



**KAIROS Research Paper**

# **Huge Challenges for Canada after the Paris Climate Conference**

John Dillon, Ecological Economy Program Coordinator  
January, 2016

"Historic." "A global U-turn." "The enduring framework the world needs to solve the climate crisis." This is how French Foreign Minister Laurent Fabius, UN Secretary General Ban-Ki Moon and U.S. President Barack Obama, respectively, assessed the significance of the Paris Agreement accepted by 195 countries at the December 2015 UN Conference on Climate Change.

On the other hand, author Naomi Klein termed the global deal "ambitious but inadequate." Bill McKibben, founder of 350.org, said the Paris Agreement was insufficient to save the planet but "may have saved the chance of saving the planet."

Still others condemned the agreement as a "fraud" (climate scientist James Hansen), a "farce" (Dallas Goldtooth, Indigenous Environmental Network) and "deceptive, paving the way to disaster" (Brazilian eco-theologian Leonardo Boff).

## **Canada in Paris**

Prime Minister Justin Trudeau received a round of applause when he declared "Canada is back" at an early plenary session in Paris. Canadian negotiators worked hard to secure the inclusion of human rights, Indigenous rights, gender equality and a just transition for workers in the legally-binding text. Despite their efforts, these important principles appear only in the non-binding preamble.

Environment and Climate Change Minister Catherine McKenna was an early advocate for the goal of keeping temperature increases to 1.5<sup>0</sup>C in the Agreement. In the end, it included a commitment to keep the rise in global temperatures "well below" 2<sup>0</sup>C compared to pre-industrial times, while striving to limit them to 1.5 degrees. The fact that this new, more ambitious target is included in the final text is one of the most significant outcomes of the Paris

conference. Less laudable, however (as will be explained below), was Minister McKenna's work as a mediator that led to the inclusion of an endorsement of carbon markets.

In this paper I shall endeavour to make a balanced assessment of the Paris Agreement in Part One and outline the challenges that lie ahead for Canadians in Part Two.

## **Part One: What the Paris Agreement Achieved and Where It Falls Short**

Although a flawed pact to address climate change is better than none at all, the Paris Agreement has major inadequacies which need to be understood. In the analysis that follows, I distinguish between two documents emerging from COP 21 (the twenty-first Conference of the Parties to the UN Framework Convention on Climate Change).

The Paris Agreement begins with a non-binding preamble followed by 29 Articles that supposedly are legally binding.<sup>i</sup> However, unlike international trade agreements, the Paris Agreement has no enforcement mechanism. A second document, the Decision text, contains 140 numbered paragraphs that elaborate on many of the articles in the Agreement and contain short-term promises that are not considered legally binding.

Below I shall describe 10 important aspects, both achievements and shortcomings, of COP 21.

### **1. Voluntary Pledges**

Prior to the Paris COP, most member countries submitted voluntary pledges known as Intended Nationally Determined Contributions (INDCs) for greenhouse gas emission reductions. However, the UN climate secretariat has cautioned that if every country achieved its INDC targets between 2020 and 2030, global temperatures would still rise by 2.7<sup>0</sup>C above pre-industrial levels by the end of this century. Experience shows that countries often fall short of their pledges, with Canada being a prime example.

An analysis by [Climate Action Tracker](#) shows that actual government policies are much more important than their pledges as a predictor of future temperatures. Its report claims that there is only a 50% chance of holding temperature increases to 2.7<sup>0</sup>C even if all pledges are kept. More importantly, under current policies, temperatures are likely to rise by 3.6<sup>0</sup>C or more, by 2100.

The Paris Agreement does nothing to change the voluntary nature of national promises and imposes no penalties on countries that break their word. What is new is a decision to convene a

---

<sup>i</sup> For a thoughtful commentary on the legal status of the Paris Agreement see Richard Falk. "'Voluntary' International Law and the Paris Agreement." *Znet*. January 17, 2016 at <https://zcomm.org/znetarticle/voluntary-international-law-and-the-paris-agreement/>

“facilitated dialogue” among member countries in 2018 to assess whether efforts are adequate to meet the long-term goal of keeping increases “well below 2<sup>0</sup> Celsius.” The first official stocktaking to inform countries on what enhancements are needed to their commitments would not take place until 2023. Further stocktaking would then occur only at five-year intervals, unless a future COP decides to accelerate the schedule. (Article 14)

Such a delay is unacceptable as enhanced actions must be undertaken immediately without waiting for another eight years. Steffen Kallbekken, Director of the Centre for International Climate and Energy Policy, explains: “By the time the pledges come into force in 2020, we will probably have used the entire carbon budget consistent with 1.5°C warming.”<sup>1</sup>

## **2. Industrial Nations Not Liable for Loss and Damage**

The Paris Agreement reflects many compromises between industrialized countries and less developed countries, particularly those that are most vulnerable to the severe storms, devastating droughts and rising sea levels that are the inevitable consequences of climate change. They were the prime advocates of including the 1.5<sup>0</sup>C target in the Agreement. With early support from Canada, they won a victory. According to Article 2, the goal is to limit “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C.”

While this is significant, the 1.5<sup>0</sup>C goal remains aspirational rather than a firm commitment. Many observers believe that its inclusion was part of a trade-off allowing industrial countries to avoid compensating those who face the worst ravages of climate change, such as small island states, for losses and damage.<sup>2</sup>

The issue of whether the countries that are responsible for most of the emissions of greenhouse gases (GHGs) over the last 150 years would be obliged to pay compensation for loss and damage was highly contentious. Claims for compensation would be substantial since significant losses are already occurring as global temperatures have risen 1<sup>0</sup>C above their pre-industrial level. In a compromise worked out during the conference, Article 8 of the Agreement “recognizes the importance of averting, minimizing and addressing loss and damage” due to climate change. But paragraph 52 of the Decision text explicitly says, “Article 8 of the Agreement does not involve or provide a basis for any liability or compensation.”

## **3. No Specific Date for Global Peaking of GHG Emissions**

While the Agreement recognizes that global GHG emissions have to rapidly decline once they peak, it does not specify when “peaking” will occur. Article 4 simply says: “Parties aim to reach

global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties.”

During the Paris conference, scientists from five leading climate research institutes declared that this approach is completely inadequate. They said emissions must begin to decline before the next round of nationally determined contributions would take effect only after the first official stocktaking in 2023 and be totally phased out by 2050, to have any hope of staying below 1.5°C.<sup>3</sup>

Other scientists speaking in Paris maintained that to keep temperature increases under 1.5°C the phase out of fossil fuels would have to occur sooner, between 2025 and 2030.<sup>4</sup>

#### **4. Emissions from Shipping and Aviation Omitted**

Although GHGs from international shipping and aviation account for around 5% of global emissions, they are not covered by the Paris Agreement. This is a step backward since they were included in the 1997 Kyoto Protocol, requiring action through the International Civil Aviation Organization and the International Marine Organization. Emissions from aviation are expected to double or triple by 2050 and those from shipping to quadruple.

