W3 | Work in a Warming World

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Climate Change and Work

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Abstract

As part a comprehensive review of climate change literature, this paper examines the relationship between climate change and jobs. For 25 years, scientists have warned us of climate change and our need to create a sustainable society to mitigate and adapt to it. Though this process will be difficult, the Global Climate Network, an alliance of independent think tanks, estimates that the development and wide use of low-carbon technology will create millions of jobs globally.

In Canada, the lack of political leadership on climate change has increased carbon emissions, stimulated an industry of climate denial, missed out on green jobs and clean energy investments. A proactive approach to climate change leads to job creation. Pending an effective political response, it is urgent and necessary to create a movement to "repair the planet" by involving trade unionists, environmental activists, academics, educators and journalists. To the extent that such action "from the bottom up" is effective, it will combat climate change and result in new jobs in a new, sustainable economy.

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"There are more jobs in saving the planet than in wrecking it." Keith Stewart, Greenpeace (Agenda, TVO, 12 Oct., 2011).

Introduction

Having completed a comprehensive review of climate change literature using the headings: environmental history, the science, social responses (environmentalism, culture, and media), political economy and policy developments, obstruction and climate denial, impediments to mitigating climate change, and **climate change and work,** this paper examines the relationship between climate change and jobs. For the last 20 years, climatologists and other scientists have warned us with increasing urgency that climate change is upon us, that work is needed to create a sustainable society and in the process mitigate against climate change so we can adapt. Thus far relatively little that is concrete has been written about work and climate change, but the Global Climate Network, an alliance of independent, progressive and influential think tanks, estimates that the development and wide use of low-carbon technology will create millions of jobs around the world (Low-Carbon Jobs in an Interconnected World, Global Climate Network, 2010). In 2008, the UN Environment Program calculated that in 2006, 2.3 million people were employed in renewable energy industries and estimated that number would increase by 2030 to over 20 million people. A recent ILO report suggests the successful transition to a greener economy will require efficient re-training and skills upgrading, especially for the disadvantaged in the labour market (Skills For Green Jobs, ILO Report 2011).

The Context

It is official government policy in Canada and the United States that North Americans will have to reduce greenhouse gas production by 80 percent by 2050 (Condon, 2010, xi). In 2010, the warmest year on record, "the world was getting a taste of what global warming feels like in its early stages" (McKibben, 2011, 60). Nineteen nations set temperature records; the melt season was longer and affected the Greenland ice sheet. Russia experienced drought and fires; in many places (including Manitoba and Quebec) floods occurred from heavy rains and deluges (especially affecting Pakistan). These events occurred with a temperature increase of less than one degree Celsius and with atmospheric concentrations of CO2 of 390 ppm.

Also in 2010 initial attempts to deal with climate change ended with the Kyoto Protocol; cap and trade approaches waned, but carbon emissions continued to climb. The cap and trade plans attempted to deal with the emissions problem at minimal cost using complicated schemes for companies to take advantage of, but the fossil fuels industry opposed them (Upham, 2010). The US Senate refused to vote on a moderate cap-in–trade bill, despite some corporate support for clean energy and climate legislation. The unsuccessful Copenhagen and Cancun conferences revealed longstanding divisions between the rich and poor nations on many issues including climate change (Pelling, 2011). Thereafter, the US focused on research and development without mentioning climate change (which is still contested in conservative circles) and the UN is

concentrating on clean energy. The UN Durban Conference in 2011 agreed to establish a universal legal agreement on climate change no later than 2015.

