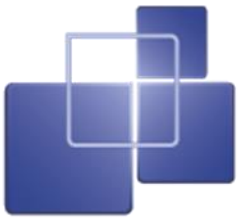
Climate Change and Just Transition:

What Will Workers Need?



ACW | Adapting Canadian Work and Workplaces to Respond to Climate Change

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The project investigates how Canada's diverse workplaces can best adapt to mitigate greenhouse gases, and explores the changes needed in law and policy, work design, and business models for industry and services, to assist the "greening" of workplaces and work. ACW membership includes 56 individual researchers and 25 partner organizations in 7 countries.

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Introduction

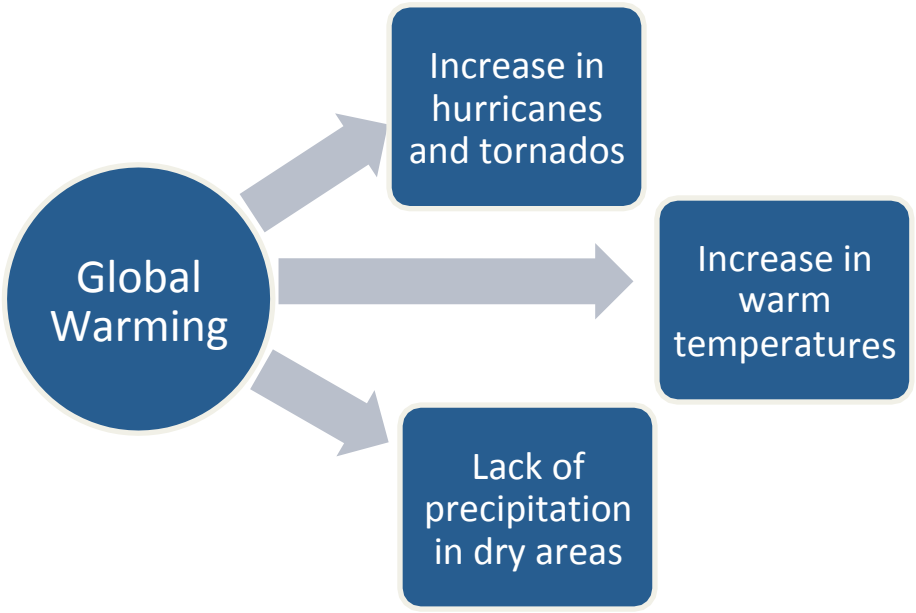
The time has come to address the controversial realities that as a global community we are currently facing: climate change and global warming.

> **Cli·mate Change** ***(noun)***
> Any change in climate over time, due to natural variability or as a result of human activity.
>
> **Glob·al warm·ing (*noun*)**
> A gradual increase in the overall temperature of the earth's atmosphere generally attributed to the *greenhouse effect* caused by increased levels of carbon dioxide, chlorofluorocarbons and other pollutants.

Climate Change vs. Global Warming!

Very often these terms are used interchangeably as they lead us to the same results; but the most significant distinction is that climate change is the result of global warming. As the Earth begins to heat up, the climate within its atmosphere changes, altering various weather patterns. Ice caps and glaciers begin to melt as the poles become warmer, causing an increase in sea levels and threatening the sustainability and livelihood of all coastal cities throughout the world.

Global warming results in climate change



Activity #1

What do you know about climate change?

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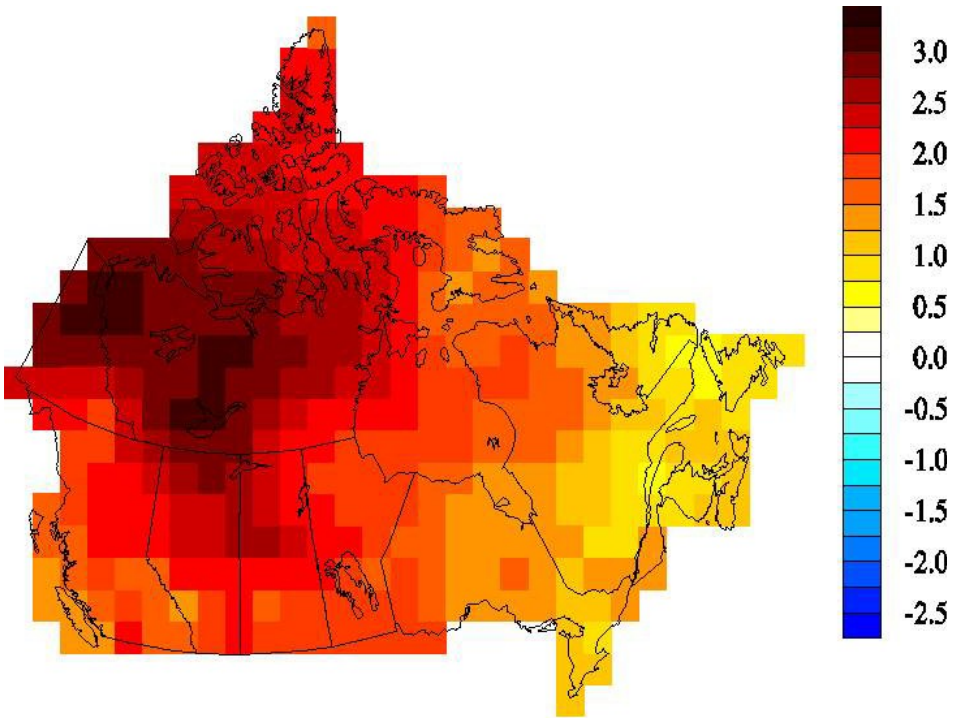
Canadian Temperature Trends – 1948 to 2012



Graphic by Environment and Climate Change Canada

Any climate change map will show you that temperatures are increasing. Take a second to think about where you live. If you have been there for some time, you are familiar with the climate patterns in that particular region. What do you think can be done in your community to reduce the impact of climate change?

Climate Change

How Climate Change Connects Us

As difficult as it might be to understand the idea that we are all together, it cannot be overlooked. For as the diagram above displays, we are all connected. It all begins with the individual, and slowly branches out to the rest of society. We are all in this together.

With the constant growth of ***globalization***, and as trade deals between nations increase, we have become much more dependent on each other. We can no longer deny the effects that climate change has brought as a result of our overuse of fossil fuels. It has begun to damage the very environment that we rely on to survive, infrastructures and societies worldwide are no longer able to withstand the force of changing climates1.

Globalization
glob·al·i·za·tion

The process by which businesses or other organizations develop international influence or start operating on an international scale.

With that in mind, we cannot disregard the notion of needing to work together for the greater good of all citizens. As we continue to emit toxins into our air and water, these effects aren't maintained in one region of the world but affect all, as weather patterns shift throughout the earth's surface, altering its climate throughout.

Since the 1950s, it has become unquestionable that Earth's climate has begun to get warmer. Many of the changes observed have been recorded and noted to be unique to this time period.[2] It was noticed that certain parts of world were gradually getting warmer resulting in what we call today ***global warming***.

How We Cause Climate Change

Even though we cannot deny the effects of global warming, they are most certainly seen through the concept of *climate change*; which is the change in weather that is experienced and recorded over a long period of time, including temperature, wind and rainfall patterns.[3]

Scientific evidence for warming of the climate system is unequivocal.

– Intergovernmental Panel on Climate Change[4]

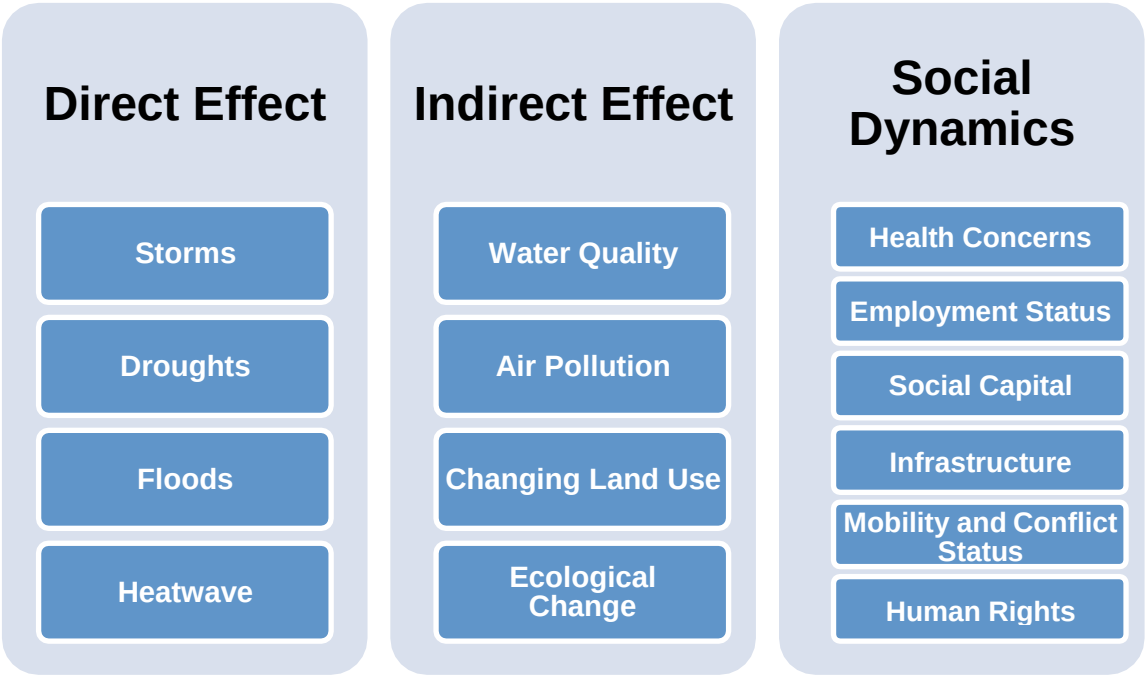
Most climate scientists agree that the main cause of the current global warming trend is human expansion of the "greenhouse effect" – which is warming that results when the atmosphere traps heat radiating from Earth towards space.[5]

Currently, governments are attempting to undertake measures to reduce the amount of greenhouse gas being emitted into in the atmosphere. As outlined in the most current Paris Agreement, Canada's federal government has signed off on its content and mentioned determination in fighting climate change.

Regardless of what government representatives are saying, the burden of care cannot solely be left to them as there are many other parties involved in the fight against climate change. Economists, resource workers, policy makers, Indigenous communities, local farmers, union workers and society itself all have the obligation to look out for this planet. As numerous climate change promoters have said, "there is no work on a dead planet."

As we come to understand, a change in climate will affect us one way or another, therefore we must be proactive in dealing with such changes and know that many aspects of society will soon change. It will become much clearer to notice the direct effects of global warming, for as explained earlier it will result in a change in the climate, followed by the indirect effects which may be harder to point out because they will vary depending on how each region is affected. Following the indirect effects, we will be able to see the changes that society will have to make to ensure everyone's safety and security.

The following table displays the chain of effects that can occur as a result of climate change. Even though we may not think about the social impacts, it's important that we begin to think about them to be able to adapt to those changes and be ready to address them accordingly.



Adaptation and ***mitigation*** policies need to be more ambitious and obtain wider support. Some sectors of our economy are already or will soon be targeted by these measures (i.e., energy production, energy-intensive industries, transport, etc.) [6] It is important that all participants keep in mind the impact of such policies on employment and the most vulnerable, as they may not have the necessary means to push through change.

