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Lasting regional gains from non-renewable resource extraction: The role of sustainability-based cumulative effects assessment and regional planning for mining development in Canada

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ABSTRACT

If mining proposals are to receive more positive reception in host communities and regions, they will need to be planned, reviewed and approved in ways that ensure they contribute to more sustainable regional futures. That transition will require improvements in individual project assessment practice–especially a shift from a focus on mitigating "significant adverse effects" to requiring "positive contributions to sustainability" as well as avoidance of adverse effects. It will also demand more effective regional planning and other strategic level efforts to provide attention to the cumulative regional effects of multiple mining projects, associated infrastructure and other past, current and anticipated activities. Such broader work would provide a better examined context and more authoritative guidance for individual project planning and development. Regional scale planning and assessment are largely a responsibility of governments, not something that individual mine proponents can reasonably be expected to deliver adequately in project-based assessment and approval processes. This paper reviews the current status of assessment regimes, identifies deficiencies and suggests where best practice opportunities exist. The implications are summarized as recommendations for assessment regime design that addresses cumulative effects, largely through regional processes linked to project-level assessments, and that incorporate the following five characteristics:

(i) Multi-dimensional: covers the full suite of cumulative effects of multiple undertakings, past, present and reasonably foreseeable in the relevant regional future (well beyond the individual project level), in light of contribution to sustainability objectives;

(ii) Long term: uses scenarios or some equivalent to explore and illuminate the nature and potential implications of plausible and desirable futures, to identify alternative pathways and plan options to examine;

(iii) Credible: establishes explicit open processes for elaborating and evaluating regional alternatives and justifying decisions in light of context-specified sustainability-based criteria and trade-off rules;

(iv) Authoritative: integrates regional assessment conclusions as decisions in legislatively authoritative regional plans or the equivalent with provisions for ensuring compliance in project level planning and assessment; and

(v) Accountable: ensures clear and accountable assignment of cumulative effects management responsibilities and expectations, including provisions for engaged monitoring, effective responses and public reporting.

Special attention to legacy effects is also emphasized because orebodies are non-renewable resources.

For illustrative purposes, the paper considers approaches to anticipated mining development in the Ring of Fire region, 500 km of Thunder Bay, Ontario, Canada, where reliance on individual project assessments is problematic given the regional cumulative effects issues and the range of alternative response options.

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1. Introduction

Every mining project has ecological and socio-economic effects, both positive and negative, during mine life and after closure. But the impacts that matter in the end, and increasingly at the outset in decision making about proposed mines, are the cumulative effects. Often, multiple projects are proposed and undertaken within a given area, due to the geological concentration of mineral resources and the practical demands of access to necessary infrastructure. However, our current assessment and approval processes are ill-designed to address cumulative effects and broad alternatives for enhancing or mitigating these effects (Duinker et al., 2012; Duinker and Greig, 2006; Sinclair et al 2017; Therivel and Ross, 2007).

Assessment scholars and professionals have provided various definitions for cumulative effects or impacts (Duinker et al., 2012). For the purposes of this discussion, " . . . cumulative impacts are the successive, incremental and combined impacts of one, or more, activities on society, the economy and the environment. Cumulative impacts result from the aggregation and interaction of impacts on a receptor and may be the product of past, present or future activities" (Franks, Brereton, and Moran 2010, 300). Also, cumulative effects include the full range of impacts, whether positive and adverse, near and long term, social, economic and cultural as well as biophysical effects and their interactions.

Cumulative effects assessment (CEA) is described and critiqued in a now vast global literature. In Canada, CEA gained prominence in the mid 1980s via the work of the newly founded Canadian Environmental Assessment Research Council (e.g. CEARC, 1986). By 1995, requirements to consider cumulative effects were embedded in the *Canadian Environmental Assessment Act* as a mandatory component of a project-level environmental assessment (EA). Federal workshops, guidelines and academic interest kept CEA in the forefront of EA innovation in Canada until the late 1990s and early 2000s (Duinker et al., 2012; Duinker and Greig 2006, 154–155; MacDonald, 2000). Despite the attention and investment, however, CEA continues to be poorly implemented within assessment and has, in some regrettable practice, become a glorified checklist (Duinker and Greig, 2006).

