



## Grades 7-9: Environment/ Climate Change

### Turning up the Heat on Climate Change //120-160mins

Questioning whether Canada's political parties are making just decisions on climate change and understanding how these decisions affect quality of life.

Learning Objectives	
<p><b>Focus:</b> How government decisions on environmental issues affect quality of life</p> <p><b>Essential Question:</b> Are Canada's political parties making just decisions regarding climate change?</p> <p><b>Main Learning Goal:</b> Demonstrate an understanding of how human actions impact the environment.</p>	
Curriculum Expectations	Assessment
<p><b>Social 9, 2.6</b>  <i>-How is a political party's philosophy reflected in its platform? (ER, PADM)</i></p> <p><i>-How do government decisions on environmental issues impact quality of life? (PADM, ER)</i></p> <p><b>Science 9 Unit 3</b>  <i>-Comprehend information on the biological impacts of hazardous chemicals on local and global environments, by: interpreting evidence for environmental changes in the vicinity of a substance release</i></p> <p><b>Religion 9 Unit 6, Theme 3</b>  <i>-Define justice in terms of respect for the integrity and balance of creation</i></p>	<ol style="list-style-type: none"> <li>1) I can explain the actions Canada's political parties plan to take on climate change based on their Fall 2015 election campaigns.</li> <li>2) I can analyze how these political parties' philosophies about the environment are reflected in their platforms on climate change.</li> <li>3) I can evaluate the biological impacts of actions that may involve the release of hazardous chemicals on local and global environments.</li> <li>4) I can discern whether the campaign platforms of Canadian political parties include just actions on climate change that promote quality of life, respect for the integrity and balance of creation, social responsibility, solidarity, and the common good.</li> <li>5) I know about just actions I can take on climate change as an individual in Canada that promote quality of life, respect for the integrity and balance of creation, social responsibility, solidarity, and the common good.</li> </ol>
Catholic Graduate Expectations	
<p><b>A discerning believer formed in the Catholic faith community who</b> - Develops attitudes and values founded on Catholic Social Teaching and acts to promote social responsibility, human solidarity, and the common good.</p> <p><b>A reflective and creative thinker who</b> -Adopts a holistic approach to life by integrating learning from various subject areas and experience;</p> <p>-Examines, evaluates and applies knowledge of interdependent systems (physical, political, ethical, socio-economic and ecological) for the development of a just and compassionate society.</p> <p><b>A responsible citizen who</b> -Respects the environment and uses resources wisely</p>	

Learning Strategies	
<b>Cognitive-</b> Reading, paraphrasing, analysis, Frayer concept map, graphic organizer, evaluation) <b>Metacognitive-</b> Journal reflection <b>Collaborative-</b> Group activities in pairs and small groups <b>Experiential-</b> Opportunities to engage with actions on individual/whole class basis	
Key Vocabulary	Principles of Catholic Social Teaching- <a href="http://www.devp.org/cst">www.devp.org/cst</a>
<b>Just</b> <b>Integrity</b> <b>Environmental Issues</b> <b>Quality of Life</b> <b>Balance</b> <b>Campaign Platform</b> <b>Common Good</b> <b>Social Responsibility</b> <b>Solidarity</b> <b>Stewardship of Creation</b> <b>Climate Change</b>	<p><b>Common Good:</b> We must all consider the good of others, and the good of the whole human family, in organizing our society – economically, politically, legally. Human Dignity can only be realized and protected through our relationship with society-at-large. We must love our neighbours, locally and globally, and prioritize the good of the human family over commercial interests.</p> <p><b>Solidarity:</b> We are all part of the human family and we are all interconnected and interdependent. Loving our neighbour has global dimensions. We must see ourselves in others and collaborate toward solutions. Solidarity is the recognition that we are ‘all in this together’, and is a commitment to strengthen community and promote a just society.</p> <p><b>Stewardship of Creation:</b> The Earth is sacred. Creation has its own intrinsic value. We have a responsibility to protect and to cherish the Earth’s ecological diversity, beauty and life-sustaining properties. Together, we must hold it in trust for future generations.</p>

Preparation: Review videos and resources to select those most appropriate to your group

## PART 1

## See

//10mins

### Minds On (hook)

**Teacher:** What is it like to sit inside a car on a hot afternoon?

Briefly invite responses from students (uncomfortable, hard to breathe, sweaty, stuffy, etc.)

### Link Concept

**Teacher:** Scientists suggest the earth is showing similar symptoms that we show in a trapped car. The earth’s atmosphere is becoming too thick for heat to escape. Our concern is, how is this affecting our quality of life? We will briefly interpret scientific evidence of climate change. We will then focus on how different political parties are addressing climate change in their platforms, and which one is most just in terms of improving quality of life.

### Student Learning Objectives

Objectives should be visually presented for students to review them.

### Key Vocabulary

Students will briefly explore key vocabulary using a concept definition map, word placemat, or other appropriate strategy/tool.

