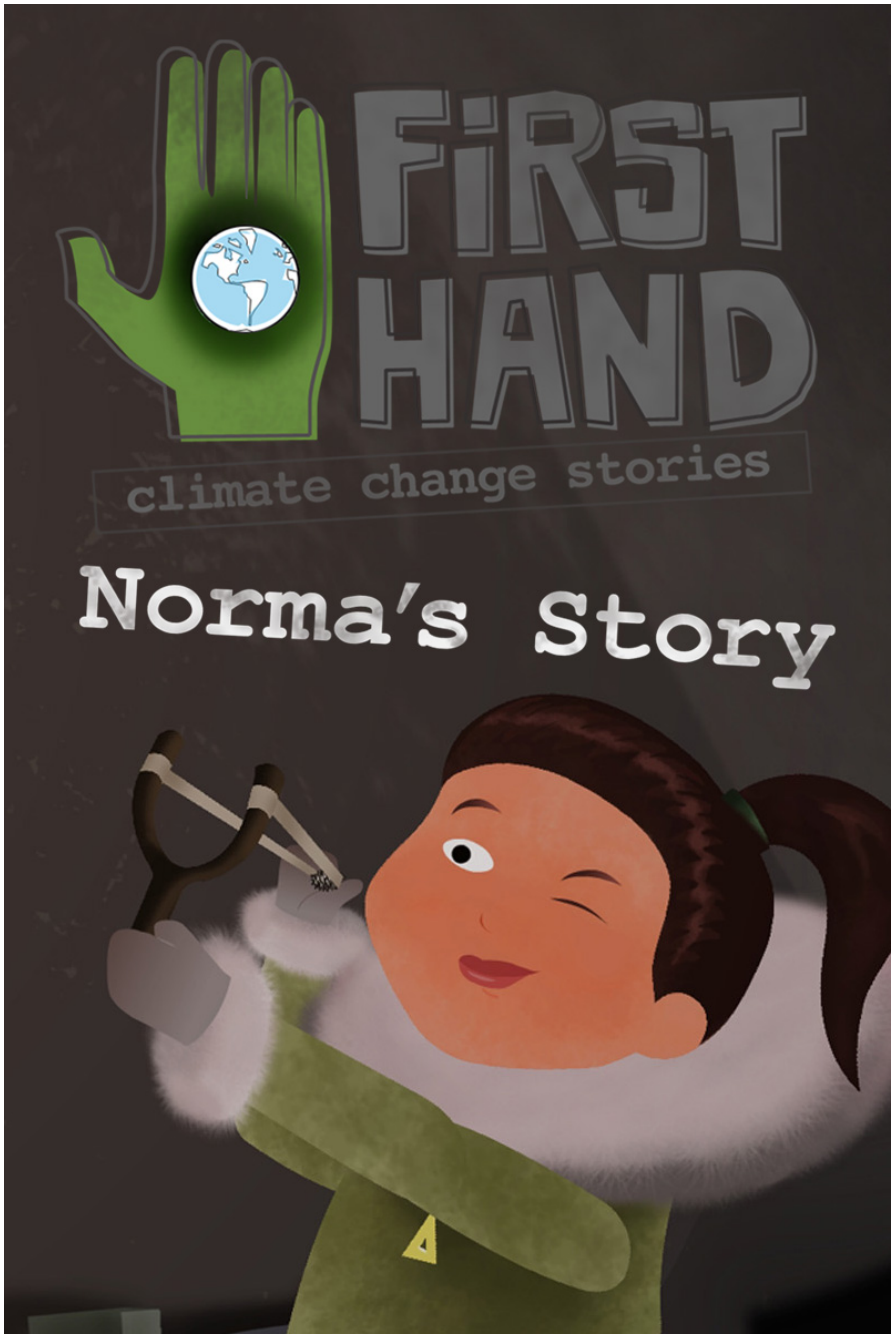


Norma's Story

Education Module - May 2015

Educational Module Prepared by Karen Hawley

Norma’s Story

5 min 46 sec : Animated video

Summary

This animated short film is a stylistic and lively story of the profound effect of climate change on the people and wildlife of the Arctic. Northern communities provide authenticity to the story of climate change because they are experiencing its impacts now, not in some distant future.

Temperature changes, unrivalled anywhere else on the planet, have significantly impacted the wildlife sustaining the Gwich’in First Nation and other northern communities.

