for developing innovations and generating impacts**, regardless of whether they are the intervention focus.

All research takes place in an institutional context shaped by past and present public policies that are more or less conducive to innovation. The emergence of certain priorities on political agendas—either over the long term or in response to a crisis—can guide researchers' choices and modes of intervention and determine the extent to which their research will have an impact.

Finally, the experience of implementing the ImpresS *ex ante* approach highlights that public stakeholders are often present as part of the major, influential, and impacted actors identified in the first stage, and when defining the desirable outcomes. A public stakeholder may be a major, influential and/or impacted actor depending on the formulated intervention. It would therefore be important to open the black box of the participation of these public stakeholders to better understand with whom and how interactions with them should take place so as to foster outcomes and contribute to certain impacts.

How to identify and strengthen interactions with public stakeholders?

When mapping desirable outcomes, those related to public stakeholders should be clearly identified (ideally in collaboration with some of them). This includes to specify the moment when an intervention from public stakeholder is expected in the change process and the roles that he/she could be expected to play in facilitating the impact.

To this end, it is useful: (i) to more precisely outline the **types of public stakeholders** with whom the intervention could prompt interactions; (ii) to clarify the **concrete terms of public action** and the points at which public stakeholders are likely to interact with the other actors and facilitate (or hinder) the impact-development process.

i) Types of public stakeholders to be considered

The case studies analyzed using the ImpresS *ex post* method help identify different types of public stakeholders. This can be done by adopting a vertical approach according to the scale of governance considered, while distinguishing:

- National public stakeholders (State, ministries, central services, etc.);
- Decentralized State services (e.g., administrations, prefecture/sub-prefecture.), which are the representations and catalysts of national public stakeholder action;
- Local public stakeholders 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 stakeholders outside the country of the intervention (donors, bilateral or multilateral cooperation agencies), which pursue their own political strategies and influence the policies of governments in developing countries.

Yet, it may also be useful to adopt an 'horizontal' approach, which is rarely used in drawing up public policies aimed at unclustering activity sectors and related ministerial divisions. For example, an intervention targeting the seed value chain could benefit from interactions beyond the scope of the specialized office of the Ministry of Agriculture in charge, and thus include services attached to other ministries such as the Environment (for biodiversity-related aspects), Health (for nutrition-related aspects), Culture (for heritage aspects of certain species/varieties), Employment or Trade Ministries.

ii) Concrete terms of public action

Public stakeholders can play a key role by influencing the research orientation: through directing funding and subsidies for actors who innovate, through drawing up rules and standards, or through guiding training organizations. They also have a crucial role in the scaling stages. Public stakeholders may thereby have a leverage effect on innovation (in terms of creation or scaling) during the different phases of the impact pathway:

- Regarding research investments (inputs): public funding, research program orientations, networking;
- Regarding research outputs: contribution of public stakeholders to participatory multi-actor research, creation of an environment conducive to innovation;
- Regarding the generation of desirable outcomes: mobilizing actors, setting up standards and rules, creating consultation or management structures and promoting their functionality, financing communication operations, investment financing;
- Regarding impacts: financial incentives, creation of an innovation-friendly environment, facilitation of scaling, etc.

The more public stakeholders are involved in the intervention formulation process, the more they will be receptive to the envisaged activities. The participation of public actors in innovation processes, and especially their collaboration in participatory multi-actor research, strengthens their ability to interact with researchers and other actors in the innovation system and to facilitate the generation of sustainable impact of research.

Interactions can also provide impetus for opening (often absent) public spaces for discussion and consultation between public stakeholders from different sectors (agriculture, environment, health, employment, etc.) and other civil society actors, in order to highlight public policy contradictions that could have a negative impact on some interventions, or to develop shared assessments on targeted interventions, and in turn influence the design of public policy.

Research has also an impact on public policy by serving advocacy, and participating in public policy formulation or evaluation. Yet, political and scientific agendas differ. Researchers are expected to be flexible for interacting with public stakeholders, e.g. via informal relationships or participation in coalitions geared towards influencing certain innovation-friendly public policies.

3.2 What are the obstacles and opportunities to generating final and intermediate outcomes?

Once the desirable final and intermediate outcomes have been identified, it is essential to gain insight into potential obstacles to these outcomes, or the opportunities that could promote them. The idea is to ask (1) why an actor does not yet implement these practices, behaviors, and interactions, (2) why he/she would not have the necessary knowledge, skills, and motivation, (3) what elements in the context hamper achievement of these outcomes, or what opportunities are among these actors or in the context that could be used to foster generation of these outcomes?

These questions boost the plausibility of the hypotheses underlying the identified outcomes, and facilitate the **identification of opportunities that could favor them**. This stage of formulating obstacles on the basis of the final and intermediate outcomes helps in systemically identifying all the obstacles to these outcomes, even though they can again include some of the issues listed in the problem tree.

3.2.1 Obstacles and opportunities related to actors

Specific questions can help gain insight into the obstacles and opportunities related to the actors that could hamper or promote these outcomes:

- Do the identified actors **wish to change** and for what reasons? How is this outcome in line with their **values**?
- To what extent **do the actors have the ability, knowledge, available resources**, and power to do things differently?
- Can some of actors, who have specific **interests**, make the realization of the outcomes difficult or impossible?
- Can some of the actors, who have **specific interests**, accelerate/favor the outcomes?
- Can some **power relations** positively or negatively influence the final outcomes at the level of specific actors?
- For which obstacles can the intervention's partners **legitimately** intervene? For which obstacles can research legitimately intervene?

At this stage, the actor mapping elements (2.4) can be used to determine actors' roles and attitudes with regard to the outputs of the intervention:

- What is the exact role of each actor in achieving the desirable outcomes? What is his/her possible level of influence?
- How does the production of the final outcomes affect each actor?
- What is the foreseen reaction of the actor to the intervention (contribution/opposition)?

Answers to these questions can be thought by type of actor, particularly by distinguishing between major and influential actors. When the answers are unavailable to the team formulating the intervention, a phase may be specifically devoted to this assessment at the start of the intervention. This will help define the best strategy to engage the various actors and encourage output appropriation or modification of the intervention, especially its outputs.

Influential actors must be considered when mapping desirable outcomes. This is because an influential actor who is opposed to a solution proposed by an intervention may jeopardize the success of the intervention (e.g. a business producing inputs that would feel threatened by the introduction of a new agricultural practice). If this is the case, communication and awareness-raising activities to convince these actors should be considered. It is not necessarily up to research to carry out these activities, but it is important to build a strategy targeting those risks.

3.2.2 Context-related barriers and opportunities

In some cases, the context and its elements may represent an obstacle or an opportunity:

- Do the **physical environmental** conditions (soil, climate) prevent, for example, livestock farmers from changing their practices?

- Does the **economic environment** support changes in actors' behavior and interactions in a value chain [price incentives, existence of a market, infrastructure, etc.]?
- Is there a **regulatory or legislative** model that frames, limits, or encourages changes in practices, e.g. by processing companies?
- Do the **culture and values** of population of a territory determine possible changes?
- What past experience or existing arrangements can facilitate generation of the desirable outcomes?

Here again, the intervention alone will not necessarily be able to overcome all of the obstacles identified and take advantage of all the opportunities. By continuing the scoping work [2.3.3], reflection should be focused on the major obstacles and opportunities that an intervention could overcome. The intervention could also seek links with other projects or interventions able to overcome the obstacles. Overcoming certain obstacles may also be beyond the intervention ambition and potential. In this case, these obstacles will be considered as potential risks that should be highlighted and discussed.

3.3 What strategies should be implemented to overcome obstacles and seize opportunities?

Once the obstacles and opportunities have been identified, the team can design strategies to overcome obstacles on the one hand, and seize opportunities and trigger the desirable outcomes on the other hand. Strategizing consist of combining inputs and actions to fulfil an ambition. The plausibility of these strategies increases with the extent to which they elucidate hypotheses upon how outcomes are generated, thus highlighting the causal links between the different elements of the impact pathway. By a **strategic shift**, rather than seeking a 'miracle' solution, **a set of coordinated and systemic actions** can be formulated to overcome an obstacle.

The question that arises when defining strategies is: **how can the intervention contribute to the appropriation of its outputs by the actors—by removing obstacles or complex combinations of obstacles and/or by taking advantage of opportunities?**

More specifically, we could for example ask:

- How could the **motivation** of actors opposed to a potential intervention be addressed? Who is legitimate to do so and how?
- If an obstacle is contextual and concerns an actor, how can we **facilitate his/her access** to resources [cognitive, financial, material, human, economic, legal, social, etc.] so as to enable him/her to implement this change?
- In relation to the obstacles and opportunities identified to generate the desirable outcomes, should new technologies be **proposed to actors or existing technologies be improved**? How could they be designed or tested with actors to promote their appropriation? With which other strategies (e.g. on organization, governance, relationships between actors, etc.) should the availability of this technology be combined?
- What type of **training courses** should be offered to build individual or collective capacity, for whom, and in what formats? Who could sustainably conduct the training initiatives? Do these institutions/individuals also require capacity building or access to specific resource access for this?
- Can the implementation of new **mechanisms of consultation** between actors help solve conflicts between them? Under what conditions?

An intervention cannot implement all possible strategies, but could rely on those that prove to be the most plausible and legitimate to trigger desirable outcomes in the identified context. Ultimately, if the intervention team does not have the ability, means, or mandate to implement certain strategies, this legitimacy can be questioned. In this case, supporting or mainstreaming an integration with other legitimate projects, programs, or actors could prove to be a better strategy. Box 6 presents an example of reflection on desirable outcomes, identified obstacles and strategies to overcome them.

Mapping and interlinking final and intermediate outcomes, obstacles and opportunities, and developing strategies for overcoming obstacles and seizing these opportunities consists in the end of reflecting about how to **convincingly demonstrate** that the **intervention outputs can actually generate changes for the actors**, using a systemic standpoint and taking the complexity into account.

Box 4: Reflecting on desirable outcomes, obstacles and strategies to overcome them

In order to be able to appropriate a new agricultural machine, for example, farmers must know how it works and be able to use or adapt it. They have to be able to access the machine (this relates to acceptable cost, subsidy, ...), it must be readily available (on the market or through public actions), it must not trigger conflicts between actors in relation to its dissemination, etc. Using the machine can generate tensions within the family by increasing the workload of some family members or with employees who may be excluded from a work opportunity. Moreover, farmers may be skeptical of the new machine because it changes the way their work is organized and can clash with their customs. Suppliers of competing machinery may also have a negative attitude towards the new equipment, etc.

This simple analysis of the situation helps identify strategies to address these potential dynamics, for instance:

- Coordination between research and extension services may be necessary to promote interactions between actors and tailor the machine in the aim of its appropriation by actors. This means that new links are created between actors, and new activities are to be planned for the intervention, etc.
- It might be necessary to develop new commercial strategies for disseminating the new machine, e.g. by including alternative machine suppliers in the initiative, strengthening the negotiating capacity of some actors, etc.
- These actions may be beyond the scope of the intervention (outside the area of influence), so in some cases it could be necessary to develop alliances with other interventions.

The *ImpresS ex ante* approach urges the intervention team to reflect on systemic issues regarding the outcomes it proposes to generate.

3.4 What activities and outputs result from these strategies?

So far, we have detailed the desirable (final and intermediate) outcomes and the actors involved, obstacles and opportunities to generate these changes, as well as the strategies that the intervention could implement to help overcome the obstacles and generate the desirable outcomes.

The selected strategies represent the **main lines of activity** that the intervention will implement, alone or via partnerships/coalitions. At this stage, the strategies are split into more detailed activities, and the outputs the intervention will generate through these activities are identified. Ideally, the reflection proposed by the *ImpresS ex ante* approach should prompt a review of the participants' preconceived ideas and give rise to a consistent shared vision of the intervention starting from the targeted impacts and outcomes, not from the outputs.

Detailing the intervention activities involves defining:

- The **type of activity** (e.g. analysis, expertise, training, service provision);
- The **method chosen** to carry out each type of activity, including the degree of actor participation in implementing the method (observational research, action research, participatory research, etc.);
- The **interactions between actors** in the intervention and beyond;
- An accurate **timeline** highlighting the activities (Gantt chart of the intervention);
- The **actor leading** the activity and the participants.

In order to decline a strategy into activities, it is essential to identify, for example, a consistent set of activities that could help overcome an obstacle and to implement the chosen strategy. These activities can then be broken down into sub-activities or tasks, while specifying the implementation timeframe (beginning and end) and identifying the interdependencies between them. The potential outputs of each activity may then be identified, as well as the human, financial, and material resources needed to implement the activities. A bottom-up rationale may then again be applied when mapping desirable outcomes to assess whether the activities are sufficient and necessary to overcome the obstacles and generate the identified outcomes. Current links to other outcomes or missing activities can also be identified to link these 'blocks' to other outcomes depending on the activities.

