

*Public District School Board Writing Partnership*

# Course Profile **Geography of Canada**

Grade 9  
Academic

• *for teachers by teachers*

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## Unit 3: Humans in the Environment

**Time:** 25 hours

**Development Date:** August 12, 1999

### Unit Description

Students develop research skills as they explore the relationship between humans and their environment with a focus on the interaction of human and natural systems. Students use case studies and analysis of systems management to investigate issues related to natural resources. Building on the concept of ecological footprint the culminating activity brings the global concerns related to human and environmental interaction into a local and personal focus.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Global Connections, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.03B, SSV.04B, SSV.05B, HEV.01D, HEV.02D, HEV.03B, HEV.04D, GCV.03B, UMV.01B, UMV.02B, MIV.01B, MIV.02B, MIV.03D.

**Specific Expectations:** SS1.03B, SS1.04B, SS3.01D, SS3.04D, HE1.01B, HE1.02B, HE1.03B, HE1.04B, HE2.01D, HE2.02D, HE2.03D, HE2.04D, HE2.05B, HE3.01D, HE3.02D, HE3.03D, GC2.01D, GC3.03D, UM1.02B, UM2.01B, UM2.02B, UM2.03B, UM3.03D, MI1.01B, MI1.02B, MI2.01D, MI2.02B, MI2.03D, MI2.04B, MI2.06B, MI2.07B, MI2.08B, MI2.10D, MI2.11B, MI2.14B, MI3.01B, MI3.02D, MI3.04D.

### Activity Titles (Time + Sequence)

Activity 1	Valuing the Environment	60 minutes
Activity 2	Determining Our Ecological Footprint	90 minutes
Activity 3	Exploring Water Management	210 minutes
Activity 4	Making a Presentation on an Energy Source	240 minutes
Activity 5	Researching Automobiles and Alternatives	120 minutes
Activity 6	Investigating Urbanization and Loss of Agricultural Land	240 minutes
Activity 7	Creating a Bulletin Board on Waste Management	180 minutes
Activity 8	Examining Resource Use Through Case Studies	180 minutes
Activity 9	Developing an Environmental Futures Tree	180 minutes

### Prior Knowledge Required

This unit builds on concepts and skills developed in the elementary curriculum and throughout the first two units of this course. The strands, from Grade 7 Geography, of geographic inquiry, patterns in physical geography and natural resources provide important prior learning. Also important is the Earth and Space Science Strand from the Science and Technology curriculum, especially the expectations for Grade 8 which address Water Systems.

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## Unit Planning Notes

- Review information on waste management, ecological footprint and carrying capacity.
- Review the activities prior to detailed lesson planning, as some activities require completion of tasks prior to class. Consider modifications to the activities appropriate to your class, your facilities, and your community.
- Plan to introduce the culminating activity early in the unit, so students are aware of the focus for their studies.
- Plan to collect samples of student work during the unit that demonstrate achievement at different levels for use in the future.
- Teachers ensure:
  - appropriate bookings of technology facilities;
  - an adequate supply of textual and graphic resources on ecological footprints, waste management, water management, common and alternative energy sources, information related to the resource and energy costs of transportation, loss of agricultural land in Ontario and materials related to the case studies as well as information on local development;
  - preparation of materials for activities (e.g., chart paper, graph paper, tracing paper);
  - arrangements and accommodations for field study and field trip.

## Teaching/Learning Strategies

Student learning takes place in this unit through involvement in a variety of the following:

- Socratic lessons;
- brainstorming;
- concept web development;
- map and graph construction and analysis;
- multimedia production and presentation;
- simulation and role playing;
- co-operative learning;
- oral and visual presentation;
- research of secondary sources.

While many of these activities can be done in pairs and groups, they can also be carried out as individual activities.

## Assessment/Evaluation

During this unit checklists and rating scales, often involving self- and peer-assessment, are used to provide frequent feedback. This provides opportunities for students to set individual goals and improve their learning. Students need guidance from teachers to carry this out. Some assessments are also used to provide data on learning skills, which are reported separately from achievement of expectations on the report card, but are critical for student success.

More complex tasks are assessed using rubrics (some rubrics are included in the appendix as models, and demonstrate connections between their criteria and the categories in the achievement charts). Share rubrics with students beforehand and encourage student input into their creation. Give students the opportunity to view exemplary student work to support improving student learning.

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The learning activities are designed to meet a cluster of expectations, and the variety of assessment tools used to assess the learning tasks allow for students to demonstrate their achievement of the expectations at all levels and in all categories of the achievement charts. While self- and peer-assessment of individual and group activities are used for formative assessment, teacher-assessment of individual student work is used for summative assessment and evaluation.

## Resources

In addition to the listings in the Resources section of Phase I, the following resources are useful for this unit:

*Canada and the World Backgrounder: Our Threatened Planet.* R/L Taylor Publishing Consultants Limited.

*Imprints: Developing Canada's Resources.* Prentice Hall Ginn Canada. ISBN 0-13-240011-1

Wackernagel and Rees. *Our Ecological Footprint: Reducing Human Impact on the Earth.* New Society Publishers. ISBN 1-55092-251-3

Yamada, Karen. *Ecoquest: Reducing Our Ecological Footprint.* Toronto: Lever-Pond's, 1996. ISBN 0-9698878-3-3

The approved textbooks for this course are also useful for this unit, and are referred to in many of the activities.

Cartwright, F., G. Birchall, and G. Pierce. *Contact Canada 3rd Edition.* Oxford University Press Canada, 1999. ISBN 19-5414-896

Clark, B.W. and J.K. Wallace. *Making Connections: Canada's Geography.* Prentice Hall Ginn, 1999. ISBN 0-7702-6633-9

Draper, G. and W. Andrew. *Perspectives: Canadian Geography.* Irwin Publishing, 1999. ISBN 0-7725-2757-1

Wright, I.A., L.A. Swatridge, W. Hildebrand, C.A. Oliver, and G.D. Pyzer. *Canada: Exploring New Directions.* Fitzhenry & Whiteside, 1999. ISBN 1-55041-377-5

Resources useful for specific activities are listed under the Resources heading for each activity.

## Activity 1: Valuing the Environment

**Time:** 60 minutes

### Description

Students brainstorm the topic "Elements of the Environment". Students draw from their previous knowledge of what makes up the environment and then determine what value each of these elements has in the world. Students then create a web to identify the interconnections between these elements. Students are asked to generate their own definition of the concept of our ecological footprint, so they may realize the impact that their way of life has on the environmental elements.

### Strand(s) and Expectations

**Strand(s):** Human-Environment Interactions

**Overall Expectations:** HEV.01D, HEV.03B.

**Specific Expectations:** HE1.01B, HE2.01D.

### Planning Notes

- Prepare materials for brainstorming activity.

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### Prior Knowledge Required

Students draw upon prior learning in Grade 7 and 8 in which they demonstrated an understanding of geographic inquiry and the different methods in which to communicate geographic information, the ability to identify factors that affect the use and value of natural resources, and an understanding of how human activity affects the environment.

### Teaching/Learning Strategies

1. Individually, students generate a list of the different elements of the environment, writing each element on a separate post-it note. In groups, students each post their elements on a piece of chart paper and then move them into identifiable categories. The students share the elements they have agreed on with the rest of the class. They may add categories to their chart once they have heard ideas from the other groups.
2. In groups students then place values on each of the elements on their chart paper to identify why they are important (e.g., Forests - valued as a natural resource, a place for wildlife, a source of oxygen).
3. Each group then posts their chart paper, reporting on one of their elements.
4. The teacher then summarizes and uses the student charts to generate a web showing the interconnections.
5. At this point, the teacher identifies how an ecological footprint can be used as a way for students to consider the impact that their way of life has on the different elements of the environment. Students create their own definition of “my ecological footprint”. The teacher has students share definitions in order to reinforce the concept and provide a transition to the next activity.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Observation	diagnostic	teacher	Group Charts

### Accommodations

- Work with a peer/buddy or scribe.
- Use the textbooks (*Making Connections* and *Perspectives*) to generate ideas.
- Provide expectations in written form.

### Resources

Textbooks

### Activity 2: Determining Our Ecological Footprint

**Time:** 90 minutes

### Description

Students develop the concept of ecological footprint through discussing renewable and non-renewable resources, carrying out a one-day inventory of their personal behaviours and habits (their ecological footprint), and identifying how they affect resource depletion and resource sustainability. Individual results become part of a class set of data from which they can determine how they can work towards reducing their ecological footprint.

### Strand(s) and Expectations

**Strand(s):** Human-Environment Interactions, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** HEV.01D, HEV.02D, UMV.02B, MIV.02B, MIV.03D.

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**Specific Expectations:** HE1.01B, HE1.02B, HE2.05B, UM2.02B, MI1.02B, MI2.03D, MI2.04B, MI2.10D.

### Planning Notes

- Ensure chart paper, markers, and graph paper are available.

### Prior Knowledge Required

Students need to draw upon prior learning in Grade 7 and 8 to focus their inquiry to the theme of environment; gather, process, and communicate geographic information through graphing and written skills, demonstrate an understanding of how human activity affects people and the environment.

### Teaching/Learning Strategies

1. With a partner, students create a list of classroom objects and identify those that are *not* made from natural resources. They quickly recognize that all items are made from natural resources. The teacher can create a chart to identify the different resources used in making the various items.
2. Students develop the concept of a renewable versus a non-renewable resource by creating definitions in their notebook. Then students write a brief paragraph to outline the impact that their way of life and consumption has on resource depletion and sustainability. They can share their paragraphs with the class. (This also serves as a way of predicting their consumption patterns before they complete the inventory activity.)
3. Students keep a one-day inventory (could extend the inventory up to 7 days), of their personal behaviours according to the five ecological footprint areas: water, food, garbage, energy use, and transportation (see Appendix 3.2.1 for sample inventory). The teacher gathers all of the data from the students
4. Once the data is collected for each area, the teacher divides the class into five groups, with each group assigned to one set of class data.
5. Each group creates a graph of their data (suggestions are bar graphs or circle graphs). The graph can be done on chart paper or on graph paper to create a visual analysis.
6. Each group then examines their results and determines ways in which they could reduce their consumption or practices (e.g., Food - eat more fruits and vegetables to decrease the amount of packaging, or Garbage - recycle more items) and summarizes their conclusions on chart paper.
7. Each group briefly presents their results to the class and identifies ways to work towards resource sustainability in their designated area.
8. The teacher posts the graphs and the summaries in the classroom and has each student write a response to summarize the class results, focussed on working towards resource sustainability and decreasing the impact of our ecological footprint.
9. The teacher explains that the rest of the activities in the unit explore the components of the ecological footprint, leading up to the culminating activity in which students are able to identify personal actions to reduce their ecological footprints.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher-generated)	formative	teacher	Graph
Rating scale (teacher-generated)	formative	student	Group Participation (learning skills)
Checklist (teacher-generated)	formative	teacher	Written Summary of Class Results

### Accommodations

- Extend the activity by increasing the inventory up to seven days in length and have the students graph and analyse their own individual results.

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- Encourage students to get help from a parent or guardian to complete the inventory or work with a partner to complete the summary of the class results.
  - As an extension, expand the inventory to itemize all foods and their sources, in order to relate food consumption to the energy involved in production and transportation.

## Resources

Textbooks

## Activity 3: Exploring Water Management

**Time:** 210 minutes

### Description

In this activity, students investigate water consumption and management in Canada and in their local region. First they review their own use and examine statistics on water consumption. Then they carry out an exercise to simulate the management of a watershed using dams and reservoirs. This is followed by a field study of their local watershed.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.03B, SSV.05B, UMV01B, UMV.02B, HEV.01D, HEV.02D, HEV.03D, HEV.04D, MIV.01B, MIV.02B, MIV.03D.

**Specific Expectations:** SS1.03B, SS1.04B, SS3.01D, SS3.04D, HE1.01B, HE1.02B, HE2.01D, HE2.04D, HE2.05B, UM1.02B, UM2.01B, UM2.02B, UM2.03B, UM3.03D, MI1.02B, MI2.03D, MI2.04B, MI2.08B, MI3.01B, MI3.04D.

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## Planning Notes

- Visit your local Public Works Department and obtain a guide to water efficiency - this provides local data on consumption.
- Contact the local Conservation Authority for information on local water management issues and floodplain controls.
- Prepare the equipment required for the water management simulation as outlined in Appendix 3.3.1.
- Refer to the resources listed for a more detailed explanation of this experiment.
- Using a topographic map of your region, prepare this Watershed Field Study by locating certain water resource sites. The Public Works department or local Conservation Authority may be of great help.
- Be sure to visit the sites and construct a valid and informative worksheet of questions.
- Provide a local map so that the students can follow the route precisely.
- On the worksheet, include questions such as: list the names of lakes and rivers that we pass; what kinds of businesses do you see along route and how many of these businesses depend on water activities; stop at a *flood plain* and discuss the effects of a rise in water levels; stop at a *hydro electric installation* and discuss who operates the dam, what kind of resources does it create, what has been lost or changed by building this dam; stop at a *wetland* and ask in what way is a wetland like a sponge, what role do wetlands play in the quantity and the quality of water; stop at a *wild life preserve* and discuss and note the lack of development and the amount of management visible; stop at a *natural spring of groundwater* and discuss how this water might become contaminated by nearby sources; stop at a *trout spawning shoal* and observe how a trout ladder works and ask whether this type of technique is worthwhile; stop at a *watershed divide* and ask if the students can envision the natural flow of water; stop at a *detention pond* and discuss why these are required now that infrastructure has been built.
- Depending on your area, you may also include such sites as reservoirs, canals, irrigation streams, ditches constructed for heavy rain, water treatment plants, harbours, and the mouth of rivers as they enter a lake (perhaps testing temperature, acidity, or water quality).
- Choose a nice setting (beside a lake or river) to eat lunch, allowing students to appreciate the aesthetic value of water resources.
- If cost for the field trip is a concern, try visiting some local water management sites within walking distance. Most creeks and streams have regulating dams, and storm ditches are located beside most roads to catch a surplus of precipitation.

## Prior Knowledge Required

Students draw on their understanding of the themes that geographers use to organize their inquiries such as location, environment, region, and interaction as well as locate relevant information from a variety of primary sources, of how human activity affects the environment and how technology has affected natural resources, and of how people use renewable, non-renewable, and flow resources in a variety of ways to meet their needs. They also use their ability to communicate results through graphs and charts.

## Teaching/Learning Strategies

1. The teacher introduces the topic of water management using reference to the data collected as part of their personal inventory in Activity 2. Students gather data for their household consumption of water and then compare their use of water. The activity in *Making Connections* (p. 442) may be used as a guide.
  - a. Construct a graph with Daily Water Use (L) on the vertical axis and Family Size (people) on the horizontal axis. Each student in the group plots the data.
  - b. What is the relationship between the number of people in a household and the amount of water used?
  - c. Determine per person consumption by dividing the total water consumption of each household by the number of people in that household
  - d. What are some of the similarities and differences between students and their water uses?
  - e. What things could you and your family do to reduce the amount of water you use?

(Adapted from *Making Connections*, Prentice Hall Ginn)

2. The teacher discusses water consumption on a national level (reminding them that this is only personal use and does not include industrial, commercial, recreational or agricultural usage, which increases Canada's per capita use to over 950L!) using the following data:

Average Daily Household Water Use (per capita).			
United States	425L	France	150L
Canada	350L	Germany	150L
United Kingdom	200L	Israel	135L
Sweden	200L		

3. The teacher discusses water consumption at a regional level, using local information, if possible, and asks students what the impact of this is. The following statistics are a sample of what can be obtained from a local guide to water efficiency in litres per person per day.

Pickering	950	Oshawa	964	Newcastle	936
Ajax	968	Orono	609	Bowmanville	732
Whitby	973	Uxbridge	809	Courtice	736

4. Students create a bar graph using these or local statistics, and suggest reasons why their regional statistics are high or low. The teacher provides students with the following information: most of the water in southern Ontario is used for domestic purposes (61.8%); other uses are commercial (24.5%), industrial (11.1%), and institutional (2.6%). Almost 50% of our water is used during the summer months putting stress on municipal water supply and treatment systems.
5. The teacher reviews the hydrological cycle and assigns homework to define the following terms: run-off, groundwater, water-table, flood plain, and wetlands in preparation for the water management simulation.
6. The teacher introduces the simulation exercise by asking the students why it is important to learn about water management in a province that contains ½ of Canada's abundant fresh water supply.
7. Students brainstorm the advantages and disadvantages of dams and reservoirs (one of the most common means of managing water resources) by considering both large scale (Hoover Dam) and local scale (regulating dams on your local creek) examples.

