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ARTICLE

Between top-down constraints and polycentricity opportunities: the role of local governance systems in maintaining or overcoming climate lock-in dynamics in Wallonia[1]

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Abstract

Between 2008 and 2023, local energy governance gained importance in Belgium. At the same time, it has been characterised by climate delay discourses, mirroring carbon-intensive lock-ins. Against this backdrop, this article questions whether local governance structures can contribute to overcoming these lock-ins, using municipalities of Wallonia as case studies. First, it identifies two local governance systems: polycentric and top-down. Second, it showcases a typology of climate delay discourses that are present in both governance systems. These discourses uncover behavioural and institutional lock-in dynamics. Third, it analyses whether municipalities with a polycentric governance system create an institutional and political environment that may overcome lock-in dynamics compared to municipalities with a top-down governance system. This article shows that local governance systems play a decisive role in overcoming or maintaining lock-in dynamics, which have so far been analysed only at higher institutional levels. Our findings demonstrate that while polycentric governance does not eliminate lock-ins, it creates institutional conditions that allow local actors and knowledge to counter them. This nuances the view of polycentric governance as

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inherently superior, suggesting instead that its value lies in enabling context-specific pathways and multiple entry points for action. Overall, municipal structures and the lock-ins they sustain are central to the limits and possibilities of climate transformation. We therefore argue that future research should move beyond policies to examine how governance systems shape climate trajectories.

Keywords: Local energy governance, Polycentric governance, Climate delay, Lock-in, Qualitative methods

Introduction

Local climate stakeholders have taken increasing importance in climate and energy governance. This evolution has recently been categorised through the lens of polycentric governance, which focuses on how governance structures enable self-organised actors to get involved at different governance levels, including at the local level (Jordan et al., 2018). While polycentric governance is often used to explain climate governance at the international level, more research on the role and potential of local actors as units of polycentric governance is still required (van der Heijden, 2018). This article aims to fill this gap by providing empirical data from the local level.

In parallel to the rise of polycentricity, and despite the urgency of climate action for planetary integrity, climate governance has found itself blocked in contexts marked by different strategies used to delay climate action. In particular, Lamb et al. (2020) have identified several discourses of climate action's delay. However, no precise categorisation of these discourses has been developed at the local level of governance, where climate objectives are concretely implemented. This article analyses climate delay discourses in municipalities of Wallonia. It categorises these discourses that mirror a local energy governance embedded in carbon-intensive lock-ins (Pierson, 1993; Unruh, 2000; Seto et al., 2016).

Coupling both trends, this article questions whether governance structures at the local level can make a difference in overcoming these lock-ins, using municipalities of Wallonia as case studies. Based on fieldwork interviews with 66 actors of local energy governance in 18 rural municipalities, it analyses how local energy governance may overcome or maintain lock-in dynamics. The research hypothesis is that municipalities adopting polycentric governance are more prone to overcoming lock-in dynamics compared to those embedded in a top-down governance system. The article is organised in three steps.

First, it defines and identifies two governance systems at the local level: polycentric and top-down. The polycentric system includes governance in which local authorities have included non-state actors in policy decisions that may (dis)favour lock-ins, such as renewable energy cooperatives (RECs), local sections of the "Transition

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Network", and wind turbine opposition movements. The top-down governance system includes local governance in which local authorities act as a centralised government centred exclusively on the agenda preferences of its local elected representatives and on the institutional capacity of its administrative services.

Second, the article details the climate delay discourses present in municipalities, regardless of their governance system, to better understand local lock-in dynamics. It identifies seven types of climate delay discourses that are more or less intentional. Delays may reflect weak institutional capacities. In fact, weak institutional capacity for climate action and climate delay discourses often reinforce one another, creating behavioural and institutional lock-in dynamics. The originality of this contribution lies in bringing climate delay and lock-in down to the local level. Whereas the literature has traditionally applied them to higher levels of governance, this article demonstrates their relevance at the municipal scale, and in a rural setting, thereby offering a new perspective on the role of local governance systems in maintaining or overcoming lock-ins. It further shows how the propinquity of the local level in a rural environment shapes these dynamics, making local governance a uniquely revealing site for observing how delay and lock-ins interact. This contribution puts the focus on a rural setting, whereas existing literature on the local level tends to focus on urban settings.

Third, the article analyses whether municipalities with polycentric governance systems manage to escape lock-in dynamics. It is found that in these municipalities, local climate stakeholders find space to design and implement local climate actions, enhance energy and social experimentation, increase trust amongst local stakeholders through (non)-institutionalised participative mechanisms, and reinforce local institutional capacity with site-specific knowledge and energy expertise. On the contrary, top-down local authorities isolate themselves from the local energy expertise of local climate stakeholders and maintain weak institutional capacities, which contributes to maintaining existing lock-in dynamics.

In the following sections, this article details the theoretical framework of the study, evolving around polycentric governance, top-down governance, climate delay, and lock-in (section 1). It then presents the case studies and the research methods (section 2). Section 3 unpacks the core results. The article concludes by explaining how municipalities leaning towards polycentric governance manage to overcome lock-in dynamics, unlike municipalities marked by top-down governance.

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1 Theoretical Context: Polycentric Governance, Climate Delay, and Lock-In

1.1 Polycentric and Top-Down Governance

The concept of polycentric governance is closely linked to the work of Elinor Ostrom (2005). Ostrom (2005, p. 259) argued that the governance needed to tackle ecological problems may find its roots in the development of "institutions for governing sustainable resources", understood as common resources (the Commons). Polycentric governance appears in this context, involving the higher levels of government along with local, self-organised systems. Her main argument in favour of developing polycentric governance for the Commons rests on the premise that local systems are "more effective in learning from experimentation than a single central authority" (Ostrom, 2005, p. 281). She gave utmost importance to experiments and processes of experimentation in polycentric governance thinking.

