

Cumulative Effects Assessment of Natural Gas Projects in British Columbia

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Introduction

The Province of British Columbia (BC) currently is the second largest producer of marketable natural gas amongst the Canadian provinces (CAPP 2016). In 2012, the Province issued a *Natural Gas Strategy* which recognizes natural gas, particularly exports of liquefied natural gas (LNG), as a provincial priority (BC MEM 2012).

Potential cumulative effects from the natural gas development in BC are a growing concern for both stakeholders and the general public. Cumulative impacts are also of particular concerns for Indigenous groups, with many of them unsatisfied with the adequacy of a cumulative effects assessment (CEA) of past, present and reasonably foreseeable industrial activity in their traditional territory, conducted by the proponents, in relation to their respective Aboriginal interests.

This paper examines major cumulative adverse effects to environmental valued components (VCs) and Aboriginal interests arising from development of the natural gas industry in BC, and provides examples of the key approaches to mitigate, manage and monitor these issues effectively.

Methodology

A discussion of existing and proposed natural gas projects within the region is fundamental to the analysis of the current state of this industry in British Columbia. Our study reviewed 18 major natural gas, natural gas liquids (NGLs) and LNG projects in BC that have completed an environmental assessment (EA) process with the provincial and/or the federal responsible authority since January 1, 2010. Distribution by the project type included three natural gas processing facilities, ten natural gas pipelines, one NGL pipeline and four LNG facilities. The proposed projects are representative of the entire geographical region and involve a wide range of output capacities.

For these 18 projects, EA applications by the proponents and, where applicable, EA reports by the provincial regulator (BC Environmental Assessment Office [BC EAO]) and/or the federal regulator (Canadian Environmental Assessment Agency [CEAA] or National Energy Board [NEB]) were reviewed for CEA. In addition, primary regulatory documents and policies issued by the Province of BC were analyzed for cumulative effects initiatives.

Results and Discussion

As required by both the provincial and the federal regulatory bodies, a CEA of natural gas pipeline and LNG projects is to be done for each project and included in the EA application (BC EAO 2015; CEAA 2015). The federal *Canadian Environmental Assessment Act*, 2012 requires that each EA of a designated project takes into account any cumulative environmental effects that are likely to result from the designated project in combination with the environmental effects of other physical activities that have been or will be carried out (CEAA 2015). According to the provincial legislation, if it is expected that a project reviewable under the *BC Environmental Assessment Act*, 2002 will result in any residual adverse effects on the selected VCs, then a CEA for those VCs must be considered. This must be made for all residual adverse effects, not only those predicted to be significant; the significance of any cumulative effects must also be evaluated (BC EAO 2013b, 2015).

A review of the EA reports for the above 18 natural gas pipeline and LNG projects shows that according to the regulators conclusions, the majority of the proposed projects will not likely to result in *significant* cumulative adverse effects to identified VCs taking into account practical means of preventing or reducing to an acceptable level, any potential adverse effects. However, for the wildlife VC, the cumulative effects of past, present and known proposed future projects were rated as significant for three threatened or special concern species (specifically, caribou, grizzly bear and harbour porpoise) on six out of the 18 assessed projects (BC EAO 2013a, 2014a,b,c, 2016b; CEAA 2016).

Certain populations of woodland caribou (*Rangifer tarandus caribou*) in British Columbia are listed as Threatened both federally and provincially; conserving this species is declared a priority for the Government of BC (BC MOE 2016). The decline in woodland caribou numbers in BC may be attributed to loss or alteration of habitat, fragmentation of the herd and increased predation, all resulting from industrial activities (BC MEM 2012). Any additional residual loss of habitat, increase in disturbance of critical habitat, or increase in mortality in the area of the proposed projects will have a serious impact on the potential for recovery of caribou subpopulations. Caribou are likely to alter their movement to avoid noise, activity and disturbance associated with construction activities. A pipeline right-of-way and additional linear development could provide a travel route for predators, while available mitigation to reduce impacts of increased predation is still unproven (BC EAO 2014a,b,c; NEB 2015a,b).

Regarding impacts on caribou, in four of the reviewed projects (Westcoast Connector Gas Transmission, Prince Rupert Gas Transmission, Coastal GasLink Pipeline and Fortune Creek Gas Project), BC EAO concluded that the residual effects of habitat disturbance, sensory disturbance and creation of access from the proposed projects would likely interact with reasonably foreseeable future projects to create cumulative effects. Taking into account the significant project effects and the sensitivity of caribou to further disturbances, the cumulative effects to caribou were considered to be significant (BC EAO 2013a, 2014a,b,c).

Grizzly bear (*Ursus arctos*) is listed as a species of Special Concern under both federal and provincial legislation. Grizzly bears are sensitive to human disturbance, with the cumulative effects of human disturbance being the largest threat to bear populations. In particular, roads are known to have a negative effect on grizzly bear. At the regional scale, open road density higher than 0.6 km/km² is known to adversely affect habitat use and these effects are magnified when road density increases over approximately 1 km/km² (Environmental Reporting BC and BC MOE 2012).