## Evidence for Climate Change

// 10-20mins

For a brief overview of climate change, students can:

a) view one of the following videos:

- IPCC, Nov 21, 2013. 'English – Climate Change 2013: The physical Science Basis', 9mins. Retrieved from: [https://www.youtube.com/watch?feature=player\\_embedded&v=6yiTZmOy1YA](https://www.youtube.com/watch?feature=player_embedded&v=6yiTZmOy1YA)
- International Geosphere-Biosphere Programme, Nov 19, 2013 'Climate Change: The State of Science', 4mins. Retrieved from: [https://www.youtube.com/watch?feature=player\\_embedded&v=\\_EWOrZQ3L-c](https://www.youtube.com/watch?feature=player_embedded&v=_EWOrZQ3L-c)
- National Geographic, May 18, 2007. 'Global Warming 101', 3mins. Retrieved from: [https://www.youtube.com/watch?feature=player\\_embedded&v=oJAbATJCugs](https://www.youtube.com/watch?feature=player_embedded&v=oJAbATJCugs)
- 'Development and Peace Animated Clip – Fall Campaign 2011', 2½ mins. Retrieved from: <https://www.youtube.com/watch?v=ISdlOgpKU0c>

b) read the following texts:

- James Wakelin (2015), 'What is Climate Change?', Retrieved from: <http://achangingclimate.org/whatisclimatechange/>
- James Wakelin (2015), 'What is Global Warming?', Retrieved from: <http://achangingclimate.org/what-is-global-warming/>
- Canadian Foodgrains Bank (2014) 'Let's Talk about the weather!', Retrieved from: <http://foodgrainsbank.ca/uploads/policy%20documents/Climate%20Change%20booklet.pdf>

## Interaction: Think Pair Share

**Teacher:** Reflect on what you learned through the videos about climate change, then Turn to a classmate and discuss these 4 questions:

- 1) What is 'climate change'?
- 2) What are its causes?
- 3) What are its impacts on humans?
- 4) What are its impacts on the environment?

## Judge

//30-40mins

## Whole class discussion on the Effects of Climate Change on Quality of Life

**Teacher:** How does climate change impact the quality of life?

## Small Group work: Climate Change and Quality of Life

**Teacher:** In small groups, you will first identify in what ways climate change affects the quality of life by researching the infographs.

Distribute infographs as an online or printed resource, as well as the Climate Change and Quality of Life student worksheet (available in the appendices) to record their ideas. Students will be expected to work cooperatively in small groups of 4-5 to complete this activity. Each student will record his or her groups ideas on their own individual worksheet.

## Whole class discussion on Climate Change and Justice

**Teacher:** Pope Francis' latest encyclical on the environment, *Laudato Si'* reminds us that social justice and ecological justice are inseparable; caring for people includes caring for creation.

"A true ecological approach always becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear both the cry of the earth and the cry of the poor."  
(*Laudato Si'*, 49)

"Everything is connected. Concern for the environment thus needs to be joined to a sincere love for our fellow human beings and an unwavering commitment to resolving the problems of society"  
(*Laudato Si'*, 91)

"We are faced not with two separate crises, one environmental and the other social, but rather with one complex crisis which is both social and environmental. Strategies for a solution demand an integrated approach to combating poverty, restoring dignity to the excluded, and at the same time protecting nature." (Laudato Si., 139)

Display the Catholic Social Teaching principles Stewardship of Creation, Solidarity, and Common Good for students:

**Common Good:** We must all consider the good of others, and the good of the whole human family, in organizing our society – economically, politically, legally. Human Dignity can only be realized and protected through our relationship with society-at-large. We must love our neighbours, locally and globally, and prioritize the good of the human family over commercial interests.

**Solidarity:** We are all part of the human family and we are all interconnected and interdependent. Loving our neighbour has global dimensions. We must see ourselves in others and collaborate toward solutions. Solidarity is the recognition that we are 'all in this together', and is a commitment to strengthen community and promote a just society.

**Stewardship of Creation:** The Earth is sacred. Creation has its own intrinsic value. We have a responsibility to protect and to cherish the Earth's ecological diversity, beauty and life-sustaining properties. Together, we must hold it in trust for future generations.

*Teacher:* Based on these teachings, do you think climate change is a social justice issue, just an environmental issue, or both?

Help students make connections between earlier discussion on climate change and quality of life issues. (ie climate change impacts quality of life, and those who are marginalized tend to suffer the worst consequences of climate change, whether they live in Canada or elsewhere around the world).

"Climate change is dramatically altering the planet as we know it. The poorest people contribute the least to climate change yet are hit hardest by its impacts – but we are all affected. From the southern Alberta floods to Super Typhoon Haiyan in the Philippines, the lives of millions of people are being harmed by climate change. The poorest in the Global South, however, are struggling most to survive in the face of prolonged droughts, extreme storms and sudden floods. Development and Peace believes that it doesn't have to be this way. We can address the root causes of climate change and help people adapt to its impacts."

(Development and Peace, 2015 Action Sheet)

"Climate change affects the poorest countries most severely. Yet Canada has emissions per capita that are 150 times higher than those of Ethiopia. It's true: those who do the least to cause climate change suffer the most."

(Development and Peace, 2015 Action Sheet)

## PART 2

//40-60mins

### Small Group work: Party Platforms on the Climate – Just or Unjust?

*Teacher:* We will now divide into small groups and prepare for a debate. Each group will represent one political party's positions on ecological issues. You will have 20 minutes to prepare your points by researching as much as you can on ecological issues from your political party's campaign information. You should be able to address each issue in terms of both its ecological impact and its impact on people. Divide the students into groups and allow them time to research as a group.

Students should be provided appropriate level reading material on each party platform pertaining to environmental issues. Print material or online sources can be used. Ensure ELL students are given the right support to participate in the learning process by providing adapted material (e.g. glossary of unfamiliar terms).

Have each group select one speaker – these will be the party leaders. The rest of the groups become the audience, and it is their job to evaluate all arguments as just or unjust in terms of ecological justice and social justice, and to evaluate them against the principles of Stewardship of Creation, Solidarity and Common Good.