A fair transition has to be designed and for this to be possible, mitigation measures must be accompanied by social protection measures wherever job or income losses are expected.

Mitigation
mit·i·ga·tion

Projects or procedures that result in the reduction of the degree or intensity of greenhouse gas emissions.

Mitigation strategies could be a source of job creation in sectors such as energy efficiency, renewable energy, building restoration and regeneration or public transportation. Mitigation activities will also give rise to stress in certain sectors, i.e., those related to fossil fuels or energy-intensive industries and services[7]. Even though mitigation policies will offer opportunities, it is yet unclear what they will be and for how long they will last, but it is likely to result in an important number of jobs being created. Maximizing opportunities while minimizing negative effects must be the common goal in this area.[8]

Activity #2

What can your workplace do to combat climate change?

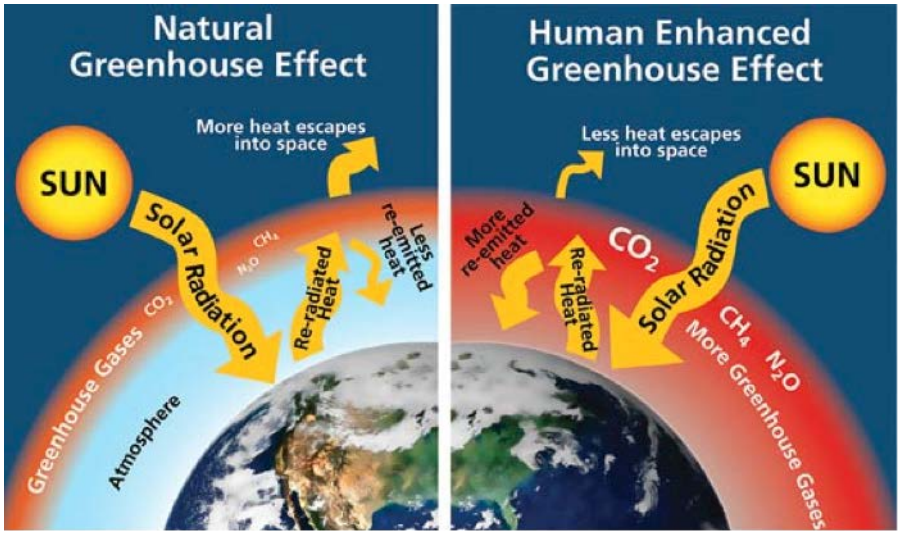
_____

_____

_____

Greenhouse Gases

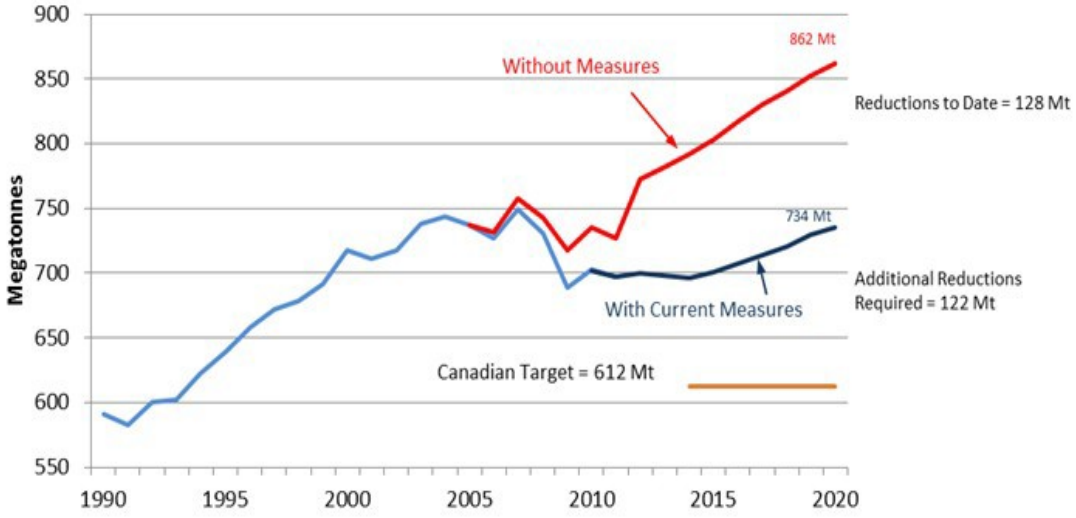
Let us not maintain the idea that all greenhouse gasses are harmful, as a small amount is essential for life on Earth. The absorption and radiation of heat by the atmosphere, otherwise known as the natural greenhouse effect, regulates Earth's average surface temperature, for without it the Earth would be naturally cold, sitting at -18°C instead of the comfortable 15°C (59°F) that it is today[9].



Graphic by Conservation in a Changing Climate

But what is concerning today, and what scientists worry about, is that over the past 250 years, humans have been increasing the concentration of greenhouse gases in the atmosphere. Since the Industrial Revolution began in 1750, carbon dioxide levels have increased nearly 38% as of 2009, and methane levels have increased 148%.[10] We have been artificially raising the number of emissions mainly through the burning of fossil fuels, but also through immediate cutting down of carbon-absorbing forests

The graph below shows the mass acceleration of fossil fuel use within the past 114 years. For the first 50 years of the 20th century, fossil fuels had been closely consumed, but as trade and globalization increased, so did the extraction and burning of fossil fuels increase.



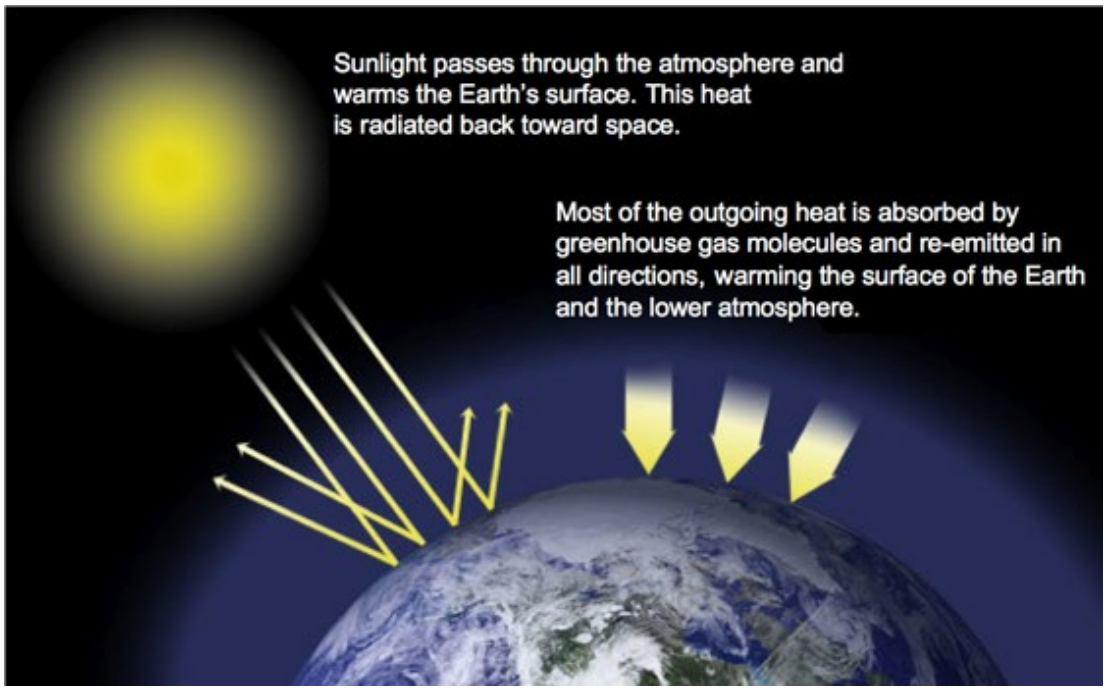
Graphic by Environment Canada

Greenhouse gases **(GHG)** are the main contributors to our ever-changing climate. GHG are a collection of gases, made up of methane, cardoon dioxide (CO_2), water vapour, nitrous acid and chlorofluorocarbons (CFCs).[11] The most toxic forms of emitting such gases are done through the extraction, manufacturing and burning of fossil fuels and oil, along with mass cultivation of agricultural products (soil cultivation, cattle ranching, etc.) and synthetic compounds used in industrial production.

The rise in GHG concentrations in the atmosphere is a direct consequence of our productive, economic and social model. Almost every sector in which we work or which provides us goods or services emits greenhouse gases. Industry, transport, electricity generation, heating, some agricultural practices as well as industrial and domestic cooling and heating systems are examples of human activities that contribute to GHG emissions. Due to the seriousness of climate change impacts, these sectors are likely to face great transformations in the coming years, if we want climate change to be kept at a safe level.[12]

The atmosphere today contains more greenhouse gas molecules, so more of the infrared energy released by the Earth ends up being absorbed by the atmosphere. Since some of the extra energy from a warmer atmosphere radiates back down to the surface, Earth's surface temperature rises. By increasing the concentration of greenhouse gases, we are making Earth's atmosphere a more efficient greenhouse.

A rise in greenhouse gas concentrations results in a rise in temperatures



Graphic by NASA: Global Climate Change.

Activity #3

Can you identify which of the following statements are true or false in regards to greenhouse gasses?

1. All greenhouse gasses are harmful and even the smallest amounts can endanger humans.
2. Earth naturally produces its own greenhouse gas effect through the natural absorption and radiation of heat by the atmosphere.
3. Without greenhouse gasses Earth would naturally be cold.
4. The influx of emissions could be correlated with an increase in industrialization

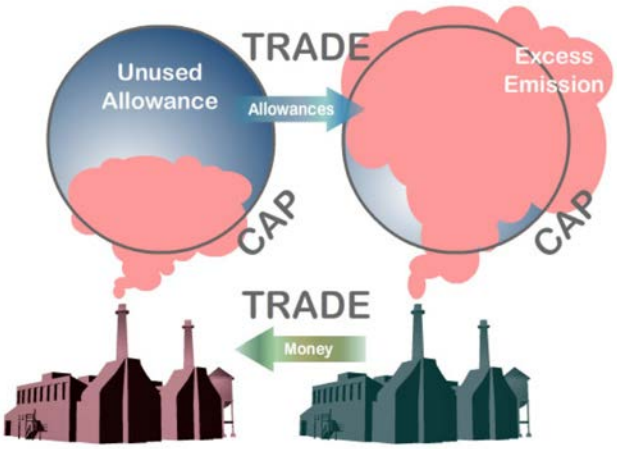
How Do We Know About Climate Change?

The Intergovernmental Panel on Climate Change (IPCC) is a worldwide reference on climate change. Composed of scientists from all over the world, their analyses are done thorough an objective, open and transparent manner, scientific, technical and socio-economical information on climate change risks, adaptation and mitigation.[13]

Political Will to Change

Throughout the years, various countries have taken numerous decisions in regards to climate change. One of the most prominent examples is based on the largest multinational cap-and-trade program, established by the European Union Emissions Trading System (EU-ETS). Intended to be done in a three phases, beginning in 2005, the last phase is currently being executed ending in 2020.[14] The Environmental Defense Fund found evidence to prove that even though the EU was warned against engaging in any form of emissions reduction program as it would impede economic growth by dramatically increasing costs to consumers and industry, the evidence shows that the ETS played a significant and successful role in reducing the EU's global warming pollution at the cost of a fraction predicted. Instead it proved to be a practical and innovative way of reducing greenhouse gas emissions. Even the most energy-intensive sectors had only minimal effects. With such optimistic and positive results, it's disheartening that our own Canadian government has found it difficult to implement a national ***cap-and-trade system***.[15]

What is cap-and-trade and how does it work?