Cumulative adverse effects on the grizzly bear population were considered to be significant on one natural gas project out of the 18 reviewed (BC EAO 2016b). The existing average motorized access density within the area that would be intersected by the proposed Eagle Mountain-Woodfibre Gas Pipeline project currently exceeds the minimum threshold for high risk of mortality and displacement for two grizzly bear population units transected by the project. Both units are provincially considered threatened, with core grizzly bear habitat currently remaining well below the recommended minimum target levels, although the habitat loss that would be attributed to the proposed project is negligible. Disturbance from noise created by new and existing roads and linear corridors was found to adversely affect grizzly bear habitat effectiveness, to fragment habitat, to increase mortality risk and to impact the reproductive potential of breeding females. Based on these findings, BC EAO has concluded that while the proposed project alone does not have significant adverse effects to grizzly bears, cumulative effects to this species are considered to be significant (BC EAO 2016b).

Harbour porpoise (*Phocoena phocoena*), federally listed as a species of Special Concern, is highly sensitive to acoustic disturbance (particularly underwater noise), shows strong site fidelity and a higher degree of behavioral response to similar disturbances compared to other marine mammals (CEAA 2016; Department of Fisheries and Oceans [DFO] 2009). The CEAA concluded that the proposed Pacific NorthWest LNG project is likely to result in significant adverse cumulative effects to harbour porpoise, given the number of large industrial projects proposed in the Prince Rupert area that could increase underwater noise and considering that behavioral effects of overlapping projects are expected to occur over a larger area and for a longer period of time (CEAA 2016; MOE 2016).

While British Columbia has less than one-fifth of Canada's Indigenous and First Nations peoples, it is characterized by the greatest diversity of Indigenous population and culture in Canada representing 198 First Nations, or about one third of all First Nations in Canada (INAC 2010). The Province also presents a unique landscape of Aboriginal rights and interests, with the history of treaty making substantially different from the rest of Canada (BC Ministry of Aboriginal Relations and Reconciliation [BC MARR] 2016b).

As stated in the reviewed EA reports, cumulative effects remain a matter of critical importance for various Indigenous groups potentially impacted by proposed natural gas pipeline and LNG projects in the Province. Many of them expressed concerns about the inadequacy of the CEA of past, present and reasonably foreseeable industrial activity in their traditional territory, conducted by the proponents. Specifically, cumulative effects in northeast BC at a regional scale

have been a concern of the Treaty 8 First Nations, including Blueberry River, Saulteau, West Moberly and Fort Nelson First Nations, who are of the view that industrial development in the Western Canadian Sedimentary Basin and northeast BC has already and will continue to result in a reduced ability to exercise their treaty rights. Many Indigenous groups sought a cumulative effects assessment of their territory, relative to their respective Aboriginal interests (NEB 2016).

Throughout its review of the proposed projects, the provincial regulatory authority set out to address Indigenous groups' concerns regarding cumulative effects. BC EAO considered the potential cumulative impacts of multiple proposed natural gas pipeline and LNG projects, along with past, current and reasonably foreseeable future projects, drawing on relevant information provided by the proponents regarding CEA of VCs, as well as the potential impacts of proposed projects on Aboriginal Interests. According to the regulatory authorities, the majority of issues raised during the review processes by Indigenous groups were satisfactorily addressed through existing, revised or new commitments and project design changes made by the proponents, who have made efforts to avoid high value areas for Indigenous groups (for example, by building on existing industrial lands, minimizing clearing wherever possible and providing appropriate mitigation measures to reduce the potential cumulative effects) (BC EAO 2013a, 2014a,b,c, 2016b; CEAA 2016, NEB 2015a,b).

While a high degree of uncertainty regarding the cumulative effects still remains in the region, the Province is moving forward with initiatives that aim to assess and manage cumulative effects to key values, and to consider the impact to Aboriginal rights (BC EAO 2016a). Examples of those initiatives include, but are not limited to, the Cumulative Effects Framework, Area-Based Analysis, Northeast Water Strategy and Water Tool, LNG Environmental Stewardship Initiative, and Regional Strategic Environmental Assessment (BC MARR 2016a; BC MFLNRO and BC MEM 2016; BC OGC 2015a,b; Province of BC 2015, 2016).

Conclusions

This review of the cumulative effects assessment portions of the 18 provincial and federal EAs conducted for natural gas pipeline and LNG projects in British Columbia since 2010 shows that a majority of the EA reports concluded that the proposed projects would not likely result in significant cumulative adverse effects. However, the cumulative effects of past, present and known proposed future projects were rated as significant for three wildlife species VCs (caribou, grizzly bear and harbor porpoise) on a number of the projects assessed. The findings can be mostly attributed to the results of long-term habitat fragmentation and ongoing loss and alteration of the landscape in the region. Growing concerns about the cumulative impacts of natural gas development arising from Indigenous groups potentially affected by proposed projects have also been discussed.

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