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Metropolitan planning organizations and climate change action☆

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ABSTRACT

Metropolitan Planning Organizations (MPO) sit at a unique nexus of government arrangements and missions that could be effective for addressing issues of climate change. Using survey and secondary data this study investigates the potential of metropolitan planning organizations to play a formative role in climate change action and policy. We examine factors that promote MPOs involvement in climate change issues by bridging two types of literatures in a quantitative modeling framework: the institutional responses to environmental change, driven by conceptualization of urban systems as social-ecological systems, and the public policy, regional planning and local politics literature. We find robust MPOs, capacity and the organization members' mental models play significant predictors for MPOs engagement in activities directly or indirectly related to climate change.

1. Introduction

The institutional responses to environmental change are coming into view after three decades of contemplating the challenges of climate change. Governance networks could be a key consideration for both urban affairs and communities dealing with climate change. Most research in the U.S. has not looked at regions and regional institutions to better understand their roles, strengths, and weaknesses for dealing with climate change. There are some examples of international research that suggest investigating regions and regional institutions may be a productive venue for advancing climate change action. Aylett's (2015) findings from his survey of over fifty municipalities across five continents reveals that some regions are more engaged in their efforts than others and that the most effective regions dealing with climate change adaptation are the ones that are building collaborative networks among municipal agencies. Another example is the work of Moloney and Fünfgeld (2015) that details examples of climate change alliances in Australia that are both formal and informal and having facilitated multi-level governance interactions for adaptive climate change responses.

In the U.S., most of the research has been on a city-level engagement in climate change. Cities are certainly at the forefront of tackling these challenges, but regional efforts may also exist and either complement or support city efforts. One exception is a study performed at the regional metropolitan level by Zahran et al. (2008) that looked at regional capacity as well as the stress and the risks regions face regarding climate change outcomes. Their study made use of Census, GIS, and consumer research survey data to define the characteristics of the regions. Using existing data is certainly an excellent place to start but can be limited in terms of what we can learn *about* regional capacity and *involvement* in climate change policy. Climate change is regional and global in nature, presenting both regional and local city impacts and governance challenges (Ruth et al., 2006; Cutter et al. 2014; Bulkeley, 2010).

As such, it is plausible that metropolitan regions could play a role in climate change mitigation and adaptation. For example, in California, the Council of Governments for the 18 metropolitan regions in that state are actively implementing regional climate

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planning as required by law Senate Bill (SB) 375. The goal of SB 375 is to reduce greenhouse gas emissions by coordinating land use and transportation at the regional level through a Sustainable Communities Strategy or SCS. Additionally, according to the Center for Climate Change, 23 states have emission targets and goals to reduce Greenhouse Gas (GHG) emissions statewide (Center for Climate and Energy Solutions, 2011). Given that we know state and regional climate change planning is already taking place, it is worthwhile to find out which factors (beyond laws) are promoting engagement in regional climate change policy by metropolitan planning organizations (MPOs).

Regional level actors have the potential to overcome collective action problems through regional institutions with support in terms of funding but also disseminate information on successful and unsuccessful practices. The higher-level support of regional level actors can provide the foundation or opportunity to gain cooperative governance. Yet, the political landscape of regions may foster or detract from an MPO's ability to collectively engage in climate change action. Some regions such as those found in states with laws or targets to address GHG emission may be better positioned to work regionally than others. Even partisan politics could have an impact. For example, a region with a more liberal central city surrounded by more conservative cities may find it more challenging to obtain collaboration on climate change action than one surrounded by equally liberal communities. Knowing which factors drive involvement in climate change action could lead to best practices that other regions could adopt. The importance of knowing the drivers has been underscored by previous research. For example, a study in the Florida Keys reveals experts and decision makers express a strong belief that there are serious impacts stemming from climate change, yet they are less certain about how to find solutions (Mozumder et al., 2011). The regional nature of climate change issues may mean MPOs are one type of institution well situated to be part of the answer or at least help address some of the challenges climate change presents communities. We know of no research to date that has systematically studied the role that MPOs play in this important topic in the US.

To explore the potential role of MPOs as part of the solution, this manuscript begins with a description of MPOs and our conceptual framework. We then review the literature on institutional responses to environmental change and literature from public policy, planning and local politics. Thereafter, the methods used to collect and analyze the data are discussed before turning to the analysis of the results. The manuscript concludes with policy implications and promising practices for encouraging more involvement by MPOs in climate change policy as well as ideas for future research on the topic.

2. Metropolitan planning organizations and our conceptual framework

2.1. Metropolitan planning organizations

Metropolitan regions are the primary drivers in economic growth and national economic activity (Fragkias, 2016). The economic outcomes observed in cities rely, to a large extent, on the efficient movement of goods and people – and the exchange of ideas across space. As such, metropolitan agglomerations provide the fundamental infrastructure that allows for urban economic growth but, at the same time, the decisions metropolitan regions make on the types, form and function of that infrastructure defines the bidirectional impacts between each region and the environment (Cutter et al., 2014). So, for example, while each metropolitan region is affected by climate change differentially, regions also have differing capacities and resources to engage in climate change mitigation and adaptation (Hughes, 2015). It is important to realize though that both of these effects are ultimately connected by decisions regarding urban infrastructure. MPOs are one of the institutional structures that exist and contribute to the work and infrastructure that can enable in metropolitan regional capacity.

MPOs maintain a unique nexus of government arrangements and missions that could be used effectively to deal with climate change. MPOs are regional organizations that coordinate transportation investments of local, state and federal agencies. In 1962 the Federal Aid Highway Act required urbanized areas to coordinate “continuing, comprehensive and cooperative planning process[es]” when using federal dollars. In 1965 there were 224 urbanized areas and today there are 405 (including the urbanized area in Puerto Rico) (Association of Metropolitan Planning Organizations, 2016; U.S. Department of Transportation, Federal Highway Administration, Federal Transit Administration, 2016). Nearly half of all MPOs also serve as the Regional Council or Council of Governments (COG) for their specific geography. The MPOs that do not serve as Regional Councils focus on their federal mandate for elected officials to assist in the planning and implementation of the use of federal transportation funds within their region, often referred to as Regional Transportation Plans (RTPs). Regional Councils have a broader focus where local governments work together on social and environmental issues (National Association of Regional Councils, 2016; Association of Metropolitan Planning Organizations, 2016). Given that nearly half of MPOs are also Regional Councils and the other half deal directly with regional transportation planning, which has implications for energy, air quality, and infrastructure, suggests MPOs may have both the institutional capacity and technical knowledge to work, if not directly, indirectly on issues that could have an impact on climate change.

Yet, the MPOs that serve various regional areas are not equal in size or capacity. There is great variation in the geography they cover ranging from 34 square miles to 38,649 square miles and populations ranging from 50,000 to one million or more people. Some MPOs have a staff of two employees while others have more than 100 employees. The median size staff for all MPOs is six while the median size of staff ranges between three and 37 employees varying in large part with the size of the area's population. The specializations of the employees include GIS, Travel Demand Modeling, Transit, Bicycle and Pedestrian, Public Involvement, Traffic Operations, Intergovernmental Relations, Air Quality, Safety, Transportation Disadvantaged, Freight, and Socio Cultural Impacts (The Council of State Governments, 2015; Federal Highway Administration, 2010). The largest source of operating funds for MPOs is the federal government but state and local governments also supply a substantial amount of funding that MPOs may use (Federal Highway Administration, 2010). Yet, MPOs are constrained by federal guidance as to what they can and cannot do so as not to