Graphic:www.solidarity-us.org/site/node/4131

The **cap** on greenhouse gas emissions is a limit backed by science. Companies pay penalties if they exceed the cap, which gets stricter over time.

The **trade** part is a market for companies to buy and sell allowances that permit them to emit only a certain amount. Trading gives companies a strong incentive to save money by cutting emissions.

As time has passed, it has become evident that we are not in a position to disregard the wellbeing of the environment for the growth of the economy**.** Even though provinces such as British Colombia, Alberta, Ontario and Quebec have already mentioned the implementation of a cap-and-trade system there has yet to be a national carbon price to regulate the emissions of all provinces.[16]

The following table shows the comparison of a cap-and-trade system throughout various provinces in Canada. The federal government has left it in the hands of each individual province to establish their own cap and trade system, allowing them to take into consideration the industries which will most likely be affected and deal with them accordingly.

Province	**Cap-and-Trade System**
BRITISH COLOMBIA[17]	• Launching a strategy to reduce upstream methane emissions by 45% • Amending regulations that encourage switching commercial fleets to renewable natural gas • Rehabilitating under-productive forests • Facilitating projects that will help fuel marine vessels and commercial vehicles with cleaner-burning natural gas
ALBERTA[18]	• Implementing a new carbon price on greenhouse gas emissions • Ending pollution from coal-generated electricity by 2030 • Developing more renewable energy • Capping oil sands emissions to 100 megatons per year • Reducing methane emissions by 45% by 2025 • The Climate Leadership Plan is Alberta's strategy to reduce carbon emissions while diversifying the economy and creating jobs.
ONTARIO	• Establishing a green bank to help homeowners and businesses access and finance energy-efficient technologies to reduce greenhouse gas pollution from buildings.
NOVA SCOTIA[19]	** *The following points are options being discussed.* • No transfers of emissions in or out of the province; therefore, no plan to link with a cap-and-trade program in another jurisdiction. • Proposes to allow for banking of allowances, subject to holding limits.

Regardless of national concerns, it is clear that without environmental consideration, economic markets will no longer be sustainable if we do not move towards renewable energy sources and reduce our dependency of fossil fuels. It is critical that all provinces along with the federal government embark on a journey that addresses each provincial need, while still adhering to national regulations in GHG emissions.[20]

Climate change is the outcome of a gigantic market failure, and mitigation efforts now require strong government action at the national and international levels. Clear political choices are necessary to achieve sustainable energy use, extending into a sustainable, green economy.

How Climate Change Contributes to the World of Work

As we intend to reduce our dependency on fossil fuels, it is evident that individuals working within the most energy-intensive sectors will suffer employment loss as their jobs begin to decrease due to a rise in renewable energy.

With that in mind, it is important that from a very early stage we identify the most at risk and begin working with employers, workers, unions, social service providers, government officials and policy makers in creating a strategy to assist and maintain those unemployed. An economic transition will affect everyone whose job relies on the employment of other individuals, therefore all those within the economic circle of those who lose those jobs will also be affected. The following table outlines the potential effects that climate change will have on each economic activity and employment in Canada.

Location	Main Climate Drivers	Expected Effects on Economic Activity and Employment
NORTHERN TERRITORIES (YT, NWT, NUV)	Rising temperature, high atmospheric concentration of CO_2	Negative impact on Inuit sustainability
EASTERN PROVINCES (NFL-L, PEI, N.S., N.B.)	Decrease in temperature and an increase in precipitation	Negative impact on infrastructure
WESTERN PROVINCES (B.C., SASK., AL.)	Rising temperatures, rising sea levels (B.C.), decrease in rainfall	Unstable agriculture, increase risk of forest fires
CENTRAL PROVINCES (MN., ONT., QB.)	Rising temperatures, increased rainfall	Unstable agriculture and the forest industry.

Workers and trade unions should be concerned with the lack of policies in place protecting the rights of all workers who will be affected because of a direct or indirect loss of their jobs as a result of climate policies. Some sectors of our economy are already or will soon be targeted by these measures. We as workers, employers, and labour unions need a better understanding of the impacts these measures will have on employment, not with a view to blocking them, but to

ensure that the most vulnerable will be prepared to face the necessary changes and not pushed even further into exclusion.

Employment

As Canada moves away from a coal-powered economy, not all jobs within the coal sector will be lost, for there will be certain operations that must always be generated with coal. With that said, it must be kept in mind that not all high-energy intensive jobs will be lost, but certainly a significant number will be cut. As we seek ways to implement a just transition, measures need to be put in place to ensure that all those jobs lost due to an environmental and economic transition do not cripple employees economically, and their new jobs do not come at the expense of decent jobs and fair wages.[21]

Statistics Canada data shows that direct and indirect employment in the oil and gas sector has declined by 47,225 jobs (6.2 per cent) since 2014 as a result of a low oil price environment. About 16,200 Indigenous people living off reserve are directly employed in the energy sector.[22]

Industry	Employment (jobs)	% of total employment
Energy (direct) - **Oil and gas** - **Electricity**	280,365 191,415 78, 270	1.5% 1.0% 0.4%
Energy (indirect) - **Oil and gas** - **Oil and gas construction**	625, 033 518, 133 203, 065	3.4% 2.8% 1.1%
Total (Direct + Indirect) - **Oil and gas**	905,398 709,548	5.0% 3.9%

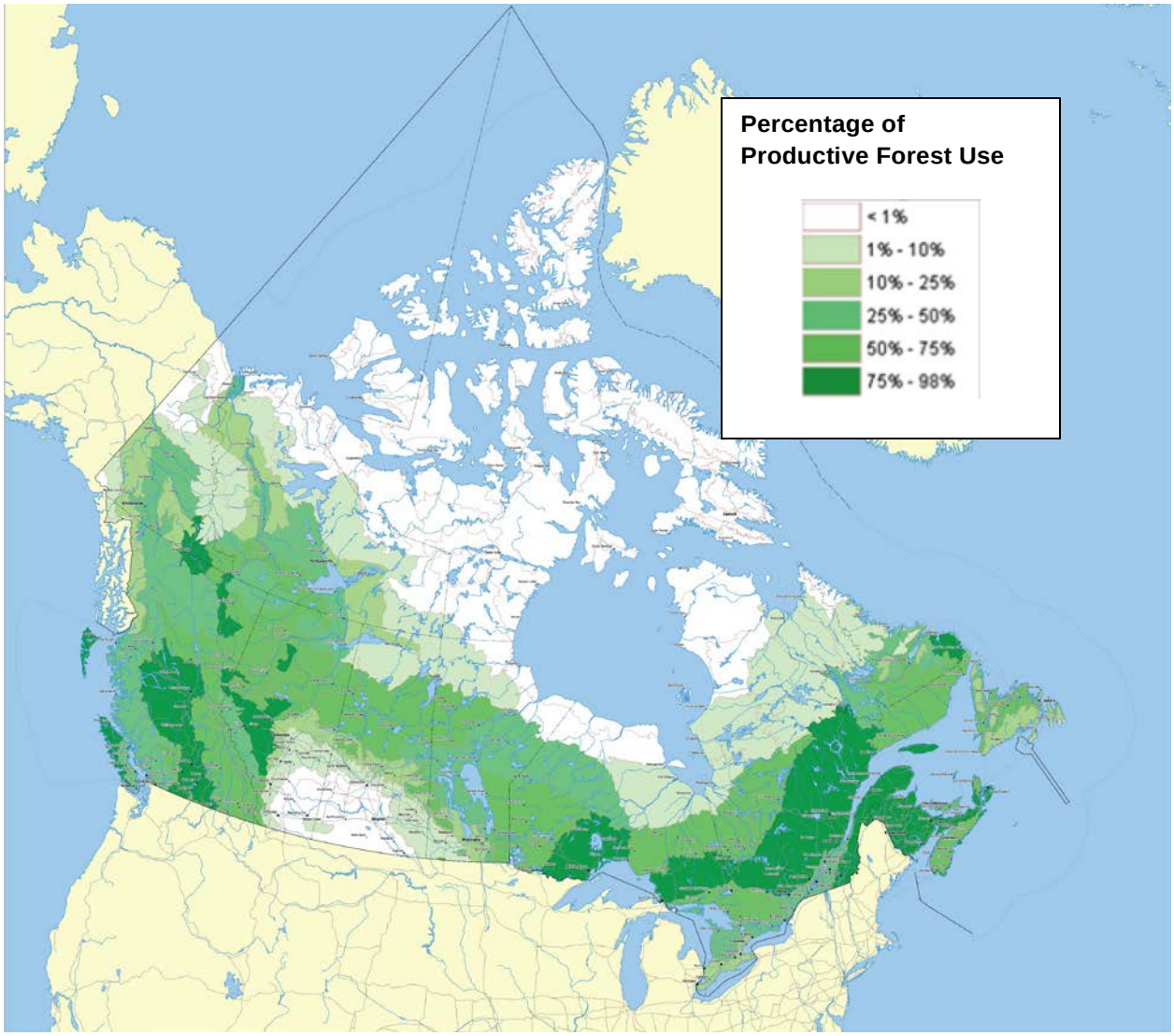
Industries have tended to make labour pay the cost of the sector's lack of investment in research and development. In the race to reduce production costs, industries have closed factories and looked for cheaper workforces elsewhere without necessarily investing in sustainability to modify the CO_2 patterns in sectors of activity.

The transition towards a low-carbon economy must ensure respect for the livelihoods of workers and their communities and the need for different corporate behaviour.[23]

Forestry

In Canada, 45 per cent of the territory is forested corresponding to 417.6 million hectares. There are 234.5 million hectares of commercial forests and 0.4% is harvested each year. The forested areas managed for timber production are mostly located in the Boreal Shield, Atlantic Maritime,

Montane Cordillera and Pacific Maritime eco-zones.[24] The following map shows the percentage of productive forest use within all of Canada.



Graphic by Natural Resources Canada, Forestry.

Forests are a major source of wealth for Canadians, providing a wide range of economic, social and environmental benefits.[25] In 2013, production in the forest sector contributed $19.8 billion—or 1.25% to Canada's real GDP.[26] The table below shows the fluctuations of employment opportunities that have occurred within the forestry industry within the past couple years.[27]

Forest Industry Employment			
	2013	2014	2015
Labour Force Survey			
Forestry and logging industry	28, 317	29, 267	26, 858
Pulp and paper manufacturing industry	62, 692	69, 342	61, 292
Supportive activities industry	21, 792	19, 608	22, 183
Wood product manufacturing industry	143, 750	149, 650	148, 817
Total number of people employed	**256, 767**	**268, 100**	**259, 308**

Given their traditional relationship with forests, Indigenous peoples have an important role to play in planning and managing forest resources, for they own 2.0 per cent of forests within Canada.[28] In 2011, 70% of Indigenous communities were located in forested areas.[29] Indigenous peoples account for 4.8 per cent of the total forest sector workforce in Canada.[30] The participation of Indigenous people in land-use decisions and sustainable forest management will be a key component of the long-term contribution of Canada's forests to climate change mitigation.[31]

What is the Indigenous Forestry Initiative?

