

It's Our Forest

Teacher's Guide



Welcome to the It's Our Forest Learning Guide

Why an education resource on the forest?

With forests covering over half the area of Alberta they are a vital part of our provincial landscape and influence how we live, work and play. Like the title says-*It's OUR Forest*.

Along with the online video series, this guide offers interactive activities to get your class engaged in critical thinking, considerate action and reflective practice needed to help them understand the value of the forest from multiple perspectives.

Curriculum Connections

While this video resource and learning guide are developed for use across the curriculum, important connections can be made to:

Grade 6 – Science: Trees and Forests

Grade 7 – Science: Interactions & Ecosystems;
Plants for Food and Fibre

Grade 9 – Science: Biological Diversity

Senior High - Career & Technology Studies - Forestry

What's included in this resource?

The It's Our Forest video series contains four segments, each approximately five minutes in length, covering key topics related to forests in Alberta.

1. Videos

Video Part 1: The Forest Ecosystem

Investigates forest ecosystems and the connection to climate change, the carbon system and water filtration. The video also touches on the importance of forest habitats and our role as forest stewards.

Video Part 2: Human Values of the Forest

Provides insight into the complex uses of our forests as a renewable resource, as well as the diversity of stakeholders connected to the forest industry.

Video Part 3: Land-Use Planning

Explores the planning and management of our forests while touching on the multiple users working together in the forest. The video also examines innovative forest technology and the shared responsibility to manage forest sustainability.

Video Part 4: People and Products

Looks into Alberta's forest economy; focusing on the diversity of forest products, innovation within the industry and careers in the future of forestry.

2. The Learning Guide:

To further explore the topics covered in each section of the It's Our Forest video series we have provided unique activities to supplement each video. The activities consider differentiated learning styles and levels, and are adaptable to different spaces and time frames.

This guide can be used solely as a teacher's guide, as a learner's guide, or as a 'flipped classroom' where students watch a video segment for homework and then choose to explore activities together during class time.

Each activity is also followed by a 'Call to Action' or a 'Call to Reflection' as an extension to the main activity.

Please use and enjoy it in any way your class likes to learn!

It's Our Forest was made possible through the partnership of:



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Activity Overview

Video Part 1: The Forest Ecosystem

Activity 1: Carbon Connection

Go outside with the carbon calculator to find out how much carbon is stored within the trees around your schoolyard. Take it a step further to see how much carbon you produce with your everyday activities. Reflect on your results. [experiential learning activity]

Activity 2: Mindfulness Matters

Think critically about your personal connection to the forest. Answer some guiding questions and reflect on what it means to practice forest stewardship. [critical thinking activity]

Video Part 2: Human Values of the Forest

Activity 3: Six Trees of Separation

Use the '6 trees of separation' cards as an interactive class activity that explores a wide variety of forest related careers. [experiential learning activity]

Activity 4: Forests of our Future

Learn about the seventh generation, an aboriginal practice of sustainable resource development. Consider your own perspective on forest issues and explore different perspectives through a group activity. [experiential learning activity]

Video Part 3: Land-Use Planning

Activity 5: A Piece of the Land

There are many stakeholders in Alberta forests and the provincial government manages how, when and where they can operate. In this activity students will take on the role of a land use planner as they attempt to balance the multiple stakeholders with the environmental needs of our forests. [critical thinking activity]

Activity 6: Forest Handprint

Our ecological handprint shows our contribution as forest stewards, as opposed to our footprint, which shows our impact. Create an ecological handprint to showcase how you positively interact with our forests. [self-directed learning activity]

Video Part 4: People and Products

Activity 7: The Value of Forests

The forest industry is vital to Alberta's economy. Think critically about what you believe the forest is 'worth'. Use the guiding questions to explore the value of our forest. [critical thinking activity]

Activity 8: Work Wild

Take the Work Wild forestry career quiz to see if you might have a future in the forest industry. Write an i-search paper sharing the interesting details you found while exploring a forestry career. [self-directed learning activity]

Video Part 1: The Forest Ecosystem



Activity 1 - Carbon Connection

Forests, including their trees, soil and water, play an important role in removing carbon dioxide from our atmosphere.

