

# Shaping Urban Climate Governance: The Power of Multi-stakeholder Collaborations and GHG data

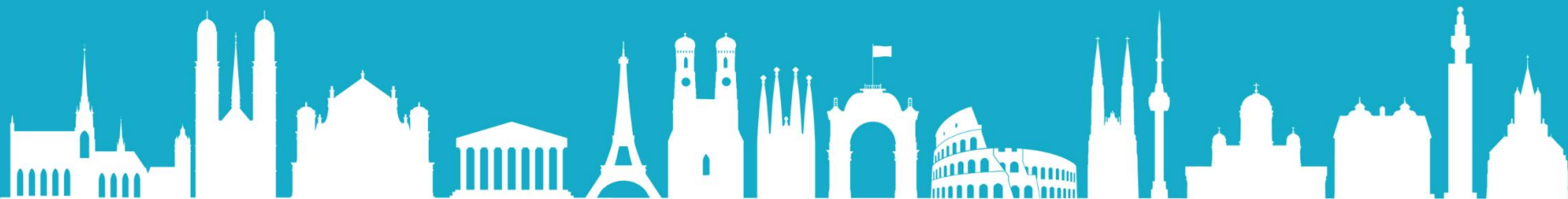
Science-technology policy governance and emissions data - Information and policy needs of the pilot cities

Prof. Dr. Miranda Schreurs, Ana Maria Isidoro Losada, Barbara Dias Carneiro,



Have you ever collaborated in any shape or form with city governments?





ICOS Cities brings together European citizens, policy makers and top scientists in co-designing pioneer greenhouse gas measurement methodologies and services for cities to support climate action.



3 PILOT CITIES



13 COUNTRIES



15 CITIES



30 SCIENTIFIC PARTNERS



13 M€ FUNDING



2021-2025 PROJECT DURATION



15 cities involved in Europe

3 pilot cities: Paris, Zurich and Munich



3 PILOT CITIES



13 COUNTRIES



15 CITIES



30 SCIENTIFIC PARTNERS



13 M€ FUNDING



2021-2025 PROJECT DURATION



How decision makers in the pilot cities use emission data in their decision making in the past & how new emission data can be used to improve efforts to reduce GHG & other harmful emissions.

15 cities involved in Europe

3 pilot cities: Paris, Zurich and Munich



3 PILOT CITIES



13 COUNTRIES



15 CITIES



30 SCIENTIFIC PARTNERS



13 M€ FUNDING



2021-2025 PROJECT DURATION



- Climate governance structure in the 3 pilot cities
- Key stakeholder collaborations

