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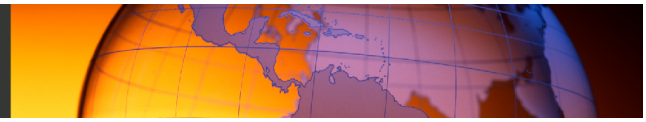

Policy Entrepreneurs in Public Administration: A Social Network Analysis

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This article examines the role of policy entrepreneurs in promoting change in flood risk mitigation at the local level in Sweden through a comparative study of two Swedish municipalities with different approaches to flood risk governance; as a technical issue or a social issue. The municipality in which flood risk mitigation is addressed as a social issue exhibits a larger size of the network mitigating flood risk, more diverse actors involved, and a more central location of the politicians and senior management. Moreover, the analysis points to the salience of a bureaucratic policy entrepreneur in promoting this shift toward addressing it as a social issue, and shows how they use relational strategies to frame the issue as relating to climate change action. The article operationalizes sociability and credibility, two of the attributes of policy entrepreneurs, and thus, contributes to the theoretical and methodological discussion of policy entrepreneurs in general, and as they pertain to environmental policy in particular.

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Emprendedores de políticas en la administración pública: un análisis de redes sociales

Este artículo examina el papel de los emprendedores de políticas en la promoción de cambios en la mitigación del riesgo de inundaciones a nivel local en Suecia a través de un estudio comparativo de dos municipios suecos con diferentes enfoques para la gobernanza del riesgo de inundaciones. El municipio en el que se aborda la mitigación del riesgo de inundaciones como un problema social exhibe un mayor tamaño de la red que mitiga el riesgo de inundaciones, más actores involucrados y una ubicación más central de los políticos y la alta gerencia. Además, el análisis apunta a la importancia de un emprendedor de políticas burocráticas en la promoción de este cambio, y muestra cómo utilizan estrategias relacionales para enmarcar el tema en relación con la acción del cambio climático. El artículo operacionaliza la sociabilidad y la credibilidad, dos de los atributos de los emprendedores de políticas, y por lo tanto contribuye a la discusión teórica y metodológica de los emprendedores de políticas en general, y en lo que se refiere a la política ambiental en particular.

Palabras Clave: Mitigación del riesgo de inundaciones, Toma de decisiones, Crisis, Riesgo, Suecia, Política comparativa, Emprendedores de políticas, Diseño de políticas, Análisis de redes sociales, Política de medio ambiente, cambio climático.

公共行政中的政策企业家：一项社会网络分析

本文通过对就洪灾风险治理采取不同措施的两个瑞典自治市进行比较研究，分析了瑞典政策企业家在从地方层面推动改变洪灾风险缓解措施一事中发挥的作用。将洪灾风险缓解作为一个社会问题加以解决的自治市展现了更大范围的洪灾风险缓解网络、涉及更多样化的行动者、并且政客和高级管理层的中心位置更强。此外，分析指

出了官僚政策企业家在推动这一转变的过程中的重要性，同时表明了他们（官僚政策企业家）如何使用关系策略来将该问题描述为与气候变化行动相关。本文将政策企业家的两个性质—社交性和可信度—进行操作化，并由此从整体上对关于政策企业家的理论探讨和方法论探讨作贡献，尤其是与环境政策相关的探讨。

关键词: 洪灾风险缓解, 决策, 危机, 风险, 瑞典, 比较政治, 政策企业家, 政策设计, 社会网络分析, 环境政策, 气候变化.

Understanding the factors and mechanisms leading to policy change is a key concern of policy studies (Capano and Howlett 2009; Sabatier 2007; Weible and Sabatier 2014). Policy entrepreneurs have long been recognized within the public policy scholarship as agents of change in general (Carter and Scott 2010; Mintrom 2000; Mintrom and Norman 2009; Mintrom and Thomas 2017; Schneider and Teske 1992; Schneider, Teske, and Mintrom 1995; Sheingate 2003), and environmental policy change in particular (Huitema, Lebel, and Meijerink 2011; Ingold and Christopoulos 2015; Mintrom 2019; Kalafatis and Lemos 2017; Verduijn 2015). Further, policy entrepreneurs are integral to both canonical and more recently established theories of the policy process (Mintrom and Norman 2009; Petridou and Mintrom 2020). The policy entrepreneur is "a special kind of actor, embedded in the sociopolitical fabric, who is alert to opportunities and acts upon them; he or she amasses coalitions for the purpose of effecting change in a substantive policy sector, political rules or in the provision of public goods" (Petridou, Aflaki, and Miles 2015, 1). In addition to their contribution to environmental policy change, policy entrepreneurs have been found to be influential in the process of effecting transformative change in other substantive policy sectors, such as economic development (Petridou 2017; Schneider and Teske 1992; Schneider, Teske, and Mintrom 1995), education (Mintrom 2000), foreign policy (Blavoukos and Bourantonis 2012; David 2015), and social policy (Hammond 2013), to name a few (see Frisch-Aviram, Cohen, and Beeri 2019). In other words, policy entrepreneurs matter (Arnold 2020).

A segment of policy entrepreneurship literature suggests that these actors are members of the elite, exceptional actors, or high-level decision makers (Christopoulos 2006; Christopoulos and Ingold 2015; Frisch-Aviram, Cohen, and Beeri 2019), while the role of public servants has not garnered much attention by scholars (see Frisch-Aviram, Cohen, and Beeri 2018; Hysing and Olsson 2011; 2012; Olsson and Hysing 2012; Petridou 2018). This lack of scholarly attention belies the fact that bureaucracy is an integral part of the political process, because public servants are key state actors who delegate the task of proposing policy direction and making policies work. This delegation offers them a significant degree of discretion in policy development and practice (Frisch-Aviram, Cohen, and Beeri 2018; Jordan and Huitema 2014). In addition, a recent systematic review of policy entrepreneurs finds the lowest

percentage of scholarship devoted to the local governance level, as opposed to the regional, national, and supranational levels (Frisch-Aviram, Cohen, and Beeri 2019). This lacuna results in a lack of understanding of bureaucratic policy entrepreneurs—or bureaucratic entrepreneurs as Roberts and King (1991) describe them—in terms of how they make use of the array of strategies at their disposal in their efforts to influence the policy-making process.

