CHAPTER 4:

It's Easy Being Green!

A Project of Learning for a Sustainable Future

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Art by Laura Valdés González for ArtistsForClimate.org

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Chapter 4. It's Easy Being Green

This chapter explores green energy, the difference between “needs” and “wants” as well as the importance of becoming a climate champion.

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Background information: What do educators need to know?

Ripple Effect of Individual Actions

According to Canada’s Institute for Climate Choices, personal changes in behaviour will play a key role in reaching Canada’s net-zero goal. The question that often comes up is *how can one person’s actions have an impact on a problem as large as climate change*?

Behavioural Psychologist Kelly Fielding from the University of Queensland explains, "people are very influenced by what others do, even though we don't think we are". "It's a paradox. We think we make our own decisions, but the truth is we look to others for guidance about how we should behave. When it comes to climate change, the problem is that we just aren't getting the cues we need from our friends and families or, for that matter, from government and business.” This is

what makes individual actions so important: it's less about our actions themselves and more about growing our impact by guiding others to follow suit (Justin Rowlett, BBC, 2019).

Climate change isn't going to *happen or not happen*—it is happening!—but it's up to the government, corporations, and, yes, individuals to determine just how much the climate will change and what impacts will be felt. As Greta Thurnberg says about taking individual action: "We do it because we want to influence the people around us, we want to send a clear signal that we are facing an emergency and when you are in an emergency you change your behavior" (Green Matters, 2022).

Consumer Choice

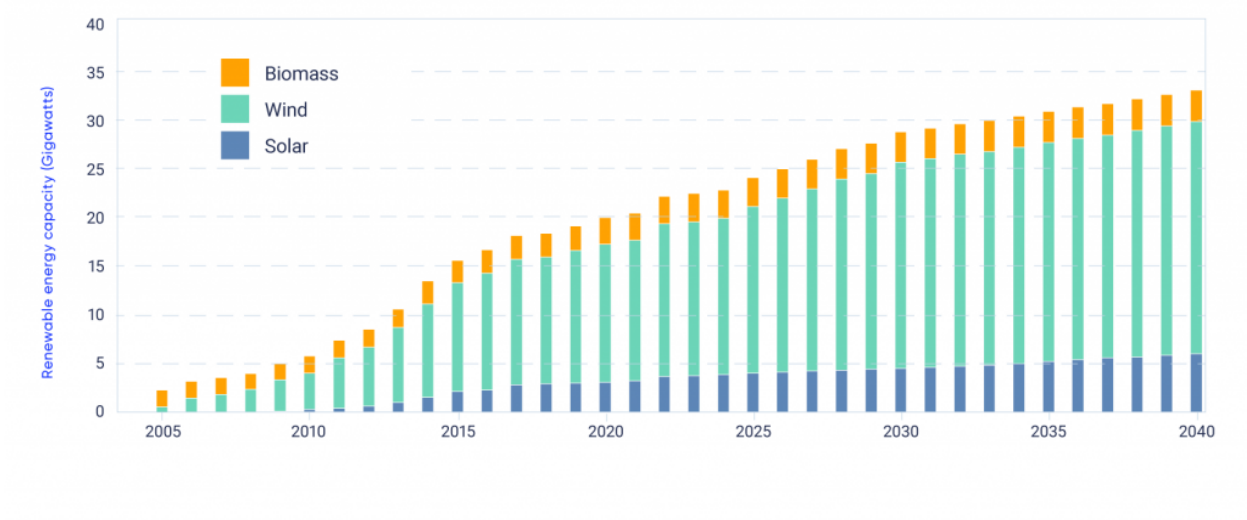
Every day we make choices about what is a necessity vs. a luxury (need vs. want) in our lives. These consumer choices have a big impact on the planet. To keep us fed, clothed, sheltered, and entertained, the earth's resources are being consumed faster than they can be replenished. This is related to humans' overconsumption, but also the linear nature of our economy. A linear economy means the raw materials that were used to make a product are thrown out at the end of its use, and thus become waste. A circular economy, on the other hand, reduces or eliminates waste by recycling and re-introducing used materials back into production, and materials/services are produced with sustainability, longevity, and repairability in mind.

In Canada, many goods and services are consumed without considering the environmental impact. For instance, according to a recent report by Second Harvest, 58% of all food produced in Canada is thrown away. Additionally, according to Elisa Tonda (Head of the Consumption and Production Unit at the UN Environment Programme), fast fashion and irresponsible purchasing of clothing are large contributors to the climate crisis; apparel and footwear industries account for more than 8% of global climate impacts.

While we can work to make our economy more circular, while it remains primarily linear, we need to examine our consumption habits to reduce our waste and impact on the earth.

Green Energy

Globally, the energy sector accounts for over 70% of all greenhouse gas emissions attributed to humans (Our World in Data). To significantly reduce these emissions, humans need to not only reduce their overall energy use but also transition to cleaner and greener energy sources. "Climate change also has direct and indirect impacts on energy demand. Warmer winters reduce fossil fuel and electricity demand for heating (Mantle314, 2019), while the increasing number of hot days in summer increase electricity demand for cooling (Ortiz et al., 2018; Jaglom et al., 2014)." (NRCAN, 7.6.1)



Observed and projected changes in non-hydro renewable energy capacity in Canada between 2005 and 2040 under the National Energy Board reference case scenario. Higher rates of growth are projected under a technology scenario (NEB, 2018).

