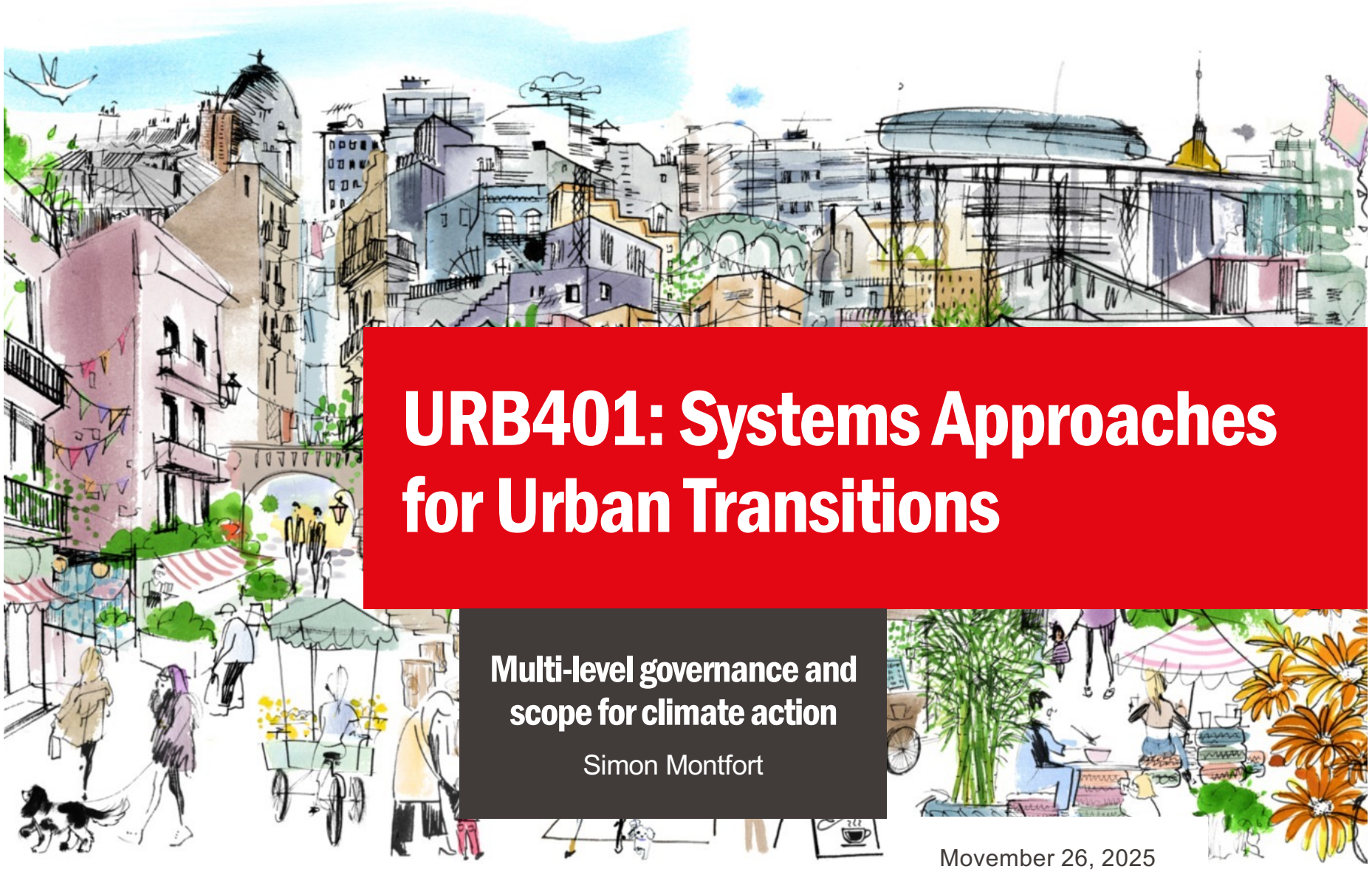

URB401: Systems Approaches for Urban Transitions

Multi-level governance and scope for climate action

Simon Montfort

Movember 26, 2025

Courtesy of UN-Habitat and Global Utmaning

Course syllabus

Lectures 9:00-11:00
GC D0 386

Part	Week	Date	Teacher	Lecture
Part I: Urban transitions from a systems perspective	**1**	Sep 10	Hecher	Introduction to the course **Special guest:** Poetic transitions in the case of a historical architectural and urban design (Darius Karácsony)
	2	Sep 17	Hecher	Systems thinking for sustainable urban transitions
	3	Sep 24	Hecher	**Special guest:** Leverage points in the housing system (Anna Pagani)
	4	Oct 1	Binder	Transition research in urban systems
	5	Oct 8	Binder	Urban metaphors and urban metabolism
Part II: Social perspectives of urban transitions	**6**	Oct 15	Hecher	Social innovation and urban niches
	7	Oct 29	Hecher	Social acceptance in cities
Part III: Urban infrastructure and ecology in cities	**8**	Nov 5	Jessel	Multifunctional approaches through ecosystem services
	9	Nov 12	Jessel	Combining green-blue-grey infrastructures: Large-scale approaches (city level)
	10	Nov 19	Jessel	Combining green-blue-grey infrastructures: Small-scale approaches (building and neighborhood level)
Part IV: Policy and governance for urban transitions	**11**	Nov 26	Montfort	Multi-level embedding of cities: From global governance to scope for action in cities
	12	Dec 3	Montfort	Climate solutions in different types of cities
	13	Dec 10	All	**Special guest:** Urban transition processes in practice (Anton Sentic)
	14	Dec 17	All	Presentation City Lab projects

Outline

- What are the academic debates about the importance of cities for sustainability transitions?
  - How does this link to ongoing international processes?
- What is the scope for climate action in cities?
  - Where can cities decide, and where does the authority lie with the nation-state or other actors?
- What is multi-level governance?
  - How does it differ across countries and city archetypes?
- Which actors are involved in different types of multi-level governance?
  - how did this evolve over time?

Learning objectives

- Learn about the academic debates on the importance of cities for climate action
- Learn what multi-level governance is and what it means for cities
- Learn about the scope for city-level policies
- Learn about the actors involved in multi-level governance

International Arena: COP30

Watch link: minutes 16-18 (in German); we will translate it together

International Arena

- The Paris Agreement is not enforceable; no punishment for non-compliance
- COP30 in Brazil: minimal outcomes for payments to compensate poor, developing countries facing the most severe impacts
- Ways to transition away from fossil fuels are not clear.

Let's play a game

- **3 rounds**
- **In each round, you select to either reduce emissions or to emit**
- **Rules:**
  - If more than 60% cooperate, and you reduce emissions→ **you get 4**
  - If less than 60% cooperate, and you reduce emissions → **you get 1**
  - If more than 60% cooperate, and you emit → **you get 6**
  - If less than 60% cooperate, and you emit → **you get 3**
- **Everyone submits choices privately on a piece of paper alongside their name, which we collect**
- **You do not know what others submit until the end**

Let's play a game

- Why did you choose your option?
- What would have made cooperation easier?
- Was talking enough to build trust?
- Why did a few free riders undermine the whole group?
- What rules would fix this game?

Let's play a game

- The theory of collective action, where rational actors maximise their utility, predicts that actors do not reduce their emissions
- This is due to free-riding (incentives to wait for others to make costly emission reductions) and lack of enforcements, which inhibits the Paris Agreements' effectiveness

Let's play a game

2 players → S

M ↓

	Emit/ free-ride	Reduce/ Cooperate
Emit/ free-ride	(3,3)	(6,1)
Reduce/ Cooperate	(1,6)	(4,4)

Payoff: in parentheses; higher is better

Let's play a game

S

M		Emit/ free-ride	Reduce/ Cooperate
	Emit/ free-ride	(3,3)	(6,1)
	Reduce/ Cooperate	(1,6)	(4,4)

Let's play a game

Dominant strategy

S

M		Emit/ free-ride	Reduce/ Cooperate
	Emit/ free-ride	(3,3)	(6,1)
	Reduce/ Cooperate	(1,6)	(4,4)

Let's play a game

Dominant strategy

S

Dominant strategy

M

	Emit/ free-ride	Reduce/ Cooperate
Emit/ free-ride	(3,3)	(6,1)
Reduce/ Cooperate	(1,6)	(4,4)

Let's play a game

S

M		Emit/ free-ride	Reduce/ Cooperate
	Emit/ free-ride	(3,3)	(6,1)
	Reduce/ Cooperate	(1,6)	(4,4)

Equilibrium < than if both cooperate

Why cities are important: bypass free-riding

- Ostrom (2010): Many local actors facing collective action problems do still cooperate
  - Repeated interactions, trust, reciprocity, and long-term benefits
  - Communication, norms, and reputation
  - Potential for the group to sanction and punish defectors
- Hence, she is very optimistic that cities can experiment and learn from each other how to reduce CO2 emissions

Global Environmental Change 20 (2010) 550–557

Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

Polycentric systems for coping with collective action and global environmental change

