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A balancing act: The role of benefits, impacts and confidence in governance in predicting acceptance of mining in Australia

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ABSTRACT

Mining activities generate benefits but can also negatively impact human societies and the environment. The present research aims to examine how people evaluate the benefits and negative impacts of mining, and how this evaluation, in turn, affects the extent to which they support mining activities in Australia. Study 1 ($N=210$) found that when the key impacts and benefits were considered simultaneously, mining's environmental impact was the major factor leading to rejection of mining, followed by impacts on other sectors such as agriculture, with impacts on living cost had no significant bearing on people's attitude toward mining. On the benefit side, creating employment and promoting mining community development were the most important benefits leading to participants' acceptance of mining, followed by benefit in general wealth and regional infrastructure improvement. Further analysis indicated that participants were not prepared to compromise their concern over environmental impact when weighing benefits over costs. Study 2 largely replicated the findings of Study 1 with a larger and nationally representative sample ($N=2590$). Further analyses in Study 2 showed that confidence in governance institutions (i.e., perceived legislative and government regulative capacities in holding the mining industry accountable) played an important role in moderating the effect of environmental impact on acceptance of mining. The implications of these findings are discussed in the context of managing development of the mining sector in Australia.

Introduction

The materials extracted from mining are central to modern life. However, the benefits and negative impacts of mining are numerous and complex (e.g., Measham et al., 2013). They are particularly acute for communities both locally situated in mining intensive regions and for society as a whole in mining dependent countries like Australia (Franks et al., 2010; Measham et al., 2013; Schandl and Darbas, 2008). Mining has played a significant role in the economic development of Australia since the 19th Century and is strongly associated with social development in many regional Australian contexts where mining is present (Hajkowicz et al., 2011; Roarty, 2010). However, the discontent with extractive industries and the broader challenges to the legitimacy of mining in Australia and internationally have been documented extensively. Instances of project delays, interruptions, and shutdowns due to community conflicts at a local level are numerous (Davis and Franks, 2011; Moffat and Zhang, 2014; Prno and Slocombe, 2012). Governments have imposed moratoriums on extractive activities due, at least in part, to broader community concerns (e.g., James and Daniel, 2013). Without public acceptance (i.e., social licence to operate), it is very difficult for a mine to operate effectively or profitably. The present paper aims to examine how citizens in Australia weigh the benefits and negative impacts of mining in determining their acceptance of the industry (i.e., granting a social licence to mining).

The Impact Assessment (IA) literature and, more particularly, Social Impact Assessment (SIA) research, have extensively examined the positive and negative effects that mining has on society, usually at the operational and regional scales (Esteves et al., 2012). What is apparent is that mining development is complex and characterised by tensions and conflicts between the mining industry and communities (Haslam McKenzie et al., 2013). The distribution of mining associated benefits and costs can have a significant bearing on the level of acceptance of an operation (Franks, 2012). Broadly, the function of SIA is to identify potential negative impacts for a prospective mining operation in order to design mitigation and minimisation strategies, as well as to identify the benefits to inform strategies to maximise their likelihood (Esteves et al., 2012). While there have been extensive case studies examining the nature of impacts and benefits that arise from mining operations (Haslam

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McKenzie et al., 2013), there has been a lack of systematic enquiry into how these issues are understood at a national level, and how these perceptions relate to acceptance of the industry by the public more broadly.

Such understanding is especially important in national contexts where community expectations of the industry are changing and their legitimacy is being challenged (Parra and Franks, 2011; Yongvanich and Guthrie, 2007). It has become evident that meeting regulatory requirements and acquiring a formal licence from government are no longer sufficient; acceptance by the public and various stakeholders has become essential for mining operations and the industry more broadly (Everingham, 2007; Moffat and Zhang, 2014; Yongvanich and Guthrie, 2007). That is, mining companies need to gain and maintain a social licence to operate. For the mining industry to be sustainable, the public must be willing partners in the process of mining development. Hence, public attitudes toward mining, most particularly how citizens perceive mining associated benefits and costs, should be important considerations for successful mining developments and mining related policy making.

A review of the literature indicates that the research on how mining associated benefits and impacts affect acceptance of mining, so far, has been mainly exploratory in nature, with a particular lack of theoretical orientation and operational definitions. The lack of explanatory research limits the understanding of public attitudes toward mining. In the following section, we aim to develop a theoretical paradigm that will help explain how the public weigh the perceived benefits of mining against its impacts, and how this relates to their attitudes toward mining by applying a social exchange framework. We argue that social exchange theory is an appropriate framework to adopt in developing an understanding of public acceptance of mining in considering mining associated benefits and costs. Therefore, the objective of this paper is to develop a conceptual model that explains how the public weigh the positive benefits and negative impacts of mining development, and how this, in turn, influences the extent to which they accept mining. The paper is structured as follows. We first examine the benefits and negative impacts mining activities can cause. We then discuss social exchange theory, and its application to understand how mining associated benefits and impacts may affect citizen attitudes toward mining activities. Two studies were conducted to test the proposed hypotheses.

