Chapter 7. Conclusions

This thesis started with the proposition that the radical innovations that are necessary for sustainable development involve numerous processes that are hard to get a grip on. For managers of these processes, it is like entering unchartered territory without clear pathways and even lacking the tools to create these pathways. Moreover, it takes multiple actors to bring about radical innovations, all entering the unchartered territory at the same time, with different starting positions and different resources, albeit with a common purpose. With this common purpose as a point of reference, managers of niche experiments can identify opportunities for funding, generate new knowledge and make connections with relevant actors. At the same time, circumstances change, important stakeholders drop out or competitors take over. In this complex arena of multifaceted processes, managers require support and guidance.

Many scholars have argued that blueprints or action plans are not appropriate for the governance of niche experiments because radical innovation is about doing something radically new and different. Rather, managing niche experiments involves taking advantage of opportunities as they emerge and without knowing what they will be beforehand, encountering what is known in the scientific literature as task uncertainty. This makes it extremely difficult for managers of niche experiments to know what to do and for researchers to provide guidelines that are concrete enough to offer managers action perspectives. In this thesis, I have therefore aimed to better understand the governance of these types of initiatives and to provide practical guidance to project managers by developing a framework and tools which will reduce the task uncertainty they face.

In the five studies presented in this thesis, I have developed a framework with tools to reduce the task uncertainty faced by managers of niche experiments. In this concluding chapter, I provide a systematic reflection on the results of the five studies (Sections 7.1 to 7.6) and show how they have been used to achieve the main objectives of this thesis. After addressing the six study questions which this thesis was designed to answer, overall conclusions are drawn. In the last four sections of this chapter, the validity of the findings is discussed, the contribution of this study to various scientific fields is
described, and options for further research to reduce the task uncertainty of project managers are proposed, followed with a concluding reflection on the aim of this thesis.

7.1 Reducing task uncertainty requires an adaptive capacity framework

What elements should a framework comprise to reduce functional task uncertainty in the governance of niche experiments with a Triple P purpose?

In order to provide guidance during the process of governing niche experiments, I have developed the *Adaptive Capacity Framework for the Governance of Niche Experiments* (Chapter 2). The adaptive capacity framework starts from the assumption that reducing the task uncertainty of project managers implies striking a balance between keeping the focus on the *Triple P purpose* and at the same time dealing with unforeseen events, emerging questions, and a changing environment. In short, reducing task uncertainty is enabled by formulating the main ‘task’ of the project manager or team as ‘increasing the adaptive capacity of the project’. The adaptive capacity framework for the governance of niche experiments helps in achieving this task. It does so first by posing that a niche experiment cannot be governed without a *Triple P purpose* because a clear purpose helps in keeping direction and making choices.

![Figure 7.1. Triple P purpose and emergent design](image-url)
Second, in the adaptive capacity framework, working towards a Triple P purpose is considered an emergent process requiring emergent design during which the purpose, decisions taken and activities planned become more concrete and evolve over time (see Figure 7.1). The width of the spiral signifies the extent of uncertainty, which is reduced as establishing the purpose comes closer. The emergent design element of the framework emphasizes that functional task uncertainty of managers can be reduced by making explicit their questions about the route to follow during the process, rather than answering them in checklists beforehand. Regular review of the on-going situation, keeping the proposed purpose in mind, is built into the process, helping to identify and analyse the obstacles that could otherwise implicitly shape the direction into a more compliant but less desirable direction.

Third, the framework comprises a set of strategies related to the three dimensions, diversity, knowledge generation, and alignment that support the process of defining next steps. These next steps include the activities necessary to achieve the Triple P purpose. The strategies help to determine what activities need to be undertaken regarding the three dimensions. The ‘diversity of actors’ dimension refers to the need to involve relevant actors in establishing the Triple P initiative. Which actors are relevant to include depends for example on the knowledge needs of a niche experiment. The second dimension of knowledge integration, comprises the generation of knowledge that is necessary to determine which route to follow in establishing the Triple P initiative by integrating different knowledge bases (of the actors involved). Moreover, adopting a multi-actor approach, integrating different knowledge bases, perspectives and values, requires alignment. In this framework, alignment can be between niche experiment and regime, between values of different stakeholders, between working routines of different actors, and between the planet, people and profit values.

The strategies that are related to the three dimensions help for example to identify knowledge gaps and generate knowledge with regard to the problem to be solved and its solutions. They also help to identify and engage actors with relevant knowledge and integrate the different types of knowledge within the niche experiments. In this way, knowledge and values at regime level are connected to niche experiments by formulating alignment strategies. To guide the governance of niche experiments, the framework suggests that the three dimensions should continuously be re-assessed (see Figure 7.2).

The adaptive capacity framework for the governance of niche experiments is not characterised by a set of rigid elements that each have an individual process of
compliance. Instead, the framework comprises an emergent design process that continuously works to attune and integrate the strategies associated with the different elements. The framework places the concept of adaptive capacity at the centre of the challenge of governing niche experiments, integrating activities of knowledge generation, embracing diversity and creating alignment with surrounding systems in order to achieve the Triple P purpose. In this way, the framework is able to reduce the functional task uncertainty of managers. It does so, not by reducing functional task uncertainty but, rather, accommodating functional task uncertainty, accepting that new uncertainties will continue to emerge as the experiment evolves and at the same time acknowledging and providing a constructive space to face these uncertainties.

![Figure 7.2. The adaptive capacity framework for the governance of niche experiments (and its elements)](image)

When compared with the recommendations identified from the literature review on the governance of niche experiments, the framework I propose emphasises the Triple P purpose and shows how the concept of emergent design is operationalised to build continuous linkages between the Triple P purpose and the current situation, with its specific knowledge needs, actors with different value sets and prevailing practices and structures that may hamper the innovation. The concept of alignment also has a more prominent position in the framework when compared with the literature.

Stating that a Triple P purpose is a necessary element of a framework for the governance of niche experiments appears to be obvious but is one of the hardest challenges to deal with in practice. When no clear link exists between learning activities organised within the niche experiment and its Triple P purpose, the learning process does not have a specific focus and may therefore be endless. Geels and Schot, for instance, observe that experiments that facilitate broad learning by engaging a variety
of actors face the risk that “too much variety dilutes precious resources and prevents accumulation. It also creates uncertainty and may delay choices/commitments.” (Schot & Geels, 2011, p28). To prevent this, all activities organised within the niche experiment, including the engagement of actors, should be made against the backdrop of the Triple P purpose. This is not to say that a Triple P purpose should be shared by all stakeholders from the start, nor that it should remain stable over time. Inherent to the complexity of the Triple P purpose is the fact that different stakeholders will have different perspectives on the balance between planet, people and profit and that opportunities to find more optimal combinations may present themselves at different moments in time. This is in contrast to studies (and practices for that matter) that perceive Triple P value creation as a linear process comprising value proposition, value creation and delivery, and value capturing (e.g. Carayannis et al., 2014; Gudiksen et al., 2014). The iterative process of redefining, refining and realigning a Triple P value proposition is not part of the usual business model.