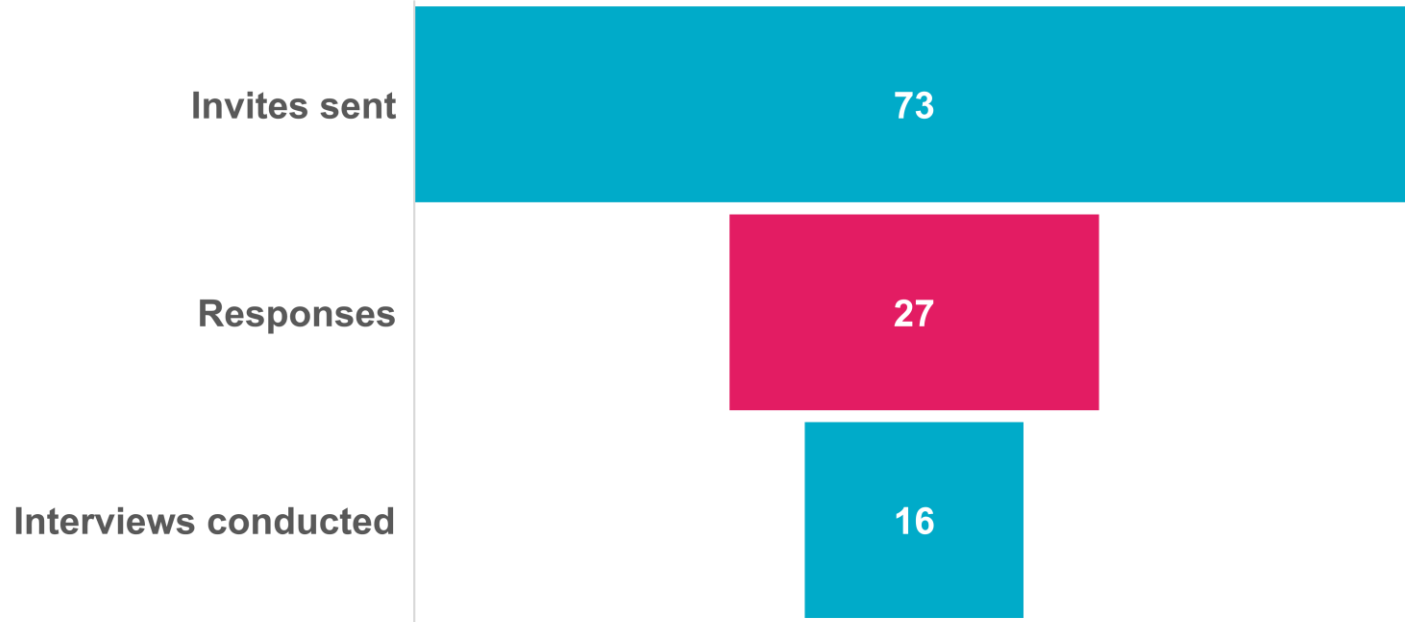
15 cities involved in Europe

**3 pilot cities: Paris, Zurich and Munich**

# Interview preparations

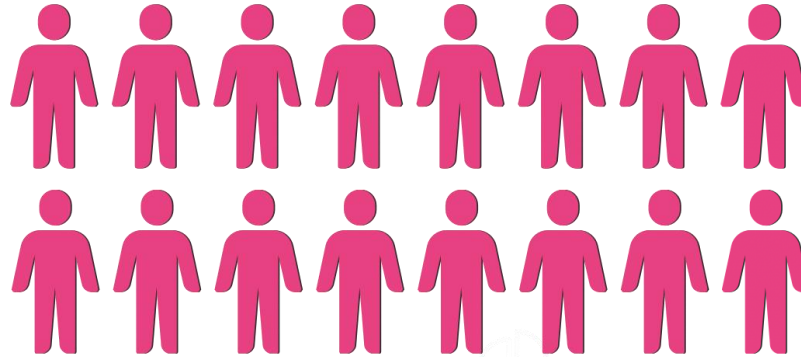


# Response rate





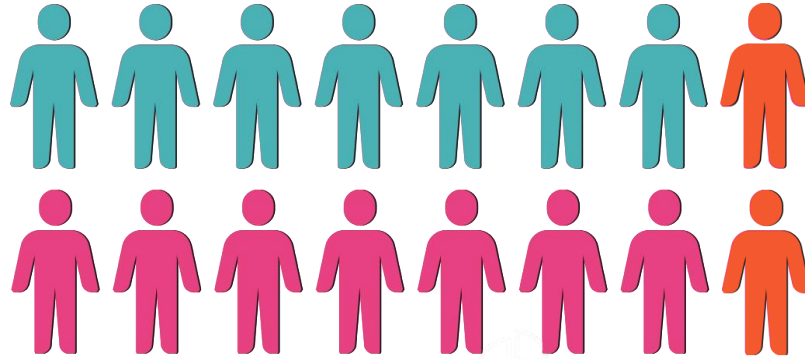
# Progress on Interviews



2020

**16 stakeholders interviewed**

# Progress on Interviews



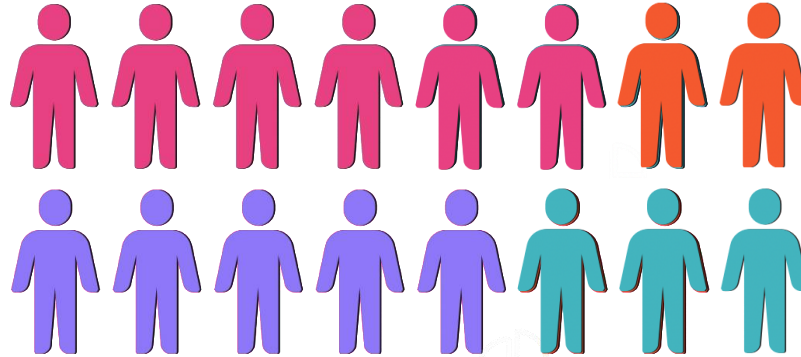
2020

**7 stakeholders from Munich**

**7 stakeholders from Zurich**

**2 stakeholders from Paris**

# Progress on Interviews



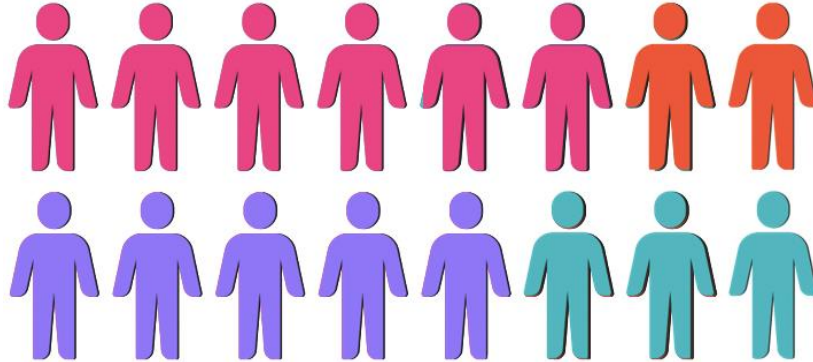
2020

