A balancing act: radicality and capture in institutionalising reflexive governance for urban sustainability transitions

Tessa de Geus[1*] , Julia M. Wittmayer[1,2] and Giorgia Silvestri[1]

*Correspondence:
geus@drift.eur.nl

[1] Dutch Research Institute for Transitions (DRIFT), Erasmus University Rotterdam, Postbus 1738 – room T16-53, 3000 DR Rotterdam, The Netherlands
[2] Erasmus School of Social and Behavioural Sciences (ESSB), Erasmus University Rotterdam, Rotterdam, The Netherlands

Abstract

Over the past two decades, urban actors have sought to foster long-lasting change towards sustainability through reflexive governance. Related activities, including transition labs, arenas, experiments, and roadmaps, have been problematised for disparities between using a discourse of transformation and radicality while failing to materialise radical action and succumbing to 'projectification' – meaning that the impact of an intervention tends to evaporate after the initial experiment impulse. Enabling a transformative legacy of such interventions requires institutionalising reflexive governance arrangements, i.e. a process of integrating these arrangements as part of the existing institutional set-ups while maintaining 'radical' elements. Particularly as the focus in certain urban transitions shifts from emerging and supporting niche practices towards institutionalising new ways of working and breaking down regime structures, it becomes paramount to better understand such processes. Based on a comparative empirical analysis of six European cities, we explore how these cities attempt to institutionalise reflexive governance and take stock of the tensions encountered, particularly to what extent cities manage to safeguard their radical ambitions, or whether these become 'captured' in the process. Other highlighted tensions are a focus on internal dynamics, a struggle around voluntary structures and accountability, and a challenge of keeping momentum with new actor constellations while trying to address complexity and uncertainty. We conclude by putting forward three recommendations for how reflexive governance processes may increase their impact: through prioritising institutional embeddedness in and outside of the local authority; creating transparency around how governance arrangements are adjusted and modified throughout the process for accountability; and renewing commitment periodically to ensure continuity and commitment from actors involved.

Keywords: Reflexive governance, Transformation, Transitions, Transition management, Governance arrangements, Action research, Urban governance, Institutionalisation, Regime-niche dialectics

Science highlights

- With discourse on transformation failing to translate to radically different governance for climate mitigation, this paper addresses the development of reflexive governance arrangements by six cities, and the tensions that occur in the institutionalisation process.
- Positioning institutionalisation as a process of regime-niche dialectics, we assess to what extent the developed governance arrangements align with reflexive governance characteristics, with a focus on transition management.
- Tensions encountered in this process include an emphasis on internal processes, a voluntary and unaccountable structure of governance arrangements and keeping momentum in the absence of 'conventional' process management.

Policy and practice recommendations

1. To build (political) support and develop finance mechanisms, pro-actively embedding reflexive governance arrangements in ongoing strategic processes in *and* outside of the local authority is key, while remaining cautious to not solely focus on internal processes, but rather on multi-actor collaborations. A better understanding and awareness of power dynamics might support this.
2. We recommend cities to explicitly state and reflect on how governance arrangements are radically different from 'conventional' governance practices, and how they are adjusted during the institutionalisation process, while also fostering a conversation about how involved actors can hold each other accountable. This can for instance be done as part of a transparent and multi-actor reflexive monitoring structure.
3. As reflexive governance arrangements differ from 'conventional' project logics, and do not necessarily deliver short-term gains, actors involved face challenges regarding keeping momentum and commitment. To confront this, periodic checks and discussions on roles, responsibilities and ownership with stakeholders involved are crucial, by consciously opening up and closing down in different stages, while remaining aware of the legitimacy of the process.

Introduction

A surge in the literature on urban experimentation indicates how cities are eager to experiment their way out of the multiplicity of crises that they are faced with, such as climate, pollution, or inequality (Broto and Bulkeley 2013; Frantzeskaki et al. 2018; Sengers et al. 2019; Torrens et al. 2019; Fuenfschilling et al. 2019; Raven et al. 2019). From living labs to arenas, challenge-prizes, gamification or building future scenarios: a plethora of experiments has been developed to support cities in finding ways to foster transformations (Ferguson et al. 2013; Loorbach et al. 2016; Voytenko et al. 2016; Hildén et al. 2017). Some of these practices are rooted in a radically different approach to conventional urban governance: reflexive governance. Reflexive urban governance takes as a starting point how real-time and deep reflection on, and discussion of,

underlying goals, strategies, power relations, knowledge paradigms, and unintended consequences ought to lead to a corresponding adjustment and modification of practices and frames (Voß and Kemp 2006).

This article picks up on tensions that emerge when attempting to make reflexive governance, and particularly transition management as a specific approach of reflexive governance, part of norms, structures and practices. In light of discourses on transformation and radical change becoming mainstream (Turnheim et al. 2020; Kovacic and Benini 2022; Westman and Castán Broto 2022), we argue that reflexive governance approaches constitute a 'radical' alternative to conventional governance approaches. Responding to complexity and uncertainty as inherent features of transitions, reflexive governance represents a fundamentally different way of steering and collaborating around common goals, knowledge production and strategies. The question that arises is a familiar one in transition studies, namely how the practices and outcomes of reflexive governance experiments (framed as niches) can become part of existing structures and, in doing so, change these along the way (Smith 2007; Pel 2016). We therefore posit that it is key to understand how institutionalisation processes are navigated in urban transition processes in terms of regime-niche dialectics (Loorbach 2022). To explore how these processes take place in cities, what tensions actors involved are confronted with, and how these are dealt with, we empirically trace the implementation of reflexive urban governance arrangements. Based on multi-method research across six European cities, this article addresses the research question: '*What are reflexive governance arrangements that cities develop and what tensions do they encounter in institutionalising those?*' In doing so, it explores the largely unchartered territory of what lies beyond experiments (Sengers et al. 2020) by building upon and enriching our understanding of the link between novelty and institutional change (Fuenfschilling et al. 2019; Raven et al. 2019; Sengers et al. 2020).

This question is addressed by firstly setting out the theoretical context in the section "Reflexive governance as institutionalised radicality" and outlining our research design in the section "Methods and analysis". The section "Developing governance arrangements in cities" presents our findings, reviewing the attempts of six cities to institutionalise reflexive governance arrangements. In the section "Discussion: tensions in institutionalising reflexive governance", we discuss to what extent the cities follow through on the characteristics of reflexive governance and highlight tensions that emerged during the institutionalisation process. In the "Conclusion" we put forward three recommendations for increasing the impact of reflexive governance.

Reflexive governance as institutionalised radicality

In this section, we start from the observation that the discourse on transformation and radicality falls short in materialising into actual radical change in governance, while this is considered a condition for shaping urban sustainability transitions. Building on the issue of 'projectification' as a bottleneck for (governance) experiments to affect large-scale impact, we are interested in understanding processes of institutionalisation, which we frame in terms of regime-niche dialectics. Finally, we operationalise our research question by using the concept of *governance arrangement* as a lens to understand and

study governance practices, as well as by eluding to the five characteristics of reflexive governance.

Reflexive governance as radical change

The term transitions refers to systemic shifts in structures, cultures and practices, i.e. challenging the very foundations of society (Loorbach et al. 2017). A sustainability transitions perspective problematises the root causes of unsustainability and injustices in society, such as oppressive relations (Avelino 2021), or a pervasive economic growth paradigm (Feola 2019), including the institutions that reproduce such norms, structures and practices (Grin et al. 2010). After more than two decades of research on sustainability transitions (Markard et al. 2012; van den Bergh et al. 2021) – such *radical* change towards more sustainable societies (the etymological origin of radical, *'radix,'* referring to *'root'* in Latin), still fails to materialise. Westman and Castán Broto (2022) point to this discrepancy when asking: "*If radical change is central to transformations, why is the discourse failing to advance radical ideas?"* (p. 1327)*.* Even though the concepts 'transitions' and 'transformations'[1] are increasingly featured in (policy) discourse on addressing planetary-scale sustainability crises, dominant governance is arguably still characterised by incrementalism, 'optimising' existing system constellations rather than challenging and replacing them (Blythe et al. 2018; Loorbach 2022).