In the governance of niche experiments, emergent design refers to emergence in the process of bringing about sustainable development. This combination of emergence and planning is in accordance with the findings of Mintzberg and Waters (1985), who studied the distinction between deliberative (planned, or intended) strategies and emergent (unintended or without intentions) strategies in the context of organisational development. They found that perfect deliberative and emergent strategies do not exist. Instead, there seems to be a continuum, merging deliberative and emergent characteristics. Strategies are therefore said to be deliberatively emergent. This implies, for example, that a vision provides a general sense of direction but the details of the vision can emerge en route as there is room for adaptation (Mintzberg & Waters, 1985). Adapting this to the context of niche experiments, I argue that niche experiments adopt a deliberatively emergent approach towards sustainable development rather than an emergent (or open and flexible) approach. This deliberatively emergent approach is visualized in the framework as a focused spiral, using the Triple P purpose to focus the decisions made when confronted with opportunities and challenges.

The adaptive capacity framework is a strategy framework. It helps managers to focus on crucial aspects of the governance of niche experiments, and it provides them with a set of strategies to analyse the current situation in the context of the Triple P purpose and to assess what activities need be planned to achieve the Triple P purpose. In this sense, the framework seems to help to reduce strategic task uncertainty more than functional task uncertainty. My original hypothesis that project managers primarily face functional task uncertainty (they know what to do, but not how to do this) is not
supported by my research. From the literature study on guidelines and the study on challenges faced by managers of niche experiments, I learned that in particular the concepts of ‘alignment’ and of ‘Triple P purpose’ needed to be added to the existing guidelines and incorporated in the strategy framework, and hence reduce strategic task uncertainty.

If the adaptive capacity framework primarily provides strategic guidance to the governance of niche experiments, than the question remains how to accommodate the functional task uncertainty managers face with the governance of niche experiments. This will be discussed in the next section.

7.2 Tools as routines to generate new action patterns

What tools can be identified to support the employment of the framework, and thus the governance of niche experiments with a Triple P purpose?

In this thesis, I have explored and experimented with several tools to reduce the functional task uncertainty related to the employment of the adaptive capacity framework. This experimentation process identified six tools that support managers with the implementation of the adaptive capacity framework namely, actor analysis, causal analysis, the Dynamic Learning Agenda (DLA), TransLearning, and timeline-and eye-opener workshops. The degree to which the tools address the different dimensions and strategies of the framework varies. Some of the tools mainly focus on creating diversity (e.g. actor analysis), while others generally address emergent design (e.g. DLA). The list of tools is not comprehensive as new tools may be developed in the future, based on the adaptive capacity framework.

In this context, I first want to address the term tools in relation to their intended working. To emphasise the purpose of the tools, such as developing agency, I propose replacing the term tools with the term routines. Turning Triple P innovations into viable businesses or practices is extremely hard. It requires new ways of making trade-offs (e.g. Triple P instead of profit alone), planning activities (emergent design instead of regular project planning), working with other actors (attuning and integrating interests and knowledge instead of allocating tasks), creating knowledge (integrated in the innovation process instead of transferred from science to practice in a linear way), and coordination between different ‘worlds’ (active processes of alignment instead of allocating responsibilities and activities). These new ways of working can also be
referred to as new routines. Routines are defined as the rules that guide behaviour, generating action patterns that are recurring over time and are shared by multiple actors (e.g. see Cohen et al., 1996). The tools that I have developed to support the employment of the framework in practice should be understood in this way: they generate new action perspectives and thus the possibility for new action patterns to emerge. By employing these routines, old action patterns can be replaced by new action patterns that are required for radical innovation. New routines underlie the framework and support its employment (see Figure 7.3).

![Figure 7.3. Routines to support the governance of niche experiments](image)

For instance, the Dynamic Learning Agenda provides routines by regularly assessing the differences between the Triple P purpose and the current situation, translating possible obstacles into learning questions for managers. For example, rather than establishing that the dominance of profit values might act as an obstacle, a learning question could be ‘What can I as a manager do to bring profit, people and planet values more in balance?’ By formulating learning questions, latent uncertainties and implicit pathways are made explicit and, hence, negotiable and resolvable. Well-formulated learning questions can provide relevant action perspectives for the manager. The learning question mentioned above is not easy to answer but asking the question as a learning question (‘What can I do …’) opens up possibilities for different actions, i.e. they are questions with steering capacity. Different possible actions include the in-depth exploration of underlying causes of the imbalance by, for example, employing the routine of causal analysis with the team; conducting research on best practices in a
comparable field and bringing these into the process by, for example, contracting researchers or by employing the routine of TransLearning; and organising a design session with input from different actors on new ways to balance different values. In this way, the DLA routine can be applied at different levels of the framework.

Another learning question that is very relevant in the context of the governance of niche experiments, and that easily follows out of the framework by using the DLA could be ‘How do I as a manager create alignment between the needs of the entrepreneurs and ‘normal’ (in the Kuhnian sense) knowledge production by the involved scientists?’ Again, phrasing this obstacle (the incompatibility of the modus operandi and associated time frames of researchers and entrepreneurs) as a learning question steers towards new action perspectives. The first issue to explore is why is it so hard to create alignment – this question can be explored with the scientists and entrepreneurs involved in the niche experiment. Joint reflection on this question may already result in possible solutions. Subsequent actions may be to organise knowledge brokering sessions in which entrepreneurs are asked to meticulously present their needs and scientists are asked to think of connections between these needs and the available knowledge base and ways to make the knowledge available.

There are many more examples of relevant learning questions which shows that the routine DLA is generic enough to be applicable to any situation in which managers face functional task uncertainty. Combined with the framework and its strategies, the DLA provides concrete action perspectives that accommodate the uncertainties faced. The same can be argued for any of the other routines: TransLearning and the eye-opener workshop are generic routines which bring together the specific knowledge questions and answers that arise at a particular moment during the process. Similarly, actor analysis is a routine that can be used to generate action perspectives for dealing with a diversity of actors, whether they form obstacles or create opportunities.

