

# Working harmoniously on the earth

CUPE'S NATIONAL ENVIRONMENTAL POLICY  
2021

***CUPE***



The Canadian Union of Public Employees (CUPE) represents 700,000 workers in a wide variety of jobs. Many of these jobs have an environmental component, such as in municipal water work; compost, recycling, and waste collection; energy generation and distribution and other jobs. CUPE members can be part of the solution and help contribute to a greener workplace and world. Public sector work is integral to sustaining and enriching Canadian communities. CUPE has a responsibility, as a large organization, to set a positive environmental example through its own policies and practices.



## 1. Background

CUPE has been responding to the climate crisis for years. As the crisis grows more intense, it is time to strengthen our position. Responding to this emergency is among humanity's most urgent priorities now and over the coming decades. We have got to get this right to put humanity on a path to true sustainability.

Climate change and other environmental problems are widespread issues, but their causes and impacts are not equally shared. Burning fossil fuels (mostly oil, coal, and natural gas) that emit greenhouse gases (GHGs – mostly carbon dioxide and methane) causes climate change. Greenhouse gases trap heat in the atmosphere. Large sectors of the Canadian and international economy are based on, or related to, fossil fuel extraction and industries that depend heavily on fossil fuels (e.g., automotive, mining, steel, and many other big corporate enterprises). We must shift away from fossil-fuel dependent work, while having effective

just transition strategies and programs in place to minimize impacts on working people.

While all of humanity is confronted with climate change, not everyone contributes equally to the problem and not everyone is at equal risk. Societal inequality can make climate change impacts worse on some people and some regions of the world. Part of CUPE's role environmentally is to push back against the economic and political forces responsible for the current environmental crisis. At the same time, we all inhabit the same planet, and all have a duty to be better environmental citizens.



This is a second, revised edition of CUPE's national environmental policy. With the climate crisis escalating, our policy needs to stay current. Originally, CUPE members adopted a resolution at our 2011 convention (Resolution #94) calling on CUPE to develop an environmental policy to give direction to the union on climate change and set a course for future environmental work. The environmental policy provides guidance for the work we do and positions we take with governments, businesses, our employers and allies, with the objective of overcoming the environmental crisis. This policy also offers guidance for CUPE's own internal and operational environmental vision.

This policy contains statements in three main areas:

- Broader policy statements.
- Recommendations for CUPE workplaces where our members work.
- Recommendations for CUPE's operations.

The policy informs CUPE members, the broader labour movement, policy

makers and citizens about what constitutes the best choices for sustainable work, while promoting universally-accessible public sector services. It promotes sustainability, sound environmental stewardship, conservation, and efficient use of natural resources in a zero-carbon economy.

Other core environmental issues are dealt with in this policy but climate change underscores each. Some other environmental issues (e.g., loss of biodiversity, deforestation, desertification, etc.) are not mentioned explicitly in this policy; this does not mean that these issues are not important.

## 2. The environmental crisis

The science-based evidence is clear: the earth is warming. A warmer planet is less stable, hospitable, and less socio-economically balanced. At the time this policy was first published, the Earth had warmed 0.8°C on average. Presently, in 2021, average global temperatures are slightly more than 1.0°C higher than they were in 1880. Two-thirds of global

warming has happened since 1975, with global temperatures steadily rising 0.15 to 0.2°C per decade. The planet is warming at a dangerous pace.

This warming is not evenly distributed across the earth, nor will future warming be. Parts of Canada have already warmed well above the global average, such as in the far north where communities have been adversely affected by steadily rising temperatures.

The effects of climate change are clear. In every corner of the world, there have been more frequent and intense storms, floods, prolonged droughts, wildfires, rapidly retreating glaciers, surging and rising seas, damaging invasive species, and other outcomes linked to a changing climate. These impacts affect human survival with decreased and poorer fresh water supplies, lower crop yields, exacerbated food insecurity for some people, destructive storms, wider disease vectors, and other negative outcomes. Moreover, climate change disproportionately affects poorer regions of the world and disadvantaged communities.



Despite decades of research, knowledge, and awareness, not enough has been done to cut greenhouse gases that cause climate change. As a result, the planet is on course to warm by as much as 4 to 6°C by 2100 if we don't flatten the emissions curve and drastically ramp up GHG cuts. That level of warming would lead to disastrous climate conditions that would make large areas of the planet uninhabitable for humans, while threatening global food supply, political stability and peace, and other ruinous impacts.