This film tells the true story of Norma, a Gwich’in woman who has experience dramatic changes in her way of life in just a few decades.

Food Security

The concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences.

- World Health Organization

PRIMARY CURRICULUM (GRADES 1-3) - OLD CROW'S SUPERMARKET

Before the film:

- Brainstorm with the class answers to the question:
    - ***Why do we need food?***
- When the class has established that food provides energy for our bodies to live, play, and think. Make another connection - all living things need food. Some creatures eat plants, some eat animals and plants make their own food from the sun.

What do you like to eat?

- Have the kids draw 3 things they've eaten today or their 3 favourite foods.
- Have each child tell the class what they have drawn.
- With larger classes you might want to avoid repetition by beginning a list and tally the number of students that chose the same items, until all foods for the class have been listed.

After sharing and noting the diversity of foods ask the class…

- Ask ***Where do you get your food from?*** Answers will vary from mom and dad to the supermarket, perhaps a farmers market, maybe even a backyard garden or community plot.
- Write down all offerings. ***Does it come from nearby, or faraway?***

After the film:

- Establish the difference between Norma's way of life when she was a child and that of the children in the class:
    - ***What does Norma eat?***
    - ***Where and how does she get her food, and who helps her?***
    - ***Does Norma have a supermarket?***
- Review why the food Norma ate as a child is disappearing. Discuss very briefly that the earth is warming because of all the fossils fuels people all over the world have been burning for more than 100 years.
- Discuss how the warming causes the arctic ice caps to melt. These are the key points to understand about climate change when discussing food issues for Norma's story.
    - Recap why the caribou are having a hard time: storms, deeper snow making it difficult to migrate and find food during the winter.
    - Recap why the diversity of birds is shrinking: storms affecting their migration routes, loss of lakes for nesting habitat and food.
    - Recap why fish are disappearing: evaporating lakes as the arctic gets warmer.
- ***What can Norma's community do to make sure they have healthy food?***
- ***What can we do to make sure our community has healthy food?***
- Explore the idea of community gardens, shopping at the farmers market and ask the kids what their experience has been. Perhaps some children come from farms, or rural areas in other countries. Perhaps your school has a garden.

Before the film:

- Clearly define food security. The WorldHealth Organization (WHO) states that food security exists ***"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".***
    - ***Does our community have food security?***
- There is no right answer to this question and accepting a variety of responses will generate food-for-thought. Ask students to consider: If trucks carrying veggies for grocery store shelves couldn't make it to your town:
    - ***How would that impact your community's food security?***

After the film:

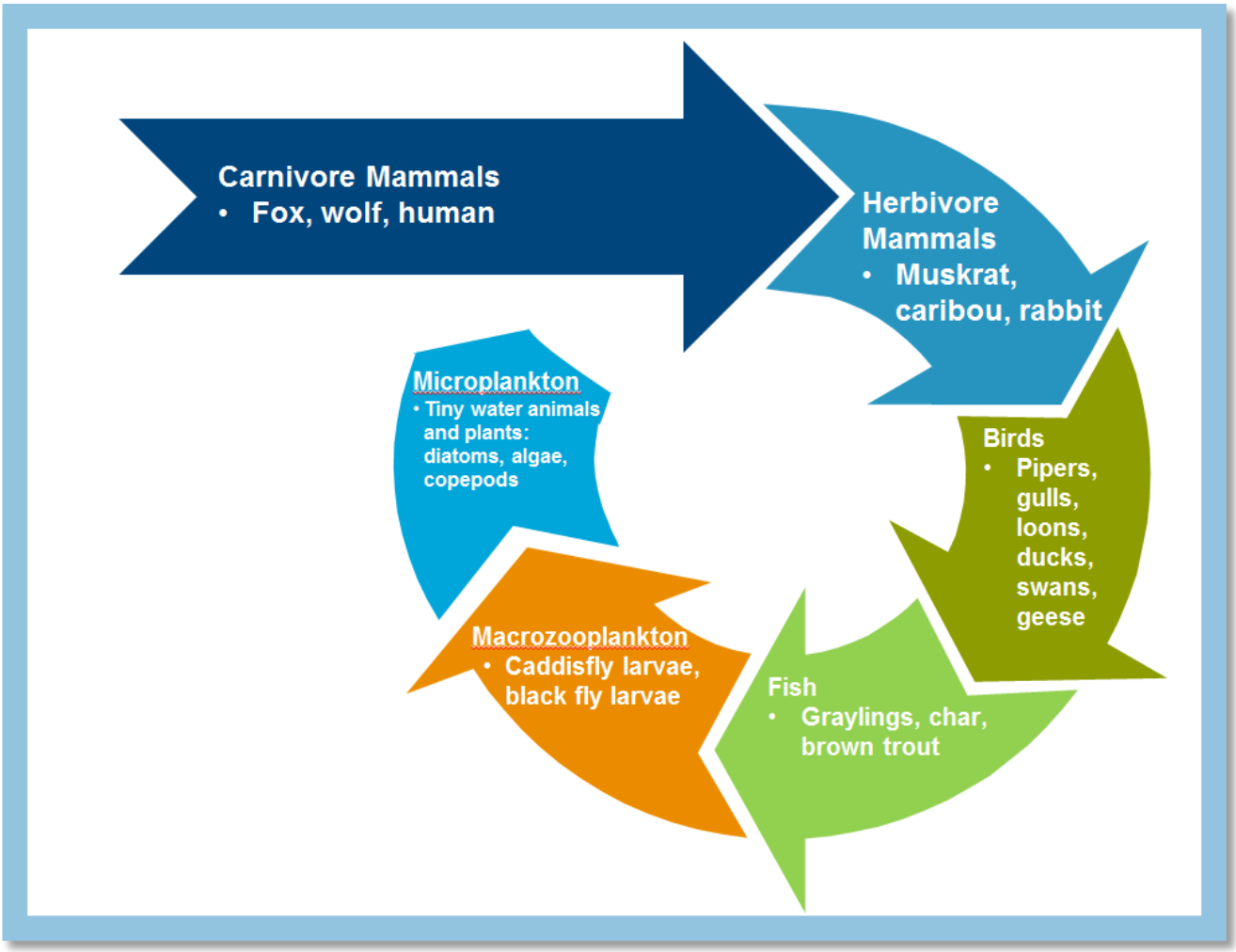
- Compare Norma's life as a child to her life today:
    - ***What is it that threatens Norma's food security?***
- Connect three key climate change impacts to the potential threats to food security:

    1. Irregular rainfall and snowfall
    2. Increased average temperatures
    3. More frequent storms

Broadly, climate change is threatening Norma's food security. Specifically, climate change impacts are decreasing the number of birds visiting Old Crow which in turn reduces access to fresh eggs and fowl. It is becoming more difficult for Caribou migrations due to storms and deep snow. Fish, birds and muskrat are losing habitat as the lakes evaporate.

- ***How do you think the changes to climate affect the food web and Norma's diet?***

Arctic Lake Ecosystem – Food Web



- Have the class break into small groups and look at a food web that includes the Porcupine Caribou herd.
- Have the group consider where in the web climate changes have an impact.
- Coming back into the larger group each group will appoint a spokesperson to talk about the impacts they've noted.

- Discuss as a whole class or in small groups.
  - ***How could this affect her community's way of life?***
  - ***What solutions might Norma's community adopt to ensure food security?***
  - ***What are the downsides to bringing food in by plane, as so many Northern communities are forced to do today?***

  Dividing into small groups, have each group look into these three concerns. Newspaper articles as well as Canada's food guide will address some of these concerns, and these resources could be supplied:

  1. Cost

  2. Freshness and variety

  3. Nutritional content and health

Before the film:

- Clearly define and discuss the concept of food security. The World Health Organization (WHO) states that food security exists ***"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".***

- ***Where are communities that have food insecurity?***

  Examples would include: Countries or States that are experiencing prolonged drought, recently Kenya, parts of China, Russia; communities that depend heavily on imported food – like isolated northern communities in Canada, China, and Russia. In fact many communities in the developing and developed world bring food in from beyond their borders and rely on imports outside of their growing season. Our modern food system is potentially insecure as fuel for transport becomes more costly, to name one reason.

- ***What else might make a community food insecure?***

After the film:

- ***Why has Norma's community become food insecure?***

o Connect three key climate change impacts in the North to the potential threats to food security:

1. Irregular rainfall and snowfall

2. Increased average temperatures

3. More frequent storms

Climate change impacts are reducing the number of birds visiting Old Crow reducing access to fresh eggs and fowl. It is becoming more difficult for Caribou migrations due to storms and deep snow. Fish, birds and muskrat are losing habitat as the lakes evaporate due to increased summer temperatures.