Some topics you may choose to focus on:

- Each party's position on climate change
- Keystone XL and Northern Gateway Pipeline, particularly as it relates to bio-hazards, environmental protection, etc.)
- Protection of natural resources
- Economy based on fossil fuels, alternative economy base on renewable energies (particularly in regards to the environmental impact bituminous sand (aka oil sand or tar sands)
- Carbon-reducing initiatives, carbon trading programs, etc (especially in regards to the actual reduction of emissions world-wide)

After the debate, gather the students to review the findings. Encourage students to present and discuss their points of view.

**Teacher:** Overall, do we believe our political parties will improve or reduce our quality of life based on their climate change platform?

- How will each party's positions affect the quality of life of Canadians in the short and long term?
- How will each party's positions affect the planet in the short and long term? How will this affect our sisters and brothers around the world

## Act

//10-15mins

### Journal: Just Action on Climate Change

**Teacher:** If climate change is also a social justice issue, how does Jesus call us to ensure we are addressing the negative impact of climate change?

Invite students to suggest ideas (advocating for just laws and improved quality of life, supporting positive political initiatives, joining an environmental club, changing our individual lifestyles, etc.)

After students have brainstormed ideas, each student will reflect on three ways we are called to take action for justice; pray, act, advocate. Some students may need support in identifying the most appropriate actions to take.

Have students use the Development and Peace Fall Action Cards (order copies free at [devp.org](http://devp.org)) to advocate to the Prime Minister for action on climate change. The Action Card allows students to write their own commitment to reduce their carbon footprint, and asks the Prime Minister to commit to:

- 1) Adopting a fair, ambitious, and legally-binding international agreement on Climate change to ensure that the world's average temperature does not exceed 2°C.
- 2) Providing the resources necessary for the most vulnerable communities in the world to adapt to climate change.
- 3) Transitioning Canada's fossil-fuel dependent economy towards one that is based on energy-efficiency and renewable energy.

These action cards can be signed and mailed (no postage required). This is a great way for students to practice advocacy and responsible citizenship.



### Sample Action: Advocate

Students prepare a letter to an appropriate school board or governmental representative explaining what you have learned and asking the minister to prioritize the ecology in decision-making. Sample ideas:

- To school board trustees about environmental policies (does your school want to use land for a food bank garden or have a local food policy for the cafeteria?),
- To a local minister responsible for a current issue (for example, is a local construction project causing concern?),
- To a provincial minister (energy is a provincial jurisdiction), or
- To a federal minister (want Canada to make binding international agreements on climate change, or to prioritize a green economy?).

Help students write these letters, basing themselves on what they have learned – letters can be evaluated for argument construction if desired. Ensure students MAIL the letters themselves, or minimally stamp and address the envelopes themselves – take this opportunity to congratulate the students on their citizen advocacy!

## REVIEW

//5mins

### Video: Call to Action on Climate Change

**Teacher:** As we continue to reflect on how we are called to act with justice for creation, invite us to enjoy a light-hearted message on this serious topic:

Blink Star, June 16, 2015. Pope Francis: The Encyclical. Retrieved from:

[https://www.youtube.com/watch?v=XlHb\\_9rJSjw](https://www.youtube.com/watch?v=XlHb_9rJSjw)

### Submit Exit Slip/Just Action Journal

Students will submit their just action on climate change ideas. A plan should be in place for students to share their reflections on their actions in the coming weeks. Students should also hand in their action – a prayer written, an advocacy letter, a public education poster, etc. Extra time may need to be given to these students to ensure their action is meaningfully completed.

### Closing Prayer: Care of Creation

God of grace and glory,  
You revealed to St. Francis  
that You are Father of all creation and  
that all creatures are related as brothers and sisters.  
Grant us, Lord,  
the grace to see Your beauty and likeness  
in created things  
that we may follow St. Francis  
in showing care for creation. In the name of the Father, Son, and Holy Spirit. Amen.

- adapted by Br. Cathal Duddy ofm, from "The Canticum of the Creatures" by St. Francis of Assisi

### Assessment for Learning

- Completed and accurate Climate Change and Quality of Life record sheet (individual)
- Anecdotal Observation Sheet (partner and small group participation)
- Exit Slip: Action Journal

### Accommodations

- ELL leveled texts on Climate Change and Political Party Platforms

# APPENDICES



## Climate Change and Quality of Life

9.2.6

*I have come that you may have life in all its abundance.*  
~ Jesus Christ

*In your group, take time to investigate the affects of climate change using the infographs. During your investigation, record what evidence you find of how climate change affects each area of life listed below. (The categories below are guidelines; your group may revise the list based on your research.)*

Area of Quality of Life*	Affects of Climate Change
Peace and security	
Physical and emotional well-being	
Environmental protection	
Participation in decision making	
Cultural identity and community	

\* Adapted from Manitoba Education, [http://www.edu.gov.mb.ca/k12/cur/socstud/foundation\\_gr7/blms/#cluster2](http://www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr7/blms/#cluster2)



## Climate Change and Quality of Life

9.2.6



<b>Political Party</b>	<b>How their climate change policy improves quality of life</b>	<b>How their climate change policy reduces quality of life</b>	<b>Overall – POSITIVE, NEGATIVE, or NEUTRAL?</b>

## Just Action on Climate Change

**Pray. Act. Advocate.** These are ways Catholics respond when faced with injustice. Choose one idea from each list below. Use class resources to get you started. Be prepared to share with your class how you acted to help stop climate change and improve quality of life for all!

