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June 9, 2016

Sent via E-mail: ec.egesa-ughga.ec@canada.ca

Environment and Climate Change Canada
351 Saint-Joseph Boulevard, 12th floor
Gatineau, QC K1A 0H3

Dear Sir or Madam:

Re: Comments on Draft Review of Related Upstream Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion Project

I write to provide comments on behalf of Living Oceans Society (“Living Oceans”) and Raincoast Conservation Foundation (“Raincoast”) on Environment and Climate Change Canada’s (“ECCC”) draft of the Review of Related Upstream Greenhouse Gas Emissions Estimates for the Trans Mountain Pipeline ULC – Trans Mountain Expansion Project (the “Draft Review”).

Living Oceans and Raincoast were intervenors in the National Energy Board (“NEB”) review of the Trans Mountain Expansion Project (the “Project” or “TMX”), where upstream and downstream climate change impacts were excluded from the list of issues the NEB considered.

Living Oceans and Raincoast have several concerns about the Draft Review, set out below. They are concerned that the Draft Review fails to actually assess the climate impacts of the Project and its compatibility with national and global climate targets, which would seem to be the purpose of ECCC being tasked with conducting an analysis of the project’s impact on GHG emissions to inform the Governor-in-Council’s decision making on the Project.

1. These reviews should be informed by national and global emissions reduction targets.

Without this context it is impossible to assess whether any project is consistent with Canada’s commitments or with global targets.

The Draft Review does not measure the project against relevant targets and commitments. ECCC projects that the upstream emissions associated with the Project could range from 20.3 to 25.7 Mt of CO₂ equivalent per year, but fails to reconcile this with national or global targets. As discussed further below, the Draft Review includes a brief and inconclusive discussion of the compatibility of increased oil sands production in general with a 2°C warming limit. However, it

does not address the compatibility of increased production associated with the Project with a 2°C limit. Nor does it address the compatibility of either increased oil sands production generally or the Project specifically with any of a 1.5°C limit, with Canada’s UN Framework Convention on Climate Change (“UNFCCC”) commitments, or any national targets or goals.

It is also clear from the Draft Review that Canada urgently needs a national strategy for reducing GHG emissions against which individual projects can be measured. The First Ministers agreed in the March 3, 2016 Vancouver Declaration on Clean Growth and Climate Change (the “Vancouver Declaration”) to develop a pan-Canadian framework on climate change, to be implemented by early 2017.¹ In the meantime, business as usual cannot continue without a national strategy.

2. Downstream emissions should be included in ECCC’s assessments.

The exclusion of downstream emissions from greenhouse gas reviews will result in assessments that significantly understate the Project and other projects’ actual climate impacts. This cannot be justified since all GHG emissions count against the global carbon budget, regardless of whether they occur upstream or downstream of the project. A lifecycle, or, “wells-to-wheels” assessment that captures these emissions is needed.

3. ECCC should not assume that for every investment not made in the oil sands, an equivalent investment would be made elsewhere.

The Draft Review states that:

[g]iven the competition for investment in oil production, it is likely that if oil sands production were to not occur in Canada, investments would be made in other jurisdictions and global oil consumption would be materially unchanged in the long-term in the absence of Canadian production growth.

On this basis, the Draft Review states that the difference in global GHG emissions resulting from any increase in oil sands production would only be the difference in the upstream emissions of oil sands production versus production of other comparable crude oil.

This involves significant assumptions for which the Draft Review does not provide a foundation. The approach taken in the Draft Review, which reflects the approach set out in the draft methodology, appears to dramatically oversimplify complex oil market dynamics and numerous factors affecting oil production and consumption in other countries.

This approach can also be seen as a failure to take responsibility for Canadian upstream emissions. As discussed elsewhere in these comments, Canada has made international GHG reduction commitments, which it must take into account. The Project’s upstream GHG emissions would occur in Canada and must be counted against Canadian commitments and targets.

¹ https://news.gov.bc.ca/files/Vancouver_Declaration_clean_Growth_Climate_Change.pdf

4. The Draft Review reflects an inability or unwillingness to attribute incremental GHG emissions to any particular project.

The Draft Review takes note of “the challenges associated with attributing any incremental GHG emission to a specific pipeline given that a number of pipeline projects with similar construction timelines and capacities have been proposed in Canada.”

