



Climate Change Resources For Teachers 2016



Climate Change Resources for Teachers

*Climate change is a problem of global proportions whose solution may collectively be our greatest challenge.*¹

COP 21 has set a new global agenda to address climate science, climate impacts, mitigation actions and adaptation measures. Here in Canada the new Federal government has made significant action on climate change part of the general mandate of every Minister.² Leadership on this cross-cutting issue is central to the mandate of the newly renamed Department of “Environment and Climate Change:”

“[Y]our overarching goal will be to take the lead in implementing the government’s plan for a clean environment and a sustainable economy. Your key priority will be to ensure that our government provides national leadership to reduce emissions, combat climate change and price carbon. I expect you to help restore Canada’s reputation for environmental stewardship.”

Success in moving Canada toward a “clean environment and a sustainable economy” will require support and buy-in at all levels of Canadian society that can only be achieved through increased awareness, education, and skills development for the general public, private and public sectors, and especially for youth.

The scope and complexity of climate change presents educators with a formidable challenge. Understanding climate change involves phenomena that cross traditional school subject boundaries ranging from geosciences to media and requires that one have a grasp of the process of change and an understanding of system dynamics. Many climate change scientific findings challenge broadly held societal beliefs and ambitions. How society is presently responding provides an ideal context for new learning.

¹ *Weather, Climate and Climate Change: Key Themes in Education for Sustainability*, Learning for a Sustainable Future, 2006, page 3.

² The introductory section of the Mandate Letter for each and every Minister includes the following passage: “If we are to tackle the real challenges we face as a country – from a struggling middle class to the **threat of climate change** – Canadians need to have faith in their government’s honesty and willingness to listen. I expect that our work will be informed by performance measurement, evidence, and feedback from Canadians. We will direct our resources to those initiatives that are having the greatest, positive impact on the lives of Canadians, and that will allow us to meet our commitments to them. I expect you to report regularly on your progress toward fulfilling our commitments and to help develop effective measures that assess the impact of the organizations for which you are answerable.” [Emphasis added]

Learning for a Sustainable Future (LSF) has identified and reviewed a wide range of climate change classroom resources, children's literature books and videos which are available on LSF's Resources for Rethinking (www.R4R.ca) database.

WWW.R4R.CA is a free online database which provides access to over a thousand excellent, peer-reviewed, curriculum-matched resources for educators from hundreds of publishers. These resources include lesson plans, activities, children's literature, and videos. Educators can search by language, jurisdiction, grade, subject, curriculum unit, and sustainability theme in order to get the perfect resource. About 6,600 teachers per month visit the R4R.ca website to access resources.



Learning for a Sustainable Future (LSF) is a Canadian charitable organization whose mission is to promote, through education, the knowledge, skills, values, perspectives, and practices essential to a sustainable future. LSF has been working with the federal and provincial governments, universities, business, educators and youth across Canada to support Climate Change and Sustainable Development Education since 1991. LSF's innovative programs and strategic partnerships are reshaping education policy and transforming learning methods, helping students learn to address the increasingly difficult economic, social, and environmental challenges of the 21st century.

For further information on our programs, please contact us at:

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Climate Change Resources for Teachers

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|------------------|
| Middle School |
| Secondary School |

