3

Explorative Transition Governance

Understanding by Engaging in Transitions in the Making

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3.1 Introduction

Transition governance is an area of sustainability transitions research that explores how transitions can be influenced and steered (Loorbach et al., 2017). Transition governance refers to the agency, processes, structures and strategies actors employ to influence the speed and direction of complex societal transitions (Smith et al., 2005, Grin et al., 2010). Some transition governance research takes a more descriptive, evaluative, or purely historical approach, but in this chapter, we expand on research that takes an explorative and engaged approach to transition governance. However, both are connected as explorative researchers draw lessons from historical transitions and how agency influenced their trajectories and outcomes and translate these to 'transitions in the making'. Combining these insights with knowledge from complex system theories, resilience theory and social sciences, they experimentally develop insight into how emerging transitions can be influenced in terms of their speed and direction (Hebinck et al., 2022).

'Transitions in the making' are the patterns of transformative change that emerge today and that *might* lead to full transitions that future historians can analyse. These 'transitions in the making' are hypothesised to be *needed* to achieve future sustainability within time frames that still allow for liveable futures. However, it is still undetermined whether they will occur and, if they do, there is *uncertainty* regarding their speed and direction. Take, for example, the transition from fossil-fuel dependence towards renewable energy sources: while it is acknowledged as vital for a sustainable society, it is dependent on a myriad of factors – social, technological, ecological, etc. – and how it will ultimately unfold and at what speed is unclear. Explorative transition governance is about understanding how actors influence dynamics of 'transitions in the making' and developing support for actors to navigate the inherently complex, ambiguous and uncertain contexts towards just sustainability (Loorbach et al., 2017).

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Analyses of historic transitions have been key to the development of transition governance more generally, enabling scholars to make sense of this complexity and better understand the visible dynamics of change, see Chapter 2. However, while historic transitions can be described retrospectively as moving from 'A' to 'B', being part of 'transitions in the making' is explorative, speculative and experimental (Hebinck et al., 2022). Societal actors find this increasingly difficult to gauge and respond differently to the transformative pressures that build up. Explorative transition governance as a field aims to both analyse and support societal actors that challenge incumbent regimes, develop transformative alternative practices, visions, or models, or otherwise explore just sustainability transitions. Key to explorative transition governance is an indirect, network and multi-actor perspective to transitions: transition dynamics are not so much influenced by singular actors ('the government', 'the market'), but by civil servants, activists, entrepreneurs, scientists and citizen (Avelino and Wittmayer, 2015), see also Chapter 17. Explorative transition governance then seeks to identify what strategies, processes and structures these actors can employ to navigate sustainability transitions and engages these in action research to facilitate their learning and agency.

The concept of transition governance emerged in the early 2000s as a response to the recognition that enabling and accelerating sustainability transitions requires deliberate and coordinated efforts across diverse actors, sectors and levels (Loorbach et al., 2017; Smith et al., 2005; Voß et al., 2009). While initially with a predominant focus on government policy (Loorbach, 2007), this quickly evolved towards a societal perspective by including decision-making processes of (and between) public, private and civic actors (Wittmayer et al., 2014). Such as in the Rotterdam neighbourhood Carnisse, where Transition governance approaches were applied to '*facilitate the self-organisation of inhabitants to address persistent sustainability problems*' (Wittmayer et al., 2018).

There are various analytical perspectives and approaches within the field of explorative transition governance that integrate principles of sustainability transitions with theories and models on governance, innovation, policy and management (Grin, 2010; Loorbach, 2010; Voß and Kemp, 2006). Within that scope, explorative transition governance research ranges from being ***analytical*** – aimed at analysing how actors use processes, structures and strategies to interact with(in) systems, to being ***action-oriented*** – providing actionable knowledge towards influencing 'transitions in the making' by taking a normative perspective to sustainability transitions (Loorbach et al., 2017). Here, action-oriented approaches are strongly linked to and dependent on the analytical approaches to explorative transition governance: requiring analysis of the 'state of transition' prior to developing actionable knowledge on how to navigate and accelerate transitions.

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This chapter continues by outlining analytical approaches to explorative transition governance, explicating its origin and synthesising diverse applications throughout the field. It also highlights the **'X-curve framework'** (Hebinck et al., 2022; Loorbach et al., 2017), an analytical explorative transition governance framework developed to make sense of the continuously evolving dynamics of 'transitions in the making', which may also be used in actionable ways. This is followed by a synthesis of key action-oriented approaches in the field of explorative transition governance. This starts with a recall of the action-oriented turn in sustainability transition studies (Wittmayer and Schäpke, 2014), which allowed for various action-oriented approaches to transition governance to emerge. Further in this section, we zoom in on **'Transition Management'** approach, a much-used action-oriented approach aimed at devising strategies to navigate sustainability transitions (Loorbach, 2010). This chapter concludes with reflections on how the field of transition governance might progress.