Reconceptualising tools as routines supports the understanding that functional task uncertainty can be reduced by routines that generate new action patterns and it are these action patterns that are necessary for radical innovation to be successful. These new routines are hypothesised to contribute to the development of ‘dynamic capabilities’, used in the context of strategic management to understand how the competitive advantage of an organisation can be improved by focusing on the internal dynamics of the organisation (e.g. Eisenhardt & Martin, 2000). Dynamic capabilities are described as “organizational processes by which firms synthesize and acquire knowledge resources, and generate new applications from those resources” (Kogut &
Zander, 1992, cited in Eisenhardt & Martin, 2000, p1107). These definitions show that dynamic capabilities are necessary to adapt a firm’s standardized working procedures to a changing circumstances. But how to develop dynamic capabilities? According to strategy scholars Ludwig & Pemberton (2011), little research is done on the process of dynamic capability building. Although the development of dynamic capabilities falls outside the direct focus of this study, the results of this study suggest that the routines proposed in this thesis may build dynamic capabilities. These routines support the development of new action patterns more suitable to the change process, enhancing the ability of managers to deal with progressing insights and changing conditions. In other words, the routines help managers to develop dynamic capabilities in the governance of niche experiments.

In literature, dynamic capabilities are often described in vague terms, such as ‘routines to learn routines’ (Eisenhardt and Martin, 2001). Eisenhardt and Martin (2001) however, argue that dynamic capabilities is not a vague concept as they consist of well-known tools. However, managers often lack insights to determine which tool is most appropriate to use in what situation and to decide what is the most appropriate time to implement the tool. This research contributes to this gap with the development of a framework that helps managers to select the right tool for the right situation, and to apply the tools at the right time. Morover, I propose several routines to support managers in employing the framework. Using the framework and routines result in a more contextualised and tailor-made use of tools.

7.3 Purpose as the vital focus in the governance of niche experiments

*How can the process of shaping a Triple P purpose, and its role in governing niche experiments, be understood?*

Chapter 2 describes the process of shaping and re-shaping the Triple P value proposition as the operationalisation of the Triple P purpose of MijnBoer. It shows that within two years, reshaping of the Triple P value proposition had taken place, and that the small team of entrepreneurs and researchers involved did not jointly reflect on and discuss the changes made to the Triple P value proposition. These findings provide room for defining a new routine that supports the governance of niche experiments, shaping analytical space for using the framework with the Triple P purpose as a central concept.
Radical innovations in the area of sustainable agriculture require integration of high levels of ambition in terms of profit as well as people and planet. Multiple actors need to be involved, all with their own perspectives, knowledge and ideas on the people, planet and profit aspects of these innovations. One of the important elements of the framework is thus the Triple P purpose that is shared by the different actors, which acts as a point of reference for taking decisions and shaping activities along the route. At the same time, everyday tasks, existing routines and non-conducive systems can dilute the initial level of ambition.

Taking adaptive capacity as the central concept of the framework is consistent with the idea that there are no yardsticks for the right mix of people, planet and profit aspects, nor is there one tool that can be employed to unequivocally and immutably integrate people, planet and profit aspects. With changing circumstances and new stakeholders entering the arena, new perspectives need to be aligned and, as a result, the Triple P value proposition is re-articulated. This finding is in agreement with the evaluation of the TransForum niche experiments (action experiments) of TransForum, by Peterson and Mager (2010, p117), who observe that a success factor for progress in establishing a Triple P purpose is that “different stakeholders acknowledge that the action experiment aiming to contribute to a more sustainable development of agriculture will never be un-debated” (my emphasis). With this observation, they refer explicitly to the diversity of definitions of sustainability between the different stakeholders because of their different value sets. They emphasise the importance of acknowledgement, arguing that it is:

“... a crucial step to take, since it implies that no single actor or group of stakeholders, no scientific research, but also no process of negotiation is able to create an ultimate sustainable solution. If this notion is disregarded, all too often multi-stakeholder processes lead to endless deliberating and negotiating, ultimately leading to a situation where stakeholders dig in and start debating each other’s value set instead of looking for possibilities that connect those different value sets” (Peterson & Mager, 2010, p118, my emphasis).

In terms of reducing task uncertainty of managers, the question then becomes ‘How can I as a manager ensure that different stakeholders acknowledge the inherent complexity of an ultimate definition of sustainability?’ Chapter 3 has shown how the Triple P value propositions of the different actors can be made explicit at different moments in times. This opens up the possibility for considering how different value sets relate to each other and what opportunities can be created for aligning profit
values with people and planet values. By reflecting regularly on the Triple P value propositions, new opportunities for alignment and thus for establishment of the Triple P business idea, can be identified which otherwise might have remained unnoticed. This routine, namely the process of making explicit and reflecting on Triple P value propositions, gives a concrete action perspective to managers of niche experiments to shape the, what by TransForum is defined as the, principle “sustainable development is a dynamic process” (van Latesteijn & Andeweg, 2010a, p13).

The importance of purpose in any change or innovation process is also emphasised by project management professional Schmidt (2009). He states that “purpose is the vital, often missing focus that expresses the desired result or the impact we expect the project deliverables to produce” (Schmidt, 2009, p100). He goes on to explain why this focus is often missing:

“Purpose floats a level above that which we can directly control – the outcomes. It is a subtle concept, often hard to grasp because we are so conditioned to thinking of activities and outcomes” (p101).

In niche experiments, where the relationships between activities, outcomes and purpose cannot be unequivocally determined beforehand and where no predetermined project plan can be developed, it is important that managers do not default to focusing on activities, outcomes and project deliverables. According to Schmidt, the outcome-to-purpose-link should be iteratively tested and refined to determine whether the outcomes will achieve the purpose. This is done by asking questions like: ‘Are the outcomes collectively sufficient? Are they all necessary? Are these outcomes the best choices? What other sets of outcomes might be better?’, allowing the mix of outcomes to ‘intelligently evolve’ (Schmidt, 2009). According to Schmidt, this process calls for system thinking and mental flexibility which can be seen as examples of action patterns that are generated by new routines.

7.4 Facilitating vicarious learning to reduce functional task uncertainty

How can the exchange of experiential knowledge about the governance of niche experiments with comparable dynamics be supported in order to reduce functional task uncertainty?
The generation and integration of knowledge is one of the three pillars of the adaptive capacity framework. I assumed that strategic task uncertainty for knowledge generation is low, as one would acknowledge that generation of new knowledge is essential to radical Triple P innovations. Moreover, many routines have already been developed to shape the process of knowledge generation. One strand of research focuses, for example, on the role of brokering in the interactions between formal knowledge institutes such as universities and society. Knowledge brokering emphasizes the importance of engaging in and facilitating the interaction between knowledge producers and users, linking knowledge supply and demand by serving as an intermediary (Turnhout et al., 2013). Knowledge brokering thus facilitates the transfer and exchange of knowledge, including scientific knowledge, among various stakeholders, including researchers, practitioners, and policy makers. Knowledge brokering is challenging and the role of knowledge brokers and their activities in supplying, bridging and facilitating knowledge generation processes has been extensively studied. This research has generated a wide range of routines that knowledge brokers can employ, varying from the ‘articulation of knowledge demand of non-scientific actors and translation into scientific questions’ to ‘building bridges between disciplines’ (Turnhout et al., 2013, Box 1, p5). An overview of routines knowledge brokers may employ is provided in Box 7.1.

