GUIDE

Building research projects differently: co-creating R&I with society

One of the paths toward research that matches the transitions, lessons from the field for institutions

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What will you find in this guide?

FOREWORD

Passing on a proven practice

For nearly fifteen years, I led SoScience, a pioneering company in responsible research and innovation. We designed and ran programs that brought together actors who, ordinarily, never meet: researchers from every discipline and industrial companies, but also social entrepreneurs, NGOs, local authorities and citizens. Our goal never changed: that research produce answers useful to the major societal and environmental challenges, and that it co-produce them with society, not only for it.

This way of working was recognized early on. As soon as 2015-2016, SoScience was listed among the resources of RRI Tools, the European platform cataloguing the tools of responsible research and innovation. In 2021, our methodology was recognized by the United Nations as a good practice in support of the Sustainable Development Goals. These recognitions say something useful to whoever reads these lines: what follows is not a theory, it is a set of practices proven in the field and validated by peers and international institutions.

Today, many research organizations, universities and funding agencies are experimenting on their own with new ways of organizing research: more open, more participatory, more impact-oriented. This is excellent news. But these experiments often hit the same obstacles, and sometimes rediscover, the hard way, pitfalls that we ourselves encountered and learned to avoid.

This document is a feedback from experience, offered to the community to move faster. If you already run this kind of approach, you will find here something to compare your practice against ours, and perhaps to avoid a few detours. Reorganizing research for the transitions is a vast undertaking: it touches the training of people, new professions, new valorization structures. This guide explores only one entry point, concrete and immediately accessible to an institution wishing to put it into practice: building research and innovation projects with society.

One clarification before we begin: the examples and figures gathered here are a snapshot taken at a given moment, that of SoScience's closure. They describe a practice as it had developed over nearly ten years, not a definitive state. Take them for what they are, useful landmarks, and not as a fixed measure of a field that, for its part, keeps evolving.

My thanks go to the SoScience teams who, over the years, built and refined these practices, and in particular to Roxane Bibard and Julie Jouvencel, who helped formalize this material, as well as to the directors of our collaborative impact open innovation programs: Antoine Bertholus, Yoann Malinge, Sophie Demoures and Xavier Gascuel.

Mélanie Marcel
Founder of SoScience

CHAPTER 1

The clear need for another way to organize research

Shared observations

Several observations now command consensus. The diversity of actors stimulates creativity and innovation. Social and environmental challenges demand the active involvement of civil society and of those who shape public policy. Researchers eager to contribute to the solutions of a sustainable transition struggle to identify the right partners, especially outside their usual academic sphere. And economic actors increasingly seek to explore solutions that let them move beyond their historical activities and adapt their models.

These elements form a solid base for building multi-actor consortia dedicated to the transition. And yet, if such collaborations were simple to set up, they would already be the norm.

Why the classic attempts plateau

Institutions have not stood idle. Incubators, schools, open labs, each with its own approach or scheme: the attempts are many. But the results often remain limited, because these formats reproduce a very traditional logic. Three pitfalls can be named:

- you meet a single type of actor at a time (for instance, only start-ups in incubators);
- the actors are not really led to collaborate together (industry-researcher meeting formats keep multiplying, but the outcome of these exchanges is left to serendipity);
- or the co-creation offer is limited to the two "usual suspects": academia and the private sector. This is the case for industrial chairs, or entrepreneurship schemes (student or otherwise) run by academic actors.

Conversely, truly multi-actor initiatives make a point of integrating the four representatives of the famous "quadruple helix": academia, the private sector, the public sector and organized civil society. Alexandre Bisquerra, at the IRD, puts it from a research organization's point of view: multi-actor programs "make it possible to find the right relays and key actors to integrate into collaborations, notably in the social and solidarity economy," and to attract partners that are usually hard to mobilize. On a subject like urban agriculture, the program developed with SoScience allowed the IRD to bring together actors it would have been impossible to interest otherwise.

A long-standing industrial partner, scientific director of a food group, makes the same diagnosis from his vantage point as a private-sector actor: open innovation is an overused term.

> ***"With incubators, you only meet start-ups; with universities, only academics. It is rare to interact, at the same moment and around the same table, with all the relevant actors of a value chain. That is precisely where the added value of a truly open program lies."***

The problem, then, is neither a lack of will nor a lack of schemes. It is the difficulty of truly bringing together the diversity of actors needed, and getting them to work together over time. That is the problem that more than ten years of experimentation taught us to solve.