Examples of how strategies are converted into activities and outputs are presented in Table 3.

Table 3: Simplified examples of the breakdown of strategies into activities and outputs

Strategies	Activities	Outputs
Local production of stills enables small-scale production by farmers	Development of a still prototype Training on still production and usage	Stills Trained local craftspeople Trained farmers
Land certification enables sustainable management of fuelwood for still operation	Training on sustainable management at each site for each actor Training nursery growers on reforestation	Land certificates issued Trained nursery growers
In-depth discussions with an industrial distillery on approaches regarding producers help create partnerships between the private sector and farmers doing the distilling	Drafting of an operational project to trigger the interest of industrial distillers	Operational project
Participatory assessment of the value chains enables identification of the stumbling blocks	Participatory workshop and interviews with key actors for an assessment of each value chain per site	Assessment-based publications Support for participatory workshops
Strengthening actors' management capacities enables them to better manage resources in their area	Participatory management training actions at each site for each type of actor Creation of local resource management committees	Training curriculum Assessment report on capacities to be strengthened per type of actor Local resource management committees
Negotiation of sustainable resource usage contracts	Discussions with public and private actors to define the operating contract content Working sessions with management committees for contract negotiation Discussion of contracts in local governance assemblies	Operating contract content Contracts negotiated and implemented

A new negotiation/deliberation/elucidation stage between actors is required when defining strategies and activities. An overall outcome-generating strategy may have already been formulated, but without a common vision on who should be the instigator, how and when. For instance, if one of the strategies is 'capacity building for agricultural advisers to support farmers in managing their farms', it is essential to reflect on the training format (duration, curricula, vocational training, etc.), who will conduct it, on what scale and how many people will be involved, etc. The scope and size of the intervention are thereby gradually redefined.

Regarding the actors' roles, it can be interesting to use the RACI matrix to help determine the key responsibilities: R - responsible (who carries out); A - accountable (who supervises and reports); C - consulted (who advises); and I - informed (who is informed). This matrix is used to highlight how each participant intervenes during an intervention and specifies the scope of the roles and the responsibilities of each actor.

As this stage, several elements on the impact pathway have been defined: desirable outcomes, outputs and the strategies that elucidate the causal logic underlying these changes.

We can also define the inputs used to carry out an activity (human and material resources, budget distribution between partners, information, knowledge, etc.) and thus generate the outputs.

3.5 To what impacts will these desirable outcomes contribute?

Once the outcome mapping is under control, it is important to get back to the initially formulated vision of the future so as to fine-tune the initial impact hypotheses according to the final formulated outcomes. This vision of the future may thus be reformulated and refined.

It is important not to focus solely on the positive impacts in the reflection on the impacts to which the final outcomes might contribute, i.e. the potential direct or collateral negative impacts should also be considered. It is useful to review the impacts identified during the reflection on actors (**Paragraph 2.4**) so as to consider, for example, those who could be indirectly impacted by the intervention without being

involved in it. These negative impacts could represent intervention risks. Additional strategies to minimize or even avoid them should be identified.

Figure 11 shows different dimensions of effects or impacts to be accounted for in the intervention logic. In addition to the intentional intervention effects, other targeted or non-targeted effects could be envisaged. At this stage, it is essential to be plausible and realistic by not multiplying the types and dimensions of impact to which the intervention contributes. Instead, the impacts that have been identified should be narrowed down to those that are the most plausible in the medium and long term while specifying the causal links between these impacts and the final identified outcomes.



Figure 11: The different types of impacts

In order to reflect on the impacts, the 11 impact domains identified by CIRAD on the basis of the 13 case studies analyzed in the framework of the *ImpresS ex post* method may be considered and matched against the Sustainable Development Goals (Table 4).

Table 4: The 11 impact domains identified in the framework of the *ImpresS ex post* approach

Impact domains (11)	Impact dimensions (4)	SDGs concerned	
Culture and living conditions	Human development and food security	End poverty in all its forms everywhere.	SDG1
Food security and product quality		End hunger, achieve food security and improved nutrition and promote sustainable agriculture	SDG2
Household and farmer incomes			
Environment, natural resources, and biodiversity	Environmental conservation	Protect, restore, and promote sustainable use of terrestrial ecosystems, halt biodiversity loss	SDG15
Animal health			
Economic opportunities, business turnover and employment	Economic activity	Ensure sustainable consumption and production patterns	SDG12
Production and productivity			
Quality of services			
Institutions and public actions	Institutions and sustainable partnerships	Partnerships	SDG17
Access to information and legitimacy on new issues			
Capacity to innovate			

3.6 Finalizing the mapping of desirable outcomes: stabilization of the first version by iteratively delineating the line of ambition of the intervention

At this point, the first two stages of the process enabled mapping the desirable final and intermediate outcomes starting from the vision of the future, the underlying problems, the contributing desirable outcomes, thereby leading to identification of the strategies, activities, and outputs necessary to generate these changes. This mapping is achieved through a series of questions that allows to account for the complexity of the situation [see Figure 12].

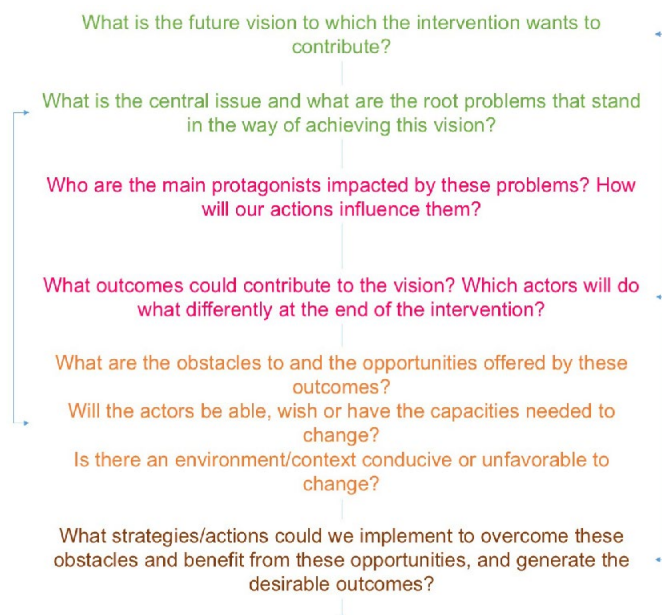


Figure 12: A series of questions for formulating an intervention based on the vision of the future

On the basis of this first version of the mapping of desirable outcomes, different iteration loops help specify the intervention ambition, reflect on the overall impact pathways to which this mapping relates (while identifying possible gaps in the logic), as well as reflect on the mode of intervention from research of the proposed action.

Through implementing an intervention building process with the ImpresS *ex ante* approach, the team deliberates/negotiates the definition of the intervention reach and scope. The intervention duration is often limited to a few years, so it is important that the partners clearly define the extent of their ambition relative to the reflection on the areas of intervention control, influence, and interest **(Paragraph 3.1.2)**:

- What changes in practices, behavior, and interactions are **plausible and achievable** over the intervention period (while remaining ambitious)?
- What **line of ambition** is defined for this intervention?

Thus, some desirable outcomes that had been identified initially may—after collective discussion—become impacts because they are considered to be beyond the intervention scope or influence in this timeframe, with this partnership, these inputs and in this context, etc.

The line of ambition does not necessarily correspond to the ‘influence area’ defined by the team at the start of the intervention. The intervention ambition may be to increase these actors’ influence beyond the current level by boosting the role, skills, or power of certain actors, so that by the end of the intervention, they could be able to influence some circles that they did not directly influence at the outset, or by creating strategic collaborations with influential actors. **The line of ambition therefore corresponds not only to the initial area of influence of the intervention partners but also to what it could potentially achieve by the end of the action period.**

This may also lead the partners' team to reflect on the role of other institutions or interventions to foster the generation of certain outcomes beyond the scope of their own intervention [final outcomes 'external' to this intervention ambition]. These external changes could be identified and mentioned to elucidate the necessary causal links and synergies with interventions or organizations. This could generate changes that the intervention would not be able to directly influence, but which may be necessary to make the impact contribution as plausible as possible within the intervention timeframe or beyond.

We should mention the development of strategies that aim at scaling. These can facilitate the transition from changes in practices, behavior, and interactions induced by a project on 'target' actors and populations to encompass broader populations (scaling out: at the same level) or actors at other levels (scaling up/down) not directly targeted by the intervention, thereby increasing the intervention impact. Links between major and impacted actors and between influential and impacted actors are especially important to be taken into account when considering scaling at different levels : vertical (scaling up) and horizontal (scaling out).

The reach, ambition, and scope of an intervention can evolve during this phase, enabling to foster strategic choices on the ultimate intervention target for which the intervention will be 'responsible' at the end of its operational period.

Figure 13 provides an example of the mapping of desirable outcomes in the CerealSecure project, while specifying its line of ambition and the desirable outcomes (external outcomes complementing those of the intervention).

Once all these stages have been completed and the line of ambition defined, **the map of desirable outcomes can be transformed into an impact pathway**. This mapping is not definitive—instead it is an intermediate object, which may evolve during the intervention formulation process, but could serve as a basis for presenting the logic and identifying the hypotheses that still need clarification or detail.

Finally, this outcome graph can be mobilized and revised regularly to test the plausibility of the hypotheses over time and serve as a basis for designing the intervention monitoring and evaluation system.



Figure 13: Mapping of desirable outcomes in the CerealSecure project

For further insight #2: What is the main research intervention mode?

The *modus operandi* proposed for research in an intervention requires reflection once the outcome graph has been drawn up. The way research interacts with other actors throughout the innovation process is one of the three following elements that shape the impact pathway: (i) the weight of scientific knowledge in the innovation process and the extent of involvement of research in the resulting outputs, (ii) the role research plays in managing the impact pathway, and (iii) the weight of other actors in the innovation process and the impact orientation. The desirable outcomes and the overall process will vary depending on

these elements, the intervention mode, the posture of research and its involvement in output production (Devaux-Spatarakis *et al.*, 2016).

Research carried out at CIRAD may be categorized into four 'archetypes', as described during the analysis of 13 case studies in the framework of the ImpresS *ex post* approach (Figure 14):

- Participatory knowledge and technology transfer;
- Co-building of innovations;
- Support for the innovation process;
- Open innovation.