Frisch-Aviram, Cohen, and Beeri (2018) focus on the structural characteristics of governance in their examination of low-level bureaucrats in Israeli local-waste separation authorities. In this article, we seek to complement such research by teasing out the networks of bureaucrats at the Swedish local governance level in the fields of flood risk mitigation and climate change adaptation, with a focus on their treatment of the policy problem. Local government-led initiatives are important beyond their jurisdiction, as they may function as a policy experiment with the potential to lead to national change (Mintrom and Luetjens 2017; Petridou and Olausson 2017). Mintrom and Luetjens (2017) focus on subnational policy entrepreneurs to understand the kind of political work required to effect the behavioral (and political) change needed to address climate change. More specifically, the authors examine the micro actions of policy entrepreneurs that have the potential to have macro-level results by focusing, *inter alia,* on problem framing.

Framing, as an integral part of any problem definition and a specific strategy of policy entrepreneurs, has attracted considerable scholarly attention (Mintrom 2000; Petridou 2014; Stone 2002; Zahariadis 2007, 2014). Less research, however, has been devoted to the interactional aspect of problem framing defined as "the dynamic enactment and alignment of meaning in ongoing interactions (and frames as transient communication structures that people build around issues during each turn at talk)" (Dewulf and Bouwen 2012, 169).

Mintrom and Luetjens (2017) explore this aspect of problem framing within the context of policy entrepreneurship, where policy entrepreneurs take a dialectic approach in casting a situation as a policy problem; an approach based on interactions rather than an *a priori* constructed narrative. In this article, we contribute to the work above—drawing on Arnold, Long, and Gotlieb (2017), Balsiger and Ingold (2016), Christopoulos (2006), Christopoulos and Ingold (2015), Ingold and Christopoulos (2015), and Lieberherr and Ingold (2019)—by adopting a structural focus in our analysis. We examine the network structure of two Swedish municipalities with a focus on the relational profile of the policy entrepreneur identified in one of them. A relational approach sheds light not only on the problem framing strategy used by policy entrepreneurs as evidenced through their interaction with others, but it also advances the scholarship on the relational strategies of entrepreneurs (Mintrom and Vergari 1996). Relational strategies are significant in cross-sectoral issues—such as climate change action—that require broad, integrated institutional mobilization and coordination, which can be described as a "whole government approach" (Cázarez-Grageda 2019, 9). We also operationalize and examine how policy entrepreneurial skills—sociability and credibility—underpin relational strategies. The aim of this article is, thus, to shed light on the following research question:

How do policy entrepreneurs facilitate the transformation of a technical issue into a wider social issue on the political agenda at the local level of governance?

The empirical context for the article is flood risk mitigation in Sweden. Floods constitute a threat in Europe, with far reaching social and political consequences that are expected to increase as the climate continues to change (Becker 2014, 2018; Priest *et al*. 2016). Technical solutions are an integral part of flood risk mitigation (Tasseff, Bent, and Van Hentenryck 2019; see also Ermolieva *et al*. 2017; Goniewicz and Burkle 2019; Nakamura and Oki 2018; Pérez-Molina *et al*. 2017), while reviews of the flood risk management system in Germany and in the United States point to the importance of a more comprehensive approach of mainstreaming flood hazards in spatial planning and urban development, as well as engaging citizens in flood risk mitigation questions (Thieken *et al*. 2016; Tyler, Sadiq, and Noonan 2019). Moreover, the agency of policy entrepreneurs has been shown to be salient in the broader issue of climate governance at the local and regional levels in a host of countries, including: Germany, Sweden, the Americas, and Canada (Anderton and Setzer 2018; Brouwer and Huitema 2018; Giest 2018; Huitema, Boasson, and Beunen 2018).

In Sweden, a large number of floods creating systemic disruptions have occurred since the 1980s (Nyberg 2008). The responsibility for flood risk mitigation—and more broadly, flood risk governance—in Sweden, rests with the local level; that is, the municipality. The 290 municipal administrations vary considerably in size—both demographically and geographically—and have considerable freedom in how to organize administrative work (Larsson and Bäck 2008).

Theoretical Underpinnings

In this section, we briefly review and integrate the scholarship on policy problems, networks, and entrepreneurs.

Policy Problems

The study of the policy process "is the study of change and development of policy and the related actors, events, and contexts" (Weible *et al*. 2012, 3). A key goal of involved actors is to exert influence in this process with a view to achieving a range of objectives, including adopting a new policy, incrementally adjusting institutional arrangements, successful implementation, raising public awareness of an issue, or facilitating cooperation among adversaries with the intention of brokering an agreement. Changes in policy could be operationalized as outputs ranging from an alteration of existing institutional rules that would affect operational activities of policy programs already in place to the creation of entirely new programs (Weible *et al*. 2012). Notably, one of the ways actors

may exert influence in the process of public policy making is through building networks for the purpose of overcoming collective action dilemmas. To solve commons problems, collective action is required, meaning that it is necessary for individuals to be motivated to act and thus assume private costs (i.e., time) in the pursuit of a collective good (Ostrom 1998). Prior to this, an issue has to be identified as a policy problem, which is an issue that is solvable through collective action.

Policy problems constitute a central theme in the study of public policy, at least partly, simply because policies would not be enacted or altered in the absence of problems (Marier 2017). Indeed, at the heart of policy making and governance is the attempt to solve social and economic problems, though whether problems are actually solvable remains a fundamental question (Marier 2017; Peters 2015). A related question that arises is "[i]n the absence of knowledge concerning potential solutions to problems, how good are we at identifying problems?" (Mintrom 2012, 58[1]). For social and economic problems to exist for political purposes, they have to be conceptualized as such (Peters 2005).

The way a problem is defined delineates the actions likely taken to solve it (Stone 2002). Further illuminating the contingent relationship between problems and solutions, Stone (2002) defines problem definition as the distance between the statement of a goal and the current state of affairs at any given time. The definition of a policy problem, if it is to be effective for policy design, is a two-step process. The first step concerns the kind of problem the issue at hand is (i.e., a problem of what?) and the second step consists of framing the problem for potential solutions (Peters 2005). Problem framing has been studied extensively in a variety of disciplines, including sociology, communication, decision making, policy sciences, and public administration, and it is a well-documented strategy of policy entrepreneurs (Dewulf and Bouwen 2012; Meydani 2015; Mintrom 2000; Petridou, Aflaki, and Miles 2015; Stone 2002). It refers to the idea that issues may be understood and defined from a number of different perspectives, depending on the narrator, the elements of the narrative, and the audience.