A. Lesson / Unit Plans

| Resource Title | Review | Synopsis | Curriculum Fit | |
|--|---|---|---|---|
| | | | Course | Unit |
| Heat Up Over Climate Change | http://r4r.ca/en/resource/heat-up-over-climate-change | Explores the social, economic & environmental effects of climate change on children. <i>Subject content-</i> climate change cause and effects, global connections | Social Studies 6 Geography 7 | -People & Environments -Physical Patterns in a changing world |
| Sow the Seed | http://www.resources4rethinking.ca/en/resource/sow-the-seed | Examines the impact of climate change on agriculture. <i>Subject content-</i> plant growth, impacts of climate change around the world | Social Studies 6 Geography 7 Science & Technology 7 | -People & Environments -Physical Patterns in a Changing World -Interactions in the Environment |
| Climate Change: Connections & Solutions (6-8) | http://r4r.ca/en/resource/climate-change-connections-and-solutions-gr-6-8 | Examines the economic, social and environment dimensions of CC. <i>Subject content-</i> Carbon cycle, greenhouse effect, energy sources, climate change | Science & Technology 6 Science & Technology 7 Math 6, 7 & 8 Social Studies 6 | -Electricity & Electrical Devices -Interactions in the Environment -Data Management -People & Environments |
| Climate Change: Creating Solutions for our Future | http://www.resources4rethinking.ca/en/resource/climate-change-creating-solutions-for-our-future | Explores the past, present & future aspects of climate change. <i>Subject content-</i> greenhouse effect, CO2 emissions, weather & climate, inter-connections | Science & Technology 5 Science & Technology 6 Science & Technology 7 Geography 7 Science & Technology 8 | -Conservation of Energy -Biodiversity -Interactions in the env. -Physical patterns in a changing environment -Systems in action |
| Sunny Schools Resources | http://resources4rethinking.ca/en/resource/sunny-school-resources | Multi activity resource that examines the climate change cause , effects around the world and the importance of investments in renewable energy | Science & Tech. 5 Science & Technology 6 Geography 7 Geography 9 | -Conservation-Energy & Res -Electricity -Natural resources & Sustai -Interactions- Physical |
| Real World Math | http://www.resources4rethinking.ca/en/resource/real-world-math-lessons-7-9-and-12 | Students use climate change examples to write, graph and solve inequalities. <i>Subject content-</i> solving inequalities, carbon footprint, greenhouse gases | Math 8 | -Measurement & number sense |
| Taking Our Temperature | http://resources4rethinking.ca/en/resource/taking-our-temperature-4-lesson-plans | Examines health issues related to global warming. <i>Subject content-</i> water-borne pathogens, transmission of vector-borne diseases, greenhouse gas effects | Science & Technology 7 Science & Technology 8 Health & Physical Ed. 8 Issues in Canadian Geography 9 Science & Technology 10 (Academic & Applied) | -Interactions in the Environ. -Water Systems -Healthy Living -Interactions in the Physical Env -Earth and Space Science |
| What's All The Buzz About (Middle School links) | http://r4r.ca/en/resource/whats-all-the-buzz-about | How climate change effects disease transmission. <i>Subject content</i> – climate, Infectious disease – transmission & vectors, data collection & presentation | Geography 7 Math 7 & 8 Phys. Ed & Health 7 & 8 Geography 9 | -Physical Patterns in a Changing World -Data Management & Prob. -Healthy Living -Interactions in the Physical Env. |

