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Co-design in action: Design principles to successfully manage transformative social innovation

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Abstract

To meet grand challenges, organizations must rethink how they establish their objectives and processes in a more sustainable way. Social innovation is seen as a very promising way to respond to this call. Nevertheless, social innovation encounters difficulties in scaling and reaching its transformative power. Based on the theoretical framework of transition management, our paper focuses on the co-design of transformative social innovation by trying to identify how actors can manage it successfully during the experimentation phase. We have conducted research based on the design science methodology to develop both concrete solutions to solve empirical problems and build strong design propositions. The results and design propositions stem from the analysis of three case studies of French social impact bonds, which are contractual tools funding social innovation programs. Social impact bonds are, by nature, co-design processes involving different types of stakeholders (private funders, public commissioners and nonprofit organizations). This paper provides six design principles to support the cooperation and alignment of multiple stakeholders to foster their scaling up, which is crucial for perpetuating social innovation. This research contributes theoretically to both the social innovation scaling literature and the transition management framework and offers practical guidelines to help social practitioners to co-design and manage transformative social innovations.

Managerial Relevance Statement

Using a design science approach, we created six design principles to guide the actions of transformative social innovation stakeholders to scale their social experiments. For actors of social impact bonds (SIBs) engaged in the design and management of transformative social innovation, implementing guidelines should reduce the extinction risk of social innovation at the end of the experiment. More generally, in social innovation, many practitioners are not management experts. Providing guidelines should help them structure innovation strategies and long-term ecosystems.

This paper invites them to carefully design the experimentation and choose key stakeholders. We also suggest that they go beyond simple indicators to measure social experiment outcomes. In the same way, our research suggests managing new knowledge stemming from social experiments to learn and raise awareness about social innovation. Strengthening the social ecosystem is crucial to ensure scaling and the success of transformative social innovation.

Index Terms—innovation management, social innovation, scaling up, social impact bond, design science, artifact, guidelines

I) INTRODUCTION

Although the alarm bell has been rung regularly for more than fifty years, tackling grand challenges [1] has become an overwhelming imperative [2]. Grand challenges are inherently complex [3], as they raise heterogeneous issues that are correlated [4]. Furthermore, their complexity stems from the difficulty of measuring the interactions between local and global levels [5]. Among the initiatives that have been put forward by management and organization scholars in response to grand challenges, social innovation is considered to be a very promising approach [6]–[8].

Social innovation is a process whose primary goal is to solve significant social or environmental challenges faced by our societies. However, it is a broad and heterogeneous concept that shapes different situations and actors [9]. Whereas social innovation is sometimes described by the social entrepreneurship movement as relevant and efficient to respond to social needs targeting [10]–[12], it is increasingly studied as a process whose objective is to design sustainable alternatives to existing economic and social systems based on communities and civil society [13]. In this respect, we can define social innovation *as a process that enables new solutions for complex social problems that tend to transform societies and institutions through the emergence and implementation of more sustainable models* [6], [9], [14].

In this paper, we adopt the perspective of *transformative social innovation* [8], which considers social innovation as a process that not only solves social needs [10] but also tackles the roots of wicked problems in society [6]. Transformative social innovation has the potential to solve grand challenges [6]. Several scholarly contributions have actually shown that the goal of social innovation (social impact and systemic change) is achieved only when it is spread on a large scale and shapes a significant number of people and territories [15]–[18]. Scaling is, therefore, all the more important for transformative social innovation.

The concept of scaling up is key in that upscaling transforms an experiment into a long-lasting social impetus. However, numerous scholars acknowledge that scaling social innovation constitutes a challenge for social innovators [17]. This challenge can be explained by a theoretical paradox, especially when a social innovation aspires to be transformative. On the one hand, social innovation triggers and enables large-scale transitions to new and more sustainable systems, and on the other hand, the social impact generated by social innovation stems from its local and territorial embedding, which makes it difficult to scale either at a local or broader level [13], [19]. There is, thus, an important theoretical gap to be bridged between the promise of the transformative power of social innovation and the micromanagerial modalities of its scaling up.

Because very little scholarship has identified levers for the scaling of social innovation from a transformative perspective [15], [16], [20], [21], our goal is to contribute to this challenge by identifying how practitioners can manage social innovation to avoid the risk of scaling failure. From this perspective, it seems relevant to take an in-depth look at the whole process of social innovation starting from the upstream phase, especially during the design and experimentation stages. This focus leads us to formulate the following research question: **how can actors manage successful transformative social innovation?**

To better analyze and contribute to the problem of scaling social innovation, we mobilize the theoretical framework of transition management [22], [23]. Issued from transition studies and the multi-level perspective, it offers a relevant frame for studying social innovation from a transformative perspective [8], [24], [25]. Nevertheless, there are still too few empirical and theoretical insights to understand the fine mechanisms underlying the articulation of these activities to facilitate sustainable transitions via the scaling up of experimentation.

We propose to fill this gap by adopting design science methodology [26]. It is an original methodological approach that makes it possible to provide the “how” to deal with complex subjects and major societal challenges and eventually find new and adapted solutions to wicked problems. Adapted for a normative aim, this methodology seeks to develop a solution, an artifact—management tools, good practices, and step-by-step approaches—in response to the problem posed. Finally, experts and stakeholders evaluate the artifact. The paper is focused on the first design science methodology iteration: elaboration of general principles for managing transformative social innovation.

The empirical field is based on social innovation projects funded by social impact bonds (SIBs). A SIB is a multi-stakeholder financial mechanism for experimental social innovation programs implemented by nonprofit organizations and funded by private investors [12]. SIBs are by nature co-design processes involving a large number of stakeholders of varied types. Based on an empirical field study of three SIB cases, a creative researchers’ session and interviews with experts, we show that stakeholders face three challenges: (1) co-designing the experimentation; (2) co-designing the evaluation of the experimentation; and (3) managing the experimentation. The results of our first qualitative case study are integrated with academic knowledge to compose six design principles that aim to help practitioners co-design and manage transformative social innovation. Finally, this paper contributes to the management of the social innovation scaling literature by focusing specifically on transformative social innovation and the transition management framework in adding more precise managerial guidelines.

This article is structured as follows. The next section reviews the relevant literature about social innovation and transition management, focusing on the operational modalities of experimentation management and scaling up. The second section describes the design science methodology and

empirical field studies. The third section presents the empirical results: the complex context of SIBs, challenges for SIB actors and co-designed solutions. The fourth section presents six guidelines to foster the scaling of social innovation and its evaluation by experts. Finally, the discussion section presents contributions and research limitations.

II) RESEARCH BACKGROUND

The literature on social innovation points out its peculiar nature: it is relevant to address complex societal problems, and paradoxically, is complex in its implementation at a large scale [13], [19]. On the one hand, the collaborative nature of social innovation can be seen as a specific co-design process that integrates a wide range of stakeholders with antagonist goals and missions, often those of nonprofit, public, and private stakeholders [27]. This ability to generate and manage various forms of hybridity makes social innovation valuable (via its impacts) at different levels of transformation from the micro- to the macro-level [28]. On the other hand, some studies show that the social impact generated by social innovation stems from its local and territorial embedding [13]. According to these authors, it is the grassroots character of social innovation that anchors its transformative velocity (rearrangement of values, new forms of collaboration, response to problems in a specific territory, etc.) [18], [29]. These paradoxical features of social innovation make its management difficult and require a more in-depth study of the issue of scaling.

A. The Scaling of Social Innovation

The issue of scaling up social innovation has been addressed in the literature as a stage of the social entrepreneurship process [30], [31]. On the one hand, the stages of the upstream phase are important for developing relevant and sustainable social innovation (*identification and*

formalization of the idea; testing and validation of the social innovation; development and sustainment of the innovation). On the other hand, the downstream phase is key to maximizing the expected social change and systemic transformations (*scalability stages*).

