



Original article

Role of social networks in urban forest management collaboration: A case study in northern Japan



Kazushige Yamaki

Hokkaido Research Center, Forestry and Forest Products Research Institute, 7 Hitsujigaoka, Toyohira, Sapporo, Hokkaido 062-8516, Japan

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ABSTRACT

Public participation is crucial for sustainable forest management. In particular, in urban forest areas, it is an important tool for overcoming conflicts among diverse needs regarding the forests through collaboration between citizens and governments. Such collaboration requires social learning. Social learning is dependent upon the presence of social networks that serve as an infrastructure for social capital. This study analyses the role of the social network in a participatory forest management approach of the Nopporo Forest Regeneration Project (NFRP) in the urban Nopporo National Forest in Hokkaido, northern Japan, aimed at restoring a typhoon damaged forest. Within the framework of the participatory approach the project has created a network of several citizen organizations for exchanging information. Outside this formal NFRP network several additional citizen organizations are concerned about the Nopporo Forest management. The article describes the overall social network that has evolved around the Nopporo Forest and compares the attitudes and evaluations of the NFRP network organizations and the not formally NFRP related organizations towards their collaboration with government agencies and other citizen organizations. The overall social network around the Nopporo Forest had a multi-nodal character with the National Forest Agency and Hokkaido Prefectural Government acting as main central nodes. Only a few citizen organizations had direct relations to both central nodes; many organizations had links to either the National Forest Agency or the Prefectural Government. The organizations involved in the formal NFRP network had close ties with the National Forest Agency. This contributed to a positive evaluation of present forest management approach and the collaborative activities of the government agencies. In contrast, the organizations that were not involved in the formal NFRP network were found to have fewer ties with the National Forest Agency. The lack of opportunity to form a direct social learning relation hindered the formation of social capital and resulted in a lower evaluation of the participatory management approach as well as of the collaborative activities. Thus, although the participatory forest management approach of establishing formal social networks enhanced collaboration between the National Forest Agency and several citizen organizations and social learning, it was less successful in encouraging a democratic process involving all interested citizen organizations.

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1. Introduction

During the period of rapid economic growth in Japan in the 1960s and 1970s, large-scale forest developments, such as timber harvesting and construction of roads, were undertaken in the remote National Forests. These developments resulted in social anger and provoked a series of nature conservation discussions in the 1980's. These discussions revealed the citizens' distrust in the government and the inability of the government to reflect the citizens' and stakeholders' diverse needs when developing policies for

the National Forest (Kakizawa, 1993). As a result of these forest conservation debates, the National Forest administration introduced in 1989 a new communication system to respond to the public's demands to participate in the National Forest planning process to improve the distrust between the public forest administration and citizens (Yamaki et al., 2002). And in 2000, Japanese government published a Forest White Paper, which unveiled a drastic political change by the National Forest administration from an emphasis on timber production to an enhancement of diverse public functions of the forests. The phrase "Forests for Citizens" was introduced to represent the National Forest's standpoint on the concepts guiding their official management policy. Public participation, which promotes the involvement of citizens in the management process, is a significant component for the implementation of the management

E-mail address: yamaki@ffpri.affrc.go.jp

of the National Forests as “Forests for Citizens.” Accordingly, several participatory forest management approaches have been introduced in the National Forests (Yamaki, 2014).

In Japan, populations are mostly concentrated in urban areas. Consequently, the concepts of public participation and collaboration have become significant as a decision-making tool for solving conflicts in urban forest areas between diverse needs of local people. Some previous researches have evaluated the participatory planning process in urban forests (Sipilä and Tyrväinen, 2005; Kangas et al., 2014), but few have examined the extent to which participatory forest management approach enhances the collaboration between citizens and government agencies. This study aims at elucidating the characteristics of collaboration by examining the role of social networks in urban forest management.

1.1. Characteristics of collaboration in public participation

Public participation has been of great importance in forest management as well as sustainable natural resources management (Buchy and Hoverman, 2000; Germain et al., 2001; Predmore et al., 2011; Saarikoski et al., 2010). Public participation is the involvement of non-state actors such as people and organized groups in a process where they can exchange information and express opinions about the policy-making process. There are diverse social needs for forests; therefore, it is necessary to coordinate and make compromises between the diverging and conflicting social needs. Because centralized bureaucratic governments have failed to address the complex natural resource management issues, public participation has been assumed to lead to better policy outcomes as it is anticipated that it can improve the quality of decision-making by facilitating the exchange of information and ideas and by promoting collaborative social learning about problems and their potential solutions. Public participation is thus considered a decision-making tool in which conflicts between the different interests are reduced and mitigated, thus leading to more effective and durable decisions and production of better plans and policies (Aasetre, 2006; Kangas, 2010; Maier et al., 2014; Reed et al., 2009).