Emissions from aircraft burning jet fuel are a particular concern because at high altitudes they trigger chemical reactions that are more harmful than the same emissions on the ground. The Intergovernmental Panel on Climate Change (IPCC) has estimated that “the climate impact of aircraft is two to four times greater than the effect of their carbon dioxide emissions alone.”<sup>5</sup>

Moreover, military aviation is responsible for huge emissions but these are omitted from national GHG inventories and difficult to quantify. At COP 3 in Kyoto, the U.S. secured exemptions for the military from any requirement for GHG reductions.<sup>6</sup>

#### **5. Decisions on Financing for Low-Income Countries Deferred to Future COPs**

While numerous media reports have stated that developed countries will “provide” developing countries with US\$100 billion per year in financing, the Paris documents are less specific than even the 2009 Copenhagen Accord. The Decision text “strongly urges developed country Parties to scale up their level of financial support, with a concrete roadmap to achieve the goal of jointly providing US\$100 billion annually by 2020 for mitigation and adaptation.” (par. 115) The Decision text also says that Parties shall seek to set a new goal prior to 2025 from a floor of US\$100 billion per year. (par. 54)

Actual commitments on financing have largely been postponed until future conferences, beginning with next year’s COP22 in Morocco. One reason for the inability to make actual commitments in Paris is a dispute concerning whether financing provided by China and other

“emerging markets” should be counted towards the overall goal. China has pledged US\$3.1 billion for developing countries that it insists should be treated as South-South solidarity, separate from financing from Northern countries.

Echoing the language used in the Copenhagen Accord, the Paris Agreement states that “developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources.” (Article 9:3) The key word in both texts is “mobilize” meaning that financing would not come only from developed country governments but also from the private sector and from multilateral financial institutions.

The Paris documents omit any reference to financing that could be provided through alternative sources such as taxes on aviation or international shipping fuels. Neither is there any mention of financial transaction taxes that could provide significant revenues.

Another factor holding up agreement on specific commitments is the lack of clarity on accounting practices. The task of coming up with accounting guidelines is referred to the Subsidiary Body for Scientific and Technical Advice for consideration only at COP 24 in 2018. (Decision text, par. 58.)

The need for clear accounting rules reflects widespread criticism of a controversial 2015 [report](#) by the Organisation for Economic Co-operation and Development (OECD) in collaboration with Climate Policy Initiative (CPI). That report estimates that an average of US\$57 billion a year was raised for spending in developing countries in 2013 and 2014.

Oxfam has conducted a detailed analysis of the report and concluded that only US\$14.5 billion represented funds from developed countries that were specifically designated for climate specific spending in low-income countries. Most of the bilateral and multilateral funding took the form of non-concessional loans rather than grants. Moreover, some four-fifths of the bilateral flows appear to be money diverted from official development assistance budgets rather than new and additional finance.<sup>7</sup>

To put the US\$100 billion target into perspective, it is only 0.16% of the GDP of the 20 largest economies and just 6.7% of world military budgets – far less than what is needed. According to the UN Environment Program, developing countries need about US\$150 billion per year for adaptation measures to prepare for the effects of climate change. Moreover, developing countries will need additional financing to convert their economies from dependence on fossil fuels. The *New Internationalist* suggests that low-income countries will need approximately US\$670 billion per year to achieve this task.<sup>8</sup>

## 6. No Reference to Leaving Fossil Fuels in the Ground

Perhaps the most glaring deficiency in the Paris Agreement is that it makes no mention of fossil fuels, let alone the need to keep most of the known reserves of oil, natural gas and coal underground. The Paris Agreement also gives short shrift to the need to make the transition to a new energy paradigm. The only reference to renewable energy appears in the preamble to the Decision text where it acknowledges “the need to promote universal access to sustainable energy in developing countries, in particular in Africa, through the enhanced deployment of renewable energy.”

In 2012 the Carbon Tracker Initiative released a groundbreaking report indicating that known reserves of fossil fuels were five times as large as the amount that could be burned before 2050 if the world were to have an 80% chance of avoiding temperature rises of more than 2°C. The International Energy Agency, in its 2012 *World Energy Outlook*, concluded: “No more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2°C goal, unless carbon capture and storage (CCS) technology is widely deployed.”<sup>9</sup> In 2013, for the first time, a report from the Intergovernmental Panel on Climate Change (IPCC) included a carbon budget that indicated that if humans were to continue burning fossil fuels at the then current rate the threshold for keeping temperatures below 2°C would be surpassed within 27 years.<sup>ii</sup>

A 2014 IPCC report confirmed that most reserves of oil, gas and coal are unburnable. Data in that report indicates that only one-quarter to one-seventh of known fossil fuel reserves could be burned if temperature increases were to be kept below 2°C. Although the 1.5°C target has not been extensively studied by the IPCC, data in its 2014 report indicates that to contain warming to below 1.5°C only 6% to 11% of known reserves could be burned.<sup>10</sup>

Calls for keeping fossil fuels in the ground gained further momentum and credibility when Bank of England Governor Mark Carney warned investors in oil, gas and coal that between two-thirds and four-fifths of their investments could become “stranded assets.”<sup>11</sup> These are assets that would lose their economic value due to changes in legislation or regulations to restrain climate change. Governor Carney also warned companies and their insurers that they could be held responsible for losses and damages due to climate change.

---

<sup>ii</sup> All the studies cited here are for carbon dioxide emissions only. The range of their estimates for the amount of fossil fuels that must be kept in the ground varies because they employ different assumptions. One key difference is their estimate of the effectiveness of attempts to mitigate the impact of greenhouse gases, other than CO<sub>2</sub>, especially methane. The studies also vary in their assumptions concerning the impact of emissions from agriculture, land use and forestry. As well, they make different assumptions about the use of “negative emission technologies” such as carbon capture and storage techniques that would capture CO<sub>2</sub> at source or remove it from the atmosphere. See Carbon Tracker “*Things to look out for when using carbon budgets!*” at [www.carbontracker.org/wp-content/uploads/2014/08/Carbon-budget-checklist-FINAL-1.pdf](http://www.carbontracker.org/wp-content/uploads/2014/08/Carbon-budget-checklist-FINAL-1.pdf)

In his role as Chair of the Financial Stability Board mandated by the Group of Twenty, Carney is urging that accounting rules be established requiring companies to disclose the carbon intensity of their assets. In Paris, Carney joined former New York City Mayor Michael Bloomberg, who also owns the Bloomberg News agency, in setting up a panel to encourage corporations to voluntarily disclose the risks they face from climate change.<sup>12</sup> Climate justice advocates urge that such disclosure be mandatory so as to provide reliable and verifiable information.

## **7. No Consideration of a Carbon Tax**

When prominent climatologist James Hansen called the Paris talks “a fraud,” he was no doubt reflecting on the findings of the [research paper](#), “Ice melt, sea level rise and superstorms,” that he and 16 other scientists published in the journal *Atmospheric Chemistry and Physics* last July. They found that most of the Earth’s ice sheets are melting faster than previously predicted. They conclude: “Humanity faces near certainty of eventual sea level rise of at least [five to nine meters] if fossil fuel emissions continue on a business-as-usual course. ... It is unlikely that coastal cities or low-lying areas such as Bangladesh, European lowlands, and large portions of the United States eastern coast and northeast China plains could be protected against such large sea level rise.”

While they are uncertain as to how quickly sea level increases will occur, their research suggests, “rapid large sea level rise may begin sooner than generally assumed” due to amplifying feedbacks from climate change that is already occurring.

They conclude: “The 2<sup>0</sup>C global warming ‘guardrail’ ... does not provide safety, as such warming would likely yield sea level rise of several meters along with numerous other severely disruptive consequences for human society and ecosystems.”<sup>13</sup> Other scientists, writing in the journal *Nature Geoscience*, also dispute the widespread assumption that two degrees is somehow “a safe limit that avoids dangerous climate change.”<sup>14</sup>

In Paris, Hansen reiterated his conviction that any agreement would be “pointless unless greenhouse gas emissions are taxed across the board. He argues that this alone will force down emissions quickly enough to avoid the worst ravages of climate change.”<sup>15</sup>

The former NASA scientist has suggested an initial “fee” of \$15 per tonne be placed on GHG emissions and raised by \$10 each year. The model preferred by Hansen would be revenue neutral with all the money collected returned to residents as dividends. Other advocates of carbon taxes suggest reinvesting some of the funds in conservation and renewable energy while compensating low-income households with the rest.

