

# CLIMATE CHANGE: THE IMPACT OF LANDFILLS

## INTRODUCTION

Climate change is a global problem, but everyone can be part of the solution. To help your classroom understand the link between climate change and landfills and get students thinking about ways they can make a change, watch this [short video](#). The following document provides three potential directions that teachers can explore with students. Each direction can be explored individually and modified as needed. Directions include resources, discussion topics, activities and class challenges.

## CURRICULUM CONNECTIONS

### SCIENCE

#### Grade 7

- Learners will implement an environmental stewardship plan.

#### Grade 8

- Learners will evaluate the impact of human activity on climate change.
- Learners will formulate a plan to mitigate or adapt to the effects of climate change.

## WE WANT TO HEAR FROM YOU!

Please share classroom experiences with us to highlight on our website and social media.



## KEY RESOURCES

[Government of Canada - Climate Kids](#): Interactive games and activities for kids about climate change.

[Environment and Climate Change Canada](#): Information about climate change in Canada.

[The Nature of Things - Curb Your Carbon](#): An episode about practical ways to fight climate change hosted by Ryan Reynolds.

**Key time stamps:** Food Waste - 17:06, E-Waste and Repair - 23:15, CO2 emissions from cars - 28:19, Recycled Art and Plastic Waste- 38:00

[Nova Scotia Landfill Audit](#): Pie charts showing what is in Nova Scotia's landfills. (Appendix a.)

## GLOSSARY

**Climate Change:** Changes in long-term weather patterns mainly caused by human activity.

**Greenhouse Gases:** Gases in the earth's atmosphere that trap heat.

**Methane:** Methane is a powerful greenhouse gas. One source of methane is food decomposing in a landfill.

**Second-Generation Landfill:** A contained waste disposal site built with extra layers of protection to help keep garbage from impacting our groundwater or soil.

**Organics:** Compostable waste generated at home, school, or businesses. Examples of organics include food scraps and yard waste.

**Vermicomposting:** Composting with worms, specifically Red Wigglers.

**Anaerobic:** An environment lacking oxygen.

**Aerobic:** An environment with oxygen.

# DIRECTION 1

Taking action to reduce waste will decrease the need for landfills which are a source of greenhouse gases.

## BACKGROUND

The average Nova Scotian disposes of 400 kilograms of waste per year, that's equivalent to the weight of 67 full backpacks. That's a lot of waste! To help combat our waste problem, the Government of Nova Scotia has set a goal to reduce the average disposal rate to 300 kilograms per person per year by 2030.

Currently, municipal solid waste landfills are responsible for about 23% of Canada's methane emissions. Methane is a powerful greenhouse gas that contributes to climate change. Reducing waste is one of the most effective ways to combat climate change, and it can be as easy as choosing reusable items over single-use items.

## DISCUSSION TOPICS

- Reflect on the types of waste students produce at home and discuss how this waste is managed.
- Research policies that Nova Scotia could implement to help achieve the disposal goal of 300 kg per person.
- Think about actions that individuals, schools, and communities can take to send less to landfill.
- Research the [2017 Divert NS waste audit](#) to determine what landfills in Nova Scotia consist of and identify which materials are the most problematic and should be targeted for reduction.

## Classroom actions

Suggestions for long-term projects or quick in-class activities.

**Create an awareness campaign:** Share messages that connect landfills and greenhouse gases. Visit a waste management facility to film an awareness video and interview a local waste educator to help inspire students to reduce their waste.

**Take a pledge:** Develop a pledge that commits students to creating less waste. Run a campaign to get students to reduce climate change impacts.

**Advocate for change:** Talk to your school administration about implementing waste reduction initiatives throughout the school, then track your progress and improvements.

### Resources:

- [Environment Canada](#): Canada's actions to reduce waste and greenhouse gases.
- [Divert NS Refuse, Reduce, Reuse](#): Information and resources to help cut down on waste.
- [Waste Reduction Week in Canada School Resources](#): This resource will help your school plan Waste Reduction Week activities, conduct a waste assessment, and implement a waste reduction action plan.

<https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/reducing-methane-emissions-canada-municipal-solid-waste-landfills-discussion.html>

# DIRECTION 2

Reducing organics in landfills is a way to mitigate climate change.

