

RESEARCH ARTICLE

Projectified governance and sustainability transitions: How projects and framework programmes can accelerate transition processes

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Abstract

Projects are used in large numbers as a method to steer societal development, especially in contemporary Western societies. This so-called projectification has relevant socio-political effects on sustainability transitions, especially from the policy perspective. The aim of this paper is to analyse how projects and policy framework programmes can accelerate transition processes. The paper introduces the concept of a 'projectified transition policy process' by synthesising research on projectified governance, transitions and policy processes. The concept's empirical relevance is addressed with a case study analysis focussing on a framework programme that supports nutrient recycling technologies and practices via project funding. The framework programme was the first measure to actualise transition-driven nutrient recycling policy in Finland, which has been ongoing since 2010. The conceptual exploration and case analysis in this paper show that projects and framework programmes can accelerate transition processes by mobilising actors, creating synergies between them with intermediary actions and producing project outcomes that can be turned into effective transition inputs.

KEYWORDS

nutrient recycling, policy process, projectified governance, strategic niche management, sustainability transitions

1 | INTRODUCTION: WHY PROJECTIFICATION MATTERS IN SUSTAINABILITY TRANSITIONS

Contemporary societal development is steered through projects in large numbers. This is especially true in the European Union (González Fernández et al., 2019) where 'about half of the EU budget is allocated to funding projects in one way or another' (Büttner, 2019, p. 172). The proliferation of projects has socio-political effects that have been analysed in the projectified governance (PG) and projectification literature (Hodgson et al., 2019; Sjöblom, 2009).

The effects of the proliferation of projects are relevant to the field of sustainability transition¹ for two main reasons. First, transition research has shown that experiments, demonstrations, trials, pilots and research and development are essential for transition processes (Geels, 2019; Hoogma, 2002). These are more or less project-type endeavours: single, goal-orientated interventions with fixed schedules, designated teams of actors and budgets (Munck af Rosenschöld, 2017). More often than not, projects are funded by the public sector, which links projects to policy processes (Hodgson et al., 2019; Hoogma, 2002; Howlett & Giest, 2013). The second reason stems from the fact that sustainability transitions are large-scale change processes that challenge

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incumbent power structures. Therefore, politics, governance and interventions of the state are deemed essential for sustainability transitions (Geels, 2011, 2019; Meadowcroft, 2011). Projects represent interventions of the state in significant numbers.

During the past decade or so, transition research has started to pay more attention to the political nature of sustainability transitions (e.g., Avelino, 2017; Johnstone & Newell, 2018; Meadowcroft, 2011). The importance of policies as a means to further transition processes has also been recognised (Bento & Wilson, 2016; Turnheim et al., 2020). As Sovacool (2016, p. 210) puts it, 'previous transitions may have been accidental or circumstantial, whereas future transitions could become more planned and coordinated, or backed by aggressive social movements or progressive government targets'. Lately, the idea of sustainable transitions has made its way into mainstream policymaking (Turnheim et al., 2020). A prime example of this is a report that was authored by European Environmental Agency officials and transition scholars (EEA, 2020). It 'intended to explore the practical implications of transitions research for policy' (Turnheim et al., 2020, p. 116). To strengthen the policy aspect of sustainability transition, it would be a logical step to take a closer look at what PG research has to offer for transition policy-making.

This paper focusses on the role of projects and framework programmes in a transition-driven policy process. Framework programmes are policy tools that link projects to policy. Framework programmes manage projects by making funding calls and decisions about which project applications are funded and by articulating the policy objectives and what is expected from projects to meet them (Munck af Rosenschöld & Wolf, 2017). The difference between framework programmes and other form of funding institution or program is that framework programmes are fixed-term and are clearly situated in a policy setting. Consequently, they can be essential for effective transition policies. Therefore, the aim of this paper is to analyse how framework programmes can accelerate² transition processes.

That analysis requires a conceptual exploration of linkages between PG and sustainability transition literature from the policy perspective. This is done in Section 2. As a result of the exploration, the so-called 'projectified transition policy process' is conceptualised in Subsection 2.3, which outlines the dynamics of how framework programmes can accelerate transitions.

In addition to conceptual discussions, this paper includes a case study analysis in Section 4. It will empirically demonstrate the acceleration effects of projects and framework programmes on transition processes. The case study focusses on the early stage of a Finnish nutrient recycling (NR) policy, which seeks to replace chemical fertilisers with organic ones (Marttinen et al., 2011). The research subject of the case study is a framework programme, 'Programme to promote the recycling of nutrients and to improve the status of the Archipelago Sea 2012–2015', also called 'RAKI I' (Ministry of Environment, 2012). It was the first measure to actualise a transition-driven policy to promote NR in Finland. NR policy was initiated in 2010 and is ongoing (Finnish Government, 2019) in 2021. The significance of NR policy stems from the fact that the Baltic Sea is essential for Finnish culture in various ways, and therefore it is not taken lightly that the Baltic Sea

suffers from a major eutrophication problem and is one of the most polluted seas in the world. Consequently, there have been various efforts to improve the state of the Baltic Sea (e.g., Pihlajamäki & Tynkkynen, 2011).

Analysing RAKI I provides an informative case for studying the effects of PG in transition processes for three reasons. First, Bento and Wilson (2016) have emphasised the importance of stable and consistent policy for furthering transition as it has been acknowledged that initiatives towards sustainability transitions are mostly fragmented and tend to remain isolated and short-lived (Geels, 2019; Turnheim et al., 2018). The longevity of the Finnish NR policy represents a case in which policy has been continuous. Second, in the early stage, the Finnish NR policy emphasised projects as a means to meet the vision of the transition to replace chemical fertilisers with organic ones. Finally, the case analysis demonstrates how the framework programme, its projects and the outcomes of the projects affected the transition process towards NR.