The International Literature

Since the Intergovernmental Panel on Climate Change (IPCC) first reported in 1990, scientists have accepted that some temperature rise will occur. Hence, populations in all countries will need to adapt, which implies having plans and also trained people to assist in this process. The IPCC's fourth report in 2007 stressed that "warming of the climate system is unequivocal," is largely the result of human activity, and the necessity of strong early action to mitigate the worst impacts of climate change. This IPCC report also warned there is a timetable and point of no return. "Sustainable development can reduce vulnerability to climate change" and "can enhance mitigative and adaptive capacities, reduce emissions and reduce vulnerability." But with increased adverse impacts of climate change and a reduced capacity to adapt, "climate change could impede nations' ability to achieve sustainable development pathways" (IPCC, 2007, 70). In other words, there is a tipping point, a phrase of Jim Hansen's, a leading American NASA scientist. Therefore, it is important to act sooner rather than later. If we do not begin to reduce our carbon emissions, at some point Nature's systems will take over and the situation could possibly be beyond human control (Homer-Dixon, 2010, 2).

In recognizing the danger of delay, some analysts stress that the costs of stabilizing climate are significant but manageable. They believe delay would be more costly and that early action on climate change will create business opportunities, new markets in low-carbon energy technologies, and low-carbon goods and services (Fankhauser, Sehlleier and Stern, 2008). In addition, the OECD stresses the role of technological innovation in bringing down the costs of climate change mitigation over time. With growth in new markets, new employment will result. "Changes in energy technologies and in the structure of economies" create opportunities "to decouple growth from greenhouse gas emissions." Ignoring climate change will eventually damage economic growth, so "tackling climate change is the pro-growth strategy for the longer term" (OECD, 2008). Emissions need to be cut by energy efficiency, changed demand, and by adopting clean power, heat and transport technologies in order to decarbonize by even 60 percent by 2050 to stabilize atmospheric concentration at 550ppm CO2e. Scientists have concluded this is necessary though some think that level of CO2 is too high. The shift in the energy and transportation sectors as well as drastic cuts in emissions from agricultural and industrial processes will require new technology, jobs and policies. The growth of more forests will be part of the carbon shift process (Parfitt, 2011). These enormous sectoral changes will create new jobs.

In the international literature, patterns emerge. One pattern indicates that countries that build infrastructure and involve government as well as the private sector do the most to adapt to climate change and in the process provide for human security. Europe has taken this approach and is ahead of the curve. Spain, Germany and Denmark spearheaded the massive increase of wind, biomass and solar energy with "feed-in tariff policies that provided investment security and triggered almost a million new jobs. New renewable

energy sources increased from almost zero in 1995 to more than 10 percent of the total electricity share in Europe today." Recently the EU adopted a renewable energy directive for the years 2010 to 2020 (Schurig, 2011). Despite these positive actions, in 2010 all G20 member countries continued to support fossil fuel subsidies to a level of at least $470 billion (Vidal, 2011, 1). Dropping subsidies could slow growth in CO2 emissions by 1.7 billion tonnes a year, equivalent to the total emissions of the UK, Germany, Italy and France, which would cut global demand for oil. Historian Spencer Weart has noted that scientists have given us warning of climate change in time, but governments have delayed in heeding that warning; he recommends that governments immediately remove all subsidies from fossil fuels, which are high, often hidden and in his view economically unsound (Weart, 2008, 202).

Simultaneously, in diverse countries including China, another pattern has been action from the bottom up at the level of the community. It has proven to be a useful approach in moving towards a new economy. Nepal for example, which is vulnerable to weather events affecting food security "has become one of the first countries to increase community-based adaptation (CBA) to climate change" making it part of its national development policy (IRIN News, 17 May 2011). The United Nations Development Programme (UNDP) has designed its CBA project to achieve the goal of reducing vulnerability and increasing adaptive capacity to the adverse effects of climate change by building the resilience of communities, ecosystems, and resource-dependant livelihoods in the face of climate change.

In Canada and the United States, where the national governments have been slow to act, municipalities have taken some initiative. The C40 Leadership Group for example is an urban equivalent of the G20 association of nations, comprised of 40 partner cities and 18 affiliates around the world. It communicates the experience of cities in order to tackle climate change; it assists cities in reducing greenhouse gas emissions through energy efficiency and clean energy programs (Centre for the Environment, 2011 Annual Report, 28).