## 8. Reaffirmation of Carbon Markets

While there is no hint that a carbon tax was even discussed in Paris, the alternative of using carbon markets as a mechanism for putting a price on carbon was highly contentious. A group of countries led by Venezuela and Bolivia strongly opposed any endorsement of carbon trading while the European Union, Brazil and New Zealand led the charge for its inclusion. French Foreign Minister Laurent Fabius asked Minister Catherine McKenna to take on the task of mediating this issue. After taking on this task she told *The Globe and Mail*: “Whether or not the language [of carbon markets] is reflected in the agreement, there will continue to be a role for the markets.”<sup>16</sup>

In the end, an endorsement of carbon trading is incorporated into Article 6 of the Paris Agreement under the obscure name of “internationally transferred mitigation outcomes.” The Article provides for an entirely new international trading mechanism to replace the Clean Development Mechanism (CDM) established under the 1997 Kyoto Protocol. Unlike the CDM where only developed countries or their companies could purchase credits from projects in developing countries, the new mechanism allows all countries and private entities to trade with each other as a way of reaching their national GHG reduction targets when domestic policies fall short.

Article 6 promises that the new mechanism will “ensure environmental integrity and transparency” and “shall apply robust accounting to ensure ... the avoidance of double counting.” However, the promises ring hollow given the actual experience under the Kyoto Protocol. In our *Briefing Paper No. 42 [Canada Falls Far Short of Pope Francis’ Call for Ecological Justice](#)*, we describe how trading credits under the CDM and the European Union’s Emissions Trading System has been marked by speculation, widespread fraud, double counting and grave human rights violations. Too often Indigenous peoples and other populations have been forced from their lands to make room for carbon offset projects. Furthermore, the over-allocation of permits in carbon trading schemes has led to price collapses rendering the mechanisms useless as incentives for emission reductions.

## 9. Hidden Agenda for Achieving Negative Net Emissions

As late as December 10, the second last day of COP 21, the negotiating text contained references to seeking “emissions neutrality” or “net zero emissions” in the second half of this century. However, the official text on mitigation refers only to achieving “a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century.” (Article 4.1) The supposition here is that carbon dioxide would have to be

withdrawn from the atmosphere in order to make way for continued use of fossil fuels after 2050.

Article 5 encourages parties to “preserve and enhance ... sinks and reservoirs” of GHGs including forests and to support “results-based payments ... for activities relating to reducing emissions from deforestation and forest degradation.” Although the final text does not refer to existing REDD (Reducing Emissions from Deforestation and Forest Degradation) initiatives under the UN and the World Bank, REDD was referenced in earlier drafts of the Paris Agreement.

Under REDD, developed countries make payments to developing countries, or communities within them, in return for promises to preserve forests. As with the human rights abuses that occurred under the CDM, projects to earn credits under REDD have been associated with dispossession of peoples from their lands and violations of the rights on Indigenous peoples.<sup>17</sup>

A leading climate scientist, Kevin Anderson from the Tyndall Centre for Climate Change Research in Britain, exposes the hidden agenda behind the talk of enhancing sinks to remove GHGs from the atmosphere. He identifies “biomass energy carbon capture and storage” (BECCS) as the preferred mechanism and describes how its wide-spread use would entail:

“Apportioning huge swathes of the planet’s landmass to the growing of bio-energy crops (from trees to tall grasses) – which, as they grow, absorb carbon dioxide through photosynthesis. Periodically these crops are harvested; processed for worldwide travel; shipped all around the globe and finally combusted in thermal power stations. The carbon dioxide is then stripped from the waste gases; compressed (almost to a liquid); pumped through large pipes over potentially very long distances; and finally stored deep underground in various geological formations (from exhausted oil and gas reservoirs through to saline aquifers) for a millennium or so.”<sup>18</sup>

While not mentioned explicitly in the Paris text, Anderson says BECCS is a fundamental premise of the mitigation goals of 2<sup>0</sup>C and especially 1.5<sup>0</sup>C. Moreover, it is the premise behind many national INDCs. Anderson states that to use BECCS on the scale envisioned would involve “decades of ongoing planting and harvesting of energy crops over an area the size of one to three times that of India” at the expense of growing crops to feed the more than nine billion humans expected to be alive by 2050.

A report released in Paris by Biofuelwatch notes that BECCS proponents suggest that in the future the technology could remove up to 10 billion tonnes of CO<sub>2</sub> annually – more than a quarter of current CO<sub>2</sub> emissions.<sup>19</sup> Yet, Biofuelwatch asserts: “Wood-based bioenergy has led

to increased forest degradation ... and higher carbon emissions from land-use change associated with the expansion of industrial tree plantations.”<sup>20</sup>

The concept has gained credence since most of the models explored by the IPCC in its 2014 Assessment Report involve BECCS, even though large-scale BECCS technologies are unproven. Capturing CO<sub>2</sub> from fermentation of crops such as corn to produce ethanol has been successful but it is not commercially viable without subsidies.

While BECCS is the favoured technique in the near term, a few climate scientists advocate more exotic geoengineering techniques such as reducing the amount of solar radiation that reaches the Earth by artificially whitening clouds or spraying aerosols into the atmosphere to duplicate the effects of volcanic eruptions.<sup>21</sup> Proponents of experiments to manipulate nature acknowledge that they may have unintended consequences such as causing widespread droughts in Africa.<sup>iii</sup>

Building on an Oxfam study that found that the richest 10% of the world’s population, wherever they live, are responsible for about 50% of global emissions, Anderson asserts that instead of focusing on GHG removals, “a 30% reduction in global emissions could be delivered in under a year, simply by constraining the emissions of [the richest 10%] to the level of a typical European.”<sup>22</sup>

Anderson’s depiction of the hidden agenda with respect to BECCS supports eco-theologian Leonardo Boff’s characterization of the Paris Agreement as “deceptive.” Boff calls the goals set out in the Paris Agreement “totally unreal” as long as fossil fuels continue to be burned.<sup>23</sup> He is mindful of Pope Francis’ call for resisting a dependency on the kinds of technology that operate “according to an undifferentiated and one-dimensional paradigm.” (*Laudato Si’* #106) Geoengineering, including BECCS, are prime examples of a paradigm that assumes humans can manipulate nature.

In our *Briefing Paper No. 42* we explored the Canadian experience with Carbon Capture and Storage (CCS) for removing CO<sub>2</sub> from coal-fired power stations. Existing CCS technology, which is not yet viable without large public subsidies, is a precursor of BECCS. It is impractical for widespread use and encourages the continued use of fossil fuels. Furthermore, according to the Biofuelwatch study, when captured CO<sub>2</sub> is used for enhanced oil recovery, around 30% of the CO<sub>2</sub> is emitted again into the atmosphere.

---

<sup>iii</sup> For a discussion of unintended consequences that could result from geoengineering, see Chapter 8 “Dimming the Sun: The Solution to Pollution Is ... Pollution?” in Naomi Klein’s *This Changes Everything*. Toronto: Alfred A. Knopf Canada.

## 10. Trade Agreements Can Override Climate Policies

Another major omission from the Paris documents is any measure to prevent international trade agreements from interfering with actions on climate change. This limitation was built into the original 1992 UN Framework Convention on Climate Change. Article 3.5 states: “Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.”