One important perspective for the definition and treatment of a policy problem is complexity, differentiated between political and programmatic complexity (Peters 2005). The former reflects the number of interests and actors involved in the process—the larger that number, the higher the complexity of an issue. The implication is that the more actors and interests involved, the more arduous the landscape becomes and the more difficult it becomes to reach a solution that may satisfy all the stakeholders. Conversely, programmatic complexity concerns intrinsic aspects of the problem, including its technical context and a diffuse causality chain. Generally, programmatic complexity in technical terms is inversely correlated to political complexity. However, technical

[1] For an expanded discussion of the relationship between problems and solutions see Peters (2005).

knowledge has to be translated to a social narrative to affect change. A broad social narrative with a wide buy-in can place an issue on the agenda.

Complex, intractable, and seemingly insoluble problems were termed "wicked" by Rittel and Webber (1973). Challenges such as, for example, climate change, poverty, and disaster, defy a precise definition, are not clear when they are solved, choices concerning them always involve externalities, attempts to solve them are long and arduous processes, they are nested, and their causes are unclear and rarely agreed upon (Rittel and Webber 1973). A handful of decades later, the proliferation of such challenges have engendered a more nuanced theorization of complexity, including a classification of complex problems from tame to very wicked, based on the combination of different degrees of programmatic and political complexity (Alford and Head 2017).

Roberts (2000) suggests that network-based, collaborative approaches to solving complex problems are the most advantageous. By "get[ting] the whole system in the room," meaning creating a diverse network of stakeholders—"a community of interest"—actors would at least have the possibility to agree on the nature of the problem at hand as well as a possible solution (Roberts 2000, 13-4). More recent research also highlights the need for a collaborative approach, including actions of policy entrepreneurs, to provide viable solutions for climate change consequences (Mintrom and Luetjens 2017; Mintrom and Thomas 2017).

When it comes to flood risk governance, this approach is reflected in the paradigm shift that has occurred in Western Europe; from an earlier reliance on engineering solutions to a turn toward integrated flood risk management, focusing on collaborative, nonstructural solutions involving coordinated action among a variety of actors (Balsiger and Ingold 2016; Butler and Pidgeon 2011; Klijn *et al.* 2008). This paradigm shift is reflected in policy documents at the EU level, as well as in national policies in the United Kingdom and the Netherlands, where favoring such structural solutions as the erection of dikes or the modification of river channels have given way to measures that allow water to take space and dynamic water retention (Balsinger and Ingold 2016; Brouwer and van Ek 2004; Defra 2005). The increased need for coordination and a holistic approach to extraordinary events in general is reflected in the broader crisis management literature (see e.g., Boin and Bynander 2015; Boin *et al.* 2017).

Networks and Entrepreneurs

Collaborative arrangements may be conceptualized as networks. Networks are analytical constructions that facilitate our understanding of interdependencies among actors. Policy networks, specifically, are "an intuitively comprehensible metaphor: regular communication and frequent exchange of information lead to the establishment of stable relationships between actors and to the coordination of their mutual interests" (Adam and Kriesi 2007, 129). Studies of networks in environmental policy concern questions regarding the formation of networks and how any interactions between networks and individual-level variables

shape socio-environmental outcomes (Berardo *et al*. 2018). In their review of environmental policy and management of natural resources addressed in studies using formal social network analysis (SNA), Berardo and others (2018) note how the network-level activity has the potential to affect the behavior of actors comprising them and, in turn, how the actors' behavior at the micro level may potentially result in changes in the network. A structurally salient actor is the (policy) entrepreneur, whom Berardo and others rather uncritically conflate with the leader, despite the long debate in the policy entrepreneurship literature (see Petridou 2017).

Kingdon (2003) established the concept of the policy entrepreneur in the policy literature as a component of the Multiple Streams Approach (MSA), further elaborated by Zahariadis (2007, 2014) and Jones and others (2016). Although MSA offers no mono-causal explanations of policy making under conditions of ambiguity, the salience of the policy entrepreneur rests in matching solutions to problems. First, policy entrepreneurs must be creative and insightful, and have the ability to see how their proposals will affect the policy debate in the long run. Second, policy entrepreneurs are socially sensitive and perceptive so that they are able to view problems from many different angles. Third, they must be able to move in and out of a variety of social and political settings. Fourth, policy entrepreneurs are persuasive. Fifth, policy entrepreneurs must be able to build teams to pursue their policy goals. Sixth, they must be able to "lead by example," that is, inspire their team with their vision for the future, which must be realistic (Mintrom 2000). Finally, the public entrepreneur is not an individual working in isolation; rather the milieu in which they operate is very important (Mintrom 2000) and often the entrepreneur is a group of actors or even an organization (Frisch-Aviram, Cohen, and Beeri 2019; Zahariadis and Exadaktylos 2016). In recent work, Mintrom (2019, 2020) has noted that *sociability* and *credibility* are attributes policy entrepreneurs possess. Credibility can be achieved by demonstrating expertise or holding certain positions, or generally appearing as having "what it takes." Sociability may be interpreted as likeability, the ability to consider others and their ambitions and desires in the process of trying to achieve one's own purposes (Mintrom 2020). Both of these attributes constitute an important impetus for the relational strategies of entrepreneurs.

Policy Entrepreneurship, Networks, and the Framing of Policy Problems

Given that politically complex problems are more likely to involve a larger number of actors and render a consensus solution more difficult to achieve, it would seem counterintuitive for a policy entrepreneur to frame a technical issue (low in political complexity) as a social issue (high in political complexity), thus attracting the attention of a large number of diverse actors, who may have divergent views. However, environmental governance for climate change requires the mobilization of large swathes of politics and society to effect change and, as outlined earlier in this section, collaborative approaches are most appropriate in attempts to solve them. What is more, the current political climate in Sweden

is favorable to environmental policy designed to mitigate the effects of climate change (Gullers Grupp 2018). Framing flood risk mitigation as a social issue—rather than a technical issue—reduces the cognitive threshold needed for lay people to conceptualize viable solutions. In addition, increased attention to an issue, as noted by Howlett (2014), factors in the politicians' decision calculus, since visibility has the potential to legitimize the allocation of resources to proposed solutions.