3.2 Analytical Approaches to Understand Transition Governance

The foundation of transition governance is the understanding that transitions are the outcome of patterns of agency that respond to structural change dynamics, with emphasis placed on the exploration of how the two influence one another. This is rooted in Giddens (1984) 'structuration' perspective (arguing that neither agency nor structures can be viewed in isolation), understanding societal transitions in terms of how actors interact with each other, 'regime' dimensions and 'landscape' changes. Over time, these dynamics constitute a fundamentally changed dominant culture, structure and practice (regime) in a specific societal (sub)system (Kok, 2023). In other words, by understanding structures as both giving shape to actors and as being shaped by actors, transitions are not seen as autonomous processes. Therefore, transition governance considers the engagement of a diverse set of actors as necessary to destabilise incumbent regimes and accelerate alternatives (Delina and Sovacool, 2018; Loorbach and Lijnis Huffenreuter, 2013). Similarly, analytical approaches to explorative transition governance are then interested in making sense of agency processes, structures and strategies that influence the speed and direction of transitions in different ways.

Research taking an analytical approach to explorative transition governance, highlighting how actors interact with transition dynamics, has thus far yielded diverse kinds of insights related to the governance of transitions. For one, it has revealed diverse strategies actors employ to reinforce business-as-usual or even lock-in: for example, by capturing innovation (Pel, 2016), through greenwashing (Yildirim, 2023), by using crises to restabilise the regime (or 'shock doctrine'

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see Klein, 2007), by 'hindering through cooperation'[1] (Smink et al., 2015), or less obviously by using innovation to optimise existing regimes (also described as reinforcing path-dependency) (Wells and Nieuwenhuis, 2012). On the other hand, this understanding has also revealed different types of transformative agency that help to advance dynamics that accelerate and (re-)orient dynamics towards desired societal transitions: such as activism (Bruno et al., 2021; Pierri, 2023), social entrepreneurship (Bolton and Hannon, 2016; Proka et al., 2018), intermediary actors (Kivimaa et al., 2019), entrepreneurial policymaking (Jhagroe and Loorbach, 2018; Kivimaa and Kern, 2016), proactive incumbents or 'regime-niches' (Greer et al., 2020; Turnheim and Sovacool, 2020) and action research (Wittmayer et al., 2014). These are all examples of types of agency that '*seek to challenge, alter and/or replace incumbent ways of thinking, doing and organizing*' (Avelino et al., 2019). Such analytical insights on the roles, behaviour and transformative agency of actors within processes of transition are vital to understand the governance of transitions. Rather than understanding transitions as 'manageable' or 'controllable', transition governance seeks to explore the diverse ways in which actors shape and are shaped by the system and how these influence the governance of transitions (Avelino and Grin, 2017). Depending on the change dynamics that a context presents, explorative transition governance's focus on actors within transitions provides different insights.

But over time, the dynamics of transition in the making evolve and so does the type of agency that drives it – in terms of positions, roles and contributions to acceleration sustainability transitions. To make sense of these continuously evolving dynamics, explorative transition governance analyses are often supported by research on diverse issues salient to transition governance. Such as the role of politics and power (Avelino, 2017; Grin, 2012 – see also Chapters 12 and 14), democratic legitimacy (de Geus et al., 2022; Hendriks, 2009), spatial dynamics and interactions (Loorbach et al., 2020; Skjølsvold and Ryghaug, 2020 – see also Chapter 21), the directionality of transition governance (Fischer et al., 2023; Pavloudakis et al., 2023; Pel et al., 2020), governance at diverse scale levels (Bosman and Rotmans, 2016; Wittmayer et al., 2014), the role of emotions in transitions (Bogner et al., 2024) and capacities needed for transformative governance (Hölscher et al., 2019a; Wolfram et al., 2019).

Such advancing research is crucial to further refine the understanding of transition governance amid the continuously evolving dynamics of 'transitions in the making'. For example, when the need for transitions is increasingly acknowledged and alternatives become increasingly appealing, new collaborations and partnerships

[1] Roughly translated from the Dutch 'meestribbelen'. A Dutch word used to describe a delay tactic that is aimed at preventing concrete results or agreements needed to prevent a problem from taking shape.