The Draft Review states that, assuming pipeline capacity were to enable incremental production, “it would be difficult to attribute these incremental upstream emissions to the pipeline capacity added by the TMX project.”

The same could be said of any one pipeline, and the obvious result is a failure to ever deal with the emissions. In order to make GHG reviews meaningful and useful to decision-makers, ECCC will have to overcome this challenge – for example, by measuring each project against a national strategy. Until a national strategy is developed, incremental emissions cannot be meaningfully evaluated.

5. The Draft Review should address the Paris Agreement goals of keeping warming well below 2°C or keeping to 1.5°C, but only attempts to address a 2°C limit.

The Draft Review seems to abandon the 1.5°C goal adopted at Paris.

Article 2 of the Paris Agreement states that it aims to limit “the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels” (emphasis added).

The Draft Review references this commitment, but thereafter refers only to a 2°C limit and whether that might be compatible with increased oil sands production. It does not address whether oil sands expansion could be compatible with holding the increase to *well below* 2°C, which is the actual wording of the Paris Agreement, nor to the more ambitious 1.5°C goal.

6. The Draft Review fails to consider the implications of Canada’s UNFCCC emissions reduction commitments for oil sands production.

The Draft Review cites both the Paris Agreement and Canada’s UNFCCC commitment to reduce emissions 30% below 2005 levels by 2030. The latter has been consistently described as the “floor” for Canada’s GHG reduction actions, meaning a more aggressive target is possible and preferable, and in the Vancouver Declaration the First Ministers committed to increasing the level of ambition consistent with the Paris Agreement.²

However, the Draft Review only considers the implications for oil sands production of the global target in the Paris Agreement, not Canada’s specific UNFCCC commitment. It cites a handful of studies with conflicting conclusions as to whether oil sands production growth can be compatible with a 2°C limit, and it cites one report concerning the compatibility of Canada’s UNFCCC commitment with the 2°C goal. It fails to address whether oil sands production growth is compatible with Canada’s UNFCCC commitment. This is an important gap.

² https://news.gov.bc.ca/files/Vancouver_Declaration_clean_Growth_Climate_Change.pdf

Reviews should consider whether emissions caused by new projects are compatible not only with global targets but also with national targets. This is important because, to state the obvious, only Canada can meet Canada's national targets. It is also important because Canada can ultimately only control its own actions towards climate targets, and cannot assume that other countries will take action, let alone all of the necessary action, to do their share towards meeting global targets. It does not matter whether (according to one theory cited in the Draft Review which we do not endorse) "most non-OPEC crude oil reserves (including Canada's oil sands) could be produced in a 2°C world", if OPEC continues to produce oil.

Oil and gas activities in Canada must be compatible not only with hypothetical collective sets of actions that could achieve a global 2°C limit, but also with Canada's UNFCCC commitment.

7. The Draft Review is premature because the methodology has not been finalized.

Finally, this Draft Review is premature because ECCC has not yet finalized its methodology for these reviews. The proposed methodology was published for a 30-day public comment period on March 19, and ECCC has not yet produced a revised draft or final version that takes the public's comments into account. The public notice inviting comments on the Draft Review confirms that it was prepared using the proposed methodology.³ Given that the review is intended to inform the Governor-in-Council's decision making on the Project, and the Governor-in-Council's decision is not due until December 20, it is Living Oceans and Raincoast's opinion that there was no need for ECCC prepare the Draft Review without waiting for the finalized methodology, and they suggest that ECCC wait until the methodology is finalized before proceeding any further.

Because ECCC has not yet taken into account the comments it solicited on the proposed methodology, Dr. Thomas Gunton's review of the draft methodology, which was submitted to ECCC during the comment period for the proposed methodology, is appended to this letter.

Overall, Living Oceans and Raincoast are concerned that, if the final review and other forthcoming reviews are similar to the Draft Review, the robustness and usefulness of ECCC's greenhouse gas assessments for oil sands pipelines will be undermined by assumptions that minimize Canada's apparent contribution to global emissions and allow Canada to avoid accountability for emissions caused by oil and gas projects

Sincerely,

<signature removed>

Dyna Tuytel

Counsel for Living Oceans Society and Raincoast Conservation Foundation

Cc. Karen Wristen, Living Oceans Society

Paul Paquet, Raincoast Conservation Foundation

³ <http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=114549>

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April 18, 2016

Sent via E-mail: ec.dpger-ogaed.ec@canada.ca

Environment and Climate Change Canada
351 Saint-Joseph Boulevard
Gatineau, QC K1A 0H3

Attention: Mark Cauchi
Executive Director, Oil, Gas and Alternate Energy Division

Dear Mr. Cauchi:

**Re: Ecojustice Comments on Upstream Greenhouse Gas Emissions
Associated with Major Oil and Gas Projects**

I write on behalf of Ecojustice to provide you with our comments on Environment and Climate Change Canada's (ECCC) proposed methodology for estimating the upstream greenhouse gas emissions associated with major oil and gas projects undergoing federal environmental assessments, published in the *Canada Gazette* on March 19, 2016.

