



CATCHING UP

Conservation and Biodiversity Offsets in Alberta's Boreal Forest

Executive Summary

Canada's Boreal Forest contains a quarter of the world's remaining intact forests. As one of the largest remaining intact forest ecosystems in the world, the Boreal Forest is home to a rich array of wildlife including migratory songbirds, waterfowl, bears, wolves and the world's largest caribou herds. The Boreal Forest also supports traditional land uses and numerous ecosystem services, including carbon storage and water recycling.

Alberta's Boreal Forest Natural Region (BFNR) covers 58 percent of the province's land base and constitutes most of the province's forest land. The Boreal Forest is significantly impacted by human activities including road building, seismic exploration, oil and gas production, timber harvesting, recreation, and disruption of natural disturbance regimes.¹

Northeastern Alberta, particularly the Regional Municipality of Wood Buffalo (RMWB), is a busy place. It faces unique pressures due to the development of Alberta's mineable oil sands, which are expected to contribute a significant and long-lasting footprint over the next 50 years.² In addition to the oil sands, the region contains the Alberta-Pacific Forest Industries Inc. (Al-Pac) Forest Management Agreement (FMA) Area – one of the largest forest management agreement areas in the province. Under its FMA, Al-Pac is required to manage for non-timber forest values and is certified through the Forest Stewardship Council. As part of this certification, Al-Pac bases its planning and practices on Boreal ecological processes designed to maintain natural landscape values.³

The current regulatory system for the energy sector puts a heavy emphasis on environmental impact assessment and reclamation requirements to mitigate development impacts. However, the ability to reclaim the impact from surface mining in the RMWB is unproven. The existing development footprint, along with the scale and potentially irreversible development of oil sands, creates an urgent need for new land management tools to prevent long-term and irrevocable damage to the BFNR.

This report, commissioned by the Canadian Boreal Initiative, explores biodiversity offsets as a tool to address the impacts of industrial development in the BFNR. The purpose of the report is to explore options for meeting biodiversity objectives for the BFNR overall, with a focus on opportunities to mitigate the impacts of development in the RMWB through a pilot biodiversity offset program. While the report focuses on the RMWB as a case study, the concepts are broadly applicable to Boreal Forest management across Canada.

The basic idea behind a biodiversity offset is that impacts associated with the disturbance of ecosystems and habitat loss are mitigated through either restoration or conservation of substitute forest areas so that no net loss of critical habitat is maintained in perpetuity. Mitigation is defined by the Canadian Environmental Assessment Agency as: "...the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through *replacement, restoration, compensation or any other means*" (emphasis added).⁴ The U.S. Bureau of Land Management defines mitigation to include: "... (a) avoiding; (b) minimizing the impacts by limiting the magnitude or degree; (c) rectifying the

impact by repairing, rehabilitating, or restoring; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or *providing substitute resources or environments*” (emphasis added).⁵ These definitions clearly indicate that offsets can be considered a critical component of mitigation.

Biodiversity offsets have been applied in other jurisdictions on both a voluntary and regulatory basis. For example, under the U.S. *Endangered Species Act*, developers can mitigate the impact of their activities on endangered species by purchasing species-specific offsets from a conservation bank. In spite of being applied in other jurisdictions, biodiversity offsets have not been applied in the Boreal Forest.

This report begins with an overview of the ecological context for biodiversity offsets in the BFNR. Examples of actual biodiversity offset programs are used to illustrate how these tools could be applied for mitigating impacts of development in the RMWB. The feasibility of offset options is further explored through qualitative interviews with thirty-three key informed stakeholders including eleven from industry, eight from government departments, seven from environmental non-government organizations (ENGOS), five from First Nations, and two from academic institutions. Four types of biodiversity conservation programs for the RMWB were described and respondents were asked to determine the strengths, weaknesses, opportunities and barriers of these options. The interviews were used to explore stakeholder awareness of biodiversity offsets, including whether organizations are considering offsets and what values or habitats should be protected by offsets.

To accompany this report, a multi-stakeholder workshop was held to further discuss opportunities to implement biodiversity offsets in the RMWB. The goal of the workshop was to identify opportunities and actions needed to pilot biodiversity offsets in the Athabasca region of Alberta’s Boreal Forest. Findings of this workshop will inform decision makers in their deliberations of a biodiversity offsets program for the future.

Key findings

As cumulative impacts on terrestrial resources continue to grow across Alberta, expectations for more effective mitigation options are consistent with a biodiversity offsets approach. Stakeholder interviews suggest that if used beyond a business as usual context, biodiversity offsets could result in tangible conservation results to mitigate development impacts.

Biodiversity offsets are an emerging trend within the industrial sector. All industry representatives interviewed said that their companies were either already implementing or considering investing in biodiversity offsets. The main business drivers for considering biodiversity offsets included growing public expectation, preserving a social licence to operate, and retaining access to the resource.