### Pray:

- ☐ I will commit to pray the Rosary in dedication of those most affected by climate change
- ☐ I will write a prayer for the just stewardship of creation and share it at home, school, or church

What I did: \_\_\_\_\_

When: \_\_\_\_\_

Why I believe this made a difference: \_\_\_\_\_

### Act:

- ☐ I will write a blog sharing my ideas about how we should respond to climate change
- ☐ I will practice one action to reduce climate change this week
- ☐ I will help organize a Feast of St. Francis event at my parish or school

What I did: \_\_\_\_\_

When: \_\_\_\_\_

Why I believe this made a difference: \_\_\_\_\_

### Advocate:

- ☐ I will write a letter to my elected representative, requesting that climate change be the priority issue for my government
- ☐ I will sign a petition showing my support for just policies on climate change
- ☐ I will dedicate two hours to raise awareness of climate change issues by joining a peaceful demonstration, neighborhood campaign, or information booth at local school, parish, or mall

What I did: \_\_\_\_\_

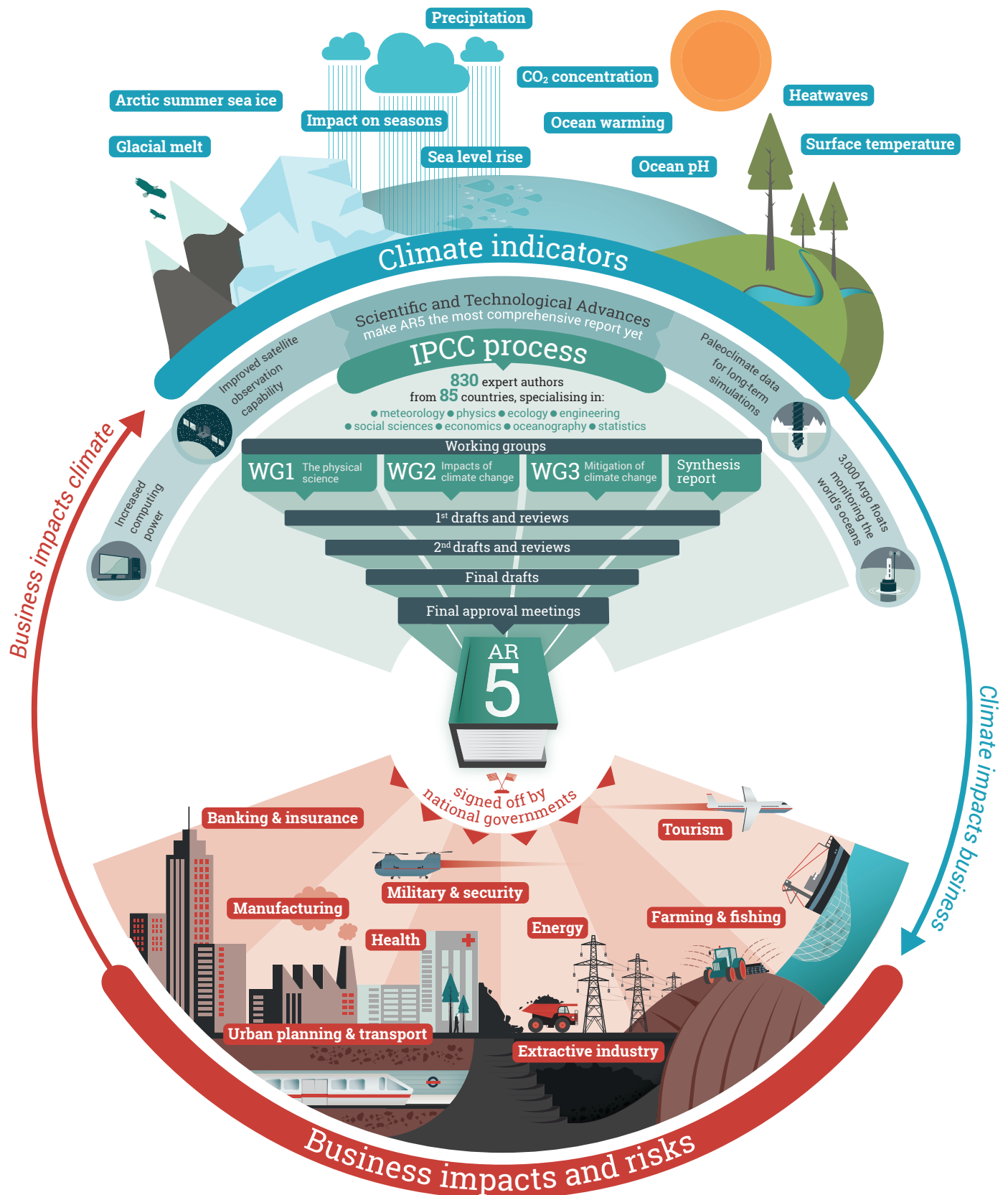
When: \_\_\_\_\_

Why I believe this made a difference: \_\_\_\_\_

# Climate

## Everyone's business

The process behind the Fifth Assessment Report (AR5) of the  
UN's Intergovernmental Panel on Climate Change (IPCC)



# 10 WAYS you can help —STOP— climate change



David  
Suzuki  
Foundation

SOLUTIONS ARE IN OUR NATURE

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

## 1 Green your commute

Transportation causes about 25 per cent of Canada's greenhouse gas emissions, so walk, cycle or take transit whenever you can. You'll save money and get into better shape! If you can't go car-free, try carpooling or car sharing, and use the smallest, most fuel-efficient vehicle possible.