Governance is generally used to indicate a process of organising collective action for defining and handling public issues (Voss and Kemp 2006, Stoker 2000). Conventional governance culture has been critiqued for creating an implementation illusion (i.e. a discrepancy between efforts put into policy-making and solving problems), risk paradox (i.e. focus on risk, negating uncertainty and disruptive change), innovation trap (i.e. only adding to systems through (technological) innovation rather than also including phase out) and an imagination deficit (i.e. inability to imagine different futures) (Loorbach 2022). Specifying what constitutes a *radical* alternative in the face of conventional governance practices is a normative question. In this paper, we contend that a radical take on governance includes new ways of dealing with two key features of sustainability transitions: complexity and uncertainty. Transitions are complex in how they are characterised by interdependencies on multiple scales and across domains (Voß and Kemp 2006), and are defined by uncertainty: there is no single assumed endpoint, and a plurality of pathways are possible (Scoones and Stirling 2020). Whereas conventional practices, often based on New Public Management, are characterised by specialisation, fragmentation, control, and reducing complexities (thereby creating new 'externalities'), reflexive governance was specifically developed to deal with complexity and uncertainty (Hendriks and Grin 2007).

Reflexive governance concerns "*thinking and acting with respect to an object of steering* [which] *also affects the subject and its ability to steer*" (Voß and Kemp 2006, p. 4). It thus implies that the very foundations of implemented governance processes (i.e. their concepts, practices, institutions, paradigms) are collectively questioned and reimagined into practice. Voß and Kemp (2006) identified five requirements, or characteristics, which governance innovations ought to adhere to, to qualify as reflexive. First, to deal with complexity, different academic disciplines and perspectives ought to be included

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[1] In the context of this paper, we consider transformation and transitions as similar concepts, which cover different system foci, and originated in different research communities as identified by Hölscher et al. (2018).

through transdisciplinary knowledge production. Second, considering all proposed solutions as hypotheses, continuous learning should result in strategies and institutions being adapted. Third, while acknowledging uncertainty, potentially unintended consequences of policy decisions should be anticipated as much as possible, particularly pertaining to the risk of creating 'lock-ins' leading to path dependency. Fourth, the goals of transformation processes should be formulated iteratively and participatory. Fifth and finally, strategy development should also be developed together with diverse stakeholders.

In this paper, we focus on a concrete reflexive governance approach: transition management (Rotmans et al. 2001; Kemp and Loorbach 2004; Wittmayer and Loorbach 2016). Initially developed in the early 2000's at the Dutch science-policy interface of the development of a nationwide environmental plan (Kemp and Rotmans 2009; Voß 2014), it aims to challenge, alter and replace existing unsustainable cultures, structures and practices through a process of searching, learning and experimenting (Loorbach 2010, 2022). To this end, interventions are developed that can potentially influence and accelerate system change, e.g. through developing collective visions, forming coalitions of frontrunners, protecting niches, and reflexive monitoring (Loorbach et al. 2016; Frantzeskaki et al. 2018). Transition management activities correspond to four dimensions, namely: 1) Strategy: problem structuring and visioning; 2) Tactics: Developing coalitions and transition agendas; 3); Operations: Implementing experiments; and 4) Reflexivity: monitoring and learning (Loorbach 2010). Transition management has been prescriptively applied in diverse urban contexts, including in Europe, Asia, Africa and Central America, while addressing a wide range of issues from urban planning and community development to reducing carbon emissions and energy use (Frantzeskaki et al 2018). While these transition management examples focused on building up innovative capacity and experimentation, transition management has also been adapted to respond to changing and more current transition dynamics in energy transitions related to institutionalisation (de Geus et al. 2022a).

Many activities rooted in reflexive governance, or transition management specifically, do not seem to transcend the stage of experimentation and affect large-scale 'radical' or 'transformative' impact. When experimentation remains local the knowledge generated similarly remains localised, meaning that they miss links with system-wide shifts and cannot diffuse their impact (Scholl et al. 2022). Another pitfall is that experiments fail to move past the stage of the short-termism or 'proto-typing', leading to a 'projectification' of efforts (Torrens and von Wirth 2021). This phenomenon is closely related to framing governance experiments as 'sand-box' practices, and the wider phenomenon of the 'pilot paradox', which explains how (governance) experiments can flourish in protected experimental settings, while they struggle when institutionalising (van Buuren et al. 2018). All these phenomena can be understood within a context of 'capture' of innovation by regime actors, in which practices that can potentially threaten the status quo (i.e. in this case dominance of New Public Management) are contained rather than scaled out, effectively turning them harmless (Hendriks and Grin 2007; Pel 2016). To understand how cities seeking to innovate their governance can move past the experimentation stage and realize change, we are interested in understanding how cities can navigate these dynamics to institutionalise reflexive governance.

Institutionalisation as regime-niche dialectics

It has been argued that current energy transition dynamics have moved past emergence and experimenting, towards an acceleration and institutionalisation of alternatives particularly in in Western industrialised economies (Markard 2018; Köhler et al. 2019; Turnheim et al. 2020). Whereas efforts for accelerating transitions were initially directed towards establishing the urgency of sustainability problems, unearthing change agents and creating a shared sense of direction among actors (Roorda et al. 2014), today, the main challenge has been argued to be the institutionalisation of alternatives. While experiments gain traction, answers to questions of how these can be translated to long-lasting structures and how institutions need to change to accommodate this remain elusive (Torrens and Von Wirth 2021). From a sustainability transitions perspective, as regime structures are increasingly destabilised, the need for the 'institutionalisation of emergence' grows, i.e. "*finding strategies, tools and methods that make the radical alternatives that developed in niches the norm*" (Loorbach 2022, p. 7), through the interaction of niche and regime (Hebinck et al. 2022). As a radical alternative to governing transitions, reflexive governance is subject to such institutionalisation dynamics itself (see section "Reflexive governance as radical change"). However, reflexive governance simultaneously could be one of these 'strategies, tools and methods' that can enable the institutionalisation of niches in other domains (e.g. relating to energy, health, mobility, circular economy, etc.).

At its core, institutionalisation is the process of becoming part of the formal and informal 'rules of the game' and changing these along the way (Lowndes and Roberts 2013). These 'rules of the game' constrain or enable actors' behaviour and may include formal laws, regulations and programmes, as well as informal norms about what is 'right' to do, or how 'things are done around here' (ibid.). Berger and Luckmann (1991) identified three patterns in institutionalisation, characterising increasing degrees of such 'taken for grantedness': 1) habitualisation, referring to an unstable situation where a small number of actors act with a lack of consensus on values, users and underlying knowledge; 2) objectification, where consensus emerges; and 3) sedimentation, where something has become a new norm or 'vested interest'.

Relatedly, Miörner et al. (2021) found that the degree of institutionalisation can be analysed based on the dimensions of scale and scope of diffusion (i.e. whether it is only relevant to one or multiple sectors); duration of existence (i.e. months vs. decades or more); invulnerability to social intervention (i.e. the degree to which it is easily changed); and materialisation/translation in practice (e.g. regulations, networks or programmes). Another relevant insight from institutional theory holds that actors continuously shape institutions through *institutional work;* i.e. maintaining, creating, and transforming institutions (Lawrence and Suddaby 2006). The ability to conduct institutional work depends on a multitude of factors such as skills, intentions, and resources. Examples of institutional work are lobbying, advertising or forging new coalitions among groups to influence policies or public opinion (Arenas et al. 2020).

