

Ecosystem services & agricultural producers

The concept of ecosystem services has important implications for agricultural producers, including the potential for receiving financial incentives for providing these services to society.

What are ecosystem services?

According to the Millennium Ecosystem Assessment, an **ecosystem** “is a dynamic complex of plant, animal, and microorganism communities and the non-living environment interacting as a functional unit”, and **ecosystem services** “are the benefits people obtain from ecosystems.”

Sometimes these services are called by other terms like *ecological services* or *environmental goods and services*. Such terms may be used in slightly different ways, but they all refer to the general concept of the benefits people derive from ecosystems.

Some examples of types of ecosystem services are:

Services	Examples
<i>Provisioning services</i>	Providing food, water, biofuel, fibre
<i>Regulating services</i>	Affecting climate, floods, disease, wastes, water quality
<i>Cultural services</i>	Providing recreational, aesthetic, and spiritual benefits
<i>Supporting services</i>	Providing soil formation, photosynthesis, nutrient cycling

Adapted from: Millennium Ecosystem Assessment. 2005. Ecosystems and Human Beings: Synthesis. Island Press, Washington, D.C.

We all depend on ecosystem services for our survival and well being. However, humans are also placing increasing stresses on ecosystems around the world, and those stresses impact to what degree ecosystems are able to provide these crucial services.

Ecosystem services may involve trade-offs. For example, let’s say a crop producer preserves a wetland. That wetland stores water, which helps reduce flooding downstream, so it provides a regulating service. However, that land isn’t providing food for humans, a provisioning service.

Why are ecosystem services important for agricultural producers?

Producers depend on the agricultural ecosystems of their farms and ranches to produce crops and livestock. Various agricultural practices help maintain the health of these ecosystems. For instance, reduced or zero tillage systems reduce soil erosion, store soil carbon and conserve organic matter, while providing good crop yields and savings on fuel costs. Off-site watering systems protect the quality of the water source and reduce health risks for livestock.

Producers are directly paid for provisioning services – for providing crops and livestock to buyers. In contrast, they often don’t receive direct economic benefits for providing ecosystem services that benefit society in general, rather than a specific buyer.

However, that is starting to change. Driven by society’s growing interest in environmentally responsible practices, some economic incentives are being developed to encourage producers to provide supporting, regulating, and cultural services. At the same time, agricultural practices are undergoing increasingly closer scrutiny as society seeks to evaluate the degree to which specific practices increase or decrease ecosystem services.

Economic instruments for encouraging provision of ecosystem services

Many countries have various policies and programs in place for encouraging individuals, companies and governments to maintain or increase provision of ecosystem services to society. In Canada, such initiatives are generally in their very early stages.

In some situations, governments use regulations to ensure provision of some ecosystem services. Another option is to use what are called **economic instruments** or *market-based instruments*.

These instruments provide economic incentives to encourage people to provide certain ecosystem services to society. The instruments require a framework that identifies such aspects as what outcomes are expected, what rules govern participation in the instrument, and how to ensure that the claimed environmental benefits actually exist. Although economic instruments don't suit every situation, they generally tend to be more flexible and efficient than regulatory approaches.

A 2011 Sustainable Prosperity report called "Advancing the Economics of Ecosystems and Biodiversity in Canada" identifies three common types of economic instruments: payments that provide direct compensation for increasing the supply of ecosystem services; taxes or fees that encourage ecosystem stewardship; and markets for ecosystem services, such as trading systems and offsets.

An example of a **payment for ecosystem services** instrument is the 2009-2013 Growing Forward Stewardship Plans Program. This program provides 50:50 cost-sharing with producers for eligible expenses related to the implementation of a wide variety of agricultural stewardship practices. (Go to www.growingforward.alberta.ca for more information about this program.)

One example of a **tax incentive** to encourage environmental stewardship is the Ecological Gifts Program under the federal *Income Tax Act*. This program offers significant tax benefits to landowners who donate land or a partial interest in land that is deemed to be ecologically sensitive. (Go to www.ec.gc.ca for details about this program.)

An example of a **market** for ecosystem services is Alberta's carbon offsets market. Large emitters of greenhouse gases can buy carbon credits on this market as a way to reach compliance with Alberta's emissions regulations. When agricultural producers in Alberta use certain practices that reduce net greenhouse gas emissions, they can sell their carbon credits on this market. (See carbonoffsetsolutions.climatechangecentral.com for more information.)