## 2 Be energy efficient

You already switch off lights — what's next? Change light bulbs to compact fluorescents or LEDs. Unplug computers, TVs and other electronics when not in use. Wash clothes in cold or warm (not hot) water. Dryers are energy hogs, so hang dry when you can. Install a programmable thermostat. Look for the Energy Star® label when buying new appliances. And a home energy audit is cheaper than you think — book one today to find even more ways to save energy.

## 3 Choose renewable power

Ask your utility to switch your account to clean, renewable power, such as from wind farms. If it doesn't offer this option yet, ask it to.

## 4 Eat wisely

Buy organic and locally grown foods. Avoid processed items. Grow some of your own food. And eat low on the food chain — at least one meat-free meal a day — since 18 per cent of greenhouse gas emissions come from meat and dairy production. Food writer Michael Pollan sums it up best: "Eat food. Not too much. Mostly plants."

## 5 Trim your waste

Garbage buried in landfills produces methane, a potent greenhouse gas. Keep stuff out of landfills by composting kitchen scraps and garden trimmings, and recycling paper, plastic, metal and glass. Let store managers and manufacturers know you want products with minimal or recyclable packaging.

## 6 Let polluters pay

Carbon taxes make polluting activities more expensive and green solutions more affordable, allowing energy-efficient businesses and households to save money. They are one of the most effective ways to reduce Canada's climate impact. If your province doesn't have a carbon tax, ask your premier and MLA to implement one.

## 7 Fly less

Air travel leaves behind a huge carbon footprint. Before you book your next airline ticket, consider greener options such as buses or trains, or try vacationing closer to home. You can also stay in touch with people by videoconferencing, which saves time as well as travel and accommodation costs.

## 8 Get informed

Follow the latest news about climate change. Visit [www.davidsuzuki.org](http://www.davidsuzuki.org) and join our community. Host a presentation for your community or workplace by requesting a presenter trained by Al Gore from The Climate Project Canada at [www.climateprojectcanada.org](http://www.climateprojectcanada.org).

## 9 Get involved

Take a few minutes to contact your political representatives and the media to tell them you want immediate action on climate change. Remind them that reducing greenhouse gas emissions will also build healthier communities, spur economic innovation and create new jobs. And next time you're at the polls, vote for politicians who support effective climate policies.

## 10 Support and donate

Many organizations, including the David Suzuki Foundation, are working hard on solutions to climate change and rely on financial support from citizens like you. Consider making a donation today by calling 1-800-453-1533 or by visiting our secure website at [www.davidsuzuki.org/donate](http://www.davidsuzuki.org/donate).



# Moves to climate-proof the planet

Adaptation projects from around the world



**Adaptive Capacity ranking**  
These scores are taken from the Maplecroft Adaptive Capacity Index (ACI). The ACI balances a country's exposure to climate risks with its ability to absorb and recover from losses.

## Canada Cooling centres and travel tokens

**DISASTER CONTROL**

To combat the urban heat island effect, Toronto has designed weather alerts to protect vulnerable people such as the elderly, children, those who are ill, and homeless people from extremes of heat (and cold). Public information and action include a heat advice line, bottled water distribution, and transit tokens to get people to cooling centres.

Adaptive capacity  
**HIGH**

## United States White-out global warming NYC

**URBAN PLANNING**

A hip project that encourages New Yorkers to 'adopt a roof' and paint it white, to cool down sweltering NYC in the summer. Meanwhile, city hall is moving back-up power generators to higher ground in anticipation of floods. No talk of green space yet, though.

Adaptive capacity  
**HIGH**

## Haiti Micro-disaster cover

**INSURANCE**

Fonkoze, Haiti's largest microfinance organization, has rolled out catastrophe insurance to their 55,000 small-loan clients. Under a donor-supported scheme, insurance is extended to those traditionally excluded from it, in this case poor women entrepreneurs. The borrower's home and business are insured against ever more frequent floods and fiercer hurricanes, as well as earthquakes. In the event of a disaster they get a \$125 indemnity pay-out, cancellation of any loan, and eligibility to receive a new loan when ready to re-start business.

Adaptive capacity  
**Extremely LOW**

## EMERGENCY COOLING CENTRE

## Britain Greening London and the mighty Thames barrage

**URBAN PLANNING, WATER MANAGEMENT**

Working with Sustainable Cities: Options for Responding to Climate Change Impacts and Outcomes (SCORCHIO – yes, really), the mayor's office will 're-green' the city to shade, cool and insulate. Some 100,000 square metres of green roofs are planned as well as a 10-per-cent increase in green cover by 2050. The gigantic Thames Barrier, which cost over \$1 billion, should be able to protect the capital from tidal floods until at least 2070.

Adaptive capacity  
**HIGH**

## Uganda SMS weather warnings

**DISASTER CONTROL**

Around 5,000 fishers die each year on Lake Victoria when their boats are capsized by sudden winds and high waves. A pilot project will see weather forecasts and warnings sent out by mobile phone text message, so fishers know when to stay docked.

Adaptive capacity  
**LOW**

## Peru Painting mountains to bring back glaciers

**WATER MANAGEMENT**

The inventor Eduardo Gold is trying to restore glacial mass in the Peruvian Andes. His team will finish painting the rocks of three peaks white this year. Sounds wacky but draws on the scientific principle 'the albedo effect' – reflecting the sun's rays back into space to bring down the earth's temperature. The World Bank was impressed – it awarded him \$200,000.