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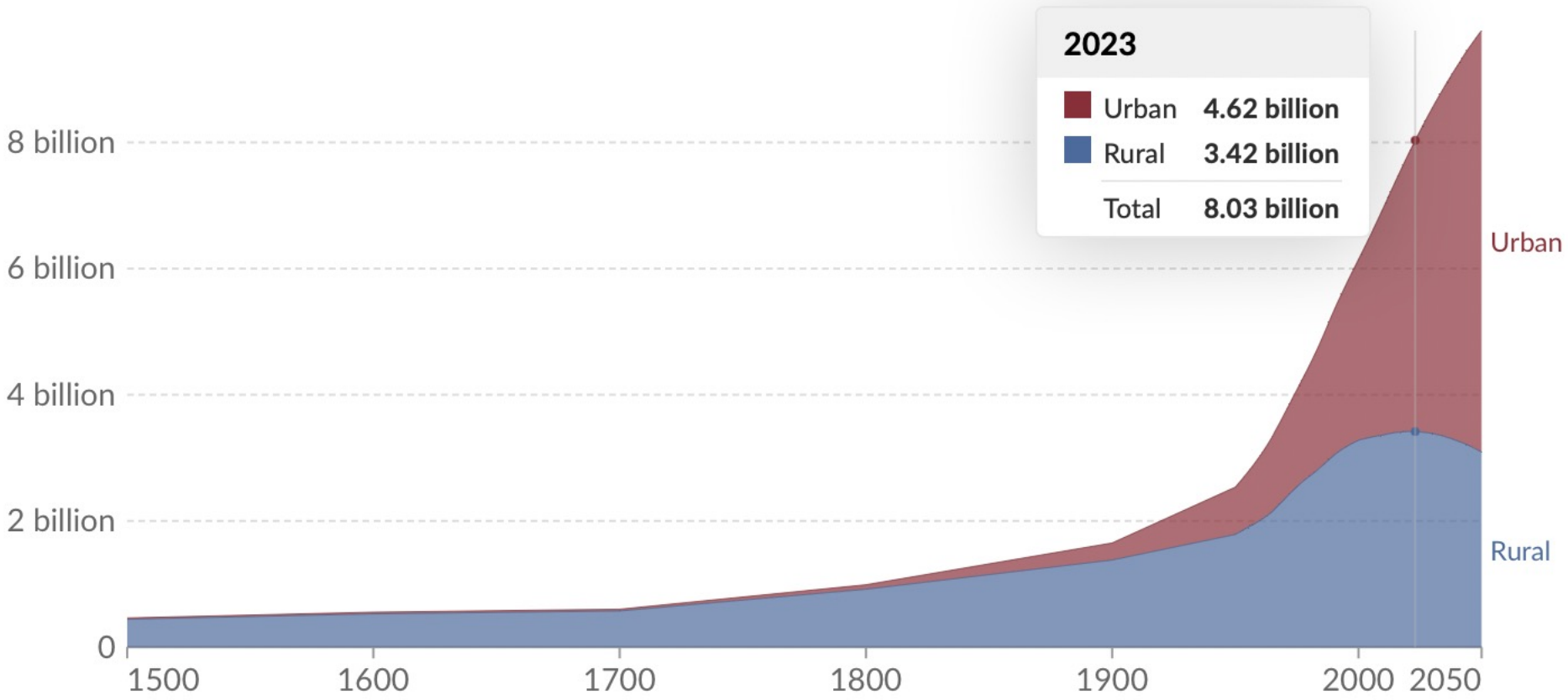
ABSTRACT

The 20th anniversary issue of *Global Environmental Change* provides an important opportunity to address the core questions involved in addressing "global environmental" problems—especially those related to climate change. Climate change is a global collective-action problem since all of us face the likelihood of extremely adverse outcomes that could be reduced if many participants take expensive actions. Conventional collective-action theory predicts that these problems will not be solved unless an external authority determines appropriate actions to be taken, monitors behavior, and imposes sanctions. Debating about global efforts to solve climate-change problems, however, has yet not led to an effective global treaty. Fortunately, many activities can be undertaken by multiple units at diverse scales that cumulatively make a difference. I argue that instead of focusing *only* on global efforts (which are indeed a necessary part of the long-term solution), it is better to encourage polycentric efforts to reduce the risks associated with the emission of greenhouse gases. Polycentric approaches facilitate achieving benefits at multiple scales as well as experimentation and learning from experience with diverse policies.

Why cities are important: population growth



→ By 2050, 68% of the population will live in cities (more than double the share of 1950)

Source: our World In data: https://ourworldindata.org/grapher/urban-and-rural-population-2050

Why cities are important: emissions

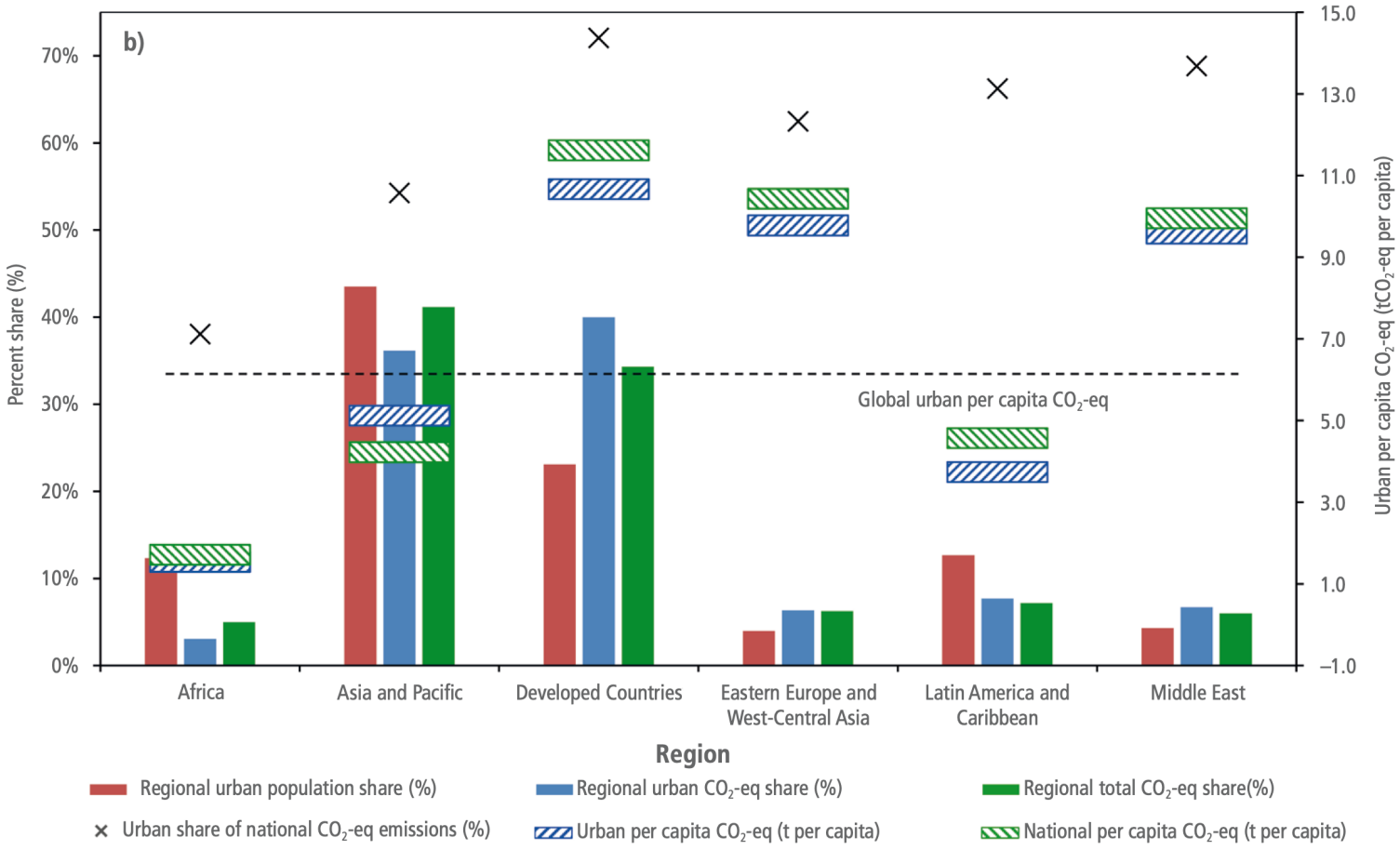


Fig 8.9 in Lwasa, S., K.C. Seto, X. Bai, H. Blanco, K.R. Gurney, Ş. Kılkış, O. Lucon, J. Murakami, J. Pan, A. Sharifi, Y. Yamagata, 2022: Urban systems and other settlements. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change[P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.010

Why cities are important: innovation

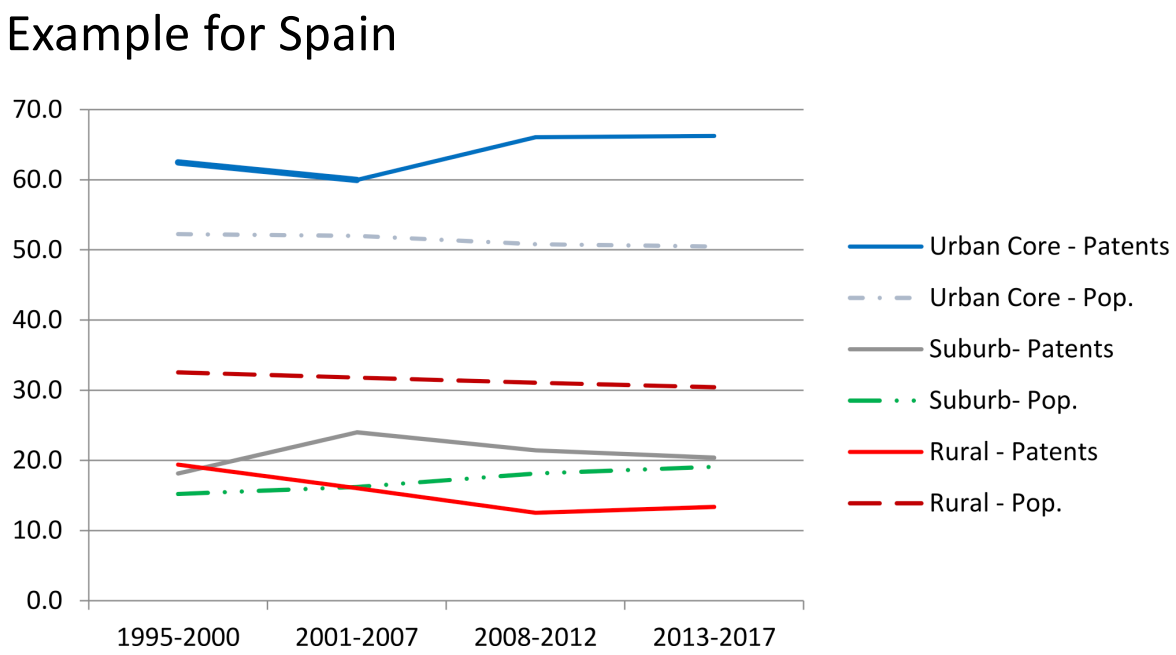


FIGURE 3 | Share of patents and share of population. *Source:* Own elaboration based on the number of EPO patent applications filed in the period 1995–2017 (private and public patents).

