

## **Understanding International Policy Networks and their Influence on Climate Policy-making**

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## 1. Introduction

Scholars of International Public Administrations (IPAs) have identified a broad range of tasks carried out by international bureaucracies (e.g. Liese and Weinlich, 2006), which allow them to exert autonomous influence on international policy outputs (Barnett and Finnemore, 2004; Biermann and Siebenhüner, 2009a; Saerbeck, 2014). Focusing on the International Treaty Secretariat (ITS) of the United Nations Framework Convention on Climate Change (UNFCCC), an actor whose role and influence has only briefly been studied so far (e.g. Bauer, 2009; Busch, 2009; Siebenhüner, 2009; Depledge, 2007; Jinnah, 2014), Jörgens et al. (forthcoming) show that the treaty secretariat as well as the Executive Secretary of the UNFCCC, Christiana Figueres, are central actors of gender mainstreaming in the UNFCCC taking place on Twitter surrounding the 20<sup>th</sup> Conference of the Parties (COP 20) of the UNFCCC. Hence, we have reason to believe that ITS actively take part in the public debate regarding a specific topic discussed at the COP 20 on Twitter.

The paper focuses on the structure of the network as determinant for secretarial influence on public policy debates taking place on Twitter. We believe that the characteristics of the given network – the level of fragmentation – determines the position and hence the strategy ITS use to steer the ongoing debate. Depending on the density of the given network, treaty secretariats likely employ different strategies to exert influence on public debates. That said we define two kinds of leadership – opinion as well as cognitive leadership – and treat them as different pathways of influence. Due to the limited resources and mandates of treaty secretariats (Busch, 2009: 253–4; Depledge, 2005: 64), the paper only focuses on the treaty secretariat's ability to exert idealist influence to alter the attitude and behavior of actors taking part in public debates. Influence is therefore understood as the exchange and retweet/mentions of information by other users.

Conducting a Social Network Analysis (SNA) will help us to identify the most influential actors participating in the public debate regarding two topics discussed at SB 42 from .. in Bonn on Twitter; the debate on loss and damage (#lossanddamage) and REDD+ (#REDD+). Influence seeking actors are, despite “different interests and perceptions of problem(s) and solution(s), (...) interdependent of each other” and thus need to interact with each other to acquire resources (Verweij et al., 2013: 1036–7). This holds especially true for “public administration-related decision-making, [which] often takes place in networks” and where collective decisions are achieved through a process of horizontal coordination between actors “who make their own strategic choices” (Verweij et al., 2013: 1035). Thus, we apply techniques of SNA to study the relationship and information exchange processes of the actors involved in Twitter debates on REDD+ and loss and damage. REDD+ stands for Reducing Emissions from Deforestation and Forest Degradation; while simultaneously aiming at conserving and enhancing forest carbon stocks and sustainably managing forests (+), it aims at creating positive incentives for developing countries to reduce emissions. Loss and damage, on the other hand, refers to the negative effects of climate change that affected populations cannot adapt to, such as extreme weather events or sea level rise.<sup>2</sup>

We gathered Twitter data because recent studies show that “an increasing number of politicians as well as public and private organizations use Twitter to connect to other political and societal actors, to exchange information and to share information on their policy preferences (e.g. Mergel, 2012; Grant et al., 2010; Siri and Seßler, 2013).<sup>3</sup> According to Barberá virtually all political actors have an active Twitter account (Barberá 2014: 77), an observation that seems to be accurate for international secretariats, too. Although one has to keep in mind that communication flows on Twitter do not necessarily mirror the “real” world policy debates – due to the fact that “a significant part of potentially influential actors in an issue-specific communication network” will not share sensible

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<sup>2</sup> Both issues have gained considerable traction at COP 19, where both the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) was created as well as the Warsaw Framework on REDD+ (UNFCCC 2013a; b). At COP 20, negotiations on REDD+ stalled, while the WIM was taken forward.

<sup>3</sup> Limitation of Twitter data for the study of “real world policy-making” see Joergens et al. (forthcoming).

information regarding ongoing negotiations “and therefore will not be covered by a Twitter-based analysis” (Jörgens et al. forthcoming) – we believe Twitter, counting 302 Million monthly active users (Twitter 2015)<sup>4</sup>, to be a valuable source to monitor public opinion (Madge et al., 2009; Woodyly, 2007) regarding climate change (Kirilenko and Stepchenkova 2014).