CHAPTER 2

What ten years of experimentation taught us

A founding failure

In 2015, in the Netherlands, I attended the presentation of a failed attempt at partnership research. The project, launched by a research funding agency, sought to bring together industrial companies, researchers, civil-society actors and citizens to discuss the energy transition. On paper, everything was there.

The problem: the "experts," researchers and industrial companies, had already worked upstream and chosen the major technological directions. Citizens were then invited to come and enrich the approach. No civil-society organization answered the invitation. No one showed up. The organizing agency was on the verge of concluding that citizens were not interested in the subject, or that they were by nature reluctant to work with the private sector.

That diagnosis was wrong. From exchanges with associations and social entrepreneurs, the essential point emerges: these actors refuse to be extras or to serve as an alibi for decisions already made. They want to be at the heart of the research and innovation process, or not at all. That failure founded our method: you do not invite society to validate decisions, you have it co-create.

Iteration, edition after edition

Our first program, in 2016, dealt with food and new protein sources. This program launched The Future Of (TFO), SoScience's flagship line of collaborative impact innovation programs, then run edition after edition on highly varied themes: food waste, urban waters, soil health, urban agriculture, environmental health, carbon capture and utilization, plastic pollution... We brought together a broad range of participants, from the leading academic researcher to the rising start-up, by way of citizen projects. The enthusiasm for collaboration was immense. But we also grasped a limit: without a dedicated structure to keep the dialogue alive after the gathering, these promising interactions can fade very fast. Everyone goes back to their overloaded daily life, these "unexpected" collaborations are not supported by institutional mechanisms: the gathering boils down to networking.

In late 2016, with the next program, run in partnership with the IRD, a French pioneer of multi-actor collaborative innovation programs, we worked on our matchmaking tools during the gathering to formalize potential collaborations. The result exceeded our expectations: in less than a day, the forty or so participants generated more than a hundred collaboration intentions (more than two per participant!), and several consortia formed over the day. The matchmaking machinery worked. But the collaborations, even formalized, still struggled to materialize without support.

In 2017-2018, with a program run alongside an industrial partner, we therefore added a decisive step: the most promising projects would receive support for their implementation. Out of more than a hundred intentions, we received about twenty structured project sheets, three of which were selected for launch support. The bet paid off: the gathering led to projects concrete enough to bring real value to research and innovation departments. As the partner company's scientific director sums it up, this kind of program produces concrete results, which lift obstacles impossible to overcome in-house, and which can be demonstrated before an executive committee.

Three pillars, the fruit of continuous improvement

Edition after edition, three pillars stabilized, and they hold for any institution that would commit to this path.

First, the real diversification of partners. Our consortia bring together researchers and industrial companies, but also associations, NGOs, professional bodies, social entrepreneurs, actors of the social and solidarity economy, local authorities.

Then, the systematic alignment with sustainable development challenges. We never launched a theme that did not directly answer a social or environmental challenge.

Finally, the priority given to concrete results. Not events, networking or communication, but the launch of prototypes, research projects, field actions.

CASE STUDY — TFO FOOD PROGRAM (2016)

Our very first program brought together, on the question of new protein sources, a leading researcher in cultured meat, a start-up now central to the microalgae field, and a citizen project around insect consumption. Three worlds, three levels of maturity, three statuses, around the same table. It is this diversity, and not scientific excellence alone, that brought out avenues none of these actors would have found on their own.

CHAPTER 3

When to involve civil society, and at what scale

The right moment is (very) early

This is perhaps the most important point of this guide for a research institution. In most schemes, the encounter with civil society is relegated to the most advanced technology-readiness levels, at the moment of "proving" or deploying a technology already built. This is almost always too late.

Because by the time society is finally invited, architectural research decisions have already been made without the actors concerned: the choice of the problem, the framing of hypotheses, the technological direction. Civil society is then asked to weigh in on options it did not help define, and one is then surprised by the resistance, the rejection, or the lack of uptake. Involving society early, from the definition of topics and the R&D phase, is not an ethical concession: it is a condition of relevance and impact.

Rethinking valorization

This conviction leads to broadening the very notion of research valorization. To classic economic valorization, which leads from an idea to a pilot, then from a prototype to industrial deployment following the needs of industry and the market, one must add a social and environmental valorization, guided by the needs of society and by global challenges. The two do not conflict, they are carried out together when needed, or separately on the projects that lend themselves only to social and environmental valorization.