Based on her conceptualisation, scholars have analysed the recent multiplication of interactions between various actors from different levels to tackle sustainable development challenges. Polycentric governance has helped identify new forms of governance emerging "spontaneously from the bottom up, producing a more dispersed and multilevel pattern of governing" (Jordan et al., 2018, p. xi; see also Ostrom, 2010) and taking place at different levels (local, regional, national, global) and in different sectors (transport, agriculture, building, energy supply and demand, etc.). This approach "claims that individual action and cooperation can be realised through a multitude of actors – in their specific contexts and in policy arenas where free-rider incentives are non-existent, less prevalent, or easier to overcome than has been perceived on the global level" (Dorsch & Flaschsland, 2017, p. 50). Ostrom stressed that polycentricity highlights that not "only the largest scale" is relevant but that it can be complementary to small- and medium-scale actors and actions (Ostrom, 2010).

Refining the framework, Dorsch and Flachsland (2017) have detailed the features of polycentric governance as (i) self-organisation, (ii) site-specific conditions, (iii) experimentation and learning, and (iv) trust. Later, Jordan and colleagues (2018) added three features: (v) local action, (vi) mutual adjustment, and (vii) overarching rules. Table 1 defines these features.

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Table 1 Polycentric governance features

(i) Self-organisation	Refers to the freedom of local actors to set up their own rules (as opposed to rule-making by the central state).
(ii) Site-specific conditions	Refers to the idea of paying attention to heterogeneous site-specific conditions, understanding and recognising heterogeneous preferences of actors and their heterogeneous competencies and constraints.
(iii) Experimentation	The willingness and capacity to experiment is likely to facilitate governance innovation and learning about what works.
(iv) Trust	Trust is likely to build up more quickly when units can self-organise, thus increasing collective ambitions.
(v) Local action	Governance initiatives are likely to take off at a local level through processes of self-organisation.
(vi) Mutual adjustment	Actors are likely to spontaneously develop collaborations with one another.
(vii) Overarching rules	Local initiatives are likely to work best when they are bound by a set of overarching rules that enshrine the goals to be achieved and/or allow conflicts to be resolved.

Sources: Dorsch and Flachsland, 2017; Jordan et al., 2018.

This article builds on polycentric governance literature to characterise local governance. Pragmatically, local governance aims to explain "the decision-making processes, the implementation of policies and the involvement and participation of public and private actors in the problem-solving process" (Schwalb & Walk, 2007, p. 9). This article distinguishes polycentric local governance from top-down governance. The latter is defined as being hierarchical and closed to citizen participation, wherein the decision-making process is centred around elected representatives from the political majority (Bell & Hindmoor, 2009). From a polycentric perspective, local governance encompasses not only municipalities but also other agents related to local policy issues. Applied to the example of climate and energy policies, RECs, wind turbine opposition movements, the Transition Network, the Covenant of Mayors, and many other local stakeholders define the territory of renewable energy sources. As such, they constitute local energy governance according to polycentricity.

1.2 Climate Delay and Lock-In

Given the current global climate crisis, energy policies are key policy domains: The fight against climate change requires a radical revision of our energy sources. However, such radical revision faces major resistance.

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Climate denialism is one of them. Initially, climate denialism was bound to the oil and gas industries (Oreskes, 2012). In the context of the USA, Brulle (2020, p. 328) explained how "efforts to take action on climate change have encountered substantial social inertia in the form of cultural, institutional and individual resistance". He emphasised that "one dominant factor in driving social inertia centres on institutionalised efforts to oppose action on climate change". In this context, Brulle spoke of "intentional efforts". In addition, a link with a conservative ideology in Western democracies has been established in the recent literature (Brulle, 2020; Jylhä et al., 2020), although authors have underscored variation in right-wing narratives from one country to another (Zuk & Szulecki, 2020).

Lamb et al. (2020, p. 1) explained that an evolution occurred in the "sophistication and range of arguments used to downplay or discount the need for action" regarding climate action. Lamb and colleagues (2020, p. 1) therefore further defined the climate delay strategy as: "policy-focused discourses that exploit contemporary discussions on what action should be taken, how fast, who bears responsibility, and where costs and benefits should be allocated" (citing Bohr, 2016; Jacques & Knox, 2016; McKie, 2019). They developed a typology of climate delay discourses in which they identified four overarching strategies. The first one refers to the idea of "surrender to climate change" and covers discourses of "doomism" (pretending that change is impossible). A second strategy includes discourses that redirect responsibility: "Someone else should take action". A third strategy includes discourses claiming that "disruptive change is not necessary" and pushes for non-transformative solutions. A fourth one covers discourses that emphasise the downsides of climate action, suggesting that climate action goes against well-being and social justice, and tends too much towards policy perfectionism (Lamb et al., 2020, p. 2). These discourses create arguments for delay "when they misrepresent rather than clarify, raise adversity rather than consensus or imply that taking action is an impossible challenge" (Lamb et al., 2020, p. 4). The distinction between denialism and delay is therefore not clear-cut.

Carbon lock-ins are another reason why a radical revision of our energy system is complicated. This concept refers to "the possibility that policies provide incentives that encourage individuals to act in ways that lock in a particular path of policy development" (Pierson, 1993, p. 606). Unruh (2000) looks at the institutional, social, and technological elements that explain the "barriers to diffusion of carbon-saving technologies". He underlines that "path-dependent evolution can create technological cul-de-sacs" (p. 830). Seto et al. (2016) further dive into the causes and policy implications of carbon lock-in by reviewing existing research on behavioural norms and the weight of long infrastructure lifetimes. They emphasise that it is "difficult to identify a single starting point for – or single cause of – lock-in". They explain that lock-ins are embedded in "technological, economic, scientific, political, social, institutional, and environmental spheres" that co-evolve and eventually favour lock-in (Seto et al., 2016, p. 434).

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This article discusses climate delay and carbon lock-ins at the local level of governance, as climate delay research has neglected, so far, this level of governance. Moreover, it reflects on the possibility of overcoming climate-delay discourses by asking whether certain types of local governance frameworks may help overcome climate delay (or not) and the lock-ins that they illustrate. It suggests that municipalities characterised by features of polycentric governance, by fostering local climate initiatives, experimentation, trust, mutual adjustment, and self-organisation, are likely to help them access site-specific knowledge while getting support from overarching regulatory frameworks such as the Paris Agreement. Such municipalities are therefore expected to be better positioned to overcome lock-ins compared to those operating under a top-down governance system.