**6 business** **2 civil society**  
**5 city administration** **3 academics**

# Progress on Interviews



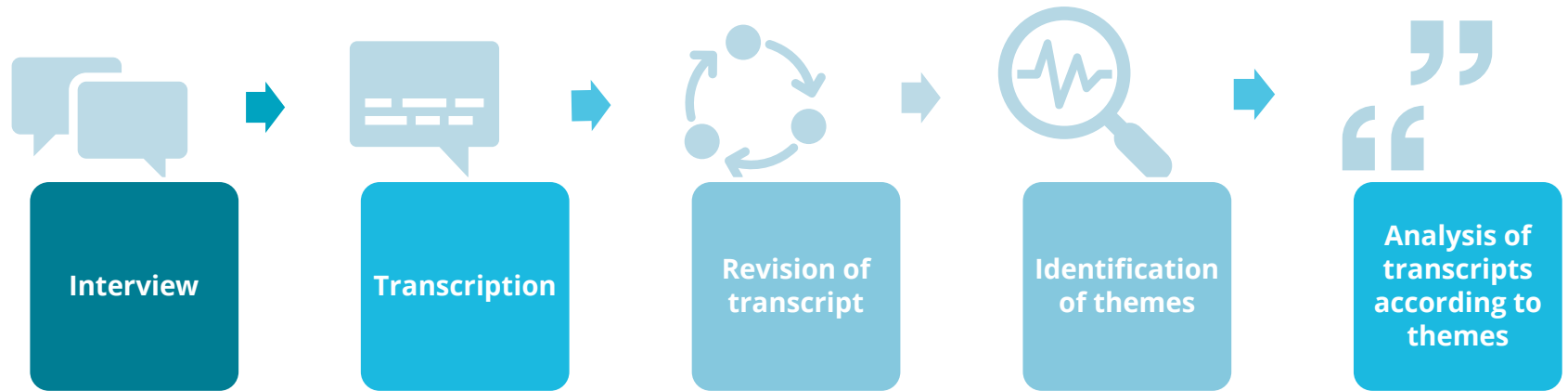
2020



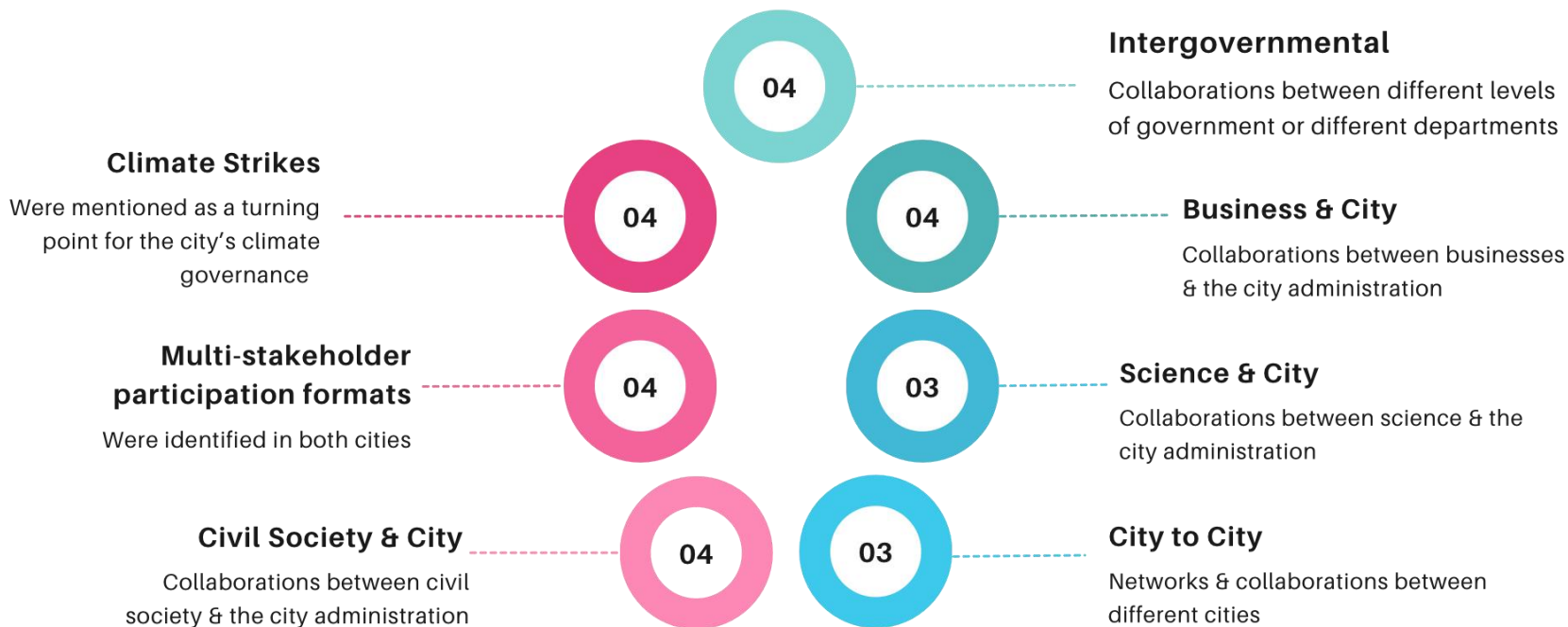
**6 business 2 civil society**  
**5 city administration 3 academics**  
**15+ organisations**



# Post-interview methodology



# Themes Identified



# Theme 1: Science-policy interface



# Importance of framing



The policy makers, they've all been exposed to the science really well. They know all the basics. The question is more how to frame the science in ways which are useful for them to take concrete action.



- Prof. Anthony Patt  
Professor of Climate Policy at ETH Zürich



# Importance of personal relations



There are some people [in the UGZ] that come directly from ETH, so they're very close to science... I think without those personal relations, we would not be part of PAUL, I would say. So I think that those personal relations, they're quite crucial.



– Rainer Zah  
Head of Business Unit Environment in UGZ, Zurich

## Theme 2: Climate strikes



# Impact on public opinion



Without [Climate Strike], it never would have been happened... They really changed public feeling and meaning about climate change.