Part 1: Schoolyard Forest Audit

Find how much carbon the trees in your schoolyard are storing. Count or estimate the number of trees in your playground and measure their height and circumference. Use the Tree Carbon Calculator table below to figure out the carbon stored in the trees.

see following page for instructions

Part 2: Creating Carbon

Now get a sense of how much CO₂ you produce doing everyday activities.

Activity	CO ₂ Produced (kg)
Driving a car 1 kilometre	0.28
Watching an LCD television for 1 hour	0.088
Sending 1 email with an attachment	0.050
Making a cell phone call for 1 minute	0.057

Can you figure out how many trees you would need to offset the amount of carbon you produce watching TV, riding in a car or using a cell phone over the course of one week?



CALL TO ACTION

Planting a tree is one of the most obvious forms of offsetting our carbon footprints. Can you find out which trees make the best carbon sinks - coniferous or deciduous, old or young? Get out there and plant as many trees as you can!

Activity 1 - Carbon Connection

Schoolyard Forest Audit Instructions

Step 1: Measure the height of the tree.

If your tree is too tall to measure... Estimate! It's easy. Measure the height of a student and count the number of times that student's height fits into the tree.

Height of student

cm

Number of times their height fits into the tree

x

Height of the tree

cm

Convert the height from centimetres to meters by dividing by 100.

. **m**

Step 2: Measure the circumference of the tree trunk.

Simply, wrap a flexible measuring tape around the tree at chest height. Or use a string and measure the length of the string with a metre stick.

Step 3: Use the table below to estimate of the amount of carbon stored in your tree based on its height and circumference. The estimated amount of carbon is represented in kilograms (kg).



TREE CARBON CALCULATOR

Circumference of tree at chest height in metres (m)

	0.25	0.5	0.75	1.0	1.25	1.5	1.75	2.0
Tree height in metres (m)	10	14	19	26	36	48	61	77
2.0	11	18	28	43	62	86	113	145
4.0	13	22	38	60	89	124	165	213
6.0	14	26	48	77	115	162	217	281
8.0	15	31	57	94	142	200	269	349
10.0								

These estimates are based on the formula: MC (mass of carbon in the tree) = 0.5 x Mw (mass of the wood), where Mw = 0.55 x V (volume of tree) x Dw (density of wood); V = 0.0567 + 0.5074 x (CBH/100)² x H. It assumes that Dw = 0.6 g/cm³, and that water makes up 45 percent of the tree's mass.

Step 4: Multiply the amount of carbon stored in one tree (in kilograms) by the total number of trees of similar height that are found in your school yard.

Activity 2 - Mindfulness Matters

The video states that “taking care of the forest is one of humanity’s greatest responsibilities”.

Brainstorm what the narrators mean by this statement and create a tree mind-map (sample template provided) to understand why it’s important to be stewards of the forest.

Some questions you may consider are:

- What do forests give us? And what do we give them?
- How are we connected to the forest?
- How can we demonstrate care toward the forest?
- Who is responsible for the forest? Why?