Taking a different approach, other advocates, such as the Bipartisan Policy Centre, a powerful US lobby group partly funded by oil, pharmaceutical and biotechnology companies and representing military, corporate and scientific interests, support more research and emerging technologies to promote climate change geo-engineering – dramatic environmental measures to cool the planet. Though no substitute for cutting emissions, this approach they argue could offer the quickest and cheapest way to reduce temperatures, particularly if the climate system reached "a tipping point" (Vidal, 2011).
All such actions create jobs. In spite of the different approaches, there is a consensus that action to deal with climate change should not be delayed. The most effective approaches are either public-private coordinated combinations or locally based actions.

The Canadian Situation

Canada has not adopted the European framework for action and recently the Harper government repudiated the Kyoto Protocol, thereby avoiding fines, and indicated it would

not sign its successor agreement, in which the U.S. and China will participate. Canada is falling behind Europe and the United States in creating green jobs (Environmental Defence Report, 2010). “The federal government has used its policy tools to reinforce reliance on market forces and the role of private actors to shape energy development and to determine Canada’s response to global warming.” (Cohen, Calvert, 2011, 9). The response has been ineffective as carbon emissions continue to rise. Overall, Canada's emissions grew 27 per cent to 725 megatonnes in 2007, from 573 megatonnes in 1990, putting it far from its commitment under the Kyoto Protocol to reduce greenhouse gas emissions to six per cent below 1990 levels by the five-year period from 2008 to 2012 (CBC News, 28 June, 2011).

The absence of any federal and only some provincial leadership on climate change policy has increased Canada’s carbon emissions. While policies to reduce carbon in the transportation and manufacturing infrastructure are lacking, the federal government’s energy policy strongly supports the fossil fuels industry including new pipelines proposed for the United States and Canada (Keystone and Enbridge). Its inaction on climate change has meant failure to regulate emissions, no credible plan to reach even modest reduction targets, ongoing cuts to government departments and scientific agencies working on climate change, and minimal programs for alternative energy (David Suzuki Foundation). Federal stimulus spending as an anti-recession measure in 2008 was not explicitly targeted towards green policies such as alternative energy. “Had the federal government devoted 100% of its stimulus spending on infrastructure to clean energy investment, instead of the 8.3% share green energy actually received …the result …would be the creation of nearly three times as many jobs” amounting to “over 238,000 jobs (compared to the government’s total of 84,000 jobs) in the year the money was spent” (Demerse, 2011, 2). Instead the federal government has supported actively, subsidized and advocated for the Alberta oil sands industry. With few policies and many of them voluntary such as the “Take the One Ton Challenge” media campaign and with relatively little stimulus spending, Canada is missing out on green jobs and investments in clean energy.

Action at a number of levels has occurred, despite denial or stalling on climate change by politicians’ and some of the general public. Some individuals have adopted new lifestyles to reduce their carbon footprints by riding bikes. According to the Census, 1.7 percent of people in the City of Toronto rode their bicycle to work in 2006. Cycling in Toronto is on the rise as between 2001 and 2006, the number of people riding a bike to work in Toronto increased by over 30 percent (City of Toronto Cycling Reports). Others are using public transit more; many are not using plastic bags (recently banned by Toronto City Council to take effect in 2012), or are using new, green light bulbs, or buying and eating local food. Such individual initiatives create new demand resulting for example in more ridership on transit systems and more money going into the local food economy (with increasing local markets).

Some large institutions are acting. The University of Toronto’s Sustainability Office, launched in 2004, achieves “tangible environmental, economic and social benefits while striving toward a culture of sustainability that is reflected in all the functions and operations of the university.” It has invested in greener operational systems, encouraged

innovation and formed partnerships to pursue its goals. It has created 1 to 3 full-time jobs, 30 positions for work-study students as wells as jobs resulting from arrangements with partners. It has not yet reduced carbon overall but only the rate of increase as the university has expanded (Sustainability office; Savan, 2011).