| Resource Title | Review | Synopsis | Curriculum Fit | |
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| | | | Course | Unit |
| Mining the Carbon Out of People's Lifestyles | Currently under review | Explores our use of electricity & its impact on the environment. <i>Subject content</i> - climate, renewable & non-renewable energy, energy consumption, fossil fuels, phantom power | Science & Technology 6 Geography 7 | -Electricity & Electrical Devices -Natural Resources: Use & Sustainability |
| Eneraction-Sustainable Transportation Lessons | http://resources4rethinking.ca/en/resource/eneraction-sustainable-transportation-lesson-package | Students explore the environmental impacts of various methods of transportation. <i>Subject content</i> -Transportation, Greenhouse gases, Data collection, computation, case study analysis, | Math 5,6,7 Science & Tech 5 & 8 Science & Tech 7 | -Data Management, Numeracy -Systems in Action -Interactions in Ecosystems |
| Rethinking Energy | http://resources4rethinking.ca/en/resource-review/rethinking-energy | Students examine different forms of alternate energy and take personal action to reduce reliance on fossil fuels. | Science & Technology 5 Science & Technology 6 Geography 7 | -Conservation-Energy & Res -Electricity -Natural resources & Sustai |
| Changes Ahoof | http://resources4rethinking.ca/en/resource/changes-ahooof | Students use a computer model to investigate the impact of climate change variables on the Porcupine Caribou population. Other activities include the construction of a board game to simulate the challenges and climate change effects on the caribou's annual migration | Science 7 Geography 9 Science 10 | -Interactions in the Env. --Interactions: Physical Env. -Sustainability of Ecosystem |
| Connections to Climate Change in Grade 11 and 12 Science | http://www.resources4rethinking.ca/en/resource/connections-to-climate-change-in-science-in-grade-11 | Resource provides climate & energy activities connected to outcomes in Biology, Chemistry & physics. Specific topics include ocean acidification, bioenergy & energy transformation | Biology 11 Chemistry 11 Physics 11 Environmental Sci 11 | -microbiology -gases & atmospheric chem.. -hydrocarbons & energy -energy & society -Scientific Solutions -Human impacts |
| Melting Ice | http://r4r.ca/en/resource/melting-ice | Examines the global causes and effects of melting ice. <i>Subject content</i> -global warming, sea level rise, Aboriginal perspectives, interconnectedness | Science 10. Academic & Applied Geographers toolkit (Geog) 11 Envir Science 11 | -Earth & Space-Climate -Human Impact on the Environ. -Global Connections -Human Impact |
| Climate Change: Connections & Solutions (9-12) | http://r4r.ca/en/resource/climate-change-connections-solutions-gr-9-12 | Examines the economic, social and environment dimensions of CC. <i>Subject content</i> - Carbon cycle, greenhouse effect, energy sources, climate change | Geography 9 Science & Tech 9 Science 10 Env. Science 11 Physical Geography 11 Canada & World Issues 12 The Env & Resource Mgt. 12 | -Interactions in the Environ -Sustainable Ecosystems -Conservation of Energy -Contemporary challenges -Earth & Space-Climate -Human Impact -Understanding & Managing change & Human-Environment Interactions -Human-Environ. Interactions -Global Connections & Human-Env. -Human Envir. Interactions -Human Envir. Interactions |
| My 2050 Tool Kit | http://r4r.ca/en/resource/my-2050-schools-toolkit | How to reduce carbon emissions & maintain a secure energy | Geography 9 Academic | -Inter actions in the environment & Managing |

| Resource Title | Review | Synopsis | Curriculum Fit | |
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| | | | Course | Unit |
| | | supply. <i>Subject content</i> -Climate change, greenhouse gases, energy sources -supply and demand | Science 10 Civics Studies 10 Environmental Science 11 Physical Geography 11 The Env & Resource Mgt. 12 | Canada's resources -Earth & Space Science: Climate -Active citizenship -Conservation of Energy & Solutions to Contemporary Env. Challenges -Understanding & managing change -Human-Environment Interactions |
| What's All The Buzz About | http://r4r.ca/en/resource/whats-all-the-buzz-about | How climate change effects disease transmission. <i>Subject content</i> – climate, Infectious disease – transmission & vectors: | Environ. Science 11 Health for Life 11 Science 12: College/Workplace Canada & World Issues 12 | -Human Health & the Environment -Community Health -Pathogens & Disease, Disease & its prevention -Human-Environment Interactions |
| The Buffer Zone: Acid Base Chemistry in the World's Oceans | http://r4r.ca/en/resource/the-buffer-zone-acid-base-chemistry-in-the-worlds | How global warming effects marine environments: <i>Subject content</i> - acid- base theory, buffers | Science 9 Science 10 Chemistry 11 Chemistry 12: College P | -Biology: sustainable ecosystems -Chemistry: Chemical Reactions -Solutions & Solubility -Chemistry in the Environment |
| Mining the Carbon Out of People's Lifestyles | http://r4r.ca/en/resource/mining-the-carbon-out-of-peoples-lifestyles | Connects electricity use to climate change. <i>Subject content</i> -energy use, energy consumption, electrical generation, phantom power | Science 9: Civic Studies 10 Science 10 Environ. Science 11 Science 12: Workplace | -Physics- Electricity -Active Citizenship -Earth & Space Science-Climate -Conservation of Energy -Electricity at home and at work |
| A Teacher's Guide for the Video Sila Alangotok - Inuit Observations on Climate Change | http://www.resources4rethinking.ca/en/resource/a-teachers-guide-for-the-video-sila-alangotok-inuit | Explores economic, social and environmental impacts of climate change in Canada's North. <i>Subject content</i> -TEK, Aboriginal society, greenhouse gases, climate | Geography 9 Science 9 Science 10 Physical Geography 11 Aboriginal Studies 10 Aboriginal Beliefs in Contemp. Society 11 | -Interactions in the physical E -Sustainable ecosystems -Earth & Space -Climate -Human-Env. Interactions -Challenges -Relationships. |
| Penguins on Thin Ice | http://www.resources4rethinking.ca/en/resource/penguins-on-thin-ice | Provides materials for musical production dealing with climate change. <i>Subject content</i> - musical, dramatic and visual arts composition & presentation | Integrated Arts 9 Visual Arts 10, 11 Music 9, 10, 11 Drama 9, 10, 11 | -Creating & Performing -Foundations |