The Indigenous Forestry Initiative is a program that provides funding to support the economic development of Indigenous peoples in Canada. The initiative funds greater participation by Indigenous communities in all natural resource sectors, especially the forest sector.

Forests play an important role in the carbon cycle by sequestering a significant amount of carbon, thereby reducing CO_2 emissions to the atmosphere. It is estimated that globally, forests offset the equivalent of about 24 per cent of greenhouse gas emissions from the atmosphere. As noted in the Paris Agreement, a balance between emissions and removal of greenhouse gases in the second half of the century is needed to ensure that global warming is limited to well below two degrees Celsius.

While forests are regrowing, they withdraw carbon from the atmosphere and accumulate it again in trees and soil. Although deforestation, itself, may not release significant quantities of methane

or nitrous oxide (N_2O), these gases are often released as a consequence of using the cleared land for cattle or other ruminant livestock, paddy rice, or other crops, especially those fertilized with nitrogen. The following table shows how important forests really are in removing carbon dioxide (CO_2), and how much or those toxins are emitted through the process of deforestation.

Green House Inventory[32]		
	2013	**2014**
For forest lands affected by land use change		
CO_2 emission removal from the atmosphere due to afforestation (megatons)	0.6	0.6
CO_2e emissions due to deforestation (megatons)	3.1	10.0

One of the consequences of deforestation is that the carbon originally held in the forests is released to the atmosphere, either immediately when the trees are burned, or more slowly as unburned organic matter decays. Most of the carbon is released into the atmosphere as carbon dioxide (CO_2), but small amounts of methane (CH_4) and carbon monoxide (CO) may also be released with decomposition or burning. Reforestation reverses these fluxes of carbon.

Given that close to 90 per cent of forests in Canada are owned by provinces and territories, communities will need to identify and implement changes in forest management practices most relevant to their region. Mitigation actions must be balanced with other sustainable forest management priorities, but could include higher utilization of residual and harvested wood, reduced burning of harvest residues in the forests, increased planting to rehabilitate forests after natural disturbances and increased planting intensity to improve forest growth after harvest. In addition to their substantial long-term mitigation potential, changes in forest management practices could create co-benefits, including increased employment in the forest sector, reductions in black carbon emissions (where there is a reduction in slash burning), and increased adaptation efforts to improve the resilience of forests.[33]

It is therefore important to recognize that without actions to protect, conserve and sustainably manage forests globally, it will not be possible to achieve the net-zero emissions required to reach this objective.[34]

What can be done to reduce these emissions?

- Afforest (create a forest) and reforest (plant forests where they have been converted to other use); Improve forest management;
- Reduce deforestation;
- Improve harvested wood product management;
- Use forestry products for bioenergy to replace fossil fuel use.

Mining

Yes, coal and natural resources extractions are the main contributor of our GHG emissions, but we cannot completely write it off as a 'must go' for the entire mining sector is a major contributor to Canada's economy. In 2015, mining contributed $56 billion to Canada's GDP, accounting for 19% of our overall exports.[35]

Being a massive economic producer, it is therefore one of the largest employers. In 2015, 373,435 people were directly employed and 189, 657 more were indirectly employed for a total of more than 560,000 employed in the sector.[36]

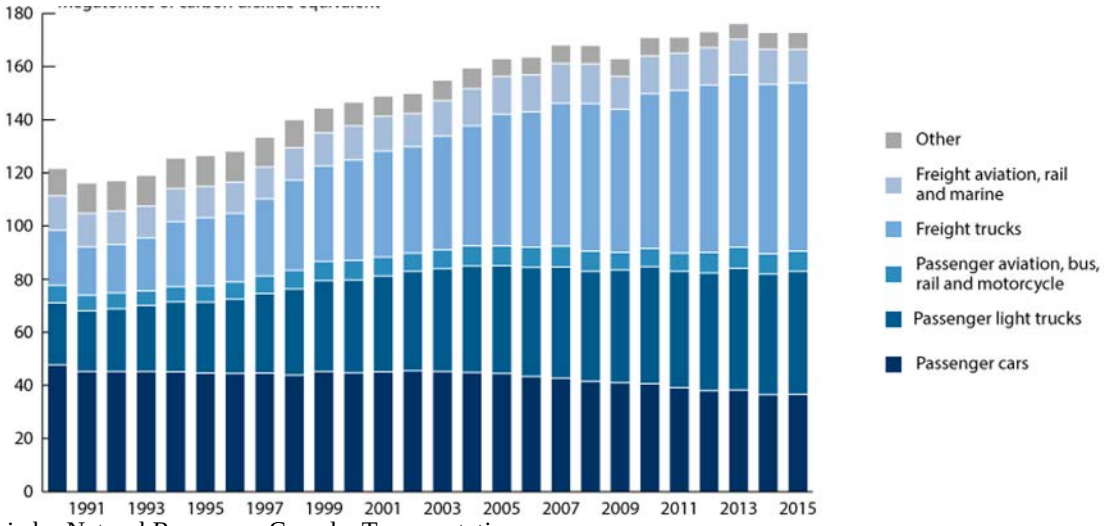
Having these numbers at hand does not make it any easier to establish a Just Transition as we can see that thousands of individuals will be affected by the reduction of mining, in particular coal, even though not all those within this sector will be affected. Nonetheless we cannot leave some stranded while others continue on, for we must urge the shift to zero-carbon while maintaining the economic and social security for all those involved.

Currently the Mining Association of Canada is aware that there are shortages in the training and education of new workers who want to undertake employment and prosper within the sector. They have made the following suggestions to reduce any discrepancies between the newer workers and more experienced one:

- Promote the industry to youth, Indigenous peoples and non-traditional worker groups;
- Improve education programs and employers provide training;
- Introduce standards for key occupations to facilitate domestic worker mobility and skills recognition.

Transportation

The following graph shows that increase of emissions from 1991 to 2015, solely through the increase in transportation throughout Canada[37].



Graphic by Natural Resources Canada, Transportation.

The transportation sector plays a vital role in the lives of Canadians and in the Canadian economy. Road transportation activity can be broken down into two components; (1) how people and freight travel (mode choice), and (2) how far they travel (activity level).

- Almost 82 per cent of Canadians live in urban areas.
- 80 per cent of commuters drive to work in their own vehicles.
- In 2014, Canada's transportation system moved over $1 trillion worth of goods to international markets and employed 896,000 Canadians (5 per cent of total employment).

Canada depends heavily on cars for urban mobility, and has a relatively high share of large cars. Canada has long distances between its cities, increasing intercity travel emissions

What can be done to reduce these emissions?[38]

- Encourage shifts from road to rail transport and from private to public transportation systems;
- Promote more fuel-efficient vehicles, hybrid electric vehicles and cleaner diesel vehicles;
- Further develop agrofuels, above all second generation ones;
- Encourage non-motorized transport, such as cycling and walking;
- Adapt land-use and transport planning to carbon constraints.

Emissions reductions could result from a greater market penetration of alternative vehicle technologies and modal shifts. Battery powered electric vehicles provide the opportunity to

emit zero GHG emissions when renewable or clean electricity is used. In addition, electric vehicles reduce local air pollutant emissions.[39]

In the transport sector, public transport jobs should increase, along with investment in the sector. Rail transportation, for both freight and passengers should also be an important source of well-trained and safe jobs. These are perfect examples of decent and green jobs.[40]

Even though a sustainable transportation policy may ultimately lead to fewer jobs in car and truck manufacturing and related fields such as fuel refining and distribution, it offers more jobs in manufacturing buses, light rail, subways and railways; in the provisions of the required infrastructure for these modes of transportation (including tracks, signals, stations, etc.); in planning, running and maintaining transit system (bus drivers, conductors, and other operators; route planners, maintenance staff, etc.) [41]. Public policy needs to address the inevitable transition from one to the other in order to smooth the process for those whose jobs will be reoriented or lost.

Transport Canada's eTV Vehicle Program

Implemented to test the safety, environmental impact and driving performance of new technologies for passenger cars and heavy-duty trucks.

The Government of Canada is bringing in stronger regulations to reduce greenhouse gas pollution by passenger cars and trucks. This will also bring standards in line with those in the United States. To meet the standards, manufacturers are quickly creating many new products.

Some of the products for vehicles that are being tested include:

- new technologies for advanced engines and transmissions
- renewable fuels
- hybrid and electric vehicles
- fuel-cell vehicles
- connected and automated vehicles

Just Transition

"Just Transition" is the conceptual framework in which the labour movement captures the complexities of the transition towards a low-carbon and climate-resilient economy, highlighting

public policy needs and aiming to maximize benefits and minimize hardships for workers and their communities in this transformation.

In a document prepared by the International Trade Union Confederation (ITUC), Just Transition is defined as a "tool the trade union movement shares with the international community, aimed at smoothing the shift towards a more sustainable society and providing hope for the capacity of a green economy to sustain decent jobs and livelihoods for all."[42]

What is Just Transition?

- A supporting mechanism of climate action, and not inaction.
- Not in opposition to, but complementary to environmental policies.
- Environmental and social policies reinforce each other.[43]

"The basis for Just Transition is the simple principle of equity."

No worker employed in a toxic industry should be asked "to pay a disproportionate tax – in the form of losing his or her job – to achieve the goals" of environmental protection. Instead, "These costs should be fairly distributed across society."

Gil McGowan, president of the Alberta Federation of Labour, defined Just Transition at the Blue Green Just Transition conference, as being "an employment and environmental transition from more-polluting industries to a greener economy."[44]

Internationally, our government advocated for Just Transition to be included in the climate change negotiations leading to the Paris Agreement, but now we must embrace those same principles here at home.

Just Transition principles include:

- A pledge to ensure that any costs of our transition to a low-carbon economy are not disproportionately and unfairly borne by working women and men.
- Support of reviews of labour force market impacts at community and provincial levels to assess impacted work forces and which transition strategies may be needed.
- Recognition that industry, governments, workers and unions all need to be involved in crafting transparent and workable just transition plans. Plans need to be flexible and designed for specific workplace and community realities.
- The need for industry supported transition funds for impacted workers and communities.

- An acknowledgment of the need for policies in support of impacted workers including support for retraining for new job opportunities, employment insurance flexibility for worker transitions, enhanced severance and salary continuance, pension bridging and early retirement options.[45]

Activity #5

Identify what a Just Transition means for you and those working within your place of employment and your industry

What Does this Mean for the Working Person?