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8. The teacher reviews the importance of water supply to a community and discusses sources of water in Ontario communities, including the impact of settlements on flood plains, with local examples if possible.
  9. The teacher explains that the goal of this problem-solving simulation exercise is to prevent the river and lakes from flooding the town.
  10. The teacher explains the set-up as follows:

Attach each funnel to a clamp so that the large one is on top (referred to as funnel #1) and the small one is second from the bottom (referred to as funnel #4). All funnels should be over top of each other, equally spaced, and the plastic container at the very bottom to catch the water. The container top with a hole in it will sit on funnel #5 (this is the flood plain) and the houses are built on this flood plain. Funnel #1 represents nature, the input of water into a watershed system. This abundance of water may be due to a heavy rain, or snow melt. This volume of water demands the placement of dams (stoppers) in all three lakes (funnels) to prevent the river and town (bottom funnel) from flooding. Funnel #5 represents a river moving through your town - most settlement are situated on a flood plain (because of the good soil) and beside a river (because of all the uses discussed in the earlier class). Funnels #2, #3, and #4 represent lakes and smaller bodies of water illustrating the water storage capacity. One of the funnels should be smaller to show that not all lakes have the same storage capacity and that the design of a flow management system is dictated by the physical variables of the watershed. The stoppers represent dams, because the rate of flow across a dam can be controlled to a certain degree. Since each stopper has a different size hole in it, a certain amount of water flows through. Just as a dam operator can control how quickly or slowly a water body drains, the students have control over the drainage of the funnels by choosing from the five available stoppers. The students discover that the only stopper order that prevents all flooding is as follows: 11 mm, 7.2 mm, and then 5.5 mm.
  11. The students use the same, designated volume of water in the top funnel during each trial. (Use a fingertip to plug the top funnel spout to allow filling the funnel to the correct level. Remove the finger abruptly and cleanly to begin every water trial and observe the flow of water.) When the lakes (funnels) overflow, the town below is washed out, and a new management system must be devised. The teacher encourages the students to approach the task trying to use the least number of stoppers to prevent the flooding, even though the students will realize they need all three dams to properly manage the river. Students add and arrange stoppers in the three lakes until all flooding is prevented.
  12. Students complete a reflection paper on the exercise, including discussion about costs and benefits of dams and alternatives to control flooding.
  13. Students prepare for the field study by locating the route and sites on a topographic map on the day prior to the trip. The teacher explains the purpose and process of each human-made site and the importance of each natural site.
  14. The teacher distributes the worksheet that the students complete during their field study. The teacher may begin by asking what a watershed is, which *national watershed* we live in, and which *regional watershed* we live in (usually each one has a name). Students locate distinct watershed boundaries (high ridges of land) on the map and discuss the direction of water flow.
  15. The teacher leads the field trip and the students complete the field trip worksheet.
  16. The teacher facilitates follow up discussion at the start of the next class to tie in some of the key concepts and management techniques examined.

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## Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher-generated)	formative	peer	Group Water Use Graph
Checklist (teacher-generated)	formative	teacher	Local Consumption Graph and Questions
Rating Scale (teacher-generated)	formative	self or peer	Management Experiment
Rubric (teacher-generated)	formative	teacher	Reflection Paper
Checklist (teacher-generated)	formative	teacher	Watershed Field Study Worksheet

## Accommodations

- Draw the outline for Water Use vs. Family-Size graph
- Provide the following extension: The teacher tells the students that the sponges represent wetlands. They can insert the 7.2 mm stopper into funnel #4, moisten the sponges so that the surface tension of incoming water is broken allowing proper absorption, insert sponges (wetlands) into funnels #2 and #3 so that the spout is slightly stuffing into the sponge below and then gently pour the 2 cups of water into the top funnel. Ideally, the water flows through the simulator without causing the bottom funnel and flood plain to flood. The teacher can ask students to notice how the wetlands (sponges) swell to absorb the water, then slowly release the water over an extended period of time. Students can remove the sponges to simulate draining the wetlands for development of that area (golf course, shopping mall, subdivision) and then conduct another water trial. (The activity “Wetland Metaphors” from *Project WILD!* would be a valuable follow up exercise.)
- Provide students with a sketch of the water management set up, complete instructions, and a checklist.
- Structure the groups so there is a range of abilities.
- Work through the exercise step by step as a class.

## Resources

Textbooks

*The Green Teacher*, June-September 1996 (“Floods and Dams”, p.13)

Large scale maps of the field study route.

Topographic maps of the region.

*The Waterworks: A Water Management Simulation* produced by Leslie M. Frost Natural Resource Center.

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## Activity 4: Making a Presentation on an Energy Source

**Time:** 240 minutes

### Description

In this activity, students work in small co-operative groups to produce a model and deliver a presentation on an energy source.

### Strand(s) and Expectations

**Strands:** Geographic Foundations: Space and Systems, Human - Environment Interactions, Methods of Geographic Inquiry

**Overall Expectations:** SSV.04B, HEV.02D, MIV.01B, MIV.03D.

**Specific Expectations:** SSI.04B, HE1.02D, HE1.04B, HE2.03D, MI1.01B, MI1.02B, MI2.03D, MI2.08B, MI2.10D, MI2.13B, MI3.02D, MI3.04D.

### Planning Notes

- Consider doing the activity using multi-media software such as *Corel Presentations* or *Microsoft PowerPoint*. (If so, the teacher may wish to provide a template for all groups to follow.)
- Ensure a variety of resources on each energy source and available materials for student models.
- Make reservations of the library/resource centre/computer lab for research.
- Consider having a science and/or technology teacher come in to talk about the mechanics of electrical power generation or discuss connections with the Grade 9 Science curriculum (Electricity unit).
- Consider having a representative from a local utilities company or power plant come in to talk to the class and/or help assess the presentations.
- Consider taking students on a tour of a local power-generating station.

### Prior Knowledge Required

From the elementary curriculum in Science and Technology students draw on their general understanding of energy and its sources, measurement of energy, and energy production.

### Teaching/Learning Strategies

1. Referring to students' personal inventories from Activity 2, and the items for which they use energy, the teacher introduces this project as a way of finding out more about the energy systems in use. The teacher divides the class into groups of four students and assigns each group one of the following energy sources: biomass, coal, energy from waste, geothermal, hydroelectricity, hydrogen, natural gas, nuclear fission, nuclear fusion, ocean thermal, oil, photovoltaic cells (solar), tidal, wind.

2. The teacher assigns the following roles to students in each group:

Role	Responsibility
Researcher	Researching: <ul style="list-style-type: none"> <li>• the energy production process of the assigned source and providing this information to the designer/engineer;</li> <li>• the distribution of the power plants that use the source;</li> <li>• data illustrating the percentage of electrical power in Ontario, Canada, North America and/or the World that is generated from the source and providing this information to the cartographer;</li> <li>• the pre-requisite conditions necessary for the successful generation of power using the source;</li> <li>• the benefits/disadvantages of using the energy source to generate power;</li> <li>• information on a Megaproject related to the energy source and providing this information to the writer.</li> </ul>
Writer	Use the information and data provided by the Researcher to write a brief report outlining: <ul style="list-style-type: none"> <li>• the energy production process of the source;</li> <li>• pre-requisite conditions and benefits/disadvantages of the energy source;</li> <li>• the feasibility of generating power in this manner in the local region;</li> <li>• an overview of a Megaproject related to the energy source.</li> </ul> Incorporate the maps and graphs provided by the cartographer into the report. Produce visuals (e.g., a chart or a poster, or slides if multimedia software is used) for use in the group presentation that highlights important information from the report.
Cartographer	Use the information and data provided by the Researcher to: <ul style="list-style-type: none"> <li>• produce maps of Ontario, Canada, North America, and/or the World showing the distribution of the power plants that use the assigned energy source;</li> <li>• produce a series of graphs illustrating the percentage of electrical power in Ontario, Canada, North America, and/or the World that is generated from this source and provide these maps and graphs to the Writer.</li> </ul>
Designer and Engineer	Use the information and data provided by the Researcher to: <ul style="list-style-type: none"> <li>• construct a model that demonstrates the energy production process of the assigned source.</li> </ul>

3. The teacher discusses the critical elements for successful co-operative group dynamics (e.g., individual accountability and positive interdependence). Though individual roles are assigned in this activity, students should be encouraged to assist fellow group members with their tasks. Under the guidance of the Writer, students develop a presentation to the class that:

- involves all group members;
- focusses on an illustration and discussion of the energy production process using the group's model;
- highlights important information in the group's report (i.e., maps/graphs, pre-requisite conditions, local feasibility, and benefits/disadvantages).

4. The teacher provides groups with resources related to their energy source and time in the resource center to use hard copy resources, electronic media, and/or the Internet for research.
5. The teacher provides students with available materials for their models and suggestions on sources for additional materials.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Self Peer Evaluation - Appendix A	formative	self and peer	Group Work
Presentation Evaluation Rubric - Appendix D	summative	teacher	Presentation
Report Evaluation Rubric (teacher-generated)	summative	teacher	Group Report
Rating Scale (teacher-generated)	summative	teacher	Model

### Resources

*Canada and the World Energy*. R/L Taylor Publishing Consultants Limited

*Canada and the World Background: Out Threatened Planet*. R/L Taylor Publishing Consultants Limited

*Human Activities and the Environment*. Statistics Canada, 1994. ISBN 0-660-15439-0

### Accommodations

- Arrange heterogeneous groupings of students according to learning style and give students the opportunity to select roles according to their strengths and interests.
- Provide templates or guides, including sequential steps, to students to assist them with their role.

## Activity 5: Researching Automobiles and Alternatives

**Time:** 120 minutes

### Description

In this activity students examine the use of the automobile and alternative methods for transporting people by considering the efficiency of various forms of transportation and discussing programs, incentives, and facilities that promote the increased usage of the more efficient modes. They research alternative fuel sources and complete tasks related to Ontario's Clean Drive program and Automobiles and the Environment. The investigation concludes with a discussion of the complexities involved in achieving sustainable development in the automotive industry.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human - Environment Interactions, Global Connections, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV .05B, HEV.01D, HEV.03B, HEV.04D, GCV.03B, UMV.02B, MIV.01B, MIV.03D.

**Specific Expectations:** SSI.04B, HE1.02B, HE2.02D, HE2.04D, HE2.05B, HE3.02D, GC2.01D, UM1.02B, UM2.02B, UM2.03B, MI1.01B, MI1.02B, MI2.03D, MI2.04B, MI2.08B, MI2.11D, MI2.14B.

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## Prior Knowledge Required

Students use their ability to interpret bar graphs and perform simple mathematical calculations, and draw on their understanding of transportation networks from Unit 2.

## Planning Notes

- Make appropriate reservations of the computer lab and Internet access or download contents of the Internet sites to prepare hard copies for students.
- Ensure materials for production of posters are available.

## Teaching/Learning Strategies

1. The teacher refers to the Unit 2 activity on moving goods and peoples and to the data collected in their personal inventory in Activity 2 to introduce the concepts of transporting people. The teacher uses the text, diagrams and graphs on p.108-109 of *Perspectives*, p.51-52 of *Canada and the World: An Atlas Resource 2nd Edition* or other suitable resources to extend the concept.
2. The teacher draws students attention to: Figure 6.4.f “Vehicle Ownership and transit ridership” and Figure 3.6.c “Comparing efficiency of methods of moving people” on p. 205 of *Perspectives* and Figure 3.6.b “Average energy used moving people per person per kilometer” on p.108, (alternative: “Energy efficiency: Average energy use per person per kilometer” graph on p.51 of *Canada and the World: An Atlas Resource 2nd Edition*), and proposes the following questions for discussion:
  - What is the most efficient way of moving people? What is the least efficient?
  - Compare other forms of transportation to the streetcar by calculating how many times less efficient each is in moving one person one kilometre (i.e., how many times the number of megajoules are required?)
  - Since the 1950s, what has been the trend involving the use of transit vs. the use of the automobile? Why is this trend is occurring? What impact will it have on humans and the environment?
  - From your knowledge, how are cars being improved to reduce the problems they create?
  - What areas in your local area experience traffic congestion? At what times of day is this congestion the worst? Where are all these people going?
  - What programs, incentives, facilities, etc. are you aware of in your local area or other areas of the province that are encouraging the use of carpooling and public transit?(Questions adapted from *Perspectives*, Irwin Publishing)
3. Students read the Case Study on Natural-gas powered vehicles on p.75 of *Perspectives* and complete Question 6 for homework: *Use your Resource Centre and the Internet to research an alternate source of fuel for automobiles, e.g., hydrogen fuel-cell, solar-or battery-powered cars. Write a “consumers’ report” on the chosen fuel.*
4. The teacher introduces the Environmental Impacts of Automobiles by sharing the following information with students:

*With the increases in automobile traffic, it has become apparent over the last 20 years that the automobile has many negative impacts on human health and the environment. The majority of these impacts are the result of tailpipe emissions from the combustion of gasoline or diesel fuel. The main pollutants from automobile emissions, for conventional gasoline and diesel engines, are: carbon dioxide, carbon monoxide, nitrogen oxides, hydrocarbons, suspended particulates and lead.*

5. Students visit the web sites related to Ontario's Drive Clean program and the Automobile and the Environment ([www.driveclean.com](http://www.driveclean.com)), follow the links shown below and complete the tasks for each section:

Link: Why " Drive Clean will make a difference

Question: How will Drive Clean help us and our environment?

Link: Back " Ontario's smog problem

Question: What is smog? What is it composed of? Where do these pollutants come from? How are they created? How does smog affect us?

Link: Back " Fine particles in our air " What are fine particles?

Question: What are fine particles composed of and where do they come from?

Link: Back " Why are we concerned about particles?

Question: What effects do fine particles have on materials and on us?

Link: Back " What are we doing?

Question: Summarize the four steps that Ontario has taken to improve air quality in our province.

(Optional) Link: Back " Back " Learn " Write a story

Question: *A Story About Our Future: Write a science fiction story about Ontario in the 2025, focussing on pollution. Has it been beaten? Or, does it continue to be a problem? Send us your original stories (about 500-750 words) and we'll post a selection on the Drive Clean web site.*

6. Students use the Energy Fact Sheet, originally published by the Energy Educators of Ontario in 1993, and now available at The Automobile and the Environment site [www.iclei.org/efacts/auto.htm](http://www.iclei.org/efacts/auto.htm) to complete the following chart, using the Environmental Impacts section of the page.

<b>Impacts of the Automobile Tailpipe Emissions</b>				
<b>Pollutant</b>	<b>Description</b>	<b>Creation</b>	<b>Environmental and Human Health Impacts</b>	<b>Other Significant Facts and Statistics</b>
carbon dioxide				
carbon monoxide				
nitrogen oxides				
hydrocarbons				
suspended particulates				
lead				
<b>Other Impacts of the Automobile Not Resulting from Tailpipe Emissions</b>				
<b>aspect</b>	<b>Description</b>			
manufacturing				
air conditioners				
agricultural land				
inner cities				
disposal sites				

7. Students use the information in the Reducing the Impacts section of the web page to create a poster that promotes *Options for Reducing the Environmental Impacts of the Automobile* using the template below:

Fuel efficient vehicles	Car pooling	Alternative fuel vehicles
	Logo and Slogan	
	Bicycling and Public Transit	

The teacher facilitates a gallery tour of the posters when completed.

8. The teacher concludes by leading a discussion on the complexity of the factors and interactions that need to be considered when an industry tries to bring production in line with sustainable development. (For information on this topic, refer to Figure 8.2.a on p 264 of *Perspectives*.)

### Assessment/Evaluation

Tool (all teacher-generated)	Purpose	Who	Activity
Observation	formative	teacher	Student Participation in Class Discussion
Checklist	formative	teacher	Completion of Questions and Chart for
Rating Scale	summative	teacher	Poster

### Resources

*Canada and the Environment: An Atlas Resource 2nd Edition*, pp 55-56.

*Perspectives*, pp 75, 108-110, 205, 256, 264 and 281.

[www.driveclean.com](http://www.driveclean.com)

[www.iclei.org/efacts/auto.htm](http://www.iclei.org/efacts/auto.htm)

### Accommodations

- Pair students for this activity.
- Provide a variety of articles with a range of reading levels.
- Provide opportunities for vocabulary referencing.
- As an extension have students do a comparison between Ontario's Drive Clean program and similar programs in British Columbia and several of the U.S. states, using information at sites linked to the Drive Clean site.

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## Activity 6: Investigating Urbanization and the Loss of Agricultural Land

Time: 240 minutes

### Description

This activity builds on the students' understanding of urban development and investigates how this development affects our agricultural resources. They recognize the shifting population from rural land to urban life and the problems that are associated with this migration. Students derive possible solutions to urban expansion and examine a case study on the Niagara Fruit Belt.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.03B, HEV.01D, HEV.02D, HEV.03B, HEV.04D, UMV.01B, UMV.02B, MIV.01B, MIV.02B, MIV.03D.

**Specific Expectations:** SS1.03B, SSI.04B, HE1.02B, HE2.01D, HE2.04D, UMI.02B, UM2.01B, UM2.02B, UM2.03B, MI1.02B, MI2.03D, MI2.04B, MI2.08B, MI2.01D, MI3.01B, MI3.04D.

