

## **Rescaling Sustainability Governance : Local Authorities as Pivotal Actors in Multi-Level Climate, Energy and SDG Governance**

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## Abstract

Local and regional authorities have moved to the centre of efforts to govern sustainability transitions, yet the question of how governing capacity is distributed and rescaled across levels remains under-theorised. This state-of-the-art review analyses a corpus of forty peer-reviewed articles published between 2021 and 2023 to examine how territorial governance is being rescaled around climate adaptation, energy transition and the Sustainable Development Goals (SDGs). Reading the literature through a scalar lens, the review finds that sustainability governance is converging on a multi-level architecture in which cities and municipalities act as pivotal nodes rather than autonomous units. Three patterns emerge: a horizontal integration imperative that pushes against sectoral fragmentation; an inter-municipal cooperation turn embodied in joint climate and energy plans; and a persistent capacity gap that constrains the local delivery of supranational agendas. The review also identifies recurring tensions—between vertical coherence and local autonomy, and between collaborative ambition and implementation deficits—and concludes that the field would benefit from stronger impact evaluation and more systematic North–South comparison.

**Keywords:** territorial governance; sustainability transitions; multi-level governance; rescaling; climate adaptation; energy transition; Sustainable Development Goals; local authorities.

## Introduction

Over the past two decades, the governance of subnational public action has been reshaped by a conceptual shift from government—understood as the hierarchical, vertical exercise of public authority—towards governance, a more horizontal mode of coordination that brings together public, private and civil-society actors. As this shift has become territorialised, local and regional authorities have emerged as central sites for tackling complex, cross-cutting challenges. Nowhere is this clearer than in the field of sustainability, where climate change, the energy transition and the Sustainable Development Goals (SDGs) impose objectives that are simultaneously global in scope and local in implementation.

Governing a territory for sustainability is no longer a matter of administrative control alone; it involves managing relationships between tiers of government and across sectors while addressing intertwined socio-economic and environmental pressures. This complexity is compounded by structural constraints—financial limitations, sectoral fragmentation of competences and the need for integrated approaches—that the recent period has only intensified (Ferry et al., 2022; Bianchi & Richiedei, 2023). The result is a pervasive rescaling of authority: tasks once concentrated at the national level are redistributed upward to supranational bodies and downward to municipalities, reconfiguring where and how sustainability is actually governed.

Despite a rapidly growing literature, the scalar dimension of sustainability governance remains insufficiently theorised. Studies of climate adaptation, energy planning and SDG localisation tend to develop in parallel, with little cross-fertilisation, and the conditions under which local authorities can effectively assume their new pivotal role are rarely specified. This review addresses that gap by asking: *how is territorial sustainability governance being rescaled across levels in the recent literature, and what conditions enable—or constrain—local authorities in their pivotal role?* Three objectives follow: to map how scales and levels are articulated in recent sustainability-governance research; to compare the instruments through which rescaling is operationalised across contexts; and to identify the convergences, tensions and gaps that should orient future work.

## 1 - Conceptual Background

The analysis draws on three interrelated bodies of theory. Multi-level governance (MLG) holds that political authority and decision-making are distributed across multiple tiers—supranational, national, regional and local—articulated through both vertical relations between levels and horizontal relations among same-level actors. Applied to sustainability, MLG reframes municipal governments not as self-contained units but as nodes entangled with actors and institutions operating at other scales

(Hickmann, 2021), with subsidiarity, proportionality and solidarity supplying the normative criteria for allocating competences (Pukis et al., 2023).

The scalar politics perspective complements MLG by treating scale not as a fixed container but as a socially produced and contested outcome. Recent work identifies multiple, intersecting scales of governance—spatial, jurisdictional, sectoral and temporal—whose misalignment is itself a barrier to sustainability transformations (Allen et al., 2023). Finally, the territorialisation of public action perspective examines how plans, contracts and collective projects are constructed close to local specificities through negotiation and mediation (Knickel et al., 2021; Pachoud, 2021; Torre, 2023). Together, these frameworks support a reading of sustainability governance as an ongoing process of rescaling rather than a stable distribution of competences.

## **2- Materials and Methods**

This review is based on a corpus of forty peer-reviewed articles published between 2021 and 2023 (seven in 2021, seventeen in 2022 and sixteen in 2023). The editorial distribution is concentrated, with Sustainability accounting for twelve articles and Territory, Politics, Governance for six, the remainder spanning a wide range of journals in political science, geography, management and environmental studies. Each article was coded along a standardised grid of thirty-one variables covering bibliographic metadata, analytical content (objectives, methods, findings, conclusions, contributions, limitations and research gaps) and methodological descriptors (dataset, sample, dependent and independent variables).