Contributing to the growing body of work linking institutional theory and sustainability transitions research (Fuenfschilling and Truffer 2014, 2016), also in the context of urban experimentation (Markard et al. 2012; Raven et al. 2019), we zoom in on the tensions that arise when experimental practices and narratives want to *become* an institution, while also wanting to transform institutions – also referred to as 'regime-niche

dialectics'. Based on the points above, for a niche to become 'taken for granted', it needs to increase in scale and scope and materialise into formal and informal institutions, i.e. it needs to undergo a process of capture. However, for it to transform existing institutions, it needs to hold on to its 'radical core' so as to challenge and change the regime (Smith 2007; Pel 2016). When niche actors fail to balance this capturing process successfully, experiments may succumb to common pitfalls such as remaining localised, projectification, or the pilot paradox as described in the section "Reflexive governance as radical change".

Conceptualising reflexive governance arrangements

To further investigate the institutionalisation of reflexive governance empirically, we need to operationalise some of our concepts further. First, to understand practical questions of governance, we follow Termeer et al. (2011), who put forth the concept of a governance arrangement to address practical questions of governance. A governance arrangement concerns "*the ensemble of rules, processes, and instruments that structure the interactions between public and/or private entities to realize collective goals for a specific domain or issue*" (Arts and Leroy 2006 in Termeer et al. 2011, p. 161). Second, to understand the extent to which governance arrangements developed by cities are reflexive in the messy process of regime-niche dialectics, we further operationalise the five characteristics or 'strategy requirements' as formulated by Voß and Kemp (2006) (see section "Reflexive governance as radical change").

In the empirical cases studied in this paper, transition management-based activities were implemented as a specific approach to reflexive governance. In Table 1 we specify the characteristics of reflexive governance and link them to principles of transition management in the questions that we formulate. These transition management principles

Table 1 Operationalisation of reflexive governance based on Voß and Kemp (2006) and the transition management principles by Loorbach (2010)

	Reflexivity characteristics	Operationalisation	Question for empirical case studies
1	Transdisciplinary knowledge production	Governance arrangement involves multiple actors in knowledge production	Who is involved in producing knowledge, specifically in defining the problem and the proposed solutions, and how is this organised?
2	Adaptivity of strategies and institutions	Governance arrangement allows for strategies and institutions to be adaptive to new insights	What mechanisms are in place to modify strategies and institutions?
3	Anticipation of long-term systemic effects of measures	Long-term systemic effects are considered in developing governance arrangement	To what extent and how is systems thinking embedded in the governance arrangement?
4	Iterative participatory goal formulation	Goals of the governance arrangement are developed in a participatory and iterative way	What structures are in place to revise and adapt goals in agenda-setting in an iterative and participatory way?
5	Interactive strategy development	Strategies for governance arrangement are developed interactively	What perspectives are involved in defining problems, visioning, agenda-setting, and learning, and how is this done?

concern 1) conducting system and actor analyses; 2) differing between system optimisation and radical system innovation; 3) providing space for diversity and flexibility; 4) co– co-creating across actors (e.g. in agenda-setting and setting up projects); 5) giving room to change agents; and 6) facilitating social and institutional learning (Roorda et al 2014). In the section "Discussion: tensions in institutionalising reflexive governance", we use these questions to analyse the findings of the empirical case-studies shared in "Developing governance arrangements in cities". In the following section, we explain how the empirical casework was conducted.

Methods and analysis

To understand the efforts of cities to institutionalise reflexive governance arrangements, we draw on research that was conducted as part of an EU-funded transdisciplinary research project (TOMORROW[2]). As part of this project, six European cities set out to decarbonise and become more resilient and liveable by developing transition roadmaps towards 2050 together with citizens. The process of developing these roadmaps was co-developed by a transdisciplinary research team and based on transition management principles, frameworks and practices (Roorda et al. 2014; Loorbach et al. 2016; Wittmayer and Loorbach 2016), as well as insights from practice. This resulted in an iterative process design of four steps: 1) Understanding the conditions and positioning the city; 2) Designing roadmap development and self-sustaining governance arrangement for overseeing its implementation; 3) Developing the roadmap and implementing governance arrangement; 4) Continuing the cycle and further embedding governance arrangement. Throughout these four steps, reflexive monitoring was introduced to promote reflexivity (see Annex 1 for more details) (de Geus et al. 2022a). The six cities followed all four steps: we report on the process and results in the findings section of this article ("Developing governance arrangements in cities"). We do so along the structure of three elements, in order to evaluate regime-niche dialectics over the project period of three years. In "Contextualising transition management", we discuss contextualising transition management, i.e. formulating localised, radical objectives, which reflect the "*collective goals for a specific domain or issue*" of the governance arrangements as formulated by Termeer (2011) (based on step 1 and 2 of the process design). "Learning-by-doing: developing a governance arrangement" addresses developing governance arrangements to achieve the objectives (based on step 3). In "Looking ahead: Institutionalising radicality?" section we demonstrate what governance arrangement cities attempt to institutionalise beyond the project horizon.

   The aim of the project was thus not only to have transition roadmaps as an end result but also to experiment with, and institutionalise, governance arrangements, ensuring a reflexive implementation. These project aims had political backing, i.e. they were supported by the mayors of the cities, by means of a signed letter of intent at the start of the TOMORROW-project. The project was respectively implemented by three city administrations, two city energy agencies and one hybrid team (a municipal foundation collaborating with the city administration). All these entities are referred to as 'cities' throughout the paper (see Table 2 for an overview of the cities). The overall process was

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[2] See https://www.citiesoftomorrow.eu/ for more information (accessed 11/2022).

supported by a city network organisation and a research institute. To participate in the project, cities had applied to a call for interest from the city network organisation, which subsequently selected candidates based on potential and diversity. All cities, as signatories of the Covenant of Mayors, are committed to a minimum of 40% CO_2 reduction by 2030 (European Commission n.d.), and had submitted a Sustainable Energy and Climate Action Plan (SECAP) stating how they aim to achieve this.

The cities started their local processes in 2019 by forming a team (referred to as a transition team) to orchestrate the process and initiate a system and actor analysis. Based on the results, city-specific objectives were formulated for the reflexive governance arrangement (see Table 3). The governance arrangements that were developed allowed the citiesm to experiment with alternative ways of involving the public in formulating tactical and strategic policy (e.g. a transition fair; a local COP), building critical mass regarding the issue of decarbonisation (e.g. workshops, campaigns), trying out social and technological innovations (e.g. participatory budgets) and overall reinventing governance structures (e.g. internal working groups, instating an energy transition board) (see Tables 4 and 5 for an overview). As part of the implementation, cities finalised a transition roadmap in a co-production process with city stakeholders and reflected on what (other) rules, processes, and instruments ought to be initiated or developed further (see Table 6).