### Prior Knowledge Required

Students draw on their understanding of the themes of place, environment, region, and movement; their ability to locate relevant information from aerial photographs and produce a wide variety of graphs, charts, and diagrams. In addition, students draw on their learning from Unit 2 to identify factors that influence people to move to another place (urban/rural migration).

### Planning Notes

- Investigate local development in your area (housing or commercial).
- Make sure students have access to graph paper, tracing paper, and calculators.
- Consider a field trip to the Niagara Fruit Belt.

### Teaching/Learning Strategies

1. The teacher refers to the food consumed section of their personal inventory in Activity 2, and discusses where our food comes from. The teacher then introduces the topic of urbanization by asking students about changes (e.g., building developments, closing of local industries) in their community, and about changes in nearby cities or rural areas using terms such as urban sprawl, urbanization, urban fringe and rural-urban migration. Students identify reasons for these trends, and problems that urban sprawl might be creating. Use the resource *Communities: Urban Canada* to define terms and provide national examples of urbanization.

2. The teacher provides information on classes of farmland in Canada (e.g., Prime farmland (class 1 & 2) accounts for 1% of Canada's soils. General farmland (class 3) accounts for only 9% - meaning 90% of Canada is infertile). (A good explanation of soil classes is in *Making Connections*, p. 265). The teacher then asks students why most towns and cities are on top of the best farmland in the country. Why is land in the urban fringe worth so much money? What problems occur if prime farmland is reduced significantly? Students construct an organizer to address these points:

What are the reasons for urbanization?	What are some of the problems a loss of farmland might cause?	Why is most of Canada's prime farmland adjacent to cities?

3. Students complete the following table and construct a divided bar graph illustrating the Changes in the Urban/Rural Composition of Canada's Population.

Year	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	1999
Urban %	20	25	32	37	45	49	54	55	60	69	76	76	77	78
Rural %	80	?	?	?	?	?	?	?	?	?	?	?	?	?

They then analyse the graph and answer the following questions:

- What has happened to the urban-rural composition of the population over the past 120 years?
  - Why are there proportionately less people living in rural areas and more in urban areas today?
  - What problems may be caused by large numbers of people moving from the rural to urban areas?
  - Will this trend continue until 100% of Canadians are living in urban areas? Why or why not?
4. The easiest way to stop the loss of farmland (but not always feasible) is to stop urban expansion through city bylaws and zoning. Students write a letter from the position of a farmer who wants to sell her land after 40 years of farming. The city wants to prevent the farmer from selling to a developer, who is offering a great deal of money for the acreage. The land represents her retirement savings, and not selling her land for the highest possible value may cause financial difficulties in years to come. The teacher may also use a simulation on farming the urban fringe found on page 102 of *Contact Canada*.
5. In *Contact Canada* (p. 102) there are data for the amount of converted land in each province (that is, the land that was agricultural and has been urbanized). Also, the average farm size in each province is listed. Students calculate the number of farms that were lost in Canada during the last twenty years and address question #28 on that same page. (See Appendix A if the textbook is not available.)
6. The students interpret aerial photographs of a site in Toronto - before urbanization (rural agricultural land) and after urbanization (vast amounts of infrastructure). In *Contact Canada* (p. 102), question #29 asks the student to prepare two land use maps of the area. Students use tracing paper to outline the major roadways and different colours to indicate the land uses. What land uses had consumed the farmland in the second photo? Which of these uses had consumed the largest area?  
(Adapted from *Contact Canada*, Oxford University Press)
7. The teacher introduces the Niagara Fruit Belt as a case study in urbanization with the following information: It produces 90 percent of the nation's grapes, 70% of its peaches and over 40% of its other tender tree fruits (source: *Contact Canada*, 2<sup>nd</sup> ed., Oxford University Press, pp. 98-102). What makes this area so productive is its combination of climate, physical features and soils. Students read page 202 in *Canada: Exploring New Directions*. What physical advantages does the Niagara Fruit Belt have that allow it to grow tender tree fruits? What advantages are there for the fruit growers in being located on a major expressway linking Hamilton and Toronto?

8. Using information from *Contact Canada* (p. 98-101) or other resources students conduct a case study on the Niagara Fruit Belt. Students locate the region on a map of southern Ontario as well as the major cities located along the belt and answer the following:
- List five factors that make the Niagara Fruit Belt such a “fruitful” region.
  - Where is the only other place in Canada that enjoys these physical advantages?
  - Why is fruit farming highly specialized?
  - How do farms save labour and transportation costs and what is the problem with this alternative?
  - What were some of the changes that the grape growers and wineries, together with the governments, made to meet the challenges of urbanization?
  - Examine the multiple line graph (figure 6.24). How can the sales of wine increase so dramatically, yet the production actually decreases?
  - Why are farmers being “forced” to sell their land to developers?
  - Do you think the government should offer financial support to Niagara Fruit farmers to ensure that the region is not lost to urbanization? Give reasons for your answer.
- (Adapted from *Contact Canada*, Oxford University Press)

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher generated)	formative	teacher	Organizer
Rating Scale (teacher generated)	formative	peer	Divided Bar Graph and Questions
Rubric (teacher generated)	formative	teacher	Position Paper
Quiz (teacher generated)	formative	teacher	Land-Use Maps from Aerial Photos
Checklist (teacher generated)	summative	teacher	Niagara Fruit Belt Case Study Questions

### Resources

*Communities: Urban Canada*

Textbooks

### Accommodations

- Create the organizer on the front board as a class.
- Draw the graph ahead of time so that the students only colour in the bars and answer the questions.
- Provide an example of a letter that might have come from a farmer looking to sell his property.
- Do the mathematical calculations as a class or in pairs.

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## Activity 7: Creating a Bulletin Board on Waste Management

**Time:** 180 minutes

### Description

This activity increases student awareness that waste matters - the more we throw out, the more resources we use, and the larger our ecological footprint. Students work together on a class project and create a bulletin board depicting materials thrown into the cafeteria garbage.

### Strand(s) and Expectations

**Strand(s):** Human-Environment Interactions, Methods of Geographic Inquiry

**Overall Expectations:** HEV.01D, HEV.04D, MIV.03D.

**Specific Expectations:** HE1.01B, HE1.02B, MI1.02B, MI2.03D, MI2.08B, MI3.01B.

### Planning Notes

- Make preparations for the optional field trip several weeks ahead of time.
- Contact the local waste management services to ask for any brochures/pamphlets on the facilities in their area - especially to find out what items are accepted by each facility as the list varies between municipalities. Also check with the school custodian and/or the board's facility services, as school boards often have separate waste management contracts with collection requirements different from the local municipality.
- Consider using Internet resources to assist student with their bulletin board display.

### Prior Knowledge Required

Students draw upon prior learning at the elementary level regarding recycling and waste reduction programs.

### Teaching/Learning Strategies

1. Students use their prior knowledge on waste management to complete the following hierarchy, organizing the it in order of importance, defining each of the levels, and giving examples of items that fit into each category.

Waste Management Hierarchy	Definition	Examples of activities that would fit into the category	Tips to Reduce Waste
Reduce			
Reuse			
Recycle			
Recover			
Disposal			

2. The teacher then leads a discussion on the results and draws out that *reduction* is the key method of managing waste, but reusing and recycling should be highlighted as well - especially in their own home/school/community. The teacher relates waste management to the concept of the ecological footprint and to the results of their personal inventory from Activity # 2, stressing that this activity builds on good practices developed in elementary school which need to be continued and expanded at the secondary level. The teacher may discuss problems of pollution (from landfills, incineration, industry), NIMBY, and the overuse of natural resources to produce consumer products, and introduce the idea of *sustainable development* and where waste management might fit in.

3. The teacher may organize a half-day field trip to the local recycling depot and landfill site. The field trip could be entirely experiential; the teacher could prepare a sheet of questions for the students to answer; or the students could write a reflection paper based on the field trip
4. Students complete a waste audit of waste produced in the cafeteria by dumping the contents on a sheet of plastic in the classroom. Volunteers wearing gloves sort through the items in the garbage putting them into piles according to the waste management hierarchy. The students then design and create a bulletin board for display in the cafeteria or school hallway using the items they sorted (some of the items may have to be rinsed - rather than including compostable items, use pictures). The bulletin/display board should focus on the importance of Waste Management, the impacts on the environment both locally and globally, and the practical things individuals can do to make a difference. The library, Internet, magazines, and newspapers are useful resources. The teacher divides the task into smaller pieces and assigns groups of 4-5 to work on them. Each group could be responsible for one level of the hierarchy, and if there are enough students, one group could design and pull it all together.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist - Appendix A	formative	self and peer	Group Work on Bulletin Board
Checklist (teacher-generated)	formative	teacher	Group Work

### Accommodations

- Have students create a video instead of a bulletin board.
- Divide tasks within the groups so that students can use their strengths.
- As extensions: use scales to weigh the materials during the waste audit and graph results; do calculations regarding the mass and volume going to landfill; repeat the audit for several days; repeat the audit at a later date to determine if there has been improvement as a result of the bulletin board display.

### Resources

*Canada: Exploring New Directions*, look under 'environment' in index

*Making Connections*, pp. 448-451, 454, 488

Perspectives, pp 160-163

[www.pitch-in.ca](http://www.pitch-in.ca)

Recycling Council of Ontario fax 416-9608053

[www.Virtualrecycling.com](http://www.Virtualrecycling.com)

<http://ecokids.sympatico.ca>

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## Activity 8: Examining Resource Use Through a Case Study (Temagami)

**Time:** 180 minutes

### Description

In this activity students build on what they have learned about “ecological footprint” and “sustainable development” earlier in the unit. They work in small groups representing different stakeholders and participate in a consultation session about management issues related to terrestrial ecosystems, such as the continued logging of old growth pine forests in the Temagami region of Ontario. Each group also produces a position paper on their particular stand. Each student produces a written feedback following the consultation session.

### Strand(s) and Expectations

**Strand(s):** Human-Environment Interactions, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** HEV.01D, HEV.02D, HEV.03B, HEV.04D, UMV.02B, MIV.03D.

**Specific Expectations:** HE1.01B, HE1.02B, HE1.03B, UM2.01B, UM2.02B, MI2.02B, MI2.03D, MI2.07B, MI2.08B, MI2.10D, MI3.01B.

### Prior Knowledge Required

From the Grade 7 and 8 curriculum, students draw on their understanding of methods of geographic inquiry and the ability to analyse, synthesize, evaluate, and communicate information.

### Planning Notes

- Book time in the computer lab.
- Consult the teacher librarian regarding information on the topic.
- Consider using computers for the production of pamphlets or fact sheets.
- Use this case study as a model to develop an alternative case study using a local resource management issue (e.g., wetland conservation, hunting in protected areas, management of plantation forests, waterfront conservation).

### Teaching/Learning Strategies

1. The teacher introduces Temagami as a typical management problem related to terrestrial ecosystems, in which there are a number of points of view, depending on the stakeholder. This is a good place to point out to the students that with such issues there is always more than one point of view, often based on conflicting values and uses for the resources. To resolve such issues, solutions that draw the stakeholders together have more chance of success than those which polarize the points of view. Local issues can be discussed as further examples of this.
2. The teacher presents background information on the different types of harvesting techniques used in the forestry industry and silviculture. Students need to be familiar with the terminology used in the forest industry (e.g., old growth). Textbooks can help here.
3. The teacher explains that the class will be simulating part of a decision-making process on forestry issues. Students act as the stakeholders participating in a Consultation Session being held by the Forestry Advisory Committee, which provides an opportunity for them to voice their concerns about the issue. The Forestry Advisory Committee will be making recommendations to the government.
4. The teacher divides the class into small groups (4 - 5) each of which represents a particular stakeholder group in the Temagami issue. The teacher provides each group with a profile of the particular association or group they represent (Appendix 3.8.1).

5. Each group:
- uses the Internet sites and links provided under resources to research their group’s point of view OR if Internet access is not available, uses the library/resource centre or materials printed from web sites;
  - produces a summary of their position to be submitted to the teacher before the Consultation Session;
  - prepares and participates in the consultation session, putting forth the position of the stakeholders they represent.
6. After the forum each student submits a written feedback to the Forestry Advisory Committee (represented by the teacher) in which they state which association they represent, along with at least three recommendations towards solving the problem, with supporting points (facts, reasons) for each.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Quiz (teacher-generated)	summative	teacher	Forestry Terms
Rubric (Appendix 3.8.2)	summative	teacher	Written Feedback
Rating Scale (Appendix A)	summative	self and peer	Contribution to Group

### Resources

“Are Canada’s Forests Shrinking?” - Canadian Pulp and Paper Association Poster 1-888-398-TOUR

“The Boreal Forest” Poster Map - National Atlas of Canada, *Canadian Geographic*

*Canada: Exploring New Directions*, (pp. 186 - 196)

*Making Connections*, Chapter 23 (pp. 280 - 294)

*Perspectives*, Chapters 2.6 and 2.7 (pp. 60 - 63)

[www.uoguelph.ca/~rolajos/tem\\_env.htm](http://www.uoguelph.ca/~rolajos/tem_env.htm)

[www.ontariosnearth.on.ca/temagami.htm](http://www.ontariosnearth.on.ca/temagami.htm)

[www.twptemagami.on.ca/mmm/infolyr.htm](http://www.twptemagami.on.ca/mmm/infolyr.htm)

[www.open.doors.cppa.ca](http://www.open.doors.cppa.ca)

### Accommodations

- Develop groups so that there is a range of strengths within each group
- Provide extended timelines where necessary.
- Provide templates or step-by-step instructions with checklists for students requiring assistance with organization.
- Provide samples of written feedback for the assignment.
- Provide an additional case study on a mismanaged resource as an extension activity as follows:
  - 1 The teacher divides the students into five groups. Each group researches one of the five suggested conditions responsible for the collapse of the fishery: over fishing, improved fishing technology, uncontrolled foreign fishing, destructive fishing practices, and changes in natural conditions (as outlined on p. 253 of *Making Connections*).
  - 2 Students generate a list of key terms to define throughout the course of the activity. Students may use the textbook *Making Connections* (Chapter 21) or *Perspectives* (Chapter 2.4). Key words can include: renewable resource, groundfish, pelagic fish, shellfish, inshore fishing, offshore fishing, offshore limit, quotas, balance of trade, plankton, fishing banks, continental shelf, sustained yield management, and aquaculture.
  - 3 Students research the condition using their textbook, the Internet, and library resources. With this information they are to create a poster to educate the public about this condition (e.g., Over

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fishing: the poster must contain a message to alert the public about the dangers of over fishing, it can include facts, drawings and magazine pictures.)

- 4 Each group displays their poster and briefly discusses the issue they researched to the class.

## **Activity 9: Developing an Environmental Futures Tree**

**Time: 180 minutes**

### **Description**

This culminating activity for the unit gives students the opportunity to use information and skills from previous activities to create a diagram showing how their own actions have an impact on nature. Each student investigates existing methods that attempt to improve the balance between human needs and natural systems. They identify changes in personal behaviours to reduce their ecological footprint.

### **Strand(s) and Expectations**

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.05B, HEV.01D, UMV.02B, MIV.03D.

**Specific Expectations:** SS3.04D, HE1.01B, HE1.02B, HE2.05B, HE3.01D, HE3.02D, HE3.03D, UM1.02B, UM2.02B, MI2.08B, MI2.11B.

### **Planning Notes**

- Gather recycled materials to use for posters
- Collect brochures and pamphlets about environmental programs - e.g., Drive Clean, Local recycling.

### **Teaching/Learning Strategies**

1. The teacher identifies the previous activities and relates them to the categories of the Ecological Footprint: water, energy, transportation, food and waste. The teacher then leads a discussion on how individual behaviours as recorded in Activity 2 contribute to environmental problems.
2. Groups of up to five students draw a futures tree on chart or mural paper (recycled) showing the impact their actions have on the future environment. The roots represent current student actions and each of the five large limbs represents a different category of the ecological footprint; the leaves are the specific impacts of their actions - e.g., loss of fish species. Ideally one student should be assigned to each limb. Students indicate their current negative actions at root level by labeling these on the tree with colours other than green. Movement from the roots signifies an increase in scale from personal to local bioregion to ecozone to globe (4 levels). Students complete the tree using a variety of autumn colours for leaves to indicate the negative impacts their collective actions have on each category at each level.
3. Each student chooses one limb for further study. For their chosen category, students use previous activities and further research to investigate what is being done to reduce the environmental impact through changes in behaviour, technology, and protection or remediation of natural areas. Examples include Drive Clean, local recycling, global carbon dioxide reductions. An evaluation of these current methods should be done at this time. Students must select the most effective solutions in their categories, trying to provide one solution at each scale.
4. Using green to indicate positives, students label their limbs with the chosen solutions to environmental problems and green leaves to indicate the positive results.
5. The group then labels the roots of the tree with the actions they as individuals will take to create a healthy environment.

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6. The class posts their trees on a large wall or in the hall to make an environmental forest. Students walk through the forest, viewing each other's posters. Groups assess proposed solutions and tree designs. At this time, each group is given an opportunity to make changes they feel are required based on peer feedback, prior to the individual branch being assessed by the teacher.

