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Analyzing international city networks for sustainability: a study of five major Swedish cities

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ABSTRACT

This article studies five Swedish cities, their membership in international city networks, the different motivations for such membership, and their administrations' expected and perceived benefits. Particular focus is put on sustainability, environmental technology, and municipal companies as potential beneficiaries of such network membership. This study is motivated by the fact that city networks can potentially contribute to global sustainability goals by accelerating the diffusion of innovations, giving members access to bidirectional information flows, improving the user–producer relationship, and providing legitimacy in the potential recipient regimes.

The study relies on a documentation review, the collection of data from the websites of the studied cities and numerous international city networks, and interviews with city officials responsible for international city networks. It was found that four of the five studied cities are active members of international networks for sustainability, but also that there are large gaps between the two largest cities and the rest when it comes to the number of memberships and the geographical outreach they have through the networks they belong to.

Some city officials claim that it is easier to be active in national networks than in international networks, due to time requirements and coordination among so many members. However, city officials see benefits for their municipal companies when they are members of international networks, and these companies are usually independent when it comes to choosing and administering their memberships. It was found that it is difficult to measure direct benefits from network membership, and link improvements in the studied cities to participation in a particular network (with the exception of groups created for a specific infrastructure project, reported as "networks" by the administrations). In addition, there is no apparent direct correlation between membership and diffusion of environmental technology solutions from municipal companies. However, the administrations expect indirect benefits such as gaining legitimacy and access to milieus where they can share information and best practices, which could lead to the improvement of both local and global environmental conditions.

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1. Introduction

Cities have recently become popular units of analysis for scholars and researchers in many fields related to sustainability (Bulkeley and Betsill, 2005; Nicholls, 2008). This is in great part due to the fact that humanity has never lived as densely as it does today. Although such conditions have been driven in part by the need to concentrate services and improve the reach of utilities and amenities, it has represented a significant impact on the surrounding environment and on the environmental services humans rely on in the first place.

In this line of thought, it is possible to understand the attention that cities are getting on the world agenda. By "world agenda" we mean not only a political one, but one that includes other components of the world's social dynamics, such as economy and science, the environment, and even arts and leisure (see e.g. Keiner and Kim, 2007; Nicholls, 2008; The World Bank, 2010; UNHABITAT, 2012). In particular, the ever-changing characteristics of city dwellers are of interest, due to the importance this has on the way cities are seen and experienced, and especially on how decisions are made regarding possible solutions to their problems (Hillman et al., 2011).

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Since environmental technologies are considered to provide strong foundations for both environmental and economic sustainability (Kanda et al., 2015), the urban era represents opportunities for their diffusion. In this line of thought, cities that have historically enjoyed international visibility, reached advanced industrialization levels, and made headway in scientific advances are exploiting this condition, creating strategies and devoting important resources to promote their environmental technology expertise (Hodson and Marvin, 2009, 2010). Nevertheless, the difficulties of translating imaginaries of sustainability are becoming a concern for researchers, decision-makers and businesspeople alike. Hult (2013), for instance, highlights the difficulties that the Swedish government and its trade council (called Business Sweden) have faced when trying to export their urban development concept by using a marketing tool called SymbioCity. Such difficulties rest on the fact that the holistic approach proposed with this tool is tied to Swedish lifestyles and particular conditions that have facilitated the development and stability of these solutions at home. This can very well be a problem that many other technology providers face, since components of such solutions have grown in an orchestrated manner with local, coexisting systems and have developed in close proximity to them, something that Mejía-Dugand et al. (2013) also highlight.