Scaling up can be understood as the “ultimate goal” of a broad and complex innovation process that calls for the implementation of strategies to overcome the various related obstacles or paradoxes [16]. These strategies take a variety of forms but can be categorized by both *breadth-* and *depth-*scaling according to the modalities of increasing social impact. [32]–[34]. Breadth-scaling strategies have the goal of increasing impact quantitatively [35] through more or less centralized strategies such as networking franchising, affiliation and eventually internal growth [32], [33]. Depth-scaling strategies increase impact qualitatively through the improvement of processes or by adding new services to the same beneficiaries [35].

Beyond the scaling strategies, the literature has pointed out the factors and obstacles of scaling social innovation [15], [36], [37]. First, scholars emphasize the role played by the individual characteristics of the social entrepreneur, such as leadership or the ability to manage a complex network of relationships [18], [38]. Many studies [36], [39] have also shown how the organizational level influences scaling, encompassing mainly the configuration and nature of innovative activities but with specificities such as the organizational mission as defined by the founders [40] including the definition of vision and motivations [41]. Eventually, the external environment plays a crucial role, particularly in how social innovation is embedded in its environment [42] and the key relationships with the local community and beneficiaries [43]–[45]. Whereas this literature considers the scaling of social innovation as an increase or growth of its social impact, some authors broaden the perspective on scaling. For Westley and colleagues [18] “*scaling up*” means changing the norms and values that accompany the transition of societal

systems. They differentiate scaling up from *scaling out*, which is seen as geographical expansion, and from scaling *deep* as the value of social innovation increases [18]. However, this “transformative” dimension is ultimately not truly taken into account by the literature on social entrepreneurship because it focuses on increasing the social impact of social innovation in an instrumental way and is inspired by organizational growth strategies [8]. It is important to address the issue of scaling social innovation from a transformative perspective. Nevertheless, the literature on social innovation has not truly explored the issue of scaling by focusing on the management of the innovation process from a transition perspective [46]. The contribution of transition management theory is, in our view, key to articulating this question at different levels.

B. Transition Management Framework: an Integrated View of the Scaling Phase

To shape the question of experimentation management toward its scaling, we mobilize the theoretical framework of transition management [22], [23], [47]. This framework is embedded in the transition studies field, which acknowledges the crucial need to transform our models of production and consumption in a more sustainable way [7], [48]. Transition studies have analyzed and conceptualized the link between pioneering experimental activities and systemic change [49]. Recent scholarly work on social innovation has used the transition studies framework to adopt a transformative perspective [8] and even to study the different strategies of scaling [24], [25]. The transition management framework was a first step in this direction when Loorbach and Rotman developed it in the 2000s [22; 47]. Indeed, in their prescriptive framework, 4 levels of activities are distinguished to understand how policymakers manage transitions through this process at different levels of activity (see Figure 1):

1. *strategic level*: aiming at producing vision on different transition pathways;
2. *tactical level*: building plans and agenda with investment commitments;

3. *operational level*: learning-by-doing based on experiments and innovation;
4. *reflexive level*: evaluating to adjust the 3 other levels.

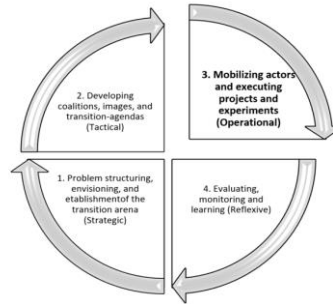


Figure 1: Focus on level three, transition management cycle, from Loorbach, 2010 [22]

More precisely, the operational level focuses on actions that allow both the implementation of transition experiments that fit with strategic and tactical activities and modalities to deepen and broaden their effects on a larger scale, particularly at the governance level [50]. Even if the question of the modalities of scaling up is raised, particularly in the key role of evaluation and learning, there is still little empirical or theoretical evidence to support the understanding of this crucial phase of transition management. In fact, the current thinking on the governance of transitions [22] focuses on the upstream phases of the process, still providing little insight into the managerial and organizational modalities on the further downstream phases [51]. Therefore, it is important to understand, at the same time, how to manage the emergence and diffusion of innovation to accelerate transition [52]. To gain an understanding, we believe that scaling is the most appropriate conceptual way to embrace the whole range of situations and levels occurring in transition management while taking into account the specific characteristics of social innovation. The transition management framework adopts a focus on the management of the transformative social innovation process with the perspective of spreading innovation at a large scale. However, the activities described in the framework and structuration into four levels do not seem precise enough for actors who need to manage these social innovations.

Indeed, we still lack more detailed guidelines about how to reach each level and, more precisely, how to co-design social innovation in the upstream phase while at the same time preparing the downstream phase via the issue of scaling up.

Design science could contribute to the multiple challenges in the academic field of social innovation by providing a new lens for researchers. The application of design science methodology to this issue provides stakeholders with new guidelines to manage experimentation, allowing scaling up. The following section presents this methodology by defining the key concepts and explains the qualitative method choices.

III) RESEARCH METHODOLOGY

Social impact bonds (SIBs) are a new form of social innovation with co-design dynamics. A SIB aims to transform social experimentation into long-lasting social public policy. More precisely, a SIB is a funding tool of a social innovation program implemented by a nonprofit organization in a limited period of time. The program is funded by private investors. In case of success, investors are paid back with an interest rate by a public commissioner. The SIB is profitable for the public commissioner since the success of the program generates more savings (avoiding cost) after refunds to private investors. Social programs usually rely on providing solutions to social issues [53]. A co-designed contract defines the relationships and commitments between stakeholders, the criteria and the targets that establish the success (or failure) of the social program. The rationale of the SIB states that a successful social innovation should be scaled up at the end of the SIB thanks to funding from the public commissioner. After their creation in the UK in 2010, approximately 200 SIBs were launched in approximately 30 countries in the world, with a total investment of \$500 million. Our cases illustrate three out of nine SIBs launched in France until now, which have

been developed in response to a call for projects in 2016 by the French government. SIBs are the specific context studied in this social innovation research: they offer co-design experiments for tackling complex societal issues with impact evaluation and opportunities for scaling in case of success.

A. General Research Strategy Operated by Design Science

Design science is promoted by many researchers to address the challenges of public life [46] and to provide concrete solutions. Design science offers a methodological toolbox to carry out intervention-oriented research. Design science is original in two aspects: first, management researchers must incorporate dispersed theoretical knowledge into a new artifact to upgrade pragmatic and creative practitioners' work, and second, the artifact created must prove its relevance to users to respond to a specific context.

Many design science genres exist in information systems [54], operation and service management [55] or organizations [56]. Romme and Meijer [57] created an approach (see Figure 2) that aims to both validate new practices of emerging organizations such as those structured by social experiments and propose theoretical enrichments to improve, systematize and strengthen these practices and test them with stakeholders such as those concerned with fostering scaling up. This dual movement of *validation* of new practices and *design* of good practices to be tested allows a dynamic movement for improving the management of experimentation from the perspective of scaling up.

In particular, Romme and Meijer [57] propose designing in two stages: (1) *creating* an artifact such as constructs (managerial vocabulary), theoretical models or principles (solution-oriented guidelines) to solve a complex managerial problem with new solutions and (2) *assessing* the artifact with criteria that are valuable for the users. In the same way, artifact *validation* must be

conducted by both *theorizing* the artifact to achieve generalizable principles and *justifying* the artifact to improve the internal and external validity of the research outputs.