In sum, the paper contributes to the theoretical conceptualization of the two abovementioned pathways of influence, to the empirical research undertaken so far on environmental treaty secretariats and on the topics loss and damage and REDD+ as well as to methodological concerns regarding the benefits of SNA for the study of issue networks. Measuring the relationship between different actors using nodes and ties, we identify the treaty secretariat’s position within the Twitter network on the abovementioned topics and discuss two steering mechanisms which we believe to be important to capture the influence of ITS on Twitter debates. The next section discusses the relationship between the characteristics of the network and notions of leadership for assessing their influence. The case study introduces the abovementioned topics and states the characteristics of each network – their level of fragmentation - derived from a qualitative analysis. Using data derived from Twitter, we first test these findings and secondly visualize the relative position of the Climate Secretariat and its Executive Secretary, Christiana Figueres. Section four discusses our results while chapter five summarizes our findings.

## **2. Characteristics of the network and notions of leadership**

The paper argues that the ability of an actor to influence Twitter debates depends on its capacity to consider the given structure of a network and its position within. Various studies show that the characteristics of a policy network influence its policy processes and as such, its results. Taking on a structural perspective, Rhodes and Marsh (1992), among others, for example argue that a “closed network consisting of a limited number of actors with shared ideology, values, and broad policy preferences will produce a different policy result than a network that is open to numerous interest groups with diverging values and conflicting preferences” (Moschitz and Stolze 2010: 248). We therefore believe that the characteristics of the network – namely its level of fragmentation – determines the position and hence, the behaviour and as such, strategy of an influence seeking actor. We distinguish between two concepts of leadership – opinion as well as cognitive leadership. Leadership is defined as an actor’s ability to influence and eventually steer the debate taking place on Twitter.

The concept of *opinion leadership* relates to the theory of “diffusion of innovations”, which seeks to explain the ways innovative ideas are spread across different levels and venues. Scholars of policy diffusion, for example, examine the communicative ties between political units in order to explain individual adoptions as well as the system-wide proliferation of policy innovations (Walker, 1969; Berry and Berry, 1990, 1992; Jörgens, 2004; Busch and Jörgens, 2012). Since the diffusion of policy innovations depends primarily on existing channels of communication or mutual observation between political units such as nation states (Tews et al., 2003), it is the degree to which an actor is integrated into the formal and informal flows of issue-specific communication that significantly affects whether his policy choices are imitated by others or not: “a basic postulate of power theories is that network centrality enhances power because the ability to control valued resources increases as a function of proximity to the core of a system of transactions” (Boje and Whetten 1981: 379).

Based on the “two-step flow”-model of communication (Katz 1957), opinion leaders have been described as mediators between professional communicators (media, politicians, organizations) and the public as stated in the diffusion literature or as moderators “who pass on their knowledge to those of their every-day associates for whom they are influential” (Katz 1957: 61) as indicated by public opinion scholars. Hence, opinion leaders feature several attributes, such as social connectivity,

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<sup>4</sup> <https://about.twitter.com/company>; 15.6.2015.

involvement in specific issues or topics, knowledge and status (Rogers 2003), while influence relates to the personification of certain values (who one is), to competences (what one knows) as well as to strategic social location (whom one knows) (Katz 1957: 73). Defining diffusion as “any process where prior adoption of a trait or practice in a population alters the probability of adoption for remaining non-adopters” (Strang, 1991: 325), actors can become influential by merely taking unilateral action, which is then observed and imitated by other actors in the network.

*Cognitive leadership*, on the other hand, relates to the ability of international bureaucracies to change the knowledge and belief system of political actors (Biermann et al. 2009: 47); in our case, their ability to shape knowledge, define concepts in a way “that makes sense for a large number of actors and can be accepted by organisations that have different interests, do not support the same policy priorities and do not share the same norms and beliefs” (Nay 2012: 57) and thus, to frame public discourses. Sometimes referred to as “think tanks” (Busch 2009: 77), international bureaucracies and as such, treaty secretariats, are likely to act as knowledge brokers. Known to have a “significant influence on the creation and effectiveness of regimes” (Biermann et al. 2009: 47), who strengthen “the knowledge base on which regimes can be designed and can operate” (ibid.), we argue that knowledge brokers exert influence on the knowledge production and consumption of the public by introducing new ideas and concepts. Understood as an actor, who “uses their in-between vantage position to support innovation through connecting, recombining and transferring to new contexts otherwise disconnected pools of ideas, i.e. they get the right knowledge into the right hands, at the right time”<sup>5</sup> (see also Verona et al. 2006).

