

Municipal Natural Capital Valuation

Introduction

1. Natural Capital or Natural Assets refer to the earth's finite stocks of physical and biological resources such as water, soil, animals, plants, or ecosystems that contribute to the provision of one or more services critical to a community's health, well-being, and long-term sustainability.
2. Communities obtain support and benefits from these natural stocks in the form of ecosystem goods and ecosystem services. Food, timber, and water are a few examples of ecosystem goods, which are all products of natural capital. Ecosystem services include nutrient cycling, water purification, climate regulation, recreational, aesthetic, and cultural benefits that people obtain from ecosystems.
3. Natural Assets are a subset of green infrastructure, and the latter includes natural and engineered elements built to mimic natural functions and processes in the service of human interests.
4. Natural capital assessment is the process of valuing natural resource impacts and dependencies by applying financial accounting frameworks to these assets, just like our traditional asset valuation methods to allow for a more meaningful comparison between what we perceive as free (nature) and more traditional assets.

Background

5. Although the concept of assigning value to the environment has existed for several decades, its significance has greatly increased in the twenty-first century as a result of ecosystem depletion and climate change.

6. TEEB (The Economics of Ecosystems and Biodiversity) was launched in 2007 in response to a proposal by the G8+5 Ministers to begin analyzing the global economic benefits of the ecosystems and to compare the costs of failure to protect these resources with the costs of conserving them.
7. The findings of TEEB provide global examples of how biodiversity valuation leads to policy changes, and how natural capital and conservation investments can outperform man-made alternatives.
8. There is a growing recognition of the pivotal role that all natural areas play in providing ecosystem services. For example, in Ontario, the David Suzuki Foundation has valued the non-market ecosystem services of the Greenbelt at \$2.6 billion annually¹.

Assessing the Value of Municipal Natural Assets

9. Emerging evidence shows that identifying, valuing, and managing natural assets as part of an overall asset management strategy can save capital and operating costs as well as reduce risks associated with climate change.
10. Canadian municipalities are increasingly recognizing the services provided by natural assets within their boundaries and are exploring ways to include them in asset management strategies.
11. Local governments across Canada are using different methods to assess the value of natural assets however, there is an urgent need for a uniform framework to value the services provided by natural assets comparable to the built infrastructure.

12. The total economic value (TEV) concept, which is commonly used in environmental valuation, suggests that economic value is the sum of use and non-use values².
13. Use-values are of three types:
 - Direct-use value: derived from direct use of the ecosystem, such as the value of water for drinking.
 - Indirect-use value: derived from indirect use of the ecosystem or resource, such as the value of a wetland for flood control.
 - Option value: derived from preserving a use value of an ecosystem today for the option of using it in the future.
14. Non-use values are calculated for the non-consumptive aspects of an ecosystem. The two categories of non-use values are
 - Bequest value: individuals' satisfaction in knowing that ecosystem services would be available for future generations.
 - Existence value: satisfaction of knowing that nutrition cycling exists.
15. In theory, values provided by the ecosystems cover a huge spectrum, from direct use to non-use, it is often difficult to capture all the components of TEV and attempting to measure TEV can lead to double-counting of benefits.
16. Globally, frameworks such as [UN System of Environmental-Economic Accounting—Ecosystem Accounting \(SEEA EA\)](#) and projects such as International Public Sector Accounting Standards Board's (IPSASB) [Natural Resources Project](#) are being developed to quantify the value of ecosystem services.
17. The [Municipal Natural Assets Initiative \(MNAI\)](#) was launched in 2015 to support and guide local governments across Canada in identifying, valuing, and accounting for natural assets in their financial planning and asset management programs, and in developing cutting-edge climate-resilient infrastructure.
18. Other services and tools adopted by municipalities in Ontario include [Business Case for Natural Assets \(BC4NA\)](#) developed by Green Analytics for valuing natural assets of the Region of Peel and Credit Valley Conservation's [Risk and Return on Investment Tool \(RROIT\)](#) to assess the costs and vulnerabilities associated with flooding.
19. The lack of natural asset valuation by the public-sector entities, often leads to poor management decisions where short-term monetary gains driving the degradation of natural assets are frequently prioritized over the long-term economic value of services provided year-on-year by intact natural assets.
20. In a recent [response submitted to the Public Sector Advisory Board \(PSAB\) Conceptual Framework Revision](#), stakeholders from public and private organizations recommended PSAB to undertake a project to develop guidance about the recognition and measurement of natural resources in Canada.
21. By allowing recognition of the value of natural assets in financial position statements, the PSAB can support public sector bodies in making more financially-sound decisions in the future.

The Saskatoon Example

22. Saskatoon's Natural Capital Asset Valuation Pilot Project analyzed the value of natural assets so they can be accounted for in ways that are comparable to engineered and enhanced assets. The Natural Capital Lab and MNAI partnered to help develop case studies of natural capital strategies for the City.
23. All the natural assets were identified and compiled in an inventory. Natural assets provide a multitude of ecosystem services. The value (benefit) transfer method was used to assign values to ecosystem services for the pilot. This method involves transferring existing values estimated for similar ecosystems.

24. A vulnerability assessment was conducted for each natural asset. Risk identification focused on service areas that the City is responsible for. Assessment of the risks then connected impacts on civic operations with the severity and likelihood of consequence, considering climate change predictions over the next 25 years.
25. Two natural assets containing a mixture of aquatic assets, grasslands, and forest/shrubland were chosen for the valuation pilot. Their Supporting, Regulating, Cultural and Provisioning ecosystem services were valued based on the relevant studies.
26. This valuation was then extrapolated to other ecosystems of the City and the total annual value of ecosystem services provided by the natural areas in Saskatoon was found to be \$48.167 million.

Municipal Implications

27. Natural Asset valuation leads to increased awareness and appreciation of ecosystem services as well as a better understanding of the knowledge gaps that must be addressed to properly value and manage municipal natural assets.
28. Despite the lack of widespread knowledge or a standard framework of valuing the ecosystem services and tracking them in a way that is compatible with engineered assets, it is important to get started. As more research is conducted in this area, additional studies can be added, and the natural capital assessment can be updated periodically to reflect the best available valuation information.

29. It is critical that public-sector entities account for, and value a) the contribution of natural assets in reduction of climate-related risks and b) carbon sequestration and storage services of natural assets, which can be used to offset greenhouse gas emissions and contribute to fulfilling Canada's commitment to achieving net-zero emissions by the year 2050.

Related Webinars and Further Reading

30. City of Saskatoon [Natural Capital Asset Valuation Pilot Project](#)
31. Credit Valley Conservation [Building Business Case for Municipal Natural Assets Webinar](#)
32. Credit Valley Conservation [Business Case for Natural Assets in the Region of Peel: Benefits to Municipalities and Local Communities](#)
33. Municipal Natural Assets Initiative [Defining and Scoping Municipal Natural Assets](#)
34. Clean Air Partnership [Natural Capital and Why it Matters](#)

References

1. [Ontario's wealth Canada's future- Appreciating the value of the greenbelt's eco-services.](#)
2. Grant, Susie & Hill, Simeon & Trathan, Philip & Murphy, Eugene. (2013). Ecosystem services of the Southern Ocean: Trade-offs in decision-making. Antarctic science / Blackwell Scientific Publications. 25. 603-617. 10.1017/S0954102013000308.