In design science, there are two valuable paths [58]. (1) Practice-driven design science is used when the field is very new, with very little previous academic research. This path needs a grounded-theory methodology for specific fields, many iterations and active action from researchers to transform the organization. (2) A theory-driven design science is adapted when the research knowledge is consistent and the field is well-known with an existing researcher community. This theoretical path needs to infer theoretical concepts with content analysis. Miles and colleagues' methodology [59] is adapted to analyze and infer few iterations between design and validation: researchers theorize observed practices from a first field study, create an artifact in a creative loop, assess it with practitioners in a second field study and improve it. Section II shows that social innovation is a mature field adapted to a theory-driven design science path. According to theory-driven design science, we conducted two data collection phases and a researchers' design loop presented in Figure 2 to *theorize, create, assess and justify*.

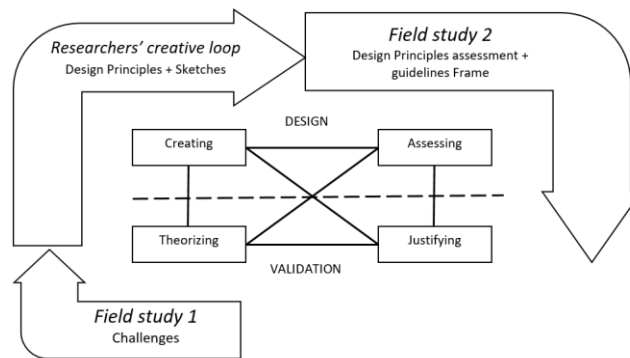


Figure 2: Design science approach and empirical field studies adapted from Romme and Meijer, 2020 [57]

B. Three Social Impact Bond Case Studies to Understand Co-design Dynamics

First, we conducted a ‘field study’ with comparative case studies (3 French SIB: ADIE, ARTICLE 1 and REH) to understand contexts and challenges faced by complex social innovation. Table 1 succinctly describes each SIB. These three cases are divergent: the social experiments address different social issues, the social operators have different sizes, the SIBs were built in different time periods and the stakeholders reflect different types of actors with various motivations.

ADIE	ARTICLE 1 (A1)	RESEAU ECO-HABITAT (REH)
<p>ADIE is a big French microfinance organization that supports unemployed people with microcredit loans, training and coaching for launching a microentrepreneurial activity.</p> <p>The SIB is focused on the deployment of the ADIE support (loans and coaching) in three rural areas for 500 beneficiaries.</p>	<p>Article 1 is a nonprofit organization aiming to foster equal opportunities in higher education. It seeks to encourage young people living in socially underprivileged areas to engage in higher education studies through mentoring actions by volunteers from private firms.</p> <p>The SIB funds a program dedicated to young people living in rural areas who follow a vocational training curriculum</p>	<p>REH is a small new nonprofit organization (5 years old) which renovates old houses of poor people who face fuel poverty and serious sanitary problems in their houses. The nonprofit offers technical and social support from volunteers and funding for the house renovation.</p> <p>The SIB aims at reaching 200 families in a larger area than the initial scope of the nonprofit organization</p>

Table 1: Description of the three cases.

A description of the ‘field Study 1’ qualitative choices is presented in Table 2. Field study 1 results must create a synthesis from insights to identify connections and create a mental model of SIB challenges [60]. Field study 1 yielded a vast amount of empirical data. Reduction and synthesis were the main content analysis activities to enable subsequent artifact creation.

To highlight different co-design practices and related challenges, first, simple descriptive codes ([61]) covering descriptions, processes, stakeholders and feelings were used. Second, we then crossed descriptions or process codes with stakeholders or feeling codes in 3 steps: (1) We schematized stakeholders’ ecosystems through the stakeholder code family. This allowed us to

differentiate the SIB stakeholders from the experimental stakeholders. By bringing together these content schemes relating to description and feeling code families, we found the first challenge concerning the design of the experiment and, in particular, the elements related to its object (targets, objectives...) [1.a] as well as for SIB stakeholders [1.b] (see Table 3). (2) We had to create more experimentation description codes to delve deeper into this issue, a source of huge content. An inter-case analysis showed different practices (see Appendix 2, 3 and 4). By bringing the feeling codes closer to the experimentation description codes, we highlighted this as a second challenge with two different practices for ADIE, Article 1 and REH about the choice of conducting additional evaluations [2.a] and the degree of rigor of the evaluations [2.b]. (3) We tried to draw a timeline with process coding. This proved impossible because the phases were very intertwined with many round trips, which is normal in experimentation. In contrast, by bringing the feeling and process codes closer together, we were able to analyze that Article 1 only developed good monitoring process practices [3.a], Article 1 and REH had scaling-up preparation practices [3.b], whereas the third case (ADIE) faced a third challenge without solutions (see Appendix 2, 3 and 4 for more details).

	Field Study 1	Field Study 2
Objectives	Understand SIB context, challenges and experiments Discover co-designed solutions created by stakeholders.	Provide guidelines assessments (usefulness and desirability of the 6 guidelines [62]) Validate our analysis of SIB contexts Obtain opinions about our sketches and drawings to create a final guidelines frame (Figure 3)
Qualitative method	Comparative empirical case study [63]: three cases of social impact bonds: ADIE, A1 & REH (Description of the three cases in Table 1) Face-to-face interviews (12) First semester of 2020 1 to 2 hours duration each, recorded (936 minutes) and transcribed (302 pages of transcription)	Qualitative interviews: Video conference interviews of SIB stakeholders and social innovation experts (7) December 2020 and May 2021 Around one hour duration each, recorded (397 minutes) and transcribed (125 pages of transcription)

Sample (Positions of interviewees are available in Appendix 1.)	12 semi-structured interviews of SIB stakeholders: 4 nonprofit organization managers carrying the social program 3 private investors 3 interviews with public commissioners 2 interviews with evaluators	7 semi-structured interviews: 1 <i>Article 1</i> case stakeholder 1 <i>ADIE</i> case stakeholder 1 other SIB stakeholders 4 experts in the field of social innovation and social impact bond
Additional Materials	Newspaper articles, annual reports, SIB ministry reports and corporate documents such as emails, reviews reports and meetings to triangulate data and understand the context.	Drawings, sketches produced in a' creative session with researchers
Guide	Themes: 1. Organization 2. SIB history 3. SIB advantages and drawbacks 4. SIB experiment funded by SIB 5. Evaluation of experiments 6. SIB risks and perspectives	Presentation and open reactions about: 0. The research project 1. SIB stakeholder problems 2. SIB challenges 3. Design principles 4. Researcher drawings
Codes	4 families of coding [59]: - Process coding (i.e: SIB negotiation, SIB signature, experiment phase, meetings, ...), - Description coding (events, target experiment, indicators, stakeholder behavior, problems, solutions, ...) - Feeling coding (i.e., opinions, mood, agreement, conflicts,...) - Stakeholder coding (commissioner, investor, project manager, experiment stakeholder, ...)	Verbal exchanges coding [61] to show different opinions about challenges, guidelines and drawings assessment: - Agreements or disagreements with the artifact - Artifact usefulness - Artifact desirability - Guidelines' future improvements
Results	- Compare the practitioners' verbatim and theoretical knowledge. - Understand how practitioners worked to implement SIBs and faced their challenges.	- Validation of our understanding of SIB contexts. - Validation of artifact usefulness and desirability - Proposition of a guideline frame to conduct SIB scaling (guidelines improvements)

Table 2: Methodological choices in the two field studies

C. Design Science Creative Loop to Develop an Artifact

Later, in November 2020, we participated in a creative loop with a design science approach. This was both a *creating and a theorizing* stage to connect empirical insights with established academic literature to design principles by writing operational guidelines. Design science proposes to develop design principles that provide, in this research, guidelines to strengthen social stakeholders to jump the chasm between social experiments and established social policies (*creating step*).