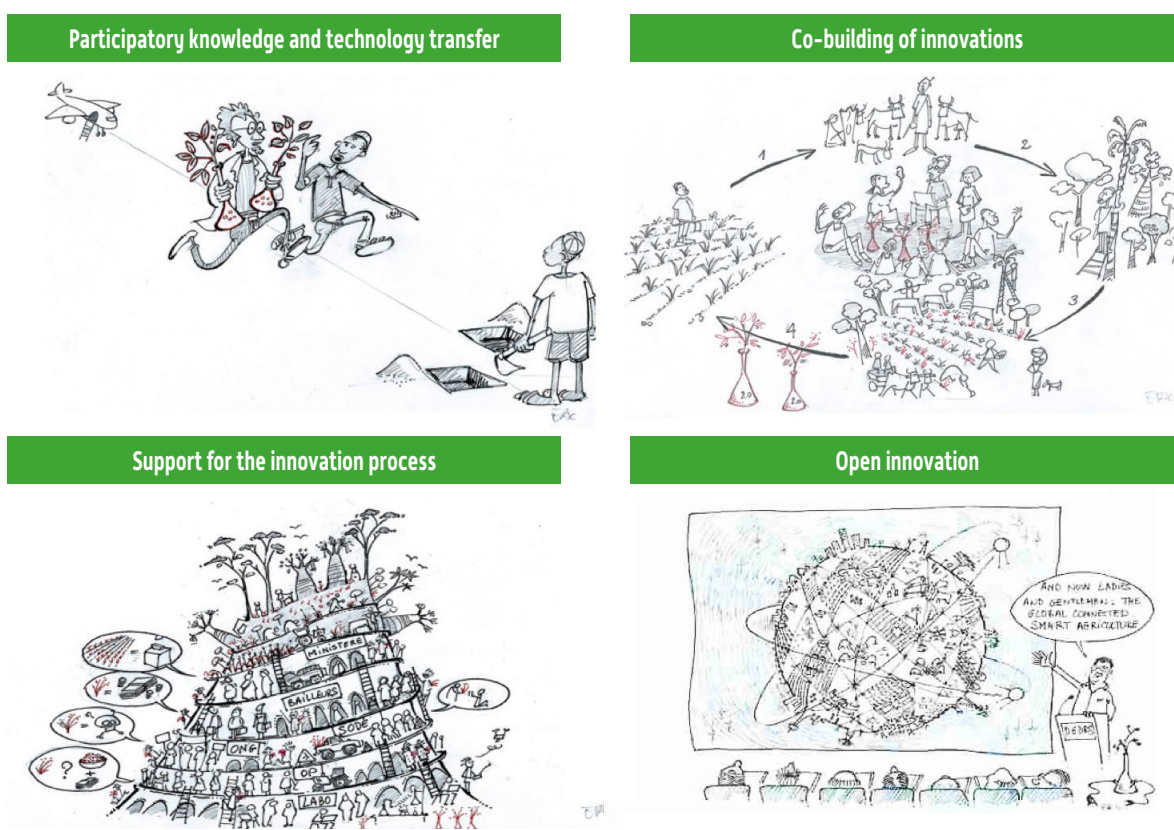
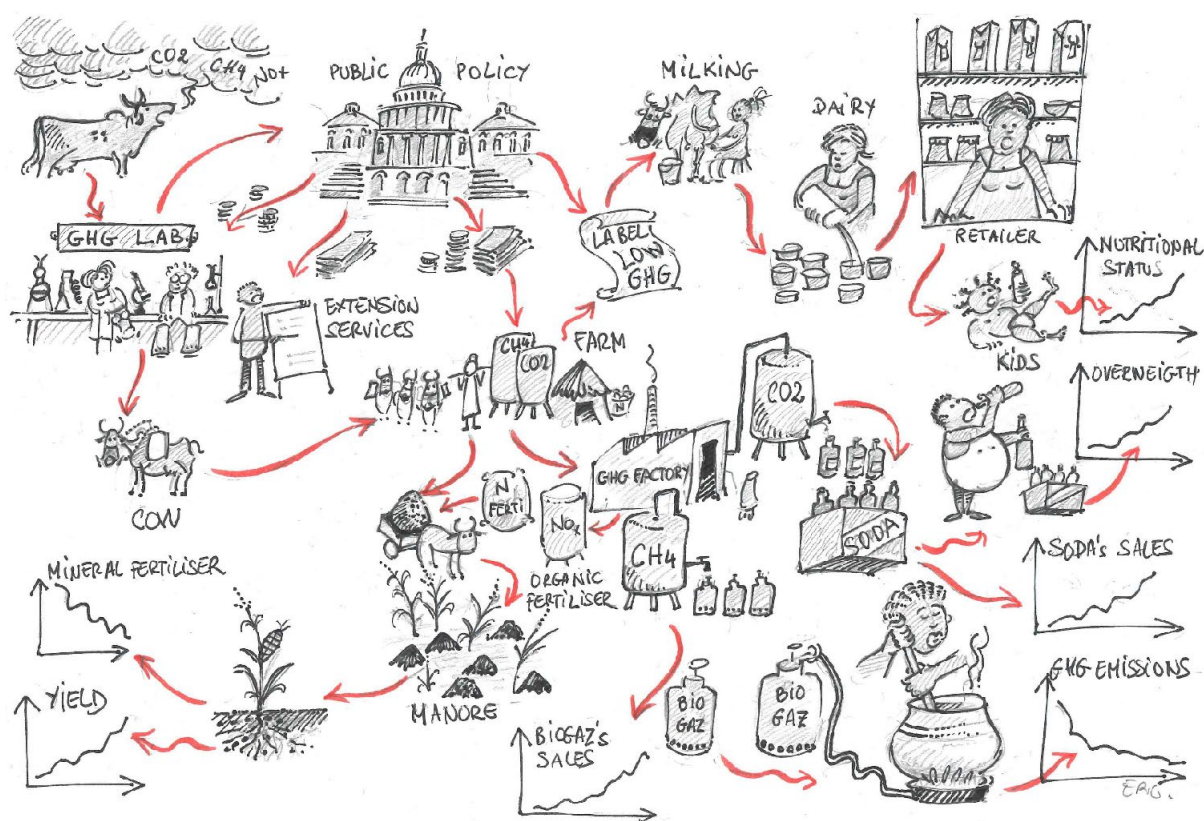


Figure 14: Archetypes of research intervention modes at CIRAD (Drawings: Éric Vall)

Reviewing the mode of research intervention at this stage can help better determine how an intervention—particularly a development-oriented research intervention—could participate in output building, what processes it would use to generate the identified desirable outcomes, and how these could contribute to the impacts. This could also help elucidate how research could meet its objectives, when, in some cases, researchers have little or no control over the impact pathway, and how they could position themselves in relation to other types of actors involved in the intervention process (development actors, training/capacity building actors, public stakeholders) who may be more effective in facilitating or achieving certain final intervention outcomes than researchers.

Chapter 4. Consolidating the impact pathway



4.1 Designing the impact pathway

At this stage, all elements required to consolidate and visualize the intervention impact pathway are available: i.e. impacts, outcomes, outputs, and inputs. We have to get back to the intervention narrative (stage 1), outcome mapping (stage 2), and identification of obstacles/opportunities and strategies to link the boxes along the impact pathway. These links represent the causal relationships between outputs, outcomes, and impacts: in impact pathway graphical displays, arrows represent these strategies and the underlying pre-discussed and explained causal hypothesis.

The impact pathway is consistent and robust because it has not been built linearly and reflects the complexity. It avoids 'miracle' hypotheses and is the result of a systemic analysis of the problems, actors linked to these problems, and systematic formulation of outcomes (final and intermediate), obstacles and opportunities linked with these outcomes, and the strategies to achieve them. This impact pathway is therefore based on a collective elucidation of all of the causal links and their plausibility.

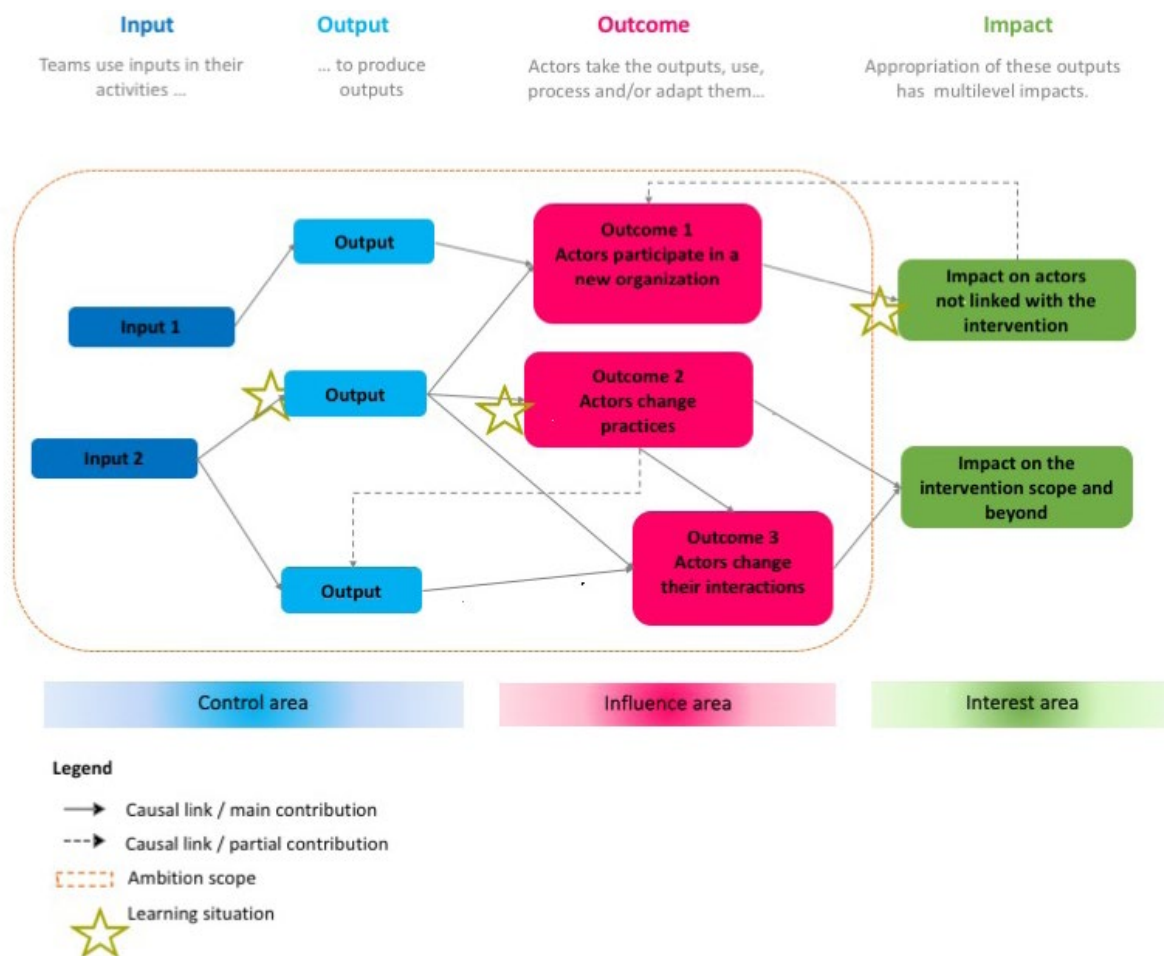


Figure 15: Schematic diagram of the impact pathway highlighting learning situations

the importance of the process resides in facilitating the collective identification of changes, and in enabling negotiation/deliberation on the final outcomes and hypotheses of change. In reality, this relationship is often more complex. It can vary between interventions, but also according to the posture of the team formulating the causal links [formulation of these different elements and their sequence may differ with regard to the intervention and its 'target' actors]¹¹.

Moreover, the distinction between outputs, final outcomes, and impacts is not necessarily a clear cut: this conventional terminology is partially used in evaluation circles and has been used for the purpose of the *ImpresS ex ante* approach, but not all evaluators go by our final outcome definition [see stage 4, translation into different outputs].

4.2 Identifying contextual factors that may influence an intervention

The intervention context is a key dimension to be considered, to assess its potential influence on the intervention implementation process but also, conversely, the potential influence of the intervention on the context. It is essential to think iteratively about the known or foreseen contextual factors that could promote/inhibit the outcomes and generate a so-called enabling environment (Douthwaite *et al.*, 2017). Actors often have ideas on how their context may change in the coming years, in the light of the prevailing economic trends, new laws, etc. Yet, foresight studies and national strategic plans may also exist that project public policy priorities over 5-10 years, etc., and the associated documents or studies must be taken into account. The intervention can contribute to modifying these factors or simply consider them as risks or opportunities.

¹¹ Mayne defines the Com-B framework for formulating behavioural change logics [behavior (B)] as the "result of the interaction between three necessary conditions: capabilities (C), opportunities (O) and motivation (M)".