The normative goal of public participation is widely acknowledged to be the promotion of democracy and social learning (Armitage et al., 2009; Reed et al., 2009) as it increases the chance for those on the periphery of the decision-making context to get involved. If participatory processes are perceived to be legitimate and transparent and consider the conflicting claims and views of the participants, they can enhance public trust and build support for decisions, thus contributing to the empowerment of democratic citizenship (Reed et al., 2009; Turnhout et al., 2010). Social learning emphasizes social interactions and the sharing of knowledge between stakeholders (both people and organizations) through learning-by-doing about the issues under discussion and can empower participants by co-generating knowledge and increasing the participants' capacity to use this knowledge. It also has the possibility of transforming relationships through the development of new relationships, changing stakeholders' perceptions of each other's views, transforming adversarial relationships, and enabling participants to identify new ways of working together (Stringer et al., 2006). More importantly, public participation leads to collaboration, which is a form of participation where all stakeholders are jointly involved in working together to facilitate the co-production of goals and processes (Davies and White, 2012).

The level of public participation can be characterized based on a process (e.g., degree of engagement) as well as the quality of the decisions and their consequences (Arnstein, 1969; Reed et al., 2009; Young et al., 2013). Public participation is categorized along with the engagement on the decision-making, where collaboration can be located toward the empowerment end of the participation spectrum (Fig. 1) (Davies and White, 2012; International Association for

Public Participation, 2014). Moreover, participation can be divided into three typologies depending on the information circulation level among participants (Stringer et al., 2006). In the first type, information flows from the initiative's sponsor to the public in a one-way, linear process, where no feedback from the public is sought nor required. In the second type, information is initiated by the sponsor, and then collected from the public, but the process is also one-way and linear. However, in the third type, information is exchanged between the sponsor and the public through a two-way interactive dialogue, which is often cyclical or iterative in nature. Because high levels of interaction among participants are emphasized in the collaboration, the information flow needs to be secured at the third level (Davies and White, 2012).

1.2. Collaboration, social capital and social networks

Collaboration that involves both formal and informal interaction between the citizens and public administrations is considered to foster social capital, which promotes information and knowledge sharing, develops trust, and lowers the cost of working together, thus facilitating cooperation (Borgatti and Foster, 2003; Coleman, 1988). Social capital is defined as “social networks and the norms of reciprocity associated with them” (Putnam, 1993). Reciprocity engenders trust, facilitating a simultaneous exchange of goods and knowledge and continuing exchange relationships. In other words, social capital represents a set of characteristics in a social organization that can improve the societal efficiency by increasing trust, producing rules, and sharing values, thus engendering reciprocal links and cooperation, which helps to achieve positive environmental outcomes (Berkes, 2009; Pretty, 2003; Pretty and Ward, 2001). Therefore, social capital is the basis for cooperative behavior and mutually beneficial collective action that can facilitate creative problem-solving across different sectors and levels of government (Belaire et al., 2011; Carlsson and Berkes, 2005; Newig et al., 2010; Uphoff and Wijayarathna, 2000).

Collaborative social learning fosters social capital, and thus promoting information and knowledge sharing. Social capital involves different forms of social relations, i.e., social networks. To understand the process of social learning, attention should therefore be paid to the role of social networks as the infrastructure of social capital (Mandarano, 2009; Newig et al., 2010). In natural resource governance, the role of the social network has received increasing attention (Bodin et al., 2006; Bodin and Crona, 2008, 2009; Crona and Hubacek, 2010; Dougill et al., 2006; Lauber et al., 2008; Schneider et al., 2003; Prell et al., 2009). Social networks are an aggregation of mutual interactions made up of a relational structure of the actors and their respective interrelationships. Recognizing the different relational patterns as structural network characteristics can ultimately lead to conclusions about their impact on the enhancement of knowledge transfer, resource mobilization, and consensus building (Bodin and Crona, 2009; Carlsson and Sandström, 2008; Newig et al., 2010). Social network analysis examines roles and relationships of the stakeholders who constitute and steer the natural resource governance (Lienert et al., 2013; Prell et al., 2009; Reed et al., 2009; Tanaka, 2006) and has recently been applied to examine collaboration in urban ecosystem governance (Belaire et al., 2011; Enqvist et al., 2014; Ernstson et al., 2008, 2010; Holt et al., 2012; Romolini et al., 2013) and forest landscape planning (Paletto et al., 2012). Therefore, this research applies social network analysis to examine the interaction between the citizens and the government in participatory urban forest management.

1.3. Research questions

Considering the above background, this study examines whether the participatory forest management approach leads to an enhancement in the urban forest management collaboration. The

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