**Assessment/Evaluation**

<b>Tool</b>	<b>Purpose</b>	<b>Who</b>	<b>Activity</b>
Verbal feedback	formative	peer	Forest Walk
Rubric (Appendix 3.9.1)	summative	teacher	Futures Tree (individual branch)

**Resources**

*Education for Development*. pp. 292- 296, ISBN 0-340-61904-X

Pamphlets from variety of government sources describing management plans

**Accommodations**

- Create a summary chart of problems as identified in earlier lessons
- Provide examples

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## Unit 4: Global Interactions

**Time:** 25 hours

**Development Date:** August 12, 1999

### Unit Description

This unit focusses on the systematic, environmental, economic, and cultural linkages existing between Canada and the world. The culminating activity for the unit encourages students to address global problems and develop solutions for problems which have been discussed throughout the unit. Students create an Atlas of Canada's Global Connections.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Global Connections, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.01B, SSV.03B, HEV.01D, GCV.01D, GCV.02B, GCV.03B, UMV.01B, UMV.02B, UMV.03B, MIV.01B.

**Specific Expectations:** SS1.01B, SS2.03D, SS3.04D, HE1.02B, HE2.05B, HE3.03D, GC1.01D, GC1.02D, GC1.03B, GC1.04D, GC1.05D, GC2.01D, GC2.02D, GC2.03D, GC3.01D, GC3.03D, UM1.02B, UM2.01B, UM2.02B, UM2.03B, UM3.02D, MI2.03D, MI2.04B, MI2.05B, MI2.06B.

### Activity Titles (Time + Sequence)

Activity 1	Identifying Canada's Global Connections	60 minutes
Activity 2	Understanding Canada's Cultural Mosaic	60 minutes
Activity 3	Investigating Economic and Moral Aspects of International Trade	240 minutes
Activity 4	Analysing Globalization and Multinational Corporations	120 minutes
Activity 5	Examining Human Rights and Canadian Peacekeeping	180 minutes
Activity 6	Researching Canada's Role in the International Ban on Landmines	210 minutes
Activity 7	Interpreting Information on Global Environment Issues	270 minutes
Activity 8	Solving a Global Problem: History of the Future	360 minutes

### Prior Knowledge Required

Students draw on their learning from the Canada and World Connections strand in the Social Studies curriculum for Grade 6, as well as from Patterns in Human Geography, Economic Systems and Migration from Grade 8, and from Unit 2 in this course. As well they continue to use methods of geographic inquiry developed throughout this course.

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## Unit Planning Notes

- Collect relevant and recent posters, advertisements, and articles from newspaper magazines and set up as a bulletin board display in the classroom for the start of the unit, both to elicit student interest and to have visual references for many of the discussion topics in the activities.
- Prepare a blank political world map template for student use, and a large one for class use.
- Review the planning notes for each activity to ensure appropriate resources are gathered beforehand.
- Determine extent of computer use possible and make appropriate arrangements.
- Consult with teacher/librarian to ensure an adequate supply of textual and graphic resources.
- Consider using guest speakers in Activity 9 and make appropriate arrangements.
- Ensure materials are available for student use to make posters, graphs, etc.
- Review recommended web sites.
- Plan to introduce the culminating activity early in the unit, and to emphasize throughout the activities the possible future trends of each of Canada's global connections.

## Teaching/Learning Strategies

Student learning takes place in this unit through involvement in a variety of the following:

- Socratic lessons;
- brainstorming;
- simulation and role playing;
- map construction and analysis;
- graph construction and analysis;
- small group and class discussion;
- analysis of articles;
- oral and visual presentation;
- research of secondary sources;
- written responses;
- textbook assignments;
- data gathering.

While many of these activities can be done in pairs and groups, they can also be carried out as individual activities.

## Assessment/Evaluation

In addition to checklists and rating scales being used for formative and summative assessment a number of quizzes and tests are also suggested in this unit. Emphasis is also placed on assessment of a variety of written responses, organizers and graphs. Rubrics continue to be used as outlined for Unit 4 to assess complex tasks and assist with improving student learning.

## Resources

The resources listed in the Resources section of Phase I provide many good references for this unit. The textbooks which have been approved for use with this course, and which are listed in Unit 3, are also useful with this unit. Specific references are also provided with individual activities.

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## Activity 1: Identifying Canada's Global Connections

**Time:** 60 minutes

### Description

This activity introduces Canada's relations with other countries through the movement of goods, ideas, people, and natural systems. This activity introduces a map which students use throughout the unit to illustrate Canada's global connections. Students are introduced to the culminating activity (Activity 9).

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Global Connections

**Overall Expectations:** SSV.01B, GCV.01D, GCV.02B.

**Specific Expectations:** SS2.03D, GC1.04D, GC2.03D.

### Planning Notes

- Ensure each student has access to blank political world maps and a world atlas.
- Prepare a list of international sports in which Canada participates to supplement the student list, and consider information on other sports besides hockey to supplement that discussion (e.g., figure skating).
- Review the reading and figures in *Perspectives* (p. 248).
- Bring some extra clothing from home that has different worldwide manufacturing nations on the label.
- Assign homework question before activity begins.

### Prior Knowledge Required

Students draw on their knowledge of Canada's trading partners from Grade 6, economic systems from Grade 8, and natural and human systems from earlier in the course.

### Teaching/Learning Strategies

1. Students share their responses to the homework question "How does Canada connect to the rest of the world?" The teacher directs the responses from the homework into the following categories: The Movement of Goods, Ideas, People, and Natural Systems.
2. Students read the labels in their clothing and write down where they were made (include shoes). Once they have made their lists, students enter the items on their own blank world map according to origin, and then on a class map
3. Students decide on an appropriate title for their map and keep it in their notebooks. Throughout this unit, each student produces an Atlas of Canada's Global Connections, consisting of all the maps they have developed in each activity. The students write a paragraph for each map that answers questions such as: What does the map show? What patterns are evident on your map? What future trends may develop? Appropriate symbols and titles must be emphasized by the teacher. This atlas is to be completed prior to the culminating activity.

4. Students then brainstorm some countries that have distinctive exports that each student may recognize to expand the concept of international trade beyond clothing. The teacher discusses the movement of natural systems (air currents, water currents, animal migration).
5. The teacher then introduces other types of connections between countries by using the increased number of Europeans playing in the NHL. The teacher leads a discussion on the impact this has on the view of Canadians towards hockey and on the worldwide popularity of hockey. (Hockey has never been so popular worldwide since such European stars as Teemu Selanne (Finland), Jaremir Jagr (Czech Rep), and Pavel Bure (Russia) have graced the ice.) Students enter the names of famous sporting figures and their country of origin on their map
6. In small groups, students generate a list of at least 10 international sporting events at which Canada is represented and then suggest three ways that participating in international sports benefits a nation such as Canada.
7. Students write a point form summary to the original homework question, using the categories as headings, and incorporating what they have learned during the activity.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher generated)	formative	teacher/students	Map
Checklist (teacher generated)	formative	teacher	Point Form Summary

### Resources

*Perspectives*, questions #2-5 on p. 249

### Accommodations

- Provide assistance to groups as they generate a list of events.
- Group the students so that an individual with an interest in sports is in each group

## Activity 2: Understanding Canada's Cultural Mosaic

**Time:** 60 minutes

### Description

In this activity students learn about Canada as a cultural mosaic and how this diversity helps define the country today and into the future.

### Strand(s) and Expectations

**Strands:** Global Connections

**Overall Expectations:** GCV.02B.

**Specific Expectations:** GC1.03B.

### Prior Learning Required

Students draw on learning from Unit 2 Human Systems.

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## Teaching/Learning Strategies

1. The teacher refers to Activity 4 in Unit 2 where origins of their family were investigated and cultural contributions mentioned. The teacher then summarizes the countries on the board. The students locate the family origins of the class on a new world map and retain it for their Atlas of Canada's Global Connections.
2. Students compile a list of the things that each of the countries mentioned have added to Canada (music, celebrations, food, religion, sports, business opportunities, new ideas, building racial tolerance).
3. The teacher introduces the idea of "cultural mosaic" and "cultural diversity", and leads a discussion as to the benefits of each to Canadians in the past, today, and in the future.
4. Students develop definition/picture of a "typical" Canadian and share it with the class.
5. The teacher emphasizes to students that Canada's cultural diversity strengthens our appreciation of the global community and our involvement in international organizations. Teacher leads the discussion and refers to the culminating activity.
6. Students write a response to the ways in which they can enhance Canada's cultural connections.

## Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist - teacher generated	formative	teacher/students	Definition/Picture
Checklist - teacher generated	formative	teacher	Response Paper

## Resources

*Canada: Exploring New Directions*, pp. 400-403

*Making Connections*, pp. 436-437

*National Geographic*, Vol. 196, No. 2, August 1999 - "Global Culture"

*Perspectives*, pp. 228-231

## Accommodations

- Use visual materials to reinforce the concepts discussed.

## Activity 3: Investigating Economic and Moral Aspects of International Trade

**Time:** 240 minutes

### Description

In this activity students examine the importance of imports and exports, both in their own lives and the lives of Canadians as a whole. They also investigate what role moral standards should play in Canada's trade policies. Groups address different moral dilemmas by incorporating their own feelings and beliefs, as well as researching the issue, and then present their information in an informal presentation.

### Strand(s) and Expectations

**Strand(s):** Global Connections, Understanding and Managing Change

**Overall Expectations:** GCV.02B, GCV.03B, UMV.02B.

**Specific Expectations:** GC1.04D, GC2.02D, GC2.03D, GC3.01D, UM2.01B, UM3.02D.

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## Prior Knowledge Required

Students draw upon prior learning in Grades 7 and 8 to demonstrate understanding of the theme of interaction, utilize mapping and graphing skills, and understand and describe the economic relationship between Canada and the global community

## Planning Notes

- Assign students the task of finding the origin of 20 items in their home before beginning this activity (they are to find out where the product was made)
- Arrange for Internet access if desired.
- Prepare materials required.

## Teaching/Learning Strategies

1. The teacher introduces a discussion and note-taking session with reference to the 1999 UN statistic on Canada being the best place to live in order to identify that the countries of the world are compared on the basis of their economic (e.g., GDP) and social (e.g., Health care, education, etc.) development. The teacher presents the criteria involved in a country's economic and social development and groups countries as developed, newly industrializing, and developing. The teacher may choose to use the exercise in *Making Connections: Canada's Geography* (pp. 406-410) for concept development. Optional: Simulation Appendix 4.3.1 and 4.3.2.
2. Students use their list of items and origins from their homework (see planning notes) and add them to a blank map of the world (the third page of their Atlas of Canada's Global Connections). The teacher lists the countries on the board or on chart paper and students add their items under the appropriate country. (This exercise could be done as students come into class.)
3. Students then brainstorm reasons why imports and exports are important for Canadians. They can refer to fig. 20.13 on page 444 in *Contact Canada: Second Edition* or p. 240, fig. 7.6a in *Perspectives: Canadian Geography* to help them and summarize in their notebooks.
4. Students complete activity 3, 4, and 5 on pp. 436-437 of *Contact Canada: Second Edition* or a similar exercise to determine whether Canada is primarily an importing or an exporting nation according to the following categories: food and beverages, natural resources, fabricated products, and finished products. Students display their information in a comparative bar graph and make notes on the overall nature of Canada's trade patterns.
5. Students use their new understanding of Canada in a global economy to examine the role of ethics (moral standards) in Canada's trade policies. The teacher divides them into five groups and gives each group a scenario depicting a moral standards trade issue. See Appendix 4.3.3 for scenarios. The teacher may include additional scenarios on child labour practices, treatment of women, sweat-shops, and the disposal of waste.
6. As a group, students examine the arguments for and against the moral issue. They may want to use the Internet or library resources to develop their points. Their own feelings and opinions can also be included. Students record their information on chart paper and attempt to come to consensus on the issue as a group
7. Each group presents their moral issue and discusses their group's feelings and facts with the class.

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## Assessment/Evaluation

Tool	Purpose	Who	Activity
checklist (teacher-generated)	formative	teacher	Map
checklist (teacher-generated)	formative	teacher	Comparative Graph
rating scale (teacher-generated)	formative	teacher	Presentation
rating scale (Appendix A from Phase I)	formative/ learning skills	student	Group Work

## Resources

Textbooks

## Accommodations

- Pair students to complete comparative bar graph activity and calculations
- Allocate roles in group work to build on student strengths.
- **Extension:** Global Challenge Simulation (Appendices 4.3.1 and 4.3.2).

## Activity 4: Analysing Globalization and Multinational Corporations

**Time:** 120 minutes

### Description

In this activity, students are introduced to the concept of *multinational corporations* and related concepts such as *globalization*, *branch plants*, and *competitive advantage*. Students analyse information on multinationals, suggest possible risks, and opportunities offered by multinationals and discern fact from opinion in two written points of view towards foreign ownership. Students may debate multinationals on the Internet and respond to a recent article. Finally, students simulate the role of the Prime Minister, developing important policies related to MNCs in Canada.

### Strand(s) and Expectations

**Strand(s):** Global Connections

**Overall Expectations:** GCV.02B, GCV.03B.

**Specific Expectations:** GC1.04D, GC2.03D.

### Prior Knowledge Required

Students draw on their understanding of Canada's trading partners and economic systems from the elementary curriculum.

### Planning Notes

- Prepare copies of articles and worksheets.
- Make arrangements for Internet access if needed.

### Teaching/Learning Strategies

1. The teacher provides examples of foreign-owned multinationals operating in Canada (e.g., Ford, G.M., IBM, Kraft, and Proctor and Gamble), as well as Canadian-owned multinationals operating in other countries (e.g., Alcan, Bombardier, INCO, and Toronto Dominion Bank).
2. The teacher then introduces the concepts of *globalization*, *multinational corporations*, *branch plants*, and *competitive advantage* using a source such as the "Canada's Economic Links" section on p. 418 of *Making Connections: Canada's Geography*. Using information from one of the textbooks or other

sources, students map Canada's Economic Links on a blank world map and add it to their Atlas of Canada's Global Connections.

3. The teacher informs students that foreign-owned multinational corporations make up part of foreign investment in Canada and that:
  - due to its small population, Canada has always relied heavily on foreign investment.
  - the U.S. has replaced England as the dominant source of foreign investment in Canada.
  - Canada's proximity to the U.S., political stability, similar language and resource wealth attracts enormous foreign investment from the U.S.
  - other significant sources of investment include Britain, Japan and Hong Kong.
4. Students generate ideas on:
  - why a multinational company might set up a branch plant in Canada (e.g., highly educated work force, cheap raw materials, a stable society and economy, or a low dollar);
  - why a multinational company might set up a branch plant elsewhere in the world.
5. Students then generate ideas on risks and opportunities of:
  - multinational corporations operating in Canada;
  - Canadian corporations operating branch plants in foreign countries.
6. The teacher discusses the results recorded by students using the perspectives in the following chart.

<b>Risks and Opportunities of Multinational Corporations</b>
<b>Risks</b>
If the international business community feels that other areas have a <i>competitive advantage</i> then they can move jobs out of Canada and devastate our economy. To prevent this, Canadian business and government sometimes feel they have to work towards lower wage rates and relaxed environmental controls to ensure Canada remains internationally competitive. Many Canadians are fighting this because they feel it would lower the quality of life for the average Canadian.
With 60% foreign ownership in petroleum and natural gas and 55% foreign ownership in manufacturing, mining, and smelting, there is a concern that Canada's independence is threatened and its economy and environment will be dominated by the U.S.
Resentment that huge profits and <i>dividends</i> totaling \$20 billion a year flow out of Canada and into the U.S.
Closure of American-owned businesses in Canada, without the say of Canadians, causes unemployment and reduction of taxes from income.
Environmental disruption and pollution caused by U.S. funded projects that generate electricity for export to the U.S.
<b>Opportunities</b>
If the international business community feels that Canada has a <i>competitive advantage</i> then it will expand its operations here, thereby creating jobs and helping our economy to grow.

The teacher may personalize the issue by asking the class questions such as:

- If you were a worker at Ford Motor Company, how might you feel about foreign ownership?
  - If you were an independent grocer, how would you feel?
7. Students read the articles from Appendix 4.4.1 - Foreign Ownership Readings and complete Appendix 4.4.2 - Foreign Ownership Student Worksheet. The teacher then summarizes the opinions in class concerning the issue and leads a discussion examining people's value systems to explain why everyone's opinion was not the same.
  8. Students complete a simulation such as that described in question 9 on p. 420 of *Making Connections*. (This question has students simulate the role of the Prime Minister in assessing and devising strategies towards expanding MNCs in Canada.)

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## Assessment/Evaluation

Tool	Purpose	Who	Activity
Rating Scale (teacher-generated)	formative	teacher	Simulation
Rating Scale (teacher-generated)	summative	teacher	Worksheet
Rubric (teacher-generated)	summative	teacher	Written Response

## Resources

*Making Connections*, p. 418

## Accommodations

- Use written comments on post-it notes when generating ideas rather than oral discussions to encourage input from less vocal members of the group
- Provide assistance with the grouping of ideas.
- Provide assistance with the readings and a guide for discerning fact from opinion.