We make these comments not as legal counsel to any particular group in any specific environmental assessment, but on the basis of our experience representing client groups in federal environmental assessments of major oil and gas projects, and our interest in strengthening environmental assessment and action on climate change generally.

We adopt Dr. Thomas Gunton's review of the proposed methodology, which is attached to this letter. We wish to emphasize three critical points made by Dr. Gunton.

First, this assessment should be done in the context of national and global emissions reduction targets.

Second, downstream emissions should be included in ECCC's assessments. The exclusion of downstream emissions will result in assessments that significantly understate projects' actual climate impacts. This cannot be justified since all greenhouse gas emissions count against the global carbon budget, regardless of whether they occur upstream or downstream of the project. A lifecycle, or, "wells-to-wheels" assessment that captures these emissions is needed.

Finally, when it comes to determining implications for global emissions, the methodology appears to assume that any oil not produced in Canada will be replaced with oil produced elsewhere. Specifically, the statement that “[i]n considering the impacts on global upstream GHGs, the primary factor will be the difference in upstream emissions intensity between Canadian and non-Canadian crude oil sources” suggests that ECCC will assume that oil production is a zero sum situation in which production in one jurisdiction directly displaces production in another. This is not a realistic assumption. Just as the methodology says that the question of whether Canadian emissions will increase due to a project being built depends primarily on “the potential increase in Canadian production expected if the project were not built”, the question of whether global emissions will increase due to the project depends not only on the comparative emissions intensity of production but also on the potential increase in production.

Sincerely,

<signature removed>

Dyna Tuytel
Staff Lawyer

Encl.

Evaluation of Proposed Department of Environment and Climate Change Methodology for Estimating Upstream GHG Emissions

Prepared by Dr. Thomas Gunton
April 18, 2016

On March 19, 2016, the Canada Department of Environment and Climate Change (DECC) released its proposed methodology for estimating upstream GHG impacts for major oil and gas projects. The purpose of this review is to provide comments on the proposed methodology.

This evaluation concludes that while the proposed methodology for including upstream GHG impact assessment in project reviews is an improvement in the review process, the proposed methodology has serious deficiencies that need to be addressed. Further, the analysis of GHG impacts of proposed projects must include a broader assessment of the cumulative impacts of proposed projects on Canada's GHG emission targets and global climate change objectives.

The evaluation is organized under the following two components of the proposed methodology: a. methodology for estimating upstream GHG emissions; b. discussion of the impacts on Canadian and global GHG emissions.

Methodology for Estimating Upstream GHG Emissions

The DECC methodology proposes estimating upstream GHG emissions by product type to reflect the different product GHG emission intensities per unit of product shipped. The methodology proposes testing alternative scenarios to reflect the range of uncertainty in potential product shipments. It is important that these scenarios be cross checked against upstream production forecasts by product type to ensure consistency. Shippers have discretion which products to ship based on aggregate product availability and product economics. Therefore, the aggregate production forecasts are a better indicator of what will be shipped than specific forecasts provided by individual project proponents.

The proposed methodology states that emissions associated with the manufacture of equipment, land use changes, grid electricity and fuels that are produced elsewhere will be omitted from the analysis. No rationale is provided for this in the documentation and the case for excluding GHG emissions from these associated upstream impacts is unjustified. All incremental impacts resulting from the production of upstream activities should be included in the estimates. For example, GHG emissions generated by incremental grid power consumed by upstream production is clearly a result of the upstream production and will generate incremental GHG emissions that should be included (by the same token energy produced by the activity that is sold back into the grid should be excluded as an impact of the project). This is the approach used by the pipeline applicants in estimating GHG impacts of pipelines, which include all the GHG emissions generated by power supplied by the grid to the pipeline (TM 2013). This is also the approach used in the GHGenius model that was developed by S&T Squared

Consultants Inc. under contract to Natural Resources Canada and used by the Pembina Institute in their estimate of upstream GHG emissions generated by Energy East (Flanagan and Demerse 2014).

