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Little by little, inch by inch: Project expansion assessments in the Papua New Guinea mining industry

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ABSTRACT

Social impact assessment (SIA) has traditionally been practiced as an ex-ante predictive tool in the context of regulatory approval by government agencies. This model of SIA developed by Burdge and others is based on 'greenfields' development, of a new project going in to areas where there are no, or relatively few, similar types of development. The International Principles of SIA signalled a conceptual shift in the practice of SIA where greater emphasis is placed on the assessment and management of social issues across the life-cycle of developments. In addition forms of cumulative impact assessment have been developed for contexts where more than one project is likely to impact on populations or communities. With these changes to the traditional models of impact assessment there is a need to clarify how and when dedicated phases of 'assessment' might be undertaken over the life-cycle of a development. In the context of the mining industry, SIAs are increasingly required by governments for incremental increases in the size or impact of these operations. This paper reviews the development and application of Project Expansion Assessments (PEAs) for two large-scale mining operations in Papua New Guinea. It argues that a different set of assumptions need to underlie the model of IA for such assessments, with more emphasis on trajectories rather than baselines, a critical evaluation and attribution of effects, and the incorporation of adaptive management tools into the process.

Introduction

The evolving science of impact assessment is replete with new approaches, refinements and acronyms. The classic model of social impact assessment (SIA), derived from the allied science of environmental impact assessment (EIA) is based on a model of ex-ante assessment of the likely effects of a project on the community or society in which it is to be located (Burdge, 1994; Burdge and Vanclay, 1996). The standard approach was very much based on the assessment of impacts of new, individual 'greenfields' projects. In the past two decades, cumulative effects assessment and management (CEAM; also referred to as cumulative effects assessment (CEA) and cumulative impact assessment (CIA)) has developed as a distinct area concerned with two particular situations where specific forms of impact assessment are required:

- where a proposed project's effects are likely to attenuate the effects of other trends and processes in the broader impact area (the Canadian CEA process as described by Therivel and Ross (2007) is an example of this).
- contexts in which there are multiple projects proposed across a region or area that will have effects that are not captured by individual project EIA/SIAs (Brereton et al., 2008; Franks et al., 2010; Ehrlich, 2010). In other contexts, and particularly where there is a strong regional planning framework, the term strategic environmental assessment (SEA) has been applied to this form of assessment.

In this paper I suggest that there is another context where the conceptualisation of such cumulative effects is also needed: the assessment of the effects of expansions of existing projects. Incremental project expansions at mine sites and industrial developments can have non-linear increases in effects on communities, and yet are rarely subject to the same rigor in terms of SIA. The International Principles for Social Impact Assessment (Vanclay, 2003) signalled a shift from the classical model of SIA to emphasise ongoing assessment, management and monitoring (Esteves et al., 2012; Vanclay and Esteves, 2011), and subsequent innovations in government and corporate policy have led to the development of both government mandated and voluntary implementation of social impact management plans (SIMPs; Franks and Vanclay, forthcoming; Franks et al., 2009). These trends notwithstanding there is still little guidance on what would trigger new phases of 'assessment' for operational projects, and how such assessments should be undertaken. Given the current dynamics within the global mining industry and developments in other sectors, project expansions are frequent. In the context of the

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mining industry at least, SIAs are increasingly implemented for incremental increases in the size or impact of operations, and mining companies have voluntarily undertaken periodic phases of assessment to inform operational planning, expansion and even closure (Everingham et al., 2013; Evans et al., 2009).

This paper reviews the development and application of SIA for the extension or expansion of two large-scale mining operations in Papua New Guinea (PNG). Drawing on elements of the literature on CEAM, and SIA in resource dependent communities (Taylor and Fitzgerald, 1988), it argues that there is a need for specific consideration of the dynamics and variations in social and economic effects that will eventuate from large-scale mine operation expansions or extensions over the duration of the mine life. Without wanting to needlessly extend the nomenclature, there is a need for greater consideration and conceptual development of what are labelled here project expansion assessments (PEAs). The addition of PEAs to the broader SIA framework[1] provides an important flag and potential regulatory trigger for significant variations to development plans (particularly in the mining industry, but also potentially in other sectors). Distinctive elements of the PEA approach should include a greater emphasis on trajectories rather than baselines, a critical assessment of attribution of effects, and the incorporation of PEAs to complement social audit and adaptive management and monitoring tools in the broader SIA process.

