Climate Change and Environmental Assessment: A Primer for Participants

Introduction

Climate change, also in the past referred to as global warming, is an issue for environmental assessment. It has been described by many as the greatest environmental challenge facing us globally, and the environmental assessment (EA) of projects under the *Canadian Environmental Assessment Act* (CEAA) and provincial EA legislation presents a significant opportunity to address climate change problems and challenges at the project planning stage, before irrevocable decisions or actions are taken by project proponents.

Background

The following gases are called "greenhouse gases" (GHGs) because their increased concentration in the Earth's atmosphere, as a result of the processes described, has created a sort of greenhouse over the Earth, resulting in a warming trend, with serious consequences for the planet and the life it supports:

- **Carbon dioxide (CO_2)** is produced when carbon-based fuels, also known as "fossil fuels" (coal, oil and gas) are burned in industrial processes, transportation, power plants and other development activities. Deforestation and the removal of vegetation also contributes to CO_2 build-up because it removes the "sink" of trees and vegetation which (through photosynthesis) naturally act to remove CO_2 from the air.
- **Chlorofluorocarbons (CFCs)** are found in the refrigeration coils of older refrigerators and air conditioners. The use of these gases has been phased out by international treaty but the gases persist in landfills and do damage to the ozone layer of Earth's atmosphere.
- **Methane (CH_4)** is produced by natural processes, but wastewater treatment processes, landfills and grazing ruminant animals (such as cows and sheep) also emit methane. Coal mines and natural gas fields also produce methane.
- **Nitrous oxide (N_2O)** is produced by the burning of fossil fuels, the use of chemical fertilizers, and by burning vegetation. Like CFCs, N_2O persists in the atmosphere for a very long time (more than a century).
- **Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulfur hexafluoride (SF_6)** are not naturally occurring but are generated as a result of the use of man-made chemicals in industrial processes.

Focusing on Climate Change Issues in Project EAs

There are three primary questions to consider when addressing climate change issues in a project EA:

1. How will the project contribute to the generation of GHGs and climate change?
2. How will the effects of climate change impact the project?
3. Does the project conform to Canadian or provincial commitments on climate change, such as the Kyoto Protocol to the UN Framework Convention on Climate Change, the national *Climate Change Plan for Canada* or Alberta's Climate Change Action Plan?

Because climate change arises as a result of many cumulative actions, it is also very appropriate to think about climate change problems and challenges on a policy scale that is bigger than just the immediate project. Participants in project EAs are correct to remind decision-makers of the

ongoing need for "strategic environmental assessment" – i.e., EA of policies and programs – that directly and indirectly affect projects and climate change issues.

1. How will the project contribute to the generation of greenhouse gases?

There are many questions to contemplate in relation to a project and whether it will contribute to climate change, such as:

a) Will the project generate GHGs? An example of a project that generates high levels of GHGs is a thermal power plant (one that generates electricity by burning coal or oil), but a mine or a construction project will also require energy to be used and will also generate GHGs.
b) Does the project enable other fossil fuel development and more carbon releases secondarily? For example, with oil sands or oil and gas drilling, energy will be expended to get the resource out of the ground, *and* once the resource is out of the ground, it will be burned to power other projects, generating even more GHGs.
c) How many tons of GHGs will the project generate each year?
d) Have the cumulative impacts of this project and other projects in that same industry or region been considered? Will the project lead inevitably to further development and more greenhouse gases?
e) Does the data collection and analysis of the GHGs seem adequate?
f) Is the project necessary and in the public interest, given the level of GHGs that it will generate?
g) Are there other sources of power available for this project (renewable, non-fossil fuel sources), which would have a lower GHG impact?
h) Has everything been done in the project design and proposed operations and processes to maximize the efficient use of fuels and energy sources? Have best practices been met?
i) Are there alternatives to this project which would achieve the same desired end but with a significant avoidance or reduction in the amount of GHGs generated?
j) Has the proponent pledged to offset the GHG emissions through emissions trading or other means? Is the proponent likely to face future liability (or could there be public liability) as a result of the proponent's failure to consider future obligations under climate change treaties such as Kyoto?
k) What measures for monitoring and follow-up are in place to address the GHG issue into the future?

Although there are not currently strict regulations or limits on the generation of GHGs, EA participants should encourage project proponents to reduce their GHG emissions as much as possible. Furthermore, responsible authorities (government departments charged with decision-making under CEAA) can impose limits on GHG emissions as conditions for approving a project that is going through an EA.

2. How will climate change effects impact the project, and what can be done to avoid or mitigate the impacts?

Effects of climate change can include:

- Rising average temperatures – and the consequential effects of temperature change – like mountain pine beetle spreading due to the fact that winter temperatures have not supported an extended deep freeze necessary for killing mountain pine beetle
- Changes in rain or snowfall levels – with the possibility of increased risk of forest fires from droughts, or alternatively, the risk of flash flooding events from intense rainfalls

- Rising sea levels
- Thawing of ground that is usually in a frozen or permafrost state – leading to changes in the ground's surface and stability (buckling, softening, melting and retreat of glaciers, etc.)
- An increase in the number of extreme weather events and their consequences – such as hail, hurricanes, cyclones, ice storms, floods, changes in tide levels, etc.

