

Understanding Ecosystem Services and Biodiversity Market Infrastructure

A market-based approach for ecosystem services requires knowledge and understanding of how markets for ecosystem services would work. Since 2012, Alberta Innovates has been leading a series of market pilots to understand market drivers, roles and responsibilities of various parties in the market, and how market infrastructure could support ES and biodiversity markets.

The Different Roles in Ecosystem Services and Biodiversity Markets

The market infrastructure consists of the arrangement of buyers and sellers, and an exchange that facilitates the transactions between them.

In ecosystem services and biodiversity markets, **Buyers** are the organizations that are required to offset environmental impacts. Their role is to purchase credits from sellers or work with landowners to create credits. **Sellers** are the organizations that restore the land for environmental benefit. They use land management practices to manage for specific outcomes. **Verifiers** ensure that conservation actions are producing the environmental benefits that are required, and **Certifiers** confirm that the verifying process is valid.

The **Exchange** is a central, electronic space for buyers and sellers to trade credits, and negotiate the terms of the trade such as price and quantity, while the **Registry** is a database that houses all information on credit availability, generation, ownership and trade.

Together, these roles are pivotal for the success of ecosystem services and biodiversity markets.

The Importance of Putting Market Infrastructure in Place

Setting up the market infrastructure is essential because it facilitates the coordination of multiple buyers and sellers of ecosystem services at a scale that can deliver on environmental outcomes. This is important because change in practice can lead to change in ecosystem services, but individual change is not enough; it's the collective changes among many people that make a difference.

Market infrastructure is also important for sending the correct price signals to help us manage ecosystem services. Establishing prices through market infrastructure is important because understanding the value of different ecosystem services keeps the buyers and sellers motivated to actively participate in ES markets.

Currently, researchers are working to better understand some of the socioeconomic aspects of ES and biodiversity markets, such as people's willingness to pay for ecosystem services, as well as the risks and return to sellers.

Market Based Instruments: Challenges and Opportunities

“Market-based instruments are policy or program tools that use markets or economic incentives to change behavior in order to achieve environmental outcomes” (ESBN)

One of the main challenges with a market-based approach to ecosystem services is a lack of understanding among stakeholders as to how ecosystem services and biodiversity markets could work. There is also a lack of environmental policy outcomes that show value and support for such a market.

Alberta Innovates leads the Voluntary Market Pilots and Prototype for Exchange project, which brings partners together to better understand the roles and responsibilities within the market and how market infrastructure can best support ES and biodiversity markets.

Proving the Concept: A Market-based System that Works

A market-based system that currently exists in Alberta is seen through the Alberta Wetland Policy, which demonstrates a functional system for offsetting unavoidable loss of wetland-associated ecosystem services. This policy aims for restorative replacement, when avoidance and minimization are not possible, and is based on function and value, rather than just area.

The policy uses assessment tools to assess the value of wetland functions on both the impacted and restored wetlands. Ducks Unlimited Canada (DUC) uses the funds paid for mitigation to compensate landowners who are interested in wetland restoration, and to restore these wetlands to replace lost ecosystem services. While there is always room for improvement, the policy demonstrates how we are achieving success with market components such as assessments and an exchange between buyers and sellers.

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