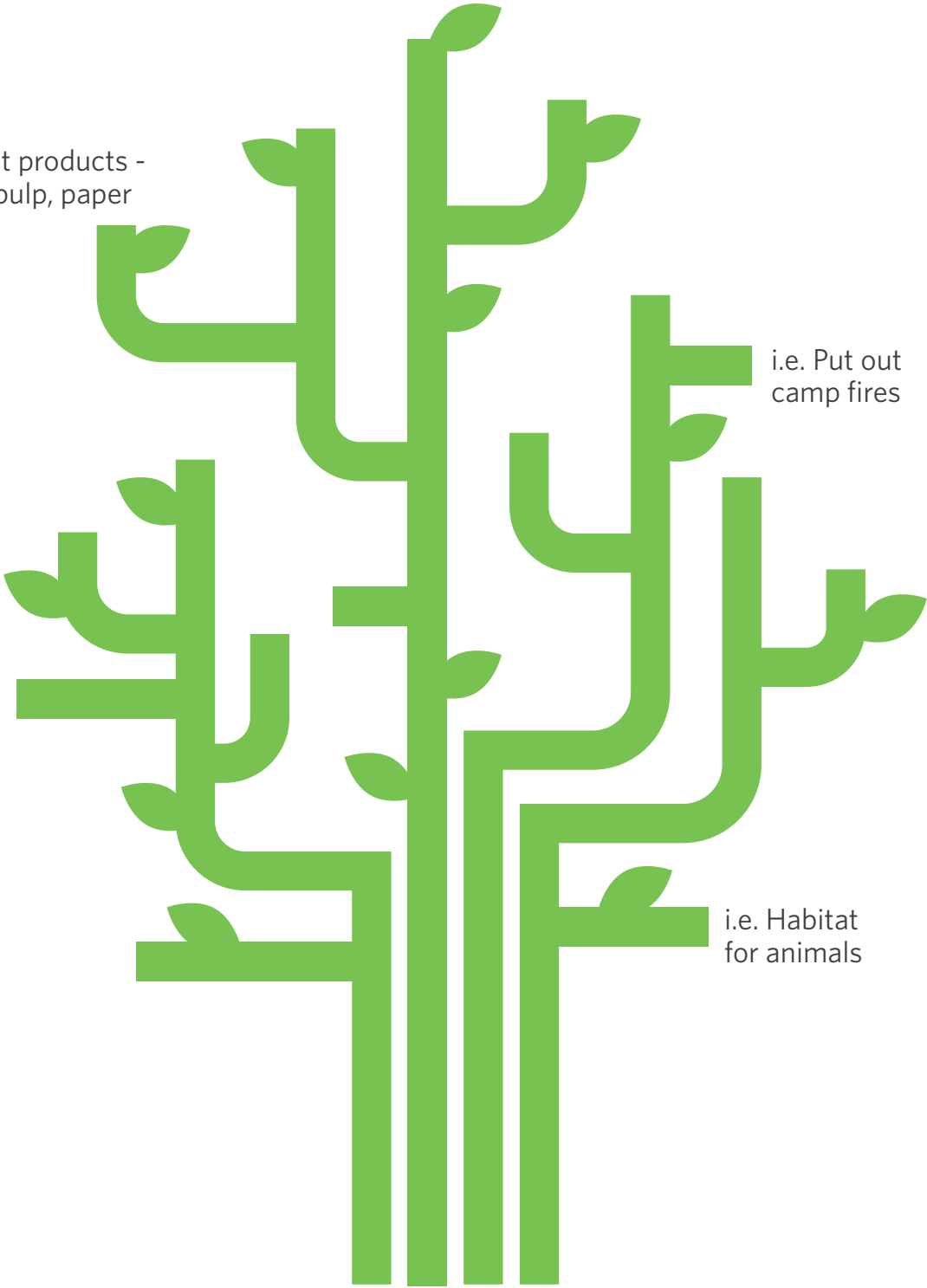
CALL TO REFLECTION

Being a forest steward means your actions are respectful of the forest environment. Think about how some of your actions might have a positive or negative effect on a forest. What do you do to respect the forest?

Activity 2 - Mindfulness Matters

Tree mind-map template

i.e. Forest products -
lumber, pulp, paper



i.e. Put out
camp fires

i.e. Habitat
for animals

Video Part 2: Human Values of the Forest



Activity 3 - Six Trees of Separation

Forests support Alberta's 3rd largest industry and careers related to the forest are vast and wide ranging. Lets explore some unique jobs that are linked to forests and discover if there is be a career option for you in the forest industry.