- ***What solutions could Norma's community implement to improve their food security?***
    - Brainstorm potential solutions.
- ***What climate impacts might make other communities food insecure?***

> Climate change poses enormous threats to food production. A one to two centigrade increase in average global temperatures will likely cause crop yields to fall in many under developed areas of the global South. According to the UN Intergovernmental Panel on Climate Change (IPCC), large areas of Africa could be stricken by yield decreases of over 50% by the year 2020 as a result of an increasingly hotter and drier climate. Small mountain glaciers will disappear, threatening water supplies, and there will be extensive damage to local fisheries and coral reefs.
>
> **- FOOD FIRST - "GROWING CLIMATE JUSTICE"**

- ***How is our community's food supply insecure?***
    - Discuss as a class.
- ***What solutions could your community implement to improve their food security?***
    - Brainstorm potential solutions.

Climate Change and its Impacts

> We are upsetting the atmosphere upon which all life depends. In the late '80s when I began to take climate change seriously, we referred to global warming as a "slow-motion catastrophe" one we expected to kick in perhaps generations later. Instead, the signs of change have accelerated alarmingly.
>
> ***- Dr. David Suzuki***

JUNIOR CURRICULUM (GRADES 4-6) - IT'S NOT JUST ABOUT THE HEAT

Before the film:

- Introduce climate change as the result of accumulating greenhouse gases (GHGs) in our atmosphere; emphasizing carbon dioxide (CO_2) as the most prevalent of those gases.

- ***Where does the carbon dioxide come from?***

- Look at various sources of GHGs in our community and beyond. This can be through brainstorming with the class or using images of cars, trucks, smoke stacks, furnaces, air conditioners, and other appliances.

Students can start to understand that using energy most often means burning fossil fuels (the primary source of GHGs). Take the time to note that not all electricity comes from fossil fuel sources. Hydro, nuclear, wind and solar power don't directly produce GHGs. Find out how your local power authority produces energy and let the students know.

- Introduce the link between the rise of global average temperatures and the increased GHGs (particularly CO_2) in our atmosphere. Compare the graph of atmospheric carbon dioxide over time, with the graph of global mean temperatures over time. The point to emphasis is that as carbon dioxide increases in our atmosphere, the average temperature on the planet increases.

Global mean temperature variations: http://www.ncdc.noaa.gov/paleo/ei/ei_reconsa.html

Atmospheric CO2 concentrations: http://www.esrl.noaa.gov/gmd/ccgg/trends/

After watching the film:

- Given Norma's way of life, ask the class:
    - ***Where do the greenhouse gases come from, that are causing the warming climate in Old Crow, Yukon?***
- Make it clear that greenhouse gases, wherever they are produced, effect the whole (global) atmosphere.

ARCTIC WARMING

Norma tells us that arctic temperatures are increasing at twice the rate of global temperatures.