Adaptive capacity  
**MEDIUM**

## The Netherlands Smart dykes and amphibian houses

**WATER MANAGEMENT, URBAN PLANNING**

Holland enjoys a sophisticated web of polders, dykes and dams, but these may not be enough to withstand rising seas and river floods. The government plans to boost defences but also to 'make room for the river', extending flood plains and introducing innovations like floodable dykes. They are also trialing 'amphibian houses' – homes that are anchored to the ground and can rise with the water, and dykes with sensors that can warn of impending danger. By 2050, the country expects to spend over \$2 billion every year on adaptation.

Adaptive capacity  
**HIGH**

## Dubai Air-conditioned bus stops

**URBAN PLANNING**

This gulf state now has 900 air-conditioned bus stops to cool down waiting commuters. Developers have eschewed traditional Persian architecture in favour of tall, glass buildings ill-equipped for soaring 50 degrees Celsius heat. The Burj Khalifa – the world's tallest building – is a case in point. It uses 150 megawatts of power, equal to about a 10th of the output of a big nuclear reactor. Also, isn't it time Dubai lost the indoor ski slope? Just a thought.

Adaptive capacity  
**MEDIUM**

## Vietnam Fighting dengue with the Mesocyclops

**HEALTH**

Dengue fever is one lethal vector-borne disease that – like malaria – may spread to new tropical areas. In Vietnam dengue was all but eliminated by a biological weapon, a mosquito larvae predator supremo: the scarily named (but really very small) Mesocyclops, which was introduced into water storage containers.

Adaptive capacity  
**LOW**

## Kenya Meat safety net for Turkana pastoralists

**LIVELIHOODS**

Droughts, which once occurred every 10 years, now come on an annual basis, wiping out livestock and causing famine. As an alternative to food aid, an NGO-financed Meat Safety Net Programme pays herders a fair, fixed price for the weakest cows or goats. The animals are slaughtered and the meat and the hide are returned to the seller. They can use the money to restock, buy food or pay off debts.

Adaptive capacity  
**LOW**

## Zambia Conservation farming

**FORESTRY AND AGRICULTURE**

A minimum tillage method that traps moisture, improves the quality of the soil, minimizes soil erosion and creates drought-tolerant growing conditions. Can result in tenfold yield increase. If global warming continues, the Victoria Falls, 'seventh wonder of the world', will be an empty ravine within 50 years – sadly, no adaptation solution for that.

Adaptive capacity  
**LOW**

## Australia Closing off the Great Barrier Reef

**BIODIVERSITY**

The organization that manages the Great Barrier Reef undertook a major review of the marine park in 2004 and decided to close off a far greater area to fishing, as coral bleaching is predicted to devastate fisheries and biodiversity here. This will minimize human pressures on the reef, but it won't actually stop corals from bleaching. A proposal to 'shade' the reef from sunlight never got much traction.

Adaptive capacity  
**HIGH**



# THE CLIMATE CHANGE GAME

## HOW SOON BEFORE WE TOPPLE?

GAME OVER

- RAINFALL PATTERNS SHIFT
- INTENSE DROUGHTS & FLOODS
- ICE CAPS MELT
- SEA LEVELS RISE
- ECO-SYSTEMS DESTROYED



OUR LIFESTYLES ARE DEVASTATING THE EARTH AND ALL LIFE ON IT

IF WE TOPPLE, WILL IT BE

**GAME OVER?**



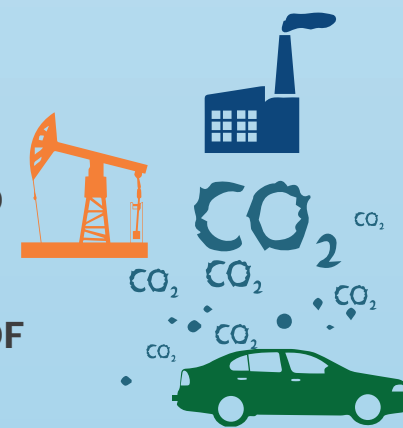
TIPPING POINT

**CO<sub>2</sub>** AND OTHER **GHGs** EMITTED THROUGH OUR LIFESTYLE CHOICES ARE CHANGING OUR CLIMATE. MORE HEAT THAN EVER BEFORE IS TRAPPED IN OUR ATMOSPHERE, **INCREASING GLOBAL TEMPERATURES**



UNSTABLE CLIMATE

**SINCE LATE 1700s** WE EXTRACT AND BURN FOSSIL FUELS- **COAL, OIL AND NATURAL GAS**- TO MAKE ELECTRICITY AND TO FUEL OUR LIFESTYLES, EMITTING HUGE VOLUMES OF **CO<sub>2</sub>**



AT THE SAME TIME, WE **CLEAR FORESTS** FOR AGRICULTURE AND INDUSTRY



LESS **CO<sub>2</sub> REMOVED** FROM OUR ATMOSPHERE



STABLE CLIMATE

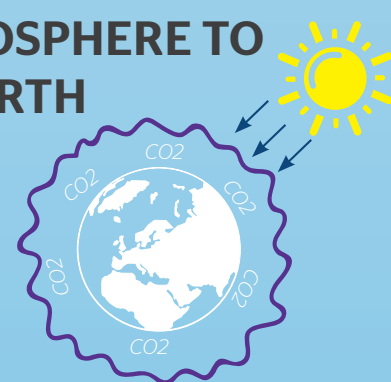
EARTH'S CLIMATE AND THE LEVEL OF **CO<sub>2</sub>** IN OUR ATMOSPHERE CHANGED THROUGHOUT HISTORY

