

1C.2 - Integrating sustainable remediation into other policies.

BUILDING A NETWORK-BASED EXPERT-STAKEHOLDER FRAMEWORK FOR SUSTAINABLE REGENERATION

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Introduction

The involvement of stakeholders in regeneration processes has recently received increasing attention in the literature on the sustainable management of land and of regenerated areas. Progress is quite recent in this area, going back one decade or so (RESCUE 2005, REVIT 2007). Stakeholders and stakeholder involvement has first been conceptualized in the business and management literatures, for example by Freeman (1984) and Freeman and Reed (1983). Approaches to stakeholder participation have also emerged in other disciplinary contexts, such as social activism, adult education, applied anthropology, complex systems, natural resource management and ecology (Reed 2008). All these have been successfully applied in the environmental management literature (Reed et al. 2009) and an emerging trend can be discerned in the literature on land management and regeneration (Cundy et al. 2013). Especially the new drive towards sustainable requalification includes the participation of stakeholders as one of its key principles (Wehrmeyer et al. 2007, Cundy et al. 2013). In this paper, we argue that further progress in understanding and managing stakeholder involvement in regeneration will be shaped by the further incorporation of concepts and approaches from the social sciences into regeneration theory and practice. We illustrate this by outlining the knowledge gains offered by a social network approach to stakeholder involvement. This approach is being developed as part of a Marie Skłodowska-Curie individual fellowship whose incumbent (identified as the first author above) is housed and coordinated in the Department of Environmental Science, Informatics and Statistics at Ca'Foscari University of Venice, Italy. The name of the research project is Nexus, that is, Network-based Expert-Stakeholder Framework for Sustainable Remediation)

The state of the art in conceptualizing stakeholder involvement in brownfield regeneration

Involving stakeholders in brownfield regeneration has not always been seen as a priority. It was only after the publication of the Brundtland report in 1987, that participation became a norm in sustainable development (Gross and Bleicher 2010, Reed 2008). From that moment on, there was a growing interest in “who is in and why”, (Reed et al. 2009), in environmental management and the management of contaminated land. The concept of stakeholders, nurtured in the business management literature, became widely used in environmental management. Stakeholders can be conceptualized both in a narrow and in a broad sense. In a narrow definition, the focus is on the economic survival of the firm (Mitchell et al. 1997). Stakeholders are individuals “without whose support the organisation would cease

to exist” (Bowie, 1988 as cited in Mitchell et al. 1997: 858). Freeman and Reed (1983: 91) also provide a narrow definition of the stakeholder concept as “an identifiable group or individual on which the organization is dependent for its continued survival.” A broader definition of stakeholders is offered by Freeman and Reed (1983) alongside their narrow definition. The wide sense of stakeholder is that of “any identifiable group or individual who can affect the achievement of an organization’s objectives.” (1983: 91). For practical purposes, it is important to have a way to identify the stakeholders who play a role in a specific case of brownfield regeneration. This process is called “stakeholder analysis” and consist of: i) defining aspects of social or environmental processes affected by decisions or actions; ii) identifying social actors, (individuals, groups or organisations) who are affected by or can affect some aspects of the phenomenon; and iii) prioritising these actors for involvement in decision-making (Reed et al. 2009).

Reed et al. (2009) also distinguish between normative and instrumental approaches to stakeholder analysis. Whereas the former is motivated by some principled argument (e.g. “stakeholders should be involved as it is their right to do so”), instrumental approaches have pragmatic ends in view (e.g. “in order to get stakeholders to accept a given technology, they need to be involved”). Regardless of the approach pursued, it is important to recognize that the three steps – defining the social and environmental systems affected by decisions, identifying groups and organisations affected by or affecting those systems and prioritising stakeholders for inclusion in decision-making – require a social scientific methodology.

Since the earliest attempts to consider stakeholder participation as part of contaminated land management (e.g. Clarinet 2002), questionnaires were used to collect data, often in comparative perspective. The focus was both on Europe (Clarinet 2002) and on European countries in comparison to the US and China (Hou and Tabbaa 2014).