2 | THE CONCEPTUAL LINKAGES BETWEEN PROJECTIFIED GOVERNANCE, SUSTAINABILITY TRANSITIONS AND POLICY PROCESSES

Analysing how projects and framework programmes can accelerate transition processes requires an exploration of suitable parts from three lines of research: PG, transition studies and policy processes. The exploration starts with a review of links between PG and transition research from a policy perspective. In Subsection 2.1, PG research has been placed as a starting point for the exploration of linkages. In Subsection 2.2, the point of departure is strategic niche management (SNM). SNM is a strand of transition research (see Markard et al., 2012) that focusses on how technology breakthroughs from innovation to the mainstream can be facilitated (Schot & Geels, 2008). Compared to other strands of transition research, SNM is most connected to projects as a method to organise development work from the bottom up (Geels & Raven, 2006; Markard et al., 2012). Finally, in Subsection 2.3, the results of the exploration of the linkages between PG and SNM inform a conceptualisation of the 'projectified transition policy process' and how such a policy process can accelerate a transition. The structure of the projectified transition policy process is encapsulated in Figure 1.

2.1 | Projectified governance: Steering with short-term policy devices

The use of framework programmes and projects has proliferated at all levels in society (e.g., Book et al., 2010; Lundin et al., 2015; Sjöblom, 2009). Projects are seen as a symbol of efficiency and innovation; they are thought to be sites for experimentation and adaptability. Ideally, projects are tools that efficiently find solutions in a flexible way, even in unforeseen situations, and provide a means of

coordination, policy coherence and public participation while having the potential to test out policy at a relatively low cost (Hodgson et al., 2019; Munck af Rosenschöld, 2017; Sjöblom & Godenhjelm, 2009). The basic idea of projects is that the subscriber party expects to get some added value from it, like a new product, practice, innovation (Andersson, 2009), or information. Sjöblom (2009) thinks the use of short-term policy devices (framework programmes, projects, networks, etc.) underlines an increasing demand for hyper-rational, tailored and competent responses to social problems, but he sees this short-termism causing friction with the coordination of long-term objectives.

Projects and framework programmes are seen as useful devices for interlinking horizontal (NGOs, interest groups, companies, think tanks, etc.) and vertical (supra-national, national, regional, municipal) levels of society for achieving policy goals (Sjöblom & Godenhjelm, 2009). Vertically, projects can 'trickle down' the policy objectives to be implemented at the local level (Andersson et al., 2006). In addition, projects can open a dialogue channel between grassroots-level actors and policy-makers. Horizontally, the goal is to commit semi-public and private institutions in the policy process to eliminate contradictions and tensions between different actors and policies (Andersson et al., 2006). In transition research, horizontal and vertical interlinking has been discussed as policy coordination, which refers to efforts to commit different policy areas and various actors from different societal levels to the transition process (e.g., Turnheim et al., 2020). PG research has also identified a downside of interlinking levels and actors; Andersson et al. (2006, p. 93) claim that the 'main consequence of these developments is an increasing complexity within the politico-administrative system both in terms of the administrative procedures and the relationships between involved actors'.

The growing use of projects has created a kind of industry. There is demand for actors and institutions that work to secure project funding and are able to execute and manage projects (Büttner, 2019; Kovách & Kučerová, 2009; in transition research, see Borghei & Magnusson, 2018). Those project-bureaucratic competences, handling the demands of project management from project-funding organisations, are as essential to the rise of the project industry as is project money itself.

Projects can be a crude method of organising development work. Projects end when time and funds are used, not when the project topic is ready. This can make development through projects discontinuous, and the danger is that if the project topic does not get further funding, know-how and networks that have been built during the project start to disperse (Munck af Rosenschöld, 2017; Sjöblom, 2009; see also Geels & Raven, 2006). This relates what in transition studies has been discussed as fragmentation, isolation and the short-livedness of initiatives (Geels, 2019; Turnheim et al., 2018). Regarding the diffusion of project outcomes, Munck af Rosenschöld (2017, p. 22) notes that 'project knowledge is often highly contextual and embodied in localized practices, which makes the scaling up of project knowledge challenging'. In the worst case, results are gathered in a report that is forgotten in the archives (Andersson, 2009), and the same type of projects will be started again in a different place or another time (Sulkkunen, 2006).

Reallocation of responsibility is another key topic in PG discussions. From the critical perspective, the growing use of projects and short-term policy devices proves that governments are withdrawing from the responsibility to govern (Sulkkunen, 2006). Policy makers can set ambitious goals and frameworks, but if they do not receive enough resources and proper political backing, they are more symbolic acts than actual change-making policies (Sjöblom & Godenhjelm, 2009; Sulkkunen, 2006). This might not be as intentional as it sounds; for example, sustainability transitions can be extensive by nature, and to succeed, transition processes need to engage with various domains of the politico-administrative system (Geels, 2011, 2019; Meadowcroft, 2011). This can create additional complications for the leadership of the process.

To conclude and underline the linkages of PG to sustainability transitions, first, PG represents a more top-down perspective on how transition processes can be steered. The perspective of PG is specific but significant: the use of short-term policy devices to meet policy objectives. Both lines of research discuss some common critical points: how to engage actors and levels of society and whether a policy gets proper political backing. However, the policy analysis in transition research goes further than PG does. Lately, the key concept in transition policy research has been the policy mix. This refers to the more or less simultaneous use of various policy instruments to promote and develop sustainable options (niches) and to weaken the incumbents that are deemed unsustainable (e.g., Kivimaa & Kern, 2016), for example, through the destabilisation of regimes and phasing out unsustainable technologies (e.g., Kungl & Geels, 2018; Kuokkanen et al., 2018; Turnheim & Geels, 2012). Despite its specificity, PG research has the potential to be a productive addition to understanding policy mixes as project funding is likely a significant method for promoting transitions.