1. Use the '6 trees of separation' cards for this activity and provide each student with a different career card; 1 card will be 'forest'.
2. Students hold the cards outward to clearly display their career.
3. Students walk around the classroom and introduce themselves to 2 (only 2!) other students they think their career would be connected to.
4. Once introductions have finished, have everyone sit down holding their cards.
5. Ask the student with the 'forest' card to stand up at the front of the room.
6. Then have the students who introduced themselves to the 'forest' stand up and share their career titles.
7. And the students who were connected to the above mentioned careers also stand up and share.
8. Continue until everyone in the class is standing.

There should be *6 or less degrees of separation* between the forest and the last person standing. Emphasize that the theory of 6 degrees of separation shows us how connected we are. If we are exploring opportunities in the forest industry, there are many direct and indirect careers connected to this important renewable resource.



CALL TO ACTION

Request *Inside Education and Work Wild's Tools of the Trade* forest education kit to get hands-on experience with actual forestry tools. Take them out into your schoolyard and see how much you enjoy working in the forest!

Visit: **www.insideeducation.ca** to request the kit and **www.workwild.ca** to learn more about forest careers.

6 Trees of Separation: Forest Career Cards

Forest	Timber Cruiser	Office Worker	Oil and Gas Worker	Parks Interpreter
Mountain Pine Beetle Scientist	Wildlife Biologist	Pulp and Paper mill Worker	Hydrologist	Printing Shop Owner
Trapper	Equipment Operator	Integrated Resource Management Worker	Office paper Distributor	Marketing Executive
Tree Harvest Foreman	Forest Educator	Forestry Engineering Technicians	Workplace Safety Specialist	Cabinet Maker
Medical Officer	Elected Official	Police Officer	Tree Planter	Conservation Officer
Forest Firefighter	Economic Development Worker	Denim Wood Artist	Government Land Use Policy Maker	Human Resources Administrator

Activity 4 - Forests of our Future

"In every deliberation, we must consider the impact on the seventh generation... even if it requires having skin as thick as the bark of a pine."

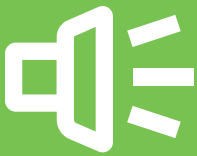
- The Constitution of the Iroquois Nations: The Great Binding Law

The *seventh generation* of thought is a belief that takes into account what impacts our current actions will have on future generations. Similar to the practice of **sustainability** which refers to: *meeting the needs of the present without compromising the ability of future generations to meet their needs.*

Be thoughtful about sustainable practices and *Take a Stand* on some issues surrounding the future of our forests.

CALL TO ACTION:

Consider a local issue that you've read or heard about in the news and think about it from multiple perspectives. Reflect on your own perspective and consider where it comes from before making a final decision about how you feel.



Take a Stand Activity

1. Create an invisible spectrum by running an imaginary line through the classroom, designate one side of the line 'strongly agree' and the other side 'strongly disagree'.
2. Use the Take a Stand statements below to see where class beliefs lie on various forest issues. Ask students to share their position.
3. Fold the spectrum in half so the students who strongly agree with a statement talk with the students that strongly disagree to share their personal point of view.
4. Discuss as a whole class and decide if you were taking into consideration sustainability and future generations.

Statements:

- ATV's should be allowed anywhere in Alberta.
- Logging in Provincial Parks should be allowed.
- All forest fires should be extinguished immediately.
- It is possible for all forest users to work together to make decisions on how to use the forest in a responsible way.
- Forestry and petroleum companies should work together to minimize the impact on the land.

Video Part 3: Land-Use Planning



Activity 5 - A Piece of the Land

Students will take on the role of land managers by considering the needs of multiple stakeholders of our forests. The activity requires collaboration, discussion and evaluation as they explore the importance of sustainable development; being mindful of ecosystem needs and the plants and animals that call our forests home.