In a [blog](#) posted prior to the Paris COP, I described how law professor Gus Van Harten [drafted a clause](#) for insertion into the Paris agreement that would explicitly require that the climate agreement take precedence over investor state dispute settlement (ISDS) mechanisms in trade or investment agreements. These instruments allow foreign investors to sue governments if their policies are deemed to be unfair or unreasonable. Most of the 38 suits filed against Canada under Chapter 11 of NAFTA have challenged environmental or natural resource policies of the federal or provincial governments.

A prime example of how an ISDS suit stands in the way of action on climate change is the January 2016 [filing](#) by TransCanada Pipelines’ of its intent to sue the U.S. over President Obama’s decision to deny a permit to the Keystone XL tar sands export pipeline.<sup>iv</sup> TransCanada alleges that the decision was arbitrary, discriminatory and an appropriation of its assets since the U.S. has approved other similar trans-border pipelines. TransCanada is seeking US\$15 billion in damages.

The corporation dismisses the contention of environmentalists that a pipeline capable of carrying an additional 830,000 barrels a day of oil to refineries in the U.S. would contribute to climate change. U.S. Secretary of State John Kerry has said that approval of Keystone XL would have undermined the credibility of U.S. efforts to fight climate change.

Whether or not TransCanada wins its case (the U.S. has never lost a Chapter 11 case under NAFTA), it will be cited often by environmental campaigners against ISDS mechanisms in trade agreements. Three significant pacts now awaiting ratification – the Comprehensive Economic and Trade Agreement (CETA) between Canada and the European Union; the Trans Pacific Partnership (TPP); and the Transatlantic Trade and Investment Partnership (TTIP) between the U.S. and the EU – contain ISDS provisions. Member countries of the EU are having second thoughts about including ISDS in CETA and the TTIP. The threat to national sovereignty and

---

<sup>iv</sup> Derek Burney, a key figure in negotiating the original Canada-U.S. Free Trade Agreement, alleges that President Obama’s action violated the core deal at the heart of the FTA. That trade-off committed the U.S. not to discriminate against energy imports from Canada, while Canada agreed not to impose minimum prices or taxes on its energy exports or to restrict exports to the U.S. Burney is now a director at TransCanada. Gordon Laxer in *After the Sands* (Madeira Park, BC: Douglas and McIntyre. 2015) also argues that Obama broke the basic deal that underlay NAFTA when he halted the Keystone XL pipeline. Unlike Burney, Laxer raises the question, “Why should [Canadians] continue to give the US unlimited access to our energy if that prevents Canadians from using their own oil?” (p. 175).

environmental protection in pending suits against Canada, such as Lone Pine Resources' objection to Quebec's ban on fracking under the Saint Lawrence river, constitute grounds for demanding the mechanism's removal from NAFTA or failing that, Canadian withdrawal from that agreement.

## **Part Two: Challenges for Canada**

While Canada took many commendable initiatives during the Paris conference, it remains to be seen whether actual policies will live up to the pronouncements of Prime Minister Justin Trudeau and Environment and Climate Change Minister Catherine McKenna. At a media briefing in Paris, Minister McKenna “refused to say whether the Liberal government would now base its own climate strategy on the 1.5-degree goal.”<sup>24</sup> Taking the 1.5<sup>0</sup>C target seriously will be a crucial test of the Canadian government's commitment to addressing climate change.

Here we examine 10 principal challenges Canada faces.

### **1. Setting a New Target**

Before arriving in Paris, Minister McKenna declared that the previous government's goal of cutting GHG emissions to 30% below their 2005 levels by 2030 is a “floor” on which Canada will build a more ambitious commitment. Understandably there was not enough time between the October 19 election and the November 30 beginning of the Paris conference for the federal government to establish a new target, in consultation with provincial and territorial leaders. However, Climate Action Tracker has calculated that in order to meet the goal of keeping global temperature increases lower than two degrees, Canada needs to set a 2030 goal of reducing GHG emissions by 73% below 2005 levels.<sup>25</sup>

The Paris Decision text acknowledges that the INDCs submitted to the Conference would result in global emissions totaling 55 gigatonnes in 2030,<sup>v</sup> when in reality they would need to be 40 Gt by that year to meet the 2<sup>0</sup>C goal. (par. 17)<sup>26</sup> Since Canada is responsible for 1.6% of worldwide emissions, its share of the 15 Gt gap would be about 240 million tonnes of GHGs. Canada's post-Paris goal, therefore, would be to reduce emissions to at least 62% below their 2005 level by 2030.

The Decision text does not suggest a target for 2030 in order to meet a goal of 1.5 degrees of warming. Instead it invites the IPCC “to provide a special report in 2018 on the impacts of global warming of 1.5<sup>0</sup>C above pre-industrial levels and related global greenhouse gas emission pathways.” (Article 21)<sup>27</sup> Whatever number the IPCC comes up with, it is clear that Canada would have to make even larger emission reductions than those suggested above if it wants to make the 1.5<sup>0</sup>C goal achievable.

---

<sup>v</sup> A Gt is one billion metric tonnes.

## 2. Relying on Reductions Within Canada Without Purchasing Credits Abroad

As I noted in a [blog](#) published during the Paris conference, the previous government's plan to achieve a large part its reduction target by purchasing carbon credits abroad contradicts the view of many Indigenous people that carbon markets are dangerous and false solutions. In his speech in Paris, Prime Minister Justin Trudeau promised to consult Indigenous people in formulating Canadian policy, saying: "Indigenous peoples have known for thousands of years how to care for our planet. The rest of us have a lot to learn." One thing we can learn from Indigenous people is that turning the world's carbon absorption capacity into a commodity to be bought and sold is a violation of the sacredness of Mother Earth.

There are many examples of carbon sequestration projects that have led to grave human rights abuses and violated Indigenous peoples' rights to Free Prior and Informed Consent (FPIC). While Canada failed in its attempt to have Indigenous rights included in the legally binding part of the Paris Agreement, the government has pledged to uphold these rights, including FPIC, as required by the *UN Declaration on the Rights of Indigenous Peoples*.

When Dallas Goldtooth from the Indigenous Environmental Network labeled the Paris Agreement a "farce," he explicitly pointed to carbon markets and carbon trading as a false solution to climate change.<sup>28</sup> This critique echoes Pope Francis' warning in *Laudato Si'* that carbon trading may seem: "To provide a quick and easy solution under the guise of a certain commitment to the environment, but in no way does it allow for the radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors." (*Laudato Si'* #171)

On the first day of the Paris COP, Minister McKenna announced that Canada is joining the Carbon Pricing Leadership Coalition (CPLC), a group of government, business and civil society organizations whose goal is "to expand the use of effective carbon pricing policies" through market mechanisms.<sup>29</sup> Although some members of the CPLC favour carbon taxes over carbon trading schemes, the organization has favoured carbon markets since its founding by the World Bank in 2014. As mentioned above, Minister McKenna went on to broker a deal to include carbon trading in the Paris Agreement, giving it the perplexing label: "internationally transferred mitigation outcomes."

What complicates policy making in Canada is that British Columbia and Alberta have chosen to use carbon taxes, while other provinces – Quebec, Ontario and Manitoba – are joining California in a cap and trade scheme. California's offset program has been [heavily criticized](#) for allowing its industries to purchase carbon credits from projects in Brazil and Mexico without the Free, Prior and Informed Consent of the peoples affected. One way to avoid purchasing credits abroad where human rights violations too frequently occur would be to allow trading of permits only within the participating provinces or states. Even then, care would have to be taken to avoid violating the rights of communities affected by offset purchases.