## Activity 5: Examining Human Rights and Peacekeeping

**Time:** 180 minutes

### Description

This activity introduces the concept of human rights, both in Canada and internationally and then looks at Canada's role as a defender of human rights and as a peacekeeper.

### Strand(s) and Expectations

**Strand(s):** Global Connections

**Overall Expectations:** GCV.03B.

**Specific Expectations:** GC1.03B; GC2.02D.

### Prior Knowledge Required

From the Grade 7 and 8 curriculum for Geography, it is expected that the student be familiar with the five themes of geographic inquiry, especially understanding global patterns in human geography

### Planning Notes

- Collect news articles related to human rights issues for use on bulletin board.
- Collect magazines for cutting and pasting (or suggest the students bring them from home).
- Arrange to rent the video *Rights From the Heart* (for a nominal fee) from the National Film Board (NFB) ahead of time if it is to be used.
- If using music, have a song available both in print and recorded.

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## Teaching/Learning Strategies

1. Students record a list of at least five items that they consider as basic human rights. They share their list with a partner and combine to form a new list. They form groups of four and combine ideas to create a list of seven to ten human rights on chart paper which they post around the room. The teacher uses their ideas to discuss human rights, what they are, and why they are important - focussing on three characteristics that the human rights share - they are universal (everyone is entitled to them); they are inalienable (cannot be given or taken away); and they are absolute (necessary either for survival or human development). Together they generate a class list of seven to ten rights that they believe each person in the world should have (food, water, safety, liveable wages, medical care, education, etc.). The teacher records this Human Rights Charter for the Planet Earth on chart paper and posts it in the room.
2. By referring to news articles on the bulletin boards and to their own background knowledge students generate examples (local to global) of human rights abuses. Each student produces an 8 ½ x 11 poster focussed on human rights for the planet for display.
3. (Optional) The teacher shows the video *Rights From the Heart* (33 minutes) or other appropriate video and students list the ideals proclaimed on behalf of the world's children.
4. (Optional) The class listens to musical accounts of human rights abuses and investigates the full story behind them. (See Resources for some examples.)
5. Students examine Canada's peacekeeping role through reading appropriate sections in one of the textbooks and discussing them afterwards. Some of the peacekeeping missions Canada has participated in are located on a world map, and included in the Atlas of Canada's Global Connections.
6. While the United Nations reimburses some of the expenses of peacekeeping, a part of the cost of peacekeeping is borne by the country sending the peacekeepers. Over the years, Canada has spent a considerable amount of money on peacekeeping in other parts of the world. Students write a one-page essay responding to the following question: Do you think that Canada should continue to support peacekeeping in view of these costs? Students include reasons for their answers (*Perspectives*, p. 253). The students can work on a rough copy in class and complete the good copy for homework.

## Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher-generated)	summative	teacher	Poster of Human Rights
Rubric (teacher-generated)	summative	teacher	Essay on Peacekeeping

## Resources

*Canada: Exploring New Directions*, pp. 383-388

*Making Connections*, pp. 416-417

*Perspectives: Canadian Geography*, Chapter 7.10 (pp. 250-253)

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### Songs

“Biko” by Peter Gabriel

“They Dance Alone” by Sting

### Video

*Rights from the Heart*. National Film Board of Canada, 1992. 1-800-267-7710

A collection of seven short, animated films based on the United Nations Convention on the Rights of the Child. It is about peace, dignity, tolerance, freedom, equality, and solidarity. 33 minutes

### Web Sites

[www.dfait-maeci.gc.ca/peacekeeping/menu-e.asp](http://www.dfait-maeci.gc.ca/peacekeeping/menu-e.asp)

[www.un.org/Pubs/CyberSchoolBus/peacekeeping/index.html](http://www.un.org/Pubs/CyberSchoolBus/peacekeeping/index.html)

### **Accommodations**

- Use video, visual, or audio options to address different learning styles.

## **Activity 6: Researching Canada’s Role in the International Ban on Landmines**

**Time:** 210 minutes

### **Description**

In this activity, students use the Internet to participate in fact-finding mission and debate regarding landmines and the Ottawa Process.

### **Strand(s) and Expectations**

**Strand(s):** Global Interaction, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** GCV .01D, GCV.03B, UMV.03B, MIV.01B.

**Specific Expectations:** GC1.01D, GC1.03B, GC2.02D, GC2.03D, UM2.01B, UM2.03B, MI2.03D, MI2.04B, MI2.05B, MI2.06B.

### **Prior Knowledge Required:**

Students use research skills developed in Grades 7 and 8 and earlier in the course.

### **Planning Notes**

- Make arrangements for access to computers or download information for student use.

### **Teaching/Learning Strategies**

1. The teacher introduces the landmines issue with reference to newspaper or magazine articles and discusses Canada’s involvement at the forefront of the movement to ban landmines worldwide (see Appendix 4.6.1 - The Ottawa Process). The teacher introduces the term AP (Anti-personnel) Landmines and the facts that illustrate their scourge (see Appendix 4.6.2 - Mine Facts).

2. Students access the web site [www.mines.gc.ca](http://www.mines.gc.ca) as a launching point and complete the following:
  - Research background information on the landmine issue using at least two different web sites to compare facts and opinions.
  - Synthesize information to describe how landmines present a deadly obstacle to development.
  - Construct a time-line that highlights the key events and dates of the Ottawa Process leading up to the signing of the treaty banning the use, production, transfer and stockpiling of AP mines (the Ottawa Treaty), and predict future steps in reaching a total ban.
  - Provide background information on one of the world's six most mine-affected countries and a description of Canada's mine action program in this country.
  - Produce a map of the world showing all of the countries that have signed the treaty to the present date (to be included in their Atlas of Canada's Global Connections).
3. The students carry out the following research, with the teacher providing appropriate support and follow-up discussion:

**Landmines and The Ottawa Process**

*A Fact-finding Mission Using the Internet*

Visit the web site below and follow the links to get to the Banning Landmines section:

[www.mines.gc.ca](http://www.mines.gc.ca)

English

Banning Landmines

1. *Landmines: The Indiscriminate Killers*

- a) Why is the title of this section appropriate?
- b) Read through the information in the first section of the web page Landmines: The Indiscriminate Killers. Gather and organize your information in a chart. Include your own categories of facts at the bottom of the chart. For web site 2, use the Related Links heading to get to an appropriate site.

Topic	Web Site 1 <a href="http://www.mines.gc.ca">www.mines.gc.ca</a>	Web Site 2 _____
Land mine numbers and production		
Types of mines listed		
Examples of countries using AP mines		
Numbers of victims		
How landmines affect victims		
Cost of landmines/Cost of removal		

- c) Write a brief comparison of the information from the two sites. What are the actual sources of the information - who produced the site and are other sources given? Explain the differences or similarities in the information.

Go back to <http://www.mines.gc.ca/english/banning/index.html> to answer the following:

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2. *The Invisible Barrier to Development*

Landmines are a serious obstacle to meaningful development in many of the world's poorest countries. The frequent use of landmines as a weapon of terror against civilian populations means that fields, roads, bridges and entire communities have been mined. Read and make brief notes to describe how each of the following are devastated by landmines:

Refugees and Internally Displaced People	Productive Land, Farming and Herding
Transport and Communications	Soil and Water
Economic Resources	Human Lives
Communities	

Create a concept map showing how the removal of land mines solves development problems in many areas.

3. *The Ottawa Process and the International Movement to Ban Landmines*

- Create a time line to illustrate the Ottawa Process from its origins in the late 1980's to the Ottawa Conference and the signing of the AP Mine Ban Convention, December 2-4, 1997. In addition to the dates, include the event(s), where it took place and who was involved.
- Describe the significance of the AP Mine Ban Convention.
- Explain the role and steps Canada took for the AP Mine Ban Convention to succeed.
- What is Ottawa Process II?
- Meeting the challenges within the next decade will require united, coherent action to focus the available resources, political will and practical skills. Important first steps are being taken. What are each of the following doing?:
  - NGOs (non-governmental organizations)
  - The UN (United Nations)
  - Mine action partners
- What steps are required for a global ban on the use, production, transfer, and stockpiling of AP mines?

4. *Canadian Mine Action Programs*

The teacher assigns each student to one of the world's six most severely mine-affected states.

Afghanistan Angola Bosnia and Herzegovina Cambodia Mozambique Nicaragua

Using the information from the site, provide background information on the landmine problem in this country and describe Canada's action response to the situation.

When complete, place students in expert groups with other students who were assigned the same country in order to discuss the information. Then place students in home groups with students who have each been assigned a different country. Each student is responsible for presenting their information to the group.

5. *Ottawa Treaty Update*

Select the HOME link then The Ottawa Treaty Update.

This is a list of the Signatories to the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction.

On a blank world map indicate each of the countries listed with an appropriate symbol, then give the map a suitable title. This map is included in their Atlas of Canada's Global Connections.

Optional: the students may add countries where landmines are a significant problem and also countries that produce landmines.

**Assessment/Evaluation**

<b>Tool</b>	<b>Purpose</b>	<b>Who</b>	<b>Activity</b>
Checklist (teacher-generated)	summative	teacher	Worksheet and Map
Quiz (teacher-generated)	summative	teacher	Landmines

**Resources**

Teaching Aids

*Children at Risk Tool Kits: Land Minds* (World Vision Canada)

*One Deadly Step: Understanding the Curse of Landmines* (World Vision Canada)

Web Sites

A Catastrophe for Children gopher

[//gopher.unicef.org:70/00/.cefdata/.booklet94/landmine](http://gopher.unicef.org:70/00/.cefdata/.booklet94/landmine)

Dept. of Foreign Affairs and International Trade (Canada)

[www.dfait-maeci.gc.ca](http://www.dfait-maeci.gc.ca)

Handicap International

[www.mediartis.fr/handicap/](http://www.mediartis.fr/handicap/)

Human Rights Watch (USA)

[www.hrw.org/campaigns/mines/](http://www.hrw.org/campaigns/mines/)

Humanitarian Foundation of People Against Landmines

[www.dsk.de/mgm/](http://www.dsk.de/mgm/)

International Committee of the Red Cross

[www.icrc.org](http://www.icrc.org)

Mines Action Canada/Physicians for Global Survival (Canada)

[www.web.apc.org/~pgs/](http://www.web.apc.org/~pgs/)

Norwegian People's Aid - International Demining Activities

[www.uib.no/People/mfakh/LM/LMreport.html](http://www.uib.no/People/mfakh/LM/LMreport.html)

One World Online

[www.oneworld.org/index\\_bytheme.html](http://www.oneworld.org/index_bytheme.html)

UN Cyber School Bus

[www.un.org/Pubs/CyberSchoolBus/banmines/index.html](http://www.un.org/Pubs/CyberSchoolBus/banmines/index.html)

United Nations Demining Database

[www.un.org/Depts/Landmine/](http://www.un.org/Depts/Landmine/)

Vietnam Veterans of America Foundation/Campaign to Ban Landmines

[www.vvaf.org/landmine.html](http://www.vvaf.org/landmine.html)

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### Mailing list

AP Mine Ban: Progress Report. 1-613-995-1874

### Video

*Ban Landmines: The Ottawa Process*. 1-613-944-4000

### **Accommodations**

- Pair students for this activity.
- Use a special education resource teacher to assist students that may have difficulty reading at the language level in which the articles have been written or provide articles at different reading levels.
- Encourage peer interaction.

## **Activity 7: Interpreting Information on Global Environmental Issues**

**Time:** 270 minutes

### **Description**

Topics such as global warming, ozone depletion, deforestation, and endangered species are recognized as global concerns that affect all nations, and a resolution must be a worldwide effort. In this activity students will examine the causes, effects, and possible solutions to some of the most recognized global environmental issues and demonstrate an understanding of Canada's involvement in international environmental agreements.

### **Strand(s) and Expectations**

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Global Connections, Understanding and Managing Change

**Overall Expectations:** SSV.01B, SSV.03B, HEV.01D, GCV.01D, GCV.02B, GCV.03B, UMV.01B, UMV.02B, UMV.03B.

**Specific Expectations:** SS1.01B, SS3.04D, HE1.02B, HE2.05B, HE3.03D, GC1.05D, GC2.01D, GC3.03D, UM1.02B, UM2.01B, UM2.02B.

### **Prior Knowledge Required**

Students utilize their understanding of the place, location, environmental, region, interaction and movement themes as well as their ability to produce a wide variety of maps, charts, and graphs.

### **Planning Notes**

- Chapter 35 in *Making Connections* provides some excellent background to global warming.
- Provide students with graph paper and appropriate maps.
- Obtain information on key world conferences such as Rio Summit and Montreal Protocol.
- Reserve the *Nature of Things: Climate For Change* video.
- Write to WWF Canada or go to their web site to obtain a list of endangered species in Canada.
- Consider having senior students assist with groups or make presentations on the issues.

### **Teaching/Learning Strategies**

1. The teacher refers to the natural systems that the globe shares and to the students' responses in Activity 1 to introduce the global environmental issues. The teacher stresses the importance of having information on these issues in order to make decisions for the future.
2. The teacher introduces the issue of *Global Warming* by discussing how a car heats up when the windows are closed - even if it is cool outside. Discuss how a greenhouse works the same way in that long wave radiation (heat) cannot escape through the glass, and the temperature in the greenhouse

increases. Make a clear distinction between global warming, greenhouse effect, and greenhouse gases.

3. Scientists generally agree that the greenhouse effect is about to produce the most rapid change in climate in the history of civilization. Students produce an organizer titled How Will a Warmer Earth Affect Us? Using the categories Benefits and Consequences, students organize some of the possible effects of global warming and share their ideas with the class. Some effects are not as obvious and should be recognized by the teacher: *agriculture* (consider growing season and precipitation patterns); *health* (consider the possible spread of diseases normally associated with areas near the equator); *forests* (consider forest pests and parasites); *agricultural land* (consider changes in growing season, precipitation patterns, and erosion agents); *oceans* (consider currents, levels of water, and fishing grounds); *wildlife* (consider the effect on natural habitats).
4. Using a map of the world, students label some of the benefits and consequences of global warming, to get a spatial understanding as to where these changes are evident. This map is included in their Atlas of Canada's Global Connections. In *Contact Canada: 2nd edition* (p. 122) there are some examples of the effects within Canada. The teacher should extend these effects globally, giving the students a general idea as to the ecological "hot spots" most affected by global warming.
5. On the overhead or blackboard, the teacher draws the *Carbon Cycle*, showing that plants produce oxygen which is used for breathing (respiration) and burning (combustion) in which carbon dioxide is produced and then used by the plants again. The teacher asks students how levels of carbon dioxide have increased over the past 100 years, making reference to Activity 5 from Unit 3. They should recognize such factors as the invention of the automobile, burning of forests, heating homes with fossil fuels, and the large-scale removal of trees (deforestation). Students graph the data (on a line graph) - Carbon Dioxide in Our Atmosphere and label five causes of the drastic increase in CO<sub>2</sub> levels - directly on the graph.

Year	CO <sub>2</sub> Level (ppm)	Year	CO <sub>2</sub> Level (ppm)	Year	CO <sub>2</sub> Level (ppm)	Year	CO <sub>2</sub> Level (ppm)
1900	292	1925	298	1950	304	1975	328
1905	294	1930	298	1955	307	1980	335
1910	294	1935	299	1960	310	1985	345
1915	295	1940	300	1965	315	1990	355
1920	296	1945	301	1970	320	1995	375

Have students continue the line to the year 2020 and, at this rate, predict the level of carbon dioxide in decades to come. What does the graph tell you?

- 
6. The teacher asks the students why this is a global issue and what can we do to slow down global warming. The class then brainstorms solutions such as reforestation, car pooling, alternate energy sources, and carbon tax for industries. Considering the solutions, why would it be easier to reduce carbon dioxide levels over a country like Canada (developed), as opposed to a country like Brazil (developing)? Why does this have to be a global effort? India produces twice as much carbon dioxide as Canada, but has 20 times the population. On a per capita basis, we are producing more than our “fair share”. Is that necessary? Discuss the United Nations Framework Convention on Climate Change (Rio Summit) in 1992 where nations of the world banned together to combat the increasing levels of carbon dioxide.
  7. A one-degree change in temperature is minor in day-to-day weather patterns. A similar change in the world's climatic pattern, however, could have major environmental effects. The teacher has students briefly explain the difference between a one-degree weather change in temperature and a one-degree climatic change in temperature.
  8. The video *Nature of Things: Climate For Change* provides excellent clips to support this topic. The teacher discusses local initiatives such as the Drive Clean Program our province has introduced and what implications this has on global warming.
  9. The teacher introduces the topic of *Ozone Depletion* explaining that although ozone is a tiny component of the earth's atmosphere, it plays a crucial role in filtering out ultraviolet radiation, which in large doses would destroy life on this planet. The teacher constructs an organizer with the students that shows the problem of ozone depletion (the cause, the effects, and the solutions) being sure to distinguish between ozone depletion and global warming and to recognize that there are no benefits of an increase in UV radiation.
  10. Using *Canada and the World: An Atlas Resource*, the teacher develops questions based on the maps, graphs, and charts displayed on pages 119-120. The Teacher's Guide provides some excellent ideas.
  11. The teacher introduces the issue of *Endangered Species*, inviting students to recall the work they completed on National Parks, and understand the link between protecting habitat in order to preserve species (Endangered Spaces Campaign by Canadian Parks and Wilderness Society is an excellent example). The teacher defines the five classifications of at-risk species: vulnerable, threatened, endangered, extirpated, and extinct. The class then brainstorms species that might fall into one of the categories (Canadian lists are available at the WWF web site or on p. 128 in *Perspectives*.) The teacher provides a list of endangered species worldwide, and has the students locate their habitat on a blank world map (to be included in their Atlas of Canada's Global Connections).
  12. The teacher creates an organizational table that compares the pros and cons of possible efforts to protect endangered species:
    - a) worldwide bans on the sale of such items as ivory, fur, alligators;
    - b) quotas on fishing, hunting, trapping;
    - c) the establishment of national parks that prevent urban development;
    - d) stopping the destruction of rain forest.