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| | | | Course | Unit |
| Local Connections to Global Issues: Health | http://resources4rethinking.ca/en/resource/local-connections-to-global-issues-health | Includes activities that bring to life current child health issues and how the spread of infectious disease is being impacted by changing climate. <i>Subject Content</i> - Climate change, human health, infectious disease, global citizenship | Science (Applied) 10 Environ. Science 11 Health Education 11 Social Studies 11 Canada & World 12 Health Education Science 12 | -Earth & Space Science -Human Health/Impact -Health for life -Equity, Diversity & Social Justice -Human –Environ. Interactions -Health Care -Science & Public Health -Disease & its Prevention |
| Tread Lightly: Low Carbon Lunch | http://www.resources4rethinking.ca/en/resource/tread-lightly-low-carbon-lunch | Students examine the relationship between food choices & climate change and take action to reduce their carbon footprint. <i>Subject content</i> -carbon footprint, local food, healthy food, waste reduction | Family Studies 9 & 10 Science 10 Env. Science 11 (Work) Geography 11 Geography 12 | -Food & Nutrition -Earth & Space Science -Human Impact on the Environ. -Human-Env. Interactions -Human-Env. Interactions |
| Serious Game | http://www.resources4rethinking.ca/en/resource/serious-game | In this simulation students are tasked to develop a strategy for reducing consumption of energy, increasing energy efficiency and choosing the best renewable energies. <i>Subject content</i> - energy conservation, renewable energy, sustainable development | Geography 9 Physical Geography 11 Environ. Science 11 Geography 12 | -Livable communities -Human-Env. Interactions -Conservation of Energy -Global Connections -Human-Env. Interactions |
| The Big Picture On Climate Change and Biodiversity | http://resources4rethinking.ca/en/resource/the-big-picture-on-biodiversity-and-climate-change | Students explore the relationship among climate change, biodiversity and human health. Resource includes a video component, simulation, outdoor activities & an action component. | Geography 9 Geography 11 Environ. Science 11 | -Interactions: Physical Env. - Human-Env. Interactions -Human Health & the Env. -Human Impact on the Env. |
| Chemistry Innovations in Sustainable Development | http://www.resources4rethinking.ca/en/resource/chemistry-innovations-in-sustainable-development | Chemistry resource includes activities on greenhouse gases and climate change | Science 10 Chemistry 11 Env. Science 11 Chemistry 12 | -Earth, Space –climate change -Hydrocarbons & Energy -Gases & Atmospheric Chem -Human Health & Impact -Chemistry in the Environment |
| Natural Gas. A Cleaner Energy Solution or Just Another Fossil Fuel | http://www.resources4rethinking.ca/en/resource/natural-gas-a-cleaner-energy-solution-or-just-another | Students gather information on natural gas, compare its emissions to those of other fossil fuels and use systems-based analysis to defend their position | Geography 9 Chemistry 11 Env. Science 11 | -Interactions-Physical -Managing Canada’s resource -Hydrocarbons and Energy -Energy Conservation -Natural Resources |
| Sustainability and Really Cool Technologies | http://www.resources4rethinking.ca/en/resource/sustainability-and-really-cool-technologiesenergy | Activities include an examination of our reliance on fossil fuels, peak oil and reducing our dependence | Geography 9 Science & Technology 9 Science 10 Env. Science 11 | -Interactions-Physical -Electricity -Earth & Space- Climate -Solutions to issues -Conservation of Energy |
| Understanding Climate Change in Grade 11 & 12 Geography | http://resources4rethinking.ca/en/resource/understanding-climate-change-in-grade-11-and-12-geography | This resource provides information and inquiry-based activities concerning climate change. | Geography 9 Geography 11 Geography 12 | -Inquiry and Skills -Interactions, Physical -Human-Envir. Interactions -Inquiry -numerous outcomes in all grade 12 courses |
| Connecting Climate Change Through Rich | http://resources4rethinking.ca/en/resource/connecting-to-climate-change- | Another inquiry based approach to the study of climate change. Includes a look at the chemistry of | Science & Technology 9 Science 10 Env. Science 11 | -Ecosystems -Earth & Space-Climate -Human Impact |