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between 'niche' and 'regime' actors can start to emerge (Costa et al., 2022; Ingram, 2015; Scharnigg, 2024). When a societal regime becomes destabilised or disrupted, therewith creating the 'transition space' for rapid institutional change, interventions and collaborations tend to be more top-down and structural in nature (Bosman, 2022; Burnett and Nunes, 2021). Consequently, transition governance then builds on such analyses in a specific domain of interest, once it becomes relevant to the state of the transition in the making, to identify the actors who and how they fundamentally challenge, alter, or replace unsustainable regimes.

Various analytical frameworks exist within the field of sustainability transitions that support an analytic approach to explorative transition governance: each allowing to make sense of specific dynamics in governance processes. For example, the *multi-level perspective* (Geels, 2011) illustrates the interactions and dynamics between different levels of governance (niche, regime, landscape), enabling governance analysis of the role of actors and institutions at each level. While the *S-curve* (Rotmans et al., 2001) depicts the ideal-type progression of innovation adoption, supporting the development of strategies to support the shift from niche innovations to mainstream adoption. Or the *Technological Innovation Systems* framework (Bergek et al., 2015) that aims to identify and leverage strategic points where policy interventions can effectively influence and steer socio-technical transitions. These foundational frameworks have evolved over time as the actual societal transitions matured.

Initially, stable regimes could be identified, and the emphasis lay on (socio-technical) innovation and experimentation. In the current transitions in the making, issues of breakdown, destabilisation, scaling and diffusion as well as broader socio-cultural, political and institutional aspects have come to the fore. Each of these frameworks builds on the complexity of sustainability transitions research and reveals insights relevant to transition governance enabling analysis of the agency, processes, structures and strategies that actors employ to influence societal transitions. In Section 3.3, we will focus on the *X-curve* (Hebinck et al., 2022) as a framework that not only synthesises a lot of insights from these frameworks and the analytical governance thinking but also provides a basis for navigating future transition dynamics.

3.3 Understanding Evolving and Future Transition Dynamics: The X-Curve Framework

An analytical framework that emerged to make sense of the evolving dynamics of transitions in the making is the 'X-curve framework' (Hebinck et al., 2022; Loorbach et al., 2017). It captures the idea that sustainability transitions are made up of two interacting patterns of build-up towards the desired system

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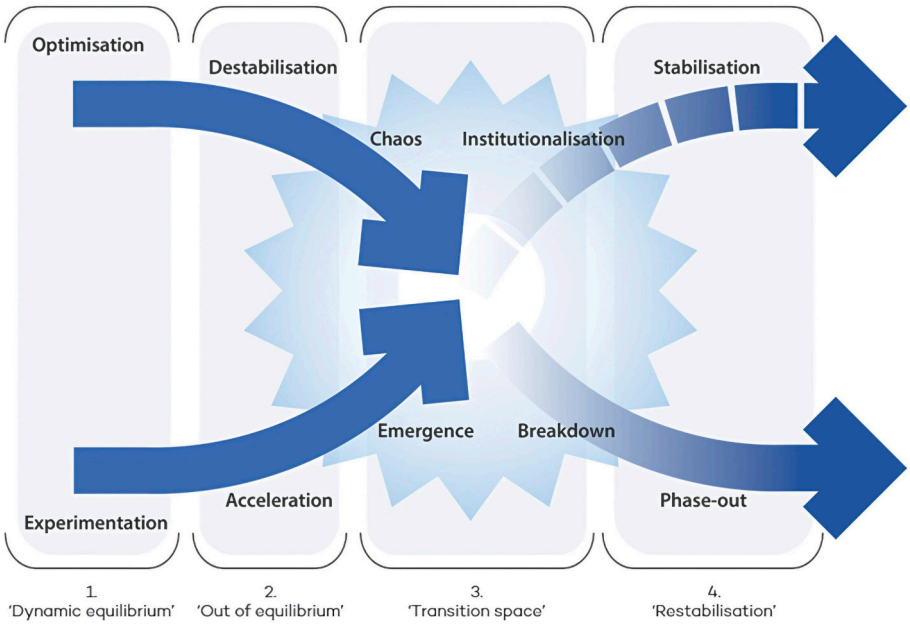


Figure 3.1 The X-curve framework which illustrates interacting patterns of build-up and breakdown that enable societal transition. The different dynamics one can distinguish in an ideal-type situation are outlined in the framework. Figure adapted from Hebinck et al. (2022)

and breakdown of the unsustainable incumbent system (Hebinck et al., 2022). By sketching an ideal-type situation, the X-curve distinguishes several different patterns and mechanisms that influence and structure transitions and that can be associated with different types of actors and roles. Here we reflect on four types of dynamics that occur throughout and ideal-typical transition process and how the X-curve helps explore and analyse agency in transition (see Figure 3.1).