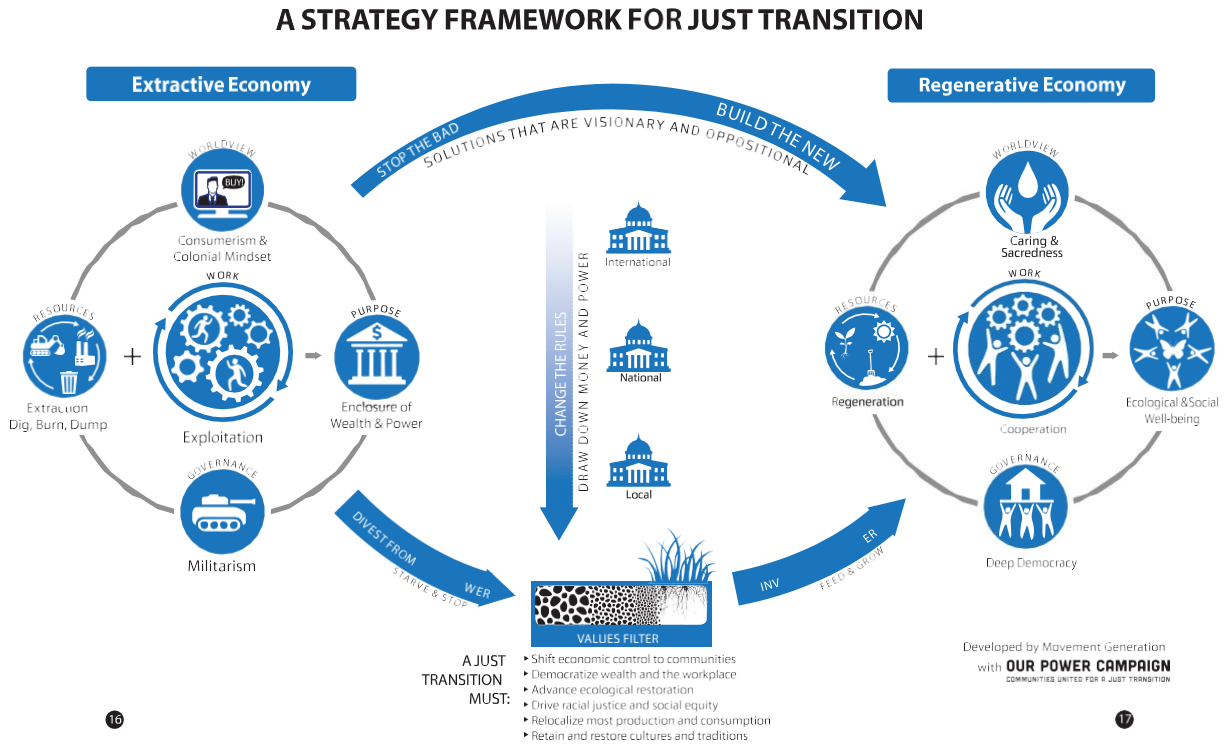
It is important that all areas of society have representation at a variety of levels, from a seat on national policy-making bodies to involvement in more specific local negotiations, such as those surrounding environmentally triggered plant closures.[46]

Proper management of this transition process can be achieved through a combination of different elements.

1. The attitudes and policies of governments and institutions which need to be taken into account
2. The social and labour-related dimensions of the transition to a sustainable development path, so that it also brings about a just transition in social and labour-related terms
3. The trade union movement will have to come up with new proposals, educate and train its members in climate change and transform itself into a force that is truly committed to a sustainable development
4. The extension of labour rights to the whole labour force and there broadening to incorporate an environmental dimension.
5. New channels of participation would be formed to incorporate workers and their representatives, trade unions, businesses and institutions, ranging all the way from the workplaces to the international arena.[47]

The appropriate measures should guarantee a fair transition for potentially affected workers.[48] These measures must include:

- Social protection systems, including health coverage
- Economic diversification policies, able to identify potential job opportunities
- Training and re-qualification programs to help workers incorporate new branches.



Graphic by Movement Generation

How Does Just Transition Coincide or Branch off From *Good Jobs?*

Just Transition is essential to the process of environmental change. Many of our members work in jobs that will become obsolete if unsustainable production, environmental degradation and resource exhaustion are allowed to continue along their current path.[49]We must ensure that Just Transition is achieved via long-term planning to maintain a stable employment. Including preserving job equity and ensuring that pay, conditions and health and safety do not suffer as a result of changes that occur.[50]

Climate change and policies aimed to adapt to it or to reduce greenhouse gas emissions will have impacts on labour markets.

Positive impacts	Negative Impacts
Employment Creation	Climate change
Infrastructure Projects	Shifts in agriculture employment
Mitigation	Lack of employment in energy intensive sectors
Renewable Energy Development	

The trade-off between a clean environment and jobs is a false choice; global warming threatens the future itself therefore global climate change must be addressed in a manner that ensures affordable energy supplies, and that encourages economic growth while sustaining and creating good jobs.[51]

Major investments are needed to develop long-term sustainable industrial policies, aimed at retaining and creating decent and "green"/sustainable jobs, "greening" all workplaces, developing and deploying technology.[52] When looking at the transition to a more carbon-efficient society, unemployment benefits are an element that will be of particular importance to the labour market and workers, especially in relation to job losses.[53]

Why Is It Important?

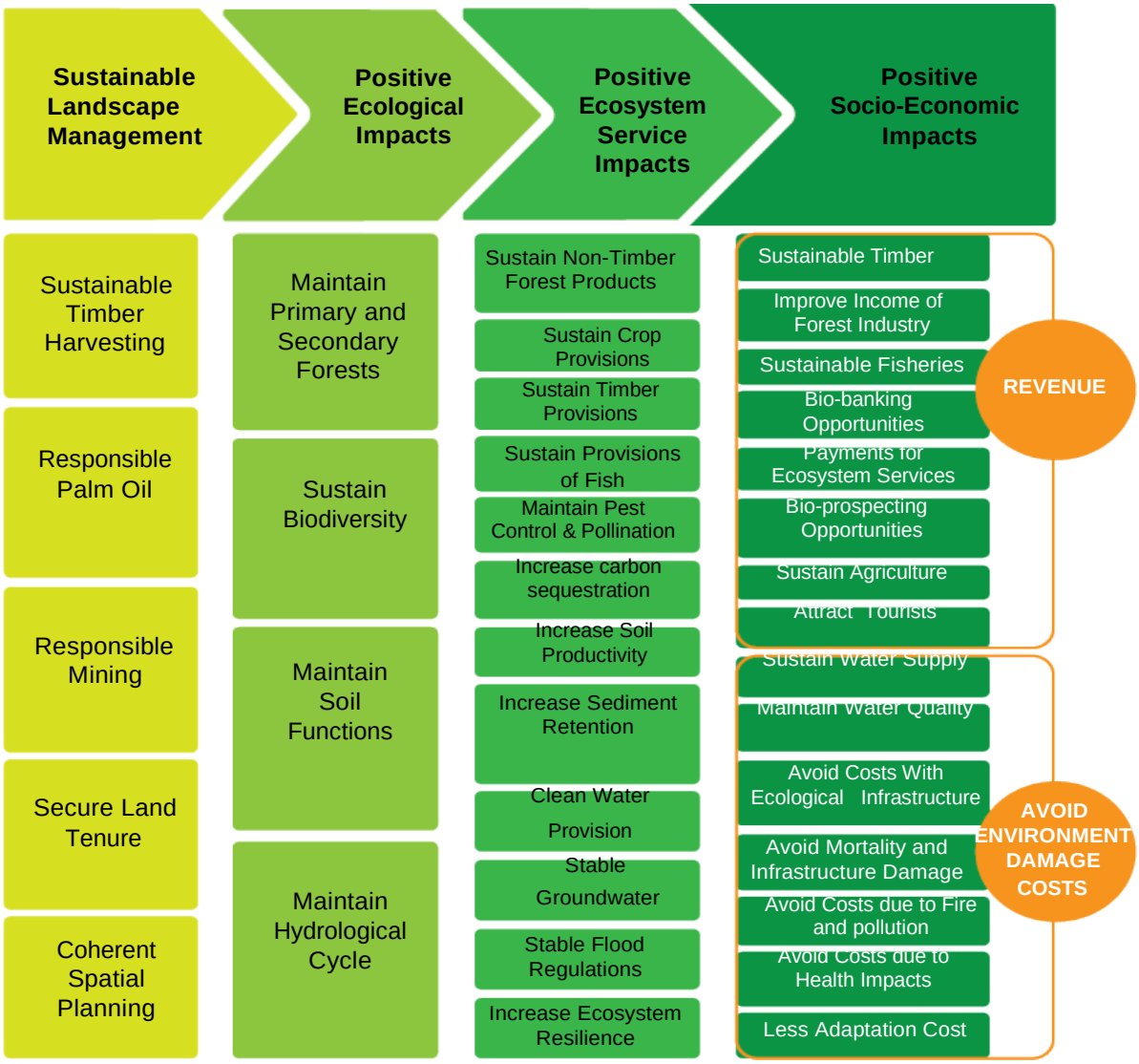
Activity #6

Knowing what you do know, do you really believe that implementing a *Just* Transition policy is important? If not, what are you skeptical about and what do you suggest would make that policy better in securing your future and the future of all Canadians currently employed?

If we as Canadians wish to sustain and maintain our way of life it would be in our best interest to begin to think about the future at this very moment. It not, we would be hindering our economy and putting the lives of future generations at risk. Our children and grandchildren will be the ones paying for our careless and frivolous decisions. In order to promote sustainable development that is socially just, environmentally friendly and economically efficient, we must focus on governance and management changes to better service the lives of millions of people.[54]

Climate-sensitive sectors such as agriculture, fisheries and, to some extent, tourism need to be especially prepared for economic diversification in order to protect the millions of workers and their families who depend on these sectors .

Reducing reliance on vulnerable sectors and increasing economic resilience are at the core of a responsible adaptation policy. These measures could ensure fairness and justice in the transition, preserving the most vulnerable from having to pay for the burden of climate change.[55]



Specialized and Individualized

The objectives in a Just Transition program are to look after the needs of the communities and the workers affected by the move to a sustainable economy, maintain their quality of life and allocate the costs in a fair and equitable manner.[56]

The ITUC recognized that just transition policies will be different in different countries and communities. It presented the basic elements as:[57]

- Major public and private investment under long-term sustainable industrial policies to create green jobs and workplaces.
- Identification in advance of the employment effects of climate protection.
- Advance planning to compensate for adverse affects of climate protection.

- Social protections, including social insurance, income maintenance, job placement, and secure access to health, energy, water, and sanitation.
- Training and education for new careers for those affected.
- Wide consultation among stakeholders.
- A diversification and climate change adaptation 'plan' for every region and community at risk to provide an alternative to a 'free-market adaptation' that will only lead to suffering and oppositions to climate measures.
- Protection for the economic life of communities, including new energy technologies and economic diversification.

Activity #7

With this list in mind, are there certain 'elements' or 'demands' which you would make to protect the transition of those within your industry, company or community. What top 3 demands be crucial for your workplace?

1.
2.
3.