Indeed, the design science that aims to build design principles “*involved a coherent set of normative ideas and propositions, grounded in [here innovation] research, which serve to design and construct detailed solutions*”[64, p. 116]. The design principles are built by combining empirical results, co-designed solutions, literature reviews and creative sessions. To do so, content data were compared to the academic literature on social innovation and experimentation in an inductive process to create theoretical inferences. This made it possible to propose design principles. Therefore, comparisons between practitioners' verbatim related to challenges and theoretical knowledge were conducted to understand how practitioners had been working to implement SIBs. The 6 seminal design principles are built upon first performing an inter-case comparison to detect best practices and failed practices. We refined it with sketches, drawings and preliminary comparisons in a creative session with researchers. Finally, we integrated additional insights from a new relevant literature review [65], [66] to write the set of design principles as the six guidelines reported in Section V. In this creative loop, pictures of sketches and drawings are collected to enrich the artifact assessment.

D. Experts Interviews to Assess our Guidelines

Finally, in accordance with the design science approach, we next needed to validate the proposed guidelines by involving SIB experts and identifying possible ways of improving them. In field study 2, we interviewed seven stakeholders and experts to *assess* our guidelines and discover artifacts for future improvements. The methodological choices of field Study 2 are extended in Table 2. To analyze this content, verbal exchange coding [61] was used to evaluate, first, the degree of agreement with our guidelines, second, the guideline assessment (usefulness and desirability) and third, future possible guideline improvements. We presented our drawings and

sketches during the interviews. We had many comments and suggestions for improvement. Finally, we drew a frame to articulate the guidelines (presented in Figure 3).

IV) RESEARCH RESULTS

The empirical context of social innovation funded by SIBs presents a co-design situation that is, by nature, complex due to the uncertainty of its outcomes, the variety of stakeholders and the different timelines involved (design of the experimentation, experimentation management and scaling phase). The situation is different from a typical case when a nonprofit organization (NPO) carries a project and looks for funders to support it. First, it is necessary to find not only one but two types of financial actors who fund the program with different rules: (1) funders who “invest” in the social experimentation, i.e., they finance the program and take the risk of losing their investment if the project fails, and (2) funders who commit to finance the program if it is successful. Second, the terms of the contract must be defined given that there are no precise guidelines about the technical, legal and financial aspects of SIBs, especially for the first SIBs in a country. SIB terms of agreement include the amounts invested, the repayment terms, the duties of the various stakeholders that are interdependent, the definition of success and the features of success evaluation. The challenge is to make everything coherent and aligned: the project, the various stakeholders involved, the repayment terms and the evaluation. This alignment of interests with SIB-specific features can be achieved thanks to a dynamic co-design process along with constant negotiations to reach a point of balance. Finally, the question of the sustainability and deployment of the experimentation once the SIB is ended remains a source of concern to the various actors. This is the case for social operators who must ensure that the experimentation

financed by the SIB is not an end in itself but a first step toward the implementation of a sustainable social service entangled in the system.

Starting from these issues that are specific to the implementation and management of SIBs, we have identified, in our three cases, three main challenges raised by the implementation of a social experiment to set the basis for scaling up: (1) Co-designing the experimentation; (2) Co-designing the evaluation of the experimentation and (3) managing the experimentation. On each of these challenges, we identify two categories of choice and various solutions for our three cases (see Table 3, first 3 columns).

A. First Challenge: Co-Designing Experimentation

The first challenge of stakeholders is to design the experimentation funded by a SIB. Several “ingredients” are required: identifying a social problem, defining the target population, defining the content of the solution to the problem, finding the funders of the experimentation and defining the terms of agreement. These actions are particularly challenging since it is necessary to align social innovation with SIB stakeholder interests. Long discussions to establish the terms of contracts between stakeholders are often required. In our data, we distinguish two critical aspects of designing experimentation: (1a) the definition of operational activities of the experimentation as a response to a social issue and (1b) the choice of financial stakeholders of the SIB (see more details in Appendix 2).

We first identified how social operators link their social innovation to a social problem encountered by a targeted population (1a). We noticed discrepancies regarding visions about system change beyond the intended impact on particular individuals who will benefit from the experiment. In two cases, the experiments are driven by their organizational activity, which is

implemented and adapted to a new targeted population, whereas in the third case (REH), the social problem and the willingness to change the existing public system are the main drivers. This difference in strategic approaches has an impact on the potential and nature of scaling.

Moreover, our cases reveal different financial stakeholders (i.e., private investors and public commissioners) in relation to their interests and motivations to fund a SIB (1b). For some stakeholders, the social experiment aligns with their strategic objectives: they have an interest in scaling the experiment. For others, funding a SIB is based on a motivation to develop SIBs as a financial tool per se: scaling the experiment is not a priority (see Appendix 2 for details).

Challenges (Verbatim field 1)	Categories of choice	Field study 1 (solutions implemented in case studies)	Design principles	Quotations from research participants - Field study 2 (Assessment of Design Principles)	Transition Management levels (Figure 1)
Co-designing experimentation <i>"You have to see the human process behind it. You've got 15 people around the table (...), infinite loops of emails, documents to review, to review again, and so on."</i> (Evaluator, ADIE)	1.a: Definition of operational activities of the experimentation on as a response to a social issue	REH: The experiment aspired to have a strong impact on beneficiaries and to change the housing renovation system	1. Co-designing an experiment that has the potential to eliminate or significantly reduce the social problem it tackles when scaled up. The experimentation should address the grassroots of the social issue through activities that generate transformative and sustainable change for beneficiaries and the social system around.	<i>"It [DP1] is a big hole in the reference frame of many structures and innovation programs! ... we must express the expected social transformations and changes, let's not limit ourselves to one ambition, one inspiration, let's say from the outset what we expect." "An organization that (...) produces a new program, (...) the first discourse it tries to bring is a discourse to respond to a beneficiary's need: 'does my program improve their situations? (...) And for me, the moment of the SIB or the moment when you go to identify the systematic change is a moment when you show something else, you say 'I complete and I fit in a relevant position in a wider set of projects and public policy'."</i> (Stakeholder 3)	Strategic level (influencing all three other levels)
	A1: The experiment centered on the extension of the organizational activity and the informal reflection about the larger impact on the system	ADIE: The experiment centered on the extension of the activity in a new area, with no ambition to change the system			
Co-designing evaluation of the experimentation <i>"I think [the former project manager] pulled her hair out on indicators when setting them up. (...) If it was so complicated because people were very involved too"</i> (project manager in the social operator, Article 1)	2.a: Formalization of additional evaluation that was not linked to financial mechanisms	Additional evaluation planned in A1 and REH cases to assess relevance, process generating outcomes and unintended outcomes. No additional evaluation planned in ADIE case	3. To foster learning among stakeholders and to prepare scaling, building an evaluation design which addresses all the main issues raised by the experiment and its transformative potential. The evaluation should not be limited to a binary quantitative measure of success, but should use qualitative evaluation tools to analyze in detail the processes that lead to the outcomes as well as the unexpected outcomes.	<i>"The evaluation or impact monitoring process must be, at least, a triptych, 1) triggering payment by results 2) quantitative impact indicators, but which are not triggering payment by results. In addition, 3) qualitative work for perhaps certain aspects that cannot be captured quantitatively, but that is truly ad hoc, project by project, but especially on the success conditions or quantitative indicators failure"</i> . (Expert 3)	Reflexive level (influencing all three other levels).