Discussion of the Impacts on Canadian and Global Upstream Emissions

The second component of the DECC methodology assesses the Canadian and global GHG impacts of the project. The proposed method identifies three steps in this analysis: a. examine resource production scenarios with and without the project; b. identify alternative transportation projects that may be built in the absence of the project and; c. assess impacts of a and b on Canadian and global GHG emissions.

Assessing impacts on Canadian and global GHG emissions from upstream production is the most controversial and problematic part of the impact analysis. As the following Table 1 summarizing alternative estimates of GHG from the Northern Gateway, Keystone XL and Energy East Pipelines illustrates, different assumptions can have dramatic impacts on the results, with estimated impacts ranging from very large to almost nil for the same project. Alternative estimates of annual GHG impacts of Energy East, for example, range from .7 to 32 MT/year and the Northern Gateway range from 3.7 to 76.3 MT/year. Three key issues account for the wide variation in results: estimating the impact of the project on Canadian production, estimating the impact of the project on global production, and treatment of downstream impacts.

Table 1. GHG Emission Estimates of Pipelines

Pipeline	GHG Estimates Range MT/year	Studies
Northern Gateway	3.7 to 76.3	Gunton and Broadbent (2012)
Keystone XL	1.3 to 27.4	USDS (2014)
Keystone XL	100 to 110	Erickson and Lazarus (2014)
Energy East	30-32	Flanagan and Demerse (2014)
Energy East	.7 to 17	Navius (2015)

Impact of Project on Canadian Production

A key issue is the assumption of what will happen to Canadian oil production if the project is not built. Low estimates of GHG impacts are based on the assumption that if the project is not built, other pipeline and/or rail projects will be constructed that will transport the product to market and therefore production will be the same or close to the same with and without the project. This is the approach used by the US State Department (2014) and Forest and Brady (2013) in their analysis of Keystone XL and by Navius (2015) in their analysis of Energy East. These lower estimates sometimes include some adjustment for transportation cost differences that can have small impacts on production forecasts. For example, the US State Department analysis of Keystone XL assumes that in the absence of Keystone XL, rail shipments will be used to transport the oil to market

(USDS 2014). But because the analysis assumes that rail shipments can be more expensive than pipeline shipments, the higher cost of rail could constrain high cost marginal production of oil, especially if oil prices are weak. The State Department conclusion is that building Keystone XL could therefore result in a slight increase in Canadian production and GHG emissions.

Other studies are based on the assumption that if the project is not built, the oil that would have been shipped on the project cannot be shipped on economically viable alternative transportation projects. Rail may be too expensive or capacity constrained and alternative pipeline projects may not be built. Pembina Institute uses this assumption in their analysis of the impacts of Energy East (Flanagan and Demerse 2014). Based on this assumption, all the oil shipped on Energy East is assumed to be incremental production and the GHG impacts of the project are therefore significantly higher than those forecast by Navius (2015).

As the range in estimates of the impacts of Energy East illustrate, the decision on the viability of alternative energy transportation projects is a key methodological decision that has a large impact on the GHG impact estimate. Unfortunately the proposed DECC methodology does not provide clear guidance on this issue. The DECC methodology appears to favour the approach that assumes no to little change in production by referencing the need to assess the impact of alternative transportation projects that will be built if the project under review is not constructed.

Assuming that alternative transportation projects could be built in the absence of the project being assessed is a reasonable assumption. **However, the conclusion that this means that the upstream impacts of the project are small to nil is not reasonable.** The logical conclusion of this approach is that no transportation project will ever result in incremental production because there is always an alternative means of transportation available. Therefore each individual project impact assessment will assume no upstream effects because it effectively transfers the effect to other projects under consideration. The aggregate result from all the individual assessments is that there is no increase in Canadian production and no increase in GHG emissions from building transportation projects. This conclusion is however clearly false because if **none** of the projects are built, it is not possible to transport the product to market and without being able to transport the product, Canadian production and GHG emissions will be lower. This fallacy of composition error is based on analyzing each project independently and not assessing the overall cumulative effects of the projects collectively.