First, transitions generally start out from a context that is characterised by a largely stable regime – or a '*dynamic equilibrium*' – that is barely contested and broadly supported in society. This enables the regime to continue to *optimise* through incremental changes and strengthen the dominant practices. Take, for example, the packaging industry and the reliance on plastic: while the negative impact of plastic pollution is increasingly acknowledged, the industry continues to optimise its practices through incremental changes such as lighter plastic or more recyclable plastics, allowing it to maintain its dominance (Bauer et al., 2022). Meanwhile, change agents and frontrunning actors who are aware of the unsustainabilities start to voice their concerns and argue for the need for change (Kuokkanen et al., 2018; Turnheim and Geels, 2013). These also allow for 'niches' to emerge at the fringes of the system, *experimenting* with alternative modes of doing, thinking and organising (Smith and Seyfang, 2007). Continuing

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the example of the packaging industry, alternatives such as biobased or reusable options surface as niche practices. However, their immaturity combined with the lack of a shared sense of urgency for change within the regime leads to the inability of these niches to challenge or alter the regime (Bauer et al., 2022), allowing the regime to continue to optimise and attempt to re-stabilise (Unruh, 2002).

Second, a regime becomes increasingly unable to address the sustainability challenges it faces, meaning signs of crises become visible (Leipprand and Flachsland, 2018): decreasing societal support, increasing landscape pressures and internal tensions lead to the system being '*out of equilibrium*'. Take the energy transition: while the fossil-based energy system is losing societal support and its negative impacts are increasingly visible, it is still the dominant system. But the regime's inability to structurally address these pressures – also '*destabilisation'* – enables transformative agency and alternative narratives of change to emerge and *accelerate*. Now becoming adopted by broader groups of citizens, entrepreneurs and policymakers, practices and discourses around energy slowly start to change (Loorbach et al., 2020). Leadership of actors within the regime begin to proactively seek and create spaces for experimentation and transformation (Bosman and Rotmans, 2016). Transition governance can support the search for broader policy commitments for change, increasing the pressures for transformative change, making it more and more difficult for business as usual to continue without contestation (Kramm, 2012; Oxenaar and Bosman, 2019).

Third, escalating crises and societal instability undermine and lock-out the regime, opening '*transition space'* and driving actors within the regime apart. 'Transition space' describes a phase during transitions when there is no clear dominant regime, and thus a lack of common direction and grip within the system (Bosman, 2022). This *chaotic* dynamic is visible in electricity regimes where incumbent companies are transforming, struggling, or scaling into wind and solar, energy cooperatives and decentralised systems mainstream and consumers become prosumers (Horstink et al., 2021). In this context, societal norms rapidly shift, allowing new markets, practices and norms to *emerge*, diffuse and *institutionalise*. The previously dominant institutions are increasingly delegitimised as being the norm (Markard, 2018). This adds to social instability and uncertainty in which tensions and (socio-political) crises surface and resistance to change starts to mount (Hebinck et al., 2022). Simultaneously, early symptoms of institutional ruptures and *breakdown* might appear in the form of mass mobilisations, court rulings that further complicate business-as-usual and commitments for transformative change from a broad range of actors that previously were the dominant structure to the regime – i.e. private, financial and public actors.

Fourth, as a broader social consensus emerges around the need and overall direction of change alongside tangible alternative practices and structures, a process of (managed) decline and institutionalisation takes place – allowing

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for institutionalisation of previously alternative practices and norms and '(re)stabilisation' of the new regime (Hebinck et al., 2022). This entails that the undesired elements, practices and technologies that were part of the 'old' system are *phased-out* (Oei et al., 2020; Rogge and Johnstone, 2017), creating the needed space for new institutions to develop and both social and behavioural changes to unfold (Bosman, 2022). These changes allow for the norm to shift and enable the *stabilisation* of a new regime to become the new normal (Kemp et al., 1998), marking the societal transition from one regime configuration to another. Whereas the first three types of dynamics have been occurring in real life over the past decades – providing opportunities for in-depth explorative research, the dynamics beyond the transition space are much more speculative and require drawing on historical examples. Such as the agricultural transition in the Netherlands, during which this phase saw political decisions that led to large-scale institutional reform, mainstreaming of new professional practices, establishment of knowledge and education systems, codification and formalisation of new economic and social norms (Grin, 2012).