2 Case Study: Local Governance for Climate Ambition

2.1 Climate Policies and Local Competencies in Belgium

The Walloon energy policy is a useful context for understanding the role of municipalities in overcoming lock-ins. As part of the European Union (EU), Belgium follows this ambitious coalition in terms of climate commitments. Regarding climate policies, in Wallonia, a climate policy was developed for the period 2008–2020 in line with the 20-20-20 objectives of the EU and mainly based on a sectoral approach. This policy has been updated and reinforced in 2019 and in 2023 to align with EU 2030 climate and energy objectives. It increases greenhouse gas emission reduction objectives in line with the Paris Agreement, introduces the instruments in line with these objectives, provides the setting up of a carbon budget for periods of five years, and establishes a committee of experts.

Moreover, the local level is particularly well-developed in Belgium. Belgium is indeed a State that may be pictured in three layers: the federal level, the regional and community level, and, lastly, the municipal level. The energy competence is split between those three levels. As regards the municipal level, municipalities share the competence, with the regional level, of being in charge of the distribution of system operators (Collard, 2016) and may play an awareness role and promote certain types of renewable energy sources (Callens & Duquesne, 2018). The split of the energy competence does not lead to great transparency and makes energy transition challenges even more complex and difficult (Collard, 2016).

2.2 Municipalities in Wallonia and Governance

Municipalities are the smallest administrative bodies in Belgium (de Becker, 2013), with a directly elected body (the Council) and an executive organ (the College). The Council is composed of local elected representatives, and the College is made of

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one Mayor and several alderpersons, in charge of specific local competencies (de Becker, 2013). As de Becker explains, "there has never existed and still does not exist any enumeration of the competencies of municipalities" (2013, p. 32). Municipalities have a certain autonomy in the way they implement rules from the regional, federal, and EU levels. In short, they find themselves between autonomy and hierarchy (de Becker, 2013).

With regard to climate change, on the autonomy side, municipalities may sign the Covenant of Mayors launched by the European Commission in 2008. At the time, the Commission wanted to acknowledge the role of local authorities in contributing to reducing greenhouse gas emissions. The Covenant now aligns with the 2030 objectives, which aim for a 55% reduction of greenhouse gas emissions. Its implementation is organised by municipalities themselves, who "commit to submitting, within two years following the date of the local council decision, a Sustainable Energy and Climate Action Plan (SECAP) outlining the key actions they plan to undertake" (Covenant of Mayors, 2019). Part of the Covenant of Mayors' narrative was built on the inclusion of local stakeholders, of which the main targets remain the municipalities.

Another example related to climate policy in Wallonia are Tradable Green Certificates (TGC) that were put in place in 2003 to facilitate the deployment of renewable energy sources (RES) that aim at reaching climate objectives. However, it did not always help renewable energy actors to navigate a blurry wind turbine development legal framework and resist wind turbine opposition movements. When it comes to building wind turbines, municipalities have the right to express an opinion on a project concerning their territory. The decision, however, remains in the hands of the Wallonia Region.

In addition to this renewable energy context, Wallonia appears as a valuable case to conduct research on local governance and climate delay. On the one hand, it is marked by institutional and policy homogeneity as all municipalities operate under the same regional, federal, and EU rules. On the other hand, local competencies and specificities allow for variation across municipalities. A balance between homogeneity and heterogeneity creates a good research environment to study local governance through climate delay discourses and polycentricity. Moreover, a plethora of actors can be at play as participative mechanisms have been enshrined in Walloon law since 2003. Hence, mechanisms such as "consultative council" (councils gathering elected members and citizens), "popular consultation", "participative budget", and "right of interpellation" have a legal basis in Walloon law (UVCW, 2018).

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3 Research Methods

3.1 Selection of Cases and Variable-Based Clustering

We use the presence or absence of a 100% citizen-led REC as the criterion to characterise polycentricity in energy governance at the local level. As put by Brummer (2018, p. 194), "most researchers would agree that the [REC] concept includes two main aspects: (1) An energy system that is more sustainable in its technological aspects [and] (2) an energy system that allows more participation and democratic control". In Wallonia, those RECs take the form of cooperatives. According to the International Cooperative Alliance (2025), a cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise". Such RECs appeared after 2008 in Wallonia, giving enough temporal depth to our study. Nine municipalities where RECs were present and nine municipalities where a REC project was debated but failed to emerge were selected, as those represent the total number of municipalities with or without a REC (but with a REC project discussed) between 2008 and 2023. The municipalities where RECs emerged indicate that local stakeholders could find themselves a place in local energy governance, where they could experiment and find trust. The presence of a REC in a municipality unveils features of polycentric governance, acting as an indicator of this type of governance. Municipalities where RECs failed to emerge indicate municipalities where obstacles to non-state actors exist. This suggests, by extension, a top-down governance system, where power remains centralised. The impact of the type of governance of a municipality and the (non)emergence of RECs has been established in recent literature (Mey & Dissendorf, 2018; Schmid et al., 2019).

Selecting RECs as a proxy for polycentricity enables us to study municipalities as they engage with the energy transition that is part of the radical changes needed to overcome lock-ins. The year of the emergence of RECs (2008) in Wallonia also corresponds to when the European Commission launched the Covenant of Mayors.

Table 2 presents the categorisation of the selected municipalities, showing that the two groups (emergence or non-emergence of a REC) form coherent clusters. These clusters were built using cluster analysis (Pastor, 2010), which is also used in Qualitative Comparative Analysis (QCA) (See Ragin, 1987 or, more recently, Schneider & Wageman, 2012). The first step of QCA enables working on logical minimalisation and on the building of a data matrix (Schneider & Wagemann, 2012). We follow this logic in this article; the data matrix is composed of five variables with a score of 1 if the variable is present in the municipality, and 0 in case of absence.