Brokers can be individuals or organizations who are positioned between distinct groups in a network (Burt, 2005). They can use this position to leverage access to information or influence information flows within the networks, enabling them to have influence by bringing parties together (Lake & Wong, 2009; Carpenter, 2011).<sup>6</sup> Cognitive leaders are therefore not necessarily expected to entertain large networks and to be centrally positioned in within to exert influence, a condition stated for opinion leadership. Rather, following Granovetter’s (1973) notion of weak ties, we argue for the importance of gatekeepers for the information exchange between otherwise barely connected groups. Actors that bridge relatively closed groups of organizations are said to play a more important role in the diffusion of policy innovations than actors whose contacts are limited to a relatively homogenous group. Hence, cognitive leadership refers to the importance of bridging groups:

“Information diffusion through a network requires a degree of heterophily among certain members” (Leinart, 2008: 6). While “strong links, i.e. within homophilous groups, are apt for influence (...), weak links, i.e. between heterophilous individuals/groups, permit new information (innovation) diffusion” (ibid.: 12): “It is through the infrequent, but strategic, contacts (...) that such information gains remarkably wide circulation” (Liu and Duff, 1972: 366).

In sum, tacking the network-structure into account, we assume opinion and cognitive leadership to be different pathways enabling treaty secretariats to exert influence, while the potential of each pathways differs depending on the structure of the given policy network. First, for networks that feature a low level of fragmentation, with few components of the network and hence, a low density, the most promising pathway for secretariats to have influence is by exerting opinion leadership. Second, and somewhat contrarily, in the case of networks that are rather ‘closed’, i.e. that are very dense and are characterized by the presence of many components, the most promising pathway to influence Twitter debates would be by exerting cognitive leadership; that is, by acting as a knowledge broker between the various components. In the context of a fragmented network in which the debate takes place within distinct parts, connecting these components as a knowledge broker may be a viable pathway for the Secretariat to influence Twitter debates.

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<sup>5</sup> <http://www.ncbi.nlm.nih.gov/books/NBK260041/?report=reader>; 17.3.2015.

<sup>6</sup> In this sense, brokers can influence negotiations in situations where a consensus is needed (Gallemore & Munroe, 2013) or the implementation of policies (Moeliono, et al., 2014).

### 3. Case study

The analysis employs a range of tools drawn from the field of SNA to map, explain and compare the networks of politicians and foremost, senior bureaucrats of the UNFCCC treaty secretariat. Although a broad range of publications somewhat have dealt with policy networks in the field of public administration in the past, scholars only recently begun to use SNA as a method to track down the influence and “networking of politicians, bureaucrats and community leaders” (Alexander et al. 2011: 1275; see also Lecy et al. 2014) and to systematically study informal networks (Kapucu et al. 2014; Isett et al. 2011), let alone patterns of communication and (informal) resource sharing “through semiformal, voluntary interactions and informal networks” (Alexander et al. 2011: 1286) using SNA. Applying SNA helps us to explain “social behavior and patterns by analyzing relations among concrete social entities – e.g. persons, groups and organizations” (Gartrell 1987: 50). Hence, we follow the approaches of Wasserman and Faust (2009), Schneider (1988), and Schneider and Leifeld (2009) to study and visualize the relations of the Twitter actors involved.

We collected Twitter Data from ... during the SB 42 meeting in Bonn of the UNFCCC. Importing all tweets with the hashtags #UNFCCC, #SB42, #COP21, #Paris 2015 as well as #loss and damage and #REDD+ using a software called DiscoverText, we collected a data set of ... tweets and ... nodes (operationalized as twitter handle or user name), including the full text of tweets, the precise time a tweet was sent, the @-mentions of other users in the tweet (if applicable), information whether a tweet is an original post or a retweet, and users who have favored a tweet. Second, we filtered the dataset by those tweets that contained keywords relevant to our case studies, such as, inter alia, “loss and damage” and “REDD+”. To analyze our data, we used different programs such as Pajek, Ucinet, NodeXL and Gephi, we detected prominent clusters, as well as applied different centrality measures. Twitter users were coded as nodes and retweets, @mentions and favorites were coded as edges.