**Box 7.1. Routines performed by knowledge brokers (Turnhout et al., 2013)**

- Designing the project approach, developing concepts and methodology
- Project management and networking
- Generating new knowledge
- Integrating and transforming existing knowledge into usable knowledge
- Organizing and participating in project meetings
- Organizing external workshops
- Communicating intermediate results as well as final results
- Management and facilitation of processes
- Articulation of knowledge demand of non-scientific actors and translation into scientific questions
- Locating and involving relevant experts and expertise from outside science
- Building bridges between disciplines
- Applying knowledge on processes of science development (meta-knowledge)

The type of knowledge brokering referred to above mainly focuses on scientific knowledge, such as technologies and housing systems for chickens. Although this knowledge is relevant to Triple P initiatives, experiential and embedded knowledge are
equally important in the governance of niche experiments and have been studied less. In a pilot study for TransLearning on the dissemination of knowledge that was generated in the context of a niche experiment for an agropark, an eye-opener workshop was organised around an audio-visual presentation of the knowledge that was generated by one of the scientists involved in the agropark project. Potential knowledge users were asked for their eye-openers (new insights, lessons, etcetera), inputs and the questions they still had after watching the audio-visual presentation on the agropark system. It was striking that in addition to very concrete questions regarding the innovation (e.g. types of biomass, amounts of biomass and biogas, concrete options for the use of rest heat), participants indicated that they needed more knowledge on the role of the researcher in supervising a multidisciplinary research team, and the role of scientific research in the entire design process of the companies. Questions were also raised on the effects of the agropark on the sustainability challenge at regional, national and international level. In short, in addition to the need for the transfer of scientific knowledge on the innovation itself, there was a need for experiential knowledge on the governance of niche experiments.

As more is known about brokering scientific knowledge, as discussed above, I specifically studied the dissemination of experiential knowledge generated in niche experiments with comparable dynamics in order to reduce the functional task uncertainty of managers. Learning from the experiences of others is often referred to as vicarious learning. The question that remains is thus: how to facilitate vicarious learning? Guba & Lincoln (1989) argue that for vicarious learning to occur, the original learning experience has to enable the re-experiencing of the learning experience. The re-experiencing of the original learning experience by the learner requires thick description, reflecting the context of the original learning experience and a detailed description of the situation in which learning took place. This thick description is often found in stories. As written reports are often not read, we experimented with new media as a way of facilitating vicarious learning. This resulted in TransLearning, a web-based system that archives and makes accessible film fragments that capture the knowledge of people involved in niche experiments with regard to how to tackle specific problems encountered in achieving a Triple P purpose. TransLearning can thus be considered a routine for reducing the functional task uncertainty of managers as it provides action perspectives on how to resolve the problems and challenges they encounter. TransLearning enables a process of identifying knowledge gaps and possible obstacles to establish the Triple P purpose to subsequently look at (comparable) niche experiments to gain insight in how they dealt with these knowledge gaps and obstacles. This assumes that although the Triple P purpose is specific to each context,
niche experiments share characteristics in terms of purpose and governance, making experiential knowledge very relevant in the governance of niche experiments. Although acknowledging that involving non-scientific knowledge in the process of knowledge production is very important, research shows that researchers often work from traditional disciplinary research (Turnhout et al., 2013), making limited use of experiential knowledge. Therefore, new routines, such as TransLearning, are necessary to make experiential knowledge accessible to researchers.

7.5 Strategic alignment

*What strategies can be identified to deal with and overcome tensions between monitoring aimed at stimulating learning within projects to reduce functional task uncertainty and monitoring directed towards the accountability requirements of funders?*

Chapter 5 shows that, in the temporarily protected space of the niche experiment, alignment needs to take place between the experiment and funder of the experiment, often governmental innovation programmes. From the perspective of the funders, a policy programme starts with clear goals and objectives and the niche experiments that are part of the programme are held accountable for the extent to which these objectives are reached within the given period and with the given budget. However, this need not necessarily be compatible with the emergent design character of niche experiments. This discrepancy often translates to different perspectives on the role of monitoring and evaluation of niche experiments, as was shown in Chapter 5. It is important to be aware of these discrepancies and deliberately employ alignment strategies to prevent the experiment from defaulting into old routines.

Chapter 5 thus showed that alignment between a niche experiment and its funders is essential for a niche experiment to be successful in achieving its Triple P purpose. Alignment, and re-alignment is, however, not only crucial with regard to the funder, but at all levels and in all phases of the niche experiment. First, there needs to be alignment between the ideas, knowledge and perspectives of the initiators of the proposed innovation, in order to formulate an initial Triple P purpose. Re-aligning perspectives of the Triple P purpose continues to take place throughout the experiment’s development, as well as alignment of the mix of activities and outcomes with the purpose. And second, it involves alignment of the proposed innovation with prevailing systems (e.g. legal, technical or financial) and structures (e.g. knowledge
infrastructure, governmental structure) as well as with a growing group of relevant actors (e.g. consumers, inhabitants).

As stated earlier, niche experiments can only temporarily take place in a protected space, they soon need to align with external actors and institutions in order to become a viable innovation. The sooner the ‘external’ is brought into the niche experiment, the sooner alignment activities can take place. Hence, the many calls for participatory and interactive processes in the fields of knowledge production, policy making or business (e.g. Fischer, 2003; Nowotny et al., 2003; Prahalad & Ramaswamy, 2004). For instance, in business, strategic alignment is a key determinant of competitive advantage (Lawton et al., 2014). Strategic management researchers, Lawton and colleagues, argue that “to build and sustain corporate success, companies must synchronize business objectives and market positions with political and regulatory activism and social and environmental engagement”23. Strategic alignment involves attuning external non-market strategies to corporate vision, values, and culture. The multiplicity of actors and perspectives that are relevant to a niche experiment need to be aligned to the vision of the experiment, namely the Triple P purpose. In turn, the vision of the experiment can be enriched with the multiplicity of perspectives involved, increasing the experiment’s chances of success and providing it competitive advantage.