Funding

How this Just Transition project would be funded has yet to be determined but some organizations have made proposals possible sources of funding:

BlueGreen Alliance Canada – Just Transition Alberta	**Canadian Labour Congress**
- via federal revenue, given to high-energy intensive sectors - Alberta to take advantage of its carbon levy - Federally reinstating corporate taxes to bring in $18 billion - Cancelling income splitting would bring in $6 billion - Closing the stock option loophole would bring in $2 billion - An inheritance tax on the wealthy would generate $6 billion[58] Even though Alberta has stated how much it would generate from its carbon level, and how much it would give to coal dependent Indigenous Communities to transition to a cleaner economy it has yet to release any plans for the funds.[59]	- society as a whole should bear the bulk of the cost - government revenues - development of community programs for economic development - promotion of environmentally constructive technology - development of green industries - environmental regulations[60]

Green Jobs

Activity #8.1

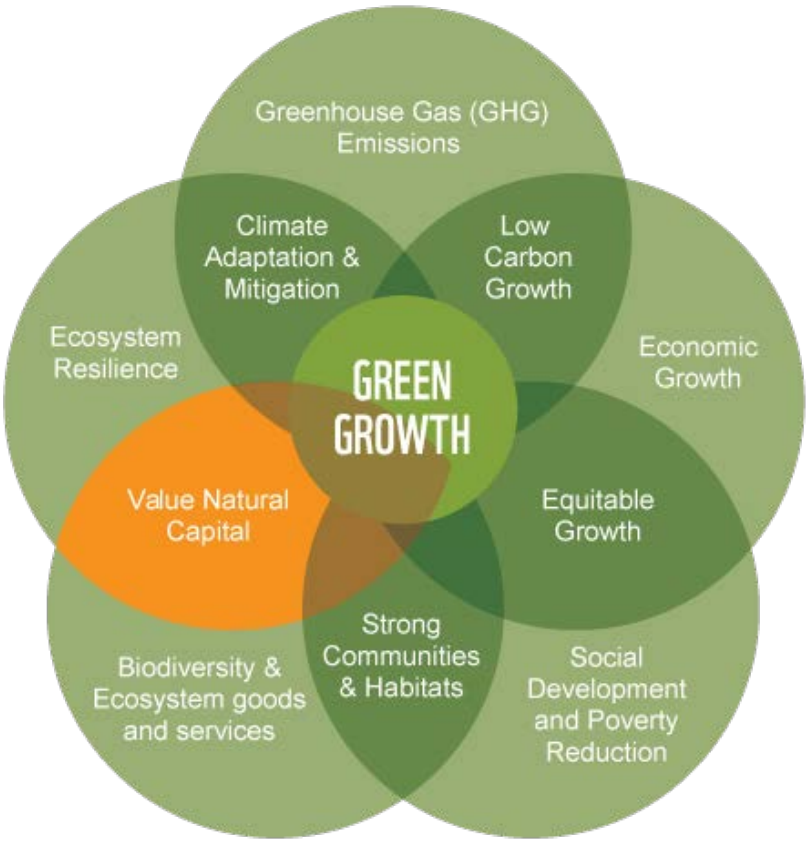
What does a Green Job mean to you in regards to your working environment?

It must be made clear from the very beginning that a green job must also be a decent job.

Green Jobs	Decent Jobs
Low Carbon Emissions	Wages and Pension
Waste Reduction	Career Prospects
Alternative Energy Source	Jos Security
Renewable Energy Development	Occupational Health and Safety
	Worker's Rights

A narrow definition of green jobs may focus solely on the green credentials of a job. However, worker advocates emphasize that green jobs also need to be decent jobs.[61] In emerging sectors of the economy, from renewable energy and turbines manufacturing to the installation and maintenance of renewable energy devices, jobs that are both *green* and *decent* need to be at the forefront of a Just Transition.[62]

Certain standards need to be upheld. People's livelihoods, rights, and sense of dignity are bound up tightly with their jobs; jobs need to provide equal hope for the environment and the employee. A job that is exploitative, harmful or fails to pay a living wage (or worse, condemns workers to a life of poverty) can hardly be called green.



Graphic by Heart of the Borneo

Activity #7.2

Using what you wrote in the previous section about Green Jobs within your workplace, could that Green Job be deemed a Decent Job as well?

Clean Energy Jobs

ECO Canada (2010) suggests that the green economy mainly influences the labour force through the adaptation or reallocation of jobs. In this regard, the labour force transition associated with the development and diffusion of clean technologies would focus on diversification and broadening of existing skills among existing professions. They suggest the following principles to guide the move towards clean jobs:

- Demand for green employment is strongly driven by established environmental industries such as environmental protection, renewable energy, energy efficiency, green building and eco-tourism.
- Green jobs require integration of environmental expertise into business planning and development.
- Careers in the low-carbon economy are widespread and highly transferable since many feature competencies in high-demand in non-clean technology work.

With the idea of Just Transition we need to be sure that the jobs that are to be created are jobs that ensure the preservation and protection of the environment at the forefront.

What Does a Green Job Mean in Relation to the Environment?

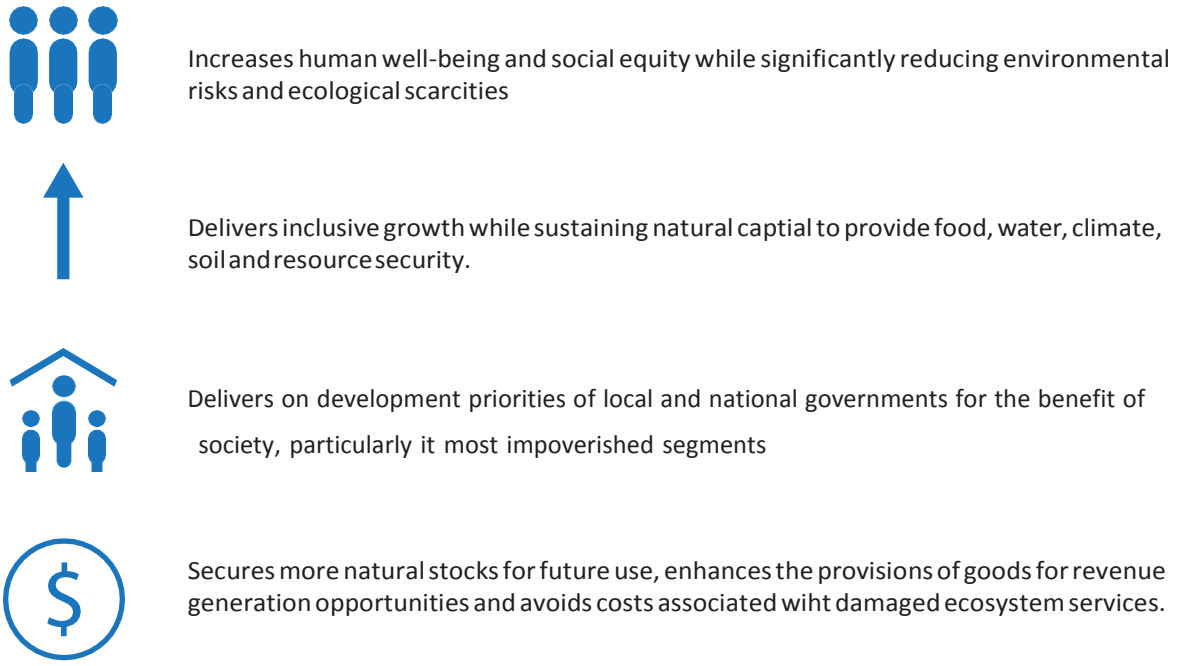
The good green jobs we speak of include jobs in manufacturing, construction and trades, but really they include all sectors. Plus, when we speak of a green economy, we are not talking about a portion of the economy, but rather an economy-wide transition to a resource efficient, low-carbon, socially inclusive paradigm.

Talk of the green economy focuses on innovation and “clean tech.” Without doubt, innovation will be necessary as we move through this transition. But the greening of our economy will have an impact on virtually every aspect of our lives and our work, plus it will create thousands of jobs as we build the infrastructure and goods we need in order to transition to a low-carbon, sustainable world.

For green jobs to increase, environmentalists, government officials and decision-makers must all come together to discuss the impacts of phasing out coal-fired generation, while considering moving to renewable energy. [63]

If we wish to confront climate change, governments need to intervene.[64] As our Canadian economy continues to increase, we must initiate dialogue to seek alternative ways to fuel our ever-growing economy. Our union must take the appropriate steps to ensure the safety and security of all workers and members within the organization, while not omitting the security of the environment. If we continue to consume our resources at the current rate, not only will our impact to the environment grow to new detrimental extremes, but it will be felt by all as the rate of unemployment increases.[65]

A **green** economy....



Graphic by Heart of the Borneo

Just Transition could create jobs in sectors such as energy efficiency, renewable energy, building restoration and regeneration or public transportation. However, the social and environmental qualities of these jobs remain unclear. We therefore have to work on the promotion of decent and green jobs from the very start.[66] In the building sector, for example, targets for emission reduction mean renewing current buildings to render them climate-friendly, which will result in a rise of employment in the sector. Mitigation is key if we want our society to survive climate change and workers and their organizations will have to face the challenges this transition will bring. Workers, and trade unions' capacity to deal with change depends among other things, on our ability to determine the means to help those affected by the measures.

The Canadian Experience with Just Transition

The idea and concept of Just Transition could be labeled as a Canadian term as Canadian unions were the first to begin talking about the need for a economic shift to renewable resources while maintaining the integrity of all workers.

Province	Outcome of Just Transition
Newfoundland[67]	- Ban of cod fishing on grounds of environmental health (tetraethyl lead) - Cod industry collapsed; almost 2,000 workers lost their jobs - There was a compensation plan in place, but no plan to mitigate the effects of the transition before it occurred. - Over 2,000 Canadian workers lost their jobs. - A decade after the ban, 36% of the production workforce was still unemployed; 8% held only part-time jobs; 23% had lower-paying jobs and only 25% held jobs of equal or higher salaries. - All workers lost their seniority - Workers suffered financial losses; decreased pension value and deterioration of their health
Ontario[68]	- Loss of manufacturing jobs - Since 2007, there have been 300,000 jobs lost - Increase in insecure service-sector work - Increase in temporary and contract work - Loss of benefits and pension, causing instability and insecurity within many families
British Colombia[69]	- Forestry sector job loss due to closing of mills - Lack of employment stability within industries - Forced to travel long distances - Family separation and socioeconomic strain - Costly to relocate and commute long distances - Lack of appropriate training and no effort to increase workers' transferable skills - More focus on the filling of labour gaps and acquiring the cheapest labour possible than on worker livelihood.

With these experiences in mind we cannot afford to fail a fourth time. Not only would the economic stability of the country be in jeopardy but also the livelihood of millions of people. Knowing what we know now, we must ensure that there are plans to protect workers. We cannot accept that workers lose their pensions or have to separate themselves from their families to seek precarious work.

Municipal Planning and Diversification

Economic diversification in rural areas must be based on a coherent and integrated approach to employment promotion and poverty reduction among relevant government ministries and agencies at all levels of government.[70]

Policies will need to ensure the security of each individual community, and foster ongoing communication between city officials and local government representatives. We will need proactive local engagement and investment in broader and long-term community transition and development work to ensure quality jobs remain in the community to prevent ghost towns.[71]

- Each community will be unique and will have a program tailored to meet its specific needs
- There needs to be a broader industrial policy that creates quality jobs in a more diverse economy
- Investing in a community transition and a broader and long-term plan for affected local economies
- repurposing capital – converting nuclear sites to solar power sites; to help keep jobs in the community.[72]

Collective Agreements

Just Transition must be understood as a collection of various parties coming together in unison to work for the greater good of workers in all workplaces.

A Just Transition framework needs to incorporate, at least, the policies detailed below:

1. Sound investments in low-emission and labour-intensive technologies and sectors.
2. Early assessment of social and employment impacts.
3. Social dialogue and democratic consultation of social partners and stakeholders.
4. Training and skills development.
5. Social protection.
6. Local analysis and economic diversification plans.

