

# **Cumulative Effects Assessment for Small Projects**

## **Abstract**

Large projects, e.g. major infrastructure, are subject to relatively rigorous cumulative effects assessment while small projects, e.g. mineral exploration, rarely are. Using the Yukon Territory in Canada as example, this paper compares the total environmental effects of the relatively few large projects with the effects of development driven by small projects or activities. The paper examines challenges of applying cumulative effects assessment to small projects. The paper presents a few potential solutions to these challenges, including moving from conducting a separate cumulative effects assessment for each project to considering cumulative effects as context in assessing project specific effects.

## **Introduction**

### Overview

Cumulative effects assessment is part and parcel of environmental impact assessment and much has been written on how to conduct cumulative effects assessment. The author has personally sat through countless meetings and workshops that stressed the importance of cumulative effects assessment and lamented the limitations of project specific assessment. Much of what has been written and talked about cumulative effects assessment is focussed on larger projects and considerable advice exists on how to conduct cumulative effects assessments on things like major infrastructure projects, mines, or oil and gas pipelines (e.g. Canter 1999, Ross 1998). Less advice is available on how to appropriately address cumulative effects in the assessment or screening of small projects, such as early stage mineral exploration projects, minor infrastructure upgrades, small scale agriculture, or residential developments.

The paper will first show that the cumulative effects of the many small projects can be more significant than those of the relatively few large projects carried out in a region. It will discuss some of the challenges of applying cumulative effects assessment to small projects. The paper then introduces some potential solutions that cumulatively could make a difference.

For the purpose of this paper small projects are defined as projects subject to only the lowest level of impact assessment and large projects as projects subject to higher levels of assessment, including panel reviews.

### Approach

This paper draws on the author's 20 years of experience in impact assessment for projects of all sizes, from minor infrastructure upgrades to mineral exploration, to basin opening pipeline projects. This experience was augmented by a rudimentary literature review. To illustrate some of the hard lessons learned over two decades, and confirmed by much of the literature, the paper uses development in Canada's Yukon territory over the past 15 years as case study.

The literature provided ample examples of cumulative effects challenges and the author's own experience provided the additional dimension of trying to apply cumulative effects assessment to small projects. The paper only presents a sampling of the challenges encountered. The possible solutions presented were similarly identified through a combination of literature review, conversations with colleagues, and seeing what does and does not work on a daily basis.

## **Importance**

Cumulative effects have been a concern for decades and by law must be considered in many jurisdictions. In Canada the federal Impact Assessment Act of Canada requires it for specified, (large) projects (Dibo et al.2018). Other jurisdictions require it for all projects subject to an assessment at any level, e.g. the Yukon Environmental and Socio-economic Assessment Act (YESAA). In recent years cumulative effects have become a key concern for almost every project. In addition to stressing the importance of cumulative effects assessment, IA participants have increasingly lamented the impotence of cumulative effects assessment in project-based assessment.

### What we can learn from the literature

The literature describes two key concepts of how the effects of small projects are important, the “tyranny of small decisions” and “keystone projects”.

The tyranny of small decisions refers to the phenomenon of regional environmental degradation occurring by default through decisions about many small developments rather than a deliberate development (e.g. Council of Canadian Academies, 2019). Often development starts with small, unintrusive activities, such as early stage mineral exploration (Ehrlich 2010). By the time impact assessment comes into play, it is virtually impossible to reverse the decision (or rather non-decision) to develop the area.

Key stone projects are the opposite of small decisions. An individual project in an undeveloped area enables many small future developments. The cumulative effects of the many small projects are rarely considered in the assessment of the one that facilitates them (Johnson et al, 2019).

### What the Yukon experience tells us

Between 2005 and 2020, YESAB completed assessments of 7 large projects and 3060 small projects. In all likelihood prior to YESAB the ratio of small to large projects was similar. Figure 1 shows all projects assessed under YESAA with large projects highlighted. Large projects are truly few and far in between. Small projects on the other hand cover a large portion of the territory. The many small projects have a significantly larger footprint, extend into many more areas, and overall have a larger impact than the few big ones we tend to focus our efforts on.

## **Challenges**

Cumulative effects assessment for small projects faces the same challenges as does cumulative effects assessment for large projects. The difficulties are often amplified when applying cumulative effects assessment to small projects, however. These challenges can be grouped into “methodological” and “fiscal and attitudinal” challenges.

Defining baseline becomes more challenging when not a few but hundreds of projects need to be analyzed. Small project proponents may not have the wherewithal to collect appropriate baseline data for many valued components. Baseline creep is especially hard to address when the change with each project is imperceptible. For small, and especially for temporary, projects there is rarely a logical temporal scope and it is easy to select a spatial scope that dilutes the already small effect to a point where it can be argued that is it negligible. While monitoring provides crucial input, small, often short term, projects like mineral exploration projects or small-scale mining do not lend themselves for long term monitoring programs covering large areas.