The federal government must decide whether it will allow international purchases of carbon credits to meet its emission reduction targets. The former government included the option of extensive use of international carbon trading mechanisms as part of the INDC it submitted to the Paris Conference in May 2015. One sign that the new government is considering allowing international carbon trades is the inclusion of carbon trading in its talks with the U.S. and Mexico about forging a new continental energy and climate pact. Reportedly, “Mexico is eager to access Canadian and American markets to sell [carbon] credits.”<sup>30</sup> Indigenous people in the Mexican state of Chiapas are strongly opposed to selling carbon credits since putting a price on nature violates their culture.<sup>31</sup>

The federal government could set a national standard for pricing carbon without resorting to international markets and still respect the autonomy of those provinces that choose cap and trade. Environmentalist David Suzuki and economist Jeff Rubin advocate a [federal carbon tax](#) that allows provinces to keep the revenues they collect from provincial programs, provided they meet a national standard. They suggest an initial national carbon tax of \$30 per tonne, to increase gradually towards a more effective level. Under this plan, B.C. would keep all the revenues from its current \$30 carbon tax (as will Alberta when its new tax comes into effect), while Quebec, Ontario and Manitoba industries would pay a federal tax equivalent to the difference between \$30 and the fluctuating value of permits sold through periodic auctions.

David Suzuki suggests that a Canadian carbon price should reach \$100 per tonne by 2020.<sup>32</sup> Studies by M.K. Jaccard and Associates in Canada and by the IPCC conclude that carbon prices would have to rise to around \$200 per tonne to be effective in keeping temperature increases below 2°C.

### **3. Incorporating Climate Change and Indigenous Rights into Decisions on Resource Projects**

During the election campaign, the Liberal Party promised to change the approval process for energy ventures to include “an analysis of upstream impacts and greenhouse gas emissions resulting from projects.”<sup>33</sup> It did not, however, specify whether these criteria would apply to pipelines already under review by the National Energy Board (NEB), including the Trans Mountain pipeline to Vancouver harbour and the Energy East pipeline to an export terminal at Saint John, New Brunswick.

On December 17, 2015, Indigenous leaders from the Assembly of First Nations of Quebec and Labrador, the Assembly of Manitoba Chiefs and the Union of British Columbia Indian Chiefs issued an [open letter](#) addressed to the prime minister demanding the “immediate cancellation of the NEB review process for Kinder Morgan’s Trans Mountain, Enbridge’s Line 3 and TransCanada’s Energy East Tar Sands pipelines.” The letter, while acknowledging the government’s pledge to implement the UN *Declaration on the Rights of Indigenous Peoples*, objects to a review process that violates Indigenous peoples’ rights to Free, Prior and Informed Consent (FPIC). The letter also objects to the NEB’s bias in favour of pipelines, ignoring “their

heavy contribution to climate change as a result of the expanded Tar Sands production that the pipelines will allow.”

In late January Natural Resources Minister Jim Carr and Environment and Climate Change Minister Catherine McKenna confirmed that the NEB reviews of the Trans Mountain and Energy East pipelines would not be suspended. Instead new interim measures would be applied to those projects while the government conducts a review of assessment processes. While the interim process promises “deeper consultation” with Indigenous peoples and accommodations where appropriate, there is no commitment to full Free, Prior and Informed Consent as required by the UN *Declaration*. It promises a four month extension of the time limit for government consideration of the Trans Mountain pipeline and a nine month extension for Energy East but such time constraints may not allow for a full FPIC process nor does it explicitly recognize the right for Indigenous peoples to withhold their consent to projects on their territories.

While the interim process will allow the government to take into account the direct and upstream greenhouse gas emissions associated with the two pipeline projects, this assessment appears to exclude the larger emissions that will occur when the products carried are eventually burned. A new, permanent regulatory approval process must include an explicit commitment to Free, Prior and Informed Consent for Indigenous peoples and a thorough assessment of the full environmental impact, both upstream and downstream.

#### **4. Keeping Fossil Fuels in the Ground Begins with the Tar Sands**

In section 6 of Part One, we describe how several international agencies have made calls for keeping the majority of known fossil fuel reserves underground. A study published in the journal *Nature* in 2015 examined which fossil fuels are costliest to develop, are located farthest from markets and, therefore, should be among the first to be abandoned. The authors found that bitumen from the Alberta tar sands and oil from the Arctic are among the costliest and least economical. It concluded that 75% of Canada’s known oil reserves, 24% of its natural gas reserves and almost all coal reserves are unburnable.<sup>34</sup>

Gordon Laxer, in [After the Sands](#), points out that keeping most reserves underground means that the remaining reserves of conventional oil and gas must be carefully allocated for use within Canada. This will allow a transition to renewable sources while curtailing tar sands expansion and fossil fuel exports.

Synthetic fuels extracted from the tar sands have a heavier carbon footprint than other fossil fuels because enormous amounts of natural gas are used to extract the bitumen embedded in the sand and upgrade it through the injection of hydrogen. Nevertheless federal and provincial politicians still advocate building new infrastructure to facilitate export of oil derived from the tar sands.

During the 2015 election campaign, Liberal leader Justin Trudeau backed the need to move oil from the tar sands to markets through pipelines to the East and West coasts provided that they receive an undefined “social license.” Similarly when Alberta’s new Premier Rachel Notley announced a new climate action policy last November that included a carbon tax and a phase out of coal-fired electricity plants, she was careful to make sure that the cap set on emissions from tar sands extraction was high enough to allow for substantial growth.

The 100 megatonne<sup>vi</sup> annual limit on GHG emissions from the tar sands allows for 30 Mt of growth above the 70 Mt currently emitted each year. Like Trudeau, Notley expressed the hope that her climate change plan would sufficiently redeem the province’s reputation to allow tar sands export pipelines to proceed.

In a 2013 [Briefing Paper](#), I cited information from the International Energy Agency’s 2012 *World Energy Outlook* implying that completing some tar sands projects planned or under construction might be compatible with keeping global temperature increases below 2<sup>o</sup>C. An analysis of Alberta’s new climate plan by Gordon Laxer makes a convincing case that we need to actually phase out tar sands production, rather than just cap its expansion.

A cap of 100 Mt of GHG emissions from the tar sands would allow their emissions to rise by 43% above current levels. Laxer writes: “Allowing such enormous oils sands emissions will prevent Canada from doing its share to reach the ambitious goal ... Minister Catherine McKenna set in Paris of limiting global warming to 1.5 degrees.”<sup>35</sup>

Laxer argues that if tar sands were to emit 100 Mt of GHGs in 2050, this would take up 84% of the total emissions allowable under the Climate Change Accountability Act introduced in the House of Commons in 2008 and again in 2010 by the late NDP leader Jack Layton. Had it not been defeated by the Conservative majority in the Senate, the Act would have established a legal obligation to reduce Canadian emissions by 80% from their 1990 levels by 2050, a level that would allow for a chance of keeping temperature increases below 1.5<sup>o</sup>C. Laxer notes that both Prime Minister Trudeau and Global Affairs Minister Stéphane Dion voted for the Act when they were opposition MPs.

In addition to phasing out production from the tar sands, Laxer says that electricity generation from burning natural gas and exporting coal, oil and natural gas must be phased out over the next 15 years if governments seriously want to meet the 1.5<sup>o</sup>C target.

## **5. Stopping Shale Gas Extraction Urgent**

While phasing out tar sands production is important, extracting shale gas using hydraulic fracturing (fracking) is urgent due to the large emissions of methane that escape during fracking operations. Methane is 85 times more powerful than carbon dioxide over a 20-year period, the crucial time frame for stopping climate change from accelerating.