Program preferences

Four conservation program options were outlined to the interviewees: voluntary offsets, regulatory offsets without conservation banking, regulatory offsets with conservation banking, and cap and trade. While cap and trade is not an offset program by definition, it was presented to stakeholders as an alternative conservation approach with similar attributes and objectives. Of these programs, the stakeholders preferred the conservation banking option. The perceived main strengths of this option include fair treatment of firms, certainty of environmental benefits, clear rules, low transaction and administrative costs relative to the no-banking alternative, flexibility for firms in meeting regulatory objectives, and private incentives to invest in reclamation and conservation to create sellable credits. However, interview respondents also noted that this option requires a lengthy process for establishing public credibility and government commitment and is likely not feasible in the near term. Therefore, learning about biodiversity offsets and market evolution through a more formal voluntary program such as a voluntary registry challenge is encouraged as an initial step toward a more comprehensive offset program.

There are several key issues to be resolved in creating an offset program. These include defining offset program objectives, determining future availability and cost of offsets, and identifying options for distributing risks of the environmental liabilities created by offsets. In terms of program objectives, there seemed to be implicit consensus from interview respondents that a coarse filter approach to biodiversity protection would be preferred to a fine filter, species-based approach.

In general, the appropriate program design will depend on identifying clear goals and objectives of the offset program. Program design issues discussed in the report include geographic scope of the offset program, incorporation of private versus public lands, defining environmental equivalence, and monitoring and enforcement options. In terms of geographic scope, the findings suggest that a program limiting offset credit creation to the RMWB would be constrained by the lack of availability of undisturbed areas that could be developed as credits. Expanding the potential for credit creation to the whole BFNR as well as incorporating private lands would help alleviate these constraints. Other issues that must be resolved for successful program implementation include:

- ability to establish offsets on public lands with overlapping resource rights;
- ability of public land occupants to sell offsets under current regulations;
- duration of offset obligations and permanent versus temporary offsets; and
- treatment of reclamation and time lags between offset creation and benefits.

Based on feedback from stakeholders, an offset program should:

- encourage the establishment of offsets prior to development to minimize any time-lag effect;
- secure offsets in perpetuity (if possible) and explore opportunities for temporary offsets;
- represent a coordinated industry approach to biodiversity protection based on conservation management plans;
- achieve additional conservation benefits beyond business as usual practices; and
- adapt to increased knowledge and understanding of restoration and reclamation potential.

Policy framework to support biodiversity conservation

Biodiversity offsets are a strategy to achieve species conservation objectives. Therefore, an effective offset strategy relies on effective land-use planning to establish conservation objectives, cumulative effects targets, and a range of actions to support conservation goals. The Boreal Forest ecosystem is complex and there is considerable uncertainty about ecological responses to human disturbances. A pilot offset program should be designed to learn more about anthropogenic effects on the ecosystem. For example, active adaptive management advocates an experimental approach to resource management that deliberately designs policy intervention in order to test hypotheses about ecosystem feedbacks.

The massive scale of development of the Western Canadian Sedimentary Basin requires that land management strategies, including policies to offset human impacts, should be designed to facilitate learning as well as to achieve conservation objectives. Therefore, establishing ecological benchmarks and protected areas as experimental controls and for monitoring the land management system is critical to ensuring that conservation strategies are appropriate and effective. The Oil Sands Consultation Multistakeholder Committee recommended the establishment of protected areas in northeastern Alberta;⁶ prompt consideration and action regarding this recommendation is encouraged in addition to exploring biodiversity offsets.

1 Daniel Farr et al., "Conserving Canada's Natural Capital: The Boreal Forest," ed. *Al-Pac Case Study Report* (prepared for the National Round Table on the Environment and the Economy, 2004).

2 Note that there are three major oil sands areas in Alberta's Boreal – the Peace, Athabasca and Cold Lake areas. However, the Athabasca area is the largest and currently contains the only mineable deposits.

3 For more information on Al-Pac's environmental policy see www.alpac.ca/index.cfm?id=enviropolicy.

4 Canadian Environmental Assessment Agency, *The Responsible Authority's Guide (Canadian Environmental Assessment Act Procedural Manual)*, Section 1.6 Step 3: Mitigating Environmental Effects, 2003 (cited August 27, 2007). Available online at www.ceaa-acee.gc.ca/013/0001/0008/partie2_4_e.htm#1.6.

5 U.S. Department of the Interior, Bureau of Land Management, *Definitions* (cited August 27, 2007). Available online at www.blm.gov/nhp/news/regulatory/3809-Final/1508_20.html.

6 Government of Alberta, "Oil Sands Consultations – Multistakeholder Committee Final Report," 2007. Page 21, "V3.S7. Action 7.1 [C] As part of the land use planning process, establish new protected areas within the Oil Sands Areas."



The Canadian Boreal Initiative (CBI) works with First Nations, governments, conservation organizations, industry leaders and others to link science, policy and conservation solutions across Canada's Boreal Forest.