Holl, A., Martínez, C., & Casado, C. (2024). The changing geography of innovation: Comparing urban, suburban and rural areas. *Growth and Change*, *55*(4), e70003.

Why cities are important: summary

- Cities are responsible for around 80% of global emissions.
- Cities will be home to 68% of the population globally
- Cities are hubs of growth and innovation
- Cities unite poor and rich side-by-side, fostering social and economic tensions

Hecher, Binder, Jessel, Montfort

Discussion

In a short discussion with your neighbour, try to find reasons why cities may not be as important as many claimed (beyond the prisoners' dillema)

Why cities are not important: decision-making capacity

1. Urban design and form.
2. Modal shift, mobility services, traffic optimization.
3. High-efficiency, low-emissions, smaller vehicles.
4. Low-energy demanding, heat-resistant architecture.
5. High-efficiency appliances and equipment.
6. Energy efficient and low-carbon urban industries.
7. High-performance operation of buildings.
8. Reducing urban heat island.
9. Infrastructure-integrated renewable energy systems generation.
10. Fuel switch to low(er) carbon generation.
11. Affordable low-carbon, durable construction materials; timber infrastructure.

→ Many relevant decisions have to be made at the national level

Vorsatz et al. (2018) cited in van den Bergh, J. C. (2020). Systemic assessment of urban climate policies worldwide: Decomposing effectiveness into 3 factors. Environmental Science & Policy, 114, 35-42. Chicago

Why cities are not important: framework

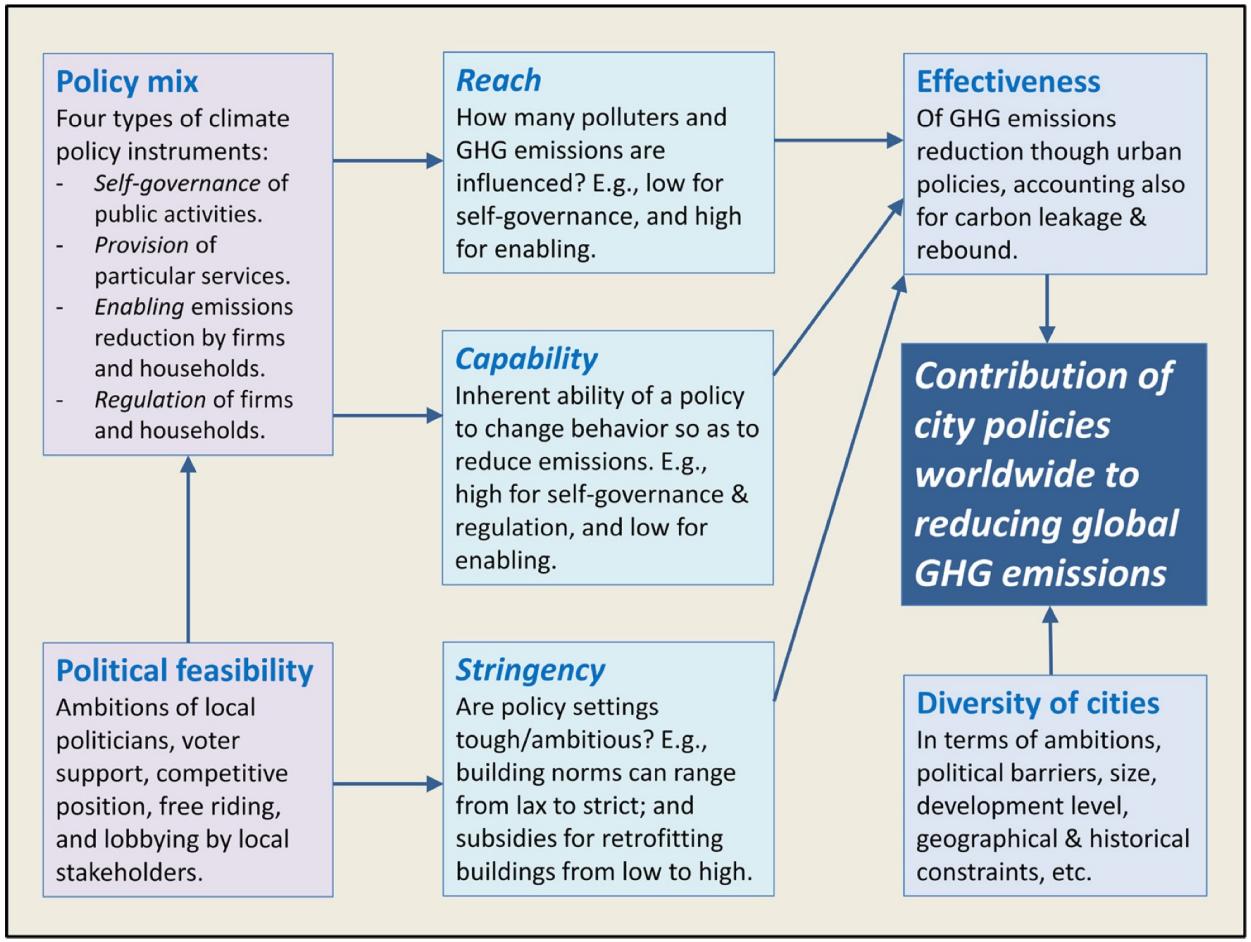


Fig. 1. Greenhouse gas emissions reduction expected from urban climate policies.

van den Bergh, J. C. (2020). Systemic assessment of urban climate policies worldwide: Decomposing effectiveness into 3 factors. Environmental Science & Policy, 114, 35-42. Chicago

Why cities are not important: policy effectiveness unkown

- Data availability is very patchy; it is difficult to assess the contributions of cities in sustainability transitions
  - Implementation of solutions
  - Effectiveness of solutions: IPPC AR6 notes big research gaps for impact evaluation for the effectiveness of urban interventions
  - → hampers learning (which, according to Ostrom, 2010 could bypass enforcement problems in international agreements)

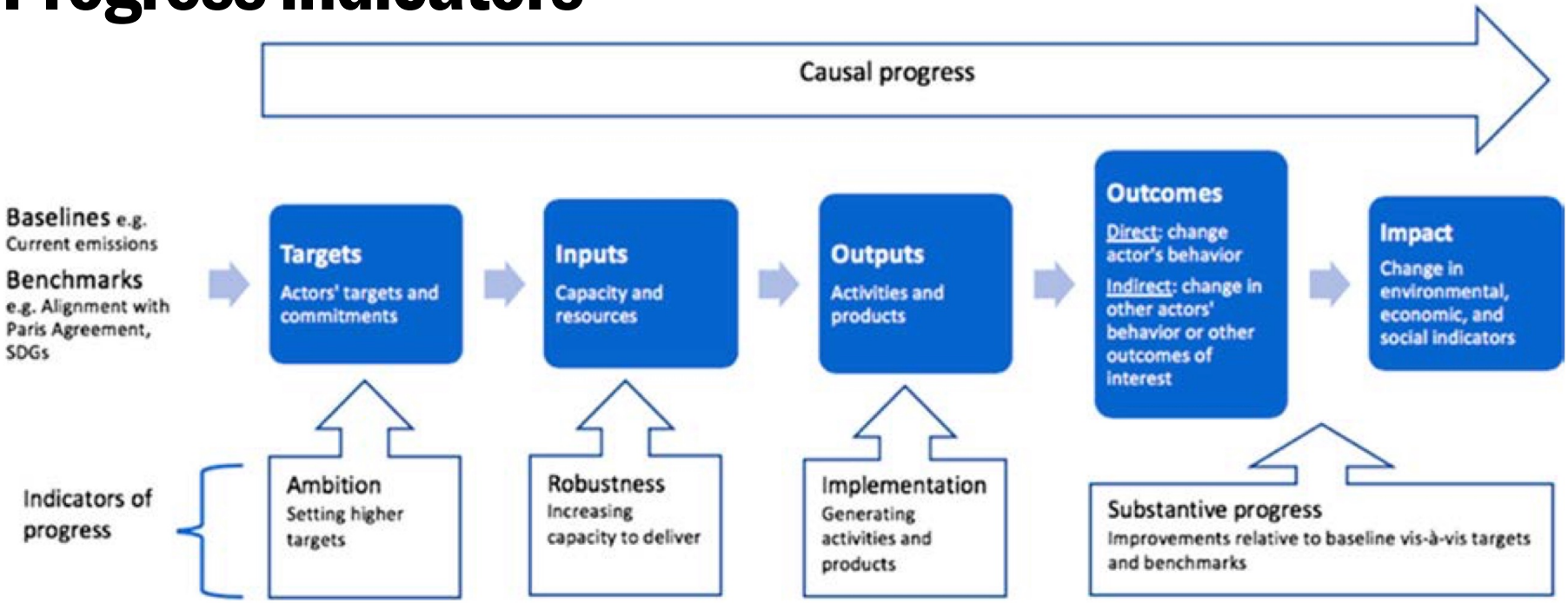
Progress indicators

Table 1. Summary of definitions

Term	Definitions	
Performance indicator	Measure of performance toward a goal, e.g. increase of a positively valued measure like renewable energy or decrease of a negatively valued measure like GHGs	
Baseline	Current or historical value of performance indicator, or future trajectory likely without intervention (e.g. GHG inventory, current financial flows, Business-as-Usual scenario, etc.)	**Ambition**: Setting a higher target vis-a-vis the baseline or benchmark
Benchmark	Relates actors' target to appropriate standard (e.g. alignment with global goals, peer targets, etc.)	
Target	A future value of the performance indicator (in a future target year), measured from a baseline value	
Inputs	Level and/or types of input going into climate action, such as human (staff), financial (money), technical or other organizational resources, regulatory authority, etc.	**Robustness**: Increasing capacity and resources to take climate action
Outputs	Volume of output or work, often in terms of an amount such as number of investments, projects, standards/rules, workshops, publications, members, etc.	**Implementation**: Taking activities to deliver climate action
Outcome	Behavioural change by actor (direct) or other actors (indirect)	**Substantive progress**: Proportion of target currently achieved.
Impacts	Changes in environmental, economic, or social indicators of interest (e.g. actors reduce emissions by XX tonnes of carbon dioxide equivalent)	

Hale, T. N., Chan, S., Hsu, A., Clapper, A., Elliott, C., Faria, P., ... & Widerberg, O. (2021). Sub-and non-state climate action: a framework to assess progress, implementation and impact. *Climate Policy*, *21*(3), 406-420.