While these dynamics provide analytical insights useful for the governance of transitions, portraying these dynamics as sequential and building on each other, it is important to note that they do not happen in a controlled, gradual, or linear way. So far, many of the desired 'transitions in the making', such as the potential transitions towards just and sustainable energy, mobility, food, or health care that are visible today, appear to be 'stuck' in the first and second types of dynamics. There are only a few examples of transitions that have graduated to the later stage dynamics – such as the electricity or fossil fuel-car regimes (Loorbach, 2022). In this later stage, completely new questions come to the fore, such as how to maintain resilience, adaptivity and reflexivity, while at the same time, a new path dependency or lock-in is developing. In addition, it is important to recognise that these dynamics are observable regardless of the specific content or normative direction: when discussing sustainability transitions, we might anticipate and even imagine going through this process towards a desired future. But, transitioning from the present state to an even more unsustainable or unjust future regime could follow the same sequence of dynamics (Ghosh et al., 2021b; Marín and Goya, 2021; Sovacool, 2021).

Building on the *analytical* insights gained from understanding transitions as dynamic processes, the action-oriented side of explorative transition governance then seeks to engage and empower actors who already shape, contribute to and support sustainable niches and alternatives that could integrate into the new system.[2]

[2] How an analytical approach, such as the X-curve framework, can be used in an action-oriented manner by integrating it into an action-oriented approach, such as Transition Management, is demonstrated in detail in Hebinck et al. (2022).

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Having identified the increasing destabilisation and emergence of 'transitions in the making', action-oriented transition governance supports the formulation of a desired direction of change and explores ways to experimentally empower, connect and diffuse niches and alternatives that aim for just and sustainable futures to become mainstream.

3.4 Action-Oriented Approaches to Navigate Governance of Transitions

In light of the increasingly turbulent processes of change associated with transitions in the making, a part of the explorative transition governance field has evolved to anticipating transformative changes initiated by actors and navigate transitions. In doing so, it has explicit *action-oriented aims*: in addition to seeking to understand the governance of transitions, it aims to actively support actors in steering and guiding these processes of change. To better understand *action-oriented* approaches within explorative transition governance, we first explore the emergence of problem-oriented science and how that leads to certain key principles for *action-oriented* approach to explorative transition governance.

3.4.1 An Action-Oriented Turn in Sustainability Transitions

Transition governance more generally emerged in a time when social sciences were strongly influencing the debate on the role and 'objective' position of researchers in relation to policy (Loorbach et al., 2017). It was during that time that the notion of 'uncertainties' (van Asselt, 2000) introduced the idea that sustainability challenges were unlikely to be solved by the then-dominant reductionist and positivist knowledge approaches (Jasanoff, 2004). In the decades that followed, a broader trend of research taking on the responsibility to support sustainability transitions became visible. Research that aimed to better understand processes of societal and environmental change and, in so doing, to shape action-oriented knowledge (Fazey et al., 2018; Jasanoff, 2004; Kirchhoff et al., 2013; Wittmayer and Schäpke, 2014). With these attempts to close the gap between the production of scientific knowledge and its applicability (Jasanoff, 2004; Stirling, 2008), expectations of science to deliver 'action-oriented' knowledge fitting the needs of diverse societal actors also grew (Dilling and Carmen, 2011; Kirchhoff et al., 2013).

Action-oriented knowledge for sustainability can be defined as '*the "knowledge how" that emerges from and informs the (i) intentional design, (ii) shared agency, and (iii) contextual realization of actions for sustainability*' (Caniglia et al., 2020). Development of action-oriented knowledge should be driven by a desire to enhance individual and collective learning about the inherent dynamics and potentials for (local) action. As such, action research moves beyond the idea

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that knowledge is generated through research, after which it is translated or disseminated into society (Caniglia et al., 2020). Instead, it considers action-oriented knowledge as the product of co-creation. That means, new knowledge and (transformative) capacities of involved actors emerge from an entangled process that combines action and capacity building through the co-creation and transdisciplinary involvement of diverse societal actors (Lang et al., 2012). With that, a key characteristic of this growing body of research is the acknowledgement that actors beyond the traditional science–policy interface – civil society, entrepreneurs and so on – likewise have a contribution to make when it comes to sustainability transitions (Avelino and Wittmayer, 2015). Supporting these varied actors in furthering sustainability transitions then requires both generation and mobilisation of action-oriented knowledge (Caniglia et al., 2020).

Attempts to align to the needs of 'users' of scientific knowledge have resulted in well-curated action-oriented frameworks. Depending on the user and their understanding of societal phenomena, these frameworks are fluid to interpretation, giving way to plural understandings (Stirling, 2011). As such, supporting processes of change requires offering 'adaptive, reflexive, collaborative and impact-oriented research' (Fazey et al., 2018, p. 54). This demands that action-oriented frameworks aid in the (1) translation of scientific knowledge to create and maintain spaces for learning (Beers et al., 2010; Wittmayer and Schäpke, 2014), (2) building of capacity for stakeholder collaboration and (3) co-production of knowledge (Clark et al., 2016).