| Resource Title | Review | Synopsis | Curriculum Fit | |
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| | | | Course | Unit |
| Performance Tasks in Grade 10 Science | through-rich-performance | climate change and an option of 2 culminating tasks | | -Natural Resource Mgt |
| Climate Change, Poverty and Women | http://resources4rethinking.ca/en/resource/climate-change-poverty-and-women | Examines climate change as a human crisis through activities that focus on how the most vulnerable are being affected | Social Studies 11 Social Studies 12 Geography 11 World Geography 12 | -equity, diversity, social justice -global social justice -Geographics- global connect. - Global Connections |

B. Short Videos

| Resource Title | Review | Synopsis | Curriculum Fit | |
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| | | | Course | Unit |
| Conversations in Action- The Bulb | http://www.resources4rethinking.ca/en/resource/conversations-in-action | Looks at how small personal changes can make a difference with respect to global warming | Science & Technology 5 Science &Technology 6 | -Conservation of Energy -Electricity & Electrical devices |
| Kids vs Global Warming | http://www.resources4rethinking.ca/en/resource/kids-vs-global-warming | Introduces a remarkable young teenager who crusades against global warming | Social Studies 6 Geography 7 | -People and Environments -Natural Resources...Use & Sustainability |
| This Bulb | http://video.nationalgeographic.com/video/this-bulb-ngv | Natalie Portman, Kyra Sedgwick and Chloe Sevigny explain how small changes in lifestyle can help reduce greenhouse gas emissions. | Science 5 Science 6 Social Studies 6 Geography 7 | -Conservation of Energy -Electricity and Electrical Devices -People and Environments -Natural Resources...Use & Sustainability |
| Climate Change, Wildlife and Wetlands | http://resources4rethinking.ca/en/resource/climate-change-wildlife-wildlands | Impact of CC on Wildlife. Challenges students to "go outside" and examine how nature is changing. Students are also encouraged to adopt lifestyle choices and actions to help make a difference | Science & Technology 6 Social Studies 6 Science & Technology 7 Science 9 (Academic & Applied) Science 10 (Academic & Applied) | -Biodiversity -People and Environments -Interactions -Sustainable Ecosystems - Climate |
| Chasing Ice | http://www.resources4rethinking.ca/en/resource/chasing-ice | Graphic illustration of the melting of arctic ice | Geography 9 Science 10 Physical Geography 11 Env. & Resource Mgt.12 | -Interactions in the Physical Env. -Earth & Space Science- Climate -Understanding & Managing Change -Human-Environment Interactions |
| 300 Years of Fossil Fuels | http://www.resources4rethinking.ca/en/resource/three-hundred-years-of-fossil-fuels-in-three-hundred | Traces our dependence on fossil fuels, the consequences and solutions | Environmental Science 11 Physical Geography 11 Media Studies 11 Environment & Resource Mgt.12 | -Energy conservation, Contemporary challenges, Human impact -- Understanding & Managing Change, Human-Environment Interactions -Media & Society -Human-Environment Interactions |
| Global Warming: A Way Forward | http://www.resources4rethinking.ca/en/resource/global-warming-a-way-forward | Images used to illustrate consequences of climate change and the future scenarios that are possible | Geography 9 Environmental Science 11 Physical Geography 11 Canada & World Issues 12 | -Interactions in the Physical Envir. -Managing Canada's Resources -Solutions to Contemporary Challenges, Human impact on the environment -Understanding & Managing Change -Global Connections, Human-Environment Interactions |