Progress indicators



→ Very few ex-post evaluations of progress in cities – links to the debate About the importance and role of cities in sustainability transitions

Hale, T. N., Chan, S., Hsu, A., Clapper, A., Elliott, C., Faria, P., ... & Widerberg, O. (2021). Sub-and non-state climate action: a framework to assess progress, implementation and impact. *Climate Policy*, *21*(3), 406-420.

Progress indicators: example impact evaluation study

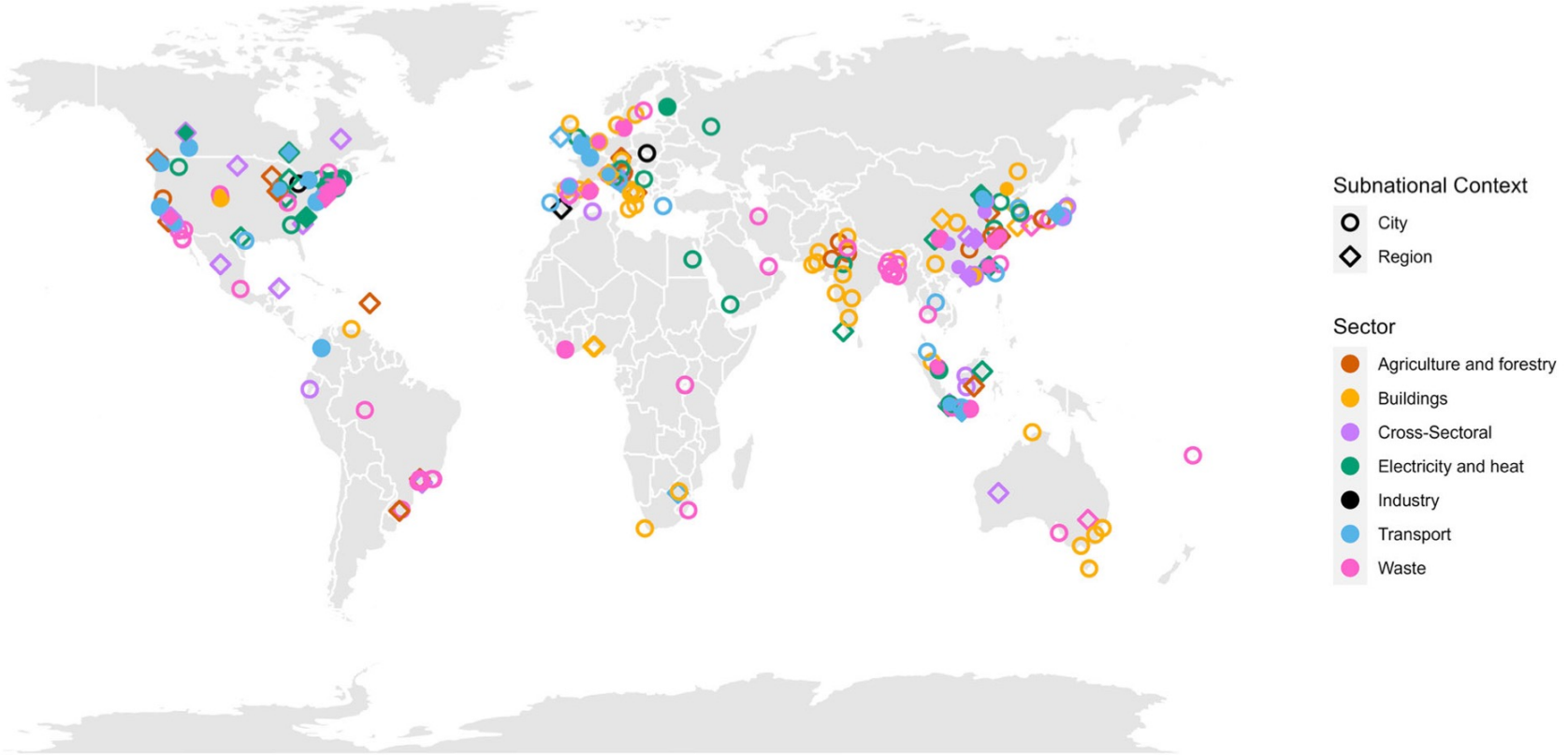


Fig. 3 Map of all subnational actors appearing in the full dataset ($n_{actors} = 242$). Actor type is indicated by shape (circles represent cities and diamonds represent regions). Color signifies the sector of the mitigation strategy observed. The filled points indicate the locations of government actions that have been implemented or planned by subnational actors observed in the actions dataset ($n_{actors} = 50$).

Burley Farr, K., Song, K., Yeo, Z. Y., Johnson, E., & Hsu, A. (2023). Cities and regions tackle climate change mitigation but often focus on less effective solutions. *Communications earth & environment*, *4*(1), 439.

Progress indicators: example impact evaluation study

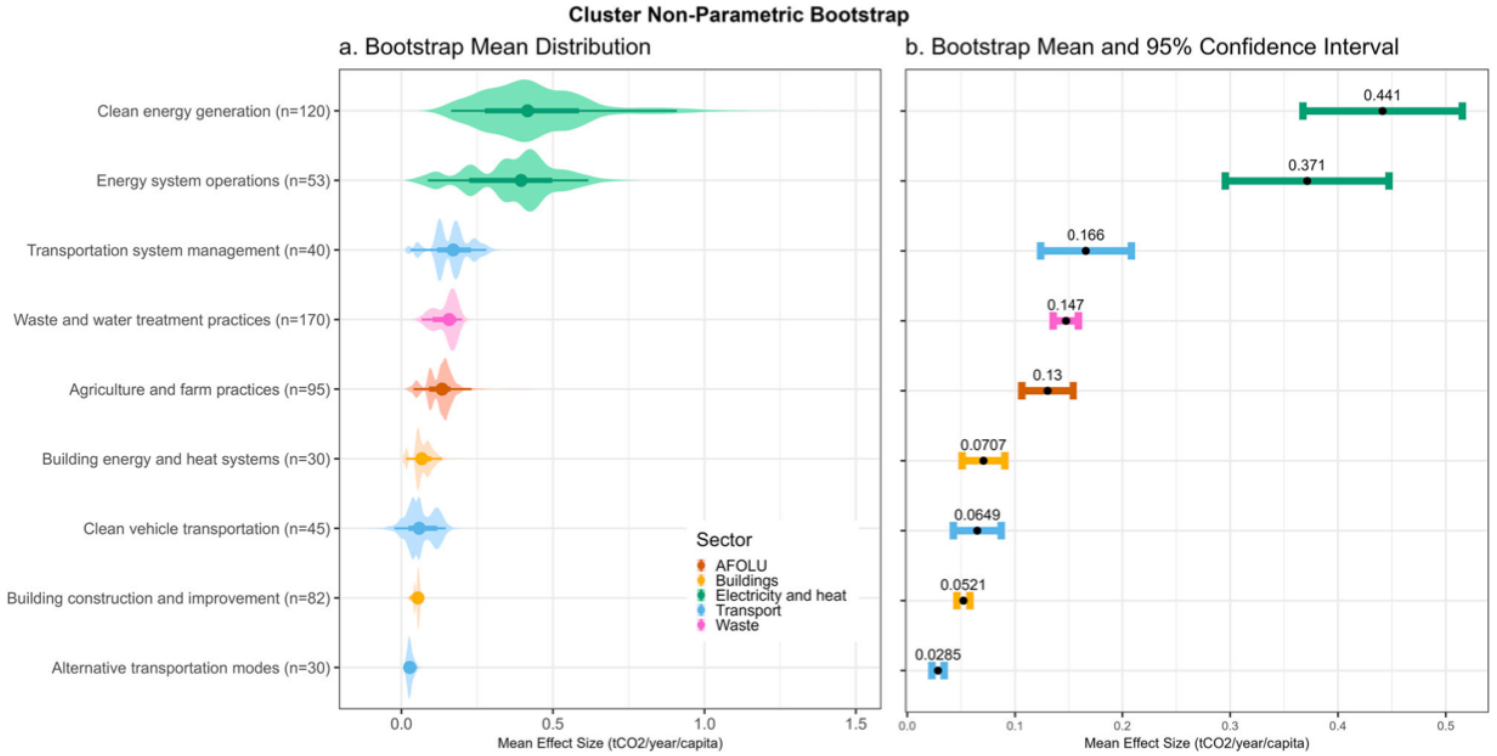


Fig. 5 Expected emissions reduction ranges for sector-specific mitigation strategies categories. The labels for each category include the number of emissions reduction observations for each category that were used in the bootstrapping analysis. Colors indicate the different sectors of each mitigation strategy category. **a** Bootstrap sampling distribution of the mean emissions reduction impact for each category. **b** The bootstrap mean emissions reduction impact and 95% confidence interval for each category.

Burley Farr, K., Song, K., Yeo, Z. Y., Johnson, E., & Hsu, A. (2023). Cities and regions tackle climate change mitigation but often focus on less effective solutions. *Communications earth & environment*, *4*(1), 439.