Table 2 Characteristics of the six TOMORROW cities adapted from de Geus et al. (2022)

City name	Size (population)	Initiating actor	Type of actor	Key characteristics
Braşov (RO)	286.000	Agentia Pentru Managementul Energiei Si Protectia Mediului Braşov (ABMEE)—Energy agency	Energy agency	Seventh most populous city in Romania; large commercial hub
Brest métropole (FR)	210.000	Urban Ecology Department of Brest Métropole together with Pôle Métropolitain du Pays de Brest	City administration	Port city and third largest metropolitan area in Brittany
Dublin (IE)	1.347.000	City of Dublin Energy Management Agency Limited (CODEMA)—Energy agency	Energy agency	Capital and largest city of Ireland
Mouscron (BE)	58.700	Energy Department of the City of Mouscron	City administration	Walloon municipality with industrial history in textiles
Niš (RS)	256.000	Department of Energy and Communal Services at the City of Niš	City administration	Third largest city of Serbia and located in the centre of the Balkans
València (ES)	815.000	Department of Renewable Energy and Climate Change at the City of València together with the foundation València Climate and Energy (VCE)	City administration and municipal foundation	Third largest city in Spain; fifth biggest port in Europe

Our multi-method research focused on the co-production of a revised transition management process approach that is more apt to address 1) Institutionalising self-sustaining reflexive governance arrangements 2) Explicating and navigating 'radical' objectives of the process; 3) Reflecting and acting on legitimacy tensions in later phases of transitions. The research design included two main streams of activities: firstly, providing ongoing training on sustainability transitions and their governance in cities, including an introduction to principles and methods of transition management and supporting their application in the cities using on- and offline meetings; secondly, reflexive monitoring of the cities' needs and implementation of transition management principles and methods using interviews and regular reflexive workshops. This allowed for a broad variety of data to draw on for analysing the specific research question posted for this paper. The data included two rounds of a total of 12 online semi-structured interviews with 9 different city representatives, a review of 6 completed work plans, 6 finalised roadmaps, and summaries of 7 transdisciplinary reflexive workshops (between January 2020 and December 2021) with the cities. The data collection took place from January 2020 to April 2023,[3] with specific checks conducted in the revision phase of this paper.

Empirical data analysis was done both inductively and deductively. The deductive approach used a set of codes based on a preliminary literature review on governance arrangements, whereas the inductive approach allowed for coding in a grounded theory fashion (Charmaz 2006). In the first round of coding, two researchers coded and checked their results, after which one researcher finalised the coding of the remainder of the interviews. The summaries of the workshop proceedings, and additional documentation provided by cities were used for background information, and to complement the interview data. Preliminary findings were shared with the cities for validation.

Limitations of our study include that we can only analyse over a process of three years, while, as discussed in the section "Reflexive governance as institutionalised radicality", institutionalisation is an ongoing process which spans decades or generations, rather than months or years. Therefore, our analysis focuses on the 'materialisation/ translation in practice' dimension of institutionalisation (Miörner et al. 2021, see "Institutionalisation as regime-niche dialectics") and as such, formal manifestations such as regulations, networks or programmes. Other limitations include that all cities were located in Europe, situating the insights within a specific socio-economic and cultural context as compared to other world regions. Nevertheless, the case studies still differ greatly in terms of geography (i.e. western, eastern and southern Europe), population (from 58.700 in Mouscron to 1.347.000 in Dublin), as well as political orientation towards sustainability measures (political leadership also shifted during the project due to election cycles). For answering our research question, we aimed to foster insight into the broad pallet of supportive or impeding factors that cities can encounter during processes of institutionalisation of reflexive governance arrangements, which we argue is supported by the diversity of our sample. In our discussion, we refer to how differences in size, political climate and initiating party (i.e. city administration or energy agency), are reflected in the tensions that are identified.

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[3] This time frame means that the process of the cities in the TOMORROW-project was heavily impact by the COVID-19 pandemic, e.g. in terms of transferring many of the activities to an online environment.

Developing governance arrangements in cities

This section provides an overview of the empirical findings on how six European cities navigate the institutionalisation of reflexive governance arrangements. First, it addresses the objectives identified by cities for their transition management process, which they aimed to advance through reflexive governance arrangements. Second, it outlines what governance arrangement the cities experimented with and sought to institutionalise, and what barriers and success factors they identified in doing so. Finally, we present the foreseen governance arrangements that cities aimed to integrate moving forward.

Contextualising transition management

Using frameworks and methods from transition studies (Silvestri et al. 2020, 2022) and contextualised against the backdrop of their decarbonisation commitments, cities formulated local 'radical' objectives for accelerating energy transitions (see Table 3 for an overview). Recognising that cities have historically configured institutions, governance and power relations, these objectives were locally specific and based on transition dynamics identified by the cities and their transition teams, to provide a direction for the kind of reflexive governance arrangements needed to accelerate energy transitions. Subject to reflexivity, these objectives have been shaped, re-evaluated and adapted based on insights and learnings gained during the implementation of the governance arrangements.

Table 3 The cities' objectives of the governance arrangement developed through transition management (adapted from de Geus et al. 2022)

City	Objectives of governance arrangement
Brașov (RO)	- Climate neutrality - Raise share of renewable energy in local energy mix - Decarbonize public buildings and heating system - Transform transport into fully electric 'Mobility as a Service' - Sustainable and inclusive city expansion, incl. green spaces - Become a sustainable city model for other communities - Support local producers and entrepreneurs - Involve stakeholders and citizens in sustainable planning process
Brest métropole (FR)	- Focus on mobilisation of actions (e.g. creating alliances between actors) - Act locally to contribute to changing national regulations/market rules - Involve many internal services in transition team - Develop governance model for external transition team and Engagement Committee
Dublin (IE)	- Create a 'transition community' of stakeholders for development and implementation of a roadmap - Engage citizens from the start of the road mapping process (e.g. engagement campaign) - Encourage local organisations to think beyond their own agenda - Pro-actively act (instead of following national level)
Mouscron (BE)	- Increase climate ambition - Mobilise citizens: Involve more target groups and stakeholders in climate plans - Initiate communication and collaboration between municipal departments to streamline climate action
Niš (RS)	- Align with EU climate goals - Share power between municipality and citizens or representatives from organisations
València (ES)	- Increase climate ambition - Collaborate with external actors - Have other sectors/entities as leading parts of the process - Give ownership of strategy to citizens - Take demonstration projects as starting point - Identify and facilitate upscaling of niches (e.g. pilot projects of new energy models)

In Brașov, the objectives were focused on completing activities with concrete emission impacts (e.g. climate neutrality, raising the share of renewable energy in the energy mix, decarbonisation of housing stock), as well as procedural aspects (e.g. supporting local producers and involving stakeholders and citizens). In the Brest metropole, the overall emphasis was on mobilising actions and restructuring governance to become less siloed and more collaborative with actors outside of city hall (including national government). More focused on the public, the city of Dublin aimed at creating a transition community to implement a roadmap towards climate neutrality, engage citizens and set a proactive example for other localities. For Mouscron, the objectives were to increase their climate ambition, mobilise citizens and develop a new structure to support the internal cohesion of sustainability policy work. Niš also put forward raising ambitions to follow EU climate goals, as well as sharing power between the municipality and actors outside of city hall. Finally, the city of València aimed to increase its climate ambition by going beyond its current Sustainable Energy and Climate Action Plan (SECAP), collaborating with actors outside the city administration and giving citizens ownership of the developed strategy.

Learning-by-doing: implementing a governance arrangement

To understand how the objectives were translated to practice, we here discuss the initial governance arrangements as developed by the cities (also see Table 4), as well as the self-identified success factors and obstaclers for institutionalising these (as summarised in Table 5). The governance arrangement in Brașov consisted of four main elements: a transition team driving the process, public engagement activities, a strategic long-term transition roadmap and monitoring for the city's SECAP (ABMEE 2022). The transition

Table 4 Initial governance arrangement developed as part of the transition management process

City	Initial governance arrangement
Brașov (RO)	- Developing roadmap to 2030, 2040 and 2050 - Forming and working through a transition team - Public consultation and campaigning activities (e.g. workshops) - Developing and monitoring SECAP
Brest métropole (FR)	- Developing and signing a Climate Mitigation Charter with 25 stakeholders - Forming 7 coalition groups - Selecting and providing seed funding for 14 micro-projects through an engagement committee - Organising public events (e.g. organising local COP events) - Forming and working through a transition team
Dublin (IE)	- Developing roadmap towards 2030, 2050 - Forming and working through a transition team - Public engagement and participation activities (e.g. survey, postcards from 2050)
Mouscron (BE)	- Developing roadmap towards 2030, 2050 - Forming and working through a transition team - Participatory budgeting for citizen initiatives - Public events and outreach activities (e.g. SDG caravan and citizen committee)
Niš (RS)	- Developing roadmap to 2030, 2050 - Forming and working through a transition team - Workshops for representatives of organisations and citizens
València (ES)	- Developing the 'Strategy for Just and Inclusive Energy Transition' - Forming and working through Energy Transition Board (transition team) - Participatory process (e.g. Demonstration Project Commission, València Changes for the Climate!, My neighbourhood in transition) - Preparing the Alliance for Climate Mission - Energy Transition internal working group monitoring and coordinating SECAP implementation across departments