Source: NRCAN Chapter 7: *Adapted from National Energy Board, 2018.*

There is some confusion among the terms “clean,” “green” and “renewable” energy. “**Clean energy** is energy gained from sources that do not release air pollutants, while **green energy** is simply energy that is derived from natural sources, and “renewable energy is energy derived from natural processes that are replenished at a rate that is equal to or faster than the rate at which they are consumed” (TWI, 2022). Renewable energy includes energy generated from many different natural resources or processes including solar, wind, hydropower, tidal power, geothermal, solid biomass, biogas, and liquid biofuels (NRCAN, 2017). While most green energy sources are renewable, some renewable energy sources may be greener than others. For example, a hydropower dam is clean because it releases no air pollutants, and it is renewable because the source of energy replenishes itself, but it is not green because dams and reservoirs that produce electricity are a large contributor to GHG emissions (WaterKeeper Alliance, 2017). Understanding the difference between these energy sources is important when discussing the environmental implications of energy use, and sustainable alternatives.

This chart below compares the tradeoffs of various energy sources:

Comparing Energy Sources

Explore the table to see the tradeoffs of different sources.

SOURCE OF ENERGY	FOSSIL FUEL	ALTERNATIVE	RENEWABLE	EMISSIONS	LAND USE
Biomass	✗	✓	✓	☁☁☁	🌲🌲🌲🌲🌲
Coal	✓	✗	✗	☁☁☁☁☁☁	🌲🌲🌲
Hydro	✗	✓	✓*	☁	🌲🌲🌲
Natural gas	✓	✗	✗	☁☁☁	🌲
Nuclear	✗	✓	✗	☁	🌲
Petroleum	✓	✗	✗	☁☁☁☁	🌲🌲
Solar	✗	✓	✓	☁	🌲🌲
Wind	✗	✓	✓	☁	🌲

*Because hydropower plants can significantly damage the ecosystems where they are built, hydropower is not always classified as renewable energy.

Source: World 101: What is Climate Change

In Canada, the goal is to reach net-zero emissions before 2030 (Government of Canada, 2020). However, the path to zero emissions will be challenging and complex. Varying solutions will likely be key parts of achieving this goal, including improving energy efficiency, shifting to non-emitting electricity, adopting heat pumps, and switching to electric vehicles (Canadian Institute for Climate Choices,p4, 2021).

"It is easy to be green!" explores climate change with K-2 students by learning about the importance of individual choices in the context of living sustainably. The inquiries focus on green energy, needs vs. want, and finally how these choices can ripple out to have a greater impact. Each of the 3 inquiries begins with a provocation followed by numerous strategies and examples. These steps can be completed in their entirety as stated. However, as inquiry is an organic and fluid process based on student input, educators may wish to adapt, modify or replace the suggested steps to create their own inquiry with their class. We, therefore, suggest that teachers review the whole chapter first to create a plan that will work best with their particular group of learners.

The following 3 inquiries are connected to curricular concepts as shown in this chart. These curricular concepts are applicable across Canada.

Curricular Connections	**Concepts**
Science	Stewardship Ecosystems Environment Biodiversity Sustainability Protection Habitats Innovation Change Survival Action Conservation
Language	Communication Inferencing Retelling Visual literacy Media forms Persuasion Point of view Critical Literacy
Social Studies	Resources Perspectives Consequences Interrelationships Cause Significance Human-environmental interaction Physical features Rights and responsibilities Scarcity Choice Supply and demand
Physical Education and Health and Wellness	Decision-making Contribution Connection Relationships Self awareness Balance Choice Peer pressure Self-determination Leadership Participation
	Composition

The Arts	Symbolism Interpretation Relationships
Math	Scale Shapes Location Investment Organisation

Prior to Provocations: Journaling
Encourage students to record their thinking and learning throughout the learning process. The main reason for developing a journal is for students to then be able to look back and track their growth and progression with their connection to climate change. Students scaffold their thinking throughout their learning journey. The entries can be a combination of personal reflections and assigned reflections. This can be done as illustrations, concept maps or written reflections.

Inquiry 1: Green Me- Needs vs. Wants

What do children need to survive and live a healthy, happy life? The activities in this inquiry help students distinguish the difference between the things they want and the things they need.

Resources:

- Wall-E Read along Storybook
- Wall-E Movie
- Needs or wants? That is the question! - Bank of Canada Museum.

Inquiry 2: Understanding Green Energy

Students will explore innovations in alternative energy, learn how they function and understand their benefits. They will explore their environment and understand how changes can be put in place to improve the energy system. Students will then create a machine that can help the environment. They will be given choices and encouraged to design and build their prototype.

Resources:

Poster:

- Engage Your Students - Project Learning Tree

Videos:

- 100% Renewable Energy

- Worlds Largest Lesson - Emma Watson Introduction | Global Goals
- 5 inventions changing the world! | Explore | Awesome Activities & Fun Facts | CBC Kids11 Kid Inventors Break Down Their Greatest Inventions | The New Yorker Engineering Design Kindergarten Science
- Seed Launching Backpack, a 3D-printed, pollinator-friendly invention | The Kid Should See This

Worksheets:

- Alternative Energy Pictures
- Invention/Design Idea

Website:

- Schools — Canadian Multicultural Inventors Museum

Inquiry 3: "I Want to be Green!"- Climate Champions

How to get students thinking about being "green". Students will explore how a simple act can have a ripple effect and change and help their world.

Resources:

- Sesame Street: It's Not Easy Being Green (Kermit's Song)
- Kermit the Frog - It's Not Easy Being Green Lyrics

Books:

- Teach kids sustainability: What Does it Mean to be Green?
- What Matters - By Alison Hughes
- I AM ONE (A Book Of Action) Read Aloud For KIDS