– René Estermann  
Director of UGZ, Zurich



# Impact on climate politics



... one and a half years ago [we saw] the single biggest step in climate politics that has ever been taken in Germany. I mean this was basically a turning point and it's, you know, just a bunch of activists from Fridays for Future that have the case.



– Alexander Rossner  
Business representative in Munich Climate Council

# Theme 3: Multi-stakeholder participation formats



# Theme 3: Multi-stakeholder participation formats

Stakeholder	Munich	Zurich	Paris
Multiple Stakeholders	Climate Council	Climate Forum, Climathon	Le Conseil de Paris Citoyen, L'Assemblée Citoyenne
Businesses	Climate Pact for Munich Economy, ECOPROFIT, Munich climate – Munich companies do climate protection	Eco-Compass, Climate Platform of the Zurich Economy	Paris Climate Action Charter
Civil Society	089klimaneutral	Participate in Zurich's Future	Climate Agora

# Difficulty meeting expectations



Sometimes [the participants] are getting frustrated because then at the end of the day for us, it's also difficult to ... follow up and to fulfill all their expectations. So yeah, we're still working on it, it's not so easy to find a good way of participation.



- Rainer Zah on Zurich's Climate Forum  
Head of Business Unit Environment in UGZ, Zurich

# Limited impact on decision-making



I think we'll have to try to change a few things about it. Because my feeling at this point is we're being asked for our opinion, we're being listened to, but I don't know if it has any effect on the decision-making.