	2.b: Degree of rigor in the evaluation	Evaluation based on public statistical data in A1 case; based on the situation as declared by beneficiaries in ADIE case; mix of data coming from social operator and public body in REH case	4. In the evaluation process, using reliable sources of data and rigorous methods of impact evaluation in order to be able to convince all the actors of the ecosystem that social innovation is worth scaling up given its proven social impact.	<i>“You have to produce evaluation work that is refutable. You have to obtain the proof level that is not defined by the academic world but by the stakeholders' expectations you want to convince”</i> (Stakeholder 3) <i>“When we think of evaluating and measuring, we think more and more, especially in this world of social experimentation, that we need the most methodologically strong quantitative evaluation possible in all the methods that exist; it is the thing that will convince us the most about the relevance and the impact”</i> (Expert 4)	Reflexive level (influencing tactical and strategic levels)
Managing experimentation <i>“Even if at that time [sustainability and scaling] seemed very far away, but ultimately not so much, it is a challenge and that is to make things sustainable in financial terms after five years.”</i> (project manager, social operator, Article 1)	3.a: Monitoring actions during the experiment	Regular adjustments are possible under agreement of the steering committee which gathers SIB's stakeholders.	5. Implementing a monitoring system which guarantees flexibility in the implementation of experimentation, commitment of stakeholders and knowledge generation.	<i>“At the same time, the follow-up is sometimes considered slightly heavy by the field workers, but I still find it interesting and important that there is attention given to how to manage and follow up the experimentation, but this is useful for the aftermath.”</i> (Expert 4) <i>“If we are in an experimental mode, what I would theoretically expect is trial and error, adaptation of practices, a notion of learning which is absent [in the various SIB projects that I have seen].”</i> (Stakeholder 3)	Operational and reflexive levels (mutual reinforcement).
	3.b: Actions aiming at preparing the potential scaling of the experiment	Actions planned or implemented in the 3 cases such as communication about the experiment toward key stakeholders or identification of potential partners for the scaling phase	6. Building conditions for scaling of experiment through lobbying, identification of key actors in the scaling stage, communication toward them and the creation of communities of practice.	<i>“The creation of a community of stakeholders as early as possible, from the beginning of the experiment, is an interesting practice that can be found in many projects”</i> (Expert 2)	Tactical and operational levels (nurtured by the evaluation and influencing the strategic level).

Table 3. Six guidelines in response to three challenges

B. Second Challenge: Co-Designing Evaluation

Evaluation is necessary for a SIB because the financial mechanism is connected with the measure of experiment success. The actors have the freedom to define criteria of success, targets, evaluation tools and data sources. It generated long and hard discussions between stakeholders to co-design the evaluation process. We found some discrepancies in the cases on two aspects of evaluation design: (2.a) the formalization of additional evaluation that was not linked to the financial mechanism and (2.b) the degree of rigor of the evaluation, especially regarding sources of data (see more details in Appendix 3).

The SIB actors considered including some measures in addition to metrics that trigger payments (2.a). These additional measures aim to evaluate additional outcomes and deeply assess the modalities and the internal dynamics of the experiment. This analysis includes a significant qualitative dimension. This additional evaluation is explicitly seen by stakeholders as critical for the potential scaling up of the social experiment.

Regarding the rigor of evaluation (2.b), some differences lie in the data sources used to assess the experimental outcomes on beneficiaries: —statistical data from public bodies or situations as declared by the beneficiaries themselves. These differences tend to have an impact on the potential to convince a broad range of actors whose support is needed for the scaling phase.

C. Third Challenge: Managing Experimentation

In addition to operational activities of the social program (finding and enrolling beneficiaries, coordinating with operational stakeholders, etc.), the social program's manager undertakes actions to monitor and manage the experiment. This entails two types of actions: (3.a) monitoring actions

during the experiment and (3.b) actions aiming at preparing the potential scaling of the experiment. We found some interesting practices in the cases studied (see more details in Appendix 4).

The monitoring actions (3.a) observed in one case brought flexibility to the management of the experiment. This was possible thanks to local tools implemented to propose and decide small changes with stakeholders. These changes were made possible and validated by the steering committee, which meets regularly.

Finally, regarding scaling-up preparation (3.b), we observed interesting actions in the cases to raise awareness about the experiment and to identify key partners for the potential scaling phase. To do this, some stakeholders participated in numerous formal and informal events to promote experimentation with the aim of bringing the idea of scaling to the forefront.

It is, therefore, the observed differences in the cases that have allowed us to identify “best” practices that correspond to transformative social innovation and that are likely to promote scaling up. This approach led us to define 6 design principles that we present in the following section.

V. DESIGN PRINCIPLES

To design guidelines for social innovation actors, we began our creative loop with the empirical results discussed above and a new literature review to emphasize theoretical rigor. With sketches and drawings, we wrote seminal design principles and guidelines for practitioners that we present in this section. In design science, it is essential to create artifacts and evaluate them. The set of design principles in Section V. A is the last version after their evaluation by experts presented in Section V.B.

A. Artifact Description

The scaling up of experimentation is not guaranteed. Nevertheless, it is the rationale of SIBs to scale up experimentations that are successful, and it is the nonprofit operator's goal to carry out

the social innovation program. In our view, the actual scaling up depends on some experimental features and the actions implemented before and during the experimental phase. Our design principles are focused on factors fostering the likelihood of scaling up successful experimentation that are identified in the existing literature on transition management and social innovation.

The 6 guidelines below are related to the three challenges and actors' best practices identified in our analysis (Table 3, 3 last columns).

DP1

Recent scholarly work has clarified the theoretical conditions for transformative social innovation, including “*new ways of doing, organizing, framing and knowing*” [8, p. 3]. Social innovation must therefore refer to numerous characteristics to guarantee its transformative power, such as generating new institutional arrangements and redefining social relations or norms [6], [9]. Social innovators must then define a long-term vision of their purpose and the way their actions will contribute to transforming the social problem they seek to address [30], [41]. It is only under these conditions that social innovation can integrate or generate “*new paths or arenas*” of transition [22]. Our empirical findings and their cross-analysis with these theories allow us to define the following first design principle:

Design principle 1: Co-designing an experiment that has the potential to eliminate or significantly reduce the social problem it tackles when scaling up. Experimentation should address the grassroots social issue through activities that generate transformative and sustainable change for beneficiaries and the surrounding social system.

DP2

To ensure the transformative power of innovation for sustainable transition, it is now accepted that it must, beyond its own internal logic, ensure the external development of the ecosystem [67]. In

the case of social innovation, this involves the mobilization of different stakeholders and the development of networks between them [22], [30]. This process of network formation enables an increase in resources through, among other things, the formation of a common discourse and the development of mutual benefits [8]. The particular case of SIBs teaches us that this networked approach must involve an alignment of interests that is often paradoxical, particularly between public and private actors [68]. The intersection of these different theoretical approaches in our cases allows us to define a second design principle as follows:

Design principle 2: Involve stakeholders who have a strategic interest in scaling the experimentation and participating in the emergence of an ecosystem of the social issue addressed.

DP3

The evaluation of social activities requires a clear definition of the objectives and issues to be investigated, given the multi-dimensional character and the lack of evaluation standards for this type of activity [69]. Scholarly research has highlighted the potential of evaluating social activities for learning [70] and redefining strategies [71]. Similar benefits of evaluation are underlined in transition management at the reflexive level [22]. It is necessary to implement a broad and relevant evaluation design, especially through the integration of qualitative dimensions in addition to quantitative metrics on which actors usually focus. The quantitative measurement of nonprofit activities has long been considered partially irrelevant, given the central place of human and qualitative outcomes [72], [73]. This is even more accurate for social innovation since processes and outcomes are very hard to plan before the implementation of the program [74]. In addition, in the SIB context, some scholars point out that SIBs have many effects beyond measured outcomes related to success and advocate for evaluation processes that have the capacity to grasp this

reality[75]. Empirical findings sustain these conclusions drawn from the literature and led us to create the following design principle.