## BACKGROUND

A 2017 Landfill Audit conducted by Divert NS revealed that organics is the largest category of waste in landfills—despite organic waste being banned from landfills in Nova Scotia. Unfortunately, when food waste breaks down in an environment without oxygen, like a landfill, it produces methane gas. Methane gas is a powerful greenhouse gas that contributes to climate change. Nova Scotians can reduce the amount of organics in landfills by participating in their municipal compost program, backyard composting or vermicomposting.

## DISCUSSION TOPICS

- Investigate the primary sources of food waste in your school or community. Think about residential and commercial sources.
- Analyze what types of composting exist in your community. Is one more effective than the other? Are there any barriers to participating in compost programs?
- Research what happens once the organics are collected from your school.

## Classroom actions

Suggestions for long-term projects or quick in-class activities.

**Start backyard composting:** Talk to your school administrator about implementing a backyard composting program at your school.

**Conduct a classroom waste audit:** What items are being thrown away? Are there any organics ending up in the wrong bin? Create a waste reduction plan based on the results of the audit.

**Start a vermicompost bin:** Learn more about worm composting and implement a worm bin in your class.

### Resources:

- **[Nova Scotia Landfill Audit:](#)** Pie charts showing what is in Nova Scotia's landfills.
- **[Divert NS Backyard Composting Guide:](#)** A guide to help you get started with backyard composting.
- **[Divert NS Lesson Plan:](#)** Students learn about the amount of waste generated in Canada. Template to conduct a classroom waste audit included.
- **[Divert NS Lesson Plan:](#)** Students learn how to create and maintain their own compost pile.
- **[Waste Not News - Rude To Our Food:](#)** In this segment of Waste Not News, Sam Sortright digs into the impact of food waste here in Nova Scotia.

# DIRECTION 3

Reducing the waste we produce decreases the need to transport waste and reduces greenhouse gases.

## BACKGROUND

In Nova Scotia, garbage is trucked to one of seven second-generation landfills in the province for disposal. In addition to our garbage, recyclable and organic material must also be trucked to local processing facilities. The transportation of this waste contributes to an increase of greenhouse gases in our atmosphere. By reducing waste, we can reduce the need for the trucking of material and reduce our impact on climate change.

## DISCUSSION TOPICS

- Reflect on the waste streams produced at your school. Research how materials are collected and where the garbage, organics, and recyclables are shipped for processing or disposal.
- Explore ways to reduce greenhouse gas emissions created by transporting waste from your school or community.
- Research innovative waste transportation initiatives across Canada that reduce greenhouse gas emissions.

## Classroom actions

Suggestions for long-term projects or quick in-class activities.

**Map the journey:** Select a waste stream (garbage, recyclables, refundables, or organics) and map its journey from the school to disposal and/or processing. See **Appendix 1** for Landfill Map.

**Interview school custodial staff:** Inquire how waste is stored at your school and how frequently a hauler collects each waste stream. Research ways to reduce the transportation impacts of waste collection.

**Contact a hauler:** Contact a local waste collection company to ask about how they are reducing their environmental impact. Share or present any innovative transportation initiatives.

### Resources:

- [Greenhouse Gas Equivalency Calculator](#): Learn how your energy consumption habits translate into greenhouse gas (GHG) emissions.
- [Where Does it Go? - Tour the Colchester Materials Recovery Facility](#): Take a virtual tour of a local recycling facility to understand how materials get recycled.
- [Municipal Solid Waste Disposal Sites](#): A list of locations and contact information for municipal solid waste disposal sites in Nova Scotia.
- [Sorting Guides](#): Learn more about waste sorting in your area.

# NOVA SCOTIA'S LANDFILLS

## Climate Change: The Impact of Landfills (Appendix 1, Direction #3)

### Map the journey of waste from your area to the landfill

#### A. Otter Lake Landfill:

Halifax Regional Municipality

#### B. Kaizer Meadow Landfill:

Annapolis Royal  
Berwick  
Kentville  
Middleton  
Wolfville  
Kings  
Lunenburg  
Mahone Bay  
Bridgewater  
Chester

#### C. Queens Landfill:

Shelburne  
Clark's Harbour  
Barrington  
Digby  
Yarmouth  
Argyle  
Clare  
Lockport  
Queens