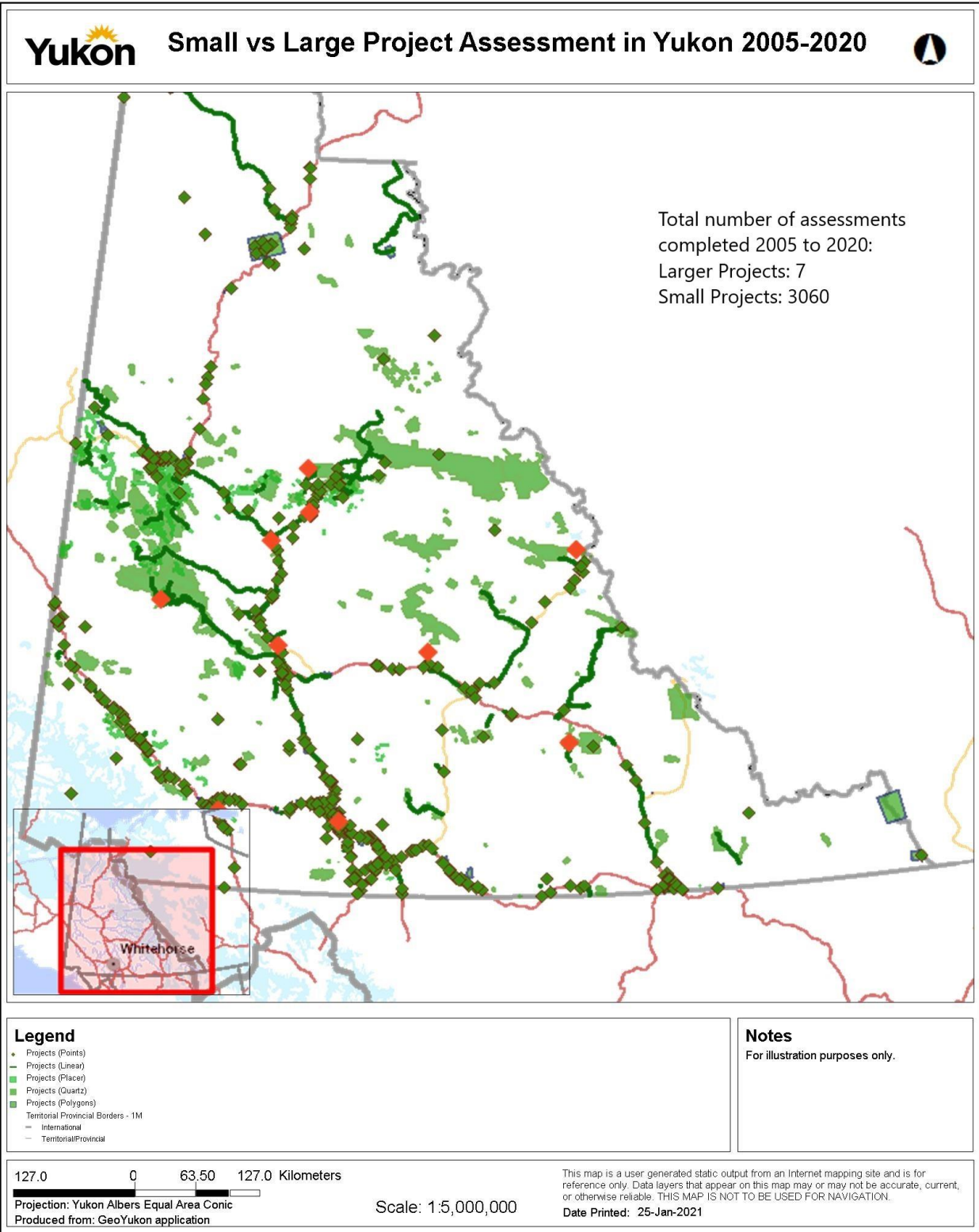


Figure 1: Project Assessments 2005-2020 (large projects shown include ongoing assessments)

The number of affected valued components is virtually the same as for large projects. As is the need for data collection and the need for specialized expertise from biologist, hydrologists, geochemists, etc. Proponents of small projects rarely have knowledgeable staff inhouse and do not have the resources to hire sufficient consultants. One of the key reasons that good cumulative effects assessments for small projects rarely occur is simply that nobody is prepared to pay for them.