To answer our overarching research question regarding the way policy entrepreneurs facilitate the transformation of a technical question to a wider social issue on the local political agenda, we focus on relational strategies of policy entrepreneurs as they relate to problem framing. Finally, we operationalize two attributes of policy entrepreneurs: sociability and credibility.

A Social Network Approach: Cases, Method, and Data

In this article, we adopted a comparative case design (Yin 2002). The case selection entails two municipalities with similar size, rate of development, political leadership, administrative settings, and recent experience of actual floods, but with different current approaches to the governing of flood risk mitigation. The municipalities of Lomma and Staffanstorp in Southern Sweden fit this description, with almost identical populations (around 24,000), similar population growth and urbanization, strong Conservative Party dominance, located in the same county, and both having been significantly flooded for the first time in modern times in 2007 and again a few times each since then (Figure 1).

Figure 1.
Location and Topography of Lomma and Staffanstorp Municipalities

The comparative case study integrated structural and interpretive analysis (White 1997), since the roles of actors contributing to flood risk mitigation are defined both by their social relations and by the institutional context in which they are embedded (DiMaggio 1992). SNA has proved useful in revealing underlying processes (Robins, Lewis, and Wang 2012), while qualitative research is useful in the investigation of their reasons and meaning (Bernard 2006). We thus conducted SNA and qualitative research to study the networks of actors within each municipal administration contributing to the governing of flood risk mitigation.

The article, though comparative, examines Swedish municipalities, potentially limiting generalization ambitions to the subnational level of advanced western democracies. Conversely, the richness of the data and methodological rigor are among its strengths. The rich qualitative data complements the SNA, contextualizing it and adding nuance to it. Network analysis has been identified as a methodological way forward in the study of policy entrepreneurs and as a means to remove bias that might occur when the researcher identifies the entrepreneur based solely on qualitative analysis (Petridou and Mintrom 2020). Further, as mentioned elsewhere in this article, SNA has often been employed in conjunction with policy entrepreneurship in environmental issues as well as specifically to interrogate agency in such issues (see e.g., Calvet-Mir *et al*. 2015; Hauck, Schmidt, and Werner 2016; Salpeteur *et al*. 2017; Tindall and Robinson 2017).

Social network data were collected through structured interviews. Following Becker (2018), the dependence between actors was the aggregation of the importance of seven different types of input rated on a 5-point Likert scale from not at all (0) to extremely important (4), which were then aggregated and normalized. The seven types of input included: (1) reports of activities; (2) equipment and material; (3) funding; (4) technical information; (5) rules and policy; (6) advice and technical support; and (7) pepping and moral support (Becker 2018). Informants were also asked to rate the level of trust they have in that they will be provided the input they need from each identified actor (on a similar Likert scale, from no trust to full trust), which was also normalized for clarity. Qualitative data were collected through open qualitative interviews ensuing during the collection of the network data and recorded through notes. Most interviews lasted between 60 and 90 minutes, with a few shorter interviews with actors less engaged in flood risk mitigation. All interviews were conducted face-to-face to minimize nonresponses and to allow for clarification and probing (Borgatti, Everett, and Johnson 2018), as well as to provide an opportunity to hold the open qualitative conversations. The social network data were analyzed using UCINET (Borgatti, Everett, and Freeman 2002).

Delimiting the boundaries of the network was a question of setting limits on social relations that in practice may have no obvious limits, which makes boundary decisions less evident (Knoke and Yang 2008; Robins 2015). We used a realist approach where "a network analyst adopts the presumed subjective

perceptions of system actors themselves, defining boundaries as the limits that are consciously experienced by all or most actors in the entity" (Knoke and Yang 2008, 15).

The network was bounded through snowball sampling, starting with a set of actors identified as likely to contribute to flood risk mitigation within each municipal administration. We used a name-generating question concerning which actors each informant depended upon for input to be able to contribute to mitigating flood risk. The data collection continued in principle until no more new informants were identified, but involved in practice boundary judgments of relevance (Becker 2018), which resulted in 35 informants in Lomma and 20 in Staffanstorp.

Scholars have successfully used centrality measures to identify actors important in a policy process (Christopoulos and Ingold 2015; Petridou 2018). To understand the agency of actors in the network based on their position in it, we calculated three types of centrality measures for each actor. Centrality concepts convey aspects of an actor's prominence in a network by summarizing the structural relations of all nodes. An actor's prominence speaks to that actor's greater visibility to other nodes, and centrality essentially means that an actor has a high level of involvement in many network relations (Knoke and Yang 2008; Wasserman and Faust 1994). Generally speaking, centrality is a heuristic for the power a node exerts in a network, with different centrality measures focusing on different variations of power.[2]

In the context of this article, the in-degree centrality of an actor constituted the aggregated importance of inputs to all dependent actors, from their perspectives, and reflected the actor's local control of resources in the network. The concept is analogous to the notion of the level of popularity of a node (Borgatti, Everett, and Johnson 2018). Conversely, betweenness centrality typically reveals the capacity for control of resource flows through the network—a sort of gatekeeping role implying power (Borgatti, Everett, and Johnson 2018)—and here included the direction of the flows. Finally, in-eigenvector centrality was used to capture the influence an actor has over other influential actors (Bonacich 1987; Borgatti, Everett, and Johnson 2018; Robins 2015); here applied in a manner making it analogous to positive Bonacich power/Beta centrality (Borgatti, Everett, and Johnson 2018), which has been suggested as a useful tool for detecting policy entrepreneurs (Christopoulos and Ingold 2011; Ingold and Christopoulos 2015).

For the purpose of understanding the way different actors work with flood risk mitigation, we also analyzed the network data for factions. Faction analysis is a way to identify subgroups in a network based on their interactions rather than their organizational affiliation and entails an optimization of the nodes into a number of groups based on node membership in separate clique-like

[2] A thorough, mathematical treatment of the measures is beyond the scope of this study. Interested readers may turn to, for example, Borgatti, Everett, and Johnson (2018) or Wasserman and Faust (1994), noting that the literature on SNA is fairly vast and versatile.

structures (Borgatti, Everett, and Johnson 2018). How well the optimization algorithm fits the data is then measured as a final proportion correct between zero (no fit) and one (perfect fit).