Table 5 Self-identified success factors and obstacles for institutionalising governance arrangements for transition management practices

City	Success factors	Obstacles
Brașov (RO)	- Applying reflexive monitoring - Framing in terms of transition studies and proposing 'radical' and creative ideas - Shared ownership of process in transition team - Visionary thinking towards 2050	- Changing prioritisation on political level - Staff capacity - Financial resources - Collecting information for monitoring - Maintaining citizen engagement
Brest métropole (FR)	- Forging collaboration between different actors - Providing training for coalitions on how to self-organise - Creating extra capacity through job position	- Convincing stakeholders to commit to complex and uncertain process - Fragile self-organisation of coalitions - Finding funding and resources for coordinating coalitions
Dublin (IE)	- Roadmap as opportunity for regional collaboration - Interaction in-person events - Inserting Zero Together in ongoing work of Codema - Building relationships within communities	- Keeping transition team members on board in open-ended process without top-down mandate - Organising shared ownership - Awareness of urgency to continue participatory process - Financial resources - Holding actors accountable
Mouscron (BE)	- Realising cross-departmental collaboration and streamlining ambitions across municipal services through lobbying and informing approach	- Political will - Staff capacity - Negotiating different points of view in transition team - Achieving a permanent change in attitude and ways of working
Niš (RS)	- Using the transition team to connect policy to academic knowledge	- Political will - Existing rules around tendering facilitators - Lack of staff capacity in department
València (ES)	- Political prioritisation by mayor, through Coordinator of Urban Agenda of València: full support and official approval - Flexibility to merge and collaborate with other policy initiatives (Urban Strategy, Climate Mission València 2030) - Stakeholders from five sectors motivated and engaged to participate in Energy Transition Board as new governance body of the Urban Strategy	- Keeping all actors involved motivated, even when financing is pending - Changing roles from co-definition to co-implementation phase - Managing different opinions and desires in transition team - Accessing transformative financing - Organising monitoring and accountability structure for strategy - Financing participatory processes

team forged new collaborations (e.g. for using waste as a resource for a high-efficiency cogeneration plant), while also having to continuously convince stakeholders to stay on board. The transition team encountered barriers of insufficient staff capacity and financial resources. These barriers increased due to a multiplicity of crises (e.g. COVID-19, geo-political instability) causing priorities to shift at the leadership level. Creating a guiding long-term vision opened up new conversations and allowed for creative ideas beyond four-year cycles (e.g. on introducing electric scooters). However, collecting information and data for monitoring progress was a challenge, as well as maintaining citizen engagement and creating trust, due to an unfamiliarity with citizens being heard in policy development and with their inputs being taken up as expressed in interview 7: "*Citizens are more open to criticising, not proposing constructive ideas or implementing ideas themselves*".

The interdepartmental transition team in Brest initiated a climate mitigation charter that 25 actors committed to (12 institutional actors, 4 associations and 8 businesses),

and established 7 coalitions on different topics (e.g. mobility, public and private lighting) with the aim of supporting collaboration for decarbonisation, which as stated in interview 2, gradually emerged as a goal: "*One of the principles that we used during the project, and I think that we will try to keep it later, is this spirit of cooperation, while it's not something that we had in mind at the beginning.*" In addition, local COP events were facilitated (65 events in 2 weeks), and 14 'micro-projects' were selected by an engagement committee for seed funding, which was sponsored by the local energy company (Brest Métropole 2022). Through the transition team and the involvement of a local council member, insights from these experiments fed into the local SECAP. Barriers encountered included convincing stakeholders to commit for the long term while navigating an open-ended and complex process: some actors found themselves 'lost' in the complexity of the task at hand. In addition, fewer actors than hoped for engaged with the climate mitigation charter. Finally, the self-organised structure as well as the lack of funding for coordinating the coalitions were considered a vulnerability of the process.

Dublin's governance arrangement was branded as 'Zero together', and consisted of three strands that were used to build a roadmap towards 2030/2050: 1) collaboration and workshops of the transition team; 2) evidence base of the Dublin region energy master plan, which resulted in policy recommendations; 3) public engagement for roadmap development: e.g. visioning through a 'Postcards from Dublin 2050'-campaign, in which citizens are asked to write a postcard to someone they know written from the year 2050 (Codema 2022). In addition, the team initiated a Zero Together public survey, and developed a strategy for a mini-public (i.e. a deliberative process with a group of randomly selected citizens) on Dublin's energy transition. It was found that the roadmap provides ground for regional collaboration, building a network of influence, and attracting new partnerships. Allowing for flexibility to merge and collaborate with other policy initiatives and ongoing processes, for instance by joining conferences of stakeholders and lobbying on the national level, was also considered a success factor. Constraints included the tight rope of keeping momentum while not having a clear top-down mandate, nor knowing what the outcome of the process would be, which was commented on in interview 9 as in practice meaning a lot of time and effort went into convincing stakeholders to stay on board: "*We feel like we need to have a pit stop with the team as it currently stands; we had had a few drop-outs and loss of momentum. The crux is [people's] time.*" Meanwhile, organising shared ownership with the transition team members proved to be unproductive, leading to a stronger role for the team of the initiating party, the energy agency CODEMA. The team also noticed a lack of awareness of the need to continuously organise (and finance) participatory processes with the local authorities. Finally, it remained unclear how to hold actors accountable beyond the remit of CODEMA.

For Mouscron, the central element of its governance arrangement was the transition team, which consisted of 16 municipal staff members aligning their efforts towards the SDGs (City of Mouscron 2022). The transition team was built through extensive lobby work and discussions negotiating different interests and points of view, as reflected in interview 3: "*We had a lot of meeting(s) with the transition team and [with our] four departments who communicate about (the) environment, and we decided to have only one way of communication*". In addition, events were hosted in Mouscron, including a

Transition Fair, several Fora, a municipal staff conference where an SDG caravan collected visions for 2050, and citizen committees. Participatory budgeting for citizen initiatives with a 50.000-euro budget was also initiated. However, bureaucratic barriers, particularly the fact that all new legislation must be planned four years ahead through the Plan Stratégique Transversal (PST), were a major barrier to institutionalising new elements, such as the cross-departmental transition team.

In Niš, a transition team was set up, but soon met a fluctuating political mandate: changing political leadership nearly led to the process being cancelled. A survey was held to gauge desired directions in energy transitions, as well as three participatory workshops to feed into the writing of a roadmap for 2030 and 2050 conducted by a university professor and contracted facilitator (Mančić et al. 2022). As explained in interview 4: "*The writing of the document will be the task for the facilitator, so he will be at the same time implementing the whole engagement process and [put the] inputs in the roadmap.*"

For València, an elaborate process led by a multi-actor Energy Transition Board, consisting of actors representing government, business, NGOs, academia and media, led to the city's 'Strategy for the Just and Inclusive Energy Transition' (Ajuntament de València & València Clima I Energia 2022). Participatory activities consisted of analysing the strategy in a workshop with citizens under the banner of 'València changes for the climate', and local discussions through the citizen participation initiative 'My neighbourhood in transition' for validation, in which city representatives organised informal conversations in public spaces (ibid.). Framing the process as a pilot version of a larger 'Urban strategy', which was being developed in parallel, enabled the team to join forces with other departments and attract attention to the methods used. València also merged the process with the municipality's Alliance for Climate Mission initiative, which successfully went on to become part of the 100 Cities Mission, opening opportunities to realise the actions identified in the Strategy. The political prioritisation of the mayor, which led to full support and official approval of the process, was a major success factor. Nevertheless, policy workers involved were insistent to ratify the Strategy before the start of a new electoral cycle to prevent it from being cancelled. Since mobilising large-scale private investment remains difficult, financing activities to implement the Strategy remains an issue and threatens to undermine the momentum and sense of urgency. As discussed in interview 11, moving from visioning to implementing was considered particularly difficult: "*We don't know how to do this co-implementation of projects, [...] the amount of financing needed is larger—beyond pilot projects, but for full- and long-term projects, massive scale*".