The paper starts out by qualitatively describing the characteristics of each network to understand its structure and content. To identify the structure of the issue networks on loss and damage as well as on REDD+ we will follow a top-down approach. We look at Twitter user’s connectivity to study the respective level of fragmentation of the network discusses. Focusing on the whole network, sub-structures can be thought of as areas of the graph that seem to be locally dense, but separated to some degree, from the rest of the graph (Haneman and Riddle 2005). Put differently, “a cluster is a local region in a network with relatively high density and relatively few links to other clusters.” Hence, we studied the density of the network to predict the ability of the UNFCCC treaty secretariat to influence information flow on twitter. Following Xu et al. (2014), we operationalize information flow as being retweeted as well as replied to and mentioned. We focus on the amount of retweets, reposts and references to other actors of secretarial posts as a proxy for discourse (Cha et al. 2010; Kwak et al. 2010, Bakshy et al. 2011).

To test our assumptions, we first distinguish between the type of tweets, namely between replies and retweet; while replying refers to directed communication, retweeting is the diffusion of a tweet from another user. Gruzd et al. (2011) show the potential to influence each other though replies and retweets. Boireau et al. (2015) furthermore state that, focusing on the interaction among candidates on Twitter before upcoming elections, retweeting helps strengthening the bond with other candidates from the same party, while replying means to debate with candidates from other parties. Influence seeking actors who are confronted with a fragmented network should therefore focus on identifying the central actors in each cluster and engage directly with them by replying to them (opinion leadership). On the other hand, influence seeking actors in a network featuring a low level of density one should focus on being retweeted (cognitive leadership). Hence, as a first basic and rather simple measure, we count the number of retweets and compare them to the number of replies.

Secondly, we focus on the pursued outreach of tweets. That said, degree centrality is a helpful first measure for the addressing of users via the @reply or retweet system. It takes into account the number of people an actor is able to reach directly. Cognitive leadership should obtain a high out-degree centrality, while opinion leadership should feature a great in-degree centrality. Cognitive leadership moreover refers to the role of gatekeepers and knowledge brokers – individuals in a network who connect different clusters – and is best portrayed by betweenness centrality, which is “equal to the number of shortest paths from all vertices to others that pass through that node” (Kolleck, 2014: 57). To maximize their outreach, they should also feature a great Eigenvector-centrality; a person whose information are sought by someone who is highly influential may have a higher influence score than one whose information is sought by many not so important people. To exert opinion leadership, on the other hand, it is not necessarily important to be the most direct route between two actors in a network, but effectiveness of communication is also determined by the extent and speed information diffuses. Opinion leaders should be interested in spreading their information as broadly as possible; hence opinion leadership features a high closeness centrality.

### **3.1. Loss and damage**

Loss and damage was introduced as a concept in 1991 by the Alliance of Small Island States (AOSIS) seeking an insurance pool to compensate victims for loss of territory. At COP 15 in 2009, the agenda point rose in importance by the establishment of a work program in 2010, culminating in a decision for the establishment of the WIM at COP19 in 2013. It was incorporated as a formal element under the Cancun Adaptation framework establishing an Executive Committee with a three year mandate reporting at COP 22 (McNamara, 2014). While the issue of loss and damage was taken forward at COP 20 – the Lima Call for Action mentions the WIM in the preamble – UNFCCC member states are still rather divided on how to progress with the issue. The Executive Committee of the WIM has set out a clear two-year work plan, which was adopted by parties at COP 20, but developing countries see the way forward far from settled (Kosolapova, 2015). With Tuvalu on behalf of the less developed countries (LDCs) as an outspoken frontrunner, developing countries strongly demand that the WIM should be integrated as a separate element into the 2015 agreement. However, many developed countries are reluctant to pursue this path, cautioning against a “duplication of efforts” on loss and damage and therefore prefer not to include it in the 2015 agreement (ibid.).