2.2 | Strategic niche management and projects

From the sustainability perspective, the purpose of SNM studies is to investigate how sustainable innovations can be facilitated from niches to markets. A niche is defined as a protected space in which innovations are nurtured and experimented in co-evolution with technology, user practices and regulatory structures (Schot & Geels, 2008). To be successful, niche innovation needs to come out of protection and challenge incumbent routines, technology or practices (de Wildt-Liesveld et al., 2015). More broadly, successful niche innovations can be building blocks for wider societal change towards sustainability (Schot & Geels, 2008).

SNM literature has identified three core processes for niche innovation to push through: (i) Expectations and visions provide guidance for development. (ii) Building of social networks is important because new actors could expand the resource base of niche innovations. Finally, (iii) learning concerns various elements that affect the success of niche innovation, such as technical design, user preferences, regulation or policy instruments (Schot & Geels, 2008).

The broader process of building up a transition in the SNM literature is discussed via the concept of a technological trajectory. This is defined as 'stable patterns in technological development at the

global level of a community of actors' (Geels & Raven, 2006, p. 375). The global level does not refer here to the geographical dimension but to an emerging field or proto-regime that has de-contextualised the lessons and knowledge from local experiments and transposed them into generic form. This process needs to be actively managed through aggregation activities (Borghei & Magnusson, 2018; Coenen et al., 2010). Aggregation concerns creating abstract knowledge (standardisation, model-building, language creation, codification of tacit knowledge, etc.) as a collective good. According to Geels and Deuten (2006), the emergence of intermediary actors is essential to pave the way for aggregation activities; the circulation of knowledge and actors, for example, in conferences, workshops, technical journals, newsletters and media, is crucial (Geels & Raven, 2006). PG has some confluence with the idea and mechanisms of aggregation in terms of how learning from the numerous project outcomes can instigate broader institutional change (Munck af Rosenschöld, 2019).

For niche actors, project funding opens up the possibility to develop and test new technology or practices and learn about drivers and the barriers their technology could face (Harborne et al., 2007). Governments usually provide funds for these projects because they expect them to produce means to reach particular societal goals in the future (Schot & Geels, 2008). This is also recognised in PG research (Hodgson et al., 2019; Munck af Rosenschöld, 2017; Sjöblom & Godenhjelm, 2009).

Harborne et al. (2007) have divided experimental projects into two phases: experimental and diffusion phases. In the experimental phase, projects mostly focus on learning about new products, processes and systems. In the diffusion phase, the focus is on market introduction and growth, which means proving technology to be credible, gaining public acceptance, identifying and reducing stakeholder opposition and identifying issues that require policy action by the government.

To conclude, the linkages between PG and sustainability transition from the SNM perspective are as follows: first, use of projects as a method of organising development work is discussed in SNM. Furthermore, SNM research has noted projectification (Borghei & Magnusson, 2018; Geels & Deuten, 2006; Geels & Raven, 2006) but without really recognising it as a societal phenomenon. The strength of SNM is that it fruitfully brings out a bottom-up perspective to transition processes by considering visions, networks, learning, intermediation and aggregation. What PG can add is, basically, how project funding can be a major factor initiating those mechanisms, although project funding can also be a crude and insufficient policy instrument, as discussed in Section 2.1. This brings us back to the role of proper political backing in order to extract effective outcomes from development projects (Sjöblom & Godenhjelm, 2009; Sulkkunen, 2006). SNM analysis has issued criticism in this regard. Schot and Geels (2008) assessed various SNM studies and concluded that many demonstration projects were organised in an overly contained way, which undermined networking and learning processes. Harborne et al. (2007) found in their case study that the government was willing to back the technology development to a point but not to go as far with the policy mix as giving subsidies or tax incentives, starting special purchase

programmes or setting up a planning framework to support the technological transition. Next, I will synthesise these discussions of PG and transitions with policy process research and analyse how transition processes can be accelerated in PG setup.

2.3 | Projectified transition policy process

Usually, policy processes are conceptualised to include the phases of agenda-setting, policy formulation, decision-making, implementation and evaluation (Howlett & Giest, 2013). However, this five-stage model has been critiqued for being an overly simplistic presentation of policy processes (Sabatier & Weible, 2018). Policy processes are more cyclic and iterative than linear (e.g., Jokinen et al., 2018), and feedback mechanisms are essential (Edmondson et al., 2018).

Feedback mechanisms, iteration and cyclicity are integral in the case of transition-oriented policy processes that, action-wise, utilise project funding as a method to organise work to create inputs for furthering transition. The building blocks of this policy process are policy, framework programme(s) and projects.

Policy is the tool that initiates the process and is meant to be a solution to the problem that has been under political debate. It accounts for the top-down elements and decisions of the policy process; most importantly, the amount of allocated resources; articulation of the vision that the policy pursues; and decisions to use other policy instruments to meet policy objectives (policy mix) (Andersson et al., 2006; Edmondson et al., 2018; Jokinen et al., 2018; Kivimaa & Kern, 2016; Meadowcroft, 2011; Sjöblom & Godenhjelm, 2009).