Labour, environmental, and social justice groups have been calling for action on climate change for decades. All sectors of society must



take bold steps to slow climate change to avoid and adapt to its worst impacts.

All other environmental issues are affected by climate change, from stressing compromised freshwater reserves, to jeopardizing fragile ecosystems, such as forests and coral reefs. The climate must be stabilized by fully decarbonizing our way of working and living if there is to be any hope of solving our environmental problems. This means phasing out and rejecting fossil fuels for good, along a timeline that permits sharp cuts while the economy transforms. Solving the climate crisis leaves no place for fossil fuels in our lives. For our survival, we have no choice but to abandon fossil

fuels in favour of renewable public sources of energy.

All CUPE workplaces are affected by climate change. Existing public infrastructure (e.g., buildings, transportation, communications, electricity and water and social systems) is not ready to withstand the impacts from the greater risk of heat, droughts, floods, and storms brought on by increasing levels of global warming.

Since this policy was first adopted in 2013, new environmental challenges have emerged and/or intensified that are addressed in this second edition. The enormous plastic pollution problem must be solved by dealing with the largest sources of plastic pollution from industrial fishing operations, plastics packaging, and containers. The global health pandemic spurred by COVID-19 has exposed the importance of having effective just transition strategies in place for displaced workers. The pandemic has decimated many industries, causing job losses and community upheavals that can only be solved with just transition programs. Environmental

racism has also come into sharper focus as global socio-economic inequality has made worse some environmental problems, cascading their effects onto already disadvantaged segments of society. Indigenous people in Canada continue to face widespread problems with clean, public, and accessible drinking water that must be fully and finally fixed.

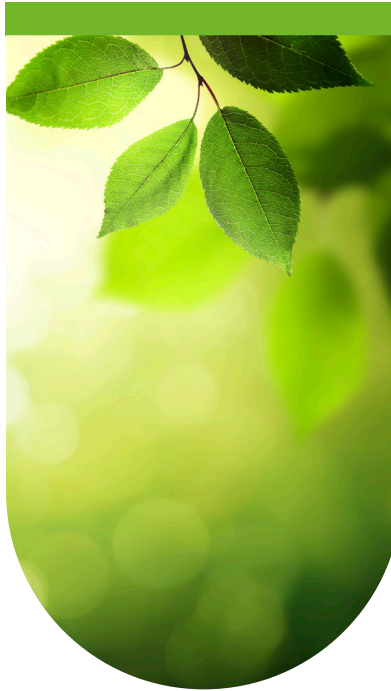
We are faced with three main challenges that must be solved together. There is a clear environmental crisis. The economic system based on continuous growth is unsustainable. There are limits to an economy that seeks infinite growth in the face of finite resources. And there is an equality challenge, both globally and within Canada.

CUPE believes that affordable access to clean air, water, soil, and energy are fundamental human rights. Plus, everyone has a right to live within a stable geophysical climate. To restore harmony with the earth and live safe and stable lives, we must build an equitable society.

### 3. CUPE's environmental vision

Ensuring the vitality of the natural environment is a priority for CUPE. Many CUPE jobs are closely linked to the environment and all CUPE jobs can contribute to a greener world. As union members, we know the earth sustains all life. But we also know the earth is in trouble. Humans have not always been the best stewards of the natural environment. The air, water, soil, climate, and all types of ecosystems have been damaged and degraded. CUPE will continue its work to be part of the solution to the climate crisis.

Climate change is a critical environmental issue that compromises our jobs, communities, health, quality of life, food, and water supplies. CUPE, with its influence and vision, is a progressive force for tackling environmental issues through education, activism, workplace, and political action, and by setting a positive example. CUPE must apply an environmental



lens to all its work and seriously consider, limit, and mitigate the climate impacts of the union's decisions, policies, and procedures.