Design principle 3: To foster learning among stakeholders and to prepare to scale, building an evaluation design that addresses all the main issues raised by the experiment and its transformative potential is key. The evaluation should not be limited to a binary quantitative measure of success but should use qualitative evaluation tools to analyze in detail the processes that lead to the outcomes as well as the unexpected outcomes.

DP4

The evaluation of outcomes is considered a key process in social innovation [28]. For scaling up, the mobilization of some key actors, such as funders, will rely on evidence that the social innovation actually has transformative potential [8]. For public actors, the evidence-based policy approach even considers that scientific evaluations should be implemented to decide on transforming successful programs into large-scale policies [76]. In the specific context of social impact bonds, which can be considered an example of evidence-based policy [77], a rigorous evaluation of outcomes allows us to ensure that all actors, especially public commissioners, actually benefit from social impact bonds [78]. The evaluation needs to be rigorous enough to convince key actors of the scaling phase to support social innovation. These insights and our empirical findings led us to define the following design principle.

Design principle 4: In the evaluation process, reliable sources of data and rigorous methods of impact evaluation can be used to convince all the actors of the ecosystem that social innovation is worth a scaling up, given its proven social impact.

DP5

To ensure that evaluation truly fulfills its reflexive role [79] with other levels of action (strategic and tactical), it is necessary to manage the experiment in a flexible way due to its exploratory nature [22], [80]. Because evaluation can generate a learning effect in the long term, it must be endorsed at the operational level in terms of managerial activities [81]. Then, different tools and systems need to be implemented [30] to co-define adjustments with stakeholders. Ultimately, stakeholder capacity drives social innovation to flexibly develop common routines that will, in the longer term, ensure scaling up [16], [82]. This important set of activities allowing the generation of knowledge by flexible management is underlined in our empirical analysis, from which we propose the following design principle.

Design principle 5: Implementing a monitoring system that guarantees flexibility in the implementation of experimentation, the commitment of stakeholders and knowledge generation is a requirement for success.

DP6

The scaling up or diffusion of innovation requires individual mechanisms not only for knowledge sharing but also for innovation appropriation [83]. By focusing on the issue of scaling up and knowledge management, the concept of community of practice [84], [85] appears central to determining both the possible barriers to diffusion and how they can be mobilized to achieve it [86], [87]. This perspective provides concrete ways to build networks and partnerships to find new resources, to extend the influence of the experimentation and the organization that supports it, to develop alliances, etc. [88]. During our empirical analysis, we observed that certain actors extended the social innovation beyond the “*geographical and temporal*” context of the experiment. They attempt both to build ad hoc communities and to integrate social innovation into established

networks. This work enables new stakeholders' involvement to increase the scaling-up potential in one way or another. This analysis allowed us to define the following design principle.

Design principle 6: Building conditions for scaling up experiments involve lobbying, identifying key actors in the scaling stage, communicating with toward them and creating communities of practice.

B. Assessing and Improving the Artifact

All stakeholders and experts validated our three challenges presented and our understanding of SIB contexts. *“You have well targeted the challenges to have in mind, from the point of view of social operators as well as for other stakeholders, including investors and evaluators. From my experience it fits well with reality”* (stakeholder 2).

Furthermore, several actors pointed out that the transformative approach is slightly developed in the SIB context. They consider that actors should target this social innovation and its scaling: *“In my opinion at least [scaling] is the number one objective of public authorities. Ok, if it works, do we have the right conditions and information to be able to scale the program?”* (expert 3).

Our guidelines are thus very useful to put forward the vision of transformative social innovation in SIBs: *“On the question of guideline usefulness, I consider that it is very useful for all people who consider social impact bonds to be a tool for supporting ambitious innovative experiments and not only view it as a financial tool”. (...) If everyone agrees that the SIB must come to an end as an innovation in public policy and to transform the system, your propositions are very strong”* (stakeholder 3). Therefore, all guidelines were validated by the actors interviewed; furthermore, the guidelines were challenged, many improvements were discussed, and some of the observations were very relevant for our research.

A guideline frame was outlined by several actors, which led to the frame of a design principle journey presented in Figure 3.

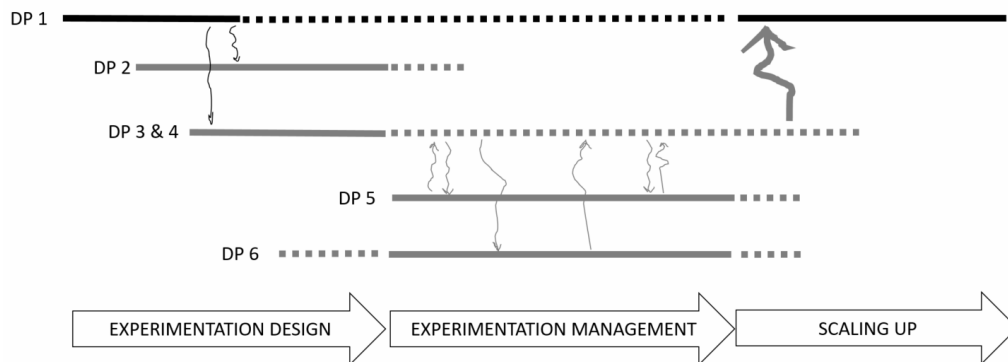


Figure 3: Guideline Frame to articulate 6 Design Principles (DP) during the 3 social innovation phases

Furthermore, the actors interviewed underscored how the different DPs are articulated between them. They all considered that DP 1 is the foundation for all other guidelines: *“For me DP1 is the basis for the potential scaling up, other design principles such as DP2 and DP4 have an operational focus (...) without the first design principle, it is not possible to build the other ones”* (Expert 4). The choice of relevant stakeholders (DP2) and design of evaluation (DP3 and DP4) depend on DP1: *“Once I get the transformative perspective of the experiment, another challenge is to define questions and hypotheses I have to verify [through evaluation process] in order to allow the scaling of this innovation”* (stakeholder 3). Expert 2 enhanced the influence of a broad evaluation of the experiment (DP3) on opportunities to create other innovations—he called them *“experiment tentacles”*—which have the potential to strengthen the transformative power of social innovation (see arrows from DP3 to DP1 during the scaling stage in figure 3). The links between different design principles are presented in Figure 3. Finally, all experts and stakeholders emphasized the importance of proactively structuring and managing the governance of the experiment.

VI) DISCUSSION AND CONCLUSION

In this study, we assessed how actors can manage successful transformative social innovation. The distinctive case of SIBs, as specific financial tools for funding social innovation, enables us to highlight most of the main social innovation specificities. SIBs require specific practices and relationships, such as the necessity to commit stakeholders and to formalize an evaluation design at the beginning of the experiment. However, these dimensions are present in every social innovation, especially from a transformative perspective, although they may be less visible or formalized. SIBs can thus be considered an extreme case of social innovation and highlight several complex characteristics of social innovation. In particular, the collaborative and multi-stakeholder nature of social innovation from the early stages is well represented in SIBs, which can be seen as an arena in the sense of transition management. This arena makes it possible to combine both responses to the specific issues of the upstream phase (DP2, DP3, DP4, DP5) while at the same time addressing at an early stage the issues directly related to the scaling up of social innovation and its dissemination (DP1 & DP6). Our guidelines are therefore not specific to SIB-funding social innovations but rather respond in a general way to the challenges raised by the co-design and management process of transformative social innovation.