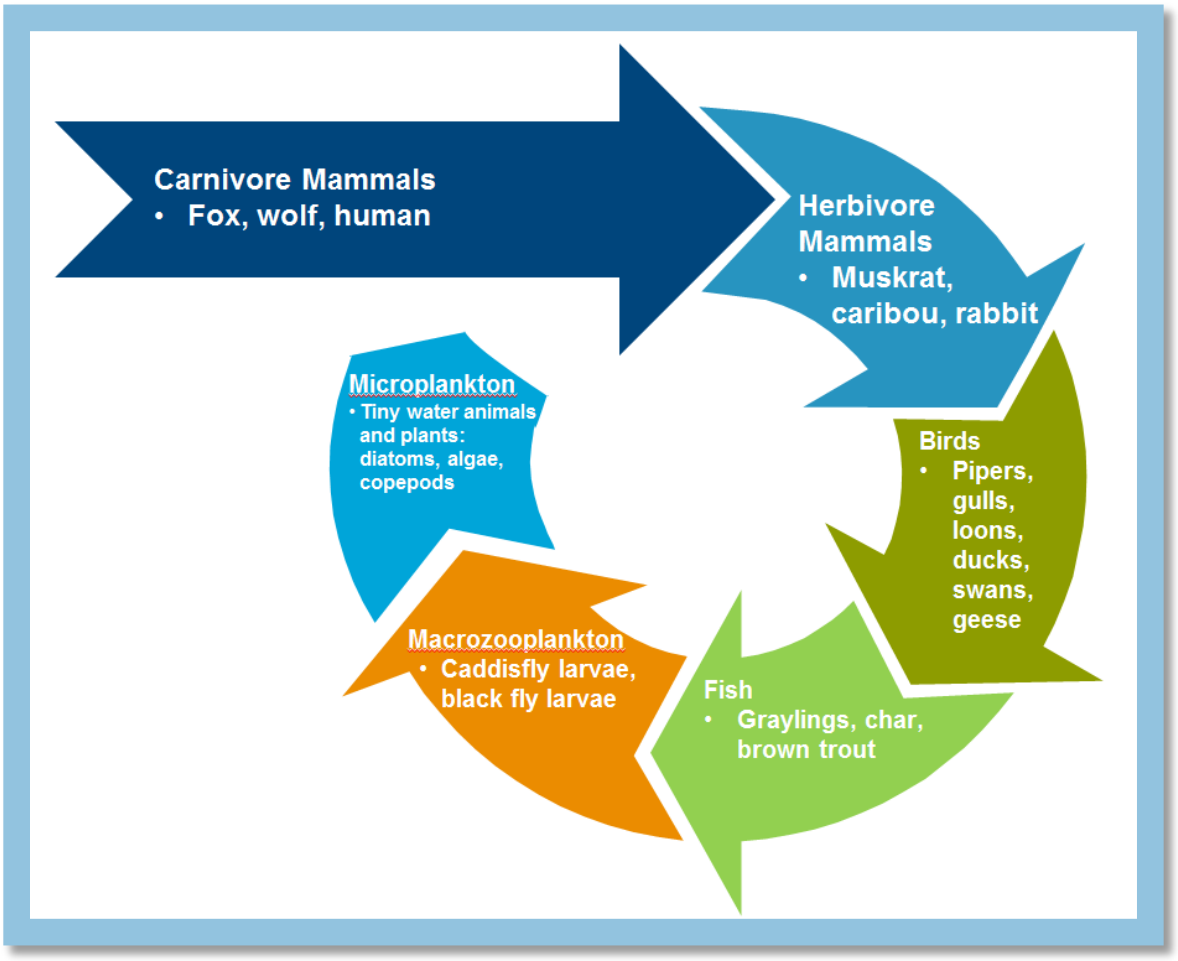
- ***What are some of the DIRECT climate change impacts in Norma's community of Old Crow?***
    - Brainstorm a list.

PERMAFROST MELT

- ***How does melting permafrost affect Norma's community?***
    - Talk about housing, as well as the impact on roads and transportation.

LAKES DRYING AND DRAINING

- ***What does it mean for the wildlife to lose the lakes?***
    - Showing where connections are broken in the food web might help students see the chain of effects that climate impacts can have.



- ***Are there solutions that might stop the climate from changing?***

These are solutions that fall under the ***Mitigation*** category. Define mitigation for your students:

> ***Mitigation:*** *lessening the force or intensity of something unpleasant, the act of making a condition or consequence less severe, the process of becoming milder, gentler, or less severe.*