Finally, we triangulated the network data with the qualitative interview data to identify any entrepreneurial actors, understand their use of skills and strategies, and contextualize the discussion in a comparative perspective.

Results

As mentioned elsewhere in this article, Southern Sweden was hit by floods in 2007, causing considerable damage in the municipalities of Lomma and Staffanstorp. Flood risk mitigation has since become a priority within the local administration in Lomma, where mitigating flood risk is framed as a climate action issue: "Everything started with the floods in 2007" (Head of Department, Lomma). At the time of the interviews, approximately ten years later, the civil servant in Lomma who emerged as the policy entrepreneur, said that "[w]e have really good politicians in Lomma. They are interested in environmental issues and focused on climate change adaptation… They listen and make decisions." In Staffanstorp, however, flood risk mitigation is dealt with as a more limited, technical issue. This means, in practice, that the solutions to the problem are also technical: "The politicians got caught completely off guard by the flood in 2007. Before they didn't do anything. Then they multiplied the investment budget for water and sewage, and we continue to improve [the drainage system] as we go" (Civil servant, Staffanstorp). As a consequence, "[they] consider floods in the planning [process], but the issue is mainly addressed by the water and sewage unit" (Civil servant, Staffanstorp). A Staffanstorp politician posits that social concerns other than flood risk mitigation are higher on the local political agenda: "Flood is not at all a priority of the leading politicians in Staffanstorp. They are focusing on other issues, such as immigration and safety for the elderly."

The question that emerges is why the status of flood risk mitigation as a policy problem is so different in these two otherwise similar municipalities. Interviews with key informants point to the salience of agency, emphasizing the action of the environmental strategist in Lomma. She is reported to "have the ear of the chairman of the municipal executive board" (Politician, Lomma) and to be trusted by the politicians (Civil servant, Lomma). A relational approach allows us to investigate both agency and structure, with a focus on the social relations of dependence and trust among the actors involved in flood risk mitigation.

The networks emerging in the two municipalities differ in a number of respects. First, they are different in size. Whereas 35 active nodes (individual actors) comprise the Lomma network, the Staffanstorp network consists of 20 active nodes (Table 1). The article also identifies an additional 27 actors

Table 1. Overview of Number and Diversity Actors in the Municipal Administrations

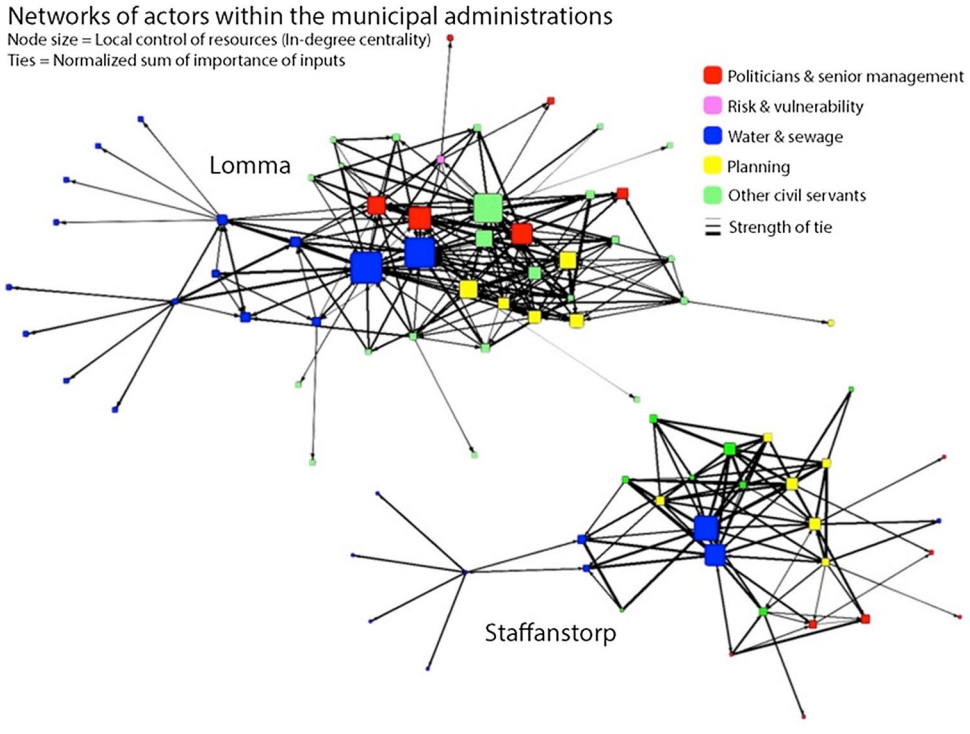
	Staffanstorp	Lomma
Number of actively contributing actors	20	35
Number of supporting actors	11	16
Number of categories of actors	7	15
Categories of actors	Politicians & senior management, water & sewage, planning, roads, land & exploitation, environment, project management	Politicians & senior management, environmental strategy, water & sewage, planning, risk & vulnerability, building permits, finance, property management, roads, parks, GIS, land & exploitation, project management, surveying, service center
Proportion of other civil servants, not primarily engaging in planning, water & sewage, and risk & vulnerability activities	30%	41%

(16 in Lomma and 11 in Staffanstorp), whose activities support flood risk mitigation but they do not actively contribute to its governance for various reasons (Table 1). These include people who are deceased, have left the organization, do not consider themselves as contributing, as well as individuals performing purely technical tasks, such as maintaining pumps or flushing pipes. This category also includes one instance per municipal administration of an informant referring to groups instead of an individual; that is, a municipal call center and a group of civil servants on a workshop.

The differences between the individual actors involved in flood risk mitigation in Staffanstorp and Lomma municipal administrations are not only quantitative, but also qualitative. Not only is the absolute number of public servants involved in flood risk mitigation in Lomma higher than in Staffanstorp, but there is also a higher proportion of actors whose main focus of operation is not in planning, water and sewage, and risk and vulnerability (Table 1), areas where the issue of flood risk mitigation belongs legally. This points to flood risk mitigation being a broader, social issue in Lomma in comparison to Staffanstorp. Moreover, there is a marked difference regarding the structural position of the decision makers in Lomma *vis-á-vis* Staffanstorp: whereas politicians and senior management are central in Lomma, in Staffanstorp they are peripheral and deemed relatively unimportant for the governance of flood risk mitigation (Figures 2-4).