Inclusion criteria, inferred from the observable properties of the corpus, comprise a thematic focus on territorial, local or regional governance; publication in a peer-reviewed venue; a 2021–2023 window; and the presence of an identifiable instrument or mechanism of subnational coordination. For the present review, a scalar coding layer was applied to a sustainability-relevant sub-corpus, classifying each study according to the dominant scale of action (local, inter-municipal, regional, national or supranational) and the direction of rescaling (upward, downward or horizontal). Three limitations qualify the findings: a marked geographical bias towards Europe and the Global North; an over-representation of the sustainability theme induced by the weight of Sustainability; and uneven methodological reporting, with dependent and independent variables specified in only a minority of studies. The corpus therefore combines robust qualitative case studies and document analyses with a smaller number of quantitative designs (e.g., the multi-level regression models of Trein & Maggetti, 2023).

### 3- Results

#### 3-1 Cities and municipalities as pivotal nodes

A first and consistent finding is the repositioning of cities and local governments as pivotal nodes in global sustainability governance. Hickmann (2021) shows that urban governments increasingly engage in policy dialogues with actors across levels, functioning as intermediaries between global agendas and local delivery rather than as isolated jurisdictions. Pukis et al. (2023) corroborate this from the European Green Deal perspective, finding that local governments' competences broadly align with the foundational principles of public governance—sustainability, solidarity, proportionality and subsidiarity—while flagging capacity shortfalls as climate targets intensify. The downward rescaling of sustainability responsibility is thus well established, but it is not matched by an equivalent transfer of resources and capabilities.

#### 3-2 Horizontal integration against sectoral fragmentation

A second pattern concerns the horizontal articulation of scales. Bianchi and Richiedei (2023), analysing regional sustainable-development strategies in Lombardy (Italy), find that sustainability objectives should be prioritised horizontally across sectoral policies, since the holistic nature of sustainability collides with the sectoral fragmentation of administrative competences. Allen et al. (2023) generalise this insight, identifying the misalignment of spatial, jurisdictional, sectoral and temporal scales as a structural obstacle to SDG-oriented transformations. The implication is that vertical coherence between tiers is necessary but insufficient: effective rescaling also requires cross-sectoral integration at each level.

#### 3-3 The inter-municipal cooperation turn

A third pattern is the emergence of inter-municipal cooperation as the privileged instrument of sustainability rescaling. In Italy, joint Sustainable Energy and Climate Action Plans (SECAPs) prove effective in small and medium-sized municipalities by enabling a collaborative approach to climate adaptation that individual municipalities could not sustain alone (D'Onofrio et al., 2023). The pioneering 'La Brianza Cambia Clima' climate-transition strategy similarly demonstrates how structured, inter-municipal transition processes can be designed and delivered (Litt et al., 2022). In the energy domain, multi-level analysis in Austria reveals strong alignment of energy objectives across tiers, indicating that coordinated action by local, regional and national authorities is achievable when scales are deliberately articulated (Dobracec et al., 2021). Collaborative contractual tools, such as the environmental contract for marine protected areas, extend the same logic to the interface between local responses and EU-level protection policies (Muccitelli et al., 2023).

### 3-4 The capacity gap and its contextual variation

A fourth finding qualifies the optimism of the preceding patterns. The literature repeatedly identifies a capacity gap between the responsibilities devolved to local authorities and the resources, skills and instruments available to them—evident in the development of comprehensive heat strategies to support net zero (Wade et al., 2022) and in the structural constraints of peripheral or specialised territories. Geographically isolated and tourism-dependent settings, such as small islands managing solid waste, exemplify how context magnifies this gap and produces governance rigidity (Wang et al., 2021). The capacity to govern sustainability is therefore unevenly rescaled: downward transfer of tasks does not guarantee a commensurate transfer of capability.

**Table 1: Typology of Rescaling Dynamics and Instruments in Sustainability Governance**

Instrument / focus	Dominant scale	Rescaling direction	Illustrative study
Regional sustainability strategy	Regional	Horizontal integration	Bianchi & Richiedei (2023)
Cities in global SDG governance	Local / global	Upward + downward	Hickmann (2021)
Joint SECAP climate plans	Inter-municipal	Horizontal pooling	D'Onofrio et al. (2023)
Multi-level energy planning	Local–regional–national	Vertical alignment	Dobravec et al. (2021)
Green Deal competences	Local	Downward	Pukis et al. (2023)
Net-zero / heat strategies	Local	Downward (capacity gap)	Wade et al. (2022)
Cross-scale SDG transformation	Multiple	Scale alignment	Allen et al. (2023)

*Source: authors*

## 4- Discussion

Read together, these findings suggest that sustainability governance is converging on a multi-level architecture in which local authorities act as pivotal nodes, but that this convergence is incomplete and uneven. Rescaling operates simultaneously in three directions—upward to supranational agendas, downward to municipalities and horizontally across sectors and neighbouring jurisdictions—and the

effectiveness of governance depends on how well these movements are aligned. Where alignment is deliberately engineered, as in Austrian energy planning (Dobravec et al., 2021) or Italian inter-municipal climate plans (D'Onofrio et al., 2023; Litt et al., 2022), outcomes are encouraging; where it is left implicit, sectoral fragmentation and capacity gaps undermine delivery (Bianchi & Richiedei, 2023; Wade et al., 2022).