13. The students create a scattergraph to show the importance of a national parks system. What does the graph show? In what direction should the countries of the world be headed if we want to protect endangered species?

<b>Habitat Area and the Loss of Species in North American Parks</b>		
<b>National Parks</b>	<b>Area (km<sup>2</sup>)</b>	<b>Per cent of Species Lost in the last 100 years</b>
Banff-Jasper	20736	0
Yellowstone	10328	4
Gros Morne	4627	7
Sequoia-Kings Canyon	3389	23
Yosemite Dan	2083	25
Rocky Mountains	1049	31
Mount Rainier	976	32
Crater Lake	641	31
Zion	588	36
Lassen Volcano	426	43
Bryce Canyon	144	36

14. The teacher introduces the issue of *Deforestation*, drawing on the understanding developed in Activity 8 in Unit 3, by having students brainstorm or use atlases to identify the benefits available from forests and then classify these benefits into two groups: Benefits that require cutting down the trees; Benefits that require preserving trees. They then reclassify the benefits into three groups: Economically Beneficial; Environmentally Beneficial; Socially Beneficial. The class then discusses what type of benefits come from exploiting forests? What type of benefits comes from preserving forests? (Students probably conclude that the exploitive benefits tend to be economic whereas the preservation benefits tend to be environmental. Some social benefits may come from preservation and others from exploitation.)
15. *Percentage Changes in Forested Area from 1989-1999 in Selected Countries*. Note: The percentage changes shown are for the decade, they are not annual rates. Students produce a *choropleth world map* to show the world's deforestation and reforestation, using a strong green for those countries with a percentage change of at least +10% or more, a weak green for those between +0.1% and +10%, a weak red for counties with a percentage change between -0.1% and -10% and a strong red for countries with a percentage change of less than -10%. This map is included in their Atlas of Canada's Global Connections.

<b>Country</b>	<b>% Change</b>	<b>Country</b>	<b>% Change</b>	<b>Country</b>	<b>% Change</b>
Canada	5.8	Sudan	-6.5	Japan	1.5
Argentina	-1.3	United Kingdom	13.8	Saudi Arabia	-11.8
United States	-1.1	Chad	-5.5	Brazil	-9.2
China	-7.7	India	-10.5	Cuba	11.8
Russia	1.1	Zaire	-11.3	Sweden	1.7
Ecuador	-21.1	Germany	1.2	Spain	5.3
Australia	0.4	Mexico	-12.1	France	13.6

Students describe the pattern produced. From where are most of the world's forests disappearing? Why? What areas have seen an increase in forested area? Why?

16. Students complete their Atlas of Canada's Global Connections as a homework exercise by organizing their atlas, with an appropriate title page, table of contents, introduction describing the contents of their atlas, and a conclusion analysing Canada's international connections.

### Assessment/Evaluation

Tools	Purpose	Who	Activity
Checklist (teacher-generated)	formative	self	Global Warming Organizer
Checklist (teacher-generated)	formative	teacher	Carbon Dioxide Line Graph & Questions
Checklist (teacher-generated)	formative	self/peer	Ozone Organizer
Checklist (teacher-generated)	formative	teacher	Endangered Species Organizer & Scattergraph
Checklist (teacher-generated)	formative	teacher	Deforestation Organizer
Test (teacher generated)	summative	teacher	Global Environmental Issues Test
Rubric (teacher generated)	summative	teacher	Atlas of Canada's Global Connections

### Resources

Atlases and textbooks

#### Web Sites

Government Site

[www.doe.ca/climate](http://www.doe.ca/climate)

Sierra Club

[www.sierraclub.org/global-warming/](http://www.sierraclub.org/global-warming/)

United Nations

[www.unfccc.de/index.html](http://www.unfccc.de/index.html)

WWF

[www.wwfcanada.org](http://www.wwfcanada.org)

#### Video

*Nature of Things: Climate For Change*

### Accommodations

- Prepare any organizers ahead of time and produce a global warming map (already labeled) if time is limited.
- Have students submit maps, charts, and graphs in a folder.
- Use world atlases where needed and encourage peer interaction.
- Use large print for easier reading of charts.

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## Activity 8: Solving a Global Problem - History of the Future

**Time:** 360 minutes

### Description

After learning about many of the global concerns facing Canada and other countries, students are provided with an opportunity to investigate international organizations responsible for action on some of these concerns. They evaluate the role of Canada and Canadians in such organizations and develop their own plan to solve a global problem as a director for one of the organizations. Finally, they interview another director (student) and write an article about the success of that organization.

### Strand(s) and Expectations

**Strand(s):** Global Connections, Understanding and Managing Change

**Overall Expectations:** GCV.02B, GCV.03B, UMV.01B.

**Specific Expectations:** GC1.02D, GC2.02D, GC3.03D, UM1.02B.

### Planning Notes

- Obtain copies of information from various international organizations to which Canada belongs (see listings under resources).
- Consider using guest speakers from organizations such as Greenpeace, World Vision.
- Collect magazines, pamphlets and art supplies for the activity.

### Prior Knowledge Required

Students draw on previous learning from the unit.

### Teaching/Learning Strategies

1. The teacher reviews the issues that have been encountered throughout the unit and students choose one they would like to address: human rights, war/conflict, landmines, trade/child labour, a specific environmental issue, or a topic from their portfolio collection. Each student is responsible for finding an organization in Canada currently trying to solve that problem.
2. The teacher presents the following chart on the board or overhead. Students complete the organizer using information from individual research. They should be prepared to describe their findings to the class under the following headings.

Organization	Headquarters	Mission and Mandate	Location of work	Recent accomplishments	Canada's role or membership responsibilities e.g., individual, governmental

3. Students report findings to class. The teacher records findings on a master chart. Students add information to their own charts.
4. In a class discussion students highlight steps taken by organizations to solve a problem and comment on each of the organizations, stating whether they think Canada (and Canadians) should continue, increase, or decrease its role.
5. In an effort to increase youth understanding of global issues, appoint each student as a director of the organization of their choice, based in Canada, whose work is in the problem area chosen. They choose an organization from the class study or a new one to investigate. Students show the results of

their investigation including name of organization, its logo (or reasonable facsimile), a description of its mandate, a map indicating global areas of significance, and a brief explanation of what they would do as director of the organization to improve its cause.

6. Have students imagine they are living in the future. The world has just achieved a major accomplishment: the end of a global problem (as chosen by each student in strategy 5). Their organization was the reason for the success. Each student shows how this was done in a “photo” album looking back to the origin of the organization. The process will be broken into a series of 5 - 10 steps shown through drawings or photos from magazines with captions indicating the sequence to create the change. The pictures will be placed on a poster, with the original information, to be displayed in the classroom to celebrate the success.
7. Pair students to interview each other about the organization and its work. Each interviewer is writing an article for a Canadian newspaper describing the organization and its solution to the global problem. The teacher provides an interview format and explains the main ideas required in the article: What was the initial problem and why was it significant? What were the most important factors leading to change? Did other organizations or individuals help in the solution? Were there specific locations that needed attention? Where were they? What were the main obstacles to the change? How long did the solution take to work? How will the solution affect Canadians? The writers should also answer the question: Is the plan reasonable and effective? Students should consider the style of media articles collected for portfolios when writing their own.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher-generated)	formative	self/teacher	Organization chart
Rubric (Appendix 4.8.1)	summative	teacher	Poster
Rubric (Appendix 4.8.2)	summative	teacher	Article

### Resources

*Education for Development*. ISBN 0034061904X

Possible Non-Governmental Organizations based in Canada:

Culture	AFS Interculture Canada <a href="http://www.afs.org">http://www.afs.org</a>
Development	Aga Khan Foundation Canada <a href="http://www.akfc.ca">http://www.akfc.ca</a>
International Trade/Child Labour	Free the Children <a href="http://www.freethechildren.org">http://www.freethechildren.org</a>
Foreign Aid	Canadian Feed the Children <a href="http://www.canadianfeedthechildren.ca">http://www.canadianfeedthechildren.ca</a>
Human Rights	Amnesty International Canada <a href="http://www.amnesty.ca">http://www.amnesty.ca</a>
Peacekeeping	Canadian Centres for Teaching Peace <a href="http://www.peace.ca">http://www.peace.ca</a>
Landmines	Canadian Red Cross <a href="http://www.redcross.ca">http://www.redcross.ca</a>
Environment	Greenpeace Canada <a href="http://www.greenpeace.ca">http://www.greenpeace.ca</a> Friends of the Earth, Canada <a href="http://www.foecanada.org">http://www.foecanada.org</a>

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### **Accommodations**

- Provide detailed organization information for students.
- Provide library/resource centre time and individualized instruction opportunities.
- Assign students a specific problem to solve.
- Provide a number of sample solutions to problems.
- Have students work in pairs.
- Provide an Interview sheet with questions to ask.

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## Unit 5: Sustainable Development

**Time:** 10 hours

**Development Date:** August 14, 1999

### Unit Description

Building on skills and concepts developed throughout the course, students complete an assignment with a focus on the protection and/or management of a global resource. The aim is the development of an environmental intervention strategy that helps ensure the preservation of the environment and/or resources for future generations. This unit serves as the demonstration portion of the final evaluation in the course.

### Strand(s) and Expectations

**Strand(s):** Geographic Foundations: Space and Systems, Human-Environment Interactions, Global Connections, Understanding and Managing Change, Methods of Geographic Inquiry

**Overall Expectations:** SSV.03B, SSV.05B, HEV.01D, HEV.03B, HEV.04D, GCV.03B, UMV.02B, MIV.01B, MIV.03B.

**Specific Expectations:** The specific expectations for this unit have been met in the preceding course work.

### Activity Titles (Time + Sequence)

Activity 1	Researching and Making Recommendations on a Sustainable Development Issue	600 minutes
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### Prior Knowledge Required

Students should possess knowledge from the expectations covered in the course to date, since they utilize skills and knowledge gained throughout the course.

### Unit Planning Notes

- Work with the teacher-librarian to prepare the school's materials on resource management and sustainable development related to the resource areas identified as topics.
- Prepare an initial list of references for each resource area group.
- Review the topic list and prepare more detailed topic choices to discuss with students.
- Consider browsing and downloading the websites listed so that students work offline (much faster) using the web browser. Internet capable computers should be booked where possible for student use in the initial phases of the project.
- This activity is an excellent opportunity to use web conferencing to introduce students to the capabilities the Internet presents for education. By searching for board websites, you can contact other schools and teachers of Grade 9 geography classes with whom you can establish class groupings. Work with technology teachers to help students learn about web page design, so as to facilitate the creation of a project web site.

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## Teaching/Learning Strategies

Students demonstrate their learning in this unit through their involvement in the following:

- review of notes;
- brainstorming;
- class discussion;
- research of secondary sources;
- presentation of geographic information;
- simulation and role playing;
- analysis of information;
- collaboration;
- report writing.

## Assessment/Evaluation

This culminating activity is intended to form part of the final evaluation for the course, as described on page 11 of *The Ontario Curriculum Grades 9 and 10: Program Planning and Assessment*. As such the emphasis is on individual accountability, with two products forming the basis for the summative evaluation. The first product is the summary of information from other student reports, which can be done using a test format and evaluated using a rubric. The second product is the individual research report which is also evaluated with a rubric. Formative self- and peer-assessment is also included in the unit to assist the students with their final products.

## Resources

In addition to the resources listed in the Resources section in Phase I, and the textbooks listed in Unit 3, the following websites are useful:

<http://www.ecouncil.ac.cr/rio/>

<http://www.webring.org/cgi-bin/webring?ring=sustainability;id=99;list>

(This is an index from a ring site that has 20 excellent other sites related to sustainable development.)

## Activity 1: Researching and Making Recommendations on a Sustainable Development Issue

**Time:** 600 minutes

### Description

Students complete an assignment based on the concept of sustainable development. Acting as consultants to the Canadian government they research, identify environmental and economic issues, and make recommendations regarding a resource area of their choice. They also review the work of three other students and write a summary on sustainability. Students communicate their understanding of the nature of Canada's natural and human geography, the interactions between humans and their environment and Canada's place in the world. They utilize the cartographic, graphing, statistical, and computer skills acquired during previous activities in the course.

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## **Strand(s) and Expectations**

Refer to Unit Strand(s) and Expectations.

## **Prior Knowledge Required**

This activity requires the student to have met the expectations covered in the course to date, since they utilize skills and knowledge gained from the meeting of these expectations.

## **Planning Notes**

- Prepare timelines for the components of the activity.
- Prepare a checklist or guide for students to follow as they complete the activity.
- Consider having reference materials for each resource area available in the classroom.
- Arrange for access to the library and computer facilities.
- Have a variety of textbooks available for student reference.

## **Teaching/Learning Strategies**

1. The teacher introduces the culminating unit as an opportunity for students to draw together the skills and concepts they have developed throughout the course and apply them to a project which demonstrates what they have learned.
2. Students review their notes from the course, listing the culminating activities from each unit along with a summary of what they did for the activity, and the skills that they needed. They also identify topics that were of particular individual interest. The teacher then discusses the activities with the students. The teacher draws their attention to the common components of each activity: expanding their knowledge related to issues and proposing actions at the personal, government, or global level to address them.
3. The teacher then reviews the concept of sustainability (an approach to development that meets the needs of the present without negatively affecting the ability of future generations to meet their demands) as the common theme for the individual projects that the students complete. Textbooks can be used for references here.
4. The teacher provides the students with the instruction sheet (Appendix 5.1.1) and discusses the context for the assignment, which simulates the work of consultants preparing a background brief for a government minister, along with identification of environmental and economic issues, and recommendations for strategies to address the issues. The teacher reviews the requirements for each student and the performance review form which is used as a basis for evaluation.
5. The teacher reviews the topic areas listed in Appendix 5.1.1 and asks the students to choose a resource area that interests them (it may match the topic they identified in strategy 1 above). The teacher then divides the students into groups according to the resource areas they choose. These groups simulate a consulting work team: each person completes an assignment individually, but provides assistance to others as they research the issue and discuss ideas on problems and recommendations.
6. The students meet as a group and determine which particular topic within the resource area they will investigate. Many of the topics can be narrowed to deal with just one aspect (e.g., forest resources could be confined to one ecozone, fishery resources could be confined to one species, water resources could be confined to one geographic region, mineral resources could be confined to one type). By narrowing the topics each student can address a different issue, though there may be some overlap. The teacher records topic choices.
7. As consultants, students begin a log of their work which they continue throughout the activity. The log contains a daily summary of what was completed, the sources of information consulted, and any peer consultations.

8. Students complete the research component of the task by first culling information from their course notes and textbook and then by library or Internet research. They record information under the following headings: Extent of the Resource; Environmental Problems; Economic Demands; and Current Programs.
9. Students then create a report on their background research, using maps, charts and graphs as appropriate and presenting the information under the above headings.
10. Students summarize the problems and recommendations for solutions using the organizer provided with the instructions, and present this to the other members of their group for peer-feedback. After revisions they submit their research report, including their summary chart.
11. The teacher makes a copy of each of the student reports and arranges them so that each student has access to three reports, from three resource areas other than their own, during the time period allocated for the completion of the assignment. Individually, students complete an in-class assignment in which they review the reports and summarize the information as directed in the handout shown in Appendix 5.1.2. They also provide written feedback on the reports for the other students to use in preparation for their final submission.
12. Students make final revisions to their reports based on the peer feedback and submit to the teacher.