### 4. Environment principles

CUPE supports the following principles and values:

- Human beings must restore harmony and balance with the earth by understanding our interconnectedness with the earth and all living things. We must have an ecological approach to life that realizes that our lives rely on, and are linked

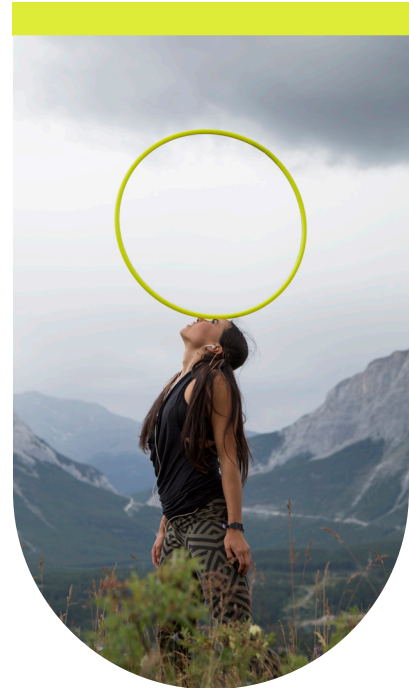
to, the earth. We cannot abuse or over-exploit its resources. We must reaffirm our connection with nature and our place in the natural world.

- This policy supports the seventh-generation principle which is rooted in an Indigenous worldview and states that decisions that are made today must consider what is best for the next seven generations. As each generation advances, it must continue to look seven generations ahead to ensure that a long-term, sustainable, and holistic view is maintained.
- Sustainability is at the heart of this policy. Sustainability simply means the ability of humans to carry on by taking a balanced approach that does not unduly harm the earth or take too much from it so that it cannot be restored.
- Economic moves away from environmentally harmful to environmentally sustainable industries and practices should not be at the cost of decent, meaningful work and jobs. There must be a just transition for workers



and their communities. Just transition means training, education and job placement programs for workers who might lose their jobs because their work changes or is made obsolete due to environmental reasons. Just transition means consultation with workers and their communities. CUPE strives to protect the rights of all working people. There are many opportunities for work in a greener economy that creates new climate jobs. The shift to sustainable work must include CUPE's vision that all people have a right to meaningful work.

- All people have a right to access clean air, water, soil, and to energy to help sustain their lives. Societal inequalities must be overcome to help ensure this access occurs.
- All people have the right to a stable climate. Equality must underscore our environmental vision, so that all people can live decent lives. Our quality of life should be measured by how we enrich our community and help to preserve a stable and clean earth for all humanity.
- Ensuring the survival and good health of our planet is a moral and ethical requirement. We have a duty as good ecological citizens to maintain the vitality of the earth by being stewards of the earth. Environmental stewardship here simply means that we should treat the earth as if it is held in trust and leave it in no worse condition for future generations than we found it, while working to fix the damage we have done to it over generations.
- To achieve environmental sustainability, our water, energy, transportation, and other critical public services must be publicly owned and operated to work for environmental objectives and the common good, rather than for private profit.
- Public sector work is often community-based. Many of our jobs put us in close proximity to the natural environment. CUPE members can, therefore, be good stewards of the earth in the same way we are good stewards of our workplaces.



## 5. Environmental priorities and positions

### 5.1 Climate change

The world is getting warmer because of human behaviour. Burning fossil fuels that emit greenhouse gases is the primary cause of climate change. To drastically cut greenhouse gas emissions we must work to eliminate the use of fossil fuels and ensure that just transition strategies keep pace with GHG cuts and economic transformation. At the same time, we must adapt to the inevitable impacts of climate change that are already "locked in" because of GHG emissions already in the atmosphere.



CUPE supports actions to cut GHGs that cause climate change to create a zero-carbon economy, while adapting to the impacts of climate change.

- We will work as a union to push Canadian governments and industries to reverse the degradation and destabilization of our environment.
- We will push the federal government to enforce its Net-Zero Emissions Accountability Act and ensure the legislation is used as a vehicle to cut Canadian emissions deeply and quickly down to zero as soon as possible. We cannot afford to go through more cycles of missed targets. This

legislation must correct past failed promises.