---

<sup>vi</sup> A Mt equals a million metric tonnes.

A study by Robert Howarth and colleagues at Cornell University found that, over a 20-year period, the GHG footprint of shale gas is double that of coal when expressed per quantity of energy produced.<sup>36</sup> In another study, they found that extracting gas from shale formations through fracking releases about 50% more methane into the air than conventional drilling.<sup>37</sup>

In Paris, Howarth warned: “If we continue methane production at current rates, the world will run up against the 1.5 degrees limit in 12 to 15 years.” On a more hopeful note he added: “If we stop producing methane, which means stopping fracking of natural gas and oil, the world wouldn’t run up against that limit for about 50 years. So we could buy ourselves 25 to 35 years of time, which is critical. That could allow us to improve our political and socioeconomic responses to climate change and de-carbonize our societies accordingly. But if we’re serious about a 1.5 degrees target or even the 2 degrees target, we can’t keep on fracking.”<sup>38</sup>

The threat to the climate posed by methane emissions points to the importance of maintaining the current bans on fracking in Quebec, Nova Scotia, New Brunswick and Newfoundland and Labrador described in our discussion paper on [Ethical Reflections on Fracking](#). There we cite a document from the Environment Minister of British Columbia which states that the pursuit of a liquefied natural gas (LNG) industry could double the province’s emissions, imperiling its legislated targets for GHG reductions. Yet, the B.C. government has plans for a significant expansion of the industry in order to export LNG to Asia, even though emissions would rise by a minimum of 16% or as much as 100%. “At the high end of that range,” the report notes, “B.C.’s natural gas sector emissions would be comparable to those from Alberta’s oil sands.”<sup>39</sup>

## **6. Funding Adaptation and Mitigation in Low-Income Countries**

The Canadian government made headlines on the eve of the Paris conference by announcing \$2.65 billion in funding, over five years, for climate-related measures in developing countries. The promised amounts would grow from \$300 million in the 2016-17 fiscal year to \$800 million in 2020-21. During the Conference Canada also announced that \$10 million of its funding would be delivered through the World Meteorological Organization’s early warning system for developing countries facing hazards such as tropical cyclones, floods and heat waves.

As discussed in section 5 of Part One, the issue of how industrialized countries might fulfill their long-standing promise to “mobilize” US\$100 billion a year for low income countries by 2020 was largely deferred to future COPs. Based on precedents where Canada has contributed around 3% to 4% of multilateral funds, civil society organizations in the Climate Action Network have advocated that Canada’s share of US\$100 billion would require an annual contribution of \$4 billion in public money by 2020. Foreign Minister Stéphane Dion explicitly acknowledged that goal by saying that the \$800 million Canada would contribute in 2020-21 would attract unspecified private “partners” whose contributions would bring the total up to \$4 billion.<sup>40</sup>

A challenge for the federal government is to make a larger contribution from public funds while explaining how each dollar from its current pledge would attract four dollars in private

financing. While private firms may invest in potentially profitable mitigation measures, such as building wind turbines, financing for the costly work needed to adapt to climate threats, such as building sea walls, will have to come from public sources.

## **7. Spending on Clean Technology, Renewable Energy and Public Transit**

The Liberal Party's 2015 election platform contained a number of promises designed to facilitate a transition from dependence on fossil fuels. These included:

- investing an additional \$100 million per year in organizations that are developing emerging clean technologies;
- supporting research, commercialization and worker training in clean technologies;
- developing a Canadian energy strategy to increase renewable energy on power grids, including through federal spending on infrastructure;
- shifting subsidies from fossil fuels to “new and clean technology;”
- creating Canada Green Investment Bonds to invest in large- and community-scale renewable energy projects;
- increasing the federal government's use of clean technology in energy, buildings, and procurement decisions;
- improving energy efficiency standards of consumer and commercial products;
- creating financing instruments to boost investment in distributed energy and building retrofits;
- including energy conservation in a national energy strategy.

These commendable ideas require specific funding commitments or a clear definition of what is included under the category of “clean technology.” Some technologies, like coal-fired electricity plants with Carbon Capture and Storage, have been shown to be anything but clean. Also lacking are estimates in terms of GHG reductions or job creation. One exception is the promise to provide \$20 billion over 10 years in “flexible” transit funding for cities.

The *Green Economy Network* (GEN), to which KAIROS belongs, with a number of trade unions and social justice organizations, presented a [fact sheet](#) in Paris that shows how Canada could reduce annual GHG emissions by 25% to 30% and create one million new jobs by investing up to 5% of the annual federal budget in renewable energy, energy efficiency and public transportation. As can be seen in the table below, GEN's proposed spending on public transit at \$21.6 billion over five years is approximately double what the government's \$20 billion over 10 years, when calculated on an annual basis.

## Green Economy Network Plan for One Million Climate Jobs

	\$Billions Invested Over 5-Year Period	Total Person Job Years Created	GHG Emission Reductions (MT CO <sub>2</sub> eq)
Renewable Energy (solar, wind, geothermal power)	\$18.8	235,247	43.7 <> 76.2
Energy Efficiency (i.e. building retrofits)	\$24.2	359,141	26.1 <> 101.4
Public Transit (i.e. improvements and expansion)	\$21.6	273,993	13.8 <> 24.2
Higher Speed Rail (between cities in urban corridors)	\$10.4	131,619	1.0 <> 5.2
<b>5-Year TOTALS</b>	<b>\$74.9 billion</b>	<b>1,000,000 Jobs</b>	<b>84.6 MT &lt;&gt; 207 MT annually</b>

### 8. A Just Transition for Workers

At a GEN-sponsored workshop in Paris, Ken Smith, President of a UNIFOR local representing 3,500 tar sands workers, told a hushed crowd that oil workers understand what climate change means as they observe unusual weather patterns leading to the wild fires consuming Northern Canadian forests. He said that whereas 10 years ago workers resisted change, now “we hope we’re seeing the end of fossil fuels for the good of everybody.” He added a plea for measures to provide workers with a just transition into other jobs.<sup>41</sup>

Canada called for a commitment to a just transition for workers to be included in the Paris Agreement. The fact that it is only in the preamble makes it no less imperative for the government to support programs for training, decent work and quality employment opportunities for workers transitioning out of fossil fuel industries.

The following principles for a just transition for workers were developed by the Communications, Energy and Paperworkers union, which along with the Canadian Auto Workers union (CAW), was the predecessor of UNIFOR:

- a) provide appropriate training and relocation funds;
- b) involve workers and their unions in decision making;
- c) preferential hiring for displaced workers when green industries receive government funding;
- d) sharing costs through a Just Transition Fund managed by unions, governments and employers.