3.4.2 Key Action-Oriented Approaches to Explorative Transition Governance

Action-oriented approaches to explorative transition governance build on the analytical research that provides insights to rethink the positions, roles and contributions of actors within transitions in an action-oriented manner (Fischer and Newig, 2016; Halbe and Pahl-Wostl, 2019; Hölscher et al., 2020; Kivimaa et al., 2020; Wittmayer et al., 2017). *Action-oriented* explorative transition governance uses these analytical insights to make sense of the current multi-actor configurations of transitions in the making, with the aim to explore the diverse ways in which transitions are and can be influenced (Avelino and Wittmayer, 2015). It seeks to conceptualise how different types of agency interact to destabilise incumbent regimes and navigate non-linear transition dynamics to establish desired futures. In doing so, an *action-oriented* approach aims to challenge the dominant perspective of policy and decision-making as only intended to support the status quo and to enable optimisation of the regime (Loorbach et al. 2021). Action-oriented approaches intend to create space for more fundamental change towards previously unimaginable futures, which allows to refocus on supporting

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emerging alternatives to incumbent regimes and explore empowerment of these alternatives to the extent to which they can challenge, alter and replace the undesired parts of the regime.

Several different action-oriented approaches have emerged that each challenge 'traditional' policymaking processes[3] and empower multi-actor configurations to decision-making in transitions. The predominant ones being *transition management*, *reflexive governance* and *strategic niche management*. These three different streams have different foci: *Transition management* is rooted in social sciences and emphasises concepts of networks and governance, while linking to theories of social movements and social innovation. It emerged as an approach for sustainable development building on the idea of 'long-term planning through small steps' with a strong emphasis on foresight methods (Loorbach, 2010; Rotmans et al., 2001; Rotmans and Loorbach, 2010) (see further on in this chapter). *Reflexive governance* builds on public administration and political science, orienting itself to the role of policy and government institutions in transitions. Strongly influenced by learning theories, it focuses on 'second-order learning' by encouraging institutions and (policy) actors to continually reflect on their principles and adapt their strategies to enable transitions (Voss et al., 2006; Voß and Bornemann, 2011; Voß and Kemp, 2006). *Strategic niche management* has its roots in innovation policy and niche markets, leading to strategies for government and research to advance specific (technological) innovations (Hoogma et al., 2002; Kemp et al., 1998 and see also Chapter 5).

Work in these three areas has evolved considerably over the past decades, laying the foundations for recent work on transformative innovation policy (Diercks et al., 2019; Schot and Steinmueller, 2018) and mission-oriented policy (Hekkert et al., 2020; Mazzucato, 2018). While their origins and foci differ, what they have in common is a normative perspective to sustainability, being rooted in transition research and considering the engagement of diverse stakeholders as necessary to furthering sustainability (Upham et al., 2015). Section 3.5 showcases how transition governance enables action-oriented knowledge by zooming in on Transition Management, a much-used action-oriented approach that aims to support actors in navigating societal transitions.

3.5 Transformative Social Learning to Navigate Transitions: Transition Management

Within the field of transition governance 'transition management' emerged as an action-oriented approach for sustainable development, building on the idea of

[3] Here, 'traditional' policy – in which the locus of power solely lies in the public domain – is considered a part of the path-dependency and the incumbent regime, institutionally oriented to support incremental change and optimisation (Loorbach et al., 2021; van Buuren and Loorbach, 2009).

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'long-term planning through small steps' (Kemp et al., 2007; Loorbach, 2007; Rotmans and Loorbach, 2010, p. 140). The approach was designed to operationalise analytical insights from transition governance and action research to provide action-oriented insights for 'transitions in the making'. Seeking to generate action-oriented knowledge, the transition management approach was made operational through a cycle made up of four dimensions through which actors in the context of a specific transition can be influenced to structure the speed and direction of transitions.