To conclude, while the concept of alignment and its importance are mentioned in literature on the governance of niche experiments (e.g. Kemp et al., 1998; van der Laak et al., 2007), I propose to give alignment a central position, in addition to knowledge generation and the diversity of actors, and employ these concepts with the associated set of strategies to bring the Triple P purpose to fruition through an emergent design process.

### 7.6 Broader applicability of the routines

*To what extent can the tools, developed and implemented to reduce functional task uncertainty in the governance of niche experiments aiming at the sustainable development of agriculture, be applied to other contexts?*

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As already discussed in the introduction, is the balancing of core values not only relevant in the sustainable development of agriculture, but can also be applied to the sustainable development of other systems. Niche experiments aiming at sustainable development thus do not only take place in the field of sustainable agriculture but also in health care, youth care and development practices. In all of these complex contexts, project managers encounter a level of functional task uncertainty. Within the ‘Thematic Learning Programme on the inclusion of people with disabilities in development practices’ (TLP), for example, the lessons that were disseminated and shared among the participants were not as much on the purpose of its activities, disability mainstreaming, but mainly on how to bring about this purpose (van Veen, 2014). Similarly, a current project within youth care, conducted by researchers who were also involved in this research, shows that managers working in youth care often do have knowledge with regard to general principles relevant to their work (e.g. involve the whole family, co-create solutions with clients), but lack insights into how to apply these principles in daily practice. As this demonstrates, agency is thus often lacking in project managers, also in contexts outside the field of sustainable development.

To explore the extent to which the routines developed for sustainable development could also be applied to develop agency of project managers in other contexts, we implemented the DLA, originally developed to support sustainable agriculture, in the TLP. In addition to experimenting with the DLA in another context, the responsibility for identifying tough issues and formulating learning questions was conveyed from an external monitor to the participants of the niche experiments themselves. Within the TLP, the Dynamic Learning Agenda (DLA) was found to be a *useful tool for integrating learning and reflection* in the social change process for the inclusion of people with disabilities in development practices. The DLA made the challenges encountered explicit through dialogue and reflection. This was not only my observation but was also the conclusion of an independent study on the effectiveness of the TLP (de Wal, 2012, p13):

> “...the concept of the Dynamic Learning Agenda is a very supportive tool in learning trajectories because this is a pre-eminent way to value the fact that learning questions change during the learning process, especially of organisations aiming for systems change.”

More specifically, the DLA helped to sensitise project managers and participants to identify challenges encountered in the niche experiment and formulate them into learning questions. Using the wordings of Schmidt (2009) who stated that the outcomes
necessary to achieve a purpose cannot be defined beforehand, DLA supports asking questions (e.g. What do we need to make happen in order to achieve the project purpose? What processes do we need to put in place to achieve our purpose) to reflect on the outcomes and thus activities of a niche experiment. The DLA thus initiates a process of iterative testing and refining of the outcomes (activities) in the light of the purpose, proposed by Schmidt (2009).

This study shows that the DLA, although developed in a different context, can also be effectively applied in the context of disability mainstreaming. This suggests that the two contexts share some characteristics that make the DLA a useful routine. Analysis of the niche experiments studied in this thesis shows that the niche experiments aiming at sustainable agriculture and the experiment on disability mainstreaming both work towards a clearly defined purpose, but the route to achieve this purpose, i.e. the outcomes and activities necessary, cannot be defined beforehand. Moreover, the purposes cannot be achieved by one single activity but require a wide range of activities. Extrapolating these findings, it is expected that the DLA and the other routines proposed in this thesis, may be specifically useful in niche experiments that aim at radical innovations.

### 7.7 Overall conclusions

Due to the radical and complex nature of niche experiments with a Triple P purpose, managers face many challenges in the governance of such experiments and establishing Triple P businesses. This complexity had already been analysed and assessed in many different ways, resulting in several general approaches towards the governance of niche experiments. The study presented in this thesis approached the complex nature of the governance of niche experiments from the perspective of a manager’s high task uncertainty, instead of the helicopter view that is often taken. Following this manager’s perspective, this thesis aimed at supporting managers to govern niche experiments in such a way they become successful in achieving their Triple P purpose. My study have shown that managers not only face functional task uncertainty: ‘How to implement recommendations and guidelines available on literature’, but also experiences a level of strategic task uncertainty when underestimating the importance of alignment and the focus on the Triple P purpose of the experiment. This strategic and functional task uncertainty have been shown to be accomodated by using the adaptive capacity framework to plan activities in establishing a Triple P business. Moreover, new routines, such as DLA and TransLearning, support managers in the development of dynamic
capabilities that are essential in the governance of niche experiments, thereby reducing functional task uncertainty. I hope that the framework and routines to enhance the adaptive capacity of niche experiments proposed in this thesis contributes to reducing (or accommodating) the task uncertainty faced by managers. Although the framework and routines identified in this thesis may provide managers with action perspectives to deal with obstacles and opportunities encountered during the governance of niche experiments, challenges and difficulties will always be part and parcel of projects with a Triple P purpose.

7.8 Discussion: two types of niche experiments

In the Introduction, I defined niche experiments broadly. The experiments under consideration in this thesis range from Triple P business initiatives to learning networks related to pioneering initiatives. In this setting, managers have the responsibility to support the achievement of the Triple P purpose as either entrepreneurs, knowledge brokers or project managers. Given the range of experiments, this section considers the extent to which the framework and routines are applicable to both business initiatives and networks.

The TransForum programme supported both business initiatives, such as agroparks, and learning networks, including “regional oriented experiments to combine agriculture and landscape management” (van Latesteijn & Andeweg, 2010, p150). These experiments were guided by a framework consisting of a set of principles, based on literature and the first year of programme experience, comprising: 1) sustainable development is a dynamic process, 2) sustainable development needs system innovation, 3) system innovation is a non-linear learning process, 4) system innovation requires a multi-stakeholder approach, 5) and multi-stakeholder approaches imply transdisciplinary knowledge creation (van Latesteijn & Andeweg, 2010a). These principles correspond with my own findings from the literature on the governance of niche experiments for sustainable development, as discussed in Chapter 1 and 2. In the TransForum experiments “… knowledge institutes, entrepreneurs, societal organisations and governments worked together to create new knowledge for innovation and sustainable development” (van Latesteijn & Andeweg, 2010b, p157). The initial emphasis was on knowledge co-creation in multi-stakeholder processes and in innovations in hard-, soft- and orgware elements, referring to multiple aspects of system innovation: new technologies, tacit knowledge and organisational processes (Andeweg & van Latesteijn, 2010). At a later stage of the programme, knowledge co-
creation in multi-stakeholder processes was found not to be sufficient to improve the sustainability performances of agricultural activities (van Latesteijn & Andeweg, 2010a) because “a considerable proportion of new ideas and new products eventually fail because there is no reward to be gained for it in the market place” (Andeweg & van Latesteijn, 2010, p.136) and because “innovation, at the end of day, is about setting up a new business that can deliver on all three aspects of sustainable development” (Andeweg & van Latesteijn, 2010, p.136). It was therefore decided to formulate an additional sixth principle for the TransForum model, namely 6) “New business models based on new knowledge lead to better 3P performance of agriculture” (p. 136).