In times of economic crisis, it is vitally important that a culture of social dialogue be established and, in particular, that collective bargaining be promoted as a useful mechanism for engaging in dialogue to address the issue of economic recovery effectively.

Collective bargaining is an important mechanism by which enterprises, in full and meaningful dialogue with workers' organizations, can ensure their sustainability both in times of growth and in times of crisis. Collective bargaining gives representational voice to the workers in a way that enables innovation in decision making and can maximize the impact of crisis responses to the needs of the real economy, while ensuring meaningful protection of workers[73].

Political Lobbying

A just transition can only be upheld if all parties agree on a fair and equal means of change. It is primarily about good governance. It is about applying the right policies in consultation and with the involvement of those concerned. Ideally, involvement must take place from the policy

development stage through to monitoring of progress. For this to happen women and men have to be able to communicate and share their views freely and in a democratic way. The design of public policy will be influenced by how people and organizations perceive risks and uncertainties and take them into account; modes of valuation from economic, social and ethical analysis are available to assist in decision-making.[74]

For climate change policies to be socially sustainable, one requirement is that they should be linked to employment and labour market policies and take into account industrial relations. Governments have to involve trade unions in addressing the needs of industries and communities at large in order to ensure that the transition to a carbon-friendly future is just and fair to all – that development is sustainable.[75]

Pan Canadian Carbon Pricing

For Canada, to become a leader in clean energy while upholding the highest standards of health, prosperity and security, it became evident that there needed to be policies and legislation implemented throughout both provincial and federal governments. In October 2016, the federal government proposed its pan-Canadian approach to pricing carbon pollution; committing itself to a cleaner, more innovative economy that would reduce emissions and protect our environment while creating well-paying jobs for Canadians.[76]

Consistent Carbon pricing would remove the incentive for industry to relocate. Whether based in Canada or abroad, all companies would face the same carbon price on sales into the Canadian market. A national carbon price prevents leakage between provinces, but subjects all provinces to the risk of leakage to the U.S. and other countries that do not price carbon.[77]

Green Procurement

Governments are major actors in the economy because of the huge number of goods and services they buy. According to the Organization for Economic Co-operation and Development (OECD), the procurement of goods and services accounts for close to 33% of federal government expenditures,[78] or slightly over 13% of Canada's GDP.[79]

Procurement
pro·cure·ment

the actions of obtaining or procuring something

Governments can use procurement as a means of stimulating innovation, new technologies and services. Canada needs visible and effective certification programs to ensure consumers and business can participate in and support green procurement.

Green Procurement Principles:

- Adopting clean technologies in a way that improves economic outcomes and supports energy, food and water security.
- Reducing reliance on diesel fuel and heating oils; developing business models that support community ownership and operation of clean technology deployments.
- Investing in a "green" future, governments should take into account all three pillars of sustainable development when procuring goods, services or works at all stages of the purchasing process.
- Adoption of the principles of sustainable development in their public procurement procedures, public authorities can provide the industry with incentives to develop new and better technologies, encourage sustainable patterns of behavior and decent work for all.[80]

Training

Activity #9

What a barrier would their be to your retraining and how could we address them to ensure that you got the most optimal training possible?

Training may be needed when there is:

- A shift in employment sector.
- Sensitive to include all groups of people; indigenous, women, people of colour and the traditionally disadvantaged.
- W ork with employers, governments, qualified individuals, labour organizations and educational institutions.[81]
- Link the training to real, decent jobs and not retraining for the sake of retraining.[82]

Training cannot sustain all workers, especially those who must also care for their families. Retraining or re-education needs to work alongside the government's social security programs, such as Employment Insurance. Long-term planning and stronger government involvement in funding training programs that lead to a recognized credential are needed.[83] A period of paid educational leave must be assimilated to a period of

effective service for the purpose of establishing claims to social benefits and other rights deriving from the employment relationship.[84] Retraining can include subsidizing a worker at a full living income level for a maximum of four years to take related programs, but also to pursue educational directions not usually subsidized because they are not viewed as being likely to result in quick employment.[85] A Just Transition strategy provides not only better access to training opportunities but also the counselling support to recognize and promote the full extent of talent and skills that workers may have outside of narrow industrial classifications.

Whether the training is energy efficiency, solar panel installation or another area, it is important to ensure the trainers are well qualified, that highest standards of safety are taught and followed. In addition to specific-job training, access to educational programs is required; education allows for greater career flexibility.[86]

Activity #10

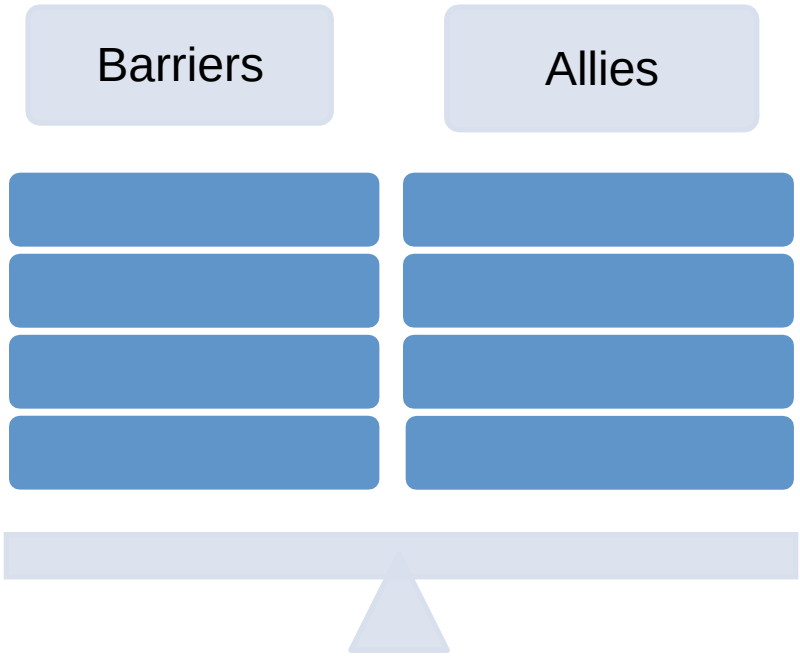
If you have the opportunity to choose another less intensive energy field and look towards a natural resource sector for employment which one would you choose?

Workers are the force that moves our economies and without us there can be no transition to a zero-carbon economy. We must demand that training programs take into account the family responsibilities of workers, for instance by being offered at times and locations compatible with family roles. In order for workers to be able to attend such training it will also have to be paid for and supported so as not to be a financial burden on them.[87]

Regardless of what occurs, for a transition to be just, it will inevitably depend on the policies and skills that are developed and associated with other market policies.[88]

Activity #11

Identify Barriers. Just Transition must include many different aspects to create a plan for an entire sector without excluding on discriminating against workers involved. Can you identify barriers that would impede you from creating a Just Transition plan that would work for you and your co-workers?



Employment Insurance

- Proper bridge to pensions; a guaranteed annual income was discussed but this does not replace quality employment, or training and education commitments.
- Needs to be extended to ensure it supports the transition to a similar quality of job, not just any job.
- Support should not hinge on individuals accepting a job at lower quality, or in an inappropriate field or location.
- Health insurance bridging and programs are needed to ensure that subsequent employment is a quality of job with similar benefits.
- There needs to be enforcement and support for the implantation of pension and other income programs.[89]

Unions have the responsibility to protect pensions, fighting for jobs, stand up for human rights and workers' right and environmental imperatives. The ITUC Shareholder Resolution Principles summarizes what worker's want as:

- A commitment to disclosure where pension funds are being invested.
- Corporate plans for the consequences of climate change consistent with the Paris Climate Agreement along with company commitments to social dialogue to ensure a Just Transition.
- Transparent procedures and due diligence and in the protection of human rights.
- Corporate responsibility for environmental risks to communities.

National Concern for the Economic Growth of Canada

Canada can reduce pollution, fight climate change and create jobs by hastening and not resisting, the transformation away from polluting fuels. We as citizens have a choice; Canada as a nation has a choice.[90]

Just Transition is About Fairness and a Strong Economy

Transitioning from coal-fired electricity generation will benefit all of society through reduced greenhouse gas emissions and improved air quality and health.

If implemented properly, a Just Transition for workers can also benefit by;

- Reducing long-term social assistance needs and costs;
- Increasing long-term income tax revenues through higher employment incomes for workers, successful community transitions and the resultant greater general economic stimulus; and
- Improving overall well-being for workers and communities. [91]

The core principle of Just Transition is that when policy changes benefit society broadly, the costs of those changes must be shared, and not imposed disproportionately on workers in the affected sectors or on the affected communities.[92]

Canada's climate change plan should include:

- A pledge to ensure that any costs of our transition to a low-carbon economy are not unfairly borne by workers.
- Support of reviews of the impacts on labour-force markets at provincial and community levels to assess which transition strategies may be needed.
- Recognition that industry, governments, workers and unions all need to be involved in crafting transparent and workable Just Transition plans. Plans need to be flexible and designed for specific workplace and community realities.

- An acknowledgement of need for industry-supported transition funds for affected workers and communities.
- An acknowledgement of the need for policies in support of affected workers including support for retraining for new job opportunities, employment insurance, flexibility for worker transitions, enhanced severance and salary continuance, pension bridging and early retirement options.

Glossary

Adaptation: Adaptation to climate change refers to the collection of measures put in place to deal with and remedy its effects. These measures could be structural, managerial and political and they could be short- and/or long-term. Adjustments can be both behavioural (human) and technical. The aim is to minimize the consequences of climate change.

Afforestation: The process of establishing a forest on land that has not been forested in the past 50 years.

Alternative Energy Resources: Energy generated in ways that do not deplete natural resources or harm the environment, especially by avoiding the use of fossil fuels and nuclear power.

Cap-and-trade system: a system for controlling carbon emissions and other forms of atmospheric pollution by which an upper limit is set on the amount a given business or other organization may produce but which allows further capacity to be bought from other organizations that have not used their full allowance.

Carbon Dioxide (CO_2): It is a natural occurring gas that is produced through the natural process of respiration, the decay of vegetation or forest fire, but its main by-product is the consumption and burning of fossil fuels. It is the principle greenhouse gas that affects the Earth's temperature.

Climate Change: Refers to the change in climate temperatures, which can be attributed directly or indirectly to human activity.

Emission: The release of greenhouse gasses into the atmosphere over a specified area and a period of time

Fossil Fuel: Are sources of energy that have developed within the earth over millions of years. Because fossil fuels - oil, natural gas, and coal - take so long to form, they are considered nonrenewable.

Free Trade Agreements: Agreements such as the North American Free Trade Agreement between two or more countries to establish a free trade area where commerce in goods and services can be conducted across their common borders, without tariffs or other hindrances.

Global Warming: The increase in the Earth's temperature, in part due to the emissions of greenhouse gasses associated with human activities such as burning fossil fuels, biomass burning, cement manufacturing, cow and sheep rearing, deforestation and land- use changes.

Greenhouse Gas: The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N20).

Less prevalent --but very powerful -- greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6).

Greenhouse Gas Effect: The trapping of heat by naturally occurring and synthetic atmospheric gases that absorb infrared radiation. These gases are essential in maintaining the Earth's temperature at a livable climate, but when too much is contained within the Earth's ozone layer it produces a change in the Earth's overall temperature.