The Transition Management Cycle (see Figure 3.2) builds on insights from sustainability transitions and action research and is designed for use in applied multi-actor settings called *transition arenas*. The cycle describes four dimensions that include strategic, tactical, operational and reflexive activities, which are intended to create concrete and actionable steps that can address sustainability challenges (Loorbach 2010). Since its early development, transition management too has undergone changes and iterations in response to the changing dynamics that the real world presents – adapting the activities of the cycle depending on the state of transition (Loorbach et al., 2021; Loorbach, 2022). The cycle builds upon several principles for transition management that draw upon the analytical perspective described. For any intervention to influence agency in transitions, it needs to adhere to the following principles:

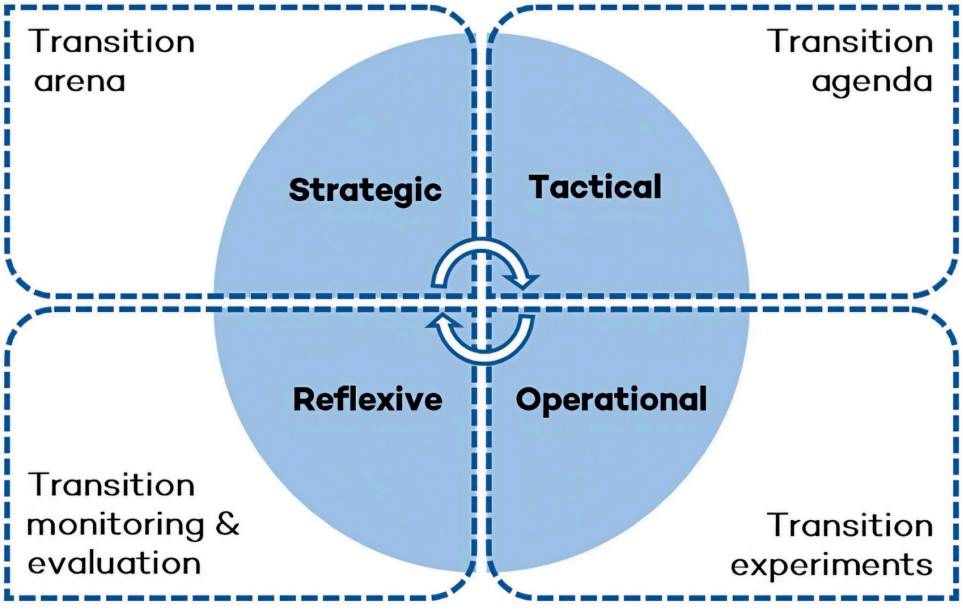


Figure 3.2 The transition management cycle activities and instruments to support the cycle's activities. Source: (Adapted from Wittmayer and Loorbach, 2016)

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- *Systemic*: Take a system perspective into account, map the system and the agency dynamics within it to develop a transition narrative.
- *Back-casting*: Take desired future regimes as a starting point for the identification of niches and for the development of transition pathways.
- *Selective*: Identify and select specific actors based on their roles and contributions to the sustainability transition to connect transformative agency.
- *Experimental*: Take a doing-by-learning and learning-by-doing approach to push transitions forward.
- *Reflexive*: Embed (social) learning within the process to adapt and evolve within a changing context.

From these principles, the Transition Management cycle identifies different dimensions through which the agency can be influenced. Depending on the observed broader transitions dynamics, the starting point or the weight of different dimensions might vary. Within every dimension, different tools and methods might be used, ranging from visioning and backcasting to co-creation, design and reflexive monitoring (Wittmayer and Loorbach, 2016).

These instruments and interventions aim to influence societal transition dynamics in different ways. First, in a *strategic* manner by influencing the way of thinking: how does society understand its problems (e.g. as persistent or systemic?) and what is its long-term future orientation? Typical instruments transition research uses here are frontrunner networks (arenas) and foresight methods such as envisioning and scenario building. Secondly, by influencing the structures in a specific transition context in a *tactical* manner: changing actor-networks and coalitions in support of sustainability transitions, changing targets and strategies, through transition pathways and roadmaps. Third, in an *operational* manner by empowering, guiding and developing the transformative potential of alternative practices and solutions that fit within the desired transition through labs, experiments, or initiatives. Finally, by stimulating learning and *reflexivity* in transition contexts by introducing reflexive monitoring or learning dialogues. Roorda et al. (2014) offer a more detailed process description of a transition management approach, taking the example of an urban context.

3.6 Progressing the Field of Explorative Transition Governance

The eternal dilemma that explorative transition governance faces is that it is extremely difficult to evaluate the extent to which an intervention contributes to desired long-term transitions. While some attempts to evaluate have been made to signal whether processes of change are moving in the desired direction (e.g. Transformative Innovation Policy (Ghosh et al., 2021a)), or the

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Capacities framework (Hölscher et al., 2019b), only time can tell if a transition is. In general, this means that moving from theory and description to action and prescription necessarily requires modesty, reflexivity and a learning-by-doing attitude. In addition, explorative transition governance is entering an interesting phase in its development. The need for more transformative policies and the engaged role of researchers is becoming more accepted, thereby bringing explorative transition governance closer to being part of the 'regime', also into other contexts – such as the Global South. These dynamics pose challenges for future research.