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Table 2: The two clusters of municipalities with and without a REC in Wallonia and their polycentricity score

	REC	Participatory mechanisms	Covenant of Mayors	Transition network	Absence of opposition movement	Polycentricity Configuration score	Mean of configuration score
Arlon	1	0	0	0	1	2	For a positive outcome: 2.44
Clavier	1	0	0	0	0	1	
Ferrières	1	1	0	0	1	3	
Fernelmont	1	1	0	0	1	3	
Gembloux	1	0	0	1	1	3	
Habay	1	1	0	0	0	2	
Ittre	1	1	1	0	1	4	
Libramont	1	0	0	0	0	1	
Waimes	1	1	0	0	1	3	
Durbuy	0	0	0	1	0	1	For a negative outcome: 1.22
Enghien	0	1	1	1	1	4	
Engis	0	1	0	0	0	1	
Havelange	0	0	0	0	0	0	
Nassogne	0	1	0	0	0	1	
Neufchateau	0	0	0	0	1	1	
Rochefort	0	0	0	1	1	2	
Sprimont	0	0	1	0	0	1	
Stavelot	0	1	0	0	0	1	

Source: authors' own elaboration

The presence or absence of a REC constituted the main selection criterion. Nevertheless, to verify its robustness, we analyse complementary variables that also reflect polycentricity at the local level. Variable 2 refers to the presence of institutionalised participative mechanisms. Variable 3 refers to the adoption by the municipality of the Covenant of Mayors. Variable 4 refers to the Transition Network, a network of initiatives inspired by Rob Hopkins' book *The Transition Handbook* (2008) that "aims to mobilise community action and foster public empowerment and engagement

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around climate change" (Seyfang, 2009, p. 2). Variable 4 refers to wind turbine opposition movements. These movements are diverse. Some act through an organised network called "Vent de Raison", which has been active since the early 2000s and counts around 70,000 members that try to influence wind turbine regulation through the writing of technical and legal opinions (Vent de Raison, 2019). Other wind turbine opposition movements may operate spontaneously and independently.

These variables reflect polycentricity in local governance as their presence or absence indicates the space given to experimentation, trust, and self-organisation within such governance (see Table 1). The existence of networks, participatory mechanisms, or support programmes like the Covenant of Mayors may represent places where local actions are discussed. The presence or absence of wind turbine opposition movements shows that polycentric governance does not solely lead to a greater inclusion of non-state actors that favour overcoming lock-ins; it may also create space for actors that look to maintain them. In summary, they lead to a configuration score (Table 2) that serves as an indicator of the likelihood of the local institutional and political environment to include different local stakeholders. The higher the configuration score, the better it reflects a polycentric governance system.

The clusters of cases are defined by their matrix of scores from the chosen variables and therefore by their configuration (Haynes, 2014). Based on Table 3, a significant distinction is confirmed between the two clusters of municipalities: a score difference appears when comparing the municipalities with a REC and those without a REC. The clustering technique is helpful as "representations that are based on the use of contrasts to elaborate different types are strongly grounded in evidence because the investigator identifies clusters of differences" (Ragin & Amoroso, 2011, pp. 190–191). As they further explain: "By a range of different cases, investigators show that the differences separating cases into [models] are linked together empirically" (2011, p. 191). These models share similarities (Pastor, 2010). The clusters of cases identified in Table 2 constitute empirical evidence of the robustness of building two models of municipalities according to their hosting of RECs: one with a polycentric governance system (with RECs) and one with a top-down governance system (without RECs).

The first governance system represents a system where local majorities welcome and help local stakeholders to emerge and develop, favouring trust locally (see Table 1). Local majorities design and implement local climate and energy policies through institutionalised participatory mechanisms or the Covenant of Mayor's pilot committees. Those local majorities also develop fruitful working relationships with Local Action Groups[3], which leads to the creation of a local network of climate and

3 Local Action Groups come from the LEADER approach of the Common Agricultural Policy of the EU.

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energy stakeholders. As put by Benulic and colleagues, these municipalities develop "nexus qualities" that are important as navigating sustainable transformations entails transgressive rather than silo thinking and front-running leadership (Benulic et al., 2021).

In the second governance system, municipalities are marked by established practices and inertia. Municipalities with this system find it challenging to adapt from a governmental to a governance model, due to a deeply ingrained commitment to historical norms and ways of functioning as a top-down government. In those municipalities, local majorities are centred exclusively on the agenda of the local elected representatives and on the institutional capacity of the municipal administration's services. They tend to disregard participatory mechanisms and do not steer the building of a local network of climate and energy actors.

Table 2 shows that the two clusters of cases in which these two governance systems may be found are robust but need to be used carefully. While data simplification is useful for analytical clarity, empirical findings from the cluster of cases also uncover exceptions. For instance, some cases with a REC have a low score, and the other way around. These cases are interesting as they bring nuances to the analysis and create variation between the two suggested systems. They confirm that each local situation is specific, hence the usefulness of qualitative data analysis through detailed interviews.

3.2 A Qualitative Study of 18 Walloon Municipalities

The study covers eighteen rural municipalities. The decision to work on rural municipalities only ensures the comparability of cases. More precisely, this research builds on 66 semi-structured interviews, lasting 25 minutes to 2 hours each, with actors from these municipalities involved in local governance related to the energy transition such as local elected representatives, members of RECs, employees of the municipal administration, members of the supra-municipal organisation that fosters local climate actions (Local Action Groups), members of the Transition Network, and members of wind turbines opposition movement. Five additional interviews were conducted by email through questionnaires. Those interviews were conducted between 2019 and 2023 (including during the pandemic period). Table 3 provides the categorisation of interviewees according to their position in local energy governance.