The remainder of this paper opens with a general discussion of the evolving nature of long-term projects in the mining industry, and the way in which such operations often require additional SIA work as the project develops and expands (as opposed to or in addition to forms of social monitoring). These PEAs are required where the project changes in an incremental manner, rather than representing a completely new development into a greenfields site. A description of two such PEAs connected to the mining industry in Papua New Guinea, is then provided, outlining both the nature of the proposed developments, the PEA process and some of the key findings. In the fourth section these case studies are drawn on to highlight key differences (some advantageous and others not) between *ex-ante* SIA and PEAs that require further reflection for practice in these contexts.

Long-term mining projects and SIA

Large-scale mining operations today are typically marked by extended mine-life (usually at least 15 years and often much longer), by sets of negotiated agreements with local communities and various levels of regulatory authorities, and by often dynamic and evolving mine planning and development. The last of these – my particular concern here – is a response to improved knowledge of the geology of the mineral resource that accumulates as the operation proceeds, the changing economics of the operation due to fluctuations in commodity prices, and new technologies (Dimitrakopoulos et al., 2002; Dimitrakopoulos and Abdel Sabour, 2007; Abdel Sabour and Dimitrakopoulos, 2011; Groeneveld and Topal, 2011). Changes in ownership and corporate culture can also often lead to a reassessment and sometimes a radical revision of the existing mine plan.

Each iteration of the mine plan has a potentially broad range of social effects, which are rarely considered by those designing them. These may include; changes in the revenue streams to communities due to changes in production levels; new waste dump areas that can produce new groups of affected people and hence require new compensation and resettlement requirements; greater environmental effects; and, typically, changes in the mine life that can have important implications for community and environmental sustainability planning. In the case of the Porgera gold mine in Papua New Guinea discussed below, for example, the original mine life was planned through to 2012 but over the life of the mine this has been extended out to 2020.

These dynamic and evolving contexts highlight one of the key weaknesses of *ex-ante* social and environmental assessment frameworks. *Ex-ante* SIA for most projects is based on a development plan that out of necessity provides (for investors, regulators and communities) a sense of certainty around a specific programme and plan for the mine construction and operation, through to its decommissioning or closure. Such certainty, though, is an illusion, and in many instances the findings of *ex-ante* SIA are rapidly overtaken by changes in mine plans as well as broader changes in the social, economic and political environment. The cliché of the initial assessments and reports gathering dust or, more usefully, propping up the wonky leg of a work desk, captures the medium- and longer term irrelevance of much of this work.

A range of tools and techniques have evolved to address the more glaring weaknesses of these ex-ante assessments, including social monitoring (Banks 1999a, 2000), social audits, adaptive management (Steinemann, 2000; Olsson et al., 2004; Franks, 2011, 2012) and community-based assessment, monitoring and planning processes (Armitage, 2005; Hill et al., 2010; Howitt, 2005; Lane and McDonald, 2005; O'Faircheallaigh, 2009). These approaches do allow, to varying extents, for the incorporation of the dynamics of mine processes and impacts to be accommodated into social mitigation and management planning, and at their best can provide for greater community control over both the tools and the processes for managing these impacts. But this is an area which is typically identified as the least resourced and weakest of the areas of SIA (Steinemann, 2000:639; Joyce and MacFarlane, 2001:16–17), and such tools are not designed to provide the more formal assessment of effects such as may be required by regulators, investors or communities for significant changes from the original mine plan.

In this context project expansion assessments (PEAs), as a distinctive form of assessment within a broader SIA framework, can serve a central role. This need may be driven by formal regulatory requirements (although this is rarely the case in many developing countries including, until recently, Papua New Guinea) or, as in both the examples given below, corporate notions of best practice and social responsibility[2]. The role of International Finance Corporation, (2012) 'Performance Standards' regarding social assessments of impacts was given in both of the cases below as being the rationale for and standard to which the corporation wished to adhere to in their SIA work.

The following sections provide an overview of the context within which the two PEAs (although they were not labelled that at the time, this is what they effectively were) occurred, and discuss the key findings and some of the difficulties encountered with each of them.

Unintended effects and extension by inches: The Porgera gold mine

The Porgera gold mine has been operating in Enga Province in the Highlands of Papua New Guinea since 1990 (Fig. 1). The mine design from the start was envisaged as a staged development, incorporating an initial underground mine that over seven years

[1] Although the discussion here is restricted to PEAs within SIA, a similar discussion is also needed conceptually within the EIA and integrated impact assessment fields.

[2] See Hilson (2012) for a discussion of the increasing significance of corporate social responsibility in shaping the behaviour of mining and oil corporations in developing countries.