



An indicator system for evaluating megaproject social responsibility

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Received 4 June 2016; received in revised form 17 February 2017; accepted 25 April 2017

Abstract

Megaproject social responsibility (MSR) is fundamentally crucial for megaprojects' sustainable development. In order to provide an approach for effectively evaluating MSR, this study develops a holistic indicator system using a structured methodology and a quantitative analysis model. Addressing the multi-dimensionality of sustainability goals for the well-being of the wider society, the indicator system simultaneously integrates project life-cycle dynamism, stakeholder heterogeneity, and social responsibility interactivity. Furthermore, the indicator system is deliberately tailored for the translation of key issues of MSR into relevant measurements. The indicator system contains 25 indicators at the organizational level and 46 indicators at the project level—a structure which offers a novel typology to organize the attributes of MSR. Moreover, the results provide an alternative solution to the substantive improvement of MSR management—one that balances the interests of every stakeholder.

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Keywords: Social responsibility; Megaproject; Sustainability; Stakeholders; Assessment indicators

1. Introduction

We are living in an age of unprecedented global investment in megaprojects. These are large-scale engineering facilities, such as large-scale hydropower projects, high speed railways, expressway networks, gas pipeline projects and long-span bridges (Flyvbjerg, 2011). Megaprojects provide fundamental public services for social production, economic development, and daily life, and form the backbone of modern societies (Flyvbjerg, 2014; Guikema, 2009). The ongoing progress and expansion of megaprojects is increasingly calling for considerations on various economic, environmental, and social issues around the world, especially in emerging economies (Aarseth

et al. in press; Ansar et al., 2014; Levitt, 2007; Lin et al., 2016; Qiu, 2007; Shen et al., 2010; Xue et al., 2015). Megaproject social responsibility (MSR) refers to “the policies and practices of the stakeholders through the whole project life cycle that reflect responsibilities for the well-being of the wider society” (Zeng et al., 2015, p. 540). As an effective approach for integrating key issues into a unique theoretical framework, MSR is fundamentally crucial for megaprojects' sustainable development. Deficiencies in MSR trigger severe outcomes. For example, neither Karakum Canal nor Sanmenxia Dam can wake up from the nightmare of self-induced catastrophic ecosystem degradation. The Three Gorges Dam, the world's largest hydroelectric project and a symbol of China's confidence in risky technological solutions, is also suffering a tempest of criticism about the threats it poses to the environment, to animal species, and to resettled people (Stone, 2008; Wu et al., 2003; Xie et al., 2003). In the coming decades, global infrastructure spending, mainly delivered as megaprojects, will

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be at about USD 3.4 trillion per year between 2013 and 2030 (McKinsey Global Institute, 2013). Meanwhile, China is funding a host of wide-ranging infrastructure programs—from highways spanning the continent, to the largest wind power base in the world, to a national strategy named “One Belt and One Road” (OBAOR) that links Asia, Europe, Africa, and many others besides. In the global context of sustainable development, MSR is thus a hot topic—both for academia and in practice.