Progress indicators: example impact evaluation study

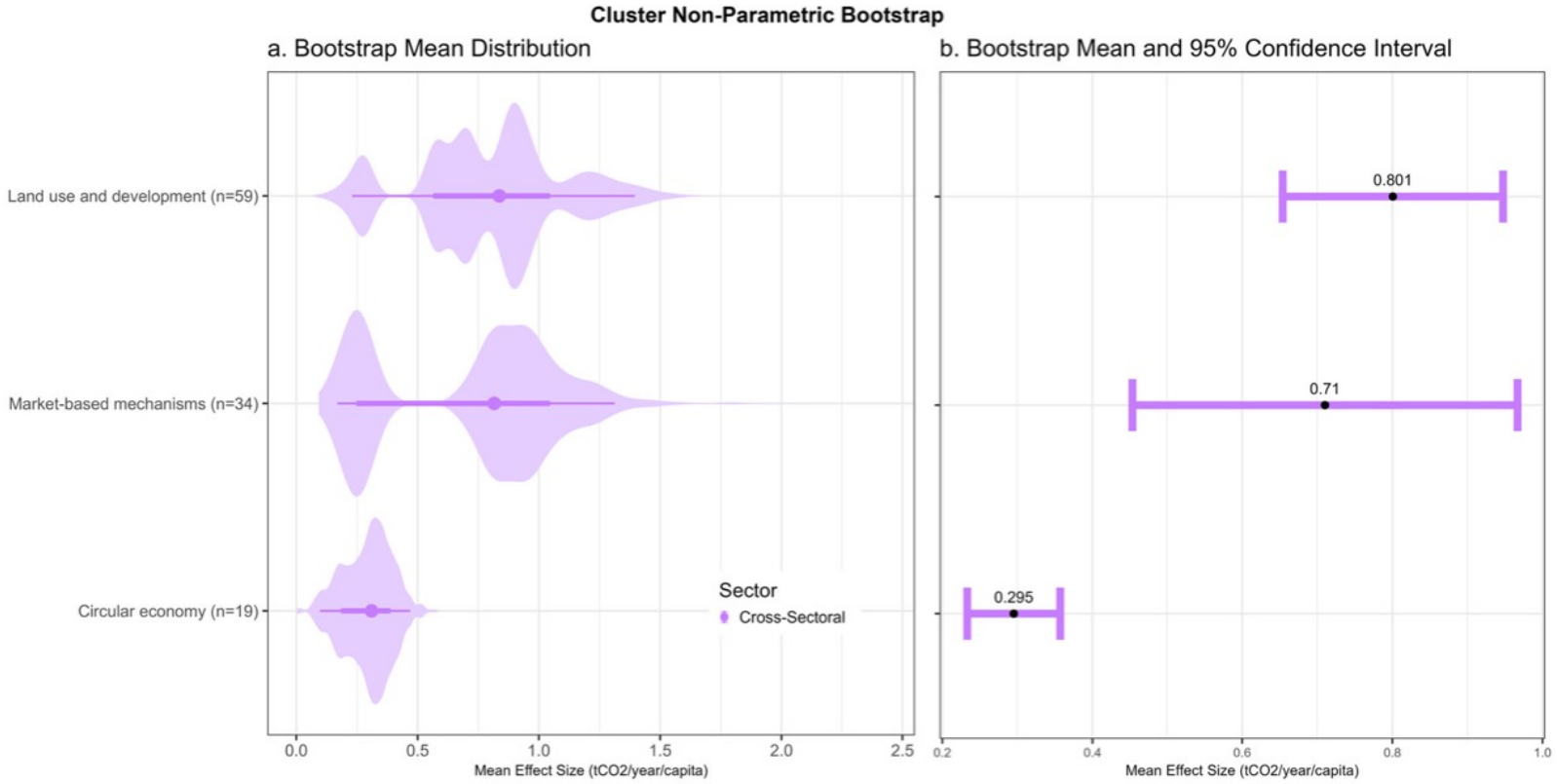


Fig. 6 Expected emissions reduction ranges for cross-sectoral mitigation strategies categories. The labels for each category include the number of emissions reduction observations for each category that were used in the bootstrapping analysis. **a** Bootstrap sampling distribution of the mean emissions reduction impact for each category. **b** The bootstrap mean emissions reduction impact and 95% confidence interval for each category.

Burley Farr, K., Song, K., Yeo, Z. Y., Johnson, E., & Hsu, A. (2023). Cities and regions tackle climate change mitigation but often focus on less effective solutions. *Communications earth & environment*, *4*(1), 439.

Areas where cities have high scope for climate action

- **Mobility:**
  Local streets, active travel, parking, and public transport operations
- **Urban planning & land use:**
  densification, urban form
- **Buildings:**
  Local permits, enforcement of efficiency rules for new/renovated buildings
- **Waste & circularity:**
  Collection systems (partly), recycling rules, local incentives
- **Water & adaptation:**
  Stormwater, drainage, local flood protection, heat-stress measures
- **Disaster management:**
  Local emergency response and risk-sensitive planning
- **Urban nature & carbon sequestration:**
  Urban forests, parks, and soils on municipal land

Areas where cities have limited scope for climate action

- **Energy system:**
  Grid decarbonisation, electricity tariffs, large-scale generation
- **Building standards:**
  National building codes, appliance efficiency rules
- **Transport standards:**
  Fuel standards, vehicle efficiency, EV incentives
- **Food systems:**
  Agricultural production, dietary policy, national food safety rules
- **Water resources:**
  Major reservoirs, river-basin infrastructure, water rights
- **Finance & insurance:**
  Disaster funding, insurance regulation, carbon pricing
- **Industrial-scale carbon removal:**
  Bio-CCS, DACCS, national carbon markets

→ Many of the system-wide solutions cannot be encouraged by cities alone

Policies

- **Regulatory instruments**
  - **State/National level:**
    - Energy standards, building codes, vehicle standards
    - Large utility regulation; emission limits for industries
  - **City level:**
    - Zoning, land-use regulations, building permits
    - Low-emission zones, parking regulation, speed limits
- **B. Economic instruments**
  - **State/National level:**
    - Carbon taxes/emission-trading systems, national subsidies, feed-in tariffs, EV purchase incentives
  - **City level:**
    - Congestion charges, parking fees, local renewable procurement, local retrofit grants

Policies

- **Informational instruments**
  - **State/National:**
    - National awareness campaigns, product labelling, energy ratings
  - **City:**
    - Local campaigns, behavioural nudges, engagement programs, neighbourhood initiatives
- **D. Organisational / Direct provision**
  - **State/National:**
    - National infrastructure, grids, highways, rail
  - **City:**
    - Public transport operation, waste collection, local adaptation infrastructure

What is multi-level governance?

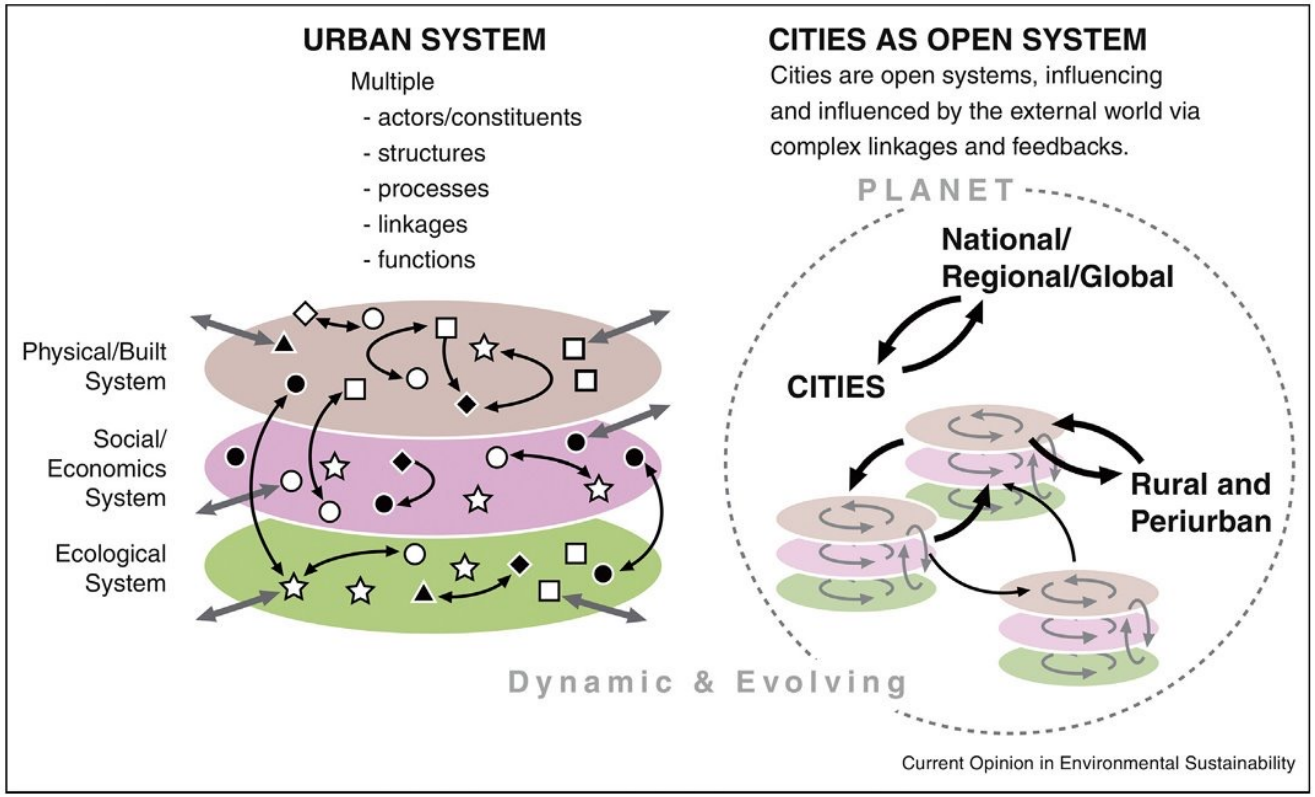
Multi-level governance

- **Multiple levels** of government are involved (local → regional → national → international)
- **Shared and overlapping responsibilities** not strict top-down control
- **Coordination and negotiation** across levels to design and implement policy
- **Involves public and non-state actors** (cities, agencies, firms, civil society)

