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Remember that energy crises are bad things

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Canada's climate debate ignores the fact that we can't suddenly live without fossil fuels, and we will need the energy industry to transition to cleaner technologies.

Introduction

For no good reason, the public debate about climate change in Canada has become a dialogue of the deaf. Rather than benefiting from serious and sophisticated strategies to reduce global emissions, Canadian politics have turned the discussion into a culture war. The 2021 election will not improve this sorry state of affairs.

The challenge of addressing climate change – and specifically the greenhouse gas emissions that cause it – is that our very way of life, in Canada more so than elsewhere, is dependent on the affordable and reliable energy provided by fossil fuels.

That means the solution is in developing and adopting new, green forms of energy as soon as possible. Yet the state of our politics precludes this. Good solutions, such as carbon capture, liquified natural gas (LNG), blue hydrogen and nuclear power, are seen as insufficiently green. Any transformation in our energy infrastructure is stymied by slow regulatory approvals processes and conservation efforts that resist any new development. And

Canada's world-class energy industry is decried as a pariah rather than embraced as a much-needed partner.

This commentary looks at the consequences of this dysfunctional debate within the context of the 2021 election. The situation is dire, for many reasons. But Canada could be the source of global solutions if our political class worked on policies rather than rhetoric.

Don't take energy security for granted

It should be obvious that we need to replace our fossil fuel infrastructure before we can get rid of it. This has not yet been the case. There seems to be a sense that Canadians can and will have affordable and reliable energy regardless of what we do. This complacency is misplaced; an energy crisis of our own making is around the corner unless we start being smarter.

First, it's important to understand the importance of energy security, which the International Energy Agency (IEA) defines as "the uninterrupted availability of energy sources at an affordable price" (IEA 2014). Energy security underpins all aspects of our economic life, from food to transportation to heating and more. Indeed, human development is almost perfectly correlated to the availability of high-quality sources of energy. As Lambert et al. identify, "the history of human cultural advancement can be examined from the perspective of the development of energy resources and the evolution of energy conversion technologies" (Lambert et al. 2014, 153).

The energy provided by the burning of fossil fuels has underpinned the unprecedented rise in human development over the past two centuries, as manifest in our growing incomes, quality of life, and innovation. It has enabled humans to be more comfortable, populous, and long-lived than ever before (Lambert et al. 2014).

Canada has been blessed with multiple, accessible sources of high-quality energy, from coal, oil and natural gas, to hydro, biomass, and uranium for nuclear. Canada has some of the lowest electricity prices in the developed world, at an average of US\$0.111 per kWh. This compares, for example, to the United States at US\$0.148, the United Kingdom at US\$0.259, and Germany at US\$0.365 (GlobalPetrolPrices.com 2020).

It is easy to forget that in many other countries, a lack of affordable energy supply results in daily rolling blackouts and gas shortages, causing severe economic harm and societal disruption. Two contemporary cases in point:

- Lebanon is currently in the midst of a severe energy crisis, a result of government incompetence, public debt, foreign currency shortages, and inflation, all of which have led to an inability to secure deliveries of imported fuel. The result is deep social unrest, including violent conflicts,

hoarding and smuggling, and a spiralling of the economy into further recession, leading hundreds of thousands into poverty.

- The deep freeze in Texas in February was a result of three major winter storms and cold temperatures; the state's energy grid was simply unable to cope. There were many failures that led to the event; for the purposes of this discussion, it is the costs that are of note. The electricity failure led to shortages of water, food and heat. Over the course of just nine days, at least 210 people died, more than 4.5 million homes and businesses were left without power, and over US\$20 billion in property damages were reported.

The 1970s Energy Crisis

Most Canadians are not old enough to recall the 1970s energy crisis, but it occurred less than forty years ago and is instructive of the consequences of runaway oil prices. It was triggered by an OPEC (Organization of the Petroleum Exporting Countries) oil embargo in 1973, which was made in retaliation for the Arab-Israeli War. The result was a near quadrupling of the price of oil, leading to inflation, recession and gas shortages. A second shock in 1979, arising from the Iranian revolution, triggered another deep recession and more social disruption.