Small projects have limited scope for mitigating cumulative effects. If a significant adverse effect results from 100 small projects, each individual small project can do little to mitigate the overall effect. In the author's experience cumulative effects assessment for small projects is often ignored, or satisfied with a few platitudes, because assessors see no reason to expend significant resources and effort when little to nothing can be done about it.

Another attitudinal issue with cumulative effects assessment for small projects is the simple fact that few decision makers are prepared to make tough decisions, with seemingly little at stake. No government official wants to explain to the proponent of a small project that theirs is the one that is pushing the cumulative effects over the significance edge and will not be approved.

### **Potential Solutions**

Possible solutions can be loosely grouped into solutions available to impact assessment practitioners right now, solutions where the tools are available but do not fit into our processes, and pie in the sky solutions. None of the ideas presented here will make much of a difference on its own. Cumulative effects require cumulative solutions.

#### Solutions we can apply right now

The following are approaches to cumulative effects assessment that are available to practitioners right now and are being practiced to some extent today.

*Scoping the whole project:* Impact assessments should scope in all activities associated with a project, rather than just the triggering activity (e.g. Ehrlich 2010). In Yukon, assessment of an agricultural land disposition may be triggered by only one activity: clearing of vegetation. However, the assessment should include effects from all activities, including creating access, fencing, fuel storage, farm animals, etc.

*Grouping projects:* Many jurisdictions have provisions to avoid project splitting and allow the grouping of multiple, closely related proposals into one project. Small projects of a similar nature and in close proximity usually do not fit interdependency criteria. If one is serious about addressing cumulative effects, one should consider grouping such projects into one larger project nonetheless.

*Cumulative effects as context:* Rather than making a separate significance determination based on the residual effects of the project, YESAB considers the cumulative effects of other past, present, or likely future activities as context for the significance determination for the project. Existing or likely future cumulative effects directly factor into the assessment of project effects. In a similar vein Duinker and Greig (2006) advocate to stop treating cumulative effects as an afterthought that is dealt with after the project assessment is done.

*Broadening reasonably foreseeable:* Cumulative effects assessment includes effects from past projects, current projects, and projects that are likely to occur in the future, often referred to as reasonably foreseeable. As Ehrlich (2010) points out, a narrow definition of reasonably foreseeable excludes many future activities that are quite likely to occur. It is not about being able to predict individual

future projects, but about being able to reasonable predict that there will be development of a certain nature.

#### Solutions that are available but do not fit into the process

The following are cumulative effects tools that are available but do not fit well into the processes for impact assessments of small projects. These tools are generally beyond the capabilities and resources of individual small project proponents and require government to shoulder the responsibility.

*Regional assessment:* Regional assessments take the burden of assessing the effects of all projects in a region off the shoulders of the proponent of an individual project.

*Land use planning (in some areas):* Land use planning can inform cumulative effects assessment, although often cumulative effects assessment is seen as input into land use planning. Land use planning can inform affects assessment not only through conformity checks against finished plans but the process itself can be useful in identifying valued components and how valued they really are.

*Keystone project assessment:* Johnson et al. (2019) lament that impact assessments rarely take the indirect effects of future development into account. Yet, if the benefits of future activities can be included in the justification of a keystone project, so can the adverse effects be included in the cumulative effects assessment.

*Scenario analysis:* Duinker and Greig (2006) advocate the use of development scenarios for project specific cumulative effects assessment. Johnson et al. (2019) extol the virtue of using scenario analysis for assessing indirect effects of keystone projects. Despite the tool's usefulness, there is little sense in a multitude of small project proponents running individual scenario analysis with their limited capacity and data.

*Monitoring:* A severe limitation of conducting cumulative effects assessment on small projects is the lack of data. While it may be reasonable to assume that ten similar projects in the same area have had some adverse effect, there rarely ever is any monitoring data available to quantify or even describe the effect.

#### Things that currently seem pie in the sky

Cumulative effects assessments of the future may involve:

*Artificial intelligence:* Artificial intelligence allows to automate processes that currently are very labour intensive and expensive. Despite drawbacks, e.g. a lack of transparency, with sufficient data artificial intelligence could some day allow techniques, like scenario analysis, to be applied to multitudes of proposals of all sizes at low cost.

*Land Use Planning (in many places):* While land use planning can be a useful tool, its wide spread application, preferably in combination with regional assessments, is lacking.

*Scrapping project specific cumulative effects assessment.* Duinker and Greig (2006) postulate that project specific cumulative effects assessment should be scrapped in favour of regional assessments. This would require significant legislative changes and is not likely to happen soon.

## Closing

We need to stop excusing small projects just because they are small. Tools for better, if perhaps not necessarily good, cumulative effects assessment are available to practitioners today. Other tools are available and could be deployed with relatively minor adjustments to the process, e.g. by government agencies shouldering more of the responsibility.

## Literature

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