Sources: Loorbach, 2003

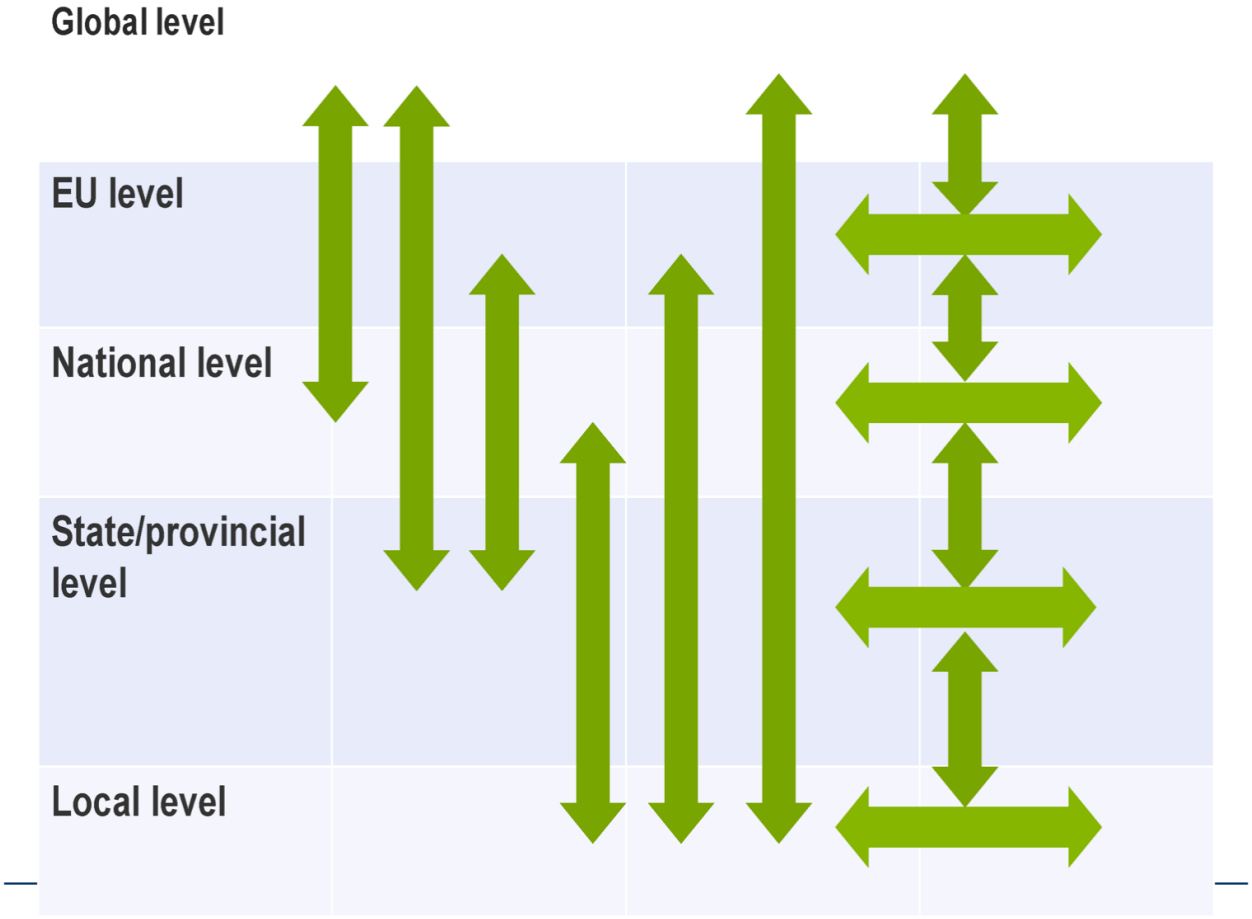
Urban systems

"Systems thinking allows us to imagine cities in their multifaceted manifestations, as geophysical spaces, physical infrastructures, economic relationships, social entities, and cultural practices."



Bai et al. (2016). Defining and advancing a systems approach for sustainable cities. Current Opinion in Environmental Sustainability, 23, 69–78. https://doi.org/10.1016/j.cosust.2016.11.010

Multi-level governance: Example I



Jänicke, M. (2015). Horizontal and vertical reinforcement in global climate governance. *Energies*, *8*(6), 5782-5799.

Multi-level governance: Example II

Planning system of Switzerland

Planning level	Planning instrument	Content of plan	Legal basis	Policy maker	Legal impact	Scale
Federal level	Territorial Concept Switzerland	Abstract spatial strategy for the entire country. Distinguished 12 different action areas	none	Elaborated by the Federal Office of Spatial Development (ARE). Approved and signed by the cantonal planning authorities	none	Nationwide
	Sectoral Concept	Covers spatial relevant principles of a specific sectors (typically infrastructure such as wind energy, or sport facilities). Must comply with national laws.	Art. 13 SPA & Art. 14-23 SPO	Elaborated by federal department, approved by Federal Council	Legally binding to all public authoritires	Nationwide, dependent on the respective content
	Sectoral Plan	Identical to the Sectoral Concept, but additionally includes concrete instructions such as locations for specific tasks (e.g., transport infrastructure or agriculture). Must comply with national laws.	Art. 13 SPA & Art. 14-23 SPO	Elaborated by federal department, approved by Federal Council	Legally binding to all public authoritires	Nationwide, dependent on the respective content
Cantonal level	Structure Plan	Spatial principles and strategies for the entire canton. Specific regulations coordinating supra-local planning and major projects.	Art. 6-12 SPA & Art. 4-13 SPO and cantonal planning laws	Elaborated by cantonal planning department, approved by cantonal government or parliament	Legally binding to all public authorities	Covers the entire canton
Municipal level	Zoning Plan	Land-use zones for the entire municipality. Accompanied by municipal building code. Must comply with Structure Plan and planning laws (cantonal and national).	Art. 14-27a SPA & 30a – 47, cantonal planning laws, and municipal building codes	Elaborated by municipal planning department or external planning office. Approved by municipal legislator. To be approved by local voters	Legally binding for all legal and natural persons, incl. landowners	Covers the entire municipality
	Special Land-Use Plan	Land-use regulations for a specific project of specific area. Must comply with Structure Plan and planning laws (cantonal and national). Can deviate from zoning plan.	Art. 14-27a SPA & 30a – 47, cantonal planning laws, and municipal building codes	Elaborated by municipal planning department or external planning office (usually in cooperation with landowner or developer). Approved by municipal legislator. To be approved by local voters	Legally binding for all legal and natural persons, incl. landowners	Covers the perimeter of a specific project or specific area of high importance (usually declared in zoning plan)

ARL ACADEMY FOR TERRITORIAL DEVELOPMENT IN THE LEIBNIZ ASSOCIATION 2022 www.arl-international.com

https://www.arl-international.com/knowledge/country-profiles/switzerland/rev/3083#&gid=1&pid=3 accessed: 25.11.2025

Multi-level governance: Example III

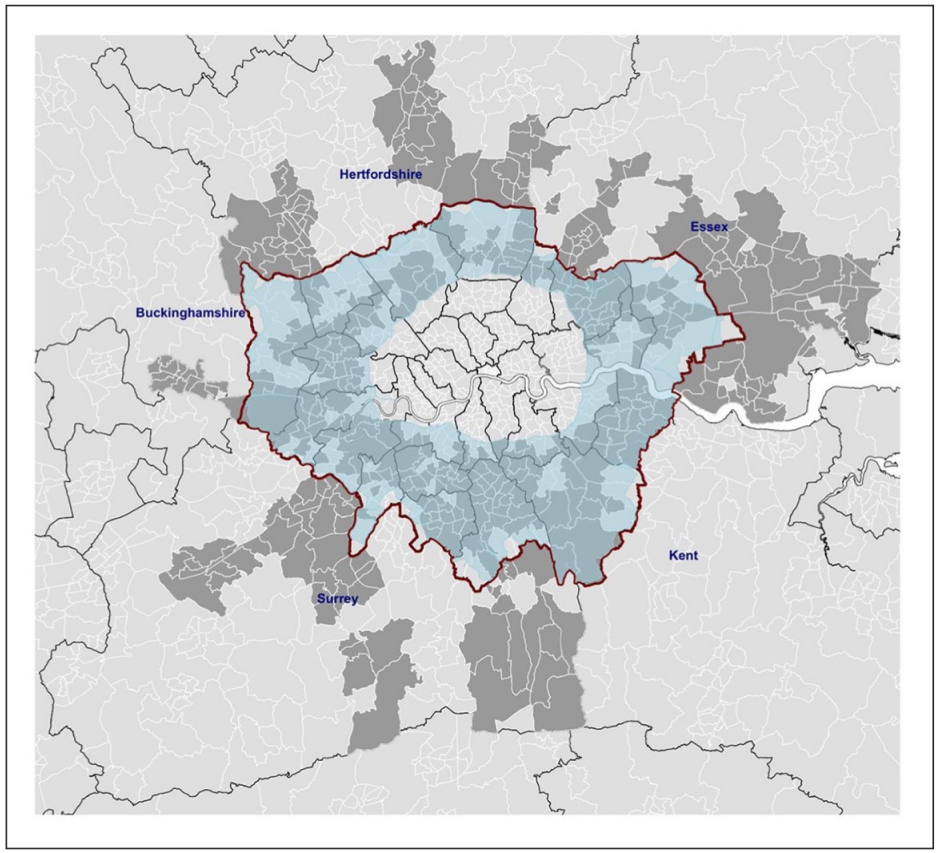
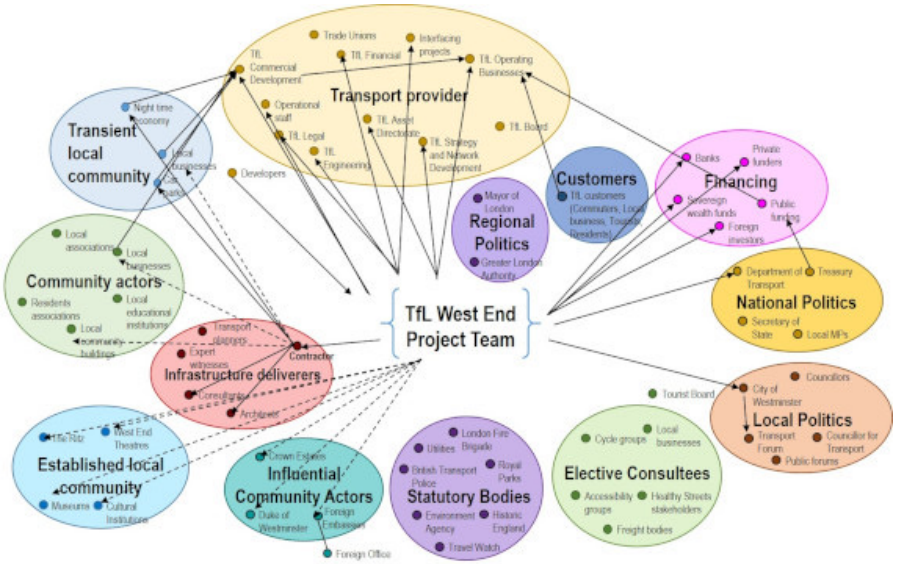