- We will push the federal government to enact Just Transition legislation to create systems and strategies to fairly deal with workers and communities adversely affected by the shift to a zero-carbon economy. No worker should be left behind as we transition to more ecologically harmonious ways of working.
- CUPE calls for GHG reductions across all spheres of Canadian society to limit planetary warming to no more than 1.5°C, which is considered a manageable and realistic warming threshold, based on scientific evidence. Achieving 1.5°C of warming maximum means cutting carbon emissions to zero.
- We will promote a move to an economy that favours renewable sources of public energy rather than energy derived from fossil fuels. We call for an end to government financial incentives and subsidies for the oil and gas industry. We call for a fair and rising price to be applied to carbon emissions to send a clear signal that polluters must pay for the damage they exact on climate systems.
- We will promote greener work practices that help cut and eliminate GHGs.
- We will support new job growth in areas that help adapt to the impacts of climate change.
- We will cut CUPE's operational greenhouse gas emissions at pace or quicker than emissions reductions targets set by the federal government. We will do this by encouraging energy efficiency in all CUPE buildings and workplaces, reducing travel that damages the climate, promoting public transit for all CUPE members and staff, using technologies that cut operational GHGs, reducing materials across all spheres of CUPE work, promoting procurement practices that are better for the climate and other steps.

## 5.2 Water

Water is necessary for human survival. It is also a core concern for CUPE, both from an environmental and a jobs perspective. All humans must have access to affordable, publicly-supplied, clean



drinking water to ensure human health and vitality. Water supply and quality are threatened with increasing scarcity due to climate change, from contamination from industry, agriculture, and other sources. Our water is threatened by privatization and trade deals that strive to turn this life-giving resource exclusively into a for-profit commodity. Water then becomes inaccessible for all but the wealthy in developed parts of the world.

CUPE is committed to protecting clean, accessible, publicly owned, and delivered fresh water.

- We will promote public municipal tap water over private, for-profit bottled water.
- We will oppose water privatization (including bottled water) and trade deals that promote the commodification of water.
- We will support access to reliable, safe, clean public water in all Canadian communities, including Indigenous communities that we recognize have historically, and often at present, been denied those services.



- We will support and recognize Indigenous peoples' role as the stewards and protectors of the waters of their treaty lands, and their traditional unceded territories.
- We will promote water conservation and efficient use of existing and future water resources in all sectors of society, in CUPE workplaces and CUPE offices.
- We will push at all levels to slow climate change, which has a huge impact on fresh water supply and quality, particularly in disadvantaged areas of the earth.

- We will work to protect water from contamination from all sources, particularly from industrial chemical contamination, from energy extraction (including from underground fracking and oil), agriculture, transportation, and other sources. We will also ensure wastewater is adequately treated to reduce its negative environmental impacts.

### 5.3 Energy

Energy and environmental issues are closely linked. Energy is essential for our economy and our modern society to function, but its generation can have negative environmental consequences. Energy derived from burning fossil fuels is not sustainable and contributes to climate change. There is abundant evidence that less environmentally destructive and more sustainable sources of energy are available. We must choose to promote public energy generation and transmission and renewable sources of energy (as spelled out in CUPE's Electrical Energy Generation policy) that are less harmful to the environment and the climate.

A sustainable economy must be diverse and not heavily weighted on the direct export of energy derived from our natural resources.

CUPE recognizes that while energy is integral to economic and social prosperity, it must be produced and supplied in a way that is sustainable and does not compromise the environment.

- We will promote the principle that access to energy – especially public energy – is a human right.
- We will work to keep energy generation and transmission public and promote public renewable energy, including advocating for bringing energy generation and transmission back into public ownership and control where it has been privatized. Publicly-owned energy utilities have lower rates, ensuring more affordable access to energy than private electrical utilities, which typically have higher rates.
- We will support renewable energy that has a less harmful impact on the climate and the environment.
- We will encourage a rapid move away from non-renewable, fossil fuel derived forms of energy to democratic, newer, green energy solutions.
- We will work to ensure that Indigenous territorial rights are respected according to the United Nations Declaration on the Rights of Indigenous People, and recognize that they have a right to free, informed prior consent to any energy project developments on those lands. We will also work to ensure clear processes are in place for sustainable and clean Indigenous energy development for the benefit of Indigenous communities and workers.
- We will support phasing out fossil fuel use in all its forms over a timeframe consistent with the need to sharply cut GHGs to net zero. We will oppose federal fossil fuel subsidies and incentives. Fossil fuel use is incompatible with solving the climate crisis.
- We will promote energy conservation in all CUPE workplaces.



- We will reduce and minimize energy use through efficient CUPE operational practices.