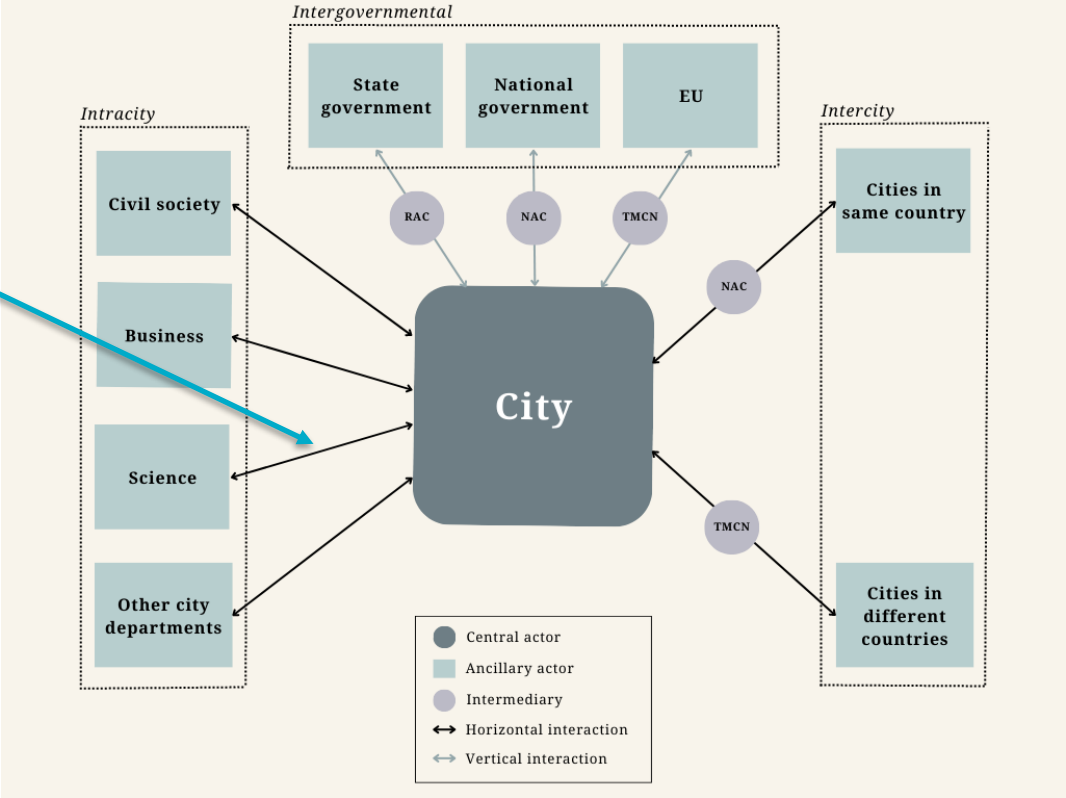


– Marianne Pfaffinger  
Business representative in Munich Climate Council



# Multi-level climate governance

ICOS  
CITIES

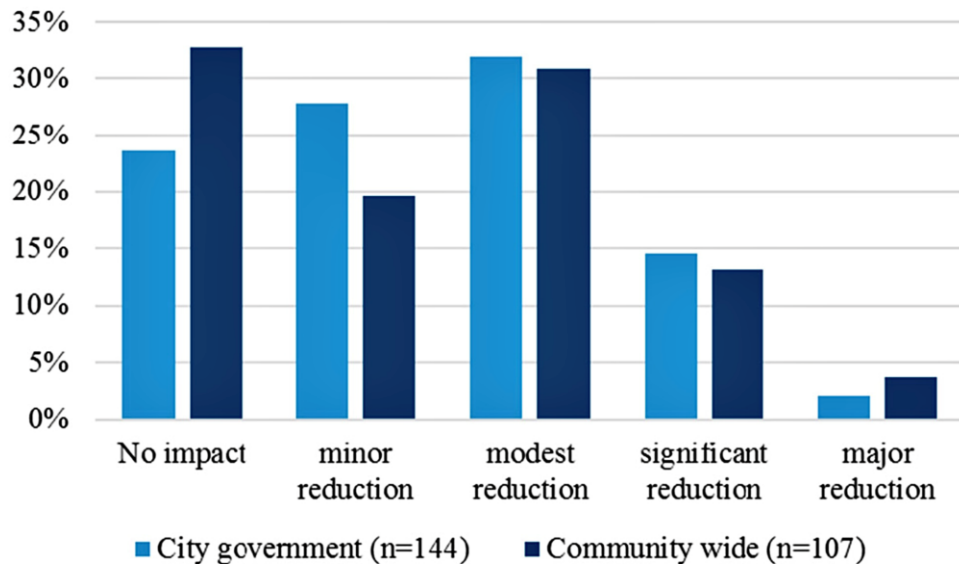


Source: Jessica Dolan

# GHG data in policy making

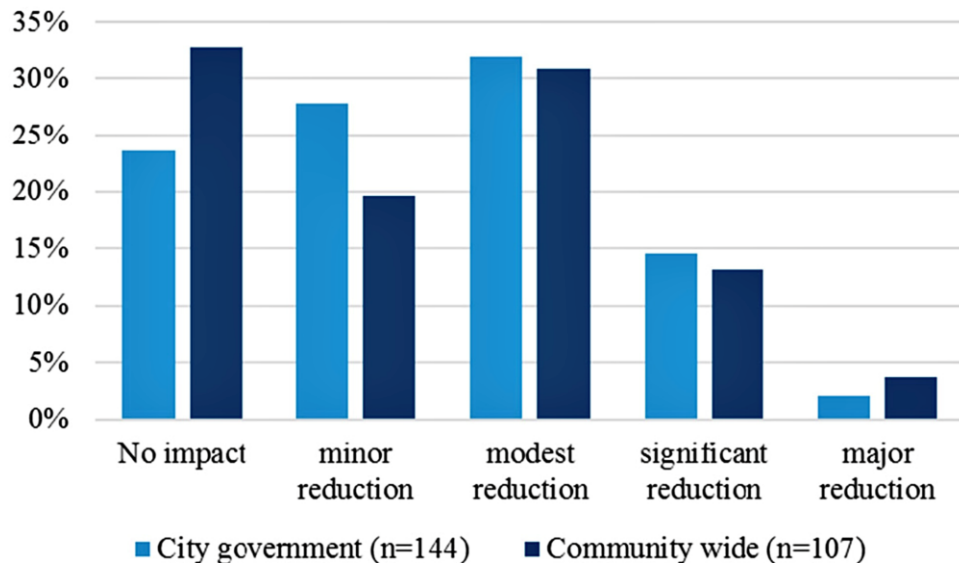


# GHG inventories use as basis of emissions reduction



Source: The effect of administrative form and stability on cities' use of GHG emissions inventories as a basis for mitigation. (Krause et al, 2019) 1