Figure 3. Map of 2022 electoral wards. Wards included in the analysis (dark-grey) outside North/South circular (light-blue area) and wards in bordering counties with the same electoral dates; Greater London border in red.

- **Ultra Low Emission Zone** (ULEZ) was introduced through the **specialised agency** Transport for London.
- **Planning: Shared** with multiple boroughs + national ministries → fragmented.

McNeil, A., & Mitsch, F. (2025). The political effects of London's Ultra Low Emission Zone. *The British Journal of Politics and International Relations*, 13691481251321656.

Multi-level governance: Example IV

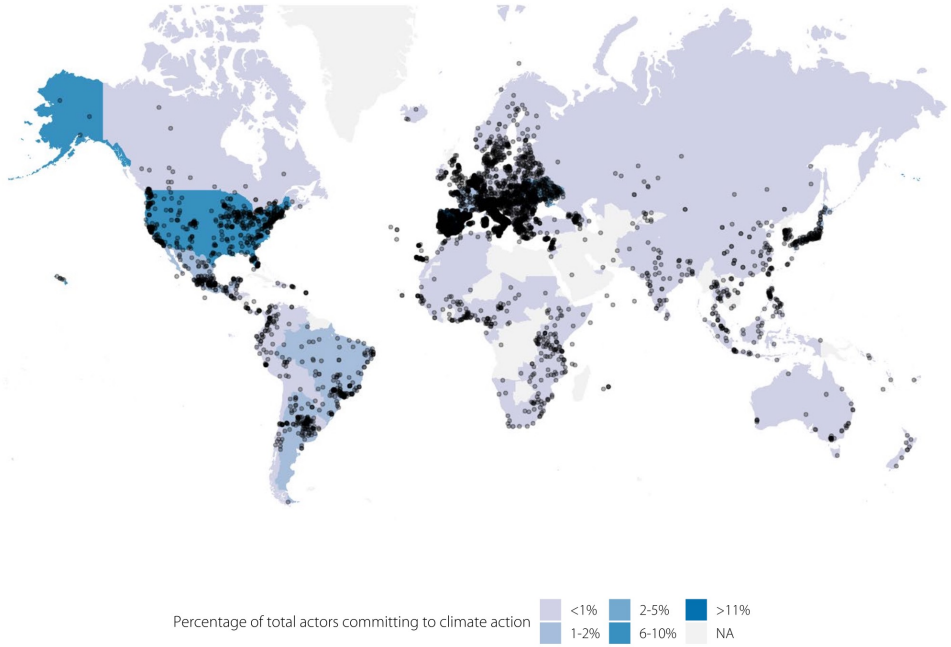


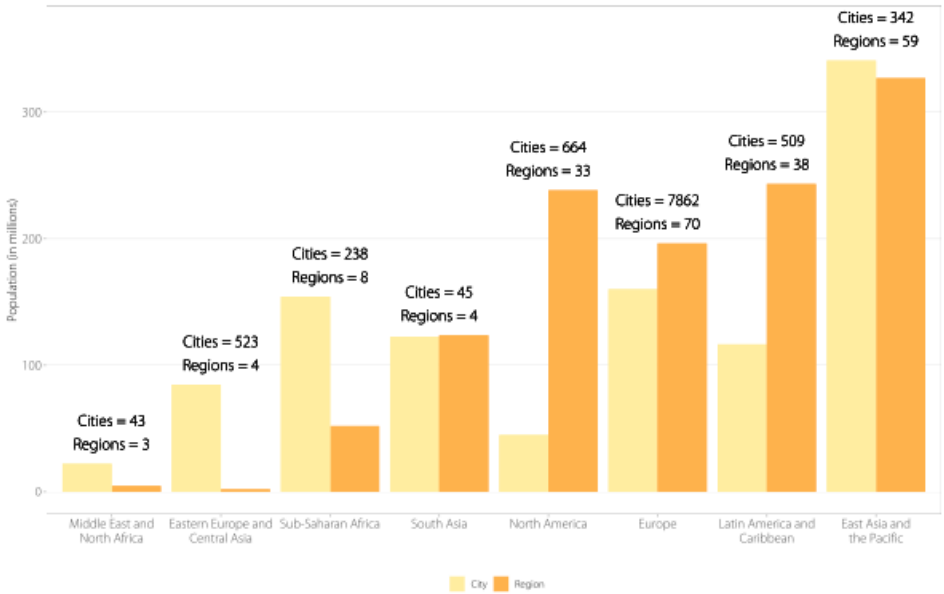
https://www.ifm.eng.cam.ac.uk/insights/servitization/making-connections/
Accessed: 25.11.2025

Task-specific authorities: Transport for London (TfL) is a specialized transport body, separate from the city government.
Overlapping jurisdictions: Boroughs, TfL, national rail, and private operators all share responsibility.
PPPs embedded: Bus services, rail lines, Oyster/contactless systems involve private firms.
Cross-scalar links: National Department for Transport regulates parts of the system.

Multi-level governance: Example V

Transnational climate network participation





Multi-level governance trends: rescaling

What are the differences between the examples regarding decision-making authority, actors involved, and accountability?

Different types of multi-level governance: Type I

Type I MLG — “General-Purpose Jurisdictions”

- Stable, hierarchical levels (local → regional → national → supranational)
- Broad competences at each level
- Non-overlapping territories; fixed memberships
- Democratic representation

Examples I-II on previous slides

→ Best for: durable policy coordination, accountability, clarity of authority.

Marks, G., & Hooghe, L. (2004). Contrasting visions of multi-level governance. *Multi-level governance*, 15-30.

Different types of multi-level governance: Type II

Type II MLG — “Task-Specific Jurisdictions”

- Flexible, problem-oriented bodies
- Overlapping, fluid boundaries
- Often temporary or adjustable
- Mix of public, private, and civic actors

Examples III-V on previous slides

→ Best for: technical, cross-jurisdictional problems requiring expertise.

Marks, G., & Hooghe, L. (2004). Contrasting visions of multi-level governance. *Multi-level governance*, 15-30.

Sources: Loorbach, 2003

Multi-level governance trends: rescaling

- Governance is reconfigured: local actors link globally, global flows affect local conditions, and networks reorganise institutional relationships.
- 1. State Rescaling
  - Authority shifts upward (EU/global bodies)
  - Downward (cities, regions, agglomerations)
  - Horizontally (public–private partnerships, networks)
- → Not state decline: state reorganization.

- 2. New State Spaces
  - Specialized, non-traditional governance zones:
  - Metropolitan regions
  - Cross-border corridors
  - Development agencies
  - Agglomeration programs
  - Infrastructure governance bodies
- → Often do not match administrative boundaries (→ Type II convergence).