A framework programme is probably the most important element in projectified transition policy processes, not only because it links projects to policy and manages the projects but also because it expands the number of actors involved, mostly from politico-administrative actors, to include grassroots-level actors. The idea of framework programmes is to mobilise grassroots-level actors to further transition through their work in the projects. It is not only the project funding that draws grassroots-level actors towards the transition process; framework programmes also send a message about the direction in which policymakers want to guide development. It is important to note that a framework programme is simultaneously a policy instrument and a fixed-term organisation. The personnel of the framework programme can vary, but as it channels public funding, it is most likely that the programme is run by public servants who are linked to decision-making on a policy level, to some degree. Thus, framework programmes can be effective tools for vertical policy coordination as they can be dialogue channels between grassroots-level actors and policy-makers (Andersson et al., 2006; Farla et al., 2012; Meadowcroft, 2011; Munck af Rosenschöld & Wolf, 2017; Schot & Geels, 2008; Turnheim et al., 2020).

Projects are expected to produce outcomes that can be inputs to further the transition. In addition to results on the topics of projects, feedback from the projects about issues and promising avenues forward is valuable for transition processes (Edmondson et al., 2018). However, project funding can be a vital resource to actors (cf. Büttner, 2019; Kovách & Kučerová, 2009), and hence

feedback messaging can be in part designed to secure future funding. Moreover, articulation of value is at play elsewhere in the process; for example, heads of framework programmes need to show how the framework programme is fulfilling the goals of the policy.

The projectified transition policy process has four mechanisms that can accelerate transition processes: mobilisation of actors to work in the projects, steering of the policy process, intermediation during the policy process and aggregation of project outcomes as inputs to further the transition process. Project outcomes do not strictly refer to results on the project topic but more widely to learning processes and knowledge generation that project work, and being part of a framework programme, produces. The fact that aggregation directly refers to ways to build up a trajectory towards the transition makes it the objective of transition policies. Therefore, the roles of mobilisation, intermediation and steering is to enable aggregation (Geels & Deuten, 2006; Geels & Raven, 2006; Schot & Geels, 2008).

Intermediation is a largely discussed subject in transition studies (Kivimaa et al., 2019; Sovacool et al., 2020), while steering is not as explored (Turnheim et al., 2020). In very broad terms, intermediation concerns actions influencing transition processes positively within the process. These actions include networking, managing, communications, advising, brokering, knowledge generation and circulation, lobbying and visioning (Kivimaa et al., 2019; Sovacool et al., 2020).

In governance research, steering is a widely used concept to discuss decision-making and instruments that are used for guiding development in a polycentric society (cf. Evans, 2012; Steurer, 2013). Similarly, in the case of transition policy processes, steering refers to decisions about directions and ways forward for the policy process. After a policy process is in motion, feedback mechanisms are essential for informing those decisions. Intermediation and steering can have some areas of convergence, but the difference is that in steering, how actions power relations are quite clear, which is not the case with intermediation actions (Avelino, 2017; Edmondson et al., 2018; Sovacool et al., 2020).

Figure 1 binds together the policy processes conceptualised here. It shows the relationship between building blocks of the policy

process (policy, framework programme and projects, project outcomes) and the mechanisms in the process that can accelerate transition. Feedback mechanisms make policy processes iterative and cyclic, as feedback provides information that should guide the way forward. Figure 1 also gives a structure to the case study analysis (Section 4), in which the mechanisms of mobilisation, steering, intermediation and aggregation will be utilised as analytical categories.

3 | THE CASE STUDY, DATA AND ANALYTICAL APPROACH

The studied case concerns the Finnish NR policy and puts its first significant policy measure, the RAKI I framework programme, under a detailed analysis. In the case study approach, a specific ‘practical, historical unity’ is analysed within the analytical framework of the study to answer the research problem. This requires extensive and diverse data to ensure the reliability of the analysis and to get sufficient apprehension of the context of the case (Eisenhardt, 1989; Thomas & Myers, 2015). Before the presentation of the data and a discussion of how the analysis was conducted, I will introduce the Finnish NR policy and the relevant information about RAKI I.

The starting point of Finnish NR policy was the Baltic Sea Action Summit held in Helsinki in 2010. It gathered decision makers from coastal states on the Baltic Sea, as well as actors from the private and non-governmental sectors, to find ways to improve the state of the Baltic Sea (BSAG, 2020). The idea put forward in the summit was to do so through commitments that each participant announced during the summit (Marttinen et al., 2011). One of the commitments the Finnish government made was to transform Finland into a leading region in the practice of NR since agriculture has been a main culprit of the eutrophication of Finnish coastal waters (Prime Minister's Office, 2009). When the commitment was announced, the concept of NR was rather novel, and thus NR technologies and practices have not been developed before. Even though, NR-type practices are very old; for example, in Finland, manure was a dominant means of fertilising until the 1960s, when chemical fertilisers started to dominate the market (Kuokkanen et al., 2017).