## 5.4 Waste and environmental toxins

Waste must be reduced and natural resources need to be conserved. A society that over consumes depletes its resources and contaminates its air, water and soil with the waste that results. Waste can be reduced by consuming less, reducing excess packaging, changing industrial processes, and diverting materials to recycling and composting streams that create good green public sector jobs. The plastic waste crisis has grown enormously in recent years and must be fixed.



Environmental toxins are harmful to human health and to the natural environment and must be eliminated. Large resource and industrial enterprises produce huge amounts of waste and environmental toxins. These sectors of our economy must be at the leading edge of waste reduction and cleaner industrial practices.

CUPE promotes efficient use of resources to decrease waste and the proliferation of environmental toxins, while ensuring that waste collection and diversion work is kept in the public sector.

- We will promote waste reduction and encourage recycling, composting and all effective waste diversion methods.

- We will support all efforts to reduce, eliminate and ban plastics in our workplaces and municipalities to help stop plastic waste from despoiling our waterways and, most significantly, our oceans. We call for industrial fishing to develop new methods to ensure no plastic waste enters the ocean from their operations.
- We will demand governments institute serious and effective plastic waste reduction and elimination strategies by targeting the main contributors to the problem: industrial-scaled fishing operations as well as plastic packaging in all its forms.
- We will promote rigorous regulations and standards to eliminate toxic substances. We will support municipal bans on toxic pesticides.
- We will promote substitution of toxic substances and products with more environmentally-benign alternatives.
- We will support campaigns and programs to buy local and buy toxic-free.

- We will encourage the adoption of regulations to make polluters pay the full costs of their products via extended producer responsibility programs to fund publicly-provided recycling and waste systems.
- We will promote efficient and full use of consumer products and oppose the disposable culture mentality in areas such as clothing, footwear, plastic containers, furniture, building materials and many other products.

## 5.5 Green jobs and greening the workplace

Good environmental choices are good for job growth and human development. There are opportunities – particularly in the public sector – to protect our environment while creating good, green jobs at the municipal level, in transportation, renewable energy, and other sectors. Our current jobs can be improved by reducing their environmental impact. CUPE members can push for changes to green their workplaces and improve the environmental record of CUPE work. We have



to change in two ways:  
promoting jobs that are  
better for the environment  
and making existing jobs  
better for the environment.

CUPE calls for greener work  
practices in existing CUPE  
jobs and a just transition to  
good green jobs that reduce  
the environmental harm  
of all forms of work in the  
Canadian economy.

- We will promote all facets of greening the workplace, such as through green bargaining language, workplace environmental stewards and committees, workplace environmental policies, green audits, and other programs. Whatever workplace CUPE members work in, these steps, if taken, can have a significant positive environmental impact.
  - We will encourage good green job growth while simultaneously making existing CUPE work greener.
  - We will promote just transition strategies for workers and their communities that will help train and prepare workers for meaningful work in a new, green economy.
- We will promote all facets of green jobs, including jobs that directly help to clean up the environment (e.g., in recycling and reusing waste), jobs that protect and restore ecosystems, jobs that spread information that is needed to improve our environmental record, and jobs in production in a new green economy, such as in new energy efficiency technology, energy efficiency building inspectors, manufacturing, and other types of work.
  - We will promote public sector job growth via jobs necessary for climate change adaptation, such



as jobs in urban design,  
urban landscaping and  
forestry, infrastructure  
resiliency, and other forms  
of work that will come  
online in a changing  
climate.

## 5.6 Just Transition

The shift toward a zero-carbon economy will mean significant changes that will affect working people. But it must be a just transition to minimize impacts on workers and their communities. It must also help generate new jobs.

A just transition strategy is an environmental and economic program aimed at helping workers retain work as the economy shifts to greener ways of working. Just transition is an internationally-recognized trade union priority. It has been enshrined as a principle, for example, in the United Nations framework agreement on climate change negotiated in 2015, the Paris Climate Agreement. This resulted from trade unionists pushing for its inclusion.

Just transition is focussed on economic shifts due to environmental reasons and the push for more sustainable ways of working. Just transition is based on many principles, including worker consultation, new education, retraining, reskilling programs, as well as strategies to identify opportunities for new work. It is a tool to help smooth the shift toward a more sustainable society, while working to ensure the benefits of economic transformation are shared by all workers. Just transition has among its goals decent work for all, social inclusion, and the eradication of poverty.