Concretely, this means that at each phase, from the definition of topics to proof of concept, one integrates economic partners but also civil society and beneficiaries, one discusses potential social and environmental impacts, one applies responsible research and innovation criteria, and one measures not only technical and commercial viability but also social and environmental indicators. Civil society plays the role of a beacon: it lights the choices all along the path, instead of being consulted only at the end.

Economic, social and environmental valorization of research

Reshaping every step of economic valorization to integrate social and environmental concerns. In indigo, the classic economic path; in coral, what the social and environmental valorization approach adds at each step.

Source: SoScience, 2024.

The same method, from fundamental research to the field

An objection often comes up: "this approach may hold for applied research, but my subject is too upstream." Experience says the opposite. Depending on the research theme, the approach adapts just as well to a very fundamental challenge as to development at a more advanced TRL.

CASE STUDY — CCU FOR FOOD PROGRAM (WITH LESAFFRE)

The subject was nonetheless arid and very upstream: how to capture and valorize CO2 to produce fermentation feedstock or food, while ensuring a social and environmental benefit? At the heart of the program, questions of scientific breakthrough (capture technologies, electrochemical conversion of CO2, fermentation), but also questions of scaling up, of impact measurement through life-cycle assessment, of consumer acceptability and of the regulatory framework. The co-creation day brought together 42 highly diverse participants: start-ups and social entrepreneurs, industrial companies, academic researchers, NGOs, public sector, innovation-support structures. Three projects were born from it, which the industrial partner judged promising enough to fund. The lesson for a research institution: even on a very upstream subject, opening up early to diversity does not weaken science, it opens up concrete outlets and partners.

From the local to the global

The scale of the challenge changes the makeup of the consortium and the place of public authorities, but not the method. Two opposite examples show this.

CASE STUDY — TFO URBAN AGRICULTURE, CODIE PROJECT (MARTINIQUE)

A deeply local challenge: converting a polluted industrial wasteland in the heart of Fort-de-France, a former hydrocarbon depot, into a food garden, in a Martinican context marked by chlordecone pollution. The consortium, very academic (IRD, Université Paris-Est Créteil, CNAM), came together with a local association and a public field actor, around the residents. Two research strategies are explored there, soil engineering and phytoremediation, seeded by 24,000 € of funding via an IRD seed-action scheme. A case where research is built with and for a territory and its inhabitants.

CASE STUDY — TFO ONE HEALTH, MOSAIC PROJECT

At the other extreme, a global challenge: the environmental health of cross-border populations, from Kenya to the Brazilian Amazon. The project builds an environment-health data ecosystem by involving local communities in the collection, the construction of indicators and the dissemination of knowledge. The consortium is international and massive (IRD, Institut Pasteur de Guyane, Fiocruz, Pan American health organizations, universities from several continents, conservation NGOs), and the project raised nearly 6 M€ via Horizon Europe. The same co-construction principle, leading to an international consortium and European funding.

CHAPTER 4

Seven keys to impactful partnership research

Here, condensed, are the method keys that structure a successful program. They hold whatever the subject or the scale.

BEFORE THE GATHERING

1. Frame the subject in language everyone understands. Define the problem with words that speak to each of your targets. The exercise is delicate, because your partners are diverse. That is why we set up, at the start of the program, a committee tasked precisely with this framing. This committee is already representative of the diversity sought at the end of the chain.

2. Set up a mixed steering committee. This committee brings together representatives of the communities one wants to get working together. They bring a double expertise, thematic and cultural: the words they choose to frame the problem will attract the right participants. It is also the body through which public authorities are mobilized. In our program on plastic waste in the Seychelles, run within a framework coordinated by the IRD, the committee involved representatives of three ministries. Public authority is thus invested, upstream, in the solutions that will emerge.

3. Ensure the diversity of expertise. Once the problem is defined, applications pour in, and their selection is a key moment. We track in real time the distribution of the profiles retained and proceed in two sessions. After the first, we identify the under-represented types (are associations missing? researchers? public actors?) and run a targeted search to rebalance the final group of program participants.