The first measure to actualise NR policy was a roadmap process for explicating the reach and content of NR and the measures needed to fulfil the policy aim (Marttinen et al., 2011). The roadmap ended with a conceptualisation of NR broadly as the utilisation of nutrient-rich biomasses to fertilise. The next step was the initiation of RAKI I (2012–2015) by the Ministry of Environment (MoE). Its formal goal was to improve the status of the Archipelago Sea and promote NR in order to decrease nutrient leaching and to prepare the Finnish food system for assumed phosphorus scarcity (MoE, 2012). During Prime Minister (PM) Juha Sipilä's tenure (2015–2019), NR policy gained further importance as it was raised as one of the government's flagship policies. Thus, the RAKI framework programme gained a sequel in RAKI II (2016–2019), and a pilot-orientated framework programme (2016–2020) was initiated by the Ministry of Agriculture and Forestry (Ramboll, 2018). NR has also been an objective in PM Sanna Marin's

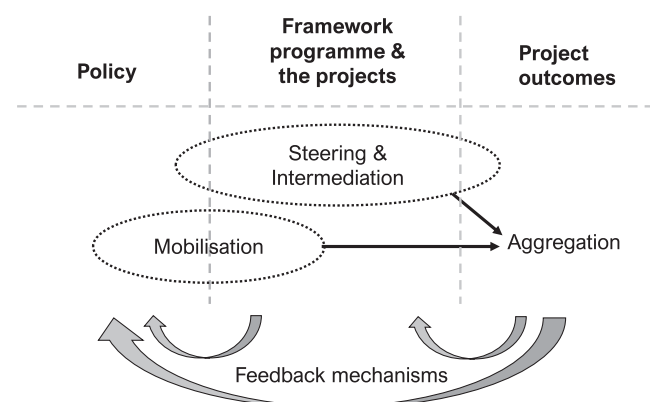


FIGURE 1 Projectified transition policy process and the mechanisms that can accelerate the transition process



government (2019-present) (Finnish Government, 2019). In terms of policy objectives, NR has diversified Baltic Sea protection: the objective of inhibiting nutrient leaching to the Baltic Sea was aligned with the objective of generating business from NR through the creation of NR products and services (Sitra, 2015).

RAKI I had five rounds of project calls (about 12 million euros spent) (MoE, 2014, 2019). Some projects (n:30/40) were overseen by a consultant and the rest by the MoE. Projects had 1 to 6 actors, and some of the projects had multi-stakeholder steering groups. RAKI I had an advisory board that included actors from the ministries of Environment, Agriculture and Forestry, Finance, and Economic Affairs and Employment, as well as research institutes, NGOs and interest groups (Pöyry, 2014).

Research data consisted of projects from the first four rounds of RAKI I funding calls (n:40/53). Therefore, the data included final reports of projects (n:40), the framework programme's background reports (n: 9), three semi-structured thematic interviews with actors who led and oversaw the framework programme (1–2 h) and structured interviews with project actors (n:28). Project actors were asked about their views and experiences with RAKI I, why they applied, and what was done with the project topic after RAKI I funding. Project actors answered questions by e-mail (n:7) or phone (n:21). Document data are listed in Appendix A.

Case analysis started with analysis of the background reports, which gave information about RAKI I and the Finnish NR policy generally: why they were initiated, who was involved in their making and how they have evolved along the way. Thereafter, final reports gave information about the project topic, the actors involved, the work done in the project, and how project actors articulated the importance of their project topic and perceived the field of NR. Finally, the goal of the interviews was to obtain a more nuanced understanding of project work, RAKI I and Finnish NR policy under the understanding I gained from conceptual exploration and the document data. As is typical in the case study approach, the research process was iterative (Eisenhardt, 1989). This means I worked simultaneously on the conceptual exploration (Section 2) as I collected data and analysed the case. The advances in conceptual exploration aided my understanding of the case, and vice versa.

The project themes are presented in Table 1. Research projects gave answers to well-defined gaps in practical knowledge; for example, one project developed a total load model for a catchment area of the Archipelago Sea. Network and practice transforming projects aimed to initiate a change of practices through networking, communications and learning. For example, one project created a manure exchange between animal and crop farms. Additionally, technology projects were concerned with experimenting with technology and/or introducing it to the market (Harborne et al., 2007). Overall, most projects had diverse work packages, such as a technology project that included a minor research element. Nonetheless, the allocation of projects to themes was clear.

Finally, the data was analysed qualitatively according to the analytical categories of mobilisation, steering, intermediation, and aggregation. Categorisation was made in the guidance of following questions: how and why RAKI I mobilised actors to apply project

funding and to be part of making the NR field; what type of intermediation methods were present in RAKI I; what affected the decision-making of taking RAKI I and NR policy forward (steering); and how aggregation of project outcomes as inputs to the making of the NR field succeeded and how aggregation was perceived by the actors involved.

4 | CASE ANALYSIS

4.1 | Mobilisation

At the start of RAKI I in 2012, the idea of NR was rather novel; however, the Finnish Baltic Sea commitment and roadmap process (Marttinen et al., 2011), which preceded RAKI I, had started to make NR known as a policy objective. RAKI I was the first effort to get grassroots-level actors involved in developing NR technologies and practices, RAKI I succeeded in mobilising all types of actors whose affiliations or expertise connected to NR to work in the projects. Project actors included industries (waste management, food, chemical), research institutes, NGOs, technology developers, interest groups and farmers. The only notable absentee was chemical fertiliser producers; however, they were part of a project in the RAKI II framework programme.

Several reasons surfaced from the data of how actors came up with project topic: (I) an actor or a group of actors already had an idea, but it lacked a suitable funding channel before RAKI I; (II) RAKI I funding call(s) were the starting point for the project idea and actor collaboration; (III) project funding provided actor(s) an opportunity for solving a specific, usually technology or production process related, problem they had identified earlier but had not started working on because of a lack of resources or willingness to allocate them; (IV) RAKI I funding provided an opportunity to continue, without interruption, to work on a project topic that had gained other funding before RAKI I; (V) the project idea was formed as a result of earlier projects; (VI) RAKI I funding provided an opportunity to test and develop a technology or a product; (VII) RAKI I funding enabled productisation; (VIII) the actors aimed to gain public approval for their technology and/or products through RAKI I.