BUT! OVER THE PAST **8,000 YEARS** OUR CLIMATE STABILISED AND **LIFE ON EARTH FLOURISHED**



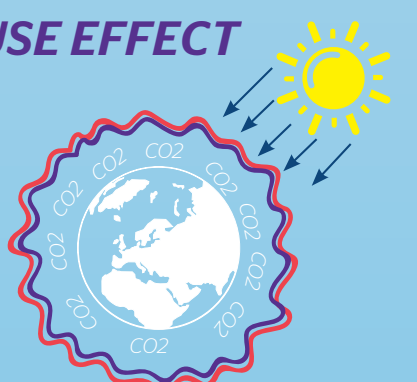
GREENHOUSE EFFECT

SUNLIGHT ENTERS OUR ATMOSPHERE TO REACH EARTH



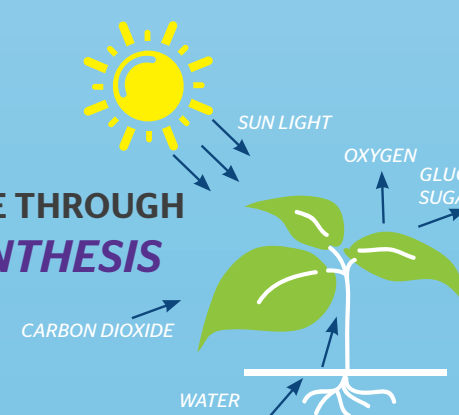
GHGs THEN TRAP EXITING ENERGY FROM EARTH'S HEATED SURFACE LIKE A BLANKET PREVENTING US FROM FREEZING

THIS IS THE NATURAL **GREENHOUSE EFFECT**

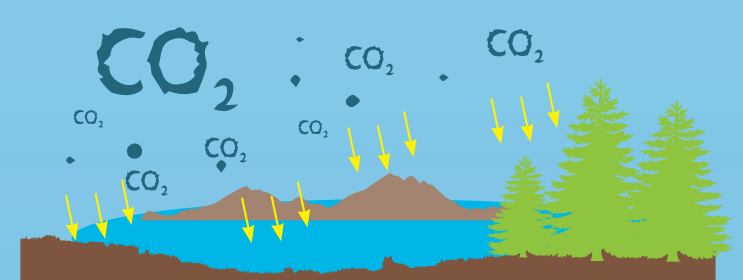


EXIT CARBON DIOXIDE

**CO<sub>2</sub>** EXITS OUR ATMOSPHERE THROUGH **PHOTOSYNTHESIS**



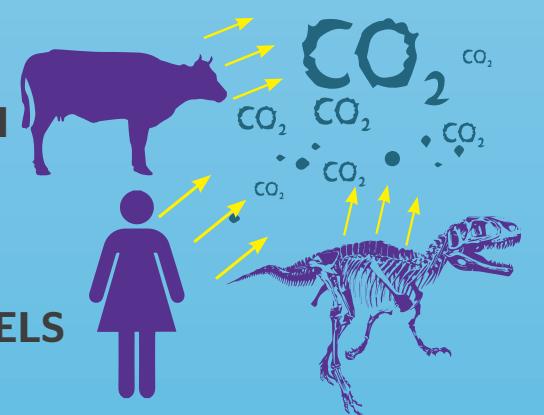
IT IS ALSO ABSORBED BY SEA, SOIL AND STORED IN TREES



ENTER CARBON DIOXIDE

**CARBON DIOXIDE (CO<sub>2</sub>)** CAN CAUSE OUR CLIMATE TO CHANGE

**CO<sub>2</sub>** ENTERS OUR ATMOSPHERE THROUGH BREATHING HUMANS AND ANIMALS, VOLCANOES, DECAYING PLANTS, AND FOSSIL FUELS