Like project level environmental assessments, traditional regional planning processes are often identified as means of anticipating and mitigating serious adverse cumulative effects. Regional land use planning can be defined as "a conception about the spatial arrangement of land uses with a set of proposed actions to make that a reality" (Leung, 2003). Regional planning can aid in determining areas of ecological and sacred significance that may merit protection, as well as in considering the spatial considerations of development. Where multiple interests and system complexities are recognized, regional planning can be appropriately non-linear, openly subjective and dynamic (Arts et al., 2005). However, outside of growing metropolitan areas, regional planning does not often consider the pace and scale of development. Nor does regional planning normally compare multiple alternatives for development trajectories and assess regional needs for policy and service supports in light of explicit and reasonably comprehensive sustainability-based criteria. In Canada, the record of efforts to integrate attention to cumulative effects concerns in regional planning has been uneven, particularly in the North (Hodge and Robinson, 2007). For example, the Yukon, which has a relatively advanced regional land use planning process that is mandated in a land claim agreement with Yukon First Nations, does use scenario-based approaches to regional planning and covers socio-economic, as well as biophysical considerations, but retains a focus on mitigating adverse effects rather than pursuing sustainability (Francis and Hamm, 2011). Also, it has struggled to complete plans for many regions and approval of the most recent proposed plan–for the Peel Watershed–has been delayed by conflict between the planning authority and the territorial government (Locke and Heuer, 2015; Staples et al., 2013).

Attention to cumulative effects is required in project-level assessments under federal law and some provincial and territorial processes, but has been treated mostly as an effort to determine whether adverse project effects, in combination with other projects' effects, may be significant and therefore affect decision making on project approval (e.g., require added conditions of approval to ensure "adequate" mitigation). In many jurisdictions, the cumulative effects focus has been on ecological considerations. More realistic and useful CEA is about identifying and anticipating all cumulative effects to develop effective means of enhancing lasting positive contributions and opportunities while mitigating or avoiding damages and risks (Duinker et al., 2012; Therivel and Ross, 2007). CEA at that level is most effectively undertaken as constituent part of regional planning (and associated policy making and programming), with identification and comparative consideration of possible and desirable scenarios and strategies for delivering better futures (Duinker and Greig 2007; Peterson et al., 2003; Robinson, 1990). The scope of project assessments is typically too narrow and project proponents rarely have the needed motivations, time, capacities, credibility or authority to act on the results of serious cumulative effects assessment (Morrison-Saunders et al., 2014).

This dissatisfaction with the actual practice of CEA in Canadian assessment regimes has been well-documented (Duinker et al., 2012; Franks et al., 2010; Gunn, 2011; MacDonald, 2000; Therivel and Ross, 2007). So far, that dissatisfaction has not yielded much positive change in assessment process design or application. However, Canadian courts are beginning to recognize cumulative effects problems and stakeholder demands for effective anticipatory attention to cumulative effects are increasing (e.g., Chetkiewicz and Lintner, 2014; Staples and Askew, 2016).

For example, the Blueberry River First Nations have filed a suit in the British Columbia Supreme Court asserting that the effects of incremental provincial approvals of industrial developments throughout their traditional territory has interfered with their constitutional and territorial rights to hunt, fish and trap. The case has brought serious questions concerning development trajectories to light (Blueberry River First Nations v. British Columbia, 2015 BCSC 1302, Supreme Court of British Columbia (N. Smith J)).

The Blueberry River First Nations argue that the cumulative effects of multiple industrial developments in their traditional territories (dams, mines, oil and gas exploration and development with supporting infrastructure) have not been addressed well enough in BC's approval regime and that the resulting long term social, economic and cultural, as well as biophysical effects, are unacceptable (Askew, 2015). Only 14 per cent of Blueberry territory remains intact forest landscape compared to the 60 per cent average in British Columbia (Macdonald, 2016). Also, less than one per cent of Blueberry River First Nations' traditional territory has been conserved in parks and protected areas. The British Columbia average is 14 per cent. In the court case, Blueberry River First Nations sought an injunction to prevent the BC government from selling 15 timber licences. The application was dismissed because the court was unable to establish "the balance of convenience," despite acknowledgement by the court that there was potential for irreparable harm from not granting the injunction (Blueberry River First Nations v. British Columbia, 2015).

The court's ruling illuminates the daunting challenges of dealing with cumulative effects in a post-hoc way that is centred on individual decisions. The judge stated,

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