The list above implies that the rationale of involvement is largely about the fact that project funding is a valuable resource for many and/or an opportunity to be a part of the development process of their interest. However, this also brought complications. At the start of the project, actors needed draft plans for how they would execute the project to produce outcomes that they had proposed in their application. In some cases, this proved to be a difficult task, as applications were written too optimistically to secure funding.

4.2 | Intermediation

The idea of intermediation was to create synergies between actors involved in RAKI I to advance the field of NR and to prevent

TABLE 1 Project themes

Project category (total n)	The development objectives of projects (n)	Research projects (n)	Network and practice transforming projects (n)	Technology project		
				Experimental phase (n)	Diffusion phase (n)	Experimental and diffusion phase (n)
Waste (9)	Nutrient extraction from sewage (6); optimisation of biowaste treatment process (1); testing of digital monitoring of filling septic collection station (1); testing of separately collected urine as fertiliser (1).	1	0	6	0	2
Manure (7)	Enrichment of nutrient concentrations of manures (5); initiation of manure distribution networks between animal and crop farms (1); creation of manure data base (1); research of management of horse manure (1).	2	1	4	0	0
Side streams (9)	Testing and development of utilisation of industrial side streams, biomasses, common reed as fertilisers (8); processing of manure into forest fertiliser (1).	1	2	4	0	2
Background research and modelling (8)	Background reports of biomasses and organic fertilisers (2); modelling of nutrient leaching (3); creation of networks and installing new operating models in line with NR (3).	5	1	0	1	1
Water (4)	Testing technologies of precipitation of phosphorus (3) and catching solid organic particles from natural waters (1).	0	0	3	1	0
Food wastage and civic activity (3)	Reduction of food wastage (2); initiation of civic activity regarding water protection (1).	0	3	0	0	0

actors from working on only their projects. Intermediation actions in RAKI I were initiated in a top-down manner: networking and communications activities were demanded of the projects in the RAKI I programme announcement (MoE, 2012), and for some of the project, a steering group was established. Collaboration with the steering group and the quality of communications varied between projects as some actors found them useful while others perceived them more as a burden.

Project actors were also obligated to participate in events in which they presented their projects and met with each other. The purpose was to expand a network around NR, to create a sense of togetherness and hype among the actors. These events were appreciated by the project actors; as one put it,

[It helped] when you met other people [project actors] from different regions of Finland and hear what kind of ideas others had of this theme [NR]. It did create a sense of community and we also found another RAKI project which worked on the same topic as we did. As a result, we had deep collaboration with that project.

Some of the projects themselves could be considered intermediaries: network and practice transforming projects fall into intermediation, as do six background research and modelling projects that did not work towards the commercialisation of the project topic (Table 1). These intermediary projects focussed on communications,

networking, learning and generating information to facilitate the development of NR technologies and practices.

The most compelling method of intermediation, however, was the project bureaucracy, which was meant to ensure that project actors did what they proposed in their project applications. Project bureaucracy meant actors needed to make specific plans for how they would execute their projects and write reports of their work; they were obligated to participate in different meetings and manage project finances. In addition, most project actors needed to invest their own money into the project, and if project actors wanted to make changes to their project plans, they needed permission from the MoE.

4.3 | Steering

The most notable way to steer in RAKI I was the funding decisions. The roadmap memorandum (Marttinen et al., 2011) informed the drafting of the programme and its first funding call (MoE, 2012). The MoE made the funding decisions in cooperation with RAKI I's advisory board. Its stakeholder assembly differed depending on the topic of each funding call, as the MoE sought to gain suitable and diverse expertise to evaluate the applications. In addition, heads of RAKI I initiated two background research and modelling projects (Table 1) as direct purchases, and those acted as intermediaries.

After the first round of projects was started, the feedback mechanisms began to provide information. The most visible form of feedback was the final reports of projects and assessment reports by consultants (Pöyry, 2014). In the final reports, project actors needed to reflect on the effects of their projects, how sustainable and applicable their results were and their recommendations for future projects and programmes. Various projects communicated about what was, in their opinion, needed for an NR breakthrough and what type of (mostly regulatory) bottlenecks they encountered. Some of these were passed on to regulatory adjustment processes.

Feedback was also an opportunity try to influence decision-making. For example, one public actor articulated the following in a final report:

In the future, MoE should focus the channelling of project funding to municipalities. In the current economy, municipalities do not have resources to develop their practices without project funding. Still, practices should be continuously developed towards resource wisdom, which is most often economically feasible course of development and thus resource wisdom should be integrated as a part of normal practices. This should be taken into consideration in the future programmes and in the project funding decisions.

Heads of the framework programme assessed their own work according to project outcomes and dialogue with the stakeholders and actors of RAKI I and oriented their actions according to what they learned:

When thinking of the starting point of RAKI I the program, it was quite scattered... Themes were quite mixed, and we funded really small projects at the beginning. At the start our work was bit like finding our way and about learning about it. Now we operate more systematically, and we have been able to clarify our aims.

4.4 | Aggregation

The aggregation of the field of NR in Finland was essentially the reason why RAKI I was initiated. To analyse the aggregation process in a projectified setup, two angles need to be considered. First, what has been done with the project topics after RAKI I funding must be considered, and second, whether there were broader – not as tangible – developments facilitated by the combination of project outcomes and the existence of NR policy and RAKI I. The latter was based on the experiences of the actors involved.