CUPE recognizes that governments have a role to play in economic transformation and must take responsibility for adverse impacts and find ways to minimize the damage on workers and their communities. Specifically, governments have a duty to support those negatively affected by the move to a zero-carbon economy. In this necessary move to a greener economy, we cannot leave workers behind.

- We will demand the federal government follow through on its commitment to establish just transition legislation to help guide Canada's move to a zero-carbon economy.
- We will promote just transition strategies as part of the solution to the climate crisis.
- We will support new public sector jobs that will help drive Canada's economy to eliminate greenhouse gases and cut emissions to net zero.
- We will educate CUPE members on the benefits of effective just transition strategies and programs.
- We will demand that just transition strategies be fair, inclusive, and based on open communication and collaborative planning with all affected workers and their community members, including with their unions.
- We will encourage all levels of government to establish transition centres in communities with affected workers, rather than distant supports, so that workers can get one-on-one, local assistance.



- We will demand that just transition programs use or build on existing skills that workers have and aim to earn comparable wages and benefits. Programs must take an inventory of workers' skill sets to get a sense of where prospects for new work exist and can happen.
- We will promote the idea of people working in their own communities. Transition programs will be more successful if there is as little socio-economic and geographic upheaval as possible.



## 5.7 Environmental and climate justice

Environmental racism is a form of systemic racism that results in the disproportionate exposure of Indigenous, Black, and other racialized communities to environmental hazards. It includes industrial, environmental, and other policies and practices that lead to environmentally-hazardous sites in close proximity to Black, Indigenous and racialized communities. Environmental hazards associated with environmental racism include polluting industries, landfills, toxic waste disposal sites, garbage dumps, noise from ground transportation, such as highways and trains,

and other harmful activities that add to community contamination and pollution.

Environmental racism and its impacts can be severe and lead to overall negative health outcomes for community members. Marginalized communities lack political power to take on or resist industries, corporations and government officials determining the fate of their communities. Environmental racism is not a practice that can be remedied overnight. There is a need for environmental justice strategies to address the root causes of environmental racism and through ensuring that Indigenous, Black and other racialized communities make the decisions that impact their communities.

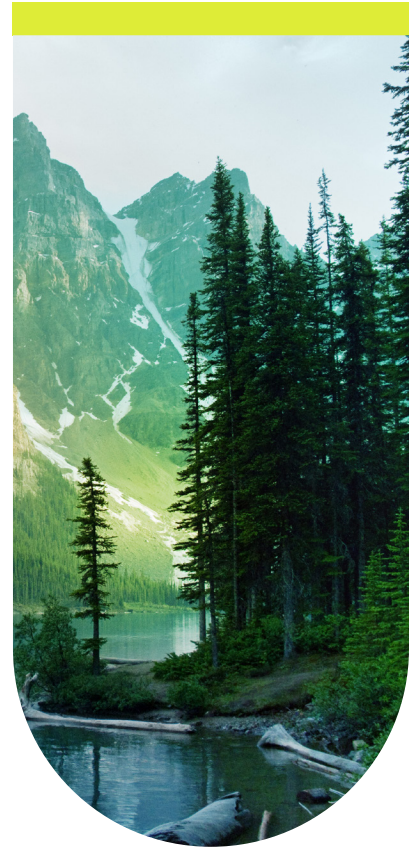
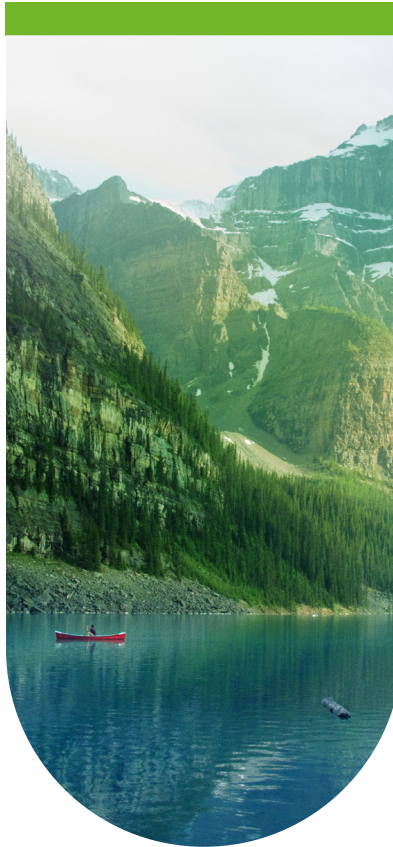
The climate movement is rooted in justice for all, including youth and future generations. Abiding by CUPE's commitment to a seven-generations approach and recognizing that the climate crisis will persist for centuries, CUPE must work with partners in the climate justice movement to make the future fair for all and help ensure everyone can live in a stable geophysical climate.