It was found in València that the implementation stage requires difficult negotiations regarding different expectations of roles and responsibilities, specifically regarding the question of how to hold actors accountable and what role governance bodies should play in this. For instance, companies expect public tendering processes, whereas NGOs wish to focus on monitoring the implementation of actions by the public administration. While stakeholders in the Energy Transition Board appeared to be motivated and engaged because of how they were the first to 'try out' this new governance body of the Urban strategy, overall, keeping involved actors motivated was considered a major obstacle: the immediate benefits of being part of a long-term participatory process do

not always seem obvious to parties involved, while it does require an investment of time and money.

Looking ahead: institutionalising radicality?

Having developed and implemented the initial governance arrangement, towards the end of the TOMORROW-project, the cities decided on what elements of their governance arrangement to continue or further develop (summarised in Table 6). In Brașov, an annual transition team meeting will be organised, to support the municipality to "*stay on track towards climate neutrality*" (interview 7), and it was proposed to set up a designated energy department. In 2023, the municipality of Brașov adopted the roadmap without local ratification by the council, as it was considered that the document was already in line with the local agenda. The involved energy agency will continue consulting citizens and initiating communication campaigns about the roadmap, focusing on schools.

The Brest metropole continues all activities that were developed—the charter, coalition, and micro-projects—after slightly adapting them based on results from an external evaluation. The actions of the charter signatories are monitored through an annual monitoring meeting based on self-written reflections by the stakeholders. In 2024, in parallel with the adoption of the next SECAP, the charter will be updated with the local

Table 6 Foreseen governance arrangements per city

City	Foreseen governance arrangement
Brașov (RO)	- Annual transition team meeting - A roadmap ratified by local council and implemented by the municipality - Monitoring of roadmap/ SECAP every two years by transition team and ABMEE - Consultation of citizens and communication campaigns, focussing on schools - Energy department
Brest métropole (FR)	- Continuing and expanding the Charter: developing impact assessment methods and organise annual monitoring meeting with signatories, based on self-written reflection - Consolidate seven coalitions: develop action plans and find funding - Calls for micro-projects: three a year - Transition team meetings - Engagement committee - 1 FTE for coordination mobilisation citizens/ collaborations - Tools to mobilise municipal staff
Dublin (IE)	- A roadmap endorsed by transition team members - Transition team ('roadmap ambassador') meetings and forging strategic partnerships - Implementation of policy recommendations evidence base - Public engagement and participation, including mini-public
Mouscron (BE)	- A roadmap endorsed by the municipal council - Transition team meetings - 1 FTE for coordinating SECAP implementation - Participatory budgeting
Niš (RS)	- A roadmap endorsed by the municipal council - Energy Transition Council meetings for initiating and monitoring activities roadmap - Energy Transition department - Network of Energy Transition officers in public institutions
València (ES)	- Endorsement of the Strategy for the Just and Inclusive energy transition - Energy transition board meetings - Alliance for Climate Mission - Demonstration Project commissions - Bi-lateral meetings on SECAP implementation - 'My neighbourhood in transition' replicated in more districts - Citizen assembly

community of actors. In addition, the city aims to develop impact assessments and continue funding the job position created for coordinating the mobilisation of citizens. The number of meetings of the transition team are reduced, and the members of the engagement committee will be renewed. The continuation of their governance arrangement is voted on by the council in early 2024.

For Dublin, the transition team will change shape: its members, upon acceptance, are to act as ambassadors of the roadmap. As the process was initiated by the local energy agency much of the implementation is beyond their remit: buy-in and commitment from the transition team and other actors are crucial. In the year following the TOMORROW-project, their efforts to reach out to key stakeholders has led to engagements with the Dublin local authorities, the national energy authority SEAI, the national electricity network provider and the Minister for the Environment, Climate and Communications. The transition team will be complemented by strategic partnerships with marginalised groups, which was preceded by a collaboration with a think tank to carry out reserach on vulnerable groups in Dublin and how to enage them. There is an intent to continue public engagement and participation if financial resources are found for this. Indeed, for sustaining the developed governance arrangement in Dublin on a long-term and implementing the roadmap funding is considered a major barrier.

Mouscron will continue its transition team with newly added members, rounds of participatory budgeting, as well as hosting public engagement activities. They have also created a new job position to coordinate the SECAP implementation and implement the roadmap towards 2050, for which regional subsidies have been allocated.

Niš aims to set up an Energy Transition Council, based on the experiences with the transition team, for initiating and monitoring activities of the roadmap (still to be ratified by the municipality). For its implementation, the plan is to instate an Energy Transition department and set up a network of Energy Transition officers in public institutions, which can coordinate actions towards climate mitigation.

Finally, València aims for the Energy Transition Board to follow up on the implementation of the developed Strategy, which is embedded in the broader València 2030 Urban Strategy. The Urban Strategy was ratified by the city council in 2023 (Estrategia La Urbana 2023a). Its participation in the European Climate Mission initiative, as well as being awarded the European Green Capital Award 2024 both further the pursuit of the Strategy both in terms of finance and institutional support (Estrategia La Urbana 2023b; European Commission 2023). Participation efforts are continued through the Demonstration Project Commission with secured funding, which includes a replication of 'My neighbourhood in transition' across additional city districts, and a citizen assembly. Bilateral meetings on the progression of the SECAP implementation are also continued as part of the Energy Transition internal working group.

Discussion: tensions in institutionalising reflexive governance

In this section, we discuss to what extent the three elements presented in Sect. 4 – the localised objectives, developed governance arrangements and foreseen governance arrangements can be considered *reflexive* according to the operationalised questions identified in Sect. 2.3. We then reflect on the process of institutionalisation, understood

Table 7 Analysis of reflexivity characteristics of governance arrangements in cities

	Transdisciplinary knowledge production	Adaptivity of strategies and institutions	Anticipation of long-term systemic effects of measures	Iterative participatory goal formulation	Interactive strategy development
	Who is involved in producing knowledge, specifically in defining the problem and the proposed solutions, and how is this organised?	What mechanisms are in place to organise the modification of strategies and institutions?	To what extent and how is systems thinking embedded in governance arrangements?	What structures are in place to revise and adapt goals in an iterative and participatory way?	What perspectives involved in defining problems, visioning, agenda-setting and learning, and how is this done?
Brașov (RO)	Transition team and citizens through public consultations	- Annual transition team meeting - Bi-annual roadmap monitoring	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	- Annual transition team meeting - Bi-annual roadmap monitoring	- Annual transition team meeting - Bi-annual roadmap monitoring - Consultation with public
Brest métropole (FR)	Transition team and actors involved through charters, coalitions, and micro-projects	- Self-written reflections for performance on commitments in Charter - Transition team meetings	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	- Periodic revision with actors involved in Charter	- Transition team meetings - Actors involved through charters and coalitions
Dublin (IE)	Transition team, strategic partnerships, and public engagement	- Transition team meetings - Citizen assembly	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	- Transition team meetings	- Transition team meetings (internal) - Citizen assembly
Mouscron (BE)	Transition team and citizens through participatory budgeting	- Transition team meetings	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	Not defined	- Transition team meeting (internal)
Niš (RS)	Energy Transition Council and energy transition officers in public institutions	- Energy Transition Council meetings	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	Not defined	- Energy Transition Council meetings
València (ES)	Energy transition board, demonstration project commissions and citizens through public engagement	- Energy transition board meetings - My neighborhood in transition - Citizen assembly	Initial system and actor analyses were conducted at the beginning of the process, but no updating mechanisms in place	- Energy transition board meetings - My neighborhood in transition - Citizen assembly	- Energy transition board meetings - My neighborhood in transition - Citizen assembly

as regime-niche dialectics and zoom in on three key tensions that emerged: an emphasis on internal dynamics, lack of accountability and keeping momentum.