In particular, technologies emerging at the municipal level (e.g. energy, waste, and wastewater management systems) face significant barriers in their diffusion. Municipal companies (in this context, mainly utility companies) have been developing solutions and know-how through many years of administering their cities (see e.g. Furlong, 2015). This has left them with valuable knowledge and expertise, which in turn represents opportunities for exploiting them from an economic perspective. However, municipal companies do not necessarily play on the same field as private companies, and thus must overcome different obstacles when thinking of benefitting from their knowledge (Kanda, 2014). Because of their nature, including the environmental solutions they provide, municipal companies often have other cities, governments and publicly owned companies as customers, often compared to business-to-business (B2B) customers in the case of private companies. Taking Swedish municipal companies as an example, Kairento and Nygårds (2014) identified barriers in their study related to human resource constraints between foreign markets and local responsibilities, lack of knowledge about foreign markets and also the difficulties of marketing intangible service offerings which hinder the diffusion of environmental technologies from municipal companies. Municipal ownership also induces split political vs. market incentives in diffusion (Kairento and Nygårds, 2014). Swedish municipalities have been developing programs to attract international attention to their solutions, e.g. foreign delegations, conferences, and field trips. However, such initiatives take a long time from participation to project realization. In addition, they have not had the expected results so far (Kanda, 2014; Mejía-Dugand, 2013).

It is commonly accepted in the innovation literature that diffusion is facilitated by the creation and maintenance of personal connections (see e.g. Pedersen, 1970; Baptista, 2001; Simmie, 2003; Keiner and Kim, 2007). The main argument of this article is that by understanding and taking advantage of the local, regional and international positioning of a city or group of cities, the process of diffusion of urban innovations, in particular those focused on sustainability issues, can be facilitated. By becoming part of international city networks, cities can have access to knowledge that is collectively supported, maintained, nurtured, and shared. In this article, the concept of networks is understood as a group of two or more cities that come together to create milieus in which they can share resources, knowledge, and experiences, and facilitate learning about a particular and explicitly defined topic.

Most importantly, and in line with the discussion presented above about the translation of urban imaginaries, city networks can provide legitimacy to their members. This is something that Kanda (2014) highlights as an essential requirement for the diffusion of environmental technologies, especially at the municipal level (cf. with private companies implementing environmental technologies based on market signals or providers' reputation). Benefits of making use of this knowledge include: entering a flow of incremental innovation that might facilitate the diffusion process (Cooke et al., 2002) and benefiting from two-way information flows (Batten, 1995); pacifying the competing logics in social and environmental innovations (Guy and Marvin, 1999); finding key compatibility factors between the innovation and the governing regimes and developing flexible and complementary/adaptive solutions (Batten, 1995; Mejía-Dugand et al., 2013); improving user–producer relations (Cooke et al., 2002); and maximizing the network value of an innovation (Cooke et al., 2002).

City networks can thus be particularly beneficial for the diffusion of environmental technologies from municipalities, which in the case of Sweden face several challenges and constraints, as mentioned above. The aim of this study is therefore to understand the dynamics of city networks and how their members benefit from their membership in them. This is done by studying the five largest cities in Sweden and the networks they belong to. We are interested in learning and diffusion of knowledge and environmental technologies. A special focus on municipal companies is central, since they concentrate a large share of this knowledge, and administrate the systems and technologies that operationalize it. This aim is supported by the following questions:

- To what extent do the studied cities participate in city networks for sustainability?
- In which way do municipal companies benefit from their city's membership in international networks when it comes to the diffusion of their environmental technologies?

Competition between and among cities has shown to bring individual benefits in many cases, but it is not clear that this has been the case for the achievement of collective goals such as global sustainability, since unilateral actions have small chances of success (Hansson, 2010). Cities cannot build isolated and individual foundations for a sustainable future, especially in a globalized context where humans, capital, goods, and labor are highly free to move, stay or leave. The globalization process, Capello (2000) claims, provides a rational explanation for network behavior. Although Guy and Marvin (1999) mentioned that competing visions of sustainable cities emerge due to the diverse nature and composition of groups and collective goals aiming at sustainability, Keiner and Kim (2007) found that competition is less important when cities form networks for sustainability, since they all have the same goals. This is of particular importance when trying to understand the behavior of innovation diffusion for the solution of urban problems and the way in which knowledge is shared among the members of these networks.

2. Sustainability: a global, rather than local goal

Cities are acknowledged as crucial components of the most important global sustainability goals (Bulkeley and Betsill, 2005; Marceau, 2008). However, when taking the city as an element, urban sustainability takes a strictly geographically bounded shape. This fact can contradict the pursuit of global sustainability, since unilateral efforts have small chances of success (Hansson, 2010). It is clear that the diffusion of environmental technologies not only has the intention of contributing to sustainability, but also to propel

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