# GHG inventories use as basis of emissions reduction



"Climate plans generally do a poor job of linking mitigation actions to reduction targets."  
(Boswell et al, 2010)

Source: The effect of administrative form and stability on cities' use of GHG emissions inventories as a basis for mitigation. (Krause et al, 2019) 1

# Potential benefits of GHG inventories in policy making

## ACCURACY

Accuracy for informed climate governance decision-making

(Gurney et al 2019, Mueller et al. 2021, Arioli et al. 2020, D'Avignon et al., 2010, Wray, 2021)

## STRATEGY

Targeted and effective mitigation strategies

(Arslanalp et al. 2023, Ibrahim et al. 2012, Arioli et al. 2020, D'Avignon et al, 2010, Xi et al. 2011, Boswell et al. 2010, Hughes et al., 2020)

## REPORTING

Reporting and monitoring progress of climate action

(Krause et al., 2019, Boswell et al, 2019, Arioli et al, 2020, Rivas et al, 2022, Reckien et al 2018)

## ACCESS

Access to collaborations, funding and higher-level support

(Hughes et al. 2020, Krause et al. 2019, Reckien et al. 2018, Boswell et al. 2010, D'Avignon et al. 2010)

## MS1 Part 2

## Analysis of climate governance structures in pilot cities

Milestone overview report 1.2  
Project number 101037319



ICOS Cities, in Pilot Applications in Urban Landscapes - Towards integrated city observatories for greenhouse gases (PAC4), has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101037319

## MS2 Part 1

## Analysis of climate governance structures in pilot cities and policy needs

Milestone overview report 2  
Project number 101037319



ICOS Cities, in Pilot Applications in Urban Landscapes - Towards integrated city observatories for greenhouse gases (PAC4), has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101037319

## Fuelling Effective Climate Governance: How High-Quality GHG Inventories Can Empower City Governments

Barbara Dias Carneiro<sup>1</sup>

<sup>1</sup>Associate Professorship of Environmental Sensing and Modeling

Correspondence: barbara.dias-carneiro@tum.de

**Abstract.** Cities are major contributors to climate change and crucial actors in the mitigation and application of climate governance. They must establish complete and accurate greenhouse gas emissions inventories in order to formulate successful climate strategies, yet, few papers explore the benefits of data-driven climate governance. Through analyzing qualitative and quantitative papers, this literature review highlights the vital role of cities in mitigating climate change and how precise and complete inventories can empower local governments. Such inventories empower cities by ensuring data accuracy for informed decision-making, enabling targeted mitigation strategies, facilitating progress on monitoring, and providing access to collaboration and funding.

### 1 Introduction

Cities play an essential role in the mitigation of climate change, and their involvement is necessary for achieving the goals set by the Paris Agreement. They are responsible for over three-quarters of worldwide carbon emissions, and therefore, are also significant contributors to climate change and its effects (Frick and Bae, 2011). To achieve the goals set by the Paris Agreement and national plans for 2030, cities must establish applicable climate strategies, which requires as a first step, a complete and updated greenhouse gas emissions inventory (Arioli et al., 2020).

The first step for cities to address climate mitigation is having a sustainable and reliable emissions inventory (Wright et al., 2011). An accurate GHG emissions inventory allows municipalities to create mitigation strategies and monitor the effectiveness of their current climate plan when regularly updated (Muehler et al., 2021). While there are different methods to achieve such inventories, high-quality, accuracy, comparability and completeness are among the main characteristics cities should aim for (Bredem et al., 2012; Ramesswami et al., 2012; Muehler et al., 2021). Although GHG inventories are not the only indicator of climate mitigation, investing in quality inventories is an essential starting point for cities to create targeted climate strategies (Frick and Bae, 2011).