The case of loss and damage condensates some of the most crucial rifts between developed and developing countries in current UNFCCC negotiations concerning how the 2015 agreement should look like (McNamara, 2014). The debate on the fundamental principles of Intended Nationally Determined Contributions (INDCs) and the role that mitigation, adaptation, means of implementation and loss and damage should play in INDCs left countries deeply divided after COP 20 (Ott et al. 2014). At the same time, loss and damage constantly gains traction among parties, fuelled by extreme weather events such as Typhoon Haiyan devastating the Philippines in 2013 or Cyclone Pam destroying vast parts of Vanuatu in 2015 (Huq 2013; King 2015; Friedmann 2015). These events may serve as examples of risks from climate change that are unavoidable, even with mitigation and adaptation measures in place (IPCC 2014: 18).

Although there is still no commonly agreed definition of loss and damage, in essence there are two rivaling positions that can be attributed to developed and to developing countries: To most developing countries (AOSIS and the LDCs, among others), it was of utmost importance that loss and damage be conceived of as a separate element of the future agreement. Most developed countries however emphasized the role of the existing WIM and were reluctant to think of loss and damage as separate element of the 2015 agreement, which they perceived as a “duplication of work”. While developing countries strive to conceptualize loss and damage as distinct from adaptation – arguing that there are losses and damages from climate change that populations cannot adapt to – most developed countries prefer to see it as part of the adaptation framework, since there is a fear that

any opening of the issue might ultimately lead to being legally required to pay compensation to developing countries for their past GHG emissions (Ott, et al., 2014, p. 5).

Being at a rather early to intermediate stage of the policy cycle, the positions on loss and damage are clear cut but nations have not clustered into many small groups with differentiated demands. Rather, when the vulnerable countries, notably the African Group, the like-minded developing countries (LMDCs) and the least developed countries (LDCs) joined AOSIS in their stance on the topic, these countries united to adopt a relatively coherent position. Developed countries on the other hand maintain their position that loss and damage should be addressed in the context of adaptation. Thus, the structure of this network is (still) rather open, featuring a low level of fragmentation, with few components of the network and hence, a low density. The negotiations on loss and damage focus on a single venue, the COP, so instances of forum shopping or shifting are not (yet) an issue. Hence, we believe that ITS will turn to *opinion leadership* to steer the debate.

### 3.2. REDD+

Similarly to loss and damage, REDD+ is an agenda item that has led to strong disagreements between developed and developing countries, or more specifically, REDD+ and donor countries. As a market-based instrument to incentivize developing countries to halt deforestation, REDD+ takes center stage for the future of forests in a post-2020 climate treaty and the generation and use of climate finance and carbon markets instruments. Despite international consensus on the need to conserve forests, the development of a global REDD+ mechanism progresses slower than many had hoped. During COP 20, negotiations stalled on issues such as non-carbon benefits, non-market based approaches and the question of further guidance for safeguard information systems (Braña-Varela, 2014). Severe disagreements have more than once stifled negotiations on REDD+, however countries willing to move forward with REDD+ have not only pursued their goal within the UNFCCC negotiations, but have shifted activities to a broader institutional complex on REDD+. While negotiations stalled within the UNFCCC, voluntary venues outside the Convention, such as the REDD+ Partnership and multilateral funds such as UN-REDD<sup>7</sup>, the Forest Carbon Partnership Facility (FCPF), the Forest Investment Program (FIP) and the Green Climate Fund (GCF), have developed REDD+ further in a bottom-up manner (Wallbott 2014; Reinecke et al. 2014, Streck 2012).

Hence, the structure of the REDD+ policy network is denser and more fragmented than that around loss and damage, comprising many distinct groupings inside and outside of the Convention. Furthermore, since REDD+ as a concept is highly complex<sup>8</sup>, involving multiple actors and taking place in a multi-level governance setting, different policy “communities” deal with REDD+ from different angles. This leads to a dispersed approach or even to ‘silo-thinking’. Although many disagreements between parties in the UNFCCC run between REDD+ and donor countries, these two groupings cannot be regarded as monolithic blocks. The donor community is highly fragmented and coordination among major funder’s remains elusive; blockage and redundancies persist. On the receiving end, REDD+ countries react very differently to this situation. While few countries, led by Indonesia and Brazil, receive the bulk of financial support, having high capacities to attract finance, many small REDD+ countries are struggling to cope with the complex financing landscape, their absorptive capacity for climate finance being low (Norman and Nakhoda 2014; Roe et al. 2014). Thus, also the REDD+ countries do not follow a coherent approach in the as, but are split into distinct components of the network.