Globalization: The process by which businesses or other organizations develop international influence or start operating on an international scale

International Panel on Climate Change (IPCC): Established in 1988 by the World Meteorological Organization and the UN Environment Program, the IPCC surveys world-wide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the Convention's subsidiary bodies. The IPCC is independent of the Convention.).

Mitigation: A human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere.

Renewables: Energy sources that are constantly renewed by natural processes. These include non-carbon technologies such as solar energy, hydropower, and wind as well as technologies based on biomass. Life cycle analyses are required to assess the extent to which such biomass based technologies may limit net carbon emissions.

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

United Nations Framework Convention on Climate Change (UNFCCC): A treaty signed in 1992, by more than 150 countries. Its ultimate objective is the 'stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous human induced interference with the climate system'.The UNFCCC is the first international attempt to deal with climate change. As its title indicates, the Convention is a framework. This framework includes commitments, different bodies, some funding, and political support.

Other Interesting Reads

BlueGreen Canada's Submission on Pan-Canadian framework on climate change

bluegreencanada.ca/sites/default/files/resources/BGC%20submission%20for%20the%20federal%20climate%20change%20framework%20-%20June%2027_0.pdf

International Labour Organization – Guidelines for a just transition towards environmentally sustainable economies and societies for all

www.ilo.org/wcmsp5/groups/publib/---ed_emp/---emp_ent/documents/publications/wcmc_432859.pdf

United Nations Framework Convention on Climate Change – Just Transition of the workforce, and the creation of decent work and quality jobs.

unfccc.int/resource/docs/2016/tp/07.pdf

Sources:

[1] Government of Ontario. (2016) Ontario's Five Year Climate Change Action Plan 2016-2020. Ottawa, ON: Queen's Printer for Ontario. Retrieved from: http://www.applications.ene.gov.on.ca/ccap/products/CCAP_ENGLISH.pdf

[2] Intergovernmental Panel on Climate Change. (2014). *Synthesis Report Summary for Policymakers.* Retrieved from: www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

[3] United Nations Environment Programme, The International Labour Foundation for Sustainable Development (Sustain labour). (2008) *Climate Change, Its Consequences on Employment and Trade Union Action*. Nairobi, Kenya: United Nations Office at Nairobi, Publishing Services Section. Retrieved from: https://www.lo.no/Documents/Klima_og_energi/Sustainlabourreportcc08.pdf.

[4] NASA: Global Climate Change. (n.d.). *Climate Change: How do we know?* Retrieved from: https://climate.nasa.gov/evidence

[5] NASA: Global Climate Change. (n.d.). *A blanket around the Earth.* Retrieved from NASA Global Climate Change: Vital Signs of the Planet: https://climate.nasa.gov/causes/

[6] See note 3.

[7] See note 3.

[8] See note 3.

[9] Lindsay, Rebecca. (2009, January 14). *Climate and Earth's Energy Budget*. Retrieved from NASA Earth Observatory: https://earthobservatory.nasa.gov/Features/EnergyBalance

[10] Riebeek, Holli. (2010, June 3). *Global Warming*. Retrieved from NASA Earth Observatory: https://earthobservatory.nasa.gov/Features/GlobalWarming/page1.php

[11] See note 5.

[12] See note 3.

[13] See note 3.

[14] Environmental Defense Fund. (n.d.). *Solving Climate Change Takes a Global Effort.* Retrieved from: www.edf.org/climate/global-climate-solutions

[15] Environmental Defense Fund. (n.d). *How cap and trade works.* Retrieved from: https://www.edf.org/climate/how-cap-and-trade-works

[16] Canada Law Energy. (n.d.) Retrieved from: www.canadianenergylaw.com/tags/cap-and-trade/

[17] Government of British Columbia. (2016, August). *Climate Leadership Plan*. Retrieved from: climate.gov.bc.ca/app/uploads/sites/13/2016/10/4030_CLP_Booklet_web.pdf

[18] Government of Alberta. (n.d.) *Climate Leadership Plan.* Alberta. Retrieved from: https://www.alberta.ca/climate-leadership-plan.aspx#toc-0

[19] Government of Nova Scotia. N.D. Nova Scotia Cap and Trade Program Design Options. Halifax, NS: Nova Scotia Environment. Retrieved from https://climatechange.novascotia.ca/sites/default/files/Cap-and-Trade-Document.pdf

[20] See note 3.

[21] Trade Union Congress. (2008). *A Green and Fair Future*. London, UK: Precision Printing. Retrieved from https://www.tuc.org.uk/sites/default/files/documents/greenfuture.pdf

[22] Natural Resources Canada. (2016-2017). *Energy Fact Book.* Ottawa. Retrieved from: www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/EnergyFactBook_2016_17_En.pdf

[23] International Labour Organization. (2010). Climate change and labour: The need for a "just transition". *International Journal of Labour Research, volume 2, issue 2.* Geneva, Switzerland. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_153352.pdf

[24] Natural Resources Canada. (2017, October 30). *Forestry.* Ottawa. Retrieved from: www.nrcan.gc.ca/earth-sciences/geography/atlas-canada/selected-thematic-maps/16874

[25] Natural Resources Canada. (2016, July 11). *Overview of Canada's Forest Industry*. Ottawa. Retrieved from: www.nrcan.gc.ca/forests/industry/overview/13311

[26] See note 25.

[27] Natural Resources Canada. (2018). *Statistical data: Domestic economic impact (Canada)*. [Data file]. Retrieved from http://cfs.nrcan.gc.ca/statsprofile/economicimpact/ca

[28] Natural Resources Canada. (2018). *Statistical Data: Overview.* Ottawa. [Data file]. Retrieved from: http://cfs.nrcan.gc.ca/statsprofile/overview/ca

[29] Natural Resources Canada. (2018, May 23). *Indigenous Forestry Initiative*. Retrieved from: https://www.nrcan.gc.ca/forests/federal-programs/13125

[30] Natural Resources Canada. Retrieved from: www.nrcan.gc.ca/forests/canada/aboriginal/16515

[31] Government of Canada. (2016). *Canada's Mid-Century Long-Term Low-Greenhouse Gas Development Strategy*. Gatineau, QC: Environment and Climate Change Canada. Retrieved from: http://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf

[32] Natural Resources Canada. (2018). *Statistical Data: Carbon.* Retrieved from: http://cfs.nrcan.gc.ca/statsprofile/carbon

[33] See note 31.

[34] See note 31.

[35] The Mining Association of Canada. (2018). *Mining Facts*. Retrieved from Mining Association of Canada: http://mining.ca/resources/mining-facts

[36] Marshall, Brendan. (2016). *Facts and Figures of The Canadian Mining Industry.* Retrieved from Mining Association of Canada: mining.ca/sites/default/files/documents/Facts-and-Figures-2016.pdf

[37] Government of Canada. (2018, March 7). *Environmental indicators*. Retrieved from http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&amp%3Bn=F60DB708-1

[38] See note 3.

[39] See note 31.

[40] See note 3.

[41] Renner, M., Sweeny, S. & Kubit, J. (2008). *Green Jobs: Towards decent work in a sustainable, low-carbon world.* Nairobi, Kenya: United Nations Environment Programme. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_158727.pdf

[42] See note 31.

[43] See note 23.

[44] Blue Green Canada. (2016). *Just Transition and Good Green Jobs for Alberta.* Edmonton AB. Retrieved from: http://bluegreencanada.ca/sites/default/files/resources/JT_Summary_WEB_LOREZ.pdf

[45] Blue Green Canada. (2016). *Submission to the Government of Canada's Conversation on Climate Change.* Retrieved from:http://bluegreencanada.ca/sites/default/files/resources/BGC%20submission%20for%20the%20federal%20climate%20change%20framework%20-%20June%2027_0.pdf

[46] Trade Union Congress. (2008). *A Green and Fair Future, For a Just Transition to a Low Carbon Economy.* United Kingdom, London. Retrieved from: www.tuc.org.uk/sites/default/files/documents/greenfuture.pdf

[47] See note 3.

[48] See note 3.

[49] Labour Network for Sustainability. (n.d.). "*Just Transition" – Just What is It?*. Retrieved from: http://www.labor4sustainability.org/uncategorized/just-transition- just-what-is-it/

[50] See note 46.

[51] See note 23.

[52] See note 23.

[53] See note 23.

[54] See note 23.

[55] See note 23.

[56] See note 49.

[57] See note 49.

[58] See note 44.

[59] See note 44.

[60] See note 49.

[61] See note 41.

[62] See note 46.

[63] See note 44.

[64] Blue Green Canada. (2012). *More Bang for our Buck: How Canada Can Create More Energy Jobs and Less Pollution.* Retrieved from: http://bluegreencanada.ca/sites/default/files/resources/More%20Bang%20for%20Buck%20Nov%202012%20FINAL%20WEB.pdf

[65] Rubin, Jeff. (2012, September 23). How High Oil Prices Will Permanently Cap Economic Growth. *Bloomberg Opinion*. Retrieved from: https://www.bloomberg.com/view/articles/2018-10-21/china-s-tesla-wannabe-nio-draws-scrutiny-over-cameras

[66] See note 3.

[67] See note 49

[68] Mendleson, Rachel. (2012, July 12). Canada Manufacturing Job Losses: Study Finds Laid-Off Auto Workers Still Struggling Years Later. *Huffington Post.* Retrieved from: https://www.huffingtonpost.ca/2012/07/12/manufacturing-layoffs-studycaw_n_1667869.html

[69] Canadian Centre for Policy Alternatives – BC Office. (2015). *Just Transition: Creating a green social contract for BC's resource workers.* Vancouver, BC: CCPA BC. Retrieved from: https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2015/01/ccpa-bc_JustTransition_web.pdf

[70] See note 23.

[71] See note 44.

[72] See note 44.

[73] See note 23.

[74] See note 2.

[75] See note 23.

[76] Government of Canada. (n.d.) Retrieved from: news.gc.ca/web/article-en.do?nid=1132149

[77] Office of Erin Weir, MP. (n.d.). *Discussion Paper on Carbon Tariffs and Export Rebates*. Regina, SK. Retrieved from https://d3n8a8pro7vhmx.cloudfront.net/erinweir/mailings/224/attachments/original/Carbon_Border_Adjustments.pdf

[78] Organisation for Economic Co-operation and Development (OECD). (2015). *Government at a Glance 2015: Country Fact Sheet – Canada.* [Fact sheet]. Retrieved from: http://www.oecd.org/gov/Canada.pdf

[79] KPMG International Cooperative. (2012). *The Power of Procurement.* UK: KPMG International. Retrieved from: https://assets.kpmg.com/content/dam/kpmg/pdf/2012/07/the-power-of-procurement-a-global-survey-of-procurement-functions.pdf

[80] See note 23.

[81] See note 44.

[82] See note 69.

[83] See note 69.

[84] See note 23.

[85] Canadian Labour Congress. (2000). *Just Transition For Workers During Environmental Change*. Retrieved from: http://digital.library.yorku.ca/yul-1121737/just-transition-workers-during-environmental-change/datastream/OBJ/download

[86] See note 44.

[87] See note 23.

[88] See note 23.

[89] See note 44.

[90] See note 64.

[91] See note 44.

[92] See note 44.