### Assessment/Evaluation

Tool	Purpose	Who	Activity
Checklist (teacher/student- generated)	formative	self	Consultant's Log
Performance Review (Appendix 5.1.1)	formative	peer	Written Feedback
Marking Scheme (teacher-generated)	summative	teacher	In-class Assignment (Appendix 5.12)
Performance Review (Appendix 5.1.1)	summative	teacher	Final Report

### Resources

Atlases and Texts  
 CD-ROM applications and GIS software (*Arcview*)

### Accommodations

- Encourage students who particularly enjoy or excel in this activity to refer to <http://iisd.ca/>, a website from which they may apply to a youth leadership program based on sustainable development.
- Provide alternatives to a written report such as a multi-media or poster presentation on the background research.
- Pair students for research activities.
- Provide examples.
- Assist students with daily monitoring of log completion and goal-setting.
- As an extension, have students complete a pamphlet, poster, or presentation on sustainability, or have students complete an additional section in their report in which they expand one or more of their recommendations into a more detailed action plan, with specific responsibilities and timelines added.

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## Appendix: 3.2.1

### My Ecological Footprint

#### One day Inventory

Complete the following:

a) Water Consumed

Record the number of times you use water (according to the following categories) in 24 hours.

Water Uses	Number of Uses
Flushing the toilet	
Showers or Baths	
Dishes/Household Chores	
Brushing your teeth	
Laundry	

b) Home Entertainment Devices and Hours Used

List all the home entertainment things in your home. Record how many hours you personally use each one in 24 hours.

Device	Number of Entertainment Devices	Time Used
CD player		
Stereo		
Radio		
Cassette Player		
Television		
VCR		
Computer		
Other		
Total		

c) Transportation

How did you get to school today? Check those that apply.

Mode of Transportation	Check which apply
foot	
bike	
bus/transit	
car (3+people)	
car (2 people)	
other	

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**Appendix: 3.2.1 (Continued)**

## d) Food Consumed

On a separate sheet of paper, write down everything that you ate in one day. Your teacher will help you to determine which food groups your daily intake best fits into and how many servings apply.

<b>Food Consumed</b>	<b>Number of Servings</b>
Meat alternatives (peanut butter, beans, etc.)	
Meat	
Vegetables	
Fruit	
Grain Products	
Dairy Products	
Other	

## e) Garbage

Record the amount of each item that you threw away, recycled, or reused.

<b>Item</b>	<b># Thrown Away</b>	<b># Recycled</b>	<b># Reused</b>
Plastic			
Glass			
Metal			
Paper			
Wood			
Food			
Other			

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## Appendix 3.3.1

### Materials Needed for the Watershed Simulation

Use the resources listed with the activity for a more detailed description of each piece of equipment.

1. Five funnels: top one 6 inches in diameter, middle three 4 inches, and bottom one 2.5 inches.
2. Five rubber stoppers. Drill holes through the stoppers so that you have a collection of five stoppers with holes of 4.0 mm, 5.5 mm, 7.2 mm, 11 mm, 14 mm.
3. One lid from a ½ or 1 litre yogurt container. Cut a round hole in the centre of the lid smaller than the diameter of the small funnel at the bottom. Epoxy or glue the lid onto the small funnel, with the edges of the lid pointing up. This creates a “flood plain”.
4. Tiny “monopoly” houses (or wooden blocks to simulate houses).
5. Support rod (beaker stand).
6. 5 clamps to hold the funnels.
7. A bucket to catch the water.
8. Sponges.

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## Appendix 3.8.1

### Stakeholder Group Profiles for Consultation Session

#### FOREST RECREATION ASSOCIATION

You have an interest in Temagami from a recreational point of view. Your goal is to make sure that the forests and lakes serve as wide a variety of recreational activities as possible and so you keep a close eye on proposals for new developments that you think might harm your interests. Fishermen, hikers, campers, canoeists, wilderness seekers, photographers, hunters, and bird-watchers make up your association.

Things for this Association to think about:

- Why can't things be left as they are? Why does the lumber company have to have Temagami?
- Can the logging be done in such a way that we won't have to sacrifice our enjoyment of the forest?
- What will the harvested areas look like? Is anyone thinking of the aesthetics?
- Is the company going to make sure that all of the areas harvested are put back into trees? And even if it does, will that take a long time?

#### LUMBER COMPANY

Your company is in favour of the continued harvesting of the Temagami forest, and you hope that the community supports the project. You believe that there are large benefits, especially in terms of jobs and other new opportunities that will become available. You realize that many serious questions have to be answered, and that people have to be satisfied that not only economics but other values, especially the environment, are respected.

Things for this Company to think about:

- How can we respond most effectively to some of the questions and concerns that we are going to hear about?
- How can we show people that we are paying proper attention to the forest environment?
- Who else in the community would help to support the project, and how can we work effectively with them?

Could our employees help to explain the project within the community?

#### TEMAGAMI ABORIGINAL COUNCIL

The Council speaks for the Aboriginal band which has harvested, hunted, trapped, and fished in this forest for centuries and considers parts of it sacred. It is worried that increased wood harvesting may disrupt these traditional uses and customary activities, which are vital to its welfare and way of life. It is also asking itself whether it could share in deciding how forest management is to be conducted in the area and whether some of the new jobs that the proposed expansion will create will be available for its people.

Things for the Council to think about:

- Will we still be able to use these lands as we have for centuries?
- What will happen to our sacred grounds, will they be protected?
- Are there going to be any jobs in this for us?
- Can we be involved in the forest management planning?

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## Appendix 3.8.1 (Continued)

### TEMAGAMI CHAMBER OF COMMERCE

You are the voice for a variety of business interests in the community and are very concerned with matters that affect the growth and development of the local economy. You find the Lumber Company's project of great interest because it promises to stimulate the local economy and be good for business. Some of your members want to accept it without question while others want answers to questions they think are important. Your members include a wide variety of people - a banker, real estate developer, retailer, newspaper publisher, car dealer, motel owner, insurance broker, and lumber mill manager.

Things for the Chamber of Commerce to think about:

- How many jobs will the project create, both directly and indirectly?
- Will there be additional services that the community will have to provide, and will the company pay their share?
- Is it going to cost others who already live in the community to help pay for any additional services?
- Will it be compatible with another very important business that the community has been trying to cultivate, namely tourism and recreation?

### ENVIRONMENTAL ASSOCIATION

Your group consists of about 100 private citizens from all walks of life. There are teachers, lawyers, factory workers, business people, doctors, homemakers, store clerks, students, and anyone who has a strong interest in the environment. Some of your members have technical knowledge and expertise, but many do not. Concern about the environment is your common interest and your Association regards itself as a kind of environmental watchdog. It petitions and speaks out on all kinds of local environmental issues. These range from litter in the streets and waste reduction and recycling to industrial pollution; and also, because it is so important to the community, forestry.

Things for this Association to think about:

- How can we be sure that the company will take care of the forest environment?
- What happens to wildlife when you cut down trees?
- What effect will the project have on water quality and air quality?
- What about soil erosion; isn't that a problem when trees are harvested?

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### MINISTRY OF NATURAL RESOURCES (MNR)

The MNR includes experts in several different fields. Each has been educated in a specific discipline and is qualified to assess situations objectively. They are not tied to any particular side in the debate but are committed to the responsible management and long-term protection of natural resources. This group includes a silviculturalist who understands how forests grow and what they require in order to be healthy and productive; a wildlife biologist concerned with providing the necessary habitat in the forest for birds and animals; an authority on wetlands; a logger, a tree planter, and a park superintendent.

Things for the MNR to think about:

- Will sustainable development be the watchword here? And will the complete forest environment receive the care and attention that it should?
- What immediate and longer-term effects will the project have on the habitat for animals and birds?
- Will the company be sensitive to the habitat requirements of birds, animals, and fish?

## APPENDIX 3.8.2

### Written Feedback to Consultation Forum

<b>Criteria</b>	<b>Level 1 (50-59%)</b>	<b>Level 2 (60-69%)</b>	<b>Level 3 (70-79%)</b>	<b>Level 4 (80-100%)</b>
Understanding of concepts related to the recommendations. K/U	- few facts and concepts presented, with minimal relationship to the recommendations.	- facts and concepts presented with some relationship to the recommendations evident.	- good range of facts and concepts presented with clear relationship to the recommendations.	- comprehensive range of facts and concepts presented correctly, with relationship to the recommendations clearly articulated.
Quality of recommendations T/I	- recommendations are repetitive and/or simplistic.	- recommendations suggest obvious solutions to the problems.	- recommendations include some creative solutions to the problem.	- recommendations present creative solutions to a range of aspects of the problem.
Clarity of written communication. C	- recommendations and supporting points are presented with limited clarity.	- recommendations and supporting points are presented with some clarity.	- recommendations and supporting points are clearly and concisely presented.	- recommendations and supporting points are clearly and concisely presented and logically connected.
Consistency of recommendations with stakeholder role. A	- recommendations and supporting arguments show limited connections to the role being played.	- recommendations and supporting arguments show some consistency with the role being played.	- recommendations and supporting arguments are consistent with the role being played.	- recommendations and supporting arguments are highly consistent with the role being played.

## Appendix 3.9.1

### Futures Tree

Criteria	Level 1	Level 2	Level 3	Level 4
Branch of tree shows how human activities affect the environment. K/U	- makes limited connections between human activities and environment.	- makes some connections between human activities and environment.	- makes considerable connections between human activities and environment.	- makes thorough connections between human activities and environment.
Selection of appropriate existing programs to reduce environmental impact. T/I	- includes programs which would have limited effectiveness.	- includes programs which would have some effectiveness.	- includes programs which would have considerable effectiveness.	- includes programs which would have thorough effectiveness.
Future tree layout and labels. C	- layout and labels communicate information with limited clarity.	- layout and labels communicate information with some clarity.	- layout and labels communicate information with considerable clarity.	- layout and labels communicate information with thorough clarity.
Results of changed behaviour. A	- predicts consequences of new behaviour on natural systems with limited realism.	- predicts consequences of new behaviour on natural systems with some realism.	- predicts consequences of new behaviour on natural systems with considerable realism.	- predicts consequences of new behaviour on natural systems with thorough realism.

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## Appendix 4.3.1

### THE GLOBAL CHALLENGE Simulation Exercise

**Purpose:** The Global Challenge is a simulation game that mimics the discrepancies in wealth and resources between developed, newly industrializing, and developing countries. Students observe and participate to understand how each group uses its power in relating with other groups - that is, to study the politics of the simulation.

**Grouping:** There are three groups (Team 1, Team 2, and Team 3), each group reflecting either a developed, newly industrializing, or developed country. Students are not aware of which type their group represents. The debriefing after the activity takes place as a whole class.

**Time:** Approximately 35 minutes in teams, then approximately 25 minutes for debriefing.

**Materials:**

- Bristol board (enough for one set of blocks)
- string
- black and red marker
- 1 pair of scissors
- 1 ruler
- 1 roll of masking tape
- optional: donuts or a treat for Team 1

**Simulation Instructions and Rules:**

Students are divided into three teams:

Team 1

- approximately 3 or 4 students (assuming a class of 30)
- freedom of movement for all team members
- very comfortable surroundings
- some form of extra luxury (e.g., donuts, bubble gum)
- 1 pair of scissors, tape, a black marker, 25 cm. of string
- instruction sheet

Team 2

- approximately 6 or 7 students
- two 10 cm square pieces of Bristol board, 1 red marker, 1 ruler
- freedom of movement for 3 students at a time
- moderately comfortable surroundings, but no luxuries
- instruction sheet

Team 3

- the remaining students, approximately 20
- more than enough Bristol board to make 2 cubes 10cm by 10cm by 10 cm
- physically uncomfortable surroundings (e.g., a washroom, limited space, etc.)
- freedom of movement for one student only
- instruction sheet (optional)

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### Appendix 4.3.1 (Continued)

Groups are given instruction sheets and sent to their locations. The groups are to create two cubes with specific markings joined by a 20 cm string. The game either evolves co-operatively with groups sharing all of their resources, or it evolves competitively. Either way, there is a great potential for learning when applied to the current world situation.

Step 1: Begin the game. Allow the teams to trade for 30 minutes or so. Teacher should be writing down observations as the game evolves.

Step 2: Clean up and Debriefing (approximately 25 minutes). Teachers may want to ask the class:

1. Teacher can begin by describing what they observed during the simulation.
2. Did any team complete the goal?
3. How did team 3 feel?
4. How did team 2 feel?
5. How did team 1 feel?
6. How does this exercise relate to the world, in relation to developed, newly industrializing, and developing countries? (Possibly identify which teams reflect each of these categories.)
7. Why are most resources found in developed countries?
8. How does this exercise relate to racism?
9. Is equal distribution of resources possible? Are there any solutions to the disparity in wealth?

Step 3: Response Paper. Students are to write a one-page response paper to this activity. They are to identify which grouping they were in, how they felt during the exercise, and explain how this exercise relates to the world. They may describe how a person in a real-life situation such as this may feel. They can offer possible solutions.

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## Appendix 4.3.2

### Student Handout THE GLOBAL CHALLENGE

The task of your team is to construct two cubes with each of the six faces of each cube measuring 17.5cm by 17.5 cm. Using the magic markers provided, mark the following on each of the cubes:

- a) 3 red circles on the outside of the two opposing or opposite faces
- b) 4 black XOOX marks on the outside of the two faces
- c) 5 alternating red, then black, OXOXO marks on the outside of the top and bottom faces.

Your two cubes must be joined together by a 35 cm piece of string, passing through the centers of two of the sides marked with red circles.

Your team only has 30 minutes (starting now) to complete this project. You may use only the materials the trainer has provided to your team and the other two teams. You may want to contact and interact with the other teams. You can do this in any way that you see as desirable. Your group may send no more than the designated number of team members out at any time to meet with members of other teams.

Good Luck!

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### Appendix: 4.3.3

#### INTERNATIONAL TRADE: A MORAL DILEMMA

##### Scenarios

(Unit 4, Activity 3)

Divide the class into groups of five. Each group receives a scenario. Each scenario deals with the issue of moral standards and whether they should play a role in Canada's trade policies.

##### Scenario One:

Canada's Tobacco farmers have suffered financial setbacks in recent years as more and more Canadians quit smoking. At the same time, demand for tobacco products is increasing in developing countries. Should the Canadian government promote the role of Canadian tobacco in other countries? (*Making Connections*, p. 431)

##### Scenario Two:

The governments of many countries in the world violate the human rights of their citizens, often children. It has been suggested that Canada should try to discourage these abuses by tying trade to human rights. Should Canada stop imports from a country that they know is using children to manufacture the product cheaply? Should human rights and trade be linked? (*Making Connections*, p. 431)

##### Scenario Three:

Many countries of the world are polluting the environment (e.g., sea and air pollution) in the manufacturing of goods for international trade. Should Canada limit or stop the imports of products that they know are being manufactured in environmentally "unfriendly" ways?

##### Scenario Four:

The trade in nuclear technology is becoming a hot issue. Many countries of the world do not have the means to develop their nuclear technology and therefore need to import this technology from other countries. Should Canada export this type of technology to other countries? If so, should it be regulated in any manner?

##### Scenario Five:

Sometimes a country may offer another country aid for reasons other than just being a Good Samaritan. Perhaps the country in need of aid has a good, service, or resource that the country offering the aid would like. Should Canada offer aid to countries that it trades with? And if so, should that trade be regulated in any way.

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## Appendix 4.4.1

### Foreign Ownership Readings

#### Why Foreign Ownership is Good for Canada - A speech by US Senator Tex McDonald

Canadians who complain about foreign ownership make me sick. By building our branch plants in Canada, we Americans have guaranteed Canadians a high standard of living. Without our investment Canada would still be a poor, undeveloped country. Our companies provide Canadians with jobs which pay high wages. These people spend their wages on many different products. This in turn helps other companies - many of which are Canadian.

We provide American expertise and know-how to these companies in Canada, making them modern and competitive. These companies pay high taxes which the Canadian government can use to help Canadians. Ordinary Canadians can invest in these companies and make money from them. A large percentage of the profits of these companies are reinvested in Canada to further develop your country.

A very important point is that when our companies make their products in Canada, it means that Canada does not have to import these products from another country. Indeed, Canada can export these products and thus Canada's balance of trade is helped.

Because of our branch plants we Americans take an interest in Canada - we help you out, and if necessary we will protect you. By sharing these companies our two countries have become close friends.

Shell, Texaco, Firestone, Ford, General Motors, Burger King, General Electric - these companies are good Canadian citizens! What's good for them is good for Canada. Stop talking about silly nationalism, bury your false pride and realize that US investment and ownership in Canada is a good thing. Praise these companies, don't criticize them.

#### Why Foreign Ownership is Bad for Canada - A speech by Member of Parliament, Julie Wilson

New York, Chicago, Dallas, Los Angeles - why should the important decisions concerning Canada be made in the United States? At the moment, because of our branch plant economy, decisions regarding plant closure, trading partners, prices, etc. are made in the United States. Canadians are not in control of their own country.

When we allow these foreign companies to operate in Canada most of the profits leave Canada and go back to be invested in the United States. Many of these large US multinationals put smaller Canadian companies out of business. The argument that we are not big enough to have our own firms is silly. Sweden, with a much smaller population than Canada, makes two of their own cars, the Volvo and Saab, and sells them all over the world. Some Canadian businesses such as Stelco, CP, and Electrohome have proven that Canada can successfully run her own industries.