Cities remain important governments for changing their infrastructure (construction codes, waste management systems, transportation systems) to create less carbon and more new jobs. Patrick Condon has used Vancouver "as a virtual laboratory to demonstrate the new green designs of buildings, neighbourhoods, infrastructure, and transportation networks that will become the building blocks for achieving national and global climate goals" (Condon, 2010, xi). In Toronto and Sudbury, municipal planners are hiring environmental consultants to integrate carbon emission strategies into mainstream urban economic and development plans (*Sudbury Star*, 2011). But more needs to be done (*Canadian Geographic*, June 2012 environmental issue).

In the private sector, some companies (both large and small) have realized "there is money to be made in providing environmental solutions" and have acted. The result has been diverse "interesting and innovative technologies" driven by climate change including high efficiency ball-bearings, smart metres, low energy computer monitors, and household goods (Medhurst, 2009). Most such efforts have been European rather than North American, but "bankers, insurers, and institutional investors have begun to tally the trillions of dollars in financial risks that climate change poses. They are now demanding that companies in which they hold stakes (or insure) add up risks related to climate change and alter their business plans accordingly" (Scott, 2007). Some large companies have increased their energy efficiency in their stores, amongst suppliers and in their truck fleets. Some companies have joined with the Pew Center on Global Climate Change, a non-profit organization founded in 1998 to support efforts to address global climate change. It is also true that multinationals have funded climate denial and more recently climate geo-engineering (*Business Week*, 2005; Bowen, 2008).

Much can be done in the construction industry to transform North America's cities into compact, energy-efficient, green areas with infrastructure that reduces resource consumption, pollution and encourages pedestrians, bicyclists and transit systems. Some construction companies are using energy efficient standards but initiatives to change building codes occur slowly and are focused on the strength of buildings facing extreme weather events rather than carbon reduction. Nevertheless developing "bold, ambitious building codes and municipal by-laws that ensure new construction incorporates green design and building techniques to conserve energy, reduce demand, and utilize renewable solar and even geothermal heat sources are hugely important" and lead to jobs (*Leader Post*, 2008). According to Cathy Taraschuk, senior technical advisor for structural design with the National Research Council's Canadian Codes Centre, the impact of climate change is being assessed and is expected to show up in the 2015 national building code.

In 2009, the Ontario government passed the *Green Energy Act,* which has led to investment in cleaner renewable energy, and has created well-paying jobs. Nevertheless, small alternative energy companies in Ontario had begun to expand and develop wind and solar technology, but the Ontario government's contract with Samsung has

circumvented them rather than encouraged them. Samsung receives large incentive payments to create jobs by wooing green energy companies to Ontario, and the province is paying premium prices for renewable energy. With limited transmission capacity, it will hold transmission power in reserve to support Samsung's projects thereby making it harder for other companies to enter the market. Ontario Power Corporation could have developed similar large scale projects. Since the Samsung deal, pressing questions about whether local climate change mitigation strategies such as the Ontario *Green Energy Act* are legal under the World Trade Organization remain problematic issues (*Globe and Mail*, 2010). Nevertheless, provinces like B.C, and Quebec have acted and introduced economic incentives to shift to cleaner energy through carbon taxes; several provinces have committed to reducing emissions through cap-and-trade systems as part of the Western Climate Initiative between some U.S. states and Canadian provinces; Nova Scotia has capped its electricity emissions, and several provinces have shut down polluting power plants (David Suzuki Foundation).

Despite politicians' efforts to frustrate actions to mitigate the effects of climate change, the labour movement's 'Green Jobs' campaign has expanded in Canada and the United States (CLC, 2008, Green Jobs). Recently in response to globalization, some unions looked at new tactics and "have been developing their own agendas on workplace change to redirect innovation towards their own goals" (Betcherman, Lowe, 1997). This trend is compatible with the goal of creating more green jobs to reduce the effects of climate change. But some unions, including those espousing social unionism, treat the environment as an add-on when it comes to climate change. The CAW for example, which has had to deal with tough economic times along with the employers "has not reframed its bargaining demands to emphasize both economically and environmentally sustainable production." Instead, its "relatively uncritical defense of the North American auto industry and the jobs it provides, despite the clearly negative role such production plays in the climate crisis, its acceptance of the structures of automobility, and its emphasis on environmental issues that have little to do with the nature of their industry" has led to its approach that accepts the management view of jobs versus the environment. The newer paradigm that a more sustainable economy creates more new jobs has been adopted by some but not all labour groups. In the future, green industries may take different forms from traditional corporations and may include cooperatives or community based small businesses. The UN has declared 2012 the International Year of Cooperatives (Hrynyshyn and Ross, 2011).