DURING THE GATHERING

4. Give everyone the tools for an equal contribution. Making the most of a multi-actor gathering requires suitable tools, designed so that the exchanges lead to concrete and equitable collaborations. A good group-facilitation tool saves time and limits the risk of failure.

5. Hold a posture of equality, beyond "inclusion." Each participant is considered an expert, whatever their field. One can be an expert in fluid mechanics or an industrial process; one can just as well be an expert in a societal issue, a territory, a lived experience. Our days are built to put everyone on the same level: no stage, no experts on one side and laypeople on the other. Without this principle, there is no possible co-construction, only a one-way transfer of information.

AFTER THE GATHERING

6. Set up rigorous follow-up. There is no successful collaboration without post-gathering support. Human time must be devoted to structuring the partnerships: contracts, intellectual property, confidentiality agreements, but also alignment of actors, clarification of vocabulary, logistical support. Having a common goal and having talked about the projects before tackling the touchy subjects: that is what binds a consortium over time. This is why these subjects are structured precisely after the gathering, even if the broad lines can be sketched beforehand.

7. Build skills in-house. It is essential to develop, within the institution, knowledge of these new audiences and methodologies, in order to play the translators between worlds that do not speak the same language. It is a central skill in structuring consortia, and the learning that takes place during a program is, in this respect, precious.

CASE STUDY — TFO SOILS, BIOFUNCTOOL PROJECT

What rigorous follow-up produces: a low-tech kit to measure soil health, based on nine indicators and three ecological functions, simple, robust and inexpensive, complemented by an app and a platform. Born of a consortium bringing together CIRAD, IRD and a start-up, the project raised nearly 465,000 € of ANR funding. An exemplary case of the move from a gathering to a field tool actually deployed, carried initially by research organizations and now more widely disseminated.

CHAPTER 5

Two traps institutions almost always fall into

Intellectual property before the partnership

The fear of engaging in approaches that are too "open," the fear of competition or espionage, the protection of ideas: research institutes, universities and start-ups all know these discussions. Each has legitimate reasons to be wary. Yet each has something to gain from collaborating intelligently, provided that each phase corresponds to an adequate level of security.

The reflex of locking everything down upstream is counterproductive. An industrial partner recounts believing he held the ideal partner for a project; that partner's refusal to take part in the program revealed a protectionist mindset, and ultimately spared him many disappointments: time lost in contractual negotiations, endless discussions over intellectual property. The program did not only let him identify partners off his radar, it also let him quickly rule out the wrong profiles. The barrier to entry that an open approach represents is, paradoxically, a useful filter.

Funding as a precondition rather than a second step

Be careful not to project yourself, or the participants, too early into the search for funding. A program of this kind aims to create unprecedented collaborations in the service of the transition; it must not turn into a funding desk.

One will object that no project gets off the ground without money. True, and that is why one goes looking for funds, but in a second step, once the collaborations are formed. One will also object that it is impossible to mobilize busy actors without guaranteeing them funding. This is false: we did it program after program. The real keys to success are the alignment of stakeholders around a well-defined problem, where each finds their interest, and a genuine desire to collaborate.

> ***Funding matters, but it comes after the "why," the subject, and the "with whom," the collaboration.***

As a long-standing partner told us, on complex, multi-actor subjects, taking the time to open up widely before acting is not a waste of time: it is what saves it.

2016 – 2024 · "THE FUTURE OF" IN FIGURES

18
programs delivered: food waste, packaging, urban waters, textile recycling, health, biomass, mobility…

9,500+
experts approached around the world

667
participants selected

12/17
Sustainable Development Goals addressed

181
collaborative projects created, of which 94 formalized within the first month

36
projects supported over time

+ €12M
raised by the projects within two years of their creation, including more than €7M with SoScience's direct support

Diversity is the strength: participant typology

Average distribution observed across the 13 documented programs. "Support": innovation-support structures. A method recognized by the UN as a good practice in support of the SDGs.

CONCLUSION

A philosophy, not only a method

Collaborative open innovation is not only a method, it is a philosophy. It does not boil down to a well-run gathering day: it means integrating, at every step of partnership research, the principle that society is not the final recipient of science but one of its co-authors.

The institutions that commit to this path today do not have to start from scratch. Many of the obstacles they will meet, we met before them, and this guide has tried to map the main ones.

One question remains, which each research organization, each university, each agency will have to settle for itself: at what moment, in your own projects, does society truly enter the room, and what would happen if it entered earlier?