The grid map on the following page represents 49 hectares of forested land (1 hectare = 1 square on the map). Each of the following stakeholders have requested to lease some of this forest. Your task is to divide the land as reasonably as possible. Each stakeholder must be represented on the final plan, but they can be allocated more or less than their requested lease. Sketch your land use plan on the grid below using coloured pencils and create a legend to define each stakeholders area. Be prepared to justify your plan!


Forest products company	15 hectares
(7) Owners of summer cabins (1 hectare each)	7 hectares
Private campground developer	5 hectares
Mining company	10 hectares
General store and service station owner	1 hectare
Railway	2 hectares (must be given)
Ski resort owner	15 hectares
Ranch operator	5 hectares
Conservation Society	As much as possible for animal habitat
River	Crosses from one side to the other

After completing your land use plan consider the following questions:

Where would the following species live?

1. Woodland caribou (require long stretches of uninterrupted, old growth forest)
2. Wood frog (require wetland areas like bogs and fens to survive)
3. Pine marten (require patches of uninterrupted old forest)

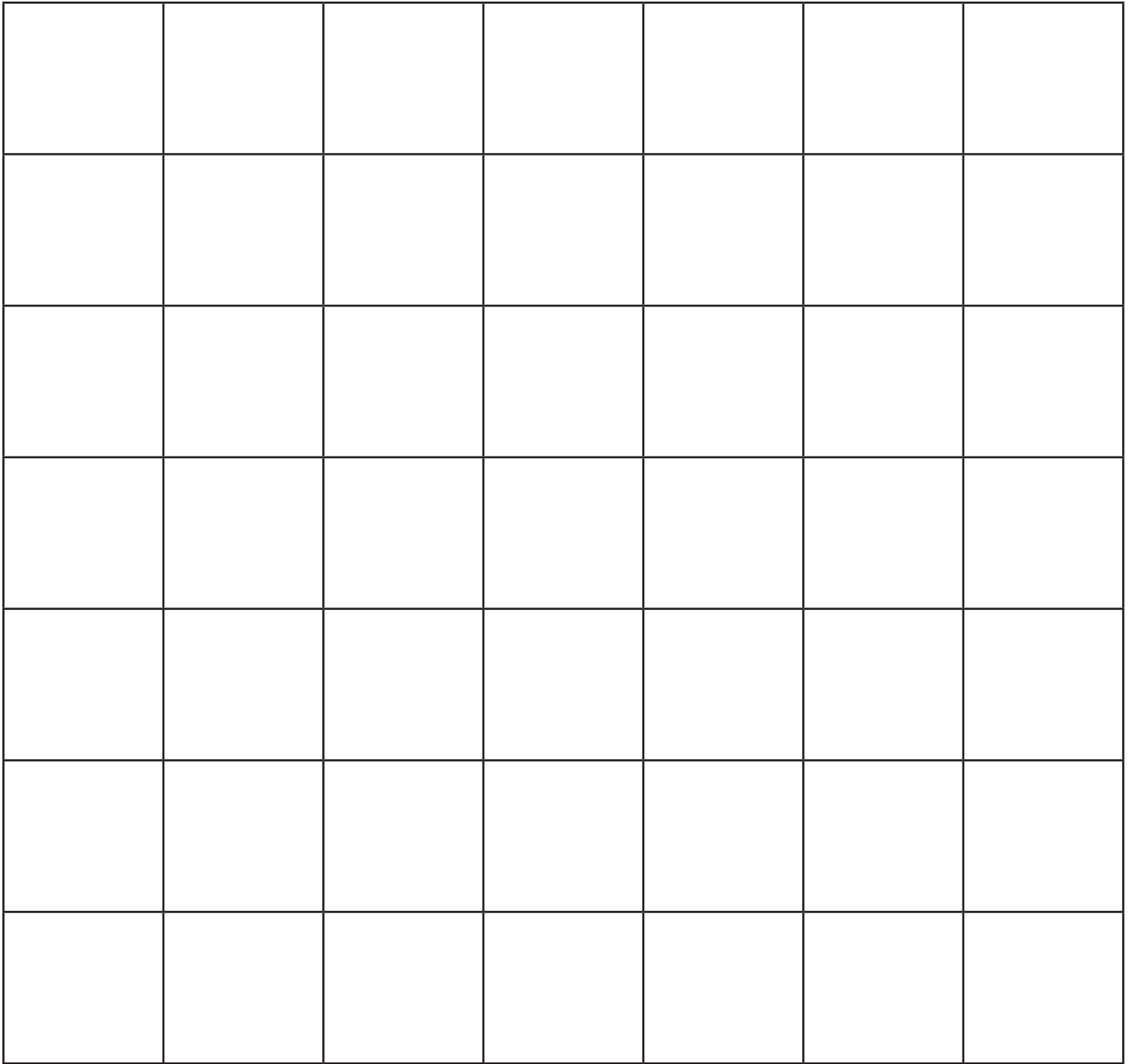
Which stakeholders had to compromise? How would you explain your decision to them?