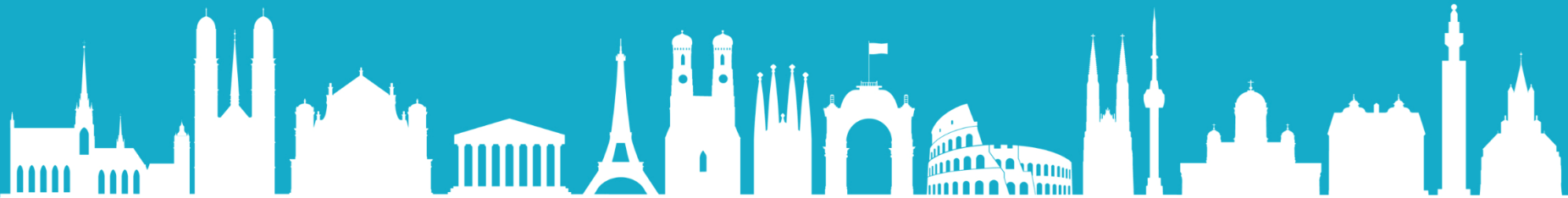
Cities are continually investing in new forms of accountability. Through data-driven governance to civil collaboration, advancements in data and technology are pushing gov-

ernments to use new tools in decision-making toward more transparent processes (Hughes et al., 2020). With that, the science of cities is evolving (Bai et al., 2018). Policy-makers are transitioning into evidence-based decision processes to mitigate risks and develop new climate strategies (Bai et al., 2018).

Research on how cities quantify their climate plans and to which state inventories contribute to it is still vague (Hughes et al., 2020; Kinuse et al., 2019). This report aims to explore the gray area of how such inventories may benefit urban climate governance, answering the following question: How can high-quality Greenhouse Gas inventories empower city governments?

### 2 Methods

This report is based on qualitative research methods, through a literature review, to investigate the potential benefits of high-quality greenhouse gas emissions inventories for cities. A systematic literature analysis of 19 qualitative and quantitative-based research papers and an exploration of national and transnational climate agreements was conducted. The selected papers were sourced from Google Scholar, ScienceDirect and other resources, such as inventory databases and relevant research articles, provided by Ph.D. candidate Patrick Aigner. The research approach includes a comparative analysis of these studies to identify potential limitations



# ICOS Cities website

[www.icos-cp.eu/projects/icos-cities](http://www.icos-cp.eu/projects/icos-cities)

Barbara Dias Carneiro  
barbara.dias-carneiro@tum.de



# Bibliography

- Corcaci, A., & Kemmerzell, J. (2023). Trans-local action and local climate policy. Configurations of success for climate innovations in the European multilevel system. *Review of Policy Research*. <https://doi.org/10.1111/ropr.12536>
- Davies, A. R., Castán Broto, V., & Hügel, S. (2021). Editorial: Is there a new climate politics? *Politics and Governance*, 9(2), 1–7. <https://doi.org/10.17645/pag.v9i2.4341>
- Fuhr, H., Hickmann, T., & Kern, K. (2018). The role of cities in multi-level climate governance: Local climate policies and the 1.5 °C target. *Current Opinion in Environmental Sustainability*, 30, 1–6. <https://doi.org/10.1016/j.cosust.2017.10.006>
- Marquardt, J. (2020). Fridays for Future's disruptive potential: An inconvenient youth between moderate and radical ideas. *Frontiers in Communication*, 5. <https://doi.org/10.3389/fcomm.2020.00048>
- Sprain, L. (2016). Paradoxes of public participation in climate change governance. *The Good Society*, 25(1), 62–80. <https://doi.org/10.5325/goodsociety.25.1.0062>





**ICOS** |  Cities



[icos-ri.eu/icos-cities](https://icos-ri.eu/icos-cities)



ICOS\_RI #ICOSCities