In line with the qualitative data, the most central actors in Staffanstorp are civil servants working with water and sewage, regardless of whether the focus is

Figure 2.
In-degree Centrality in Lomma and Staffanstorp

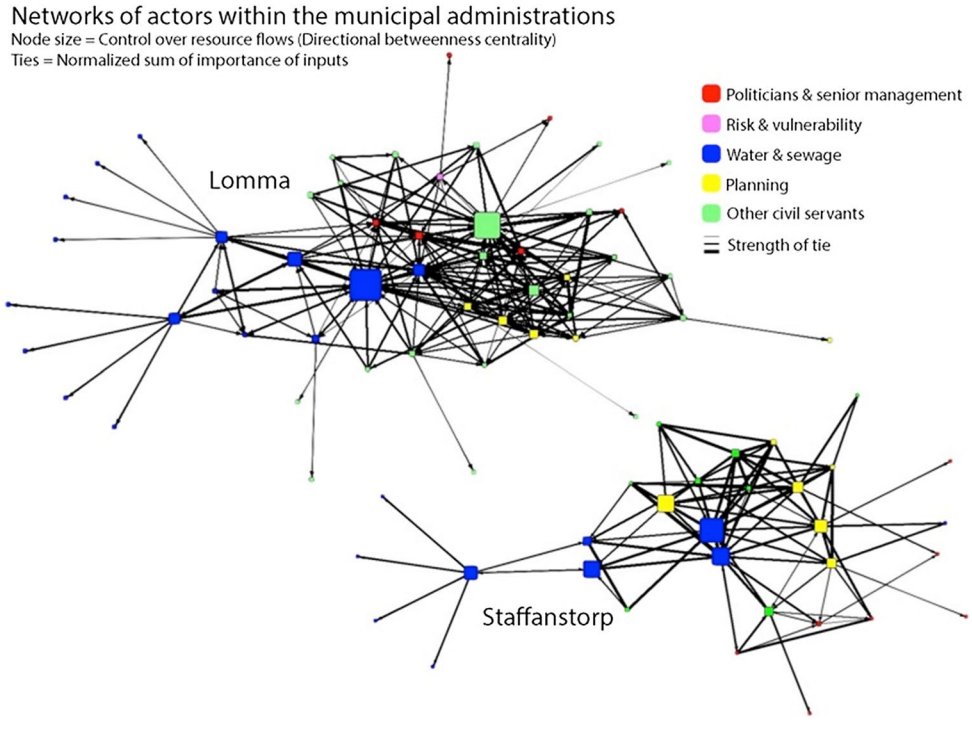


on local control of resources (Figure 2), control over resource flows (Figure 3), or influence over other influential actors (Figure 4). Civil servants working in all other areas are considerably less central. Actors engaging in water and sewage are also central and powerful in Lomma, as one would expect considering the importance of such expertise. However, the environmental strategist in Lomma (large green node in Figures 2-4) is equally central and also scores high on all three centrality measures. The analysis did not reveal such an actor in Staffanstorp.

To explore potential reasons for the more central positions of decision makers and the environmental strategist in Lomma, a faction analysis of the network of only actively contributing actors was performed. This allowed us to analyze the interactions of actors in different parts of the network and resulted in particularly interesting results for nine factions, with a high final proportion correct .85 (Table 2 and Figure 5).

The strategic decision making and coordination faction (in red) is most central, flanked by planning and building permits (in yellow), and water and sewage (in dark blue), although the planners are more central compared to building permits (Figure 5). What is more, the interactions among actors engaged in water and sewage are centered on their head of unit (4), while the head of the technical department here is part of the strategic decision making

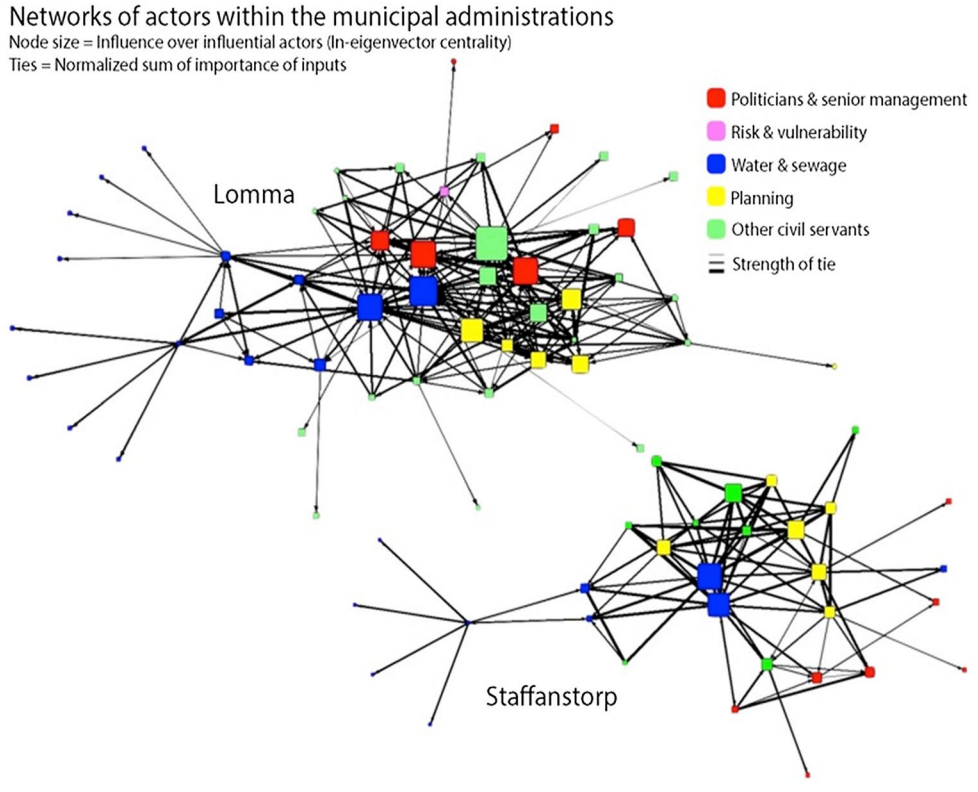
Figure 3.
Directional betweenness Centrality in Lomma and Staffanstorp



and coordination faction (14). As concluded by the previous analysis, the central position of the strategic decision making and coordination faction points to flood risk mitigation being a wider social issue in Lomma municipality. The head of the planning department (22) is as centrally located in the network as the other heads of department in the strategic decision making and coordination faction, but the qualitative data substantiate that he is more directly engaged in technical activities, such as developing the comprehensive plans for the municipality. What is even more interesting is the environmental strategist (1) being part of the strategic decision making and coordination faction (Figure 5).