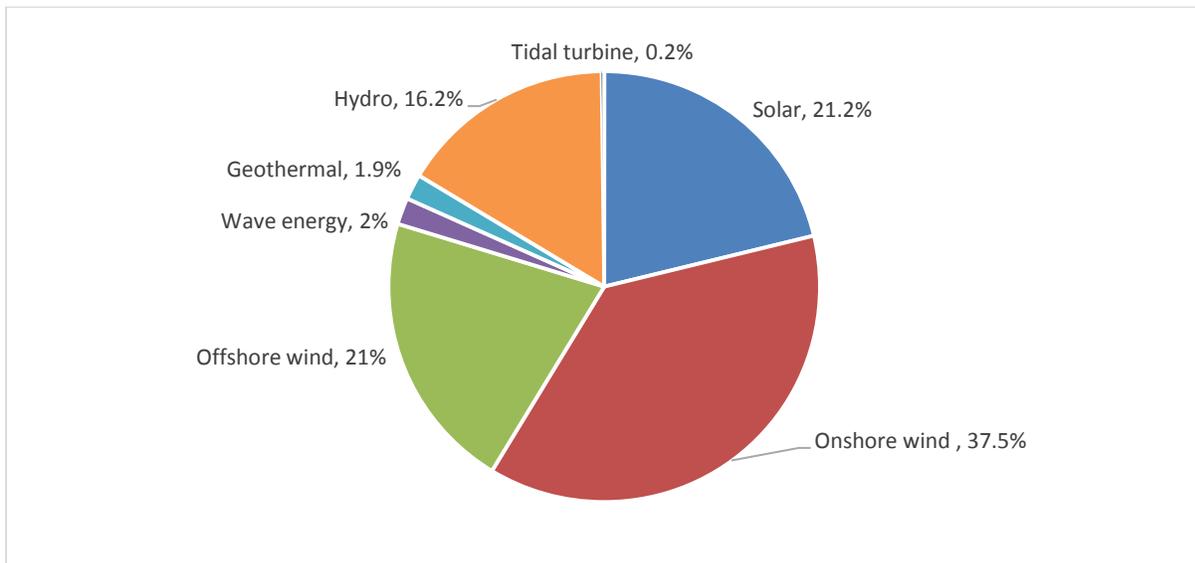
### 9. Develop a Renewable Energy Plan for Canada

On the day before the COP began, 25,000 people marched in Ottawa, as did hundreds of thousands all over the world, under banners proclaiming that 100% renewable energy is possible by 2050.

Mark Jacobson from Stanford University has done pioneering research into the worldwide potential for renewable energy. Jacobson and his team have demonstrated how it is technically possible to meet all current energy needs from renewable power sources by the middle of this century without resorting to nuclear power, biomass or new large-scale hydro projects.

Jacobson has produced a 100% renewable energy plan for Canada that could be in place by 2050 using known technologies. The following graph shows how Canadians could obtain their energy if there were the political will to definitively abandon fossil fuels.

**CANADA'S 100% RENEWABLES SCENARIO for 2050<sup>42</sup>**



According to Jacobson's study, implementing this plan would create 293,000 construction jobs and lead to 463,000 full-time operation jobs. The savings on health related expenditures would amount to \$107.6-billion each year, with 9,598 fewer deaths annually.

## 10. Financing the Transition

The ambitious agenda for actions outlined above would clearly require substantial government financing. One challenge is to direct promised infrastructure spending away from projects like roads and ports and give priority to green projects such as public transit and improved inter-city rail service.

The Canadian Centre for Policy Alternatives offers the following options for raising government revenues:<sup>43</sup>

- A national carbon tax of \$30 per tonne would raise \$16 billion a year. If it were raised incrementally to \$200 per tonne, the tax would realize \$80 billion a year. As discussed above, revenue would not necessarily accrue only to the federal government. Provinces with their own carbon levies would keep the revenue they raise if their tax rate matched

that set by Ottawa. If it were lower, Ottawa would collect the difference between the provincial and the federal tax. Some revenues would be rebated to low-income households while a portion would be available to fund the transition to a green economy.

- Ending subsidies to the fossil fuel industry would recoup about \$350 million a year for the federal government (and more if provincial governments do likewise).
- A national financial transaction tax could raise \$5 billion a year.
- Ending special tax treatment for capital gains income would recoup \$7.5 billion a year (and more for provincial governments).
- Returning the corporate tax rate to where it was in 2006 would raise \$6 billion a year.
- Tackling tax havens would recoup \$2 billion a year.
- A new federal tax bracket on incomes over \$250,000 could raise about \$3.5 billion a year.
- Scaling military spending back to pre-9/11 levels would save \$1- to \$1.5 billion a year.
- Eliminating income splitting and other ineffective recent tax cuts for families with children would recoup \$7 billion a year.

Among all the challenges for Canadian governments described above, three imminent decisions will provide a test of their willingness to follow through on their promises. One test will be the content of the 2016 federal budget. Another will be the outcome of the first ministers' conference on climate policies to be held within 90 days after COP 21. The third will involve decisions on how climate impacts and Indigenous rights are incorporated into assessments of pipeline proposals.

## **Conclusion**

Notwithstanding the above analysis of major shortcomings in the Paris Agreement, the citizen mobilizations that took place around the world provide grounds for hope. A popular refrain was *the road is not to Paris but through Paris*.

Climate justice organizations are planning new mobilizations in 2016. These include the Peoples Climate Movement; Beyond Coal and Gas Australia; 350.org; The Next System Teach-ins; the backers of the [Leap Manifesto](#): *a call for a Canada based on caring for the Earth and one another*; and countless local and regional events.

In May the global climate justice movement will undertake actions to resist fossil fuel export pipelines and fracking projects that would extend the exploitation of some of the most damaging types of fossil fuels.<sup>44</sup>

In North America, momentum towards stopping tar sands export pipelines is building with President Obama's denial of a permit for Keystone XL, the Canadian government's ban on oil tankers along B.C.'s Northern coast effectively preventing Enbridge's Northern Gateway Pipeline from being built; the B.C. government's refusal to support Kinder Morgan's Trans Mountain Pipeline; and local and regional resistance to the Energy East pipeline.

Indigenous peoples and their allies will continue to [demand](#) full respect for the right to Free, Prior and Informed Consent before dangerous resource extract projects can proceed.

Environmental lawyers will pursue legal actions against fossil fuel polluters. In Paris, the West Coast Environmental Law Association and the Vanuatu Law Association released a report entitled [Taking climate justice into our own hands](#) that explains how, "well-established principles of private international law allow the courts and governments of individual countries to take action against fossil fuel polluters." The report also includes a proposal for a *Climate Compensation Act* that clarifies the principles of liability for large-scale greenhouse gas emitters.

The global divestment movement has already persuaded 500 institutions that manage US\$3.4 trillion in financial assets to withdraw at least part of their holdings from fossil fuels. This movement continues to gain strength among faith communities and other institutions.

Many households and local communities are mobilizing to reduce their dependence on fossil fuels by retrofitting buildings and installing renewable power.

The signs of hope are everywhere. The next COP in Morocco will be important but the climate justice movement won't wait for it.

---

<sup>1</sup> Cited in Danny Chivers and Jess Worth. "Paris deal: Epic fail on a planetary scale." *New Internationalist* web exclusive December 12, 2015. <http://newint.org/features/web-exclusive/2015/12/12/cop21-paris-deal-epi-fail-on-planetary-scale/>

<sup>2</sup> Nitin Sethi. "US and EU want Loss and Damage as a toothless tiger in Paris agreement." *Business Standard*. India, December 7, 2015.

<sup>3</sup> The scientists were Hans Schellnhuber, director of the Potsdam Institute for Climate Impact Research; Johan Rockstrom, executive director of the Stockholm Climate Resilience Centre; Steffen Kalbekken, research director from the Climate Economics Unit and Director of the Centre for International Climate and Energy Policy; Kevin Anderson, from the Tyndall Centre for climate change research at Manchester University; and Joeri Rogelj, from the Energy Program at the International Institute for Applied Systems Analysis.