Assessing the reflexivity of governance arrangements

To understand the extent to which the institutionalisation of reflexive governance arrangements is transformative or rather reproductive of conventional governance, we consider how the cities' governance arrangements perform in relation to the questions formulated in Table 1, based on reflexive governance and transition management principles. In Table 7 we reflect on this for each city based on findings in Sect. 4.

Concerning who is involved in transdisciplinary knowledge production, particularly defining the problem and proposed solutions, all cities involve a range of actors through their transition team and public engagement activities. In some cities, this transition team is primarily an internal group (Mouscron, Brest, Niš), whereas in others it spans many different sectors (València, Dublin, Brașov). In València, Brașov and Niš this involves close collaboration with academia, while in the other cities, universities are not directly involved, even though scientific resources were used. In addition, over the course of three years, knowledge about the extent to which the objectives of the governance arrangement are realised through the activities remains elusive. For instance, in Mouscron the merit of the transition team is to streamline climate action across departments, however, to what extent the governance arrangement of the transition team succeeds in doing this remains unclear. While acknowledging this is a long-term endeavour, certain concrete expectations or outcomes to test whether climate action is indeed being streamlined (and if so, how?) could have been formulated to reflect on the effectiveness of the governance arrangement.

With regards to mechanisms in place to facilitate the adaptivity of strategies and institutions, while cities did modify their objectives and governance arrangements during the project period, the reasoning behind this was often not made explicit. For instance, Brest started out with the goal to connect local actions to changing national regulations and market rules but soon dropped this objective. In addition, it stands out how governance arrangements were by some considered as 'finished' towards the end of the project, rather than as a continuous process of searching, learning and experimenting (Grin et al. 2010). In the foreseen governance arrangements, monitoring activities have not been systemically integrated or have been outsourced to external actors without clear mechanisms for feeding the results back into the process or critically discussing the results among stakeholders. This may mean that the arrangements miss out on monitoring as a reflexive device for adjusting experiments and activities (Beers and van Mierlo 2017). During the TOMORROW-project, the research partner took up the role of organising reflexive monitoring and questioned the cities about their process in the face of their objectives, and how this might relate to modifying their activities. While this was appreciated as a success factor, none of the cities arranged for a substitution for such a critical monitoring role in the foreseen governance arrangements.

In terms of anticipating long-term systemic effects of measures as part of governance arrangements**,** even though the system and actor analyses conducted at the beginning of the process were meant as a starting point, it appears that cities did not revisit or update

these analyses throughout the process, nor do they have structures in place to anticipate unintended consequences. For example, to decarbonise its housing stock, Brașov developed a collaboration for using heat from waste treatment for district heating. While this is an energy source criticised for its potential lock-ins, this discussion appeared to have not been held during the process.

The main structure used to revise and adapt goals in an iterative and participatory way was the transition team. Looking ahead, while most cities plan to keep the transition team in place, its meeting frequency will decrease (e.g. Brașov) or its mandate will slightly change (e.g. in Dublin members become 'ambassadors' of the roadmap). The same applies to incorporating different perspectives in defining problems, visioning, agenda-setting and learning. Not all cities have multi-stakeholder collaboration safeguarded as a continuous element in their governance arrangement. Changing participation and collaboration from being *ad hoc* to it being an integral part of governance arrangements, was found challenging. Citizen engagement in many cases remained fragmented, and it was often unclear how it would feed into strategy development or roadmaps that were being developed. Coordinating the role of the transition team, e.g. convincing actors to take part, establishing roles, organising regular meetings, and facilitating continuity, required much capacity of the initiating actors. In the end, in almost all cities, most responsibility to continue (or lobby for) governance arrangements remains with the initiating party, or even specific function profiles (i.e. the person involved and funded by the respective organisation for the TOMORROW-project), rather than being shared across actors.

While it could be argued that *without* introducing transition management or reflexivity, conversations about societal (governance) change towards 2050 might not have been opened up, the above reflections do posit question marks concerning the degree of reflexivity of the institutionalising governance arrangements. Nevertheless, since transitions are per definition long-term, complex, and multi-actor phenomena, any impacts on changing governance paradigms are also inevitably long-term and indirect and thus cannot be observed within a time frame of three years, but rather over decades or generations. At this stage, we can only discuss the characteristics that are reflected in the governance arrangements, which could arguably increase the chance of institutionalising reflexivity.

Tensions emerging from institutionalisation

Referring back to the different patterns of institutionalisation (Berger and Lukemann [1991]), based on the governance arrangements that the cities are developing it appears that cities are generally working on habitualisation, as the desired direction of changes as well as underlying values and knowledge are still contested. In attempting to institutionalise reflexive governance arrangements in this pattern of habitualisation then, capture dynamics were rife, resulting in tensions where the degree of reflexivity came particularly under pressure. Below, we discuss three of these tensions: 1) an emphasis on internal processes; 2) a voluntary and unaccountable structure of governance arrangements; and 3) keeping momentum in the absence of conventional project management. Throughout these tensions, we highlight how differences across cities in terms of size,

political climate and position of the initiating party (i.e. municipality or energy agency) seem to influence the tensions emerging from institutionalisation.

The first tension concerns the cities focussing on their 'familiar', i.e. internal, sphere of influence while formulating and implementing their reflexive governance arrangement. By definition, transitions are emergent and systemic (Grin et al. 2010), and no one actor has all the resources, knowledge or power to affect transitions by themselves. Therefore, while municipalities can enable urban experimentation (Mukhtar-Landgren et al. 2019) and set directions, it cannot be up to them to steer transitions on their own. This requires a multi-actor process which needs to account for the distributed agency and the emergent character of sustainability transitions (Grin et al. 2011). For all cities, much of their time and effort went into building relationships, raising awareness, and lobbying to create 'allies' – both externally as well as internally. This involves creating space for actors to find new ways to relate to one another, i.e. developing new roles as part of (in)formal structures (e.g. Wittmayer and Loorbach 2016). While some governance arrangements did include forging external alliances, for municipal actors in particular, much of the actual institutional work went into forming collaborations and sharing knowledge internally across departments, as well as dealing with internal bureaucratic issues. For example, in Niš and Mouscron, much energy was spent on dealing with tendering procedures for hiring a facilitator. Comparing the municipalities (Brest, Mouscron and Niš) with the energy agencies (Dublin, Brașov) and the hybrid team (València), the energy agencies and hybrid team managed to build a multi-stakeholder transition team, whereas the municipalities did not opt for this this (even as Niš collaborated with a university professor and invited external members only occasionally).

As small-sized municipalities, Mouscron and Niš struggled to create sufficient capacity for developing their governance arrangement, relating to a lack of staff and resources as smaller administrations. Meanwhile, in València, a large municipal organisation, as well as political support by the city council, meant that multiple strategic processes were going on that the local team could relate to and collaborate with. Overall, securing financial resources, managing staff capacities, and navigating political buy-in internally were major issues for all cities. In combination with strongly centralised ownership of the coordination, this preoccupation with internal processes results in a certain fragility of the governance arrangements.