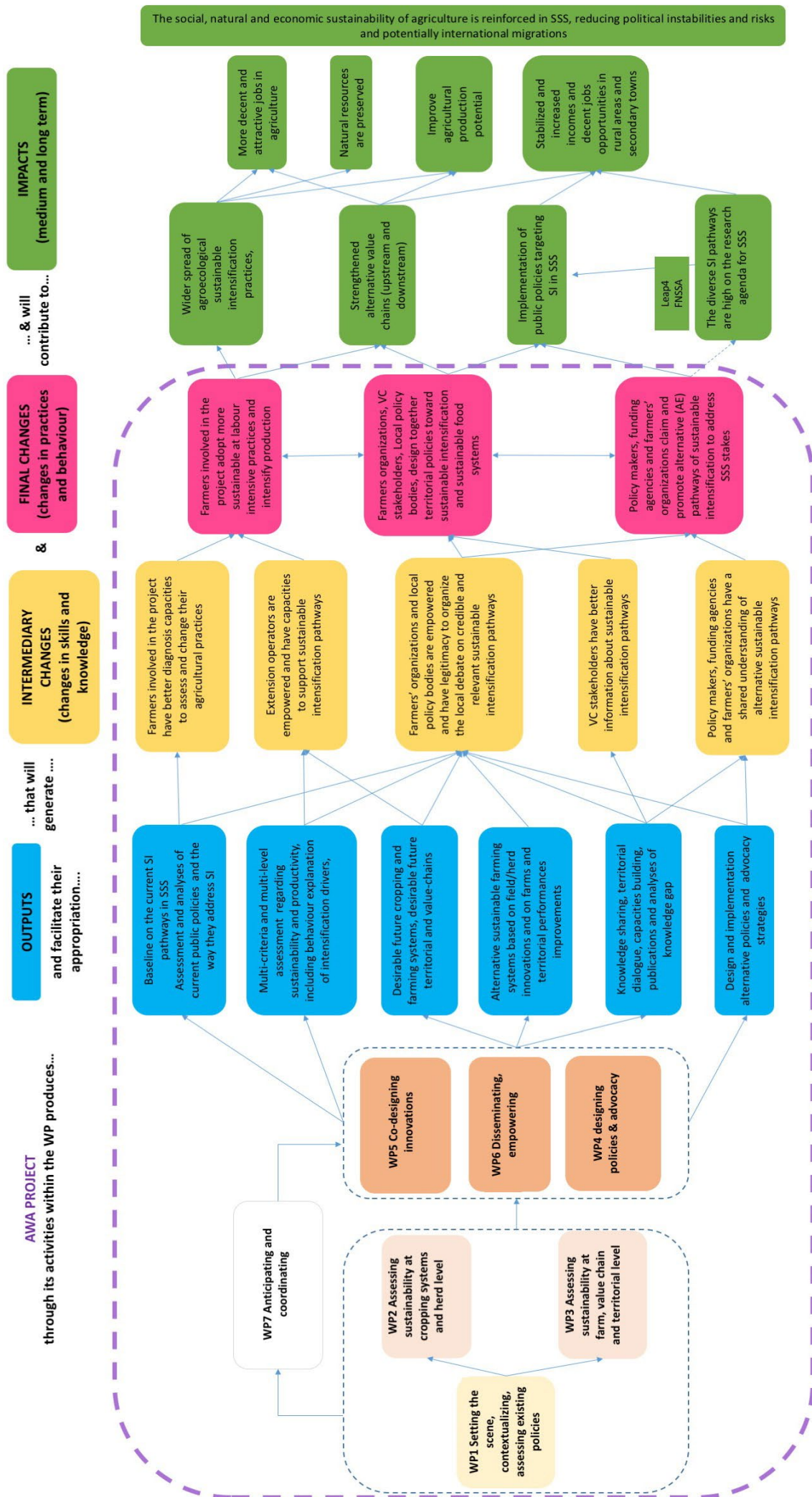


Figure 16: Example of the impact pathway of the AWA project

An iterative reflection is required on the context. It has been initiated during the stage of identification of obstacles and opportunities for change (**Chapter 3.2.2**), but it needs a more general attention in relation to contextual factors that could influence the intervention.

These factors may be **external** to the intervention, such as institutional, political, environmental, economic, technological, social and cultural factors. They can also be **internal**: in relation to the intervention partnership composition, the extent of collaboration between actors, the leading actors, access to additional funding, etc.

Let us consider an example where the pathway considered to sustainably boost the food supply in rural areas involves the implementation of agroecological practices and the reorganization of value chain. In this case, the enabling factors may include accessible communication inputs, an agroecology-friendly policy, consultation practices and spaces, and available international funding. Conversely, factors that could hinder the outcome may include chemical input subsidization policies, land policies that are not conducive to reliable access to land, or ongoing promotion by large companies of technology that is not compatible with that proposed, etc.

Now let us look at a further example where an impact pathway based on consultation and participatory decision-making to manage natural resources is proposed. In such context, the enabling factors would include policies fostering decentralization or instituting and making certain types of civil society actor consultation mandatory. The non-enabling factors would be centralized and vertical rules and routines for public decision making, no funding granted to communities, paternalistic decision making strategies, etc.

The identification of these factors helps align the formulated impact pathway with the specific context (links with the OECD DAC internal and external coherence indicators for interventions). This may also lead to the identification of new research questions (**Chapter 5.4**) on specific hypotheses formulated and their plausibility, or on the effects of specific factors on identified final outcomes and/or impacts.

For further insight #3:

To which global impact pathways should the final outcome mapping be linked?

Once the outcome graph has been finalized, it may be interesting to position the intervention in relation to three global impact pathways outlined in the innovation literature. Douthwaite *et al.* (2017) proposed a model in which agricultural research for development contributes to societal and environmental impacts along three interlinked impact pathways (Figure 6):

1. Impact through technology appropriation by actors—the **technological development and appropriation pathway**. This pathway is familiar to most researchers (Douthwaite *et al.*, 2017) and refers to the linear technology transfer model. It is a simplification of the technological development reality in existing innovation trajectories, such as breeding for crop disease resistance, or agricultural mechanization;
2. Impact through innovation capacity building in agricultural innovation systems, or via local initiatives

or social achievement—the **endogenous development pathway**: collaborative and participatory research processes help build the innovation capacity of rural actors and support organizations. This pathway is underpinned by the need to enhance the innovation capacity and interactions of actors contributing to common development objectives. Participatory and collaborative approaches are essential, and common challenges must be identified by building a structural cognitive social capital in the process and fostering endogenous development;

3. Impact through influence of the political sphere—the **political influence pathway**: research generates ideas and establishes facts to influence policymaking. Policy change helps build an enabling environment for rural innovation.

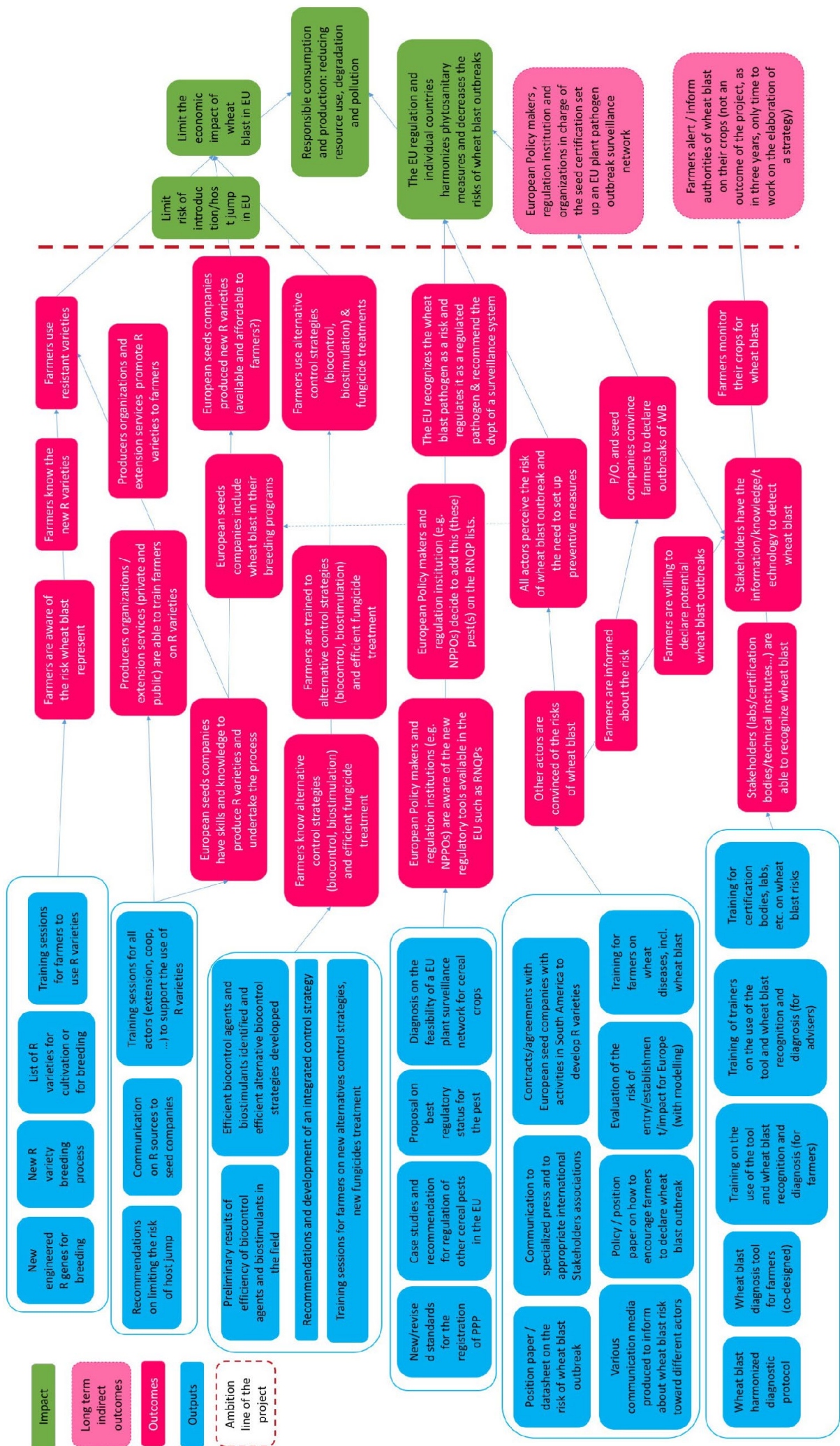


Figure 17: Impact pathway of the CerealSecure project corresponding to the outcome mapping in Figure 13

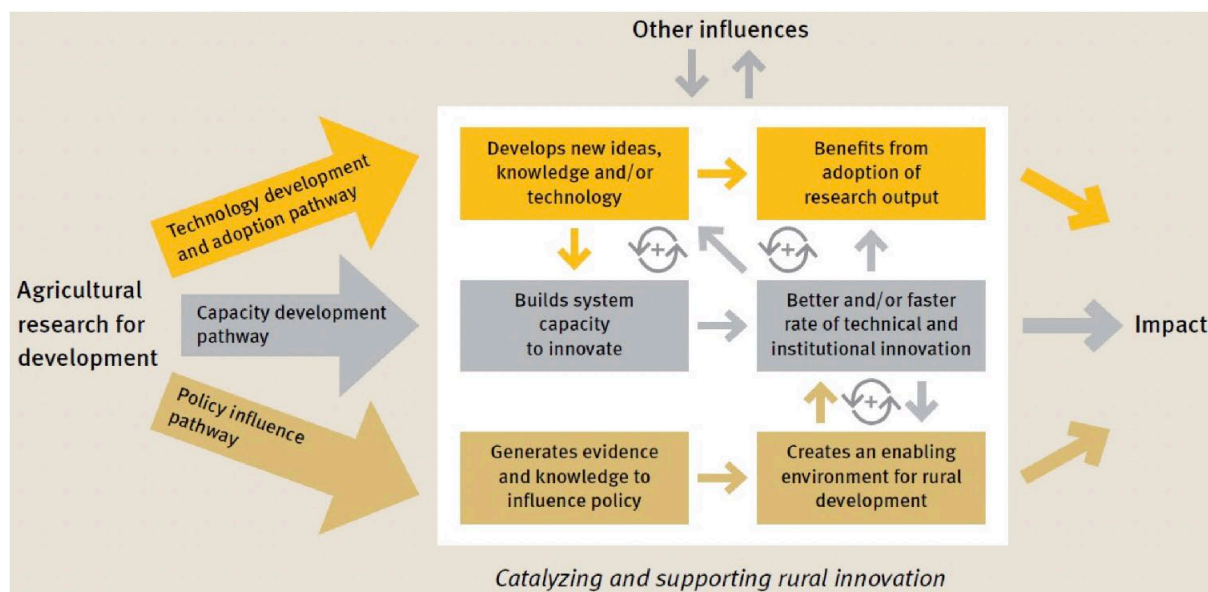


Figure 18: Three interlinked global impact pathways highlighting the impact contributions of research (Douthwaite *et al.*, 2017; p. 5)

According to Douthwaite *et al.* (2017), the impact of any agricultural research for development intervention would have an impact that would result from a combination of these three pathways. Positive interactions and feedback loops between these pathways often trigger final outcomes. For example, a research action on technical dimensions could also involve building the innovation capacities of actors to promote appropriation of the planned technology or their organization and interaction capacity, which in turn requires interactions with the political sphere for scaling purposes.

In the intervention formulation process, the three impact pathways can be interlinked over time, and research can contribute to the impact via different pathways at different times. It is essential to identify how the intervention is positioned in relation to the three types of possible pathways once a first version of the outcome graph has been stabilized. This can help elucidate and enrich the graph regarding dimensions that have been underevaluated/underexplored in order to improve its consistency. This may even enable to directly and simply elucidate the type of pathway upon which the intervention is positioned (technological appropriation, endogenous development through capacity building or political influence).

1. BUILD AN INTERVENTION NARRATIVE

2. MAP DESIRABLE CHANGES AND BUILD THE INTERVENTION STRATEGY

3. CONSOLIDATE THE IMPACT PATHWAY

4. TRANSLATE THE CREATED IMPACT PATHWAY INTO DIFFERENT OUTPUTS

Chapter 5. Translating the impact pathway into different outputs

5.1 Challenges in translating the created shared vision and impact pathway

The intervention logic is built schematically by mapping the outcomes and the impact pathway, which represents a shared vision of the intervention, its reach, scope, and ambition. They are then 'translated' into **different outputs**, depending on the objectives and target audiences [see Figure 19 below]:

- An **intervention narrative**: progressing from a schematic representation to a convincing narrative;
- An **intervention action plan**: with different project formalization tools if the intervention is a project—logical framework, concept note; or as a strategic action plan (e.g. of a partnership platform); as a road-map (e.g. for a value chain);
- An **'outcome-oriented' intervention monitoring and evaluation system**;
- **New research questions**.