RAKI I was the first early-stage policy measure that engaged grass-roots level actors in creating the field of NR. As such, projects were mostly the first steps in the development process. Only a few projects produced more or less final results, which did not need further development work (n:5), or they were designed as 'a single period' effort from the start (n:3). The latter were carried out by project organisations whose work is based on bidding and conducting projects, and their projects were categorised as network and practice transforming projects (Table 1). In addition, six project topics turned out to be unfeasible, and with two, there was no information available. With the rest of the 24 projects, the aim of project actors was to apply for further project funding with the same project topic or a set of related projects. One actor summarised this proliferation process into multiple projects simply:

The experiences and results gained from the project have been the basis for new projects.

Utilising the project outcomes for a set of sequel projects was typical for research institutes, while the business actors, especially technology developers, applied for further funding to continue with the same project topic. At best, for them, project funding facilitates their development work:

...without the project, we might not have gotten as fast to the point where we are now in our development.

As for the combination of RAKI I, projects and their outcomes, and NR policy, many of the project actors felt that the combination sends a reassuring message that NR is something that policymakers want, and thus invest in. This message reinforced the project actors' belief in NR and its opportunities, which meant some actors were willing to expand their expertise accordingly or invest resources (money, time, workers, etc.) in the development of NR technologies and

practices. Furthermore, more possibilities of NR were recognised; for example, one project actor described how urea gained more appreciation as a potential resource:

It took a while for utilization of urea as a fertilizer to be considered as acceptable [NR] ... We sent applications to RAKI I before, but it took until 2014 that our topic was accepted. Frankly, it has been difficult for us get funding for this topic, but now that situation has changed as a result of increased number of actors involved [in the field of NR] and as research has provide [d] credibility.

Perhaps the most important decision that enabled aggregation was the continuation of NR policy during PM Sipilä's government tenure (2015–2019), which added more project funding possibilities (see Section 3) and led to the initiation of over 100 NR projects (Ramboll, 2018). This meant there was a clear path forward for project actors to continue with their work, expand their networks and expertise and initiate new projects that built on outcomes of their earlier work. In a projectified setup, however, there are periods of discontinuity and latency because funding for a new project needs to be applied for. For decision makers, this was an opportunity to assess if new project ideas or the continuation of old ones was deemed feasible based on their understanding of what transition process needed. For project actors, this was a source of uncertainty, and thus some articulated that a clear pathway of funding should be promised from the start if the results were deemed good enough.

If NR policy had not been continued by PM Sipilä's government, then research institutions and project organisations would probably have turned their attention to a topic for which there were funding possibilities, and business actor development of NR solutions might have not been as quick. However, as NR policy took a step up, some actors felt the abundance of funding channels, projects and actors involved made the development look confusing, and it was questioned whether there was enough control over the direction of the development. Furthermore, some project actors critiqued the decision makers' rhetoric for giving an overly rosy image of the state and possibilities of NR. If perceived reality was too far from the promises of environmental and economic benefits, then some felt it would be counterproductive to NR policy.

5 | DISCUSSION AND CONCLUSIONS

This paper has explored the linkages between PG, sustainability transition and policy processes. As a result, it has conceptualised a projectified transition policy process that is summarised in Figure 1. It is the key contribution of this paper. This policy process was utilised as a theoretical framework in a case study of the RAKI I framework programme, an essential part of Finnish NR policy at its early stage. RAKI I took the development of NR forward, but

the NR industry is still emerging (e.g., Ramboll, 2018). Finally, I will discuss how power relations are at play in this sort of policy process and how framework programmes can accelerate transition processes.

5.1 | Governance by framework programmes

With framework programmes, political decision-makers communicate the direction in which they want to guide societal development, and they invite grassroots-level actors to realise that course of development through projects. This is not as voluntary as it might sound, as various actors are dependent on project funding (Büttner, 2019; Kováč & Kučerová, 2009). This is what Sulkunen (2006) has called governance by framework programmes. It is not clearly either top-down steering or a bottom-up type of development. Framework programmes are simultaneously a subtle and cooperative method to steer development and at the same time a clear demonstration of power as manifested by project bureaucracy and decisions about who gets funding.

The clear merit of projects as a method of organising change is that they give a team of actors a chance (or an obligation) to focus on a specific subject for a certain period of time. However, the method has various potential complications: projects can be isolated instruments of change (Schot & Geels, 2008; Turnheim et al., 2018); a large number of projects and funding channels can be a more chaotic than coherent form of societal steering; development through projects has inherent discontinuity as projects are fixed-term; and research has shown that there are difficulties in the diffusion of the project outcomes to the change-making process (Andersson et al., 2006; Hodgson et al., 2019; Munck af Rosenschöld, 2017; Sjöblom, 2009). Overcoming these complications depends largely on how the framework programme is designed. This will be discussed next.

5.2 | Framework programmes as accelerators of transition

As this paper has shown, the projectified transition policy process is a structured way to further transition. Through coordinated policy efforts, framework programmes can accelerate transition by mobilising actors, invoke synergies between actors and provide feedback and generate information to help with decision-making on how to take policy forward. Ideally, the objective is to find balance between provoking enough diversity in development and moving rapidly towards more promising avenues forward; to identify the obstacles that inhibit change and adjust them, if possible; and to iteratively build on the project outcomes and identify and fill gaps in knowledge.

The case analysis shows that there are various elements that helped the aggregation of the technological trajectory towards NR in a coordinated manner. At the start, policy measures made the idea of NR known to actors, which helped to mobilise them to the RAKI I



projects. The advisory board of RAKI I influenced the selection of projects with scrutiny, and project actors were obligated to network and communicate about their projects to a larger audience. Some of the projects were initiated as intermediaries to the transition process. Additionally, heads of the framework programme assessed and adjusted their own work according to feedback. However, the most important aspect was the continuity of NR policy, which has, basically, kept various grass-root level actors developing the field of NR.