Based on the literature and on my own findings, I concur with the TransForum model’s emphasis on the business perspective. My recommendation, namely making the Triple P purpose a central focus of the governance of niche experiments, also guarantees the sixth principle, whilst the other principles are also incorporated in the adaptive capacity framework. However, this does not imply that all niche experiments should be organised around a new business. Niche experiments with a broader focus, such as a multi-stakeholder network for reducing the use of pesticides in crop production, do not focus on the profit dimension in the first phases of the niche experiment. In the later phases, however, the niche experiment also need to take profit values into account (something that naturally happens in niche experiments that are organised around setting up a new business). The focus on the Triple P purpose safeguards attention to an appropriate mix of planet, people and profit values, whether the case requires alignment of planet values with a profit orientation, as in the case of a new business, or alignment of profit values with a planet orientation, such as with sustainability learning networks or regional sustainable development. In the case of both types of projects, if the appropriate mix of values is not found, the project will have failed.

7.9 Validity of the findings

The answering of the sixth study question provided a reflection on the external validity of the research. In this section, I reflect further on the external and internal validity. An important aspect of the internal validity of research concerns its transparency. The researchers involved in this emergent design research had a dual role since they were developing and implementing the routines that were being studied. All were aware of this dual role in implementing and reflecting on self-designed processes and the application of enablers in the niche experiments. To minimise self-evaluation and researcher bias, research activities were carefully and explicitly documented through
audio-recording of all interviews and sessions, transcribing all data verbatim, and keeping observation logbooks. Moreover, different forms of triangulation were applied. During data collection, different methodologies and data sources were employed to collect data (data triangulation, such as desk studies, document analysis, interviews, group sessions and participant observation during meetings). In the design and facilitation of the interviews and focus groups, multiple researchers were involved to reduce researcher bias. Summaries of the interviews and focus groups were sent to the participants for member check. Data interpretation and analysis were performed independently by multiple researchers (researcher triangulation) and verified with the transcripts to assure quality. Moreover, we discussed our observations and reflections with colleagues not directly involved in the study which helped to strengthen the internal validity of this study.

The methodology applied within this research was further developed and refined based on discussion and reflection meetings with a research group at Wageningen University and Research centre. Some of the routines proposed in this thesis to reduce the task uncertainty of project managers were also applied by this research group in other niche experiments, verifying the relevance of the enablers in other contexts. To further validate the findings and usefulness of the routines, preliminary findings were disseminated and discussed during conferences with colleague researchers.

Rather than purely theory-testing or theory-building, I have characterised the research underlying this thesis as conceptual-methodological and the research approach as iterative and reflexive. By engaging with managers of niche experiments in practice through monitoring, the framework and routines were continuously realigned and refined by iterating between the development of the framework and routines, and the practice of governing (monitoring) niche experiments. Being a form of design research, the inquiry focused more on understanding and constructing than on explaining or proving. This raises the question of the extent to which the resulting knowledge, namely the framework and the routines, can be considered valid and reliable. There are many ways to answer this question. I start by considering the extent to which the framework and routines can be considered reliable outcomes of my research.

In this research, the iterative and reflexive approach enabled me to develop the framework and routines in response to the challenges and difficulties experienced by managers of niche experiments, and to refine them during the course of the research through continuous interaction and iteration. Science studies scholars Nowotny and colleagues (2001), have reflected on the reliability of the type of knowledge that is
developed in close collaboration with practitioners, namely the type of knowledge resulting from design research. They consider that if knowledge is created in:

“…intense interaction within a much wider community of practitioners - embracing other disciplines; or stretching across the boundaries of academia and industry; or embracing even more heterogeneous ‘users’ - is it still possible to produce reliable knowledge?” (Nowotny et al., 2001, p. 229).

In response, Nowotny and colleagues argue that highly contextualised knowledge production gains its reliability, not from its replicability, but from its validity outside of the experimental context, a condition that they have described as being ‘socially robust’. Given that the production process of the routines was highly contextualised because it took place in engagement with the practice of governing niche experiments, the outcomes, the routines, can be considered as ‘socially robust knowledge’ (Nowotny, 1999). High contextualisation implies that the regular processes of peer review is extended into ‘extended peer review’ in which practitioners, users, innovators and others judge the reliability and applicability of the outcomes (Funtowicz & Ravetz, 1992).

If the adaptive capacity framework and routines are reliable in the sense that they represent socially robust knowledge, what can be said about the validity of the increased understanding of the processes involved in the governance of niche experiments? I will consider this point by discussing some examples. In the case of Regional Fresh Chains, I engaged with the niche experiment by observing project team meetings and external activities. Furthermore, interviews were conducted with the initiating project team members about their vision on MijnBoer and the process of achieving its Triple P purpose. The results of this initial inquiry were shared with the project team. Having a joint discussion about the Triple P value proposition was found to be beneficial to the process of alignment and mutual decision-making. The beginning of a new routine was born. From this point, the routine was developed, implemented and further refined, resulting in a socially robust routine. At the same time, using the routine helped to gain understanding of the processes involved in the governance of niche experiments. Regarding the governance of niche experiments, I learned about the importance of regularly assessing and aligning perspectives on the Triple P purpose, even within a small and relatively homogenous team of initiators. This knowledge about the governance of niche experiments can be said to be ‘inscribed’ in the routine. Hence, the robustness of this knowledge can be warranted in the same way as the routines, and by the further application of the newly developed routine in practice. The
distinction between internal and external validity thus not seem to be appropriate for this type of design research.

A second example is the development of the DLA routine. This started with the monitoring of niche experiments and discussing with the project teams the obstacles experiences in achieving their purpose. Over time, the obstacles remained obstacles and they kept coming back on the agenda in different ways. It seemed logical to put these ‘tough issues’ on a learning agenda that the monitor would follow over time (i.e. ‘monitor’). The obstacles were first formulated as ‘issues’ that required understanding. Initially, identification of these obstacles by the project team did not automatically translate into useful action perspectives, therefore they were formulated into learning questions by the monitor. The understandings about the processes involved in the governance of niche experiments that resulted from this, were first, that project managers face task uncertainty with regard to governing the niche experiment, namely they lack action perspectives to deal with the tough issues and, second, that the issues were related primarily to the diversity of actors involved and the prevailing routines of their home-base organisations; the process of knowledge integration; and the overarching challenge of what decisions to take and activities to plan to achieve concrete results, including the question of what results count as success.