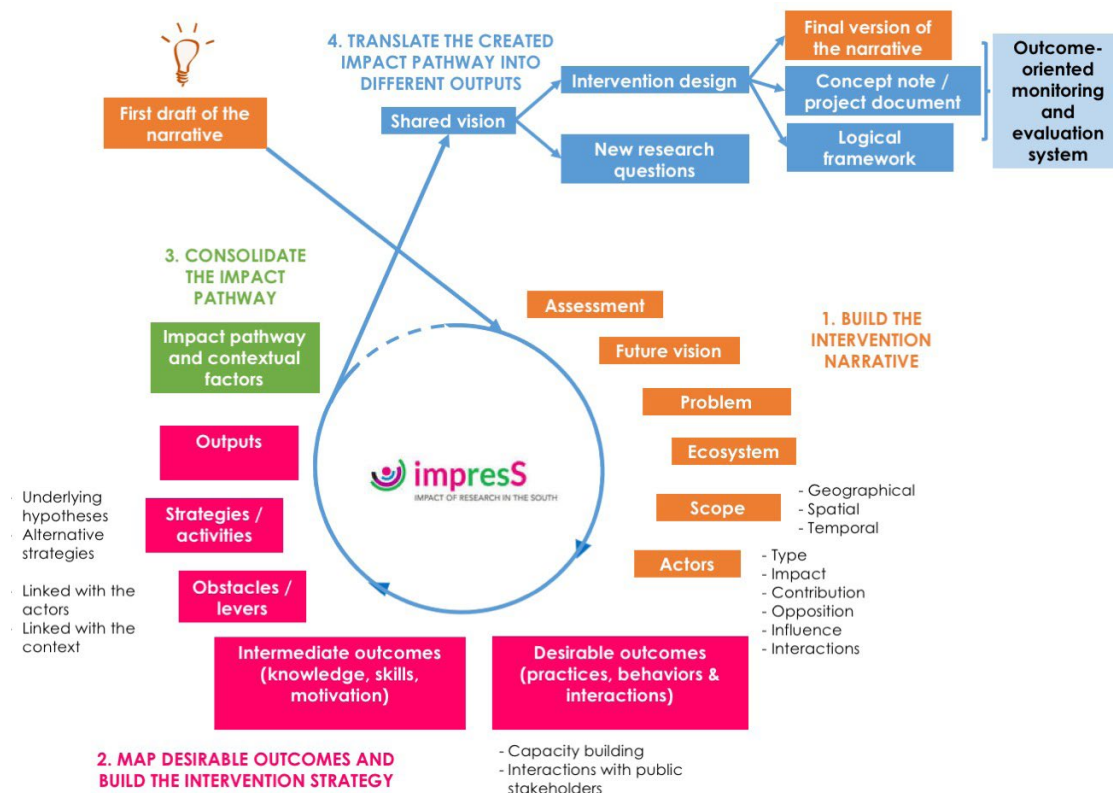


Figure 19: From an initial intervention idea to different outputs to meet different objectives

The language and format will not be the same, depending on the objective. They will have to be tailored to the context, e.g. a short policy brief presenting a powerful narrative of the shared vision of the intervention logic to policymakers, a concept note formalizing a project for a specific donor, a logical framework, etc.

It is necessary to assess and/or be aware of the expectations of the target audience, its language or semantics, and to translate the logic created through ImpresS *ex ante* into this language and these specific tools. This 'translation' process may also no longer highlight concepts and definitions used during the application phase, e.g. outcomes, obstacle, strategies, etc.

Ultimately, the core result of the approach is a **participatory building process, of crossing and aligning different viewpoints, where the reflection focus is on the role of different actors and the outcomes to which the intervention strives to contribute. The logic that will lead to these changes, for whom, why, and under what conditions is elucidated.**

5.2 Translating the impact pathway into an intervention architecture

5.2.1 The intervention narrative

The narrative sets out the theory of change visualized by the intervention impact pathway, and elucidates the causal links and the role of contextual factors. The narrative building process must remain rigorous, structured by the main outcomes (see examples below), and must describe the obstacles and strategies. It must also be carefully written in a non-scholastic style: it is a rhetorical exercise of conviction, short (2 pages maximum), explicit, punchy, plausible, and ideally attractive to the reader's attention. To avoid falling into a commitment trap, it is useful to place the intervention in a longer timeframe, particularly in relation to past interventions.

The narrative is intended to facilitate communication with different audiences, each one having its specific expectations. The narrative must be tailored accordingly—without misrepresenting its essence – in order to foster dialogue with these audiences, which can be:

- The **intervention partners** (especially those who have not participated in building the impact pathway) are primarily concerned by the narrative, so the narrative must convince them of the relevance and plausibility of the proposed intervention and the envisioned impact pathway, and encourage them to actively participate;
- The **scientific community**, including researchers. Here, it is important to elucidate the initial stages of the impact pathway, and its underlying hypotheses. Research often has a fundamental role in formulating these hypotheses, including the genesis of outputs. These hypotheses may also be the focus of new research questions (**Chapter 5.4**);
- If the intervention is a project, **donors** represent a target audience that the narrative needs to convince. The narrative should seek to echo these actors' specific concerns, expectations, priorities, and impact visions, as well as their operational frameworks (e.g. many donors expect a presentation of a logical framework that the *ex-ante* ImpresS approach could effectively help develop – **Chapter 5.2.3**). This has to be done without concealing the complexity of the proposed interventions, the need for programming flexibility over time to adapt to unforeseen events, or ignoring the relevant timeframe required to achieve the desired impact. The narrative can also be modulated to reflect the fact that some donors may not solely be funding the interventions. They may also be intervention partners who should be aware that their roles are acknowledged.

It is not always easy to translate a schematic representation into a punchy narrative, especially when the formulated intervention is complex and has been formulated by several actors. The aim here is to use the collectively built logic to generate a consistent text. The figures and boxes below show two examples: a narrative of the BioStar project, and a study carried out between CIRAD health partnership platforms (dPs) to identify potential convergent actions. In both cases, we illustrate the translation of all or part of the outcome mapping into a narrative.

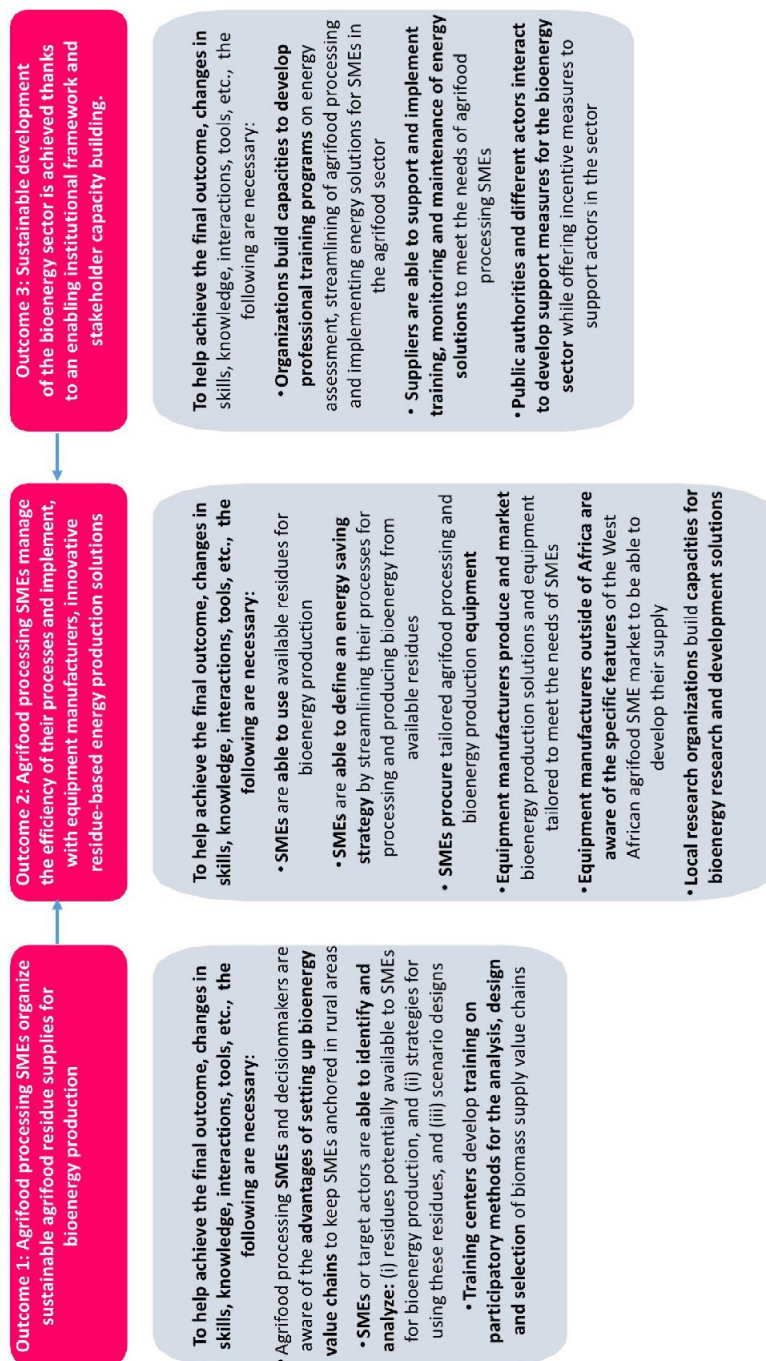


Figure 20: Main outcomes in the BioStar project and associated strategies

Box 5: BIOSTAR project narrative

The central issue in this project concerns processing operations of small- and medium-sized agrifood enterprises (SME AFs) in the Sahel and West Africa. These enterprises are often energy inefficient, which can affect the quality of their products and generate heavy losses. One of the project's final desirable changes is that SME AFs control their processing efficiency while implementing innovative crop residue-based energy production solutions. There are currently obstacles to these changes: SME AFs lack skills and information on the energy production systems likely to meet their needs; few professionals are currently able to (i) identify the specific energy needs of SME AFs, (ii) propose technical solutions adapted to the energy needs and agrifood processes of these SME AFs, and (iii) install and maintain energy production equipment. The overall project strategy is therefore to propose a approach, including all professionals in the renewable energy sector, from bioenergy equipment suppliers to maintenance experts. The intervention will help optimize

SME AF processes in terms of energy consumption, material balance, and product quality. The installation of bioenergy equipment will enable them to generate energy self-sufficiency while making effective use of their crop residues. They will benefit from training in the operation and maintenance of the installation. Other interested SME AFs in the selected sectors will also benefit from the intervention through information and training sessions organized with the support of their professional and/or interprofessional organizations. Other actors such as the bioenergy equipment manufacturers selected to supply and adapt the prototypes to be installed in SME AFs will benefit from: (i) research center support to help them adapt their equipment to SME AF needs, (ii) feedback on the operation of the adapted equipment at experimental sites, (iii) a network (bioenergy sector) of partners for the dissemination, installation and maintenance of their equipment. The establishment of a bioenergy sector will give them access to these technical proposals in the medium term.