| Resource Title | Review | Synopsis | Curriculum Fit | |
|--------------------------------------|---|---|---|--|
| | | | Course | Unit |
| | | | Environment & Resource Mgt.12 | -Global Connections, Human-Environment Interactions |
| How to Feed the World in 2050 | http://www.resources4rethinking.ca/en/resource/how-to-feed-the-world-in-2050 | Examines the relationship between climate change and sustainable agriculture | Family Studies 10 Environmental Science 11 Health for Life 11 Physical Geography 11 Environment & Resource Mgt.12 | -Food & Nutrition -Human Health & the Environment, Sustainable Agriculture, Human Impact -Determinants of Health -Human-Environment Interactions -Human-Environment Interactions, Global Connections |
| Climate Change-Planet Ocean | http://www.resources4rethinking.ca/en/resource/climate-change-1 | Provides a compelling look at the effects of changing climate in the far north | Science 9 Science 10 Environ. Science 11 Geographics 11 Physical Geography 11 Canada & World Issues The Environ. & Resource Mgt | -Sustainable Ecosystems -Earth & Space- Climate -Env. Challenges / Human Impact -Human –Envir. Interactions -Understanding & Managing Change - Human –Envir. Interactions - Human –Envir. Interactions -Understanding & Managing Change - Human –Envir. Interactions -Understanding & Managing Change |
| Biodiversity & Climate Change | http://resources4rethinking.ca/en/resource/-biodiversity-and-climate-change | Examines cause and effect relationship between climate change and biodiversity | Science 10 Env. Science 11 Physical Geography 11 Geog 12 (Canada & World) Geog 12 (Env. & Resource Mgt) | -Earth & Space- Climate -Human Impact -Human – Env. Interactions -Human – Env Interactions -Human – Env. Interactions |
| Inuit Observations on Climate Change | http://resources4rethinking.ca/en/resource/-5 | The video documents climate change in Canada's north from an Inuit perspective | Geography 9 Science 9 Aboriginal Studies 10 Science 10 Env. Science 11 Physical Geography 11 Aboriginal Beliefs in Contemporary Society 11 | -Physical Interactions -Sustainable Ecosystems -Aboriginal Peoples in Canada -Earth, Space-climate -Human impact -Human- Environment interactions -Relationships |
| My Cheeseburger Footprint | http://resources4rethinking.ca/en/resource/my-cheeseburger-footprint | Tracks the amount of CO ₂ emitted from the production of a cheeseburger, then extrapolates the larger impact of fast food on greenhouse gas emissions. | Science & Technology 7 Geography 9 Science 10 Env. Science 11 Geography 12 (Canada & World, Env & Resource Mgt, World Geography) | -Interactions in the Environment -Physical Interactions -Earth & Space-climate -Human impact -Human – Environment Interactions |

C. Children's Books/Novels

| Resource Title | Review | Synopsis | Curriculum Fit | |
|--|---|---|----------------|---|
| | | | Grades | Subjects |
| How We Know What We Know About Our Changing Climate | http://resources4rethinking.ca/en/resource/how-we-know-what-we-know-about-our-changing-climate | Introduces young people to current climate change research. Emphasis is placed on the importance of citizen science | Grades 5 - 8 | Science, Geography, Geography |
| Judy Moody Saves the World | http://www.resources4rethinking.ca/en/resource/judy-moody-saves-the-world | Judy Moody wonders how one person can "heal the world". The story chronicles her personal efforts. | Grades 3 and 4 | Literacy, Language Arts, Science |
| Empty | http://resources4rethinking.ca/en/resource/empty | Exciting drama that offers a glimpse of what our world might look with a continued reliance on fossil fuels | Grades 6-9 | Literacy, Science, Geography |
| Siberia | http://www.resources4rethinking.ca/en/resource/siberia | The novel describes a world of the future where climate change and habitat destruction have ravaged the Earth. Rosita and Mama struggle to eke out an existence in their bleak environment. | Grades 5-8 | Literacy, Language Arts, Science & Social Studies |