Often, US companies disregard Canadian environmental concerns. Most Americans don't even know what acid rain is! A corporate executive in Dallas does not care if his company is polluting a river in Northern Canada. In many branch plants the top managers are Americans, loyal to the United States, and not concerned with Canadian interests.

These American companies in Canada take away from our Canadian culture and identity. With all of these McDonalds and Burger Kings on every corner we might as well be in Chicago.

Why should industries from other countries get rich on Canadian resources? We have been an economic colony too long. It is time to gain control of our economy before it is too late!

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## Appendix 4.4.2

### Foreign Ownership Student Worksheet

1. In each reading, underline the FACTS presented. Put (brackets) around those statements that are OPINIONS.
2. In the chart below summarize the reasons why each individual feels the way he/she does.

Tex McDonald: Arguments in Favour of Foreign Ownership	Julie Wilson: Arguments in Opposition to Foreign Ownership
12345	12345

3. In the above chart place a \* beside each argument or point which you understand and a ? beside any argument or point which you do not fully understand. Try to find someone in the class who has a \* beside a point which you have a ?. By asking questions and discussing the points, try to change all your ?s to \* s. Do not proceed until you understand each point. (Teachers should allow a free 15 minute period to allow students to clarify)
4. Write a one-page opinion essay expressing your views on foreign ownership. (In other words, is foreign ownership good or bad for Canada?) In your essay, point out the two arguments from the other side of the issue which you consider to be the most convincing.

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## Appendix 4.6.1

### The Ottawa Process

#### *What is the Ottawa Process?*

The Ottawa Process is a "fast-track" diplomatic process aimed at negotiating and signing a treaty banning the use, production, transfer and stockpiling of antipersonnel (AP) mines by December 1997.

#### *Why a fast-track process?*

The widespread use of AP mines has created an international humanitarian crisis of large proportions. The international community has called for urgent action to address this crisis. A total of 156 states supported UN General Assembly resolution 51/45 S, which urges states to:

*pursue vigorously an effective, legally-binding international agreement to ban the use, stockpiling, production, and transfer of anti-personnel mines with a view to completing the negotiations as soon as possible.*

We must act now to prevent further use of AP mines, and reduce the daily carnage of deaths and disabilities caused by these horrible weapons.

#### *How did the Ottawa Process begin?*

Non-governmental organizations (NGOs) led by the International Campaign to Ban Landmines (ICBL) successfully raised international awareness about the devastating impact of AP mines on generations of people in conflict-ridden areas. A number of countries have unilaterally declared moratoriums or bans on the export, production or use of AP mines, but as recently as 1994 an immediate and global ban on AP mines was considered unrealistic.

In January 1996, Canada began working in partnership with a global coalition of like-minded states, international organizations, UN agencies, and NGOs for rapid progress toward a global ban on AP mines. Canada, as a nation involved in peacekeeping and humanitarian demining, and as a donor of international development assistance, has a special interest in ensuring that no more AP mines are planted.

The Ottawa Conference of October 1996, entitled "Towards a Global Ban on Anti-personnel Mines," brought together 50 participant and 24 observer states to discuss a strategy for achieving a global AP mine ban. The participating states adopted the Ottawa Declaration, in which they committed themselves to ensure "the earliest possible conclusion of a legally-binding international agreement to ban anti-personnel mines." At that conference, Canada's Minister of Foreign Affairs, Lloyd Axworthy, invited all states to work with Canada in negotiating a treaty banning AP mines to be signed by December 1997.

#### *How many nations support the Ottawa Process?*

The list is growing. As of August 1997, 107 states had expressed their commitment to sign a treaty by December.

#### *How was the draft treaty text developed?*

Austria prepared and circulated a draft treaty text which has been the basis of extensive bilateral and multilateral consultations throughout 1997 including at a meeting of 111 countries in Vienna, Austria, and a meeting of 120 countries in Bonn, Germany.

#### *What about countries that won't sign the Ottawa treaty?*

The aim of the Ottawa Process is to conclude a treaty banning AP mines and create a new norm against the use of these horrendous, indiscriminate weapons. Once a treaty is in place, it will give the international community a specific platform from which to urge nations that have not yet done so to sign a treaty supported by a broadly based cross-section of the international community.

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## **Appendix 4.6.1 (Continued)**

### ***Aren't AP mines necessary to protect troops?***

The International Committee of the Red Cross commissioned a study on the military use and effectiveness of anti-personnel mines. It was written by retired Brigadier Patrick Blagden of Great Britain, and endorsed by 52 active and retired military officers from 19 countries representing every continent. After examining 55 years of traditional and counter-insurgency conflicts, the study concludes that in no case did the use of anti-personnel mines play a major role in determining the outcome of a conflict.

Retired General Norman Schwarzkopf and 14 other senior U.S. military officers wrote an open letter to President Clinton, published in the New York Times in April 1996, in support of a ban. The Vietnam Veterans of America Foundation is one of the organizations at the forefront of the movement to ban AP mines, as many of its members suffered severe casualties from their nation's own mines. As of May 1997, 52 countries have unilaterally renounced the use of AP mines.

### ***What mines are covered by the treaty?***

The treaty covers anti-personnel (AP) mines, which are detonated by the pressure or proximity of a person, as opposed to anti-tank mines, which require more pressure to detonate. AP mines are indiscriminate - they are victim activated - in comparison to claymore mines, which are detonated by remote control and can therefore be reserved for military targets.

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## Appendix 4.6.2

### Mine Facts

Anti-personnel landmines at the root of a humanitarian crisis of immense proportions. Every year, 26000 people are killed or injured by landmines. Eighty per cent of them are civilians - too many are children. The vast majority of these casualties are caused by anti-personnel (AP) landmines. The legacy of destruction often extends for decades after the conflict in which the mines were first deployed is over. AP landmines respect no cease-fire, and they are indiscriminate - they do not distinguish between a soldier's boot and a barefoot child.

Some additional facts about anti-personnel mines:

- While concerned nations spend millions of dollars every year on assistance to AP mine victims, there are some 70 new victims every day, one every 20 minutes.
- More people have been killed by AP mines than by nuclear and chemical weapons combined.
- An estimated 110 million landmines are currently deployed in 70 countries - most of them in the developing world.
- AP mines terrorize and impoverish entire communities. Developing countries must bear the additional cost of victim assistance. In some countries there is not enough money for wheelchairs, prosthetics, or even crutches for mine victims.
- AP mines render large tracts of land useless for farming or grazing. Starvation can result, and both the delivery of food aid and development are obstructed and made dangerous by AP mines. AP mines have been called an overwhelming environmental disaster.
- AP mines prevent people from returning to their homes in safety after a war or conflict, contributing to a global refugee crisis.
- For every mine cleared, 20 new mines are planted. If the use of AP mines stopped tomorrow, at the current rate it would take 1100 years to clear the mines already planted around the World.
- In mine-infested Angola, one in every 334 persons is an amputee, compared with one amputee per 22 000 inhabitants of the United States. In areas where it is difficult for the able-bodied to find work or where people with disabilities are stigmatized, amputees face enormous challenges.
- The areas most severely affected by mines include Afghanistan, Angola, Bosnia, Cambodia, Croatia, Eritrea, Iraq, Mozambique, Somalia, Sudan and Viet Nam.
- AP mines significantly impede the work of humanitarian relief organizations and United Nations peacekeeping personnel.
- In the heat of an armed conflict, mine fields are frequently not mapped or monitored. Mines can shift depending on the weather and type of soil, sometimes travelling kilometers if washed out by heavy rains.
- AP mines are designed primarily to wound, diverting enemy resources to treating severe injuries. They are also intended to demoralize a population.
- Some AP mines, such as airborne-butterfly mines, are specifically designed to attract children.
- Children formed one quarter of those treated for landmine injuries in Red Cross units in the Afghan and Cambodian conflicts, and three quarters of the mine-related injuries in a hospital in northern Somalia.
- Humanitarian mine clearance is time-consuming and dangerous. One deminer is killed and two others are injured for every 5 000 mines cleared.
- AP mines cost as little as US\$3 to produce and up to US\$1 000 to remove.

Sources: *International Committee of the Red Cross, United Nations*

## Appendix 4.8.1

### History of the Future

Criteria	Level 1	Level 2	Level 3	Level 4
Description of mandate. K/U	- demonstrates limited understanding of mandate of organization.	- demonstrates some understanding of mandate of organization.	- demonstrates considerable understanding of mandate of organization.	- demonstrates thorough understanding of mandate of organization.
Sequence of steps. K/U	- demonstrates limited understanding of how natural and human systems change over time and the factors that cause those changes.	- demonstrates some understanding of how natural and human systems change over time and the factors that cause those changes.	- demonstrates considerable understanding of how natural and human systems change over time and the factors that cause those changes.	- demonstrates thorough understanding of how natural and human systems change over time and the factors that cause those changes.
Original solution. T/I	- uses creative thinking skills with limited effectiveness in producing a solution.	- uses creative thinking skills with moderate effectiveness in producing a solution.	- uses creative thinking skills with considerable effectiveness in producing a solution.	- uses creative thinking skills with a high degree of effectiveness in producing a solution.
Poster layout - use of pictures and captions. C	- poster communicates information with limited clarity.	- poster communicates information with some clarity.	- poster communicates information with considerable clarity.	- poster communicates information with high degree of clarity.
Solution process. A	- has developed a process which is limited in scope and sophistication.	- has developed a process which is simplistic in scope and sophistication.	- has developed a process which is realistic in scope and sophistication.	- has developed a process which is insightful in scope and sophistication.

## Appendix 4.8.2

### Newspaper Article

Criteria	Level 1	Level 2	Level 3	Level 4
Understanding of key issues. K/U	- addresses only some of the key issues.	- addresses some of the key issues.	- addresses almost all of the key issues.	- addresses all of the key issues.
Evaluation of solution. T/I	- produces an evaluation which is limited in scope.	- produces an evaluation which exhibits a reasonable scope but is incomplete.	- produces an evaluation which exhibits a complete and reasonable scope.	- produces an evaluation which is insightful and complete in scope.
Clarity of presentation. C	- presents material in a manner which prevents easy understanding by the reader.	- presents material in a manner which allows understanding by the reader.	- presents material in a manner which is easily understood by the intended audience.	- presents material in a manner which augments understanding by the intended audience.
Inclusion of required information. A	- addresses an incomplete number of issues as directed in the interview outline.	- addresses all issues as directed in the interview outline, but does so in a limited fashion.	- addresses all issues as directed in the interview outline.	- addresses issues as directed in the interview outline in a manner which enhances the reader's understanding

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## Appendix 5.1.1

### Sustainability Research Report: The Context

Sustainability is an approach to development that meets the needs of the present without negatively affecting the ability of future generations to meet their demands. The Minister of the Environment and the Minister of Industry, Trade and Commerce are working jointly on a project to develop policies and legislation which support sustainability in the use of Canada's natural resources. They have created a list of resource areas that are currently being affected by economic development. They have contracted your consulting firm to do the following:

- Provide background research on one of the resource areas.
- Identify environmental problems and economic implications related to the resource area.
- Make recommendations regarding solutions and responsibilities for one of the resource areas.

As part of the consulting team you are responsible for preparing a report on a specific topic within the resource area.

They are also seeking input for the production of a campaign to inform the general public about sustainability issues. You review the work of three other consultants, who are investigating other resource areas in order to provide a summary of information that they can include in their publications.

1. The following resource areas have been identified:

- Water Resources
- Wetlands
- Rivers and Drainage Basins
- Groundwater Resources

2. Atmospheric Resources

- Global Warming
- Ozone Depletion
- Air Quality

3. Terrestrial Resources

- Agricultural Land
- Mineral Resources
- Use of Land for Landfill Sites

4. Energy Resources

- Non-renewable Resources (fossil fuels)
- Renewable Resources (solar, wind, geothermal etc.)
- Nuclear Power

5. Biotic Resources

- Endangered Species
- Fishery Resources
- Forest Resources

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## Appendix 5.1.1 (Continued)

### Report Requirements: Instructions for Students

Each student does the following:

1. Choose a resource area, identify a particular topic within it for investigation, and keep a log of your activities.
2. Carry out background research and prepare a report on the following:
  - the extent of the resource and/or its use along with current trends (include maps, charts, graphs as appropriate).
  - summary of environmental problems related to the resource (e.g., Is it being depleted? Is it being polluted? Is it affected by human activity? Does it need protection? What are the consequences if not action is taken?).
  - economic pressures on the resource (e.g., what industries depend on the resource or affect the resource, what jobs depend on the resource, what has been happening over time?).
  - programs or efforts currently in place to address any problems (e.g., by individuals, governments, industry, NGOs or international organizations).
3. Present your research report to the other members in your consulting team. Brainstorm solutions to the problems. These may include government legislation, education, protection of certain areas, regulations, or controls on use in certain areas, international agreements, industrial strategies, and individual actions.
4. Complete the following organizer itemizing at least three issues related to your topic along with recommendations for solutions at a personal, industrial, government, and international level. (Some cells may be left blank.)

<b>Recommendations</b>				
<b>Issues</b>	<b>Personal Action</b>	<b>Action by Industry</b>	<b>Government Action</b>	<b>International Action</b>
1.				
2.				
3.				

5. Submit your report, including the summary of recommendations, to the teacher.
6. Complete an in-class assignment in which you summarize information from consultant reports from three other resource areas, with analysis of key points on sustainability regarding personal actions, industrial actions, government actions, and international actions. While doing this you also provide peer-feedback in the form of written comments on each report based on the performance review form.
7. Revise your report based on the peer-feedback you received and submit to the teacher for final evaluation, based on the attached performance review form.

## Appendix 5.1.1 (Continued)

### Performance Review Form

Criteria	Level 1	Level 2	Level 3	Level 4
K/U Identification and analysis of the patterns of spatial organization of the resource studied. (SSV.03B)	Limited presentation of the extent of the resource and its use, with maps limited to only regional or national data.	Presentation of the extent of the resource and its use includes some information on patterns beyond regional data and/or trends over time.	Presentation of the extent of the resource and its use includes considerable information on relevant regional, national and global data and/or trends over time.	Comprehensive presentation of the extent of the resource and its use, including information that may shows relevant regional, national, and global data, as well as trends over time.
T/I Collection, organization, and synthesis of information from a variety of sources. (MIV.01B)	Most information is from notes and textbooks, and needs more connections made between the concepts presented.	Information from library and/or internet resources is used in addition to that from notes and textbooks, with some connections between the concepts evident.	Well-organized current information from notes, texts and library and internet sources is used, with connections between the concepts evident.	A wide variety of current sources are used to provide information that is organized, relevant and presented in a connected, coherent manner.
T/I Analysis of factors and their interactions which affect natural and human systems. (SSV.05B, HEV.01D)	A limited number of problems and economic pressures are identified.	Problems and economic pressures are presented with some supporting information regarding the connections between environmental and economic systems.	A range of problems and economic pressures are identified and the supporting information demonstrates an understanding of connections between environmental and economic systems.	A wide range of problems and economic pressures are presented along with supporting information that demonstrates thorough understanding of the connections between environmental and economic systems.
C and K/U Research, synthesis and reporting on global concerns. (GCV.03B)	Research summary is brief and limited in scope, with obvious omissions of information.	Research summary contains adequate information, presented with some clarity, including some relevant information.	Research summary is clearly presented with relevant supporting information.	Research summary is very clear and comprehensive, with ample information presented for the audience.
C Selection of appropriate methods to communicate results of geographic inquiries. (MIV.03D)	Maps, charts and graphs are limited in number, with some obvious omissions.	Some maps, charts and graphs are used, usually appropriately.	A good range of maps, charts and graphs are used appropriately to communicate the geographic information.	A wide range maps, charts and graphs are used appropriately to communicate the geographic information in a highly effective manner.
A Understanding of the challenges of resource sustainability. (HEV.03B)	Recommendations are repetitive and/or obvious, with limited areas identified for action.	Recommendations are simplistic or limited in scope, with a few areas identified for action.	Recommendations include some creative solutions, with a good balance between personal, industrial, government, and international responsibilities.	Recommendations are creative, comprehensive and realistic, with a reasonable balance between personal, industrial, government, and international responsibilities.

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## Appendix 5.1.2

### Sustainability Issues: In-class Assignment

1. Read the three reports provided to you on different resource areas other than your own and summarize the recommendations made in the following chart.

<b>Resource Area</b>	<b>Personal Action</b>	<b>Industry Action</b>	<b>Government Action</b>	<b>International Action</b>
1.				
2.				
3.				

2. What similarities are there in the personal actions that are recommended?
3. Write a paragraph explaining the role government plays in managing resources and protecting the environment.
4. Choose one of the reports and make an additional recommendation in the area of industry action.
5. Explain what is meant by sustainability, using at least two examples from the reports.
6. List three key messages on sustainability that the government should include in their information to the public.

Use a pencil to write constructive suggestions on the reports to help the students improve their final product.