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Project Summary: Assessing the Ecosystem Service Benefits of the COSIA LEAP Program

What is This Project About?

This project was part of a multi-phase research initiative assessing the potential ecosystem service benefits from linear restoration. Phase 1 of the project provided a critical perspective on how projects that seek to derive ecosystem services and biodiversity benefits perform under a rigorous environmental and economic assessment. The findings of the proof-of-concept pilot revealed that there are gains to be realized from undertaking linear restoration. These results spurred interest in understanding how linear restoration may fit into a potential conservation offset scheme in Alberta. Phase 2 of this project sought to further the development of a repeatable, transferable, and implementable approach to evaluating the net benefits of restoration activities in the boreal region and assess the potential use of conservation offsets from the restoration of legacy seismic lines. Phase 2 focused on answering four key questions: 1. What are the potential ecosystem service benefits of large-scale linear restoration? 2. How can ecosystem service concepts be used to prioritize areas for restoration? 3. Do different ecosystem service modelling platforms provide similar, repeatable results? 4. How could ecosystem services be used to assess the value of restoration in conservation offset planning? As part of the success of this project, a repeatable framework was developed to incorporate ecosystem service concepts into linear restoration projects and potential upcoming conservation offset policy. Furthermore, a framework was developed to prioritize areas for restoration based on the suite of ecosystem services provided by the landscape, rather than focusing on just one land value (e.g. species at risk).

How is this Work Relevant to ES Market Innovation?

Results of the analysis showed that large-scale linear restoration can generate ecosystem service benefits including the provision of timber supply, carbon sequestration and cultural and traditional use services related to functional caribou habitat.

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- Other measured ecosystems services including water quality, biodiversity intactness and hunting success (recreational or cultural value) related to moose habitat showed little to no change from large-scale restoration. Restoring additional footprint (e.g. orphan well sites or well sites reclaimed to old standards) would likely be required to improve additional services in remote areas of the province. As restoration projects move closer to local communities, restoration impacts may influence other services, not measured in the Algar region (e.g. flood control (water storage), recreational values, etc.). We identified opportunities and challenges associated with scaling the analysis to larger areas. Scaling from the Algar region to the Lower Athabasca watershed helped us identify some of the variability between modelling platform requirements, including data constraints when modelling at such a large scale. Understanding the strengths and weaknesses of the modelling approach, including the model inputs, the model itself, and its outputs, when interpreting ecosystem service benefits will be essential for conservation offset planning. In addition, it is recommended that validation of modelling results take place, with long-term monitoring of restoration projects as they are implemented. The results of the analysis conducted during the course of this project are expected to spur further innovation in ecosystem service assessments, advance knowledge around linear restoration, and improve general ecosystem service knowledge.

Who Does this Project Impact?

All Albertans are expected to gain from this research by the improved knowledge around ecosystem services and their applicability to potential conservation offset programs. More directly, industrial proponents hoping to offset the impacts of their projects will have more insight into the potential values derived from legacy seismic line restoration. The government or regulator(s) will also benefit from this knowledge as a way to identify key areas for restoration when attempting maximization of ecosystem service benefits.

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How Does this Work Support the ESNB Vision?

A key aspect of the ESNB vision is a functional market infrastructure. Understanding the opportunities, challenges, and implications associated with legacy seismic line restoration in Alberta will help with the creation of conservation offset markets, should the province choose to pursue them. This project helps identify key considerations associated with the creation of conservation offsets frameworks, especially in the context of legacy seismic line restoration. As a result, the project helps support the fourth Strategic Goal of the ESNB "To have successfully undertaken new market transactions for ES". Furthermore, the involvement of key industry, government, the general public, researchers, and ENGOs, this project helps achieve the fifth Strategic Goal of the ESNB to "have active partners and at least one champion per major sector". All of these learnings and activities help drive the ESNB to the over-arching goal of enabling Alberta's green economy through the efficient use of natural resources.