CALL TO REFLECTION:
 Download *Inside Education's* Between the Stands poster (*natural forest panel* and *managed forest panel*) to get a closer look at how our actions change the forest. (*The PDF poster can be displayed on your SmartBoard.*) Consider how a well-managed forest, where multiple users work together can have a positive impact on the forest and community as a whole.

A Piece of the Land Map

Each square represents 1 hectare.



Legend

Activity 6 - Forest Handprint

Calculating our ecological footprint in the forest measures what we *take* from the ecosystem, or the imprint we leave on it; but our *ecological handprint* measures what we *give* to the forest, or how we benefit the ecosystem.

We know we can plant trees as a means of having a positive forest handprint, but what about the forest products we use everyday? Do you recycle all of your paper waste? Have you thought about making your school paper-free? Create an *ecological handprint* campaign that showcases an innovative way to use forest products or adopts a plan to reduce, reuse, recycle and rethink how we interact with our forests.

Here are some project ideas to help you get started:

- Hold a wood furniture remodelling event. With a few tools and a little handy work, you can fix up or repurpose wooden furniture that can be enjoyed for years to come.
- Make Christmas wrapping paper from old newsprint. Or see how many decorations you can create using only recycled paper; you may surprise yourself.
- Try bringing a waste free lunch to school; pack food in reusable containers instead of bringing individually wrapped items.
- Upcycle wood and paper products by taking 'waste' materials and making them into something new.



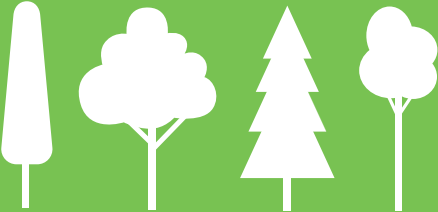
CALL TO ACTION:

Get involved with a citizen science project like PlantWatch

[www.plantwatch.](http://www.plantwatch.naturealberta.ca)

naturealberta.ca which involves students in making observations that contribute to real world climate change data.

Video Part 4: People and Products



Activity 7 - The Value of Forests

The forest industry is a vital part of Alberta's and Canada's economy. We all know money doesn't grow on trees and healthy forests are important for many reasons. Consider the following questions on how we place 'value' on trees:

- Do trees give us more than can be counted in dollars and cents? What factors would you consider for determining the value of a tree?
- What about all the products made from trees? Do we put a different value on the tree based on its products?
- Do different stakeholders value the forest in different ways? (Wildlife, Recreation, Forestry, Oil and Gas, Aboriginal peoples, Researchers & Conservation groups)

Get inspired! Create a visual representation to show how you personally value the forest. This could take the form of a(n)... Advertisement, Album cover, Brochure, Collage, Comic strip, Crossword puzzle, Merit badges, Recipes, Scrapbook, Stamps or Storyboard.