Two tensions structure the field. The first opposes vertical coherence to local autonomy: stronger alignment with supranational agendas can erode the discretion that allows municipalities to tailor responses to local specificities. The second opposes collaborative ambition to implementation capacity: the inter-municipal and contractual instruments that dominate the literature presuppose resources, skills and trust that are themselves unevenly distributed. These tensions caution against treating the pivotal role of local authorities as automatic; it is a contingent achievement that depends on the deliberate articulation of scales.

Three limitations of the current literature should orient future research. First, a North–South comparative deficit: the concentration on European and Global North settings prevents assessment of whether rescaled sustainability governance travels to lower-capacity or contested contexts. Second, an impact-evaluation deficit: the predominance of descriptive and qualitative designs leaves the causal effects of rescaling instruments largely unmeasured. Third, conceptual dispersion: 'scale' and 'level' are often used interchangeably, hampering cumulative theory-building. Future work should pursue systematic North–South comparison, mobilise quasi-experimental or multi-level quantitative designs, and clarify the scalar vocabulary so that rescaling can be specified, measured and compared.

## **Conclusion**

This review has examined how recent scholarship rescales the governance of sustainability around climate adaptation, energy transition and the Sustainable Development Goals. Its central contribution is to read a fragmented, theme-by-theme literature through a single scalar lens, showing that local authorities are increasingly positioned as pivotal nodes in a multi-level architecture, while their capacity to assume that role remains conditional. Rather than describing a stable allocation of competences, the corpus documents an ongoing, multi-directional process of rescaling whose outcomes hinge on the deliberate articulation of scales.

Four substantive findings underpin this conclusion. First, the repositioning of cities and municipalities as intermediaries between global agendas and local delivery is now firmly established: urban governments engage in cross-level policy dialogues rather than acting as isolated jurisdictions (Hickmann, 2021), and their competences broadly align with the foundational principles of European public governance (Pukis et al., 2023). Second, effective rescaling requires not only vertical coherence

but also horizontal integration across sectors, since the holistic nature of sustainability collides with the sectoral fragmentation of administrative competences (Bianchi & Richiedei, 2023) and with the misalignment of spatial, jurisdictional, sectoral and temporal scales (Allen et al., 2023). Third, inter-municipal cooperation has become the privileged instrument of this rescaling, as evidenced by joint SECAP plans in small and medium-sized Italian municipalities (D’Onofrio et al., 2023), the pioneering inter-municipal climate-transition strategy of the Brianza area (Litt et al., 2022), the cross-tier alignment of energy objectives in Austria (Dobravec et al., 2021) and collaborative contractual tools at the EU–local interface (Muccitelli et al., 2023). Fourth, and conversely, a persistent capacity gap qualifies this optimism: the downward transfer of responsibility is not matched by a commensurate transfer of resources and skills, whether in the development of net-zero heat strategies (Wade et al., 2022) or in peripheral, resource-constrained settings such as tourism-dependent small islands (Wang et al., 2021).

These findings carry implications for both theory and practice. Theoretically, they suggest that the pivotal role of local authorities should be treated not as an automatic consequence of decentralisation but as a contingent achievement, dependent on how upward, downward and horizontal movements of authority are aligned—and on whether the financialised accountability regimes that increasingly frame local action enable or constrain that alignment (Ferry et al., 2022). For practitioners and policymakers, the evidence indicates that mandating sustainability objectives at the local level without simultaneously building inter-municipal cooperation mechanisms and local capacity is unlikely to deliver results; the instruments that succeed are those that pool resources horizontally and articulate tiers deliberately (Dobravec et al., 2021; D’Onofrio et al., 2023).

Two tensions nonetheless temper any straightforward endorsement of rescaling. The first opposes vertical coherence to local autonomy: tighter alignment with supranational agendas can erode the discretion that allows municipalities to tailor responses to local specificities. The second opposes collaborative ambition to implementation capacity: the inter-municipal and contractual instruments that dominate the literature presuppose resources, skills and trust that are themselves unevenly distributed (Knickel et al., 2021; Wade et al., 2022). Recognising these tensions is essential to avoid overstating what local authorities can accomplish under current conditions.

Finally, the review points to a clear research agenda. The concentration of the corpus on European and Global North settings leaves open whether rescaled sustainability governance travels to lower-capacity or contested contexts, calling for systematic North–South comparison. The predominance of descriptive and qualitative designs leaves the causal effects of rescaling instruments largely unmeasured, with multi-level quantitative approaches such as that of Trein and Maggetti (2023) remaining a notable exception rather than the norm. And the interchangeable use of 'scale' and 'level'

continues to hamper cumulative theory-building, suggesting the need for a clarified scalar vocabulary through which rescaling can be specified, measured and compared. By foregrounding the capacity gap and these methodological deficits, the review aims to support a more cumulative and context-sensitive research agenda on the rescaling of sustainability governance.

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