There are several ways of avoiding this error. One approach is to use a cumulative impact assessment methodology that estimates the collective impact of all potential transportation projects on Canadian production, compared with a scenario in which no new projects are constructed. There are different approaches to conducting this type of cumulative impact assessment. For example, several different scenarios of potential projects can be used to reflect uncertainty regarding the actual mix of projects that may be built. The incremental production resulting from these incremental transportation options would be similar to current forecasts of Canadian oil production in an

unconstrained transportation system. If no new projects are built, oil production would be capped at current transportation capacity. If estimates are required for individual projects, the incremental oil production forecast could be allocated based on the capacity of individual projects. Further adjustments could be made in allocation among projects to reflect differences in costs and markets.

Another and simpler approach would be to compare two scenarios: scenario one would cap upstream production at existing transportation capacity and scenario two would cap upstream production at existing capacity plus the capacity of the new project being assessed¹. Capacity constraints could then be compared to production forecasts and all production that is in excess of existing capacity would be incremental production induced by the new project. If, for example, existing transportation capacity was being fully utilized, all shipments on the new project would be incremental production attributed to the new project. This type of approach is used, for example, in the Pembina study of Energy East (Flanagan and Demerse 2014), which assumes that all shipments would be incremental production.

Although more work would be helpful to define the specific structure of a cumulative impact assessment approach, using this approach is essential to correctly assess the upstream GHG impacts of transportation projects. If this approach is not used and it is assumed that the project being reviewed will have little to no impact on Canadian production because it will be replaced by alternative projects, the upstream GHG impacts of the oil production will be incorrectly assumed to be nil or close to nil.

Impacts of Project on Global Oil Production

The DECC proposed methodology references the need to assess global impacts of proposed projects and suggests that the primary impact on global GHG emissions will be the difference in upstream emissions intensity between Canadian and non-Canadian crude oil.

Estimating the impact of a proposed project on global GHG emissions is perhaps the most problematic component of the analysis due to the complexities of world oil market dynamics. One assumption is that lower production in Canada resulting from the project not being built will be replaced by increased production elsewhere in the world, with little to no change in global production. Under this assumption, the change in GHG emissions is the difference in emission intensity of Canadian production relative to the substitute production. This is the approach used by the US State Department in its analysis of Keystone XL in which they assume that if Keystone XL is built, incremental Canadian oil imports to the US would displace oil imported from other jurisdictions and the GHG impacts would be the product of the difference in emission intensity of the Canadian oil relative to the substitutes times the quantity displaced by Canadian imports (USDS 2014). As stated above, this is the approach referenced in the DECC methodology.

¹ Capacity should be based on operational capacity, which may vary from nameplate capacity.

Other studies (Navius 2015; Erickson and Lazarus 2014) incorporate the impact of the proposed project on world oil prices, production and consumption. In this approach, incremental Canadian production resulting from the project increases supply which in turn reduces price. The reduced price increases global consumption and global GHG emissions. This method of incorporating price impacts is more methodologically sound than the assumption that Canadian production and non-Canadian production are substituted for each other with no impact on global price, production or consumption. Therefore the estimate of GHG emissions should incorporate potential price impacts as well as policy constraints such as GHG emission caps in the analysis and not assume that incremental Canadian production has no impact on global oil markets. Further, given that oil is a non-renewable resource with a fixed supply, the assumption that foregone Canadian production can always be replaced by production elsewhere is dubious. Over the long run the world's oil will become increasingly expensive as supply is used up and it will become increasingly difficult to replace foregone Canadian production.

Upstream and Downstream Impacts

The major proportion of GHG impacts from oil are generated by end use consumption, not extraction. Estimates for Canadian SAGD, for example, conclude that upstream activities account for about only 10% of total GHG emissions (IHS CERA 2010). The GHG impact assessment by Navius (2015) estimates that upstream emissions account for only 13-26% of the total GHG emissions from Energy East. Therefore the decision on whether to include the full life cycle GHG emissions from oil production or restrict the analysis to just the extraction emissions will have a significant impact on the GHG estimates.

The general principle in International Panel on Climate Change (IPCC) analytical framework is to assign GHG emissions to the country in which the emissions are generated. Under this approach, all downstream end use emissions from consumption of Canadian oil are attributed to the country in which the consumption occurs. The logic of this approach is that the country in which the emissions are generated has the authority and responsibility for controlling emissions, while the country exporting the oil has no control over how the oil is used and what GHG emissions are generated. The proposed DECC methodology follows this convention by proposing to estimate only upstream GHG emission impacts.