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Table 3 Categorisation of interviewees according to their role in local energy governance

Position in local energy governance	Total: 66
Alderwoman/man in charge of energy (amongst other competencies)	13
Municipal employee working on energy part-time or full-time	10
Member of a REC	10
Member of a wind turbine opposition movement	8
Member of a local section of the Transition Network	5
Member of a Local Action Group	4
Member of a citizen-energy association	4
Covenant of Mayor's municipal employee	4
Mayor	3
Local elected representative with energy knowledge	1
Alderwoman/man with energy knowledge	1
Wind turbine operator	1
Other	2

Source: authors' own elaboration

Interviews were audio-recorded, transcribed, and coded using the NVivo software. Semi-structured interviews were appropriate for studying climate delay discourses because they combined consistency with flexibility, allowing unexpected themes to emerge. This was important since climate delay discourses often appeared indirectly, through broader reflections on governance challenges. The interviews were structured to include an open introduction and two broad concluding questions, which encouraged participants to speak analytically about local energy governance. These moments consistently produced content relevant to climate delay.

Codes were first and foremost derived from words directly used by actors to ensure the analysis was empirically grounded. When categories were not spontaneously quoted by interviewees, concepts from the literature were used (Lejeune, 2015; see Section 1). Interviews were therefore analysed through an abductive approach (Timmermans & Tavory, 2012), which allows using both empirical findings and concepts from the literature. As Coman et al. (2016, p. 26) explain: Abductive analysis supposes "permanent back and forth between theories and observation from empirical reality. Theoretical expectations are constantly revised from empirical

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observation. This observation is permanently being refined with theories". In this perspective, the analysis does not test causal or correlational relationships in a statistical sense. Rather, it aims to build a theoretically-informed explanation of the processes observed, identifying plausible mechanisms that account for the dynamics emerging from the fieldwork.

Codes enable going beyond a descriptive stance to reach an analytical ambition (Lejeune, 2015). They pinpoint frequent arguments rather than interviewees' opinions. Codes may be articulated to create the analysis. Articulation consists of identifying codes "that are bound, that vary together and depend on one another" across cases (Lejeune, 2015, p. 97). The analysis of the interviews was then refined with precise quotations from specific interviews to better describe the "situation" of the study.

In this research project, the "situation" to be described concerns climate delay discourses at the level of municipalities. Out of the 66 semi-structured interviews, nearly all contained discourses on climate delay; only 8 interviewees did not express such discourses. Two explained that delay had more to do with the regional or national level rather than the local level, while all the others detailed climate delay at the local level. This demonstrates the extent to which climate delay is a central contextual element of local energy governance that deserves to be analysed in detail. Nevertheless, further research would be needed to examine more precisely the frequency, relative significance, and power of these discourses in local energy governance through quantitative approaches.

4 Results

This article questions whether governance structures at the local level may overcome lock-in dynamics. We hypothesise that lock-in dynamics, which are illustrated by climate delay discourses, may be overcome in municipalities leaning towards polycentric governance but not by those embedded in a top-down governance system. Results address the hypothesis in two steps. First, we offer a detailed categorisation of climate delay discourses at the local level, on the basis of all our interviews, as such empirical analysis is missing from the literature. Second, we analyse how polycentric and top-down governance systems address these lock-in dynamics, on the basis of our interviews with both groups of municipalities.

4.1 Categorising local climate delay

We consider how interviewees define the causes of climate delay to understand where they put the burden of climate inaction. By doing so, we can identify seven different types of climate delay discourses that we summarise into a new typology (Figure 1). The fact that these categories were identified through the discourses of a

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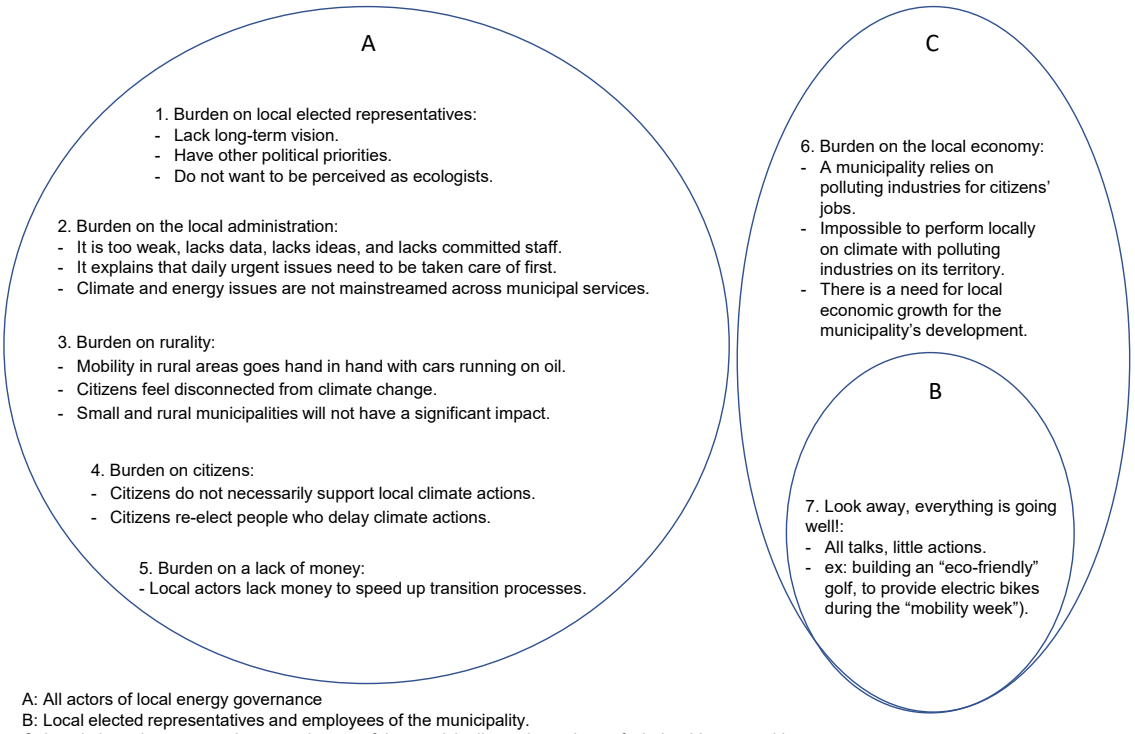
variety of actors (see Table 3) helps ensure the robustness of the typology. Indeed, no type of climate delay discourse could be linked to a unique type of local actor, and five were mentioned across all types of actors. Each type is constituted around one or more codes. These codes refer to arguments used within each of the seven climate delay discourses.