Furthermore, considering that high in-eigenvector centrality (positive Bonacich power) is an indicator of policy entrepreneurs, it is important to note that the environmental strategist (1) has the highest score of all 35 actors in the network (Figure 5). The highest scores of the next two actors, the head of the water and sewage unit (4) and the head of the technical department (14), are approximately 20 and 30 percent lower, respectively, while that of the most senior politician (35) and manager (38), the two following actors for in-eigenvector centrality, score almost 50 percent lower. In addition, the environmental strategist scores equally high when analyzing the corresponding network of

Figure 4.
In-eigenvector Centrality in Lomma and Staffanstorp



trust that each actor will provide what dependent actors need to contribute to flood risk mitigation, with the following five actors scoring 83, 76, 75, 72, and 55 percent of her score.

The particularities of the network structure in Lomma seemed to at least partly have consciously been cultivated by the policy entrepreneur. She reports on the leeway she is afforded by her manager "[h]e is the best manager… he lets me do what I need to do," which includes mobilizing people: "I have worked for a long time to get everybody involved. Some came along right away. When the politicians started to think it was important, all managers became interested and then everybody was involved shortly thereafter."

Discussion

The results reveal that flood risk mitigation started to attract attention in both municipalities after the floods of 2007, but the framing of the issue and the practices that have evolved have taken completely different directions

Table 2. Factions in the Lomma Network

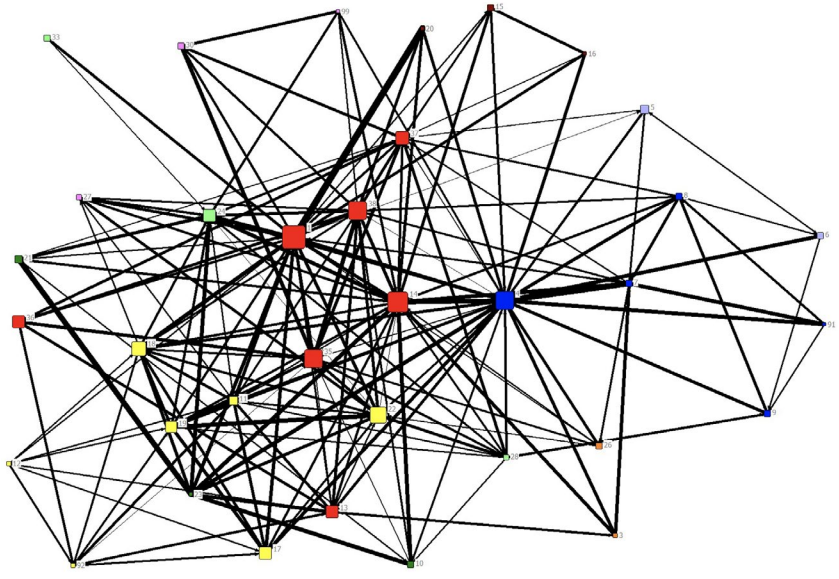
Faction Description	#	Actors
Strategic decision making and coordination (red)	7	Politicians, top-level managers, an environmental strategist
Planning and building permits (yellow)	7	Head of planning department, planners and building permit staff
Water and sewage (dark blue)	5	Staff in the water and sewage unit
Regress claims after floods (light blue)	2	Legal and administrative staff. They process claims that also serve as input to risk reduction investments to the urban drainage system.
Roads and parks (dark green)	3	Staff in units that deal with roads and transportation, and park planning, development and maintenance
Project implementation (light green)	3	Staff implementing or supporting (with special knowledge and land purchases) urban flood mitigation projects
Property development and GIS (brown)	3	Property development manager and staff responsible for municipal properties and GIS support staff
Finance and land acquisition (pink)	3	Finance manager and land acquisition staff
Risk management and environment (orange)	2	Municipal risk manager and environmental inspector
Total number of actors	3	

Note: The color notation in the parentheses refers to Figure 4.

since then. The results demonstrate significant structural differences between the two municipalities—in terms of the size of the networks, the diversity of actors comprising them, and the relative location of politicians and senior managers—clearly substantiating the difference between addressing flood risk mitigation as a technical issue (Staffanstorp) or social issue (Lomma) indicated by the qualitative data. Flood risk mitigation revolves largely around the area of water and sewage in Staffanstorp. Civil servants from planning and a few other areas are somewhat involved, while politicians and senior managers are quite peripheral. Conversely, flood risk mitigation is a much more integrated endeavor in Lomma, with more areas of civil servants not only involved, but also central in the network, and politicians and senior managers in the center of it all. Capturing the politicians' attention is essential for the ascension of an issue to the political agenda (Kingdon 2003).

The results also provide empirical grounding for discussing reasons for these differences, informed by the rich literature on policy entrepreneurs. While there is ample backing for identifying the environmental strategist as an influential policy entrepreneur in Lomma, there is no indication of a policy entrepreneur in Staffanstorp. It is obvious that the network in Staffanstorp also has actors who

Figure 5.
Network of all Seven Dependencies among Actively Contributing Actors



Note: Contains color representing faction (Table 2) and node size representing influence over other influential actors (in-eigenvector centrality).

are more central than others, but it is not enough to only look at centrality when identifying policy entrepreneurs (Christopoulos and Ingold 2015; Petridou 2018). Here, the most central actor is a civil servant working in water and sewage, which is expected in a network where flood risk mitigation is a technical issue; where other civil servants—mostly engaged in water and sewage and planning—depend on a technically competent person to do their work. More importantly, there are no signs of the issue transforming into a wider social issue in Staffanstorp; neither structurally nor in the qualitative data. The presence of a policy entrepreneur in Lomma is, therefore, considered significant for the marked difference between the two municipalities, which is a theme evidenced in the literature on policy entrepreneurship (see e.g., Mintrom 2000, 2019; Petridou and Mintrom 2020).