But over the past decades, explorative transition governance has shown a remarkable ability to use the concept transition as a basis for exploring and engaging in societal transition dynamics. In doing so, progressing not only theoretical insights but also contributing to actual sustainability transitions. Now that transitions in many areas, such as mobility, health, housing, energy, water and food transitions, increasingly unfold and are contested and resisted, explorative transition governance needs to stay ahead of the curve. How might transition space occur and be encountered, especially if it is met with deep socio-cultural conflict, polarisation, regression and conservative resistance? How could societies shift towards fundamentally sustainable and just economies while avoiding the type of conflict or unmanageable breakdown that possibly does more bad than good? How could governance institutions develop to provide stability in transitions while being transformative and reflexive? While 'old' questions and the need to address early-stage transition dynamics are as relevant as ever, these new fundamental challenges will no doubt inspire and necessitate future research as societal dynamics demand it.

An important question in this context, where interest and demand for transformative policy and transition governance surges, is how to maintain the critical and action-oriented core of explorative transition governance while mainstreaming? Standardisation, repetition and optimisation are useful, but it might also include the mechanisms for capture and watering down (Pel, 2016). As explorative transition governance becomes part of established departments, schools and curricula: how can we guarantee the needed critical and creative attitude? How can it be embedded based on the underlying values of just sustainability? How to institutionally shape contexts within which diverse teams of academic practitioners can work together in transformative ways? In the spirit of the explorative transition governance approach, we consider this a work-in-progress: the community of action-oriented transition researchers is growing and in demand, but they often have to find their own way and fight an uphill battle within more traditional academic environments. Diffusing and scaling action-oriented explorative transition governance as academic practice is thus a core challenge.

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Mainstreaming of transition research to create societal contexts for transformative change needs to co-evolve with a shift to a new governance culture. While the call for transformative change is broadly shared, dominant policy and market logics of innovation, optimisation and risk management still persevere (Loorbach, 2022). A new, transformative governance culture will need to embrace a plurality in perspectives (Ghosh et al., 2021b; Scoones et al., 2015) and engage with diverse societal actors by overcoming the dichotomies among state, market and community (Avelino and Wittmayer, 2015). Not only does this broaden the notion of what is considered expert knowledge used for governance, but it also empowers different type of actors as 'agents of change', enabling change in a multitude of ways. This, in turn, creates space for transformative social innovations to flourish and experiment with alternatives to the dominant structures in diverse locations.

Similarly, given the strong bias to and origin of the field of sustainability transitions pertaining to the Global North and specifically the North of Europe, more attention to the application of explorative transition governance theories in the Global South and elsewhere is urgently needed (Ghosh et al., 2021b; Ramos-Mejía et al., 2018). For example embedded understandings of how institutions function might limit the use of analytical frameworks. But also, when it comes to action-oriented approaches, this might be the case. While explorative transition governance approaches have been applied in various contexts across the globe, underlying assumptions on how actors interact might lead to unexpected tensions in a co-creative setting in a different cultural context (Hebinck et al., 2023).

To enable this, a rephrasing of 'power' is paramount to acknowledge and empower the various capacities needed for transformations in diverse contexts (see Chapter 12). Here, we refer to the work of Avelino (Avelino, 2017), who argues for overcoming 'the illusion of powerlessness' and distinguishes between different types of power that are important to governing sustainability transitions: *innovative power*, pointing to 'the capacity to invent and create new resources'; *reinforcive power*, emphasising the 'capacity to reinforce and reproduce existing institutions and structures'; and *transformative power*, describing the 'capacity to invent and develop new institutions and structures'. This allows for a governance culture that goes beyond a dichotomous 'niche–regime' power struggle and instead facilitates more diverse and hybrid power dynamics that can challenge the status quo and overcome vested interest.

This also means that transition management needs to engage with politics further and more deeply. While it has been a political idea from the start (empowering transformative forces in society and destabilising regimes), societal dynamics now move more towards a decisive and chaotic phase in which powerplay is needed.

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This implies rethinking strategies and instruments: new narratives, bottom-up experiments and exploring possible transitions need to be complemented with lobbying for specific institutional changes, mobilising large critical mass, achieving social tipping points and rapid phase out of unsustainable vested practices. How top-down and bottom-up interact in this context is something to find out: research and niche experiments can identify what is unsustainable and unjust as well as what potential just sustainability futures might look like. However, regardless of how these futures will materialise, they will require profound cultural and behavioural change and are likely to negatively affect government and market interest and stability.

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