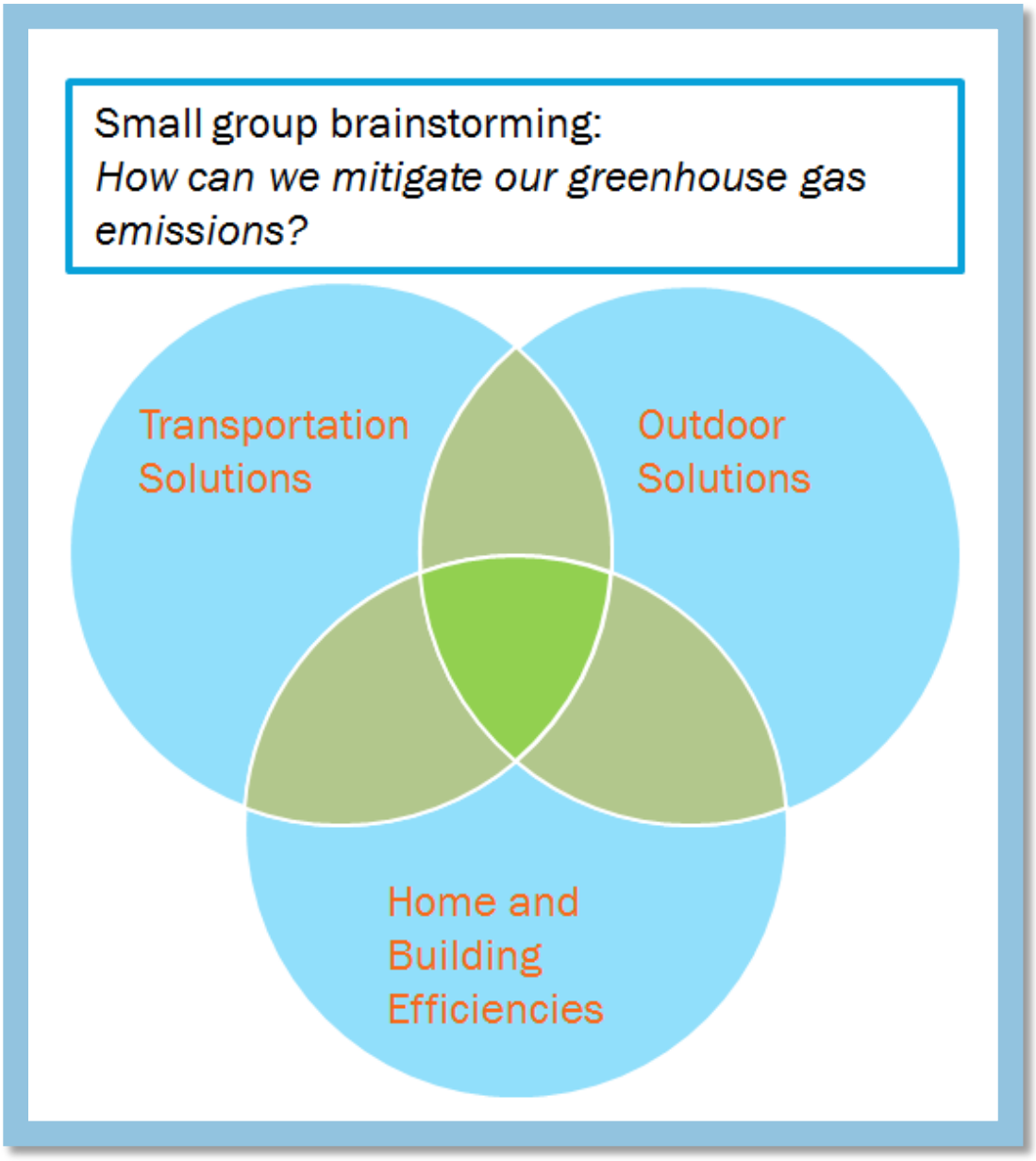
- ***Are there other solutions that might help Old Crow manage the changes to their environment?***

These are solutions that fall under the ***Adaptation*** category. Define adaptation for your students:

> ***Adaptation:*** *modifying a structure or a process to fit a changed environment*

- ***What can WE do to help Norma's community?***

- Students can work in small groups to brainstorm ways of reducing their OWN or their COMMUNITY'S greenhouse gas emissions, using the framework below.



- Use words or drawings to show your ideas in each of these three categories.
- If you have other ideas, add in the white space.
- Where the circles overlap is where ideas connect to different categories, example: "Bike paths" fit where Outdoor Solutions and Transportation Solutions intersect.

Before the film:

- Review the causes and effects of climate change.

Greenhouse gases (GHGs) – there are a variety of gases that have an impact on the amount of heat our atmosphere holds close to the earth's surface. Using the chart referenced below explain how carbon dioxide and methane particularly play a role in climate change.

Global heating – using the maps of increase in global average temperatures talk about how different scenarios for increases (a 0.8 degree increase versus a 2 degree increase) have different projections for the amount the earth will heat up and note that the arctic circle suffers the greatest heating.

After watching the film:

- Brainstorm with students the DIRECT impacts Old Crow is experiencing as the north warms at approximately twice the rate of the rest of the globe.

- ***What are the sources of the GHGs that warm the arctic?***

  After hearing some ideas, emphasize that emission anywhere on the globe will contribute to climate change anywhere else on the globe. The atmosphere is circulating and the effects are global.