CALL TO REFLECTION:

In the video, the narrators tell us that co-generation is an important part of our new forest economy when it comes to looking at trees for energy production. The forest industry is looking at the value of the whole tree and is trying to eliminate any waste. Do some research on **co-generation** and discuss if you think it's an innovative way to 'value' our trees.

Activity 8 - Working Wild

Have you ever thought about working in a career connected to the forest? There are so many opportunities, the possibilities are almost endless. So how can you find where you fit best? If you want to work wild, get started by taking the Let's Find Your Forestry Career quiz at www.workwild.ca!

Have a group discussion to share your career suggestions. Who else had a recommendation similar to yours?

After considering the career options, research and write an i-search paper on the wild career that stood out most to you. Find out if this is a future job you want to pursue. You may discover you have a bright future in forestry!

An i-search paper is a personal research paper about a topic that is important to the writer. It is less formal than a traditional research paper; it tells the story of the writer's personal search for information, as well as what the writer learned about the topic.



CALL TO ACTION:

Contact a local organization in your community that offers hands-on experiences in forest careers like *Woodland Operations Learning Foundation (WOLF)*. You may even be able to take part in a *forestry simulator training session*. Or think about having someone knowledgeable about forest careers come into your classroom to present on the future of forestry and what it means to really Work Wild!

www.workwild.ca

Glossary

Video Part 1:

Photosynthesis - a process performed by plants which converts light energy from the sun into the plants personal energy.

Carbon Sink - a natural or artificial area that accumulates and stores some carbon containing compounds for a specific period of time.

Video Part 2:

Biomass - biotic or living materials usually in the form of plants that can be used as an energy source.

Renewable Resource - a natural resource; something we find in nature which we use to meet our needs that can replenish or replace itself within our lifetime.

Video Part 3:

Forest Management Plan - the details of when, where and how trees on Crown land in Alberta are harvested and sustainably managed. Usually developed by industry to be approved by the government with input from the public.

Sustainability - meeting the needs of the present without compromising the ability of future generations in meeting their needs.

Video Part 4:

Biofuel - energy used in the form of fuel made from living organisms.

Co-generation - also called combined heat and power is the simultaneous production of electricity and heat.

Digging Deeper

We hope you have enjoyed exploring Alberta's forests with us and have come away with an appreciation of what the forest means to you!

Additional Resources:

Inside Education offers a variety of no cost teaching tools and learning resources, as well as professional development programs and student education summits, all catered to learning more about our forests.

If you are interested in learning more about specific forestry career options in Alberta's Boreal Forest please link to our *Voices of the Boreal* video and discussion guide at www.insideeducation.ca/learning-resources

If you would like to explore the forests with some actual forestry equipment, request to have our *Tools of the Trade* kit in your classroom. Find it at www.insideeducation.ca/learning-resources

If you are a high school teacher that has some students eager to really find out about what it means to work in the Boreal Forest of Northern Alberta check out our *Alberta Boreal Careers* Project and apply to join us this year at www.insideeducation.ca/youth-education-summits

Or join us on a forest field trip at one of our demonstration sites. www.insideeducation.ca/classroom-field-programs

For more information on Inside Education, visit us at:

www.insideeducation.ca

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Like us on Facebook www.facebook.com/InsideEducation

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Additional Websites

Want to learn more? Here are just a few *Alberta*-specific forest-related websites:

Alberta Forest Products Association

www.albertaforestproducts.ca

Ann & Sandy Cross Conservation Area

www.crossconservation.org

Canadian Parks and Wilderness Society

www.cpaws-southernalberta.org/campaigns/education

Foothills Research Institute

www.foothillsri.ca

Lesser Slave Natural Resources Education Society

www.lsfes.org

NAIT Boreal Research Institute

www.nait.ca/70696.htm

University of Alberta Forestry

www.forestry.ualberta.ca

Woodlands Operations Learning Foundation (WOLF)

www.w-o-l-f.ca

WorkWild

www.workwild.ca