Multi-level governance trends: rescaling

Framework for rescaling

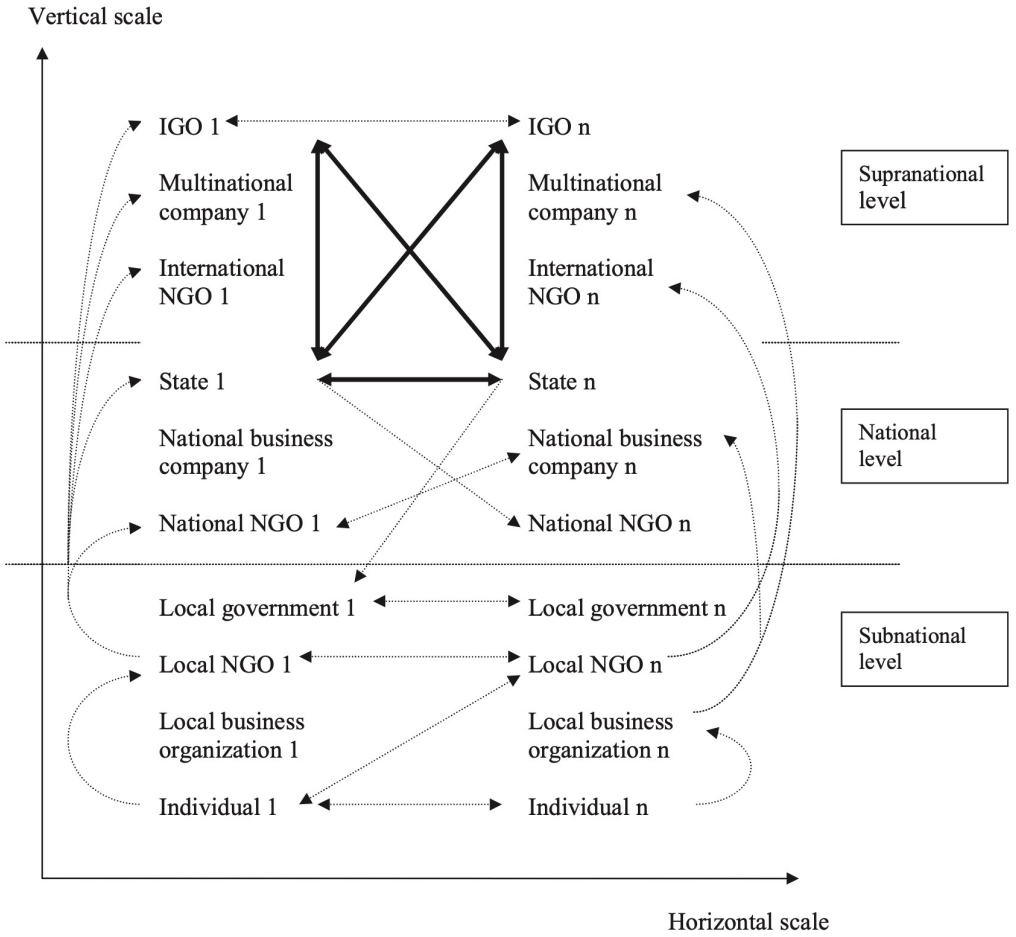


Figure 1

Dimensions of global environmental politics rescaling. Bold lines show the traditional focus of international relations. Dotted arrows identify interactions across the multiple scales at which environmental action occurs and the rescaling of global environmental politics away from interactions among states and intergovernmental organizations (IGOs) to encompass the myriad of political actors that operate across vertical and horizontal scales of jurisdictions, space, issues, and organizational domains. The notations 1 to n seek to capture the multiplicity of actors interplaying horizontally and vertically. NGO, nongovernmental organization.

Actors: Example

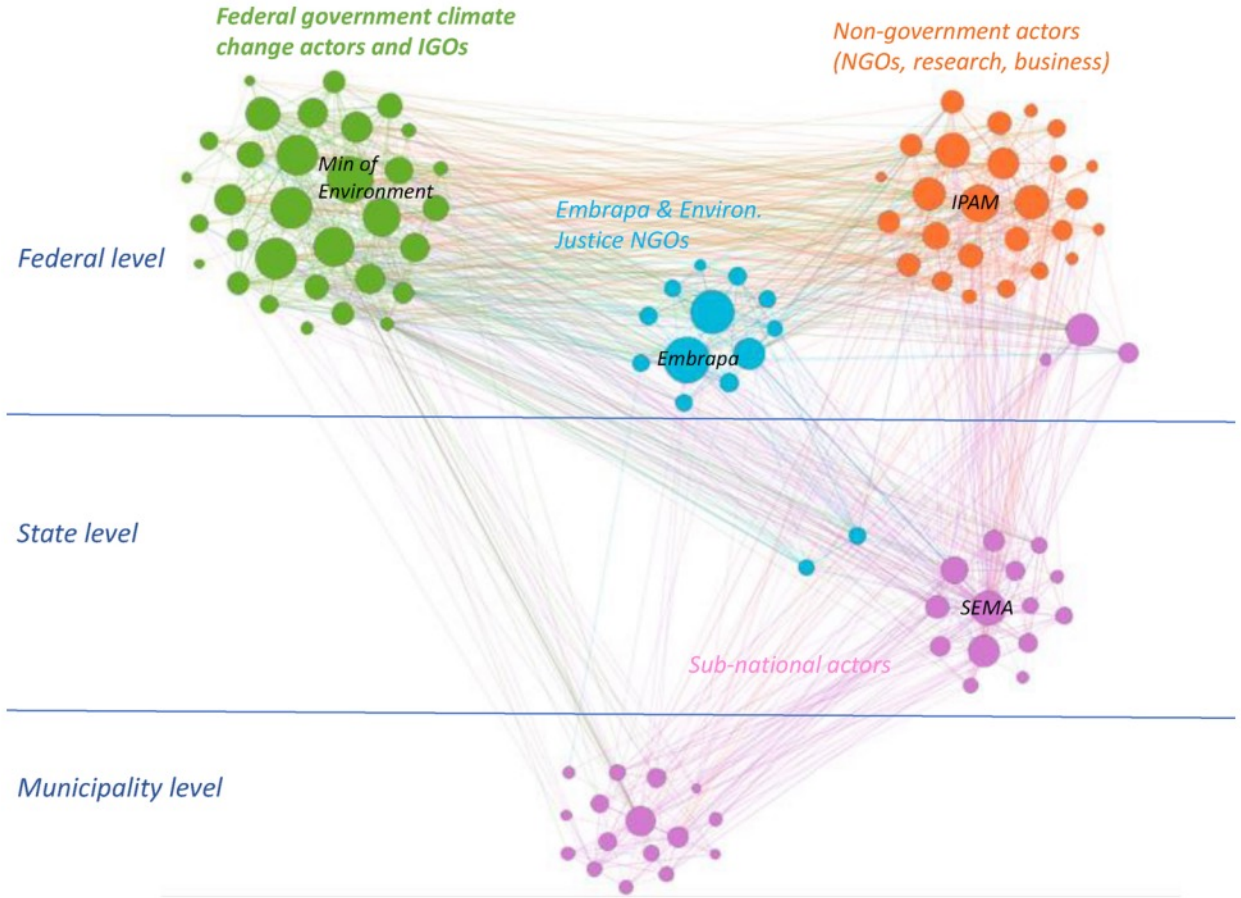


Fig. 7. Brazil network communities across governance levels.
Size of nodes = indegree centrality; Colour of nodes = network community; Colour of tie = source of the tie. The most influential actor in each network community is named: Ministry of Environment; Brazilian Agricultural Research Corporation (Embrapa); Amazon Environmental Research Institute (IPAM); State Environmental Agency of Mato Grosso state (SEMA).

Hecher, Binder, Jessel, Montfort

Di Gregorio, Monica, Leandra Fatorelli, Jouni Paavola, Bruno Locatelli, Emilia Pramova, Dodik Ridho Nurrochmat, Peter H. May, Maria Brockhaus, Intan Maya Sari, and Sonya Dyah Kusumadewi. "Multi-level governance and power in climate change policy networks." *Global environmental change* 54 (2019): 64-77.

Actors

Table 8
Cross tabulation for when, where and what experiments are led by (local government, other public organism, private actors or civil society organisations).

	Leading actor	Local government	Other government	Private	Civil society	Grand total
Where	Africa	29	6	4	2	41
	Asia	86	13	51	12	162
	Europe	112	11	24	12	159
	North America	102	11	9	14	136
	Oceania	15	1	0	1	17
	South and Central America	69	24	9	10	112
When	Pre-Kyoto agreement	20	4	4	5	33
	Pre-Kyoto ratification	65	8	15	11	99
	Post-Kyoto	328	54	78	35	495
What	Adaptation	46	19	4	7	76
	Built environment	101	13	23	18	155
	Carbon sequestration	16	8	5	6	35
	Transport	96	10	7	5	118
	Urban form	27	4	5	6	42
	Urban infrastructure-waste	18	2	13	1	34
	Urban infrastructure-water	10	0	1	0	11
	Urban infrastructure-energy	99	10	39	8	156
Total	Grand total	413	66	97	51	627

Broto, V. C., & Bulkeley, H. (2013). A survey of urban climate change experiments in 100 cities. *Global environmental change*, *23*(1), 92-102

Actors

1. Enabling

Supporting others' actions through **information, incentives, partnerships**.

Examples: community grants, public-private partnerships, open data.

2. Provision

Directly **delivering or procuring** green infrastructure and services.

Examples: public transport, waste collection, green spaces, stormwater systems.

3. Regulation

Using **legal powers** to set and enforce rules.

Examples: zoning, building codes, energy standards, low-emission zones.

4. Self-governing

Greening the **city's own operations**; leading by example.

Example: retrofitting municipal buildings, electrifying public transport buses.

Bulkeley, H., & Kern, K. (2006). Local government and the governing of climate change in Germany and the UK. *Urban studies*, *43*(12), 2237-2259.

Actors

Table 9
Contingency table for the distribution of initiatives in relation to different forms of partnership (expected frequencies in brackets).

Leading	Partner					Total
	Civil society	Local government	Private	Other government	No partnership	
Civil society	5 (5.1)	18 (3.4)	8 (13.7)	2 (1.8)	18 (26.9)	51
Local government	44 (41.5)	4 (27.7)	112 (111.3)	14 (14.5)	239 (218.0)	413
Other government	8 (6.6)	12 (4.4)	12 (17.8)	0 (2.3)	34 (34.8)	66
Private	6 (9.7)	8 (6.5)	37 (26.1)	6 (3.4)	40 (51.2)	97
Total	63	42	169	22	331	627

Table 10
Contingency table for the distribution of initiatives in terms of leading actor, partnerships and mode of governance (expected frequencies in brackets).

	Mode of governance				Total
	Enabling	Provision	Regulation (hard and soft)	Self-governing	
Leading actor					
Civil society	26 (16.8)	15 (20.9)	3 (7.7)	7 (8.0)	51
Local government	117 (125.8)	160 (169.3)	74 (58.0)	62 (59.9)	413
Other government	22 (18.9)	29 (27.0)	9 (8.7)	6 (9.0)	66
Private	26 (29.5)	53 (39.8)	2 (13.6)	16 (14.1)	97
Partnership					
No	87 (100)	134 (135)	66 (46)	43 (48)	330
Yes	104 (90)	123 (121)	22 (41)	48 (43)	297
Total	191	257	88	91	627

Key messages

- Cities **contribute** to **the problems of climate change,** but they are also an important **part of its solution**.
- **Scientific debates address free-riding** problems in international negotiations and how and to what extent cities can help
- Debates have not been resolved partly because of **insufficient ex-post evaluation** of policy effectiveness in cities and **patchy data**.
- Cities do not have the *sole* decision-making authority in many sectors; **cities are embedded in multi-level political systems** (systems thinking!)
- In the last 30-50 years, multi-level governance has been **rescaled horizontally and vertically**, which has increased the complexity of relationships between actors in governance arrangements

Contact

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