5.3 | The aggregation in the projectified policy setup

The concept of a technological trajectory involves the mechanisms of how a set of local projects start to build up a trajectory on a global level of actors through aggregation activities. Geels and Deuten (2006) have specified local, inter-local, trans-local and global phases of process aggregation. Local, inter-local and trans-local phases concern how separate projects and initiatives start to find each other, begin to network and finally, at a global level, start to create a technological trajectory. Geels and Deuten's model describes a situation in which local projects are at first quite independent. The aggregation process has also been discussed from the perspective of community-based grassroots innovations, where the point of departure is not simply growth and market orientation (Smith et al., 2016).

What this paper brings to the discussion is a more of top-down situation in which the contours of a technological trajectory are drawn by policy-makers from the start and project funds are given to actors who best articulate their contributions to the technological trajectory. When compared to more bottom-up approaches with less to no support of policy for aggregating a technological trajectory, framework programmes seem like a method of accelerating the transition process.

Basically, when policies and framework programmes support the transition process, the aggregation of the technological trajectory becomes a coordinated and structured effort. However, as the case study shows, project bureaucracy that comes with public funding restricts the latitude of actors' development work. As the conceptual and empirical analyses of the paper show, aggregation is a useful concept for future research on transitions, especially because the policy perspective is gaining more traction.

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ENDNOTES

- ¹ Sustainability transitions are 'long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption' (Markard et al., 2012, p. 956).
- ² The acceleration of sustainability transitions has been elevated to the top end of the transition research agenda because of the discrepancy between the decades-long timespan transitions seem to take to unfold and the urgent need to act upon pressing environmental problems (Köhler et al., 2019).

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APPENDIX A

The list of documents used in the case study. All documents were obtained from the web pages of the RAKI framework programme (Ministry of the Environment, 2019).

Translated title	Publisher
Background reports	
Programme to promote the recycling of nutrients and to improve the status of the Archipelago Sea 2012–2015	Ministry of Environment
The vision of the state of nutrient recycling in 2030	Not specified
Commitment by the Prime Minister Matti Vanhanen to the Baltic Sea Action Summit 10.2.2010	Prime Minister of Finland
Finland as a model country for nutrient recycling	Ministry of Agriculture and Forestry
Finland as a model country for nutrient recycling—monitoring of actualisation	Ministry of Agriculture and Forestry
Evaluation of the effectiveness and impact of RAKI projects implemented in 2012–2014	Pöyry Finland Oy
Thematic funding of RAKI and RAKI 2 projects	Ministry of Environment
RAKI programme projects by theme—Number of projects, results and how they were continued since the project	Ministry of Environment
Breakthrough of the circular economy, deployment of clean solutions—Top projects measure number 2: 'Increase nutrient recycling and step up efforts to protect the Baltic Sea and its waters'	Ramboll Finland Oy
Final reports of RAKI I projects	
PUPE – Sewage sludges to fields	Valonia
PuBi – Recycling of sewage sludge and bio-waste treatment nutrients	Finnish Environmental Institute
Efficiency improvement of wastewater treatment plants in situations of disturbance and overflow	Sito Oy
Innovative process combinations of composting and biowaste decay	HSY
Post-phosphorus	HSY
Reflux nitrogen	HSY
Cycle nitrogen	Biovakka
Tank sensor	Brahea Centre
BIOUREA	Tampere University of Applied Sciences
ModHeat technology project	SFTec Oy
Manure recovery—Towards a closed cycle	Methanor Oy
Manure action—From manure data to action	Natural Resources Institute Finland
HorseManure	MTT Agrifood Research Finland
Sensible manure	Baltic Sea Action Group
Exact nitrogen	Natural Resources Institute Finland
Standard manure	Natural Resources Institute Finland
Testing, commissioning and commercialisation of plant-based peat-free seedbed	Kiteen Mato Ja Multa Oy
Utilisation of small agricultural waste streams for energy production and use of nutrients from biogas plant waste for agriculture and production of wood for energy	Sybimar Oy
Processing of sludge and manure into fertiliser and energy products and their utilisation in forest fertilisation	Finnish Forest Research Institute
Added value from bioeconomy to agricultural production	Satafood Ry
Nutrients of the forest industry—Recovery of nutrient rich wastes and sludges from the forest industry	Apila Group
Utilisation of nutrients and energy from poor quality agricultural by-products	Metener Oy
Cell Sap	Finnamyl Oy
By-benefit	Natural Resources Institute Finland
Common reed field	ELY-Center (Southwest Finland)
Developing an overall load model for the Archipelago Sea	Finnish Environmental Institute

(Continues)

Translated title	Publisher
Utilisation of biogas in the district heating network of the Parikkala municipality	Municipality of Parikkala
'DATA' –project	ELY-Center (Uusimaa)
Bio nutrition exchange	Biotehdas Oy
Possibilities and barriers to nutrient recycling of manure and organic fertiliser products	Kristiina Mikkola Consulting, FIANIT
Nutrition Master Plan in the catchment area of the Archipelago Sea	ELY-Center (Southwest Finland)
Nutrient-neutral municipality	Finnish Environmental Institute
Field	The Central Union of Agricultural Producers and Forest Owners
Nutrient catchment net	Turku University of Applied Sciences
Nutrient capturer	Natural Resource Management (NRM)
Agricultural precipitation pilot in the Archipelago Sea's watershed	Saloy Oy
Phosphorus precipitation in Paattisjoki	City of Turku
VEERA	Aurajokisäätiö sr
Nutrient bank	City of Pori
Less waste, more circulation	Brahea Centre