

Human Activity and the Environment – Teacher’s Kit

Lesson # 2: What are ecosystem goods and services?



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The following symbols are used in Statistics Canada publications:

- | | |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| . | not available for any reference period |
| .. | not available for a specific reference period |
| ... | not applicable |
| 0 | true zero or a value rounded to zero |
| 0 ^s | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| P | preliminary |
| r | revised |
| X | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i> |
| E | use with caution |
| F | too unreliable to be published |
| * | significantly different from reference category ($p < 0.05$) |

Lesson #2

What are ecosystem goods and services?

Overview

This PowerPoint lesson describes use of the 11 slides in Set #2 and related learning activities to explore ecosystem goods and services (EGS). Beginning with two fictional business advertisements, learners draw distinctions between ‘goods’ and ‘services.’ They test their understanding of these concepts by distinguishing images that illustrate examples and non-examples of goods and services. Learners then examine images of ecosystems to try to identify examples of EGS. They are introduced to three categories of EGS, and use these categories to extend their ability to identify goods and services in the images. Finally, they consider the impact of human activity on EGS.

Audience

- junior high school
- senior high school
- introductory post-secondary

Learning outcomes

- understand economic goods and services
- understand ecosystem goods and services
- understand the importance of studying ecosystems

Curriculum links

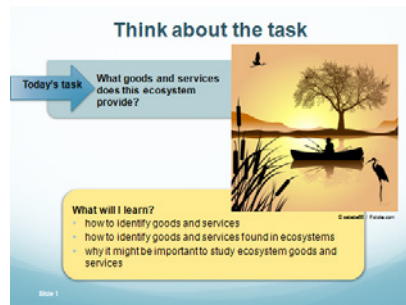
- grades 7 to 12 geography (ecosystems, geographic change), social studies (economics), biology (ecosystems and change), science, economics (accounting, valuation methods)
- post-secondary geography (ecosystems), environmental science (ecosystem accounting, ecosystem change)

Learning materials

- PowerPoint slide set #2: What are ecosystem goods and services?
- Statistics Canada publication, [Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada](#)
- Activity sheet #4: *Economic goods and services*
- Briefing sheet #1: *Categorizing ecosystem goods and services*
- Activity sheet #5: *Exploring ecosystem goods and services*

Instructions

Think about the task



Display or project Slide 1 or provide a provocative image to prompt learner reflection on the question “What goods and services does this ecosystem provide?”

Guide learners in a discussion of what an ecosystem might be and why it might be important to understand and study ecosystems. Encourage learners to consider how people benefit from ecosystems.

Explore the ideas



Organize learners into small groups and provide each group with a copy of Activity sheet #4: *Economic goods and services*. Display or project Slide 2 and inform learners that image is of advertising from two businesses. Inform learners that their challenge is to identify the goods and services offered by each business.

Remind learners of the strategies for making thoughtful observations and encourage learners to record what they observe in each ad. Guide learners in using these observations to infer possible goods and services provided by each business.

Invite learners to review the goods and services that they have recorded. Instruct them to develop possible definitions for goods and services. Record or project suggested definitions.

Test the definitions



Display or project Slide 3 and inform learners that three of the images are examples of economic goods and one image is a non-example. Prompt learners to reflect on the definition they recorded on Activity sheet #4: *Economic goods and services*.

Encourage learners to consider what services might be associated with the examples of goods. For example, ‘skateboard repair’ might be a service related to a skateboard.



Display or project Slide 4 and challenge learners to determine which of the images are examples of services and which might be non-examples of services. Prompt learners to reflect on the definition they recorded on Activity sheet #4: *Economic goods and services*. Encourage learners to think about the benefit that each service might provide.



Display or project Slide 5 and encourage learners to revise their definitions of goods and services, if required.

Extend the definition

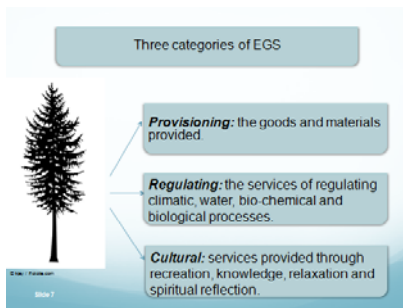


Display or project Slide 6 and inform learners that their next task is to use these definitions to determine what goods and services might be provided by an ecosystem. Invite learners to consider which four EGS pictured are goods and which are services. The images represent (clockwise from top left):

- timber and wood products
- clean air or air purification
- hiking and recreation
- water regulation or flood control.