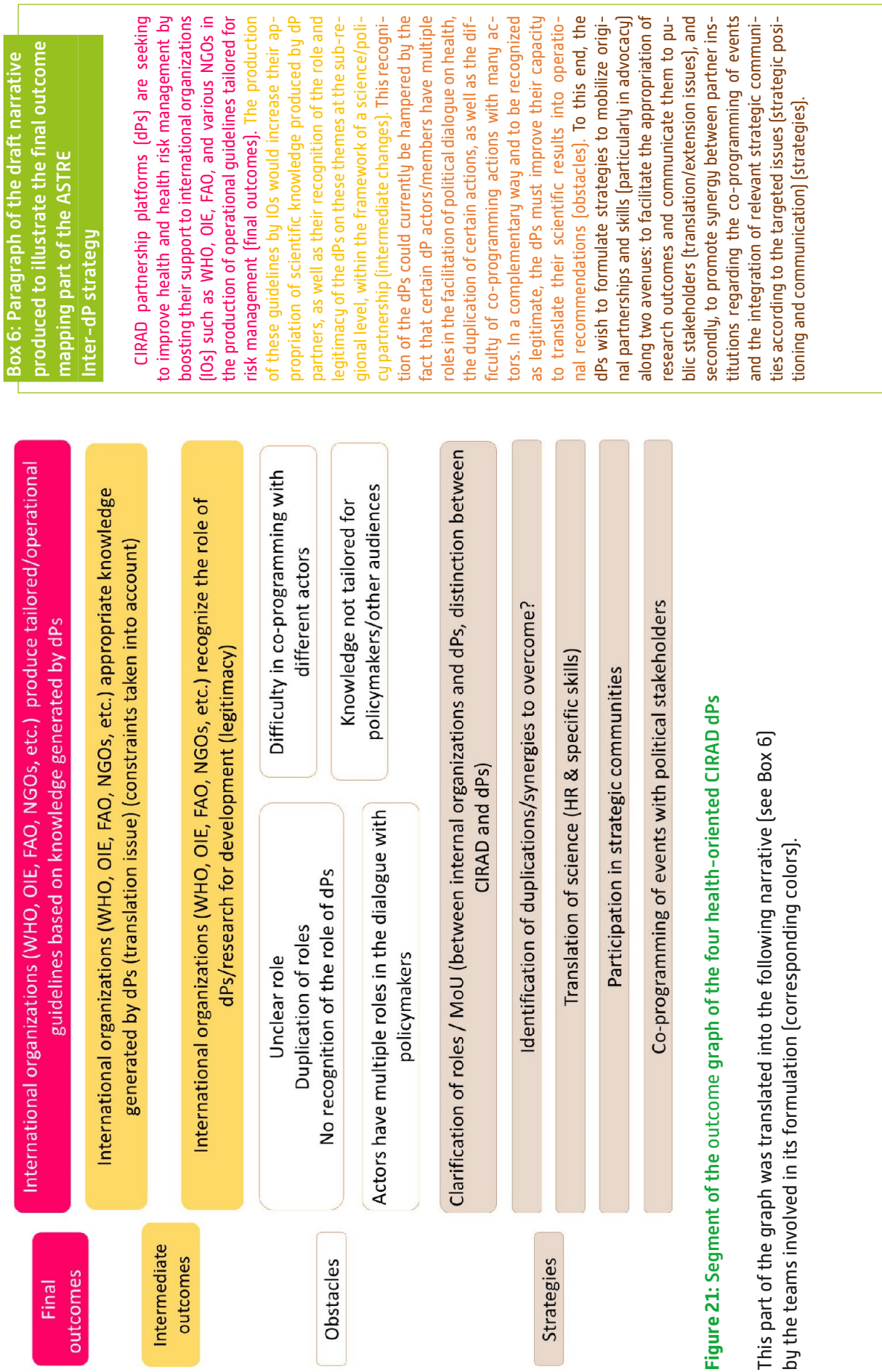


Figure 21: Segment of the outcome graph of the four health-oriented CIRAD dPs

This part of the graph was translated into the following narrative (see Box 6) by the teams involved in its formulation (corresponding colors).

5.2.2 Translating the shared vision and impact pathway into an actual intervention architecture

Based on the intervention logic resulting from the mapping of outcomes and the impact pathway, the intervention team will build a **consistent intervention architecture** (components, axes, pillars, work packages, etc.). Several architectures can be proposed:

- A **classic** organization, based on themes or disciplines (laboratory research component, training component, communication and dissemination component, etc.);
- A more **systemic** organization, based on the intervention logic, e.g. organized by final outcome blocks. This helps avoid disciplinary silos while highlighting the complementarity and articulation of the different strategies involved, all with the same final outcome.

Defining the architecture also helps formalize the intervention governance mechanisms and bodies and its monitoring and evaluation system (**Chapter 5.3**).

An example is shown in Figure 22. On the basis of the gradually refined and enriched outcome graph (see Figure 13 in Chapter 3), the team drafts consistent work packages (or project components) in line with the overall articulation logic for the identified strategies.

The logic of this project was presented in the simplified form outlined below, with the team being the vector of the overall logic and of all of the specific hypotheses of change formulated during the intervention development phase (hypotheses represented by causal links in Figure 17, page 49).

5.2.3 Translating the shared vision and impact pathway into different languages

The definitions proposed in the ImpresS *ex ante* approach are a convention. The team building the intervention is free to use different wording but the rationale must be based on the same underlying concepts, such as the changes targeted for the different actors, or the obstacles and opportunities. The challenge is to address the questions upon which the stages of the process are based when formulating a **shared vision of an intervention within a team**.

Once this vision has been clearly established within the team, using common vocabulary to formalize the different expected levels of change, it is important to understand the vocabulary used by the target audiences (e.g. donors) in terms of terminology and frameworks for formalizing interventions, and identify the corresponding elements in our impact pathway.

Below, we provide some examples of the terminology used by some donors, and the underlying logic for change (at our current state of knowledge regarding the donors): the European H2020 funding programme for research and innovation, the Bill and Melinda Gates Foundation, and the European Commission DG DEVCO.

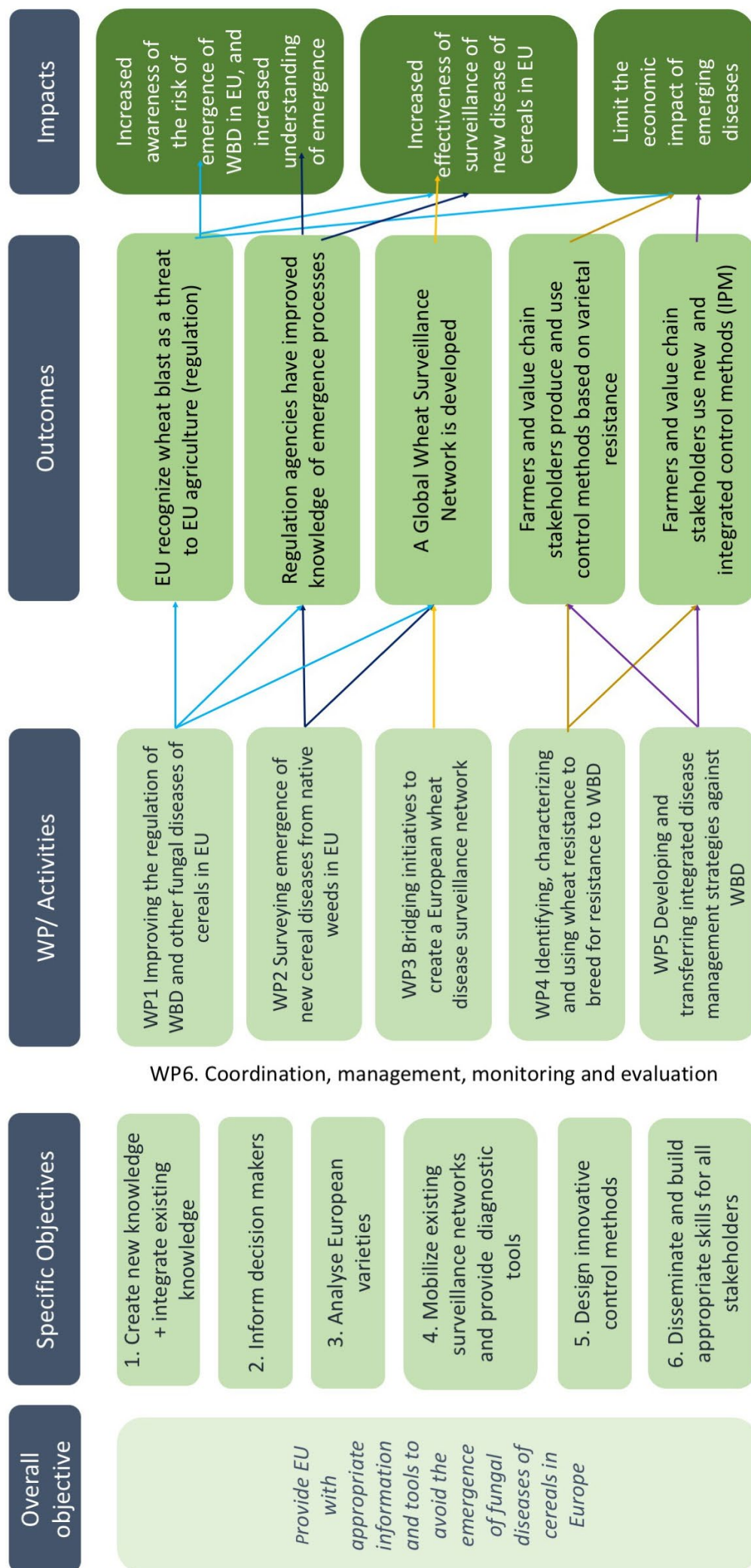


Figure 22: Example of a simplified impact pathway for an intervention (CerealSecure project)



VISION of INNOVATION oriented towards:

- TRL – technology readiness level
- Strengthening of the **innovation capacity** and integration of new knowledge; strengthening of the **business competitiveness and growth**; development and provision of **innovations that meet market needs**.

... AND POSITIVE

- “The innovation **benefits and impacts** can be societal, research-related, environmental, technical, commercial, educational, or anything that brings a **benefit** to someone or addresses”.

... INTEGRATING ACTORS

- **Innovation:** new (or improved) entity that, **when used**, generates tangible benefits, addressing needs and demands.
- “2.2 Measures to maximize the impact”: a) Dissemination and use of results; b) Communication.

MULTI-ACTOR APPROACH (MAA): projects must focus on real problems or opportunities **encountered by users**, while partners with **complementary knowledge** (scientific, operational, etc.) must **work together** throughout the project activities from start to finish.

Figure 23: Example of the terminology used in the European H2020 programme¹²

For H2020 projects, presenting an impact pathway is not mandatory (and can sometimes be detrimental to the proposal, as the evaluators are not always familiar with this type of approach and formalization). In any case, it can be very useful to mobilize a discrete ‘undercover’ approach to formulate a common vision and project architecture, and then translating this vision into the H2020 programme logic. In this case, in addition to sharing a common vision of the intervention between partners and producing a consistent and systemic overall logic, mobilizing ImpresS *ex ante* to formulate the intervention could help go beyond innovation production (as defined by H2020) and foster innovation appropriation/utilization. This could lead to reflection on the dissemination and exploitation of the outputs. Dissemination involves much more than simply communicating the research outputs. It includes their use by the actors and potential associated changes in practices and behavior. The ImpresS *ex ante* approach can also be implemented in this framework to help identify milestones (or forks in the road to change), as anticipated in the proposal.

Finally, in the frame of H2020 project submission, the topic (and the expected impacts that are presented) provides a framework for formulating the theory of change and intervention according to some levels of expectations. The intervention team decides whether to, fully or partially, address them and formulates the intervention along these lines (without solely being guided by them).

¹² https://ec.europa.eu/research/evaluations/pdf/archive/h2020_evaluations/intervention_logic_h2020_052016.pdf

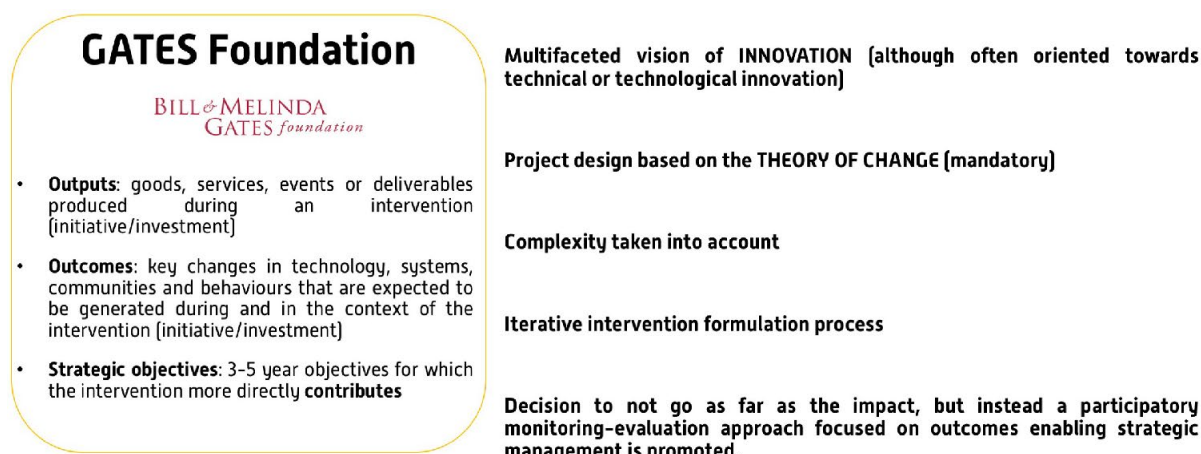


Figure 24: Example of the terminology used in Bill & Melinda Gates Foundation initiatives ¹³

The terminology and logic of the Gates Foundation is similar to that proposed in the ImpressS *ex ante* approach [similar mindsets].