Other social science methods, such as semi-structured interviews or focus groups, were less frequently used, but the review of stakeholder analysis methods by Reed et al. (2009) reveals considerable potential for successful application in sustainable regeneration. For example, these authors discuss, in addition to the two methods mentioned above, the following eight methods for stakeholder analysis:

- Snowball sampling (interviewed stakeholders identify other relevant stakeholders to be interviewed),
- Interest – influence matrices (stakeholders are placed in a matrix according to their relative interest and influence)
- Stakeholder-led categorisation (stakeholders create their own categories to classify who is involved)
- Q methodology (stakeholders sort they statements agree with, allowing the identification of social discourses)
- Actor-linkage matrices (actors are tabulated in a matrix and their relationships described by means of codes).
- Social network analysis (identifying the network of stakeholders and measuring relational ties)
- Knowledge mapping (identifies stakeholders that would work well together)
- Radical transactiveness (snowball sampling to identify fringe stakeholders).

This list of methods suggests the broad scope of social science methods applicable to the analysis of stakeholder involvement in sustainable regeneration. These methods are of varying usefulness depending on the case discussed and on the research focus of the investigators. In most case, social science researchers opt for a combination of methods. In what follows we will introduce the research design of the Nexus research project and illustrate the benefits and challenges of applying a particular combination of social science methods to investigate a case of sustainable brownfield regeneration.

Towards a social scientific framework for stakeholder involvement in sustainable regeneration

This section introduces the design of the Nexus research project. The aim of Nexus (Network-based Expert-Stakeholder Framework for Sustainable Remediation) is to provide a novel approach to conceptualize stakeholder involvement in brownfield regeneration by means of a case study. The approach is new in that it proposes: (1) a new conceptualization of stakeholder involvement, applicable

to sustainable regeneration; (2) a research design that includes several methods linked to each other as part of a research process; (3) a case study to serve as an empirical basis for developing a framework for stakeholder involvement in sustainable regeneration.

The theoretical argument is that, in any regeneration project, stakeholders are not isolated individuals or organizations, but are social actors involved in structured relationships (i.e. relationships that are stable and enduring) with each other. Describing and understanding these structures is important when one recognizes that the management of contaminated land is a multi-actor and multi-purpose process or, in conceptual terms, a governance process. Governance refers to the “structures and processes by which people in societies make decisions and share power” (Folke et al. 2005: 444). Governance assumes that managing contaminated land is not the task of only one designated actor (e.g. clean-up company) and it also not the exclusive precincts of experts (from a biochemical and physical perspective only) (cf. Bodin and Prell 2011). Instead, different actors make their influence felt in brownfield requalification projects. This has already been recognized in the sustainable regeneration literature, for example in the rainbow diagram that classifies stakeholders according to whether they are affecting, affecting and affected or only affected by a regeneration project (Chevalier and Buckles 2008; Cundy et al. 2013). What has been less recognized so far is how actors involved in the same requalification project might influence each other, via communication ties. Hou and Tabbaa (2014), for example, approach the growing interest for sustainable land management in terms of stakeholder demand and institutional processes. Regulators, site owners, consultants and broader social groups can all make demands on regeneration project managers or on other actors for achieving sustainability in requalification. We argue that the flow of demands and also of other forms of communication can best be investigated by means of social network analysis, which enables the “study of how resources, goods and information flow through particular configurations of social ties” (Bodin and Prell 2011: 10). Social network requires, however, a number of preparatory steps that are integrated in a unitary research design.

The research design for network analysis draws on the work of Prell and her colleagues (2009). The steps in identifying the network and measuring the ties among actors are described in the table below

Steps	Focal points	Methods for data collection and analysis
Step 1	Identifying specific sustainable regeneration issues over which actors communicate	Scoping interviews
Step 2	Establishing a list of potential network members	Mental maps of ego-centred networks
Step 3	Development of a tool for identifying and measuring networks for sustainable regeneration	Development and pre-testing of a questionnaire to collect data on project-specific networks.
Step 4	Data collection and analysis	Computer supported analysis of qualitative and quantitative data
Step 5	Development of an applicable framework to characterize stakeholder involvement in sustainable requalification	Generalization of the research results to other cases

Table 1 – Step-wise research design for a social science approach to stakeholder involvement in sustainable regeneration projects.