CUPE calls for steps to advance environmental and climate justice.

- We will promote training and awareness on environmental racism and environmental justice as a strategy to address environmental racism.
- We will support Indigenous, Black and racialized communities led consultations on environmental assessments.
- We will support local, national, and global coalitions for environmental justice.
- We will encourage governments to:
  - Examine the link between race, socio-economic status and environmental risk.
  - Collect information and statistics relating to the location of environmental hazards.
  - Collect information and statistics relating to negative health outcomes in communities that have been affected by environmental racism.



- Ensure access to clean air, land and water to affected communities.
- Provide compensation to individuals and affected communities and ongoing funding as needed.
- We will work with international partners in the climate justice movement, including youth, student, and Indigenous groups, to help establish a stable climate and a global zero-carbon economy that benefits all humans and all living things on earth.



## Conclusion:

### **CUPE commits to confronting the climate crisis**

This policy looks outward from CUPE and describes a way forward for taking on today's critical environmental issues, such as climate change, which requires immediate action to cut greenhouse gases and adapt to an already-changing climate. The policy generates momentum to act on environmental issues. CUPE will also apply an environmental lens to all we do.

Confronting the climate crisis, we will help build an equitable, safe, clean, and ecologically sustainable future for all people and for all living things. Humans must restore a balanced and respectful relationship with the natural world.

CUPE will build on the strong steps that it has already taken (e.g., greener CUPE office buildings, less travel, materials conservation, greener meetings and conventions) to further improve our environmental performance.

## What can I do now?

So, you've read the policy and now you wonder what's next. What can you do immediately? Here are a few ideas.

- **Talk to your local president or executive to set up an environment committee in your workplace.** For tips on how to create such committee, have a look at this fact sheet: [cupe.ca/greening-workplace](https://cupe.ca/greening-workplace)
- **Host a climate change discussion in your workplace using CUPE climate change education/discussion tool:**  
<https://cupe.ca/how-lead-workplace-discussion-climate-change>
- **Volunteer to be your local's contact on environmental issues.** Connect with CUPE National's network of environmental activists. Simply send an email to: [enviro@cupe.ca](mailto:enviro@cupe.ca)
- **Assess the environmental record of your workplace with this simple tool:**  
[cupe.ca/forms/ecoaudit.php](https://cupe.ca/forms/ecoaudit.php)
- **Organize an event or workshop to present and discuss this CUPE environment policy with your co-workers.** Start a conversation. Keep us informed: [enviro@cupe.ca](mailto:enviro@cupe.ca)
- **Participate in local Earth Day events** (or other environmental days of action). Take photos and videos you can share.
- **Join forces with climate and environmental allies in your community to fight for climate justice.**

<sup>i</sup> This policy was developed in response to Resolution #94 from 2011 CUPE National Convention. It was developed from a two-day meeting of approximately fifty members and staff, with input from a wide cross-section of our union, including representatives of the CUPE National Environment Committee, National Aboriginal Council, energy workers, the National Young Workers Committee and others.

<sup>ii</sup> [www.earthobservatory.nasa.gov](http://www.earthobservatory.nasa.gov) (retrieve April 2021).

<sup>iii</sup> Peters, G.P., Andrew, R.M., Boden, T., Canadell, J.G., Ciais, P., Le Quere, C., Marland, G., Raupach, M.R., & Wilson, C.: "The challenge to keep global warming below 2°C" *Nature Climate Change*, London, Vol. 3, No. 1, January 2013.

<sup>iv</sup> Schaeffer, M., Hare, W., Rahmstorf, S. & Vermeer, M., "Long-term sea level rise implied by 1.5°C and 2°C warming levels" *Nature Climate Change*, London, Vol. 2, No. 12, December 2012.