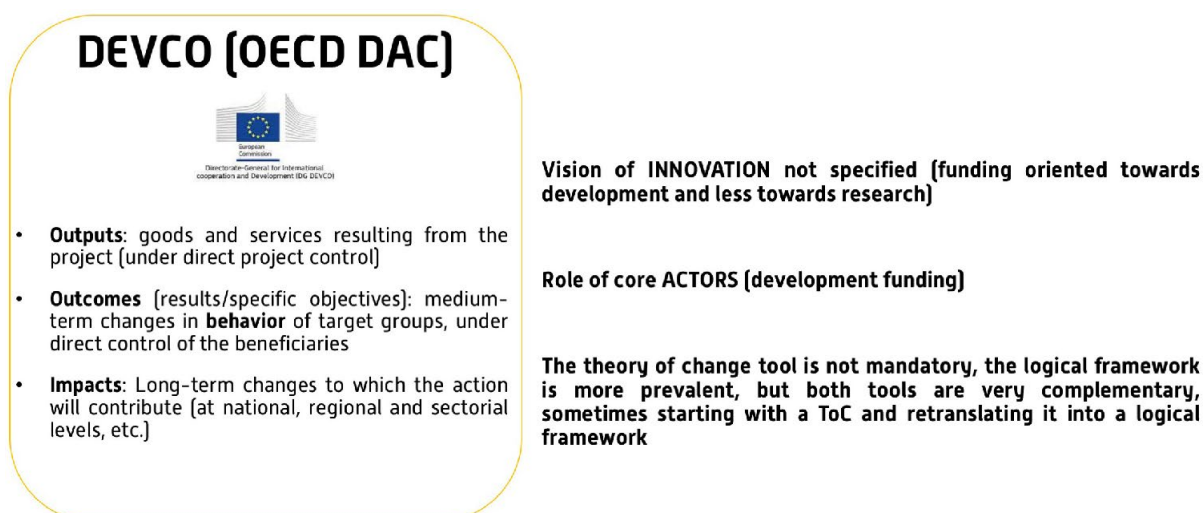


Figure 25: Example of the terminology used by DEVCO ¹⁴

In the European Commission's Directorate-General for International Cooperation and Development (DEVCO) funding framework, applicants are required to formulate an overall objective (which may correspond to the expected impacts) and one or more specific objectives (some delegations only require one). The specific objective could be formulated as a 'super outcome' (main outcome) of the project while then structuring the intervention around what DEVCO defines as results (corresponding to our final outcomes).

If the collective carrying out the intervention has formulated a theory of change, it is fairly simple to translate it into a corresponding logical framework (the logical framework was initially designed to facilitate systemic intervention formulation, but, in its form, this has resulted in 'linearizing' the building of these interventions).

These different examples present the donors' approaches and terminologies, which therefore fall within the project formulation framework.

¹³ Sources: <https://www.gatesfoundation.org/How-We-Work>, <https://docs.gatesfoundation.org/documents/guide-to-actionable-measurement.pdf>

¹⁴ Source: http://indicators.developmentresults.eu/common/pdf/SIG%20website_Methodo%202019.pdf; <https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>

Matrice du cadre logique de DEVCO

Indicateurs et sources de vérification (pour les objectifs et résultats)

	DESCRIPTION DU PROJET	INDICATEURS	SOURCES DE VERIFICATION	HYPOTHESES
Objectifs globaux (OG)	OG1 : OG2 : OG3 :	Mesure objective d'accomplissement de l'OG	Support physique (ou digital) qui prouve ou démontre la donné des indicateurs	Hypothèses précises pour que les OG puisse être réalisé
Objectif spécifique (OS)	OS :	Mesure objective d'accomplissement de l'OS	Idem	Hypothèses précises pour que les OS puisse être réalisé
Résultats :	R1 : R2 : R3 :	Mesure objective d'accomplissement de l'activité	Idem	Hypothèses précises pour que les Résultats du projet puissent être réalisés
Activités :	A1.1 : A1.2 : A1.3 : A2.1 : A2.2 : A3.1 : A3.2 : A3.3 :	Eléments de ressources (moyens) - OPTIONNEL - OPTIONNEL Eléments de moyens et budgets pour chaque activité		(OPTIONNEL) Hypothèses précises pour que les Activités du projet puissent être réalisées Hypothèses
	Description du projet : objectifs globaux, Objectif spécifique, résultats, activités			Conditions préalables

Figure 26: Logical framework and the DEVCO project document

Structure du document de projet

1. TITRE / ACRONYME	
2. RESUME	
3. JUSTIFICATION ET PERTINENCE	
3.1 Contexte du projet : géographique, environnemental, social, politique, économique, acteurs, institutionnelles/légales, Cirad...	
3.2 Situation de départ - constat initial – Etat de l’art	
4. DESCRIPTION DE L’ACTION	Description du projet : objectifs globaux, Objectif spécifique, résultats, activités
4.1 Objectifs (globaux, spécifique)	
4.2 Cibles/bénéficiaires	
4.3 Logique d'intervention, méthodologie	
4.4 Résultats	
4.5 Activités	Eléments de moyens et budgets pour chaque activité
4.6 Moyens / Partenariat	
5. BUDGET GLOBAL	
6. EFFETS / IMPACTS	
7. DURABILITE / EVALUATION	Hypothèses
Conditions préalables hypothèses, risques	Conditions préalables
8. ETHIQUE / GENRE / RSE	

5.3 Translating the shared vision and impact pathway into an outcome-oriented monitoring and evaluation system



The ImpresS *ex ante* approach is still in an experimental phase regarding the **outcome-oriented¹⁵ monitoring and evaluation (ME)¹⁶** or participatory monitoring, evaluation and learning (PMEL) stage. Here, we propose generic guidelines on the design and implementation of these ME systems, which will be the focus of future methodological developments by the ImpresS team.

5.3.1 Outcome-oriented monitoring and evaluation principles

Partners and donors generally focus on monitoring the project outputs or deliverables (e.g. the number of people trained in a training session) and they rarely ask for an effective evaluation of the final and intermediate outcomes (e.g. how the trained people have implemented the new skills acquired via the training, what changes have been generated as a result of using those skills). The ImpresS *ex ante* approach aims to go further by monitoring the real intervention contribution to the identified desirable changes based on co-building the intervention logic and the underlying hypotheses. Moreover, this monitoring generates insights that may subsequently be used to tailor intervention management, to address research questions on change processes, or to improve future planning.

Regardless of whether or not the intervention formulated is a project, this approach is interesting because it provides a tailored and reflexive action-oriented management tool.

Outcome-oriented M&E may seem complicated, time-consuming, and costly in terms of human resources, but it is successful. Experience shows that it fosters learning [Blundo *et al.*, 2017; Peersman *et al.*, 2016], and helps identify outcomes and lessons that are generally not visible under conventional development-oriented research project M&E practices. It also helps move towards more adaptive management practices [Barnett *et al.*, 2019].

¹⁵ The monitoring and evaluation term used in this section differs markedly from the *in itinere* term, which corresponds to adaptations of the ImpresS *ex post* method to ongoing interventions. See *ex post* case studies, including *in itinere* studies: <https://www.cirad.fr/en/our-research/the-impact-of-our-research/the-impress-ex-post-method/principles-and-tools>

¹⁶ "Monitoring and evaluation oriented change": from the French term: source F3E (<https://f3e.asso.fr/ressource/comment-suivre-et-evaluer-les-changements/>)

The outcome-oriented monitoring and evaluation ambitions are as follows:

- To move away from mechanistic intervention coordination, management, M&E approaches based solely on outputs, in order to generate a **system that meets the learning and evaluation needs of the actors**, who in turn appropriate the system and its outcomes [by adapting the actors' and partners' participation to promote this learning and appropriation];
- To gain insights into the **change processes** triggered by the intervention, beyond simply monitoring the performance of activities, and assess whether the hypotheses formulated at the outset are relevant, or whether the intervention activities need to be redirected;
- To systematize the **documentation and formalization of all outcomes**, including potential negative, unanticipated, and unintended impacts.

M&E can be implemented in a participatory manner, like the ImpresS *ex ante* approach. FAO defines participatory monitoring as: "having all passengers on the bus know their destination and decide how they will measure their progress". On this basis, developing an outcome-oriented M&E system and implementing it clearly requires active actor participation in the intervention, i.e. the passengers but also sometimes the bus drivers. This also implies that the bus destination has been validated, shared, and planned by all.

This outcome-oriented M&E system must meet the cross-cutting objectives of the intervention and the partners, as well as the donor's reporting requirements. It is therefore important: (i) to know what the donor's requirements are and what will be required at each stage; (ii) to build the outcome-oriented M&E system collectively with the partners so that it can meet the collective's different objectives (learning and understanding, evaluating and measuring, reporting), with regard to its form, organization, and the chosen indicators.

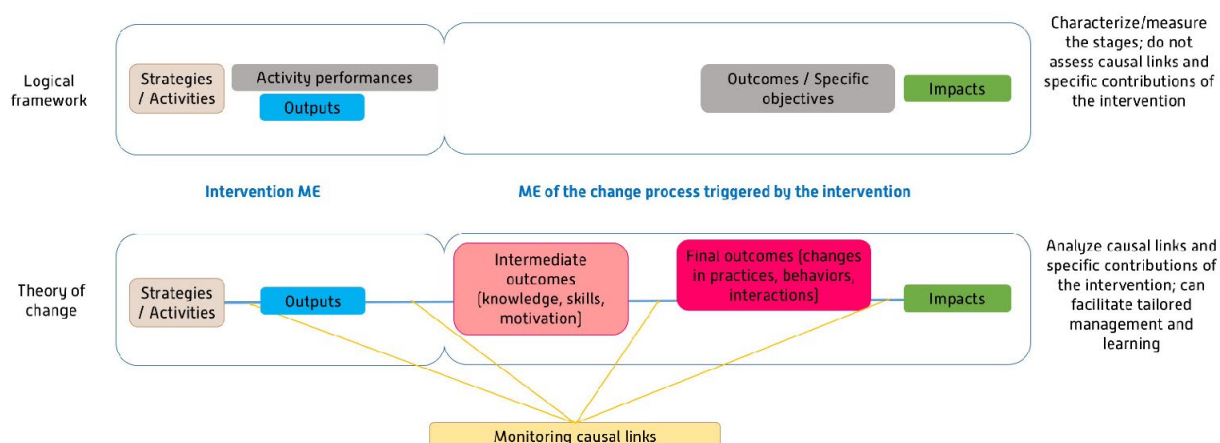


Figure 27: Comparison of a simplified classical intervention monitoring and evaluation system with an outcome-oriented intervention monitoring and evaluation system

5.3.2 Implementing and using the results of outcome-oriented M&E

The purpose of monitoring final and intermediate outcomes *via* outcome-oriented M&E is to promote collective learning and facilitate regular participatory re-evaluation and adjustment of the initial impact pathway when and where necessary. Data from the M&E system should document whether the intervention actually contributes to the recommended changes while also providing opportunities to search for unexpected outcomes, rather than simply generating mechanical monitoring data through a strict preset work plan. The latter attitude could easily lead to damaging distortions, or even failures, for various reasons: errors or omissions regarding the contextual factors taken into account, or the initial interpretation of the obstacles, failure to obtain certain outputs, thereby invalidating the impact pathway that integrates them, unforeseen partnership dynamics, etc. Outcome-oriented M&E **periodically requires revision of the impact pathway and hypotheses of change** in order to encourage gradual adaptation to uncertain and changing contexts, since the initial impact pathway is never fully predictive.

In this vision, outcome-oriented M&E can and should enable interaction with intervention partners and other actors in order to learn lessons from the ongoing intervention, to evaluate the change process generated by the intervention and help actors adapt their activities and actions, including those related to the intervention. This thinking must be based on a shared understanding and interpretation of the outcomes achieved, the changes that have occurred (or not) for the major actors, as well as changes in the context.

One of the factors necessary for outcome-oriented M&E to play such a role is the identification of key moments when the intervention team will take the time and acquire the inputs needed to critically interpret its actions and activities on the basis of monitoring data. It could also reformulate, re-evaluate and validate the final and intermediate outcomes and underlying hypotheses, the actors actually involved, context changes that need to be considered, etc. This reflection and learning can take place during time slots allocated in annual workshops to report on outcomes and plan future activities, or in periodic workshops devoted to the issue.

Outcome-oriented M&E cannot be set up alone. Specific human and financial inputs are needed to integrate it into the intervention. Specific capacities are also required. Alternatively, it can be outsourced to external evaluators who will collect information to inform the indicators and lead the process.

It is always important to have sufficient time and inputs to be able to collectively and periodically ‘take a step back’ from the daily action and think critically and strategically about the question: are we on the targeted impact pathway? Are our activities actually helping bring us closer to the desirable impacts?

The shape of the outcome-oriented M&E system ultimately depends on the nature, size, and complexity of the intervention. Finally, of course, care must be taken to ensure that the investment allocated to M&E is not disproportionate, in terms of time and financial inputs, to the detriment of the activity implementation process. There is no standard formula!