The strength of this succession of steps is that it starts with an empirically grounded understanding of sustainable regeneration in terms that the stakeholders themselves consider relevant. The understanding of the sustainable requalification issues and of who is involved in this process is done in terms of a dialectic relationship (Prell et al. 2009). Clarifying the set of sustainable regeneration issues over which actors interact, via the semi-structured scoping interviews, also allows the identification of the key actors involved, by means of the ego-centred maps, in which respondents are asked to nominate, at the end of the interview, those they communicate with on the topics they have specified in the interview. At the end of the first two steps, the researchers have a list of sustainable regeneration issues and also a list of potential network members. The third step involves the synthesis of the collected

information into one tool – a questionnaire – which allows the identification of social networks and the measurement of the nature and intensity of sustainable regeneration concerns. The fourth step allows the testing of the overall governance concept – characterizing the diversity of actors involved in a network – and of more specific propositions such as those formulated by Hou and Tabbaa (2014). Finally, the fifth step addresses the need to generalize the findings and make them applicable to different cases in which the configuration of stakeholder involvement is likely to play a role, as expected in most of the complex environmental management processes (Liu et al. 2007). Network indicators such as the centrality of individual actors, the density of the network as a whole or the existence of cliques (or cohesive subgroups within a generally loose configuration) within the network (Prell 2012) can signal for other projects to what extent the involvement of all stakeholders or of specific categories of stakeholders is effective or not.

Both the identification of networks organized around specific issues and of sustainable regeneration concerns require the use of a strategic case study. By the latter, we mean a case that displays all the conceptual constructs of interest, namely: active networks of actors who communicate on ongoing matters of concern related to the regeneration of brownfield sites and a concern with the sustainability of regeneration at different time scales. The case study chosen for the Nexus project, briefly described below, meets both these criteria.

The Vega Science and Technology Park consists of four ex brownfield sites (identified as Vega 1, Vega 2, Vega 3 and Vega 4), located in the first industrial area of Porto Marghera, Venice, Italy. Vega 1 has undergone a regeneration process between 1993 and 2006, which has resulted in eight new or refurbished structures for scientific research, technology development and service provision (Vega 2006). Between 2007 and 2011, no regeneration projects were carried out. Since 2012, the Vega 2 area is undergoing a new regeneration phase aimed at establishing a new exposition, residential and commercial space. There are a number of projects and strategies that are currently considered and discussed for the future of the Vega 2 area, both over the immediate term and long term.

The Vega 2 case fits the conceptual requirements of the Nexus research project. It enables the simultaneous identification of active networks and of sustainability issues and of the relationships between them. First, it allows the comparison of social networks linking actors who communicate about projects with immediate implications and of those in which actors discuss strategies with longer term implications. Sustainability networks are thus captured in relation to immediate and to more distant goals. Second, the Vega 2 case allows the identification of sustainability goals (via open-ended questions) and also the assessment of the relevance of sustainability indicators (derived from the sustainable regeneration literature and from the interviews with key respondents). Third, and most importantly, the Nexus research can reveal in the case of Vega 2 how stakeholders with different sustainability concerns are related to each other as part of networks.

Conclusion

This paper reports on an ongoing research project designed to use social network analysis as an operational definition of stakeholder involvement in sustainable regeneration projects. The collection of data via the research design outlined in Table 1 is currently at step 3. However, the steps carried out so far have demonstrated the utility of a social science approach in conceptualizing and measuring stakeholder involvement in regeneration projects. Social network analysis is not meant to replace previous stakeholder analysis approaches, such as those based on questionnaire research, but to shed light on a previously underexplored facet of stakeholder involvement in sustainable regeneration projects. Our focus on communication ties among actors can inform both researchers and practitioners on the following topics: how is information likely to flow among stakeholders; who are the centrally located and the peripherally positioned actors; how are actors with similar kinds or levels of sustainability concerns positioned in relation to each other etc. These and similar questions are important for understanding how decisions are or can be communicated and how power relationships – for example between those who make decisions and those who have to comply with such decisions – are played out among stakeholders.

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