While the IPCC logic makes sense for assigning national accountability for GHG emissions, any analysis of GHG impacts of a project should consider the full life cycle GHG impacts of oil production, which include end use consumption. The downstream impacts of oil consumption could not occur without production and are therefore an impact of production that needs to be included in the analysis. This is the approach used by Navius in their assessment of the GHG impacts of Energy East. Therefore the proposed DECC methodology should be amended to include full life cycle impacts of Canadian oil production in its assessment of GHG impacts. Otherwise the analysis will significantly underestimate GHG impacts from Canadian production. Again, it should be noted that estimating full life cycle impacts is problematic because of the challenges in

estimating the impact of Canadian production on world oil consumption and world GHG emissions.

Impact on GHG Targets and Climate Change Objectives

An essential component of impact assessment is to analyze impacts relative to goals, targets, and thresholds for valued environmental components to determine if the impacts are significant. Consistent with this principle, GHG impacts need to be assessed in terms of Canada's GHG targets and global climate change objectives. The question is whether the proposed project is consistent with climate change objectives. Put another way, the question is what policies and actions are required to ensure that Canada and the world meet their climate change objectives set in Paris to limit the average global temperature increase to 1.5 degrees.

There is a global consensus that meeting these targets requires a dramatic reduction in GHG emissions. The previous Canadian government committed to GHG reductions of 17% by 2020 and a 65% reduction by 2050. According to some recent studies, meeting these national objectives will likely require limiting the growth of Canadian oilsands production (Hoffele 2015).

Different studies and assumptions will lead to different estimates of what quantity of oil production is consistent with Canadian and global climate change objectives. But the key issue that must be addressed is whether the approval of a new project is consistent with Canada meeting its national targets.

The proposed DECC method does not address the need for assessing cumulative impacts of project approvals on Canada's GHG objectives and targets. Without putting the impacts in this larger context, the impact assessment will not provide the necessary information for decision makers. The impact assessments for each individual project may appear small relative to Canadian and global GHG emissions, but the cumulative impact of proposed projects will be large and inconsistent with Canadian and global climate change objectives. Therefore, it is essential that the GHG impact assessment include a cumulative effects analysis that assesses the impact of the project relative to Canadian and global objectives.

Conclusion

The proposed DECC methodology of including upstream GHG project impacts is an improvement on the current approach that excludes upstream impacts from consideration. However, there are a number of deficiencies in the proposed methodology that need to be addressed. We propose the following guidelines for the impact assessment method.

1. Indirect emissions including those generated by the manufacture of equipment, land use changes, consumption of power from the grid and production of other fuels off-site should be included.

2. The method that assumes that the project being assessed would be replaced by an alternative project and therefore there is little to no incremental production **should not** be used to estimate GHG emissions. This approach incorrectly assumes that there is little to no incremental production resulting from expansion of transportation capacity. Instead, the impact assessment should use either: i. a cumulative impact assessment method that incorporates the combined effect of all proposed transportation projects and compares production under a no new projects scenario to a likely new projects scenarios and apportions the incremental production by project based on project capacity and economics or; ii. a comparison of a no new projects scenario to a one new project (project being assessed) scenario.
3. The analysis should incorporate the impact of incremental production on global prices and consumption and should not assume that incremental Canadian production has no impact on global prices, global supply and global demand.
4. The analysis should include the full life cycle GHG impacts of incremental Canadian production.
5. The GHG assessment should include an analysis of the impacts of the project on Canada's GHG emission targets and determine if approval of the project is consistent with Canadian and global GHG targets.
6. Overall, the proposed DECC method is vague and unclear on a number of key issues that have a significant effect on the GHG impact assessment. These issues need to be resolved and the methodology needs to be refined prior to undertaking any impact assessments. It is suggested that an expert based stakeholder process be convened to further develop the methodology to address deficiencies to ensure that all stakeholders will have confidence in the methodology and the impact assessment.

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About the Author

Dr. Thomas Gunton is Professor and Director of the Resource and Environmental Planning Program at Simon Fraser University. Dr. Gunton has been an expert witness before the National Energy Board providing evidence on impacts of energy projects and oil and gas markets and has worked as an Assistant Deputy Minister of Energy and Mines and Deputy Minister of Environment. He has published over 80 peer reviewed articles and has been researching impacts of oil and gas pipelines for several decades.