<sup>4</sup> Megan Darby "Scientists: 1.5C warming limit means fossil fuel phase-out by 2030." *Climate change news*. December 7, 2015. <http://www.climatechangenews.com/2015/12/07/scientists-1-5c-warming-limit-means-fossil-fuel-phase-out-by-2030/>

<sup>5</sup> David Suzuki Foundation. *Air Travel and Climate Change*. accessed January 4, 2016. [www.davidsuzuki.org/issues/climate-change/science/climate-change-basics/air-travel-and-climate-change/](http://www.davidsuzuki.org/issues/climate-change/science/climate-change-basics/air-travel-and-climate-change/)

- 
- <sup>6</sup> *The elephant in Paris – the military and greenhouse gas emissions*. Transnational Institute. November 25, 2015. <https://www.tni.org/en/article/the-elephant-in-paris-the-military-and-greenhouse-gas-emissions>
- <sup>7</sup> Oxfam International. *Oxfam Analysis to the OECD Report on Climate Financing in 2013 and 2014*. Oxford, UK. 2015.
- <sup>8</sup> Danny Chivers and Jess Worth. Op. cit.
- <sup>9</sup> International Energy Agency. *World Energy Outlook 2012*. Executive Summary. Paris: International Energy Agency. November 2012, p.3.
- <sup>10</sup> See Table 2.2 in *IPCC Climate Change 2014: Synthesis Report*. Geneva: Intergovernmental Panel on Climate Change. 2014.
- <sup>11</sup> Mark Carney, Governor of the Bank of England. “Breaking the Tragedy of the Horizon – climate change and financial stability.” Speech delivered at Lloyd’s of London. September 25, 2015.
- <sup>12</sup> Gregory Viscusi and Reed Landberg. “Carney Backs Effort for Standard Company Climate Disclosure.” Bloomberg Business. December 4, 2015.
- <sup>13</sup> James Hansen et al. “Ice melt, sea level rise and superstorms.” *Atmospheric Chemistry and Physics*. July 23, 2015, p. 20-21.
- <sup>14</sup> Reto Knutti et al. “A scientific critique of the two-degree climate target.” *Nature Geoscience*. Volume 9. December 7, 2015.
- <sup>15</sup> Oliver Milman. “James Hansen, father of climate change awareness, calls Paris talks ‘a fraud’” *The Guardian*. December 12, 2015. <http://www.theguardian.com/environment/2015/dec/12/james-hansen-climate-change-paris-talks-fraud>
- <sup>16</sup> Cited in Shawn McCarthy “Canada pushes role of carbon markets in reducing emissions at climate summit.” *The Globe and Mail*. December 10, 2015. <http://www.theglobeandmail.com/news/world/canada-pushes-to-have-markets-role-in-reducing-emissions-recognized-at-climate-summit/article27656101/>
- <sup>17</sup> See Appendix 2 “Violation of Free, Prior and Informed Consent by UN-REDD and REDD” in *Stopping the Continent Grab and the REDD-ification of Africa*. 2015. No REDD in Africa Network at <http://no-redd-africa.org/>
- <sup>18</sup> Kevin Anderson. *The hidden agenda: how veiled techno-utopias shore up the Paris Agreement*. Kevinanderson.info at <http://kevinanderson.info/blog/the-hidden-agenda-how-veiled-techno-utopias-shore-up-the-paris-agreement/>
- <sup>19</sup> Almuth Ernsting and Oliver Munnion. *Last-ditch climate option or wishful thinking? Bioenergy with Carbon Capture and Storage*. Biofuelwatch, UK 2015. <http://www.biofuelwatch.org.uk/2015/beccs-report/>
- <sup>20</sup> Ibid. Executive Summary, 3.
- <sup>21</sup> See letter from 11 climate scientists reproduced in Tom Bawden. “COP21: Paris deal far too weak to prevent devastating climate change, academics warn.” *The Independent*. London, UK. January 8, 2016.
- <sup>22</sup> Kevin Anderson. Op. cit.
- <sup>23</sup> Leonardo Boff. *La COP 21 pavimentata el camino hacia el desastre*. December 22, 2015.
- <sup>24</sup> Cited in Swawn McCarthy. Note 13 above.
- <sup>25</sup> See Climate Action Tracker’s Assessment of Canada’s INDC at <http://climateactiontracker.org/countries/canada.html>
- <sup>26</sup> The numbers cited in the Decision text are comparable to the ranges projected for 2030 by Climate Action Tracker. See Climate Action Tracker. *CAT Emissions Gap*. December 7, 2015. <http://climateactiontracker.org/global/173/CAT-Emissions-Gaps.html>
- <sup>27</sup> Unlike the Decision text and the IPCC, Climate Action Tracker suggests a pathway for keeping temperature increases below 1.5 degrees. It would require global GHGs to be reduced to 31 Gt by 2030 implying an emissions gap of 21 to 24 Gt. Ibid.
- <sup>28</sup> Cited in Danny Chivers and Jess Worth. Op. cit.
- <sup>29</sup> Environment and Climate Change Canada News Release. “Canada joins the Carbon Pricing Leadership Coalition.” November 30, 2015.
- <sup>30</sup> Shawn McCarthy. “Canada, U.S., Mexico talk energy.” *The Globe and Mail*. November 16, 2015. B6.
- <sup>31</sup> Mariana Morelos. “Chiapas no debe ingresar al mercado de captura de carbono.” *El Heraldo de Chiapas*. January 10, 2013. <http://www.remamx.org/14826/>
- <sup>32</sup> David Suzuki. “New Government Faces Climate Challenges and Opportunities.” *Huffington Post*. November 11, 2015.
- <sup>33</sup> Liberal Party of Canada. *Real Change: A New Plan for Canada’s Environment and Economy*. 2015, 9.

- 
- <sup>34</sup> Christophe McGlade & Paul Ekins “The geographical distribution of fossil fuels unused when limiting global warming to 2°C.” *Nature*. Vol. 517. January 8, 2015.
- <sup>35</sup> Gordon Laxer. “Alberta’s plan guts efforts to cut greenhouse gases.” *Winnipeg Free Press*. December 10, 2015. A11.
- <sup>36</sup> Robert Howarth, Renee Santor, and Anthony Ingraffea. “Methane and the greenhouse gas footprint of natural gas from shale formations.” *Climate Change Letters*. March 13, 2011.
- <sup>37</sup> Robert W. Howarth. “A bridge to nowhere: methane emissions and the greenhouse gas emissions of natural gas.” *Energy Science and Engineering*. May 15, 2014. <http://onlinelibrary.wiley.com/enhanced/doi/10.1002/ese3.35>
- <sup>38</sup> Cited in Mark Hertsgaard. “Scientists Warn: The Paris Climate Agreement Needs Massive Improvement.” *The Nation*. December 11, 2015.
- <sup>39</sup> Cited in Justine Hunter. “LNG threatens greenhouse-gas goals.” *The Globe and Mail*. November 13, 2013. A3.
- <sup>40</sup> Campbell Clark. “Canada commits \$2.65 billion to climate-change fund.” *The Globe and Mail*. November 27, 2015. <http://www.theglobeandmail.com/news/politics/canada-commits-265-billion-to-climate-change-funding/article27507453/>
- <sup>41</sup> Cited in “At COP21, oil sands worker urges smooth transition off fossil fuels” by Mychaylo Prystupa. *National Observer*. December 8, 2015.
- <sup>42</sup> Richard Blackwell. “Can the world convert to total renewable energy by 2050?” *The Globe and Mail*. January 3, 2015. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/can-the-world-convert-to-total-renewable-energy-by-2050/article27989205/>
- <sup>43</sup> Bruce Campbell, Seth Klein and Marc Lee. “How can we afford the leap?” *CCPA Monitor*. November-December 2015, 40. Ottawa: Canadian Centre for Policy Alternatives.
- <sup>44</sup> See <https://350.org/press-release/break-free-from-fossil-fuels-launch-of-escalated-mobilisation-plans-for-2016/> and <http://breakfree2016.org/>