Participants in project EAs should therefore consider:

a) Does the climate-changed environment present any hazardous conditions for the project? (e.g. Are extreme weather events likely to impact the project?)
b) How has the project design or operations plan addressed/mitigated these hazards to prevent future environmental damage and public liability? (e.g. Do design specifications contemplate that the ground may heave or buckle as a result of thawing?) Have best practices been met?
c) Have a variety of sources of knowledge been employed in considering climate change impacts? (e.g., climate models, existing climate data, traditional ecological knowledge)
d) Does the data collection and analysis of the climate change effects seem adequate?
e) Will the project proponent have sufficient insurance in place to address risks posed by the environment to the project?
f) What measures for monitoring and follow-up are in place for addressing climate change effects?

3. Does the project conform to Canada's or provincial commitments on climate change, such as the Kyoto Protocol, the national *Climate Change Plan for Canada* or Alberta's Climate Change Action Plan?

Determining whether a project conforms to current commitments is a bit tricky, because Canada has not yet implemented strict legal limits on GHG emissions. Canada is in the process of developing covenants to use with large emitters in industrial sectors (such as thermal electricity, oil and gas, mining and manufacturing), and governments are developing thresholds or limits to establish as regulations for other projects.

However, the *Climate Change Plan for Canada* challenges us all to do our part to reduce GHG emissions. The Plan calls on "every government, every region, every sector, indeed every Canadian to do their share." (page 9, *Climate Change Plan for Canada*).

Disappointingly, the Canadian Environmental Assessment Agency's document, *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* ("the *Guidance* document") suggests that EA practitioners need only concern themselves with projects that have medium to high emissions or that do not meet industry or jurisdictional profiles, rather than *all* greenhouse gas emitters. This is *not* the most prudent approach for Canada, which has ratified Kyoto and has committed industries to making reductions, nor is it the one advocated in the *Climate Change Plan for Canada*, nor is it consistent with CEAA. In order to effectively tackle the climate change problem, improvements need to be considered and made in every project, regardless of project size. Small improvements across the board will net big results!

Hence, when reviewing the planning for a project, participants should view the *Guidance* document as a minimum standard only, and should encourage proponents to do more and government decision-makers to ask for more. A prudent approach is one that addresses the climate change aspects of *every* project; not one that simply addresses the medium and high level GHG emitters.

A simple way to think about the climate change impact of any project is to ask how much energy will be used in the life cycle of the project. Any energy consumption in the end contributes to climate change because the cleaner sources of energy are limited, so the more energy that is required overall, the more we will have to burn fossil fuels, regardless of whether the project itself uses fossil fuels. In other words, for most projects, a good starting point is the energy used by the project, the energy efficiency of the project, and efforts and opportunities to conserve energy. For bigger projects, and for projects that actually promote the use of fossil fuels directly or that are otherwise linked to the use of fossil fuels for energy, the next step is to look at choice of energy, and look for opportunities to promote renewables.

While there is not currently any legislation, it is on the way, and we actually do know generally what targets have to be met in Canada. Moreover, an EA seeks to look well beyond the current commitment period of 2008-2012 in the Kyoto Protocol, so it is not enough to focus on existing or near-term future legislation in any event. EA needs to be used to push proponents and government decision-makers to consider how projects will fit into a world 20 to 50 years from now, when the targets are likely to be 50 to 80 per cent lower than in Kyoto. At a minimum, we need the EA decision to hold the proponent responsible for meeting future GHG reduction commitments.

Finally, as an additional issue, participants should keep in mind that climate change is an important issue for strategic environmental assessment – i.e. the EA of policies and programs. It makes sense to question whether our policies and programs are inherently promoting or supporting projects which use fossil fuels and generate GHGs, and how policies and programs might alternatively be crafted to support renewable sources of energy or reduce the generation of GHGs. Strategic EA is an opportunity to consider the environmental impact of projects in their larger and cumulative jurisdictional, regional and industry contexts.

References and Resources:

1. The Environmental Planning and Assessment Caucus of the Canadian Environmental Network, *A Workshop for Citizens on Environmental Assessment: Your Resource Guide*. Contact the Caucus for more information. http://www.cen-rce.org/eng/caucuses/assessment/index.html
2. Government of Canada, *Climate Change Plan for Canada* http://www.climatechange.gc.ca
3. Canadian Environmental Assessment Agency, *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* http://www.ceaa-acee.gc.ca/012/014/0_e.htm
4. Climate Action Network Canada http://www.climateactionnetwork.ca
5. The Pembina Institute – on Climate Change http://www.pembina.org/climate_change.asp
6. David Suzuki Foundation – Climate Change : Impacts and solutions http://www.davidsuzuki.org/Climate_Change/