In this way, developing the adaptive capacity framework and routines in the context in which they are meant to be used gives the research outcomes validity in terms of social robustness. Socially robust knowledge is “subject to frequent testing, feedback and improvement as it is open-ended” (Nowotny et al., 2001, p167). This process of testing working hypotheses and knowledge statements and of organising feedback was brought about by the continuous iteration between theory and practice, namely experimenting with the framework and routines in the practice of monitoring and governing niche experiments. At the same time, research outcomes in terms of understanding of the processes involved in the governance of niche experiments are ‘inscribed’ in the routines and framework, and acquire their social robustness by the same process.

External validity, generalizability of findings, is not straightforward in the case of case studies (Yin, 2013). The question is whether findings from one case, are also applicable to other cases. If this is the case than ‘analytical generalizability’ can be attributed to the results, meaning that the results might be reliable in many more similar contexts, even if the research was not repeated in these contexts (Yin, 2013). At the same time, “when we give proper weight to local conditions, any generalization is a working hypothesis,
not a conclusion” (Cronbach, 1975, p125, cited in Reeves, 2006). In this study, the framework and routines resulted from engagement in multiple niche experiments, enhancing the external validity, and social robustness, of the study. Although this study specifically focused on reducing the task uncertainty of project managers with regard to the governance of niche experiments, I hypothesise the adaptive capacity framework and routines to be relevant to other innovation contexts implementing radical changes. To gain further insights into the applicability of the routines in other contexts, the routines proposed are currently being applied in other research fields, including health, disability and youth care.

7.10 Scientific relevance of the research

The lessons acquired during this research may be relevant to a diverse range of scholars from a variety of knowledge fields including strategic niche management, transition management, transdisciplinary research, Responsible Research and Innovation (RRI), and monitoring and evaluation.

First and foremost, this research contributes to new developments in the field of the governance of niche experiments, such as transition management (e.g. Kemp & Loorbach, 2003) and strategic niche management (e.g. Kemp et al., 1998; van Mierlo, 2002). Transition management aims to understand and guide long term transitions, and therefore establishing concrete projects at niche level is not problematised. As a result, transition management generally focuses on the strategic and tactical levels, and much less on the operational level of niche experiments. Little guidelines are thus available for managers to develop agency in the governance of niche experiments. This research is build on the premise that transitions only occur when niche experiments are succesful in achieving their Triple P purpose. More specifically, this research emphasises that the governance of niche experiments is essential for them to achieve their Triple P purpose, and provides a framework and routines that support managers in the governance of niche experiments. This research thus contributes to transition management by further specifying governance activities on an operational level. Strategic niche management does focus on the operational level of the governance of niche experiments and offers several guidelines and recommendations that managers may implement during the governance of niche experiments. These recommendations, however, are shown to be very general and do not provide managers with concrete action perspectives on how to implement these recommendations in the practice of
their niche experiments. The framework and routines proposed in this thesis do provide these action perspectives and may therefore contribute the further development and refinement of the recommendations formulated in the field of strategic niche management.

A second field this research may contribute to is transdisciplinary research, integrating knowledge of actors within and outside of academia. In the field of transdisciplinary research, two main understandings can be distinguished. Some scholars describe transdisciplinary research as a new way of producing knowledge, conceptualising knowledge production as something which transgresses institutional boundaries. Nowotny and colleagues (2003), for example, consider transdisciplinarity to be a way to integrate knowledge to create socially robust knowledge. More specifically, they state that in order to solve problems a range of theoretical perspectives and practical methodologies need to be combined within the context of application. Unlike in multi- and inter-disciplinary research, they state that “knowledge is not necessarily derived from pre-existing disciplines, nor does it always contribute to the formation of new disciplines” (p186).

In a more recent approach, other scholars emphasise that transdisciplinary research is a goal-oriented process where knowledge integration and problem solving go hand in hand, rather than a knowledge production process per se (see, for example, Hirsch Hadorn et al., 2008). Specifically, they argue that transdisciplinary research is based on two main principles. First, transdisciplinary research is the scientific approach to resolve tangible, real world problems. Second, the integration of knowledge from different actors relevant to the problem under study is essential for the success of a transdisciplinary research approach. This implies that insights from science have to be combined with values and knowledge from society in a mutual learning process in order to resolve complex persistent problems (Hirsch Hadorn et al., 2008). It is to this understanding of transdisciplinary research that this thesis contributes. The goal-oriented perspective on knowledge integration is a relatively new and developing strand of research, especially with respect to reducing functional task uncertainty of managers and others who are interested in adopting a transdisciplinary research approach. By providing action perspectives for managers to govern niche experiments in which a transdisciplinary approach is implemented, my research adds, for example, to the work of Lang and colleagues (2012). They describe principles and empirical experiences with conducting transdisciplinary research; make explicit challenges of implementing such a research approach; and define possible coping strategies that managers may implement to counter these challenges. My research thus contributes to
the further development of transdisciplinary research in the context of resolving complex problems in general, and reducing the functional task uncertainty of managers taking a transdisciplinary approach in particular.

Another research field to which this thesis is relevant is the field of Responsible Research and Innovation (RRI). This field is currently developing at a high pace as RRI has become increasingly important in research and practice. RRI reflects the commitment of science to be more anticipatory, reflective, deliberative and responsive in defining and facilitating research and innovation (R. Owen, Bessant, & Heintz, 2013). In a more practical sense, RRI aims to bring together researchers, citizens, policy makers, businesses and educators to cooperate during the entire research and innovation process in order to align the outcomes of research and innovation with the expectations, values and needs of society. By initiating a participatory and inclusive process, society gains greater influence on the research and innovation process through which social benefits can be created while, at the same time, negative side-effects of innovations on society and nature can be limited (Von Schomberg, 2011). RRI can thus be understood as:

“... a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society” (Von Schomberg, 2011, p9).

The field of RRI encompasses several concepts and approaches to shape the participatory processes towards research and innovation (e.g. Stahl, 2013). These approaches have multi-actor or transdisciplinary approaches in common, involving actors with a diverse range of backgrounds. However, concrete action perspectives are currently still lacking. For this reason, the EU has commissioned a programme on RRI tools\(^{24}\) to facilitate the governance of reflexive, multi-stakeholder experiments towards responsible research and innovation. In the search for effective RRI tools, the routines described in this thesis, such as DLA and TransLearning, will be taken into consideration. This provides the opportunity to further test the external validity of the framework and tools proposed here.