- ***What are the environmental changes that affect the Old Crow community's ability to survive?***

  Use the arctic lake ecosystem diagram to illustrate where these changes impact the food web.

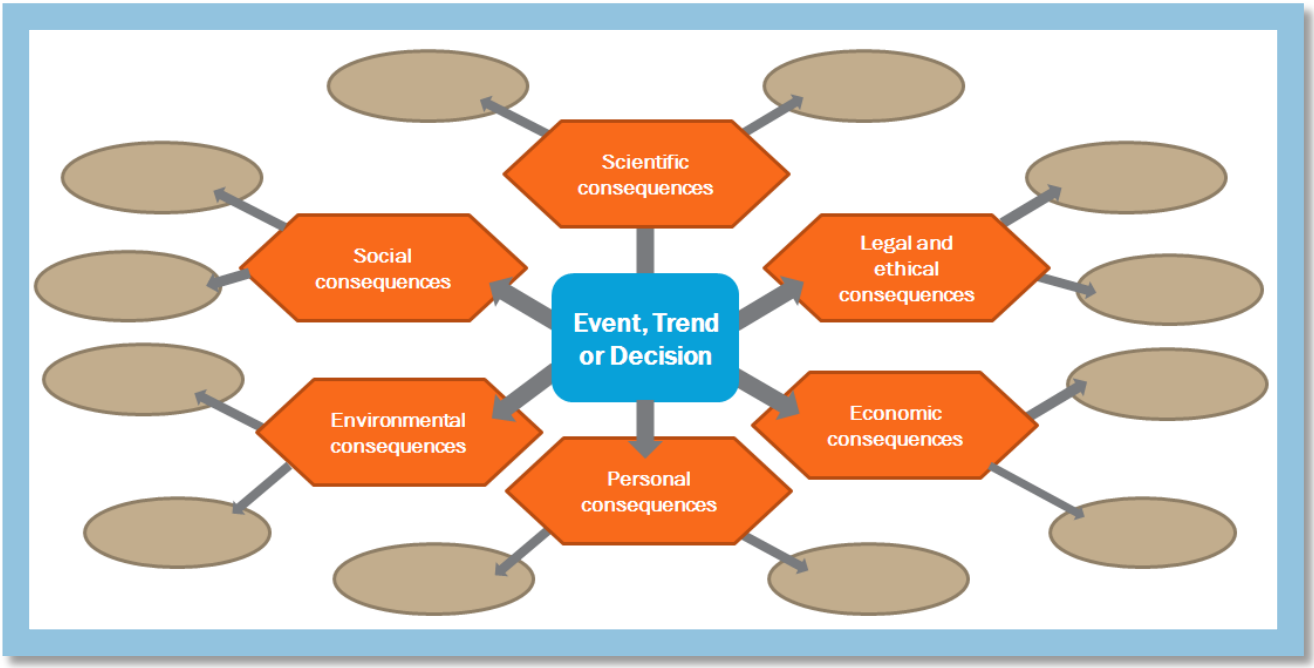
- ***What is Climate Justice?***

  The understanding behind the 'climate justice' movement is that those who are least responsible for the problem are the first to experience the devastation of climate change and will feel the impact most severely.

Countries that have enjoyed the benefits of fossil fuel driven industrialization bear a greater burden of responsibility to mitigate climate change. For example Old Crow's history does not include a significant contribution to Canada's emissions, and yet they have felt a far greater effect than the larger urban centres across the country.

Consequence Mapping

A consequence map is a visual tool used to illustrate the many kinds of future effects related to a real or imaginary event, issue, problem, trend, or developing technology. This is another tool for developing students' systems-thinking skills.



CLIMATE JUSTICE

To better understand climate justice use the consequence mapping tool to examine the increase in GHGs and heating trend that the planet is experiencing.

- Start with an increase in average arctic temperatures as the central trend.
- Choose a time frame. Norma's story takes us through a year in the 1950s to the drying up of her lakes in 2007.
- ***If there is no change in GHG emissions what consequences might Old Crow expect in the next 40 years?***
- Provide students with the consequence map graphic (above), and give them time to brainstorm and jot down potential consequences in each category. This can be done in small groups (an example is provided for climate change broadly with some possible consequences).
- Ask the students to consider: ***What would your consequence map look like if there was an international consensus to significantly reduce global GHG emissions?***