#### D. GFL West Hants Landfill:

East Hants  
West Hants  
Windsor  
Annapolis

#### E. Cumberland Central Landfill:

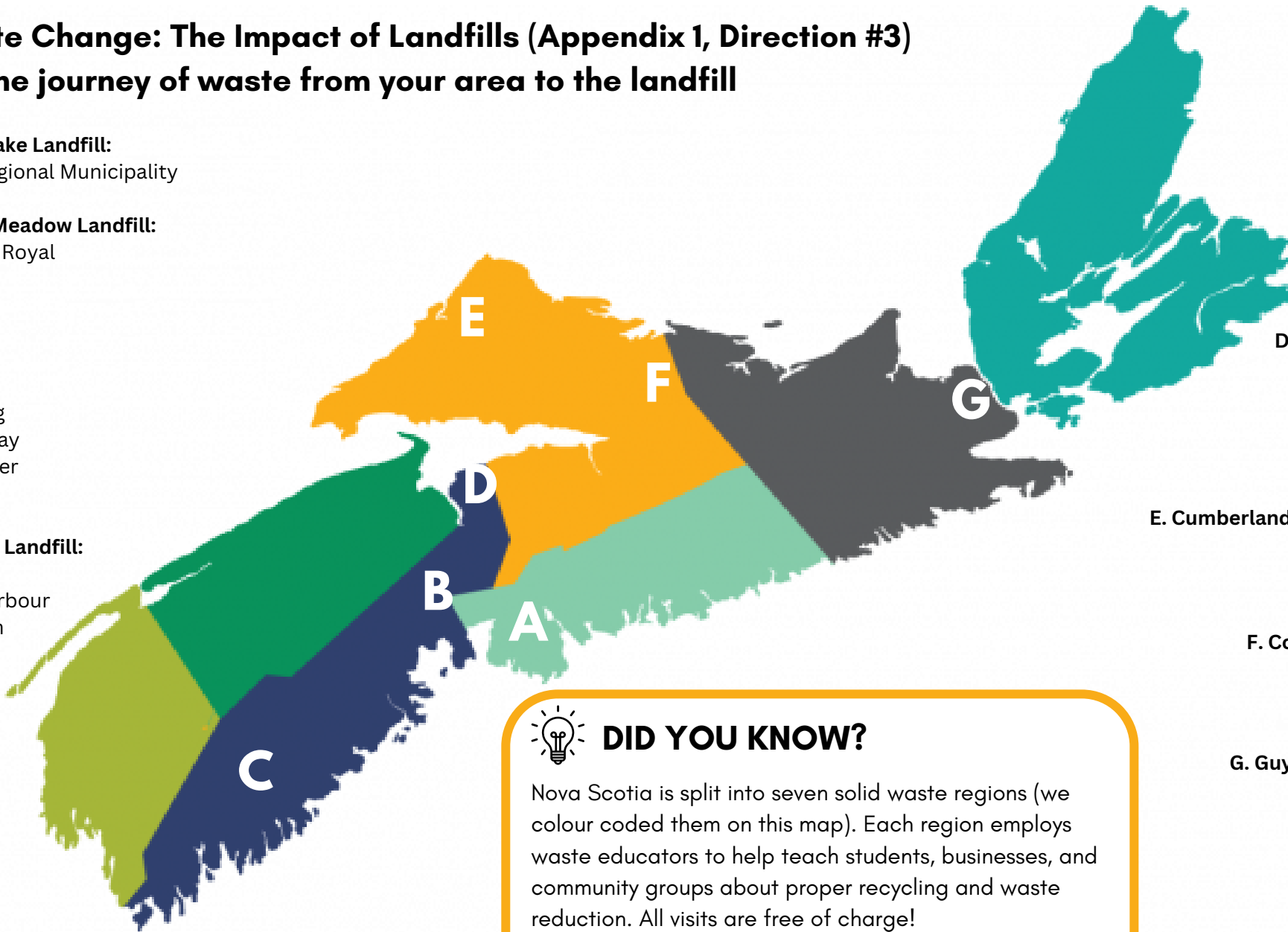
Amherst  
Oxford  
Cumberland

#### F. Colchester Balefill:

Truro  
Stewiacke  
Colchester

#### G. Guysborough Landfill:

Inverness  
Port Hawkesbury  
CBRM  
Victoria  
Richmond  
Pictou County  
St. Mary's  
Antigonish  
Mulgrave  
Guysborough



### DID YOU KNOW?

Nova Scotia is split into seven solid waste regions (we colour coded them on this map). Each region employs waste educators to help teach students, businesses, and community groups about proper recycling and waste reduction. All visits are free of charge!

To find the local waste educator in for area visit  
[www.divertns.ca/local-waste-educators](http://www.divertns.ca/local-waste-educators)