The benefits and negative impacts of mining activities in Australia

Mining has been a significant part of Australia's social and economic landscape, and will continue to be for the foreseeable future (Hajkowicz et al., 2011; Measham et al., 2013). Mining activities contribute greatly to Australian government revenues, additional taxes, and foreign exchange benefits (Roarty, 2010). For example, for the 2011/12 financial year, mining contributed 9.6% of GDP, comprised 48.5% of total exports, and constituted 41.6% of total industry investment (Department of Industry, Innovation Science, Research and Tertiary Education, 2014). Mining also fosters improvements in social conditions in various ways, including the direct creation of employment with corresponding flows of income and wealth accumulation (Fargher et al., 2003; Fleming and Measham, 2014; Rolfe et al., 2007). Moreover, mining developments may drive increased investment in social services such as health and education in mining regions (Franks et al., 2010). The construction of infrastructure including roads, port facilities, and railways, as well as operation of mines can provide direct injections of economic stimulus into regional areas, which help to maintain regional employment and facilitate job spillover effects (Fargher et al., 2003; Roarty, 2010; Rolfe et al., 2007). In addition, mining companies have invested in local community infrastructure in mining-affected communities as part of local and state government agreements and conditions or as part of a corporate social responsibility agenda (Bice, 2013; Everingham, 2007). Finally, due to the often remote nature of mining operations in Australia, fly-in and fly-out (FIFO) and drive-in, drive-out (DIDO) arrangements have increasingly become the dominant model for mining workforces, which brings both positive and negative impacts to local communities and mining regions. While this long distance commuting arrangement can create negative impacts including stress for personal and family life as well as social tensions at source communities, it has facilitated the flow of economic benefit to non-mining regions and metropolitan areas (Haslam McKenzie, 2010; Haslam McKenzie and Hoath, 2014; Measham et al., 2013).

Notwithstanding the positive benefits mining creates, it also imposes negative impacts to society and the environment (Franks et al., 2010; Pini et al., 2010). It has been widely acknowledged that mining activities negatively impact local communities, other industries such as manufacturing, agriculture, and tourism, as well as the environment (Roarty, 2010). Both the construction and production phases of mining development make major demands of skilled and non-skilled labour resources. While this demand for workers generates employment and broader economic benefits, it also imposes pressure on other industries, such as manufacturing and construction sectors, as skills are drawn from these industries by the higher wages offered by the mining industry (Miles et al., 2006; Perlich, 2009; Roarty, 2010; Rolfe et al., 2007). Moreover, the influx of workers exerts great pressure on housing stocks, driving up housing and rental prices, and increasing the cost of living in regional mining towns (Fleming and Measham, 2013; Rolfe et al., 2007). Most noticeably, mining activities are inherently disruptive to the environment. For example, mining operations tend to generate dust and noise as well as impacts on ground water quality and quantity (Franks et al., 2010; Roarty, 2010). Perceived future risks associated with mining activities also include the disturbance of the natural environment and the industry's contribution to climate change (Roarty, 2010; Weng et al., 2012).

To date, in Australia, research examining the various impacts and benefits of mining has reflected strong traditions of qualitative enquiry (e.g., Haslam McKenzie et al., 2013; Rolfe et al., 2007), economic analysis (e.g., Fleming and Measham, 2014; Ivanova et al., 2007; Rolfe et al., 2007), and surveys and engagement at local and regional levels (e.g., Esteves et al., 2012; Ivanova et al., 2007; Moffat and Zhang, 2014). Stakeholder or community perspectives at a state and national scales in Australia have also been examined; however, this work has largely been descriptive in nature and the product of interest-based polling (NSW Minerals Council, 2014; Richardson and Denniss, 2011; SBS, 2012). There is a significant deficit in systematic and empirical investigation of citizen attitudes towards mining at a national scale conducted and published by trusted research agencies.

The following section aims to apply the social exchange theoretical framework to explain how people weigh the mining associated benefits over negative impacts in determining the extent to which they accept mining developments. The social exchange framework has been successfully applied in tourism research literature to explain residents' perceived benefits and costs of tourism, and their support for tourism developments (Ap, 1990, 1992; Chen and Raab, 2012; Lee, 2013; Ward and Berno, 2011). Considering the similarities in the complex interplays between the tourism and mining industries across social, economic and environmental domains, we believe social exchange framework is appropriate for exploring the underlying relationship among perceived benefits and costs, and acceptance of mining activities by the public.

Social exchange framework

Modern social exchange theory has evolved from the works of Homans (1961), Blau (1964), and Emerson (1972). Social exchange is defined as “the exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two parties"