



## The role of the private sector and citizens in urban climate change adaptation: Evidence from a global assessment of large cities

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### ABSTRACT

Expectations of cooperation between local authorities, the private sector, and citizens in climate change adaptation in cities are high because involvement of many actors is seen as critical to success. Scholars and policymakers argue that the private sector could be more efficient than the public authorities in implementing adaptation measures and argue for the need to engage citizens to ensure legitimacy of adaptation and inclusion of locally relevant knowledge. To what extent do cities address the private sector and citizens in their adaptation initiatives? What modes of governance do they use to do this? What kinds of cities are the most likely to address the private sector and citizens? Going beyond the existing case study approaches, this paper answers these questions using a large N data set covering 402 cities around the world. We find that a majority of adaptation initiatives focus exclusively on the public sector and do not address the private sector or citizens. In the cases where they do, the private sector is more often governed through partnerships and participation, whereas citizen participation is relatively rare. Initiatives involving citizens rely more often on a provision of information that encourages citizens to adapt. We find that the more advanced a city is in its adaptation process, the more likely it is to address the private sector than citizens in its initiatives to adapt to climate change. Whereas with partnerships and participation the private sector can influence urban adaptation arrangements at a broader scale, the provision of information allows citizens only to implement individual adaptation measures according to their capacities.

### 1. Introduction

There is a broad consensus that the private sector and citizens should be involved in urban climate change adaptation, alongside public authorities. The 5th Intergovernmental Panel on Climate Change (IPCC) report states “[L]ocal government and the private sector are increasingly recognized as critical to progress in adaptation” (IPCC, 2014, p. 25). The report’s chapter on urban areas highlights the importance of the engagement of citizens and the private sector but also mentions that citizen participation and private sector involvement has so far been limited in practice (Revi et al., 2014, 580–585). The Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC, 2015) identifies “civil society, the private sector,

financial institutions, cities and other subnational authorities” (p. 19) as crucial actors responding to climate change. Likewise, many national adaptation policy documents stress the role of local authorities, citizens, and the private sector (e.g., Danish Nature Agency, 2012; German Federal Government, 2008; MMM, 2014).

Empirical research on urban adaptation finds surprisingly little active involvement of citizens and the private sector (Hegger et al., 2017; Juhola, 2013; Klein et al., 2017; Lund et al., 2012; Wamsler, 2016; Wamsler and Brink, 2015), with much effort being placed on mainstreaming within the public sector (Widmer, 2018). Even though there are empirical examples of involvement of the private sector and citizens (e.g., Anguelovski and Carmin, 2011; Bedsted and Gram, 2013; Chu, 2016; Mees et al., 2014), there seems to be a lack of guidance for the

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private sector's and citizens' adaptation (van Kasteren, 2014; Wamsler and Brink, 2015). So far, the involvement of private actors (citizens and the private sector) seems to be limited to the implementation of adaptation measures, while problem analysis and framing of adaptation solutions is dominated by the public authorities (Burton and Mustelin, 2013; Klein et al., 2017; Lund et al., 2012; Mees et al., 2015; Tennekes et al., 2013). Citizens are rarely involved in the problem framing of adaptation (Chu, 2016a; Hegger et al., 2017; Klein et al., 2017; Mees et al., 2015), and their activities are often not intentional adaptation but de-facto adaptation, motivated by factors other than climate change (Wamsler et al., 2016; Wamsler and Brink, 2015).

In terms of what modes of governance are used to steer adaptation activities of the private sector and citizens, the literature is limited. First, most of these studies are single-case, small-n studies, or cross-scale analyses (Araos et al., 2016b; Keskitalo et al., 2012; Swart et al., 2014). The differences between case studies reduce the possibilities for a consistent and comprehensive analysis across cases, and this makes it difficult to arrive at a comprehensive picture of governance of adaptation in urban areas. There are notable exceptions of cross-case adaptation studies (Wamsler and Riggers, 2018) and studies addressing sets of 100–885 cities, but these address predominantly climate change mitigation (Bulkeley et al., 2013; Castán Broto and Bulkeley, 2013; Heidrich et al., 2016) and/or they are not very specific about who is involved in and steered by adaptation measures (Aguilar et al. 2018; Araos et al., 2016a, 2016b; Hunt and Watkiss, 2011; Reckien et al., 2018). Second, there is a dominance of and bias toward studies in developed countries (Bulkeley et al., 2013; Castán Broto and Bulkeley, 2013; Meerow and Mitchell, 2017). There is, thus, a need to complement the existing small-n studies with the analysis of bigger data sets that allow for generalization (Ford et al., 2016; Swart et al., 2014).