A: All actors of local energy governance
B: Local elected representatives and employees of the municipality.
C: Local elected representatives, employees of the municipality and members of wind turbine opposition movements.

Figure 1 Local climate delay discourses in municipalities of Wallonia.

Source: our own elaboration

Reading support: This figure represents the seven types of discourses found in local energy governance in Wallonia that justify climate delay. Five of those discourses were expressed by all actors of local energy governance (A), and two by only a selection of actors of such governance (B and C).

Some types of climate delay relate more directly to the municipality as a local institution compared to others.

Type 7, "Look away, everything is going well", indicates that we should not worry about climate delay because everything is under control (Circle B in Figure 1). It is

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expressed by local elected representatives and municipality employees. This type appears similar to Lamb et al.'s (2020) overarching strategy of climate delay, which they name "Disruptive change is not necessary: push for non-transformative solutions" and translate at the global level as "All talks, little actions". According to this type, local elected representatives and municipality employees communicate about non-transformative actions that they take, such as the building of an eco-friendly golf course or the provision of a few electric bikes during a yearly mobility week. Climate delay is not justified as concrete actions are being taken.

Type 2, "Burden on the local administration" (Circle A in Figure 1) points directly towards the weaknesses of the municipality's administration when it comes to addressing climate and energy issues. Interestingly, employees from local administration usually gladly and reflexively recognise these weaknesses, as all other actors of local energy governance.

Type 6, "Burden on the local economy" (Circle C in Figure 1) has been expressed by actors linked to the municipality and members of wind turbine opposition movements. It is followed by local conservative actors who tend to disregard climate actions and favour economic development.

Type 1, "Burden on local elected representatives" (Circle A in Figure 1) points to the responsibility of local decision-makers. It was also expressed by local representatives themselves, who were reflexive about the role played by their colleagues from the opposition/majority or other political parties. Delays in climate action are related to a lack a long-term vision, the take-over of other political priorities, or to the fear of being perceived as ecologists if they engage in the climate and energy agenda.

The three remaining types of climate delay discourses reflect a wider perspective from local energy governance. Their connection with the municipality as a local institution remains present but is less direct:

Type 3, "Burden on rurality" (Circle A in Figure 1) pictures the local level as a specific territory that is too small to matter when developing climate actions. Interviewees emphasised that urban areas or big countries like China or India have to go first.

Type 4, "Burden on citizens" (Circle A in Figure 1) indicates that citizens are aware of climate change but do not necessarily support local climate actions and resist transformation processes. Another argument is that despite efforts to raise awareness about climate change, citizens keep voting for local elected representatives that intentionally and publicly delay climate actions.

Type 5, "Burden on a lack of money" (Circle A in Figure 1), was expressed by all actors. Money appears as an obstacle to climate change actions, both for projects led by the municipality and for projects led by non-state local actors like RECs or Transition Town local sections. Regarding projects led by the municipality, the presence of Type 5 discourses somehow shows a lack of political willingness as subsidies such

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as POLLEC (a local programme for Energy and Climate) exist, in addition to a municipal budget that is arguably the result of political choices. However, interviewees also explained that rural municipalities of Wallonia function with a small budget that is not always able to integrate the building of significant transformative climate and energy projects.

Figure 1 shows that climate delay discourses are diverse. Some point towards a lack of will from precise actors (Types 1, 4, and 7), while others point towards structural obstacles (Types 2, 3, 5, and 6). This difference is key as it means that for some, climate delay discourses are linked to a direct intention. In contrast, the intentionality in some other discourses is less obvious. For example, when certain locally elected representatives were not inclined to support climate initiatives as they prioritised other local concerns, the intention to delay is evident. On the contrary, in discourses highlighting car dependence in rural areas, the intentionality of climate delay is less direct, as people point to the lack of viable alternatives, such as public transport. In that case, climate delay is not their intention; it is the (infra)structures that explain it. As seen in the literature review, a focus on intentionality is found at the national level in the USA, where conservatives and oil and gas companies have long delayed climate change actions (Brulle, 2020). At the local level, in Wallonia, it is interesting to note that delay may not always be linked to apparent intentionality.

Such unintentional discourses of climate delay connect with the concept of behavioural lock-in, which refers to individual behaviours and social structural behaviours. Individual behaviour lock-ins are visible when "climate change is largely caused by unsustainable patterns in human behaviours, such as where we live, the size of homes we prefer, what we buy,and how we travel" (Seto et al., 2016, p. 438). Social structural behaviours underline the importance of socially shared practices such as "routines and norms that coevolve with the technologies, infrastructures, social networks, markets, policies and cultural norms in place" (Seto et al., 2016, p. 440). Some actors' habits, the set of norms that they share, or the infrastructures in which they are embedded may result in unintended, or at least unplanned, forms of climate delay.

Categorising climate delay discourses shows that the municipality as a local institution may be identified as a source of delay by actors of local energy governance. Hence, climate delay would be related to weakly prepared municipalities as local institutions for tackling climate and energy issues. This is an important finding as existing literature rather explains climate delay, and denialism, by referring to the important roles played by post-truth politics, populism, and (far) right-wing movements (see above). This result offers room to explore how polycentric and top-down governance systems respond to the context of climate delay and related lock-in dynamics, as developed below.

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4.2 Polycentric and top-down governance systems and lock-in dynamics

The categories of climate delay defined in Figure 1 are present in both governance systems. This suggests that no matter how polycentric local energy governance is, discourses of climate delay are present. However, the analysis shows that each local governance system favours an institutional and political environment that is more or less favourable to lock-in dynamics.