\(^{24}\) More information on this programme can be found at http://www.rri-tools.eu/
With the development of the field of transition management came the interest in developing so-called ‘transition monitoring’. Different initiatives resulted in a transition-monitoring framework encompassing the different levels (i.e. transition field, programme level, project level) and different dimensions (i.e. transition scenarios, changes in culture, structure and practices and sustainability criteria) to monitor during the execution of a transition programme (e.g. Taanman, 2014). Similarly, the system-failure framework (Klein Woolthuis et al., 2005) is used to carefully analyse different dimensions of system failures. These frameworks give insights into strategies to follow (reducing strategic task uncertainty) but do not aid the day-to-day struggles experienced by programme managers. Programmes not designed according to transition theory were felt to being measured with an inappropriate yardstick with the transition-monitoring framework (Taanman, 2014). This implies that programme managers struggling to develop and adjust their change theory during the execution of a programme, on the basis of obstacles experienced, are in need of additional or different monitoring tools and methods.

It is in this context that reflexive monitoring has been developed. Based on principles of fourth-generation evaluation (Guba & Lincoln, 1989), responsive evaluation (Abma & Stake, 2001; Stake, 1983) and action research (Kemmis & McTaggart, 1988a), reflexive monitoring (e.g. RMA) aims to assist project teams through on-going monitoring, reflecting on the relationship between ambitions and practice, and developing strategies to deal with obstacles. The reflexive monitoring of system innovations and niche experiments is a relatively new field and not much can yet be found about it in the scientific literature. This research reduces this knowledge gap, by offering a framework and new routines that are helpful for (reflexive) monitors to enhance the reflexivity within niche experiments, supporting managers to adjust their change theory and activities in achieving their Triple P purpose.

Although an increasing body of literature is emerging on the importance of contributing to learning instead of only focussing on accountability goals (e.g. Guijt, 2010; Lonsdale and Bechberger, 2007), there are few tools and methods designed specifically to aid the learning process of managers of transition programmes or niche experiments. The insights shared in this thesis on how to contribute to learning through implementing monitoring and evaluation efforts, by applying tools for reflection and learning, such as the DLA and TransLearning, are a new addition to this field. Moreover, I have discussed and provided strategies to deal with the challenges faced when conducting learning-oriented monitoring in a context in which outcome-oriented evaluation is highly valued.
The framework to enhance an organisation’s adaptive capacity in achieving its (Triple P) purpose, may also be relevant to (strategic) business management.

“Business (or strategic) management is the art, science, and craft of formulating, implementing and evaluating cross-functional decisions that will enable an organization to achieve its long-term objectives” (David, 2001, p5).

In business management, the terms mission, vision and strategy are widely acknowledged. The mission of a business or organisation is the reason why it exists, while the vision refers to the ideal state of the business or organisation in the future (e.g. Campbell & Yeung, 1991; Naaranoja et al., 2007). Strategy defines the way of how to establish the ideal state captured in the vision (e.g. Naaranoja et al., 2007). The framework and routines proposed in this thesis are considered to be very helpful for planning strategies and operational activities to establish the vision (purpose) of a business. It guides the whole organisation into the same direction.

7.11 Future research

Although the research presented in this thesis provide answers to the question on how to reduce the functional task uncertainty of managers of niche experiments, it also poses new questions that may be addressed in future research. First, the adaptive capacity framework and routines that have been developed here have, with one exception, only been used in the practice of governing niche experiments by researchers as monitors. To determine to what extent the adaptive capacity framework and routines support managers in reducing their functional task uncertainty, further research is necessary. This research could focus on the mechanisms underlying the framework in practice, addressing questions of effectiveness, efficiency, and the satisfaction of managers using the framework in their work.

Moreover, research on further refinement of the framework and routines may be undertaken to identify, explain and address the difficulties and challenges managers face using the framework and routines. As the framework and routines are novel, I consider that the list of routines proposed in this thesis is not comprehensive. Therefore, additional research could focus on further development and refinement of the routines, such by integrating outcome mapping (e.g. Carden, Smutylo, & Earl, 2001) into the framework and routines in order to create a more explicit focus on the Triple P
purpose. In addition, new routines could be systematically developed to enlarge the number of routines available to managers.

Although I did not specifically study the ease of use of the framework and routines proposed here, the DLA study suggests that a certain level of training is necessary for managers to apply the framework and routines. Therefore, I propose that future research should focus on identifying what kind of training would be appropriate for project managers to develop agency in using the framework. A sub-study could focus on the competences and skills necessary to apply the framework and routines.

The research presented in this thesis also included a study on the generalisability of the findings when implementing the DLA in a new context, not just in sustainable agricultural development. However, this comprised just a start to determine the extent to which the framework and routines are useful in other contexts and whether it is necessary to adjust them to the context of application. More research therefore need to be done on the applicability of the framework and routines to other contexts, such as other sectors and other countries.

In the current thesis, although acknowledging the existence of different types of niche experiments, I do not make a distinction between types of niche experiments. While some of the niche experiments focus mainly on developing new businesses, others aim at implementing and facilitating a network approach. To be able to determine if, in the process of further developing the framework and routines, a distinction must be made between the two types of niche experiments, a systematic research on similarities and differences between the two types is suggested. Given that the ability of entrepreneurs to continuously consider their products and services from the perspective of consumers is necessarily well developed (otherwise they do not make profit), I expect that they can more easily (compared to managers of networks) extend this ability to other stakeholders as well, resulting in the hypothesis that managers of businesses might find it easier to apply the framework and associated tools.

7.12 Concluding remarks

This thesis started with the statement that

“... [P]rojects continue to fail at an astonishing rate. At the same time, the role complexity, chaos and uncertainty play within our projects and project
environments is gaining recognition in both research and practice” (Thomas & Mengel, 2008, p.304).

In this thesis, the low success rate among a specific type of project was central, namely niche experiments with a Triple P purpose. In understanding the challenges involved in the governance of niche experiments, I took the perspective of task uncertainty, hypothesising that managers of niche experiments are faced with a high functional task uncertainty: managers do know what to do but lack insights into how to do it. This research provided a framework and several routines to accommodate the task uncertainty managers face. I expect that when managers use these in the governance of their Triple P experiments, a higher proportion of niche experiments will achieve their Triple P purpose. By contributing to successful experiments that balance people, planet and profit values, this research will hopefully contribute to a more sustainable society. From a scientific perspective, a focus on the further analysis, description and development of (new) dynamic capabilities for the governance of niche experiments seems to me to be potentially one of the most productive research topics for the future.