In this study, we pose three hypotheses and test them based on the data set of 997 adaptation initiatives in 402 cities<sup>1</sup> across the world, compiled by Araos et al. (2016b), which is to our knowledge the most comprehensive database of its kind. The data include information about each adaptation initiative and the cities' progress in the adaptation policy process. We measure the progress of the cities using the adaptation policy process index (Araos et al., 2016b), and we identify the addressees and mode of governance for each adaptation activity.

## 2. Hypotheses

Despite the high expectations in policy documents and some encouraging examples in the research literature, several empirical studies have found that cities' engagement with the private sector and citizens is very limited. In the relatively rare cases where such engagement is present, it is most often focused on the implementation of adaptation measures (Hegger et al., 2017; Juhola, 2013; Klein et al., 2017; Lund et al., 2012; Mees et al., 2015; Tennekes et al., 2013; van Kasteren, 2014), rather than involving the private sector and citizens throughout the adaptation policy process. Overall, most adaptation efforts documented by case studies at the city level seem to be focused on institutionalizing adaptation within local governments (Aylett, 2015). Thus, we propose the following hypothesis:

- 1.) So far, most public sector adaptation initiatives focus on the public sector and do not actively steer adaptation activities of the private sector and citizens.

Next, the involvement of citizens and the private sector in adaptation entails more complex considerations than whether and when they are involved. These considerations include questions about the

<sup>1</sup> The data are from urban areas larger than 1 million people. For the sake of readability, we use the term "city" for urban areas, as defined in the "Methodology" section, and the related public authorities and administration.

rationale for involvement and the modes of governance that are being used to address different actors and how this then plays out in terms of responsibilities related to adaptation.

Several arguments have been presented in the literature to support the idea that involvement of the private sector and citizens beyond the fulfillment of legal requirements is important in urban adaptation. This literature provides two broad strands of reasoning, one focusing on market orientation and the other on engagement and participation. First, it is argued that limited capacities of the public sector and the continuing trend of a retreating state can be seen as a reason to form partnerships and shift responsibilities to the private sector and citizens (Geaves and Penning-Rowsell, 2016; Taylor and Harman, 2016; Tompkins and Eakin, 2012; Wamsler, 2016; Wamsler and Brink, 2014). Some economists see private actors as responsible if adaptation is considered to provide a private good (Konrad and Thum, 2014; Mendelsohn, 2006). Second, reasons for engagement and citizen participation include issues, such as legitimacy, inclusion of citizens, and the use of local knowledge. The legitimacy of adaptation may depend on the involvement and participation of a variety of stakeholders and fair consideration of different interests (Adger et al., 2005; Castán Broto and Bulkeley, 2013; Mees et al., 2014). Participation of non-public actors can be seen as a value in itself (Arnstein, 1969; Klein et al., 2017; Mees and Driessen, 2018; O'Hare et al., 2016), and it may enable access to local and tacit knowledge, thus improving implementation and ownership of adaptation initiatives (Boezeman, 2015; Fünfgeld and McEvoy, 2014; Glaas et al., 2010; Wamsler, 2017).

These two different rationales for involving the private sector and citizens have implications on the modes of governance that may be used to encourage involvement. It has become clear from previous studies that citizens and the private sector can be involved in different stages in an adaptation process, and this can happen via different modes of governance (Bulkeley et al., 2013; Castán Broto and Bulkeley, 2013; Kern and Alber, 2008; Klein et al., 2017; Mees et al., 2015, 2014). If the main rationale is economic, it may be most feasible to achieve the desired type of involvement through modes of governance, such as public-private business partnerships or provision of economic incentives. If, on the other hand, the main rationale is engagement, the modes of governance used to encourage involvement need to include different types of participatory processes, including both citizens and the private sector. Considering possible modes of governance juxtaposed with the rationales for the involvement of non-public actors, we hypothesize that:

- 1.) Local authorities use different modes of governance depending on whether they aim to steer citizens' actions or the private sector.

Finally, we are interested in what kinds of cities are the most likely to address the private sector and citizens. It is assumed that cities where the adaptation policy process has advanced the furthest may be more likely to address private actors. The literature includes examples of pilot projects and alternative approaches that strive for a stronger involvement of citizens and the private sector. Examples from the Nordic countries, where cities tend to be rather advanced in their adaptation policy processes, indicate horizontal cooperation and more active involvement of citizens and the private sector, even though many authors point to the limiting influence of existing institutional structures (Klein, 2016; Rauken et al., 2014; Wamsler, 2017). Similarly, Mees et al. (2014) show in Hamburg, Helsinki, and Rotterdam—three cities advanced in their adaptation policy processes—that new alternative approaches to flood risk management entail an increased involvement of private actors. In most cases, however, stakeholder involvement has remained at the early experimentation stage, in both the Global North and the Global South (Anguelovski and Carmin, 2011; Chu, 2016b). In their assessment of the climate change activities (mitigation and adaptation) of 200 European cities, Heidrich et al. (2016) find that the cities focus on their own organizations first before moving on to address

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