In both governance systems, municipalities, as local institutions, are initially weakly equipped to tackle energy and climate issues, in the sense that the frequency of their actions and transformative potential appears as limited over the period 2008–2015. Table 4 (in appendix) shows the amount of full-time employment dedicated to these issues in 2015 in 11 municipalities out of 18. Altogether, these 18 municipalities employed 5.5 people full-time in these areas. Five years later, they altogether employed 14.4 people full-time. The situation slowly improved. In 2015, no municipality had more than 1 person working full-time on these issues. In 2020, two municipalities had 3 people working full-time on these issues. There are no clear patterns between polycentric and top-down municipalities.

When interviewed, these municipal employees explained how hard it is to address all climate and energy issues with such limited institutional capacities. Moreover, the work associated to energy and climate issues is rarely clear-cut: It is often linked to broader sustainability issues (Interview 11 with energy advisor, 2021) such as energy and climate issues (which includes taking care of wind turbine projects and public buildings' renovation) but also waste management or biodiversity conservation. This adds further nuance to what a full-time position is able to do. As explained by a Local Action Group (from the LEADER approach of the European Commission) member, municipalities not only struggle to finance more employees to work on these issues, they also struggle to find people who have the know-how to hold these positions. The lack of communication with other municipal services, such as those of urbanism or public work, is an additional problem: Municipal services working in silos do not ease the work of employees in charge of climate and energy issues.

These institutional weaknesses have created a political environment favourable to lock-ins. According to Seto et al. (2016, p. 433), "institutional lock-in arises … from conscious efforts by powerful economic, social and political actors". Hence, the concept helps to emphasise that Walloon local institutions all have lock-in dynamics. First, actors of local governance justify delay by underlining the weaknesses of their local institutions. In parallel, the previous section highlighted the importance of behavioural lock-in. According to Seto et al. (2016, p. 433), institutional lock-in relates to "intended features of institutional design" while behavioural lock-in is rather an "unintended by-product of systemic forces". Climate delay discourses have appeared to be underpinned by all actors of local energy governance, which illustrate a

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materialisation of a behavioural lock-in. Both lock-in mechanisms reinforce one another (Klitkou et al., 2015). The question is how polycentric and top-down governance systems react to these lock-in dynamics.

In municipalities with a top-down governance system, local climate stakeholders have the most difficulty escaping lock-in dynamics. The presence of conservative decision-makers in these municipalities is one explanation. Together with wind turbine opposition movements, they may oppose wind turbine projects and share a narrative that puts in doubt the potential of renewable energy sources. Participatory mechanisms and the Covenant of Mayors are disregarded, impeding the local majority from developing a stronger institutional capacity for climate and energy actions. Political power is concentrated in the local majority, which sticks to traditional sources of expertise, avoids alternative sources of such expertise, and believes in institutional verticality, as explained by one interviewee: "I'm telling you, the principle of the municipality, it's a principle that ... everything must come from the municipality and nothing from the citizen. Automatically, I sincerely think that especially now, in this context, it doesn't motivate people very much [to build climate action]" (Interview with an energy advisor in Nassogne, 2021).

By doing so, local authorities cut themselves off from external local energy expertise linked to RECs or Transition Town local sections. Consequently, already weakly developed local institutional capacities are left to rely on themselves. In this governance system, a right-wing local majority appeared more frequently than in the other model, and local elected representatives were more likely to use justification for climate delay for electoral reasons.

When asked about the evolution of the municipality's position towards climate and energy issues between 2008 and 2021, a local elected representative explained: "I would like to understand how it [the municipality] fell asleep. They do not go further than the legal minimum. I don't know ... . I would say, it is the governance of the municipality that fell asleep on what had to be done. It does what is legally obligatory but takes no initiative. In short, they're a good manager but not a good visionary leader" (Interview with a REC member in Havelange, 2021).

For polycentric governance municipalities, interviews highlight several elements that facilitate overcoming lock-in dynamics. Local climate stakeholders such as RECs explain how important it is to have good access to the municipality. More precisely, they emphasised the importance of being received favourably by the local majority, receiving assistance, or collaborating with the municipality's services in advancing renewable energy initiatives. They added that having local majorities that advocate for further climate and energy actions, namely by developing energy competence at the local level, also facilitates their emergence. Participatory mechanisms that are well-developed, in the sense that a few of these mechanisms are present and include energy matters, facilitate cooperation and trust between actors, as explained by

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another interviewee: "[The REC project] really came out of the participatory workshops that brought together citizens and local authorities. It's a mixed public/private reflection. That's when citizens really decided to get together to create this cooperative because they also felt that there was municipal support" (Interview energy advisor in Fernelmont, 2021).

The interviewees pinpoint several features of polycentric governance that favour overcoming lock-in dynamics. First, it favours a political environment that makes it possible for local climate stakeholders to realise local action and experimentation through various projects such as the building of wind turbines or small hydropower plants, or the installation of photovoltaic panels. Second, it favours trust by building space where all local climate stakeholders meet and exchange in an inclusive and deliberative manner. Such a space may be concretised by the setting up of a participatory mechanism. Third, it favours intelligence sharing between local climate stakeholders, for example about site-specific knowledge. Such knowledge is vital not only for local renewable energy projects that are influenced by natural conditions such as topography, meteorological conditions, and population density (Van de Graaf & Sovacool, 2020), but also by social conditions such as local acceptance or social valorisation of local places.

All these dimensions are summarised in the following quotation from a local elected representative from a polycentric municipality: "So we try to work with companies from our territory or those who want to settle here, to improve the environment … . So clearly, the company that wanted to install wind turbines here, we wanted to participate to the discussion with them in order to see which kind of cooperation we could build together. In particular, there was a municipal school nearby and we wanted to extend our PV panels … because that is something they propose too … . It is about having true cooperative relationships with companies and, even better, with cooperatives … , because there are a few cooperative members that are [from this municipality]. When we come together, the administration, the companies, the cooperatives, around the table, be it the political power or the citizen power, we can reach real deals to allow the transition to take place" (Interview with a local elected representative in Engis, 2021).