Our results contribute to the literature on social innovation and transition management by filling the gap identified previously. We contribute to the existing literature on the management of social innovation scaling by focusing specifically on transformative social innovation and bringing managerial guidelines for this type of social innovation. This managerial approach also helps us to develop the transition management framework by specifying managerial activities in the transition process. Concerning the literature about social innovation scaling, our research provides more

precise and focused insights regarding the managerial levers of the social innovation process. In this regard, we complement the existing literature that described general stages of social innovation development [89], defined general strategies of scaling [35] or identified drivers and barriers to scaling [15], [40]. We actually identify some of the managerial activities at different stages of the social innovation process and position them in a timeframe. Furthermore, these managerial guidelines are designed specifically for transformative social innovation by identifying activities adapted to this type of social innovation. Existing work outlining capabilities for managing a successful social innovation is not rooted in this perspective [36]; therefore, guidelines in these studies are centered on traditional business-like activities (acquiring and managing resources, stimulating markets, etc.). Our results nevertheless echo recent research that supports some propositions made to avoid the risk of failure of social innovation from a broader perspective [30]. Whereas this research identifies factors related to vision, stakeholder involvement and tool adoption at different process phases, our research contributes to this emerging research stream by providing more precise modalities of these management activities: the type of stakeholders involved, the content of evaluation and managerial modalities of monitoring experiments and scaling-up preparation. Therefore, our analysis provides a response to the paradox in the social innovation literature that we identified earlier. We demonstrate, through our analysis and guidelines, that the difficulties of achieving the promise related to the transformative power of social innovations [8], [9] can be partly overcome through particular choices in co-design and management of experimentation.

We contribute to the academic field of transition management by unpacking the different levels of activities and specifying some of them. In this paper, we provide empirical and theoretical reflections on experimentation management issues in co-design situations. Whereas transition

management distinguishes the different levels of activities involved, our design principles are an alternative proposition to the structuration of these management activities. Our proposition offers a more concrete view of managerial actions required in transition experiments and the most significant challenges that actors must address to ensure the success of transformative social innovation. Our results specify some of the managerial activities. First, while it is acknowledged that evaluation is a veritable keystone for governing and promoting sustainable transitions [50], [81], we provide further details on its design modalities. Second, our design principles related to managing the experimentation provide some guidelines for monitoring and adjusting the experiment and for implementing actions that prepare the following phase of the transformative process. Finally, actors must define modalities that ensure a balanced and shared view of the experimentation among stakeholders. Our guidelines lay the first foundations, but in our opinion, they also refer to the more general question of who among the stakeholders should bear and hold the general interest and vision of the transition.

We also developed several managerial contributions in this paper. Using a design science approach, we integrated the results of our empirical study with existing literature in a set of design principles. The design principles guide the actions of social innovation stakeholders to scale their experiment and thus generate long-term social change. Those guidelines define more precisely how to design and manage a transformative social innovation, especially during its experimental phase. Implementing guidelines should reduce the extinction risk of the social program at the end of the experiment. In social innovation, many practitioners are not management experts. Providing guidelines should help them structure innovation strategies and long-term ecosystems. DP1 suggests designing experimentation in a way that can significantly reduce broad social problems with a deep analysis of the grassroots social issues. DP2 invites actors to carefully choose key

stakeholders by analyzing their deep motivations toward social innovation scaling. DP3 and DP4 invite them to go beyond simple indicators to measure social experiment outcomes, to learn from experimentation, and to generate convincing measures of success. DP5 and DP6 suggest managing new knowledge spread by the social experiment to learn and raise awareness of social innovation. Strengthening the social ecosystem is crucial to ensure scaling and the success of transformative social innovation.

The findings in this paper are subject to at least two limitations and further research due to a lack of evidence in the *justifying* phase. First, in design science, design principles must be tested to prove their relevance to extend their internal validity. Therefore, the guidelines have not been implemented in a new SIB to modulate and strengthen the 6 guidelines. Second, we only studied three SIB cases, we should have observed additional cases. The *justifying* phase needs to spread the external validity by replicating our research strategy in several other social innovation contexts to increase theoretical rigor. Recent literature on transition intermediaries [90] provides other answers by showing the role that universities, scholars or non-governmental organizations, for example, can play [91]. Design science can be more collaborative in an action research way [92]. As researchers, we can actively participate in social innovation to help social transitions in a new longitudinal field to deepen the external validity.

Design science also has methodological limitations. Design principles are general statements. They are not magic or may not work in all social innovation contexts. They need to be assimilated and understood by practitioners to be well implemented. Appropriation of a management artifact has a non-predictable timeline, with risks of oblivion in the heat of the social innovation battle. Finally, we did not address the crucial question of how to evaluate the management practices gap created by the guidelines.

This research has raised many questions in need of further investigation, such as which guidelines are required to empower more non-profit organization stakeholders and how to link and coordinate many social experiments in a transition agenda.

Appendix 1: Profiles of people interviewed in field Study 1 and field Study 2

Role	Profile	Case/Institution
FIELD STUDY 1		
Our 12 interviews cover 13 different roles (one of the private investor is also the intermediary for two SIBs*)		
Finance manager	In charge of the SIB program	ADIE
Commissioner 1	Manager of impact investing at the French Ministry of Economy and Finance	ADIE
Project manager 1	In charge of SIB program	ARTICLE 1 (A1)
Deputy general manager	In charge of article 1 management and implementation of the SIB at a strategic level	ARTICLE 1 (A1)
Public officer	In charge of SIB at the French Ministry of Agriculture	ARTICLE 1 (A1)
General manager	In charge of REH management and implementation of the SIB at a strategic level	RESEAU ECO-HABITAT (REH)
Development manager	In charge of SIB program and in charge of SIB program and partnership development on a national scale	RESEAU ECO-HABITAT (REH)
Commissioner 3	In charge of the SIB at the national public agency for house renovation	RESEAU ECO-HABITAT (REH)
Impact investing officer	French private bank (main private investor and intermediary)	ADIE and ARTICLE 1
Project manager 2	At the department of investment in the French main public bank (private investor)	ADIE and ARTICLE 1
Finance director	A huge charity acting as the private investor of the SIB	RESEAU ECO-HABITAT (REH)
Intermediary*	Impact investing officer in a French private bank (both main private investor and intermediary)	ADIE and ARTICLE 1
Evaluator	Manager of a consulting firm, in charge of SIB evaluation; consultant of a big accounting firm, in charge of SIB evaluation	ARTICLE 1
FIELD STUDY 2		
Stakeholder 1 =Project manager 1 in Field Study 1	Project manager of the SIB program	ARTICLE 1
Stakeholder 2	The former project manager who coordinated the major phases that led to its contractualization.	another French SIB program in a NPO (the largest French SIBs)
Stakeholder 3 = evaluator in field Study 1	Former ADIE' SIB evaluator, currently supporting many French social innovation projects, especially in the structuring phases that allow them to scale up in the best conditions	Consulting firm in social innovation (France), PhD in social impact evaluation
Expert 1	Project manager, working for more than 10 years on the articulation of social experiments and their deployment within public administrations.	Management of a large city (France)
Expert 2	CEO, professional designer specializing in public policy design, conducting experiments in collaboration with public and private actors for more than 10 years.	Public design agency
Expert 3	SIB specialist for ten years; SIB specialist for 10 years, consultant for French ministries in financing and social innovation assessment	Assistant Professor, French Business School
Expert 4	PhD Student with a thesis in role, nature and evaluation of SIB in France and international context	University of Angers (France)

Appendix 2: Solutions created by SIB stakeholders - 1st challenge co-designing experimentation