According to the cities, much of the success of institutionalising a governance arrangement depends on prioritisation on a political level. Due to electoral cycles or other crises demanding attention, such as the COVID-19 pandemic, political support for the process can wither, as happened in Brașov, Mouscron and Niš. In Niš, the near cancellation of the process arguably led to a governance arrangement that was less radical in its reflexivity and followed much of the existing rules of the game. Moreover, the adaptive capacity of reflexive governance in combination with the transformative ambitions of transition management, makes the process vulnerable to the volatility of electoral politics in terms of changing ambitions on climate and social justice. While such volatility can significantly affect the funds and staff resources available, as demonstrated in València, financing decarbonisation is also an issue that stretches beyond the responsibilities of municipalities alone. Private funds need to be mobilised, as well as funds across different government scales, which opens up questions around finance as its own regime within

socio-technical transitions, which has its own set of structure, culture and practices that are not conducive to sustainability transitions (Geddes and Schmidt 2020).

Restructuring organisations and reshaping bureaucracies internally can indeed be a condition for effective climate action. While affecting this lies within the sphere of influence of municipal policy workers, it can also be argued that making this the primary focus of reflexive governance can delay building multi-stakeholder constellations and reinventing the government's role in relation to other actors.

The second tension of institutionalising reflexive governance arrangements concerns the extent to which it is possible to hold actors accountable for their commitments, due to their voluntary nature. For all cities, it is unclear exactly how the implementation of the governance arrangements will be monitored. Arguably, it remains difficult to hold forms of governance accountable, particularly as long as they are not 'sedimented' (Berger and Luckmann 1991; Van Kersbergen and Van Waarden 2004): their experimental status allows for an exceptional position where their constant condition of becoming can exempt them from answering certain standards. In fact, in reflexive governance, the standards to which they can be held accountable are also adaptive: for instance, certain objectives that were (initially) formulated by the cities were not translated into governance arrangements, such as Brest aiming for affecting national (legal) frameworks. Indeed, reflexivity can serve to leverage what is considered needed based on insight into transition dynamics, as well as what might appear feasible, i.e. how capture might take place. However, making these processes explicit and transparent was not always done by cities.

For all cities, creating mechanisms around monitoring and holding actors accountable proved challenging, and in many cases remained unclear. Both Dublin and València struggle to identify who should be responsible for holding actors accountable for 'voluntary' action, and how this might be done. In Brest, the charter signatories are responsible for doing their own monitoring, but it is undefined how they will do so, who will check this, and what the consequences are for them should they fail to comply. Brașov has suggested using public communications to communicate about whether the city is on track with implementing the roadmap, but the effectiveness of such public scrutiny is uncertain.

The third tension relates to keeping momentum in the absence of 'conventional' process management. As mentioned by Brest and Dublin, participants in the process expressed their discontent about the process being unclear, theoretical, and open-ended. In Brest, this led to a sense of 'relief' once the governance arrangement had been determined, and the involvement of an external consultancy firm to monitor the effectiveness of the activities and decide what should be continued. In Niš, external stakeholders were only involved for a limited amount of time, and in Brașov, the frequency of transition team meetings was reduced to once per year. Seeing as reflexive governance processes are not a matter of linear projects but rather of continuous adaptation, losing momentum, and thus the willingness of actors to remain involved, is an important barrier. However, keeping collaboration and participation on a 'project basis' can threaten the transformative potential of transition management activities. In order not to succumb to projectification, revisiting the meaning of what radicality means remains essential, as well as creating designated moments of 'opening up' and 'closing down' (Stirling 2008),

while not becoming 'paralysed' in the face of adapting activities, goals and strategies along the way.

Conclusion

This paper started from the research question *'What are reflexive governance arrangements that cities develop and what tensions do they encounter in institutionalising those?'*. We explained how the literature on urban experimentation indicates that many experiments tend to dissipate after initial project cycles, and focused on transition management as a form of reflexive governance to study institutionalisation as regime-niche dialectics. Studying six transdisciplinary case studies of European cities aiming to accelerate energy transitions, we analysed a broad variety of cities to capture the breadth of responses to institutionalisation processes. We described the governance arrangements cities developed through transition management, which included building transition teams, public engagement and participation practices. Overall, the reflexivity of the cities' governance arrangements can be debated, meaning that the characteristics of transdisciplinary knowledge production, adaptivity of strategies and institutions, anticipation of long-term systemic effects of measures, iterative participatory goal formulation and interactive strategy development were expressed to a limited extent. Tensions that occurred concerned an emphasis on internal processes, organising accountability, and keeping momentum through processes of opening up and closing down. Through addressing these tensions there is a potential to navigate regime-niche dialectics more strategically. For this purpose, we propose three recommendations: 1) pro-actively embed reflexive governance arrangements in on-going strategic processes in *and* outside of the local authority, while remaining cautious to not solely focus on internal processes, but rather on multi-actor collaborations; 2) use a multi-actor reflexive monitoring process to collectively learn, facilitate conversations, and create visibility among actors involved, to enable holding each other accountable and create more transparency about how governance arrangements are radically different from 'conventional' governance practices, and how they might be adjusted during the institutionalisation process; and 3) organise designated moments for opening up and closing down to keep momentum.

To address the inward focus, we suggest explicating the role of the initiating actor and other actors. On the one hand, this means a stronger awareness and messaging on the underlying ideas of how transition management relates to democratic legitimacy, power dynamics and the role of the government in governance. On the other hand, it also creates a focus for what ought to be prioritised with regards to internal processes, as a means to facilitate this different role. Namely, pro-actively embedding transition management practices in other strategic processes in and outside of local authority was identified by cities as a supportive factor for continuity. This also relates to obtaining political support and tapping into finance streams.

A multi-actor reflexive monitoring process might be used to collectively learn and facilitate conversations, and to create visibility among actors involved, particularly beyond municipalities alone, which enables holding each other accountable. Understanding the barriers that actors encounter in realising their commitments for instance through periodically and collectively conducting power and system analyses (e.g. de Geus et al. 2023), can help identify what support would benefit them. In addition, more

explicitly stating how activities are 'radical' in relation to existing governance, and how this affects assumptions or expectations towards actors might increase accountability. Periodically re-establishing roles, responsibilities and commitment to promote shared ownership and push for clear responsibilities, can also help to hold actors accountable in multi-actor constellations.

Finally, as reflexive governance arrangements differ from conventional project logic, and do not necessarily deliver short-term gains, actors involved face challenges regarding keeping momentum and commitment. To confront this, periodic checks and discussions on roles, responsibilities and ownership with stakeholders are crucial. We recommend actors to organise designated moments for opening up and closing down to keep momentum, and to be transparent about how this happens. While acknowledging plurality is important, the research in this paper also showed that both a pragmatic expectation for linear project management by participants and the stamina of participants may wear off after a period of time. While the instrument of a roadmap helped cities to create such closing down, it also resulted in participatory processes appearing rather fragmented, rather than part of a continuum.

Lines of future research that could be considered include looking further into the moments of interaction where a governance arrangement is contested, whereby fewer radical options start to dominate the discourse, and why and when these moments occur. Another avenue that could be explored is to perform a longevity study on the governance arrangements of cities – as mentioned, institutionalisation inevitably is a long-term process. We recommend (action) researchers to take up these challenges for developing new iterations of transition management that respond to changing (energy) transition dynamics, and for practitioners to heed these recommendations when proposing radicality, transition or transformation in the face of the global climate crisis.

Supplementary Information

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> **Additional file 1: Annex 1.** The four steps of the TOMORROW methodology guidelines and their cyclical nature.

Authors' contributions
TdG managed overall process, writing, reviewing, conceptualisation and data analysis, JMW contributed by writing, reviewing and editing sections throughout piece, focussing on positioning, framing, and methodology. GS contributed to the discussion.

Availability of data and materials
We cannot share the data used for this paper, due to the confidentiality statement that was part of the informed consent forms signed by the participants/ interviewees.

Declarations

Competing interests
N/a.

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