Social responsibility in the implementation of megaprojects has been addressed from a variety of perspectives. Researchers working in the field of organization and management have highlighted the role of social responsibility in achieving organizational sustainability (Philippe and Durand, 2011; Porter and Kramer, 2002; Sen and Bhattacharya, 2001), including firms in industries relating to megaprojects (Qi et al., 2010). These studies cover various topics, such as health and safety (Fang et al., 2004), green construction (Tam et al., 2004), environmental management (Zeng et al., 2003), and public pressure (Gluch, 2009; Qi et al., 2016). In the field of project management, project complexity, ambiguity, ambition, politicality, and risk are deeply discussed for megaprojects (Levitt, 2007; Pollack et al. in press; Saynisch, 2008). Project sustainability involves effective stakeholder management at different levels, as well as consideration of its long-standing influence on society, economy, and natural environment (Mok et al., 2017). Beyond the projects’ intrinsic objectives, researchers in economics or policy describe more macroscopical pictures of megaprojects’ effects. They touch on important issues including national productivity (Morrison and Schwartz, 1996; Fernald, 1999), market integration (Faber, 2014; Zheng and Kahn, 2013), labor market (Demetriades and Mamuneas, 2000; Leigh and Neill, 2011), economic growth (Ghani et al., 2015), and regional health (Guikema, 2009). Holistically, MSR needs to simultaneously integrate project life-cycle dynamism, stakeholder heterogeneity, and social responsibility interactivity due to megaprojects’ high levels of complexity, conflicts, uncertainty, and risks (Ma et al. in press; Zeng et al., 2015). However, in practice, megaprojects’ stakeholders have performed their responsibilities mainly relying on past experiences and intuition. The adoption of best practices requires substantial guidelines stemming from theory. Hence, there is a dire need for MSR indicators to facilitate MSR. First, existing social responsibility indicator systems usually point at corporate social responsibility (CSR), and they only partially meet the requirements of CSR. Besides firms, other stakeholders are often excluded and given no consideration. Second, existing indicators for engineering projects mainly focus on environmental protection in the construction phase (Ugwu et al., 2006). These indicators cannot accurately reflect the full MSR performance at the project level. Third, existing indicators focus attention on micro-level outcomes. Adequate tools that cover the full and detailed performance of MSR do not exist.

This study therefore aims to 1) develop a systematic and comprehensive MSR indicator system that can be used to assess the social responsibility performance of specific megaprojects; and 2) to guide the consideration of MSR. Our indicator system

is deliberately tailored for the translation of key issues of MSR into relevant measurements. The system is designed to respond to the question: “How can we evaluate MSR?” This study, with a holistic view to contributing to MSR research, concludes with proposals for participators of megaprojects to develop MSR performance details and relevant management guidelines. The rest of this paper is structured as follows. Section 2 presents a literature review on MSR. Section 3 describes the research context and the methodology. Section 4 provides the indicator system we have developed for evaluating MSR. Finally, Section 5 discusses the findings and the contributions of the study, as well as its limitations and its subject’s potential for future studies.

2. Review of the literature on MSR

As a key component of sustainability, social responsibility—especially CSR—has been a hot academic topic since the 1990s (Aguilera et al., 2007; Aguinis and Glavas, 2012; Campbell, 2007; Lin et al., 2015). The general issues of social responsibility involve human rights, labor practices, environmental protection, fair operating practices, consumer issues, community involvements, and social developments (ISO, 2006). Previous academic studies have explored CSR plentifully and systematically. Scholars have addressed broad topics on the CSR construct (Carroll, 1999), the impact of CSR on financial performance (Brammer and Millington, 2008; Peloza, 2009; Waddock and Graves, 1997), CSR measurement (Wood, 2010), and value creation by CSR (Peloza and Shang, 2011). Moreover, a large number of publications have discussed CSR-related topics in specific disciplines such as marketing (Sen and Bhattacharya, 2001), green innovation (Lin et al., 2014), organizational behavior (Aguinis, 2011), operations (Brammer et al., 2011), and information systems (Elliot, 2011).

However, social responsibility of megaprojects is quite different from CSR. Rather than being like small projects except bigger, megaprojects are often designed to ambitiously change the world (Flyvbjerg, 2014; Pollack et al. in press). The scale of these projects imposes great pressures on oceans, rivers, grasslands, forests, and the atmosphere of our planet—as well as possibly creating social disruptions and inequities (Levitt, 2007). Thus, the closely intertwined challenges and the rising controversy over the development of megaprojects often becomes a *cause célèbre* and attracts widespread concern around the world (Gil and Beckman, 2009). In the context of global sustainability, megaprojects are standing at hotspots because they can transform the nature of human activities and bring dramatic and permanent impacts to the planet. With respect to infrastructure project management, scholars have carried out exploratory studies from various perspectives and covered different issues. From the corporate perspective, scholars focus on firms in the construction industry and have studied topics such as the sub-contractor relationship (Zeng et al., 2003), health and safety (Fang et al., 2004), green construction (Qi et al., 2010; Tam et al., 2004), environmental management (Zeng et al., 2003), and public pressure (Gluch, 2009; Qi et al., 2016). Demonstrating social concern is

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