Canadian think tanks and some journalists have contributed ideas about adapting to climate change and are analyzing where the new jobs will be. The priorities for Canada seem to be: changes to infrastructure, such as revised building codes; massive new carbon-friendly transportation systems; a national alternative energy policy (Conference Board of Canada 2010, 2011; Toronto Board of Trade 2011). Local food movements in many communities have benefitted local farmers with their support, creating food security for people including the poor and saving energy by promoting food grown locally (McGregor, 2010). Groups such as the Council of Canadians have pressed for a national water protection policy and embraced tap water over bottled water (COC, 2009). Environmental groups, the Green Party and the NDP support local green entrepreneurs but differ on carbon taxes. Various groups recognize that new industries will require job

training for employees, which in itself creates educational jobs. All such work by diverse organizations contributes to jobs for human security in the face of climate change.

The Canadian government has hired researchers to prepare information about preparedness for climate change when it happens. A worst case scenario means many jobs will be created to respond to climate events. "Emergency preparedness professionals who wish to make changes to the emergencies or risk management system should consider having all the ground work done for desired changes in advance with the intention of obtaining approval from the political level when conditions are right - that is, immediately following a disaster. There will be large economic and social benefits in increasing and improving disaster preparedness and mitigation efforts. As the rising trend in the frequency and severity of weather-related events and the associated destruction, damage, injury and loss of life clearly indicates, improved disaster preparedness and mitigation is an imperative in a changing climate." (Bruce, Burton and Egener, 22). Despite these diverse initiatives, much more planning, political will, and public pressure are needed to move Canada towards a more sustainable society.

Conclusion

"Climate change is the ultimate accounting: it is the bill for a century of unprecedented prosperity, generated by the energy stored in fossil fuels," writes Professor Naomi Oreskes (Oreskes, 2010, preface). Climate change is unlike any other issue. As UN Secretary General Ban Ki-moon told the 2007 Bali Climate Conference, it is "the defining challenge of our age. The science is clear; climate change is happening, the impact is real. The time to act is now" (Ki-moon speech, 12 Dec. 2007).

- It implies both a carbon shift and energy regime change.
- It has stimulated organized climate denial and individual denial.
- It has broadened the environmental movement.
- It requires new policies to reduce carbon emissions.
- A proactive approach to climate change necessarily leads to the creation of many new jobs.

Society has the technologies necessary to mitigate the effects of climate change, reduce greenhouse gases and improve energy security. There is much to be done to create new cities, urban infrastructure, green transportation systems and energy alternatives.

Currently there is little policy direction or political action in Canada to reduce carbon emissions at the top. Indeed in 2012 over the pipeline controversies, the Canadian government clearly sided with the fossil fuels industry and characterized environmentalists as radicals for their opposition. In such circumstances and in response to politicians' inability or unwillingness to deal with climate change, creating change from the bottom up seems the most feasible approach to create new jobs immediately. The need for a social movement to "repair the planet" to achieve the necessary dramatic carbon cuts seems necessary. Such a participatory political approach also may help to protect human rights and human security if there is a future crisis (O'Brien, St. Clair, and

Kristofferson, 13). A proactive grass roots movement implies new organizational work: with unions developing new work rules and building codes and negotiating their introduction in workplaces; with activists networking, educating the public and pressing for an end to subsidies of the fossil fuel industry; with journalists communicating the immediate needs of society, and academics including scientists searching for tools and strategies to repair the planet. To the extent that such action "from the bottom up" is effective, it will lead to many new jobs in a new economy and to a more sustainable society.

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