5.4 Yielding new research questions

The type of reflection undertaken through the ImpresS *ex ante* approach is not necessarily useful solely to build an intervention (whether it is a project or not), but it can also prompt the research teams to formulate new research questions. When formulating the theory of change for an intervention, the concerned teams formulate and specify a number of underlying hypotheses of change. Some of these hypotheses can be fueled and validated by the theory (literature review, previous experience of interventions in the same or similar contexts, etc.). Other hypotheses have not yet been tested and may therefore become the subject of new emerging research questions, and the focus of specific evaluations to inform, test, and validate the hypotheses.

For example, in the Sustainable Wildlife Management (SWM) project, theories of change per intervention site were participatively formulated, involving not only the project partners, but also major local actors who were influential and/or impacted by the intervention at the different sites. This work led some researchers to question the plausibility of certain hypotheses underlying these theories of change and the existing evidence in the literature. A central hypothesis is that the creation of sustainable income-generating activities will reduce natural resource overexploitation. A literature review on this hypothesis (as for the other project hypotheses) is under way to identify the underlying mechanisms and strategies implemented by other interventions, which will be compared with the project strategies and tested during its implementation.

In another example, in the BioStar project, an entire component coordinated by social scientists from different research institutes is devoted to monitoring and evaluating changes that will be identified with the actors impacted by the project. This monitoring and evaluation system will help the team formulate specific research questions on the impacts that these changes will cause. The impacts will be studied using qualitative and quantitative evaluation methods able to address contextualized research questions.

Chapter 6. Potential adaptations to formulate an intervention using the ImpresS *ex ante* approach

6.1 Tailoring the approach to different levels of available resources

The ImpresS *ex ante* approach can be adapted to address different expectations in terms of deadlines, inputs, and capacities. Even if time is not a constraint, **it is essential to strike a balance between an excessively simplistic and an overly intricate narrative. The risk of “losing” the team in a too detailed and meaningless hypothetical impact pathway building process should be avoided while striving to ensure the building of a consistent overall vision.**

Reflection should help in designing and planning more effective interventions. Strategic questions should be asked about how best to generate change, while maximizing the likelihood that the intervention outputs will be transformed into outcomes for the actors. Actor participation and working in iterative loops are key in this building process. This will enhance the hypothetical impact pathway so as to gradually make it more realistic and credible. This fosters learning and collective appropriation of the intervention vision emerging from the reflections.

Yet, ultimately the proposed approach is not set in stone. It offers consistent stages and a variety of tools. The teams involved can select the methods they consider the most appropriate for addressing the questions put forward. It is more strategic to seek relevant answers to these questions than to focus attention on using any specific tool. Researchers in the intervention building phase are thus encouraged not to implement ImpresS *ex ante* alone. They should try to integrate and get support from multi-disciplinary and multi-partner teams, the ImpresS team, and CIRAD project development officers.

The proposed approach can be tailored to the inputs in terms of time, budget, and capacities that can be mobilized to conduct a reflection on the intervention impact. If the inputs available during the intervention design phase do not allow for sufficient participation of the future partners in the *ex ante* reflection, the design team can always take advantage of all the reflection stages and components. However, in such cases, it is highly recommended to include a specific funding request in the proposal to enable organization of a multi-actor workshop at the beginning of the intervention. The aim is to be able to share, improve, and validate the *ex ante* impact pathway jointly created by the researchers, the intervention partners and/or major actors. Some donors may be very aware of the relevance of such a request as it demonstrates that the researchers are fully aware of the participatory and multi-actor nature of the innovation processes upon which the impact depends.

Sometimes, a prior assessment may not have been carried out, or there may not be sufficient inputs or time for the participatory process to work properly, or the lead team may not have elucidated the theory of change before the intervention. In these cases, the logic of the approach could be used to rebuild the underlying theory of change, and its consistency can be worked on at the beginning of the intervention or during its launch (inception phase) so as to specify and finalize the content of the activities. This is not about starting from scratch, but rather about taking the existing intervention (existing document, etc.) into account to identify the scope of the future vision and the outcome mapping that can be formalized on this basis. These tools can then be used to rework the overall intervention logic using a ‘mirror’

(outcome graph highlighting gaps in the logic) to identify complementary activities or synergies that could strengthen the overall consistency and plausibility. Conducting this work once the intervention has begun does not provide much room for adjusting its formulation, but it does make it possible to rebuild a shared vision of the intervention between the partners, and to build an adaptive management tool to monitor and evaluate the intervention progress and generate outcomes.

Table 5: Different adaptations of *ex ante* participatory workshops according to the timeframe

Before the workshop	Timeframe	Day 1	Day 2	Day 3	After the workshop
Initial assessment: contexts, actors, existing projects First draft narrative based on the initial assessment Send the narrative to the participants (2 pages max.)	1 day	Introduction, expectations and presentation of the assessment or draft narrative (1 h), stage 1.1 and future vision (30') Problem tree (1.5 h) Mapping of actors (2 h) Determination of first outcome pathways (1 h)			Finalizing the outcome formulation Obstacles to change and strategies Strategy-based activities and outputs Impact pathways Finalizing the narrative Monitoring, evaluation and learning Final document
	3 days	Introduction, expectations and presentation of the assessment or draft narrative (2 h) Future vision (1 h) Problem tree (3 h)	Mapping of actors (3 h) Identifying outcomes and obstacles to change (3 h)	Strategies for overcoming obstacles (3 h) Activities based on the strategies and outputs of the activities (3 h)	Impact pathway Finalizing the narrative Participatory monitoring, evaluation and learning Final document

6.2 Tailoring the approach to different levels and topics

During 2018 and 2019, CIRAD teams assessed the ImpresS *ex ante* approach at different levels and for different purposes: setting up projects and programs (for different donors), formulating roadmaps for agricultural value chains,¹⁷ and formulating strategies for partnership platforms (dPs)¹⁸.

For the formulation of agricultural value chain roadmaps, preliminary analysis of the context and CIRAD's comparative advantages in addressing certain issues was necessary to avoid formulating theories of change that are too broad and generic while remaining at scales that CIRAD researchers and partners could influence.

For the formulation of theories of change for partnership platforms (dPs), the exercise enabled the different partners (researchers and other actors, i.e. institutional, technical, educational, etc.) to build a shared vision of their objectives and desirable impacts, desirable changes, their reach, as well as new alliances that could be created to enhance their influence on certain desirable outcomes.

Working at these 'non-project' scales helps elucidate partnership strategies from different angles, particularly by striving to include partners very early on when formulating CIRAD's 'internal' intervention strategies.

For large-scale programs, clusters of projects or clusters of dPs, it is likely that it will not be possible to describe the targeted changes and activities and that the definition of the hypothetical impact pathway will have to remain at a more generic level. A generic impact pathway will then be formulated for the most

¹⁷ <https://www.cirad.fr/en/our-research/tropical-value-chains>

¹⁸ <https://www.cirad.fr/en/our-research/platforms-in-partnership-for-research-and-training/list-of-platforms>

all-encompassing level (multi-context, multi-country, multi-site, etc.), while specific impact pathways will be developed at more local levels (at the level of each cluster project, of each site within a single project, etc.) following the same initial overall logic. This will lead to a highly generic impact pathway, which can then be refined and re-contextualized into specific impact pathways for different intervention sites or more specific projects. These specific impact pathways will be consistently nested within the overall impact pathway (nested impact pathways, Mayne *et al.*, 2015), which will represent the common orientation and vision of the project cluster, program, or partnership platform (dP), etc., and provide the basis for the development of the project cluster, program or dP. The overall impact pathway will feature more generic types of actors, and the specific impact pathways will specifically describe the actions to be carried out and the monitoring indicators to be considered at each site, for example. The activities could then be defined in more detail at this specific impact pathway level.

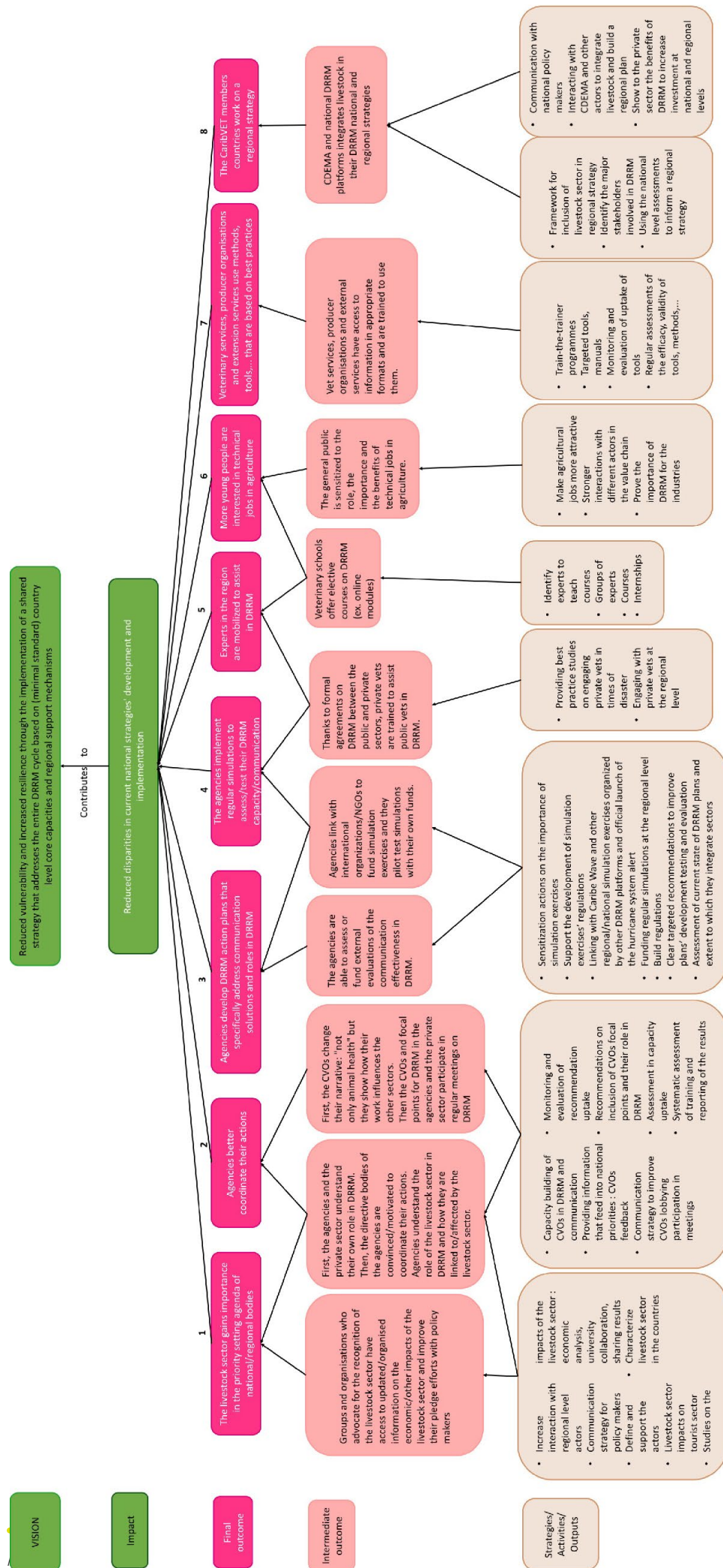


Figure 28: Mapping outcomes in the CaribVet partnership system

Conclusion

The ImpresS *ex ante* approach aims—through a collective building process—to elucidate the sequence of actions and causal links via which an intervention will generate outcomes, for whom, in what context, and under what conditions. This elucidation fosters the intervention design team to identify the underlying hypotheses of change, which are often implicit, unknown, unforeseen or not thought through.

The ultimate ambition is to support research teams and their partners in meaningfully structuring the design, implementation, management, monitoring and evaluation of their interventions to enhance the plausibility of their contributions to long-term impacts.

It is never easy to implement a fully participatory approach directed towards designing and planning an intervention involving research. Yet, the intervention partners' participation in the *ex ante* reflection can help build a shared vision combining different viewpoints, while strengthening the relevance, plausibility, and feasibility of the proposed impact pathways.

The ImpresS *ex ante* approach calls for reflexivity on the research and development postures and practices of the intervention actors—notably their role, legitimacy as well as the interactions between actors and power relations—so that all of these issues will be taken into account in the intervention building and implementation process.

Finally, the ImpresS *ex ante* approach is not simply a blanket recipe to be applied or an imposed framework. It is an approach to structure collective thinking, improve reflexivity and develop an impact culture within CIRAD and among its partners. Transparent honest reflection on the underlying outcome hypotheses aims to foster collective appropriation of strategies and objectives, while avoiding the all-too-common shortcoming of promising miraculous impacts without elucidating how and why they are to be achieved.

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