The qualitative data suggest that the environmental strategist is a consequential actor in Lomma, who mobilizes others under the environmental aspects of flood risk governance, with intentionality and during a long period of time, and therefore, exhibiting tenacity, which has been suggested an important attribute of policy entrepreneurs (Mintrom 2019). She also has been provided the space to do this (see Petridou 2017), crediting her manager for it. Our results show that the environmental strategist possesses the attributes of *sociability* and

credibility, which have been suggested salient for the relational strategies and interactive problem framing necessary for the policy entrepreneur to facilitate the political change (Mintrom 2019, 2020). To study this structurally, we suggest to operationalize *sociability* and *credibility* as follows.

As a reminder, *sociability* is the ability to understand how others respond to one's ideas (Mintrom 2020); the ability to engage with others. We operationalize this engagement as a composite of three centrality measures of the network of dependences among actors. This network is based on the seven kinds of input necessary for actors to do their work in relation to flood risk mitigation. Arnold, Long, and Gottlieb (2017) note that more successful policy entrepreneurs tend to be the ones who are well-connected in the policy community in which they operate, since their success is linked to the ability to control resources.

SNA provides a means of studying the distribution of such control in the network, with in-degree centrality measuring local control of resources and directional betweenness centrality measuring control of resource flows connecting the network. Although the environmental strategist is ranked as having second-most control in these regards, only surpassed by the head of the water and sewage unit, it is only when also explicitly considering who each actor interacts with that we get a richer view of *sociability*. It is here that Christopoulos and Ingold's (2011) seminal suggestion to use positive Bonacich power to identify policy entrepreneurs comes in, here applied as in-eigenvector centrality. This centrality measure considers the influence each actor has over other influential actors, and the environmental strategist is ranked most central. While in-eigenvector is the most important component of our structural operationalization of *sociability*, relying exclusively on it would miss other crucial aspects of local control and linking actors across the network.

When considering all three aspects of *sociability*, the environmental strategist is clearly the policy entrepreneur in Lomma. This is particularly clear because her formal role in Lomma is not directly related to the policy areas normally engaging in flood risk mitigation, such as water and sewage or planning. It involves coordinating environmental issues and it was in that role that she facilitated the transformation of the issue of flood risk mitigation into a broader climate change adaptation issue; partly due to her ability to connect with others and provide them with input they find valuable for their professional work, and partly due to her high level of credibility among actors in the network.

Indeed, *credibility* is a crucial attribute of policy entrepreneurs in need of oprationalization. Remembering Mintrom's (2020) suggestion that credibility is about appearing as having "what it takes," we operationalize credibility in relation to the trust actors place on others to provide what is needed to get their job done. However, *credibility* is not only about being trusted to provide what dependent actors need, but also about the trust these actors enjoy in turn. It is thus a relational attribute capturing the notion of *being trusted by other trusted*

actors. The distribution of such credibility among the involved actors can be analyzed using in-eigenvector centrality on the network of trust that actors will provide what dependent actors need, and it is clear in the results that the environmental strategist has the highest credibility in the network. Although such relational notion of credibility is rather intuitive, this point has not been explicitly made in the policy entrepreneurship literature.

Finally, for the environmental strategist to be an influential policy entrepreneur, it is not only important to consider controlling resources and being connected to other influential actors (*sociability*) and being trusted by other trusted actors (*credibility*). It is also important to take into account *who* these influential and trusted actors are. Others have suggested the importance of building coalitions as a strategy (Christopoulos 2006; Christopoulos and Ingold 2015; Frisch-Aviram, Cohen, and Beeri 2019; Ingold and Christopoulos 2015), and while the environmental strategist is connected directly to a wide range of civil servants, the results of the faction analysis clearly demonstrate that she belongs structurally among the policy makers in the municipality. Her expertise and experience seem to enable her to translate the technical to the political and back again. Having high *sociability* and *credibility* at the same time as being structurally affiliated with the policy makers, place her on the shortest path to these actors, who depend on her trusted input. She has created an opportunity to be heard when recasting the flood risk mitigation issue. To do that, she has to mediate the narrative of flood risk mitigation and translate it in a language understood by actors without technical expertise. This interactive mediation and low-profile approach is evidenced in the way she credits others rather than promoting herself, focusing on the actions of other actors in the network.

Conclusions

In this article, we set out to shed light on the question of how policy entrepreneurs facilitate the transformation of a technical issue into a wider social issue and set it on the political agenda at the local level of governance. We conducted a comparative SNA providing an answer to this question and in the process, we made theoretical, methodological, and empirical, if normative, contributions.

Theoretically, we focused on two attributes of policy entrepreneurs: *sociability* and *credibility*. We showed how a policy entrepreneur builds a broad network, bringing others round to their own framing of the problem. Methodologically, we heed the call of Petridou and Mintrom (2020), who call for increased rigor in the identification of policy entrepreneurs. We achieved this through SNA. In addition, we operationalized sociability and credibility. This allows for measuring these attributes, which are otherwise quite abstract. Furthermore, the combination of the structural analysis and the qualitative

data reveals the landscape of the network and contributes to the investigation of the actors' position, but also provides substantive, rich material concerning their relationship to flood risk mitigation.

Additionally, we made an empirical contribution to the scholarship, in part, by shedding light on the importance of sociability and credibility in the shifting of a technical issue to a wider social one, but also by demonstrating the salience of the proximity to policy makers. This finding is neither novel nor counterintuitive, but we demonstrate it in concrete, network terms. What is more, it has normative implications. As mentioned elsewhere in this article, others before us have argued for the importance of policy entrepreneurs in environmental issues in general. This article focused specifically on entrepreneurship exhibited by public officials and our findings suggest that a bureaucrat must not only possess high sociability and credibility, but also have a good relationship with elected politicians. A possible negative implication of this concerns the idea that powerful actors tend to be insiders, so it begs the question what this means for actors who attempt to influence policy from the outside. Regardless, this article provides some insights on how policy entrepreneurs may be effective in shifting an issue and placing it in the local political agenda. This is all that much more important in a sector where change is needed and where a driven actor, an entrepreneur, is needed to effect change. Finally, fruitful avenues for further research might examine policy entrepreneurs in local bureaucracies as the dependent variable, focusing on factors that may hinder or foster entrepreneurship at the local level.

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