Mutual adjustment is one feature that has not been observed during the fieldwork. No mutual adjustment was observed between the municipalities leaning towards polycentric governance. They did not constitute a translocal network able to share best practices and ideas. Mutual adjustment enables actors to engage in learning processes, by participating in workshops organised at the regional, national, or EU levels; by inviting colleagues from other municipalities to share their best practices; or by formulating questions to the right agencies (the Covenant of Mayors, for instance). Such practices were not observed while doing fieldwork. It could be linked to the weak institutional capacities of rural municipalities and the workload of the few employees in place.

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Ultimately, the two governance systems address the lock-in dynamics described above differently. On the one hand, municipalities leaning towards polycentric governance show that lock-in dynamics may be overcome. In these municipalities, local climate stakeholders may reinforce local institutional capacity with both site-specific knowledge and energy expertise. These municipalities find themselves in a better position to escape lock-in dynamics and create a fertile ground for experimentation. On the other hand, municipalities with a top-down governance system remain stuck in lock-in dynamics.

5 Conclusion and Discussion

In this article, we wondered whether local polycentric or top-down governance had different effects on maintaining or overcoming lock-in dynamics. We used the cases of 18 municipalities in Wallonia to test the hypothesis according to which polycentricity enables municipalities to overcome lock-in dynamics.

First, we articulated the literature on polycentric governance and on climate delay to define different governance systems and their potential (in)capacities for overcoming lock-ins. We demonstrate the relevance of using those two concepts together, as looking at climate delay discourses is helpful to shed light on lock-in dynamics. Beyond the local cases, this approach reflects a broader trend in the literature: moving from a focus on institutional design toward integrating governance analysis with discourse analysis. Our research illustrates that lock-in is not only about institutions, technologies, or infrastructures, but is also discursive and behavioural – thereby contributing to wider debates on how "delay" and "lock-in" are connected across scales.

We then identified two governance systems in municipalities of Wallonia: polycentric and top-down. Across both, we observed climate delay discourses, which are shared by a wide range of local actors. Importantly, these discourses are not uniform in their degree of intentionality. Some reflect deliberate obstruction, while others emerge unintentionally from entrenched norms, habits, or weak institutions. Highlighting this distinction nuances the concept of climate delay, showing that barriers to action can be systemic and cultural rather than purely political. In this way, our analysis contributes to a broader trend in climate governance literature toward recognising and categorising both intentional and unintentional forms of delay, expanding a typology that can be mobilised across regions and governance levels.

In the face of these lock-in dynamics, we demonstrated how municipalities with a polycentric or top-down governance system react differently. Municipalities with a polycentric governance system are better equipped to overcome lock-in dynamics. Indeed, by opening local energy governance to external forms of expertise, by cooperating with local stakeholders, and by sharing local knowledge and energy-related

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know-how, municipalities with a polycentric governance system develop a political environment in which local climate stakeholders emerge more easily – and, consequently, where lock-in dynamics may be overcome. Yet, polycentric governance does not eliminate climate delay discourses. Rather, it provides institutional and political environments that make it possible for local actors and knowledge to counteract them. This finding nuances the often-celebrated idea of polycentric governance as an inherently superior model. Instead, our case suggests that its value lies in enabling context-specific dynamics and offering multiple entry points for action. In this sense, polycentric governance is not a silver bullet, but a facilitator of diverse, place-based solutions.

On the contrary, municipalities with a top-down governance system remain oriented towards the agenda of the local elected representatives of the local majority. They do not open themselves to the local energy expertise of external local stakeholders and disregard participatory mechanisms. Consequently, they do not benefit from their local energy expertise and keep relying on weakly developed local institutional capacities. Political power remains concentrated and vertical. In this governance system, a right-wing local majority appeared more frequently than in the other model, and local elected representatives were more likely to use justification for climate delay for electoral reasons.

Finally, this article highlights a crucial yet often overlooked point: The type of governance system in place at the local level may overcome or maintain lock-in dynamics. While the literature on lock-in dynamics has traditionally focused on higher levels of institutions, infrastructures, and technologies, this article shows that lock-ins are also maintained or overcome at lower levels of governance. This study highlights that future research on climate action should look beyond policies and focus on how governance systems shape local trajectories. Our findings show that municipal governance structures, and the lock-ins they eventually maintain, are central to understanding the possibilities and limits of local climate action. These findings feed into broader debates on the determinants of local climate trajectories, aligning with recent research that identifies how local conditions steer transformation pathways (Haupt et al., 2023). In this light, polycentric governance is not just a normative ideal but a governance system that helps explain how local transformations occur. Yet, it is not a *one-size-fits-all* solution: Polycentric arrangements differ across municipalities, reflecting local specificities, actor relations, and institutional contexts. Recognising this diversity opens a comparative research agenda that could extend beyond Europe to cities and municipalities in the Global South, where governance fragmentation and resource constraints are equally decisive. At the same time, this diversity of local context underscores the need to more carefully unpack how polycentric governance is articulated in practice (Soto-Oñate et al., 2026), particularly the linkages between global and local levels, as well as the

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interactions among polycentric municipalities themselves and between polycentric and top-down municipalities.

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Appendix

Table 4 Municipal employees in charge of climate and energy in full-time equivalent in municipalities of Wallonia in 2015 and 2020.

Municipality	Polycentricity	Full-time equivalent	
		2015	2020
Arlon	Yes	NA	NA
Clavier	Yes	0,5	1
Fernelmont	Yes	0,9	0,9
Ferrières	Yes	0,3	0,3
Gembloux	Yes	1	3
Habay	Yes	NA	NA
Ittre	Yes	0	0,5
Libramont	Yes	0	0
Waimes	Yes	0	1
Total polycentricity		**2,7**	**6,7**
Durbuy	No	0	0
Enghien	No	0,3	0,3
Engis	No	NA	NA
Havelange	No	NA	0,2
Nassogne	No	1	1
Neufchateau	No	0	1
Rochefort	No	0,2	0,7
Stavelot	No	0,3	1,5
Sprimont	No	1	3
Total Top-down		**2,8**	**7,7**
Total		**5,5**	**14,4**

Source: authors' own elaboration

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