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<sup>7</sup> United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries

<sup>8</sup> A number of key challenges for REDD+ implementation at the national and international level have been identified by several studies (Angelsen, et al., 2009; Kanninen, et al., 2010; Haug & Gupta, 2013), including the right “scale” for REDD+; reference levels; financing REDD+; monitoring, reporting and verification (MRV); permanence, additionality and leakage; and safeguards. At the national level, the challenges include good governance, tenure and internal benefit sharing; the participation and rights of indigenous people and local communities; the impact of REDD+ to date and risks and opportunities of commodifying carbon (Haug & Gupta, 2013).

This network structure conditions the possibilities of secretarial influence in the REDD+ policy network, for which finance for REDD+ may serve as an illustrative example. REDD+ is currently financed by sources inside and outside the UNFCCC, ranging from large multilateral funds, bilateral programs, regional and national banks, foundations and private sector finance; all of which are progressing at different paces (Streck, 2012). Public-private partnerships and hybrid multilateral agreements such as the BioCarbon fund are also on the rise (World Bank, 2013). Thus, since the finance issue is increasingly dealt with outside the UNFCCC, forum-shopping and shifting (Forman and Segaar 2006) are also beginning to shape the political 'landscape' for REDD+.

In the context of fragmented regimes (Keohane and Victor, 2011), we argue that ITS follow a steering approach which we labeled as *cognitive leadership* to assist the countries in coping with this institutional complexity; acting as a broker between the different communities around REDD+<sup>9</sup> could allow the Secretariat to influence the debates.

Looking at the data, we find ....

#### **4. Discussion**

The cases on REDD+ and loss and damage have been selected due to their respective network structure, since this structure "may be consequential for predicting both the opportunities and constraints facing groups and actors, as well as predicting the evolution of the graph itself" (Hanemann and Riddle, 2005). While REDD+ is a relatively fragmented policy network comprising many distinct components, loss and damage is (still) a rather open network, not showing this degree of substructures. Thus, the policy network around REDD+ displays conditions in which cognitive leadership might have high potential, i.e. acting as a knowledge broker can lead to secretarial influence. On the other hand, the loss and damage network should be well suited for exerting opinion leadership, which the secretariat can do by exploiting its central position and more importantly, its embeddedness.

Results show...

#### **5. Conclusion**

Using Twitter as a proxy for public debates, we analyzed the role the treaty secretariat of the UNFCCC play in the discussions evolving around "REDD+" and "Loss and damage" on Twitter. The paper argued that extent to which it is able to influence a Twitter debate depends strongly on the structural characteristics of the network and its relative position within. Two notions of leadership and hence influence have been identified, namely cognitive as well as opinion leadership. While opinion leadership refers to the importance of being centrally positioned within a network, cognitive leadership refers the role of knowledge brokers in the network. Networks featuring a high density therefore require cognitive leadership, promoting direct communication as well as taking on a bridging position between the various components. Opinion leadership, on the other hand, is best exerted in a low density network.

Evaluating and visualizing the interplay of relevant actors, we are able to analyze the role treaty secretariats play in Twitter-debates evolving around the topics "REDD+" and "Loss and damage" during COP 20.

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<sup>9</sup> The roles of knowledge brokers in REDD+ is an emerging field of scholarly interest. See, for example, Gallemore & Munroe, 2013; Moeliono, et al., 2014.



→ Results show

Further research should take into consideration the followers of Twitter users. In the Twittersverse social connectivity takes the form of followings and followers relationships (Xu et al. 2014). Studies show that an active participation (tweeting/retweeting) in a hashtag based conversation provokes the acquisition of new followers. That might be a way to influence debates on Twitter. Moreover, it might be interesting to see how the network evolves and in how far ITSs might be able to foster the creation of new (trusting) relationships and hence, are able bridge different components of the network in case of a low density. By measuring the connectivity of network members in the beginning and after the event, one is able to determine if they succeed in creating a new (trusted) community/network.

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