Learners might suggest that wood products are a good, clean air is a good, air purification is a service, recreation is a service, and water regulation is a service. Prompt learners to consider that some EGS may be less obvious but are still important. Ask them to propose other possible goods and services that may be provided by ecosystems.

Categorizing EGS



Display or project Slide 7 and provide learners with Briefing sheet #1: *Categorizing ecosystem goods and services*. Review the different categories of EGS, then display or project Slide 8. Inform learners that their challenge is to categorize each of the EGS reflected in the images.



Learners might suggest that wood is a provisioning service, clean air is a provisioning service, air purification is a regulatory service, recreation is a cultural service, and water regulation and flood control are regulatory services.

For more information on the categories of EGS, see the Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada*, page 20.

Apply the definitions and categories



Display or project Slide 9 and inform learners that their next task is to use the definitions of goods and services to determine what goods and services might be present in the pictured ecosystem.


Provide each learner with a copy of Activity sheet #5: *Exploring ecosystem goods and services*. Guide learners in observing features of the ecosystem and identifying related EGS. Remind learners that less obvious EGS may still be very important. For example, clean air might be a good provided by an ecosystem, and cattails might provide a service by cleaning air and water.

Finally, instruct learners to indicate which of the three categories each EGS might belong to. Prompt learners to record their observations and related EGS on the Activity sheet.

Organize learners into small groups and invite them to review the EGS that they have recorded. Instruct learners to develop possible definitions for EGS. Record or project suggested definitions.

Explore human impacts on ecosystem goods and services

How has human activity affected the goods and services provided by this ecosystem?



LOOK at the image carefully

DESCRIBE what you see to your partner

IDENTIFY how human activity has affected the goods and services provided

Slide 10

Display or project Slide 10. Ask learners to suggest what has occurred in the pictured ecosystem. Prompt learners to consider how human activity has affected the goods and services provided by this ecosystem. Invite learners to discuss possibilities with a partner and then share ideas with the class.

Possible responses include the production of timber and other forest products, as well as loss of habitat, loss of clean air and increased erosion.

Conclude by prompting learners to respond to the question: “Why might it be important to understand and study ecosystem goods and services?” Possible responses include the importance of knowing about the quantity, quality and value of goods and services provided by Canada’s ecosystems in order to guide decisions about development or land use.

For more information on EGS refer to the Statistics Canada publication, *Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada*, pages 8 to 10, and 15.

Activity sheet #4

Economic goods and services

<u>ROLAND'S TENNIS ACADEMY</u>		Wally's Electronics Warehouse	
-improve your game with pro coaching -visit our pro shop for the latest in racquets and other tennis gear -custom racquet repair		<i>From personal devices to home entertainment systems, we have all the latest and greatest gadgets!</i>	
What goods do these businesses provide?		What services do these businesses provide?	
A clue or detail that I noticed:	The good that this might refer to:	A clue or detail that I noticed:	The service that this might refer to:
After reviewing what these goods have in common, I would define a good as:		After reviewing what these services have in common, I would define a service as:	

Briefing sheet #1

Categorizing ecosystem goods and services

Statistics Canada groups ecosystem goods and services (EGS) into three general categories:

1. *Provisioning services*: the 'goods' in EGS are the material and energy provided by ecosystems; for example, timber, fish, or plants that have a particular socio-economic use.
2. *Regulating services*: the capacity of ecosystems to regulate climatic, hydrological and bio-chemical cycles, as well as biological processes.
3. *Cultural services* are generated from the physical setting and location of ecosystems and give rise to emotional, intellectual and symbolic benefits that people obtain from ecosystems through recreation, knowledge development, relaxation, and spiritual reflection.

For more information on these categories, see the Statistics Canada publication, [Human Activity and the Environment 2013: Measuring ecosystem goods and services in Canada](#), page 20.

Activity sheet #5

Exploring ecosystem goods and services

A feature or detail that I noticed in the image:	The <i>ecosystem good</i> that this might be:	The <i>ecosystem service</i> that this might be:	Which category of EGS? (provisioning, regulating, cultural)
After reviewing what the goods have in common, I would define an ecosystem good as:	After reviewing what the services have in common, I would define an ecosystem service as:		