WEATHER AND CLIMATE

**WEATHER =** DAY TO DAY CONDITIONS IN OUR ATMOSPHERE

wet humid cold hot windy dry

**CLIMATE =** AVERAGE WEATHER PATTERN OVER LONG PERIODS OF TIME

**CLIMATE VARIES** ACROSS OUR WORLD



START HERE

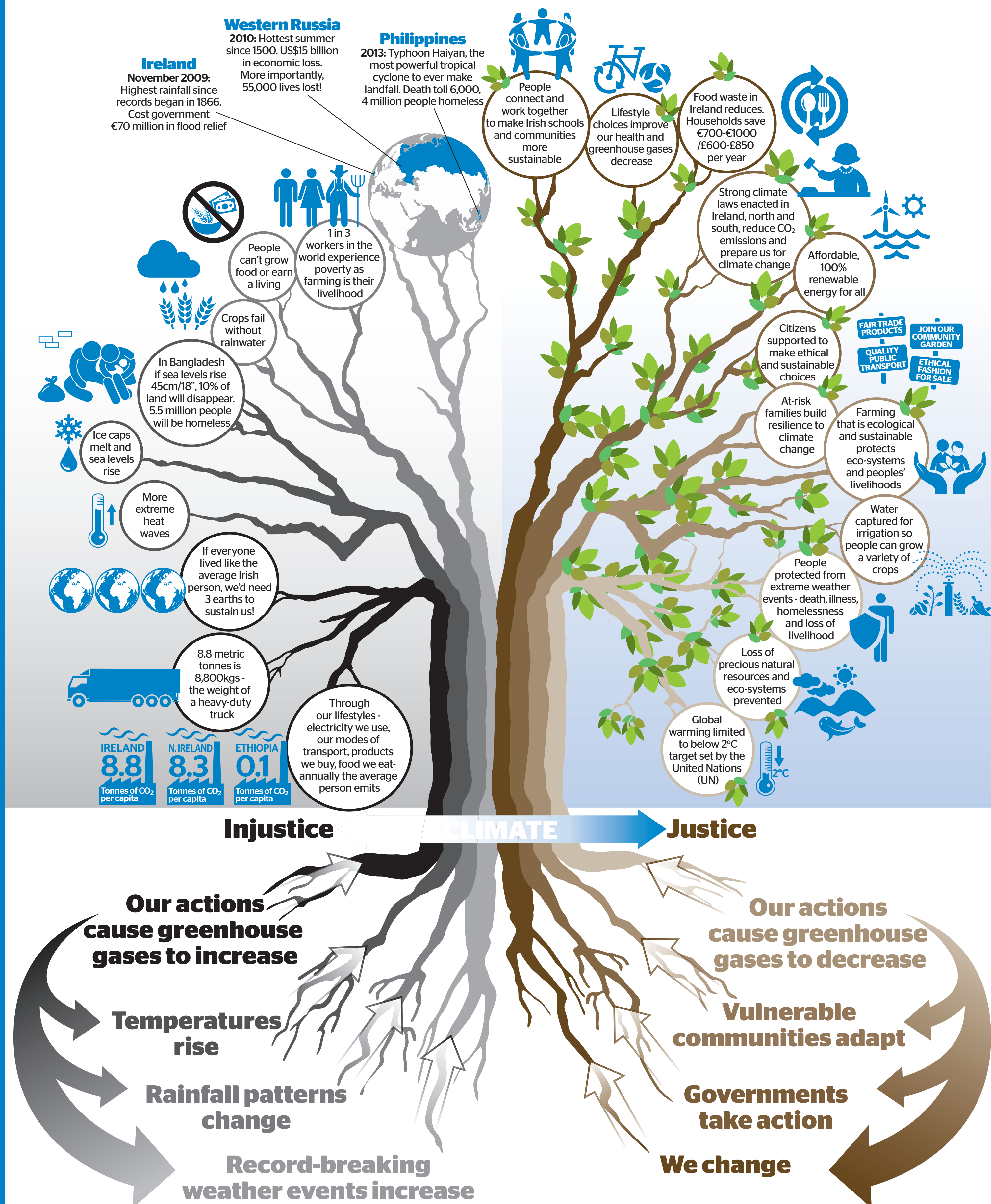
CLIMATE CHANGE BUILDING BLOCKS

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REF:EB Printed on recycled paper



# Climate Justice Tree



**Sources:**  
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Coumou, D. & Rahmstorf, S. (2012). *A Decade of Weather Extremes*: [nature.com/ncclimate](http://nature.com/ncclimate)  
Trócaire: [trocaire.org](http://trocaire.org)

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CURRENT HUMAN  
EMISSIONS PER YEAR

31 gigatons

\* before 2050 and still have a chance  
of staying below 2°C warming

TIME BEFORE WE BREAK  
OUR 'CARBON BUDGET'



13 YEARS

average yearly emissions increase: 3%

GLOBAL WARMING  
IF RELEASED

+0.8°C

1.4°F

+1.5°C

2.7°F

+2°C

3.6°F

+3-4°C

5.4-7.2°F

+5-6°C

9-10.8°F

over pre-industrial  
average temperature

SCENARIO

happened

inevitable

"safe" limit

tipping point

nightmare

SEA LEVEL  
RISE BY 2100

0.85m

1.04m

1.24m

1.43m

relative to  
1990 sea level

DROWNING  
CITIES



Amsterdam



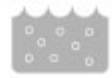
New York



Bangkok

knee-high  
flooding

OCEAN  
ACIDIFICATION



30% more  
acidic



stops growing



dissolves



dead



150% more  
acidic

oceans become  
more acidic as  
they absorb CO2

ARCTIC SEA ICE  
ANNUAL  
REDUCTION



15%



30%



45-60%



75%

HEAT



increasing  
global  
heat waves



every Euro  
summer a  
heatwave



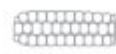
Italy, Spain,  
Greece  
deserts



unknown

some inland  
temperatures  
will reach +10°C  
(+18°F)

CORN & WHEAT  
YIELDS



-10%



-20%



-30-40%



unknown

US & Africa wheat  
Indian corn

% MORE HEAVY  
RAIN OVER LAND



7%



13%



20-26%



35-42%

HURRICANE  
DESTRUCTIVENESS



+7.5%



+15%



+22.5-30%



+37.5-45%

SPECIES AT RISK  
OF EXTINCTION



30%



40%



unknown

REALLY  
SCARY THINGS

Greenland ice  
sheet starts to  
disintegrate.  
Will take 50,000  
years to melt  
but will raise  
sea levels by 6m.

Huge amounts  
of CO2 & methane  
released by  
melting perma-  
frost in Siberia  
and Arctic.

Ocean floor  
methane released  
causing runaway  
climate change.  
Possibility of  
mass extinction.

LAST TIME CO2 LEVELS  
WERE THIS HIGH

15,000,000

MINIMUM TIME NEEDED TO RE-ABSORB  
ALL THIS CO2 FROM ATMOSPHERE

300,000