CASE	CATEGORY	VERBATIM	CATEGORY	VERBATIM
ADIE	1a: definition of operational activities of the experimentation as a response to a social issue	The experiment consists in implementing the usual activity of the organization (loans and coaching for financially excluded people) in three rural areas: <i>“we have 140 agencies in France, but we very badly address people who live in rural areas. More than half an hour from the agency, it implies mobility [i.e., people need to have a transport solution] and people do not come”</i> . It implies some changes in the operations and raises specific challenges. No real vision about solving a social issue or changing the social system.	1b: choice of financial stakeholders of the SIB	Public commissioner: impact investing department at the Ministry of Economy and Finance dedicated to impact investing. Motivated by the development of SIBs in France, but not concerned by the social issue addressed by the experiment: <i>“We should have, in an ideal world, discussions with (...) the French department of Labor. However, this administration, which was supposed to carry the ambition [of the program], (...) was absent”</i> (representative of the commissioner, ADIE). Private investors: both investors involved in most SIBs in France, motivated by the development of SIBs in France, and foundations concerned by the social issue (support of rural areas or development of alternative banking services)
A1		The experiment provides additional support for underprivileged high school pupils and students in vocational training located in rural areas through individual coaching and collective workshops. Weak impact expected on beneficiaries: <i>“We’re going to see [the students] 3 times 2 hours [per year], are we truly going to change their lives? I’m not sure.</i> However, potential indirect outcomes for teachers: <i>“That’s how we’re going to change the behavior of teachers in their pedagogy and in their way of talking about career guidance with these young people.”</i> (project manager of social operator, Article 1).		Public commissioner: Ministry of Agriculture, who is in charge of agricultural high schools in France (schools affected by the experiment). Directly concerned with the social issue addressed by the experiment Private investors: both investors involved in most SIBs in France, motivated by the development of SIBs in France
REH		The experiment fills the gap of the housing rehabilitation system: a significant amount of rehabilitation work and targeting poor people. The social operator plans to change the rehabilitation system by adding new rules designed for the specific activity and beneficiaries targeted by the experiment: <i>“After our experiment, we should be able to generalize our intervention. With others, Abbé Pierre Foundation, other operators, but we should do it. More social support, more funding in social and technical support and more ambitious renovation work for much poorer people [comparing to the current system]”</i> (social operator, REH). <i>Strong impact expected on the beneficiaries, not only about energy poverty or housing but also on many aspects of the beneficiaries’ lives: “[I have in mind the example of] XX who found a job once the renovation work had been completed at home (...). There is a social impact on employment and on health. (...) At home, there is no longer a need for an oxygen respirator. People get their social rights back, when, before, they did not want to see any social worker entering their homes because they were afraid of having to go to nursing homes for elderly people or having their kids taken away.”</i> (social operator, REH)		Public commissioner: national public agency for housing rehabilitation. Directly concerned by the social issue of the experimentation. A fit exists between them and REH because both targeted the same beneficiaries: <i>“We have seen for several years that indeed, (...) this intervention priority, which is truly to target the lowest income families in the most degraded housing, is one of our priorities and we are struggling to achieve these objectives”</i> (commissioner, REH) Private investor: <i>A huge French charity tackling poverty. Directly concerned by the social issue addressed approached by the experiment and the possible lobbying of the experiment scaling in the future. “If we want the house rehabilitation public agency to perpetuate the model and turn it into a public program after the SIB, we need a big organization (...) that can tomorrow suggest the house rehabilitation public agency that withdrawing [from the project] is unacceptable and it should be perpetuated in a public program”</i> (social operator, REH)

Appendix 3: Solutions created by SIB stakeholders - 2nd challenge co-designing evaluation of the experimentation

CASE	CATEGORY	VERBATIM	CATEGORY	VERBATIM
ADIE	2.a: formalization of additional evaluation that was not linked to financial mechanism.	<ul style="list-style-type: none"> - No additional evaluation was planned. <i>“The question always was ‘Are we going to do a qualitative study (...)?’ [However, actors said] ‘It’s extra costs, it’s too complicated to deal with it now (...). So basically, today, the agreement to evaluate the ADIE SIB does not [investigate] its innovative nature, about the relevance of this innovation, about the replication conditions of this program, etc.”</i> (evaluator, ADIE). - <i>« So if the SIB is designed to prepare for a scaling up or an innovation generalization, then I can say, what we have done does not achieve that objective»</i> (evaluator, ADIE). 	2.b: degree of rigor in evaluation	<p>Outcome evaluation based on the situation as declared by the beneficiaries themselves. Reasons for that choice:</p> <ul style="list-style-type: none"> - Power balance between stakeholders: <i>“And the public funder, he may have less confidence, he may have more interest in checking out. Except he does not have more power than two other actors. ADIE says: ‘that’s my data, finally you do what you want with them’, and investors say: ‘I trust ADIE, there’s no need to check’”</i> (evaluator, ADIE). - Too difficult to use official data from French national agency for employment, since they were not involved at all in the project. - Cost constraint in the evaluation process, whereas verification implied additional cost.
A1		Additional evaluation planned: <i>“A whole, slightly more qualitative value has been defined in a broader way (...) [there are] different surveys with the students after each workshop (...), other data are collected, which are apart from these famous indicators triggering payments”</i> (representative of the commissioner, Article 1).		Outcome evaluation based on statistical data from the Ministry of Agriculture, success measured through the comparison of the experiment outcomes with similar young people groups. It implied hard work for the service of statistics of the Ministry of Agriculture: <i>“To get to define these indicators and calculate them, we needed data, so we had to be able to update our information systems as well as to be able to supply these data, and again, it was a huge challenge”</i> (representative of the Ministry of Agriculture, Article 1).
REH		Additional evaluation planned, but not designed during the contractualization phase: <i>“And indicators of feedback which will be much more precise, and which have not been defined yet, and thus far, we have not implemented any methodology. We thought: ‘we will launch the SIB and then we will meet in order to be sure to have the right indicators, that we are able to measure, etc.’ (...). In the contracts, there is place for evaluators who can do that type of job, and a dedicated budget was also planned”</i> (social operator, REH)		Outcome evaluation based on data collected by the social operator and verified by the public commissioner through their specific processes

Appendix 4: Solutions created by SIB stakeholders: 3rd challenge managing experimentation

CASE	CATEGORY	VERBATIM	CATEGORY	VERBATIM
ADIE	3a: monitoring actions during the experiment	No specific actions implemented	3b: actions aiming at preparing the potential scaling of the experiment	Actions for preparing scaling are planned: <i>“We will soon be able to share success with actors of the organization, to think about places where it might be interesting to implement our program and to contact local authorities for funding”</i> (social operator, ADIE).
A1		Possibility of making some experiment adjustments under the agreement of SIB stakeholders: <i>“It is very closely defined: number of workshops, the cohorts, the streams, it is registered. By the way, I temper this because there is some kind of flexibility to adjust things. We have a steering board which is a partner. (...) The local authority asked us ‘is it possible to add an additional high school class?’ and we added an extra class that is not in our three [vocational training] streams to be able to have more young people”</i> (project manager in the social operator, Article 1).		Dissemination of information about the experiment among local high school actors in order to prepare the diffusion of the program: <i>“Then it’s all the communication work and results dissemination during this SIB. We bring them together every year, and I think that it can be interesting [that the heads and teachers of high schools involved in the experiment] explain what this approach is, why it is innovative, (...) what are the levers and the brakes for such (...) a project. I think the combination of all of this can allow us to ensure that it can spread to other regions”</i> (representative of Ministry of Agriculture, Article 1.)
REH		No specific actions implemented		The social operator has started to find and meet some organizations located in other areas in order to involve them as a future partner or operator in their area: <i>“We have already made some trips to Provence and Burgundy, to meet different stakeholders. (...) We started this reflection because (...) (...) we would like to have finished [the SIB] before the deadline, [and] we will say to the [public agency for house rehabilitation] (...) ‘now we (...) duplicate’ because our steering committee, in the meantime, will have shown that the demand is already there (...) and people are ready to sign up”</i> (social operator, REH).

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