From a geopolitical perspective, these events were highly significant. First, the unprecedented economic expansion in the post-World War II era can largely be attributed to the fall in real energy prices in that period as oil and gas production expanded and efficiencies were found in refining and transporting. The 1970s energy crisis ended this run.

It also led to protracted American engagement in the Middle East, as securing reliable oil imports from the region became vital to its interests. This became arguably the most consequential foreign policy issue of the late 20th and early 21st centuries, until the shale revolution led the US to energy independence, becoming a net exporter of oil for the first time in decades in 2018.

And it resulted in the outsized foreign policy influence from Saudi Arabia, Iraq, Iran, Russia, Venezuela and others, providing authoritarian regimes with more power than certainly is in Canadian interests.

All of which is to say that energy is key to economic growth and human development. States with the capacity will even go to war to secure their energy supply. States without such capacity will simply suffer socially, politically, and economically.

The 2020s energy crisis?

It should not be difficult to agree that energy crises are bad, and that those in power would do well to avoid them. And yet many of our policies are precisely lining up such a crisis not only in Canada, but among the society of nations. For those paying attention, there are many concerning signs.

First, the context. The COVID-19 pandemic dramatically lowered oil demand and prices in 2020. But it certainly did not kill them. As the impacts of the pandemic recede, and as economic life and mobility return to more normal levels, the International Energy Association predicts that oil demand will return to 2019 levels by late 2022 (IEA 2021). It will then continue to grow in absolute terms for perhaps a decade or more, before plateauing and slowly declining.

But that decline will also take decades. Fossil fuels, including oil, natural gas and coal, currently account for over 80 percent of global energy demand. While sources of renewable energy are growing, they are mostly only covering the expanding energy demand, rather than replacing current levels of fossil fuel consumption. There is no scenario in the medium-term where fossil fuels do not provide the bulk of global energy needs.

While COVID did not rein in energy demand for long, it did precipitate a dramatic decline in investment in production. The United States and Canada proved to be the most vulnerable to this downturn. That is because the North American oil industry is, uniquely, driven by the private sector, whereas elsewhere in the world, state-owned enterprises (SOEs) develop the bulk of product, comprising about three-quarters of total global production.

The COVID price collapse, on top of shareholder pressures to de-carbonize, has resulted in less access to capital with which to develop oil and gas resources in North America. We saw this manifest with activist shareholders getting seats on the board of Exxon Mobil with a promise to shift from fossil fuels, and with BHP announcing it would exit the oil and gas sector.

Because production is slowing, but demand is still growing, the practical effect is that oil and gas prices are rising. The barrel (WTI) has been hovering at US\$70, and many analysts expect oil to hit US\$100/barrel within a year. Does that sound optimistic? Natural gas prices have already set records in Europe in September 2021 (Sheppard and Wilson 2021), pushing up the price of electricity and causing concerns regarding supply for the upcoming winter, as Europe competes with Asia for natural gas imports. As a result, more coal is now being used for power generation, showing that just stopping oil and gas production does not mean wind and solar will fill the gap.

As the first and fourth largest oil producers in the world, respectively, the US and Canada play a hugely important role in maintaining diversity in the global energy supply. There could be terrible geopolitical consequences if

OPEC and Russia had a monopoly on global energy exports; a good example is Russia deciding to cut off Ukrainian gas supplies in the middle of winter in January 2006 as a political lever. An OPEC/Russia monopoly is a scenario that we must actively prepare for and avoid. Yet we already see it happening. Months after the Biden administration withdrew approval for the Keystone XL pipeline, which would have carried Canadian crude to export markets, it called on OPEC to increase their production to avoid a supply crunch that would threaten the post-COVID global economic recovery (Lawler, Ghaddar and Gamal 2021).

Cutting Canadian production will not cut global demand. What it will do is increase demand for oil produced by OPEC members and Russia.

What an energy transformation will take

Climate change is one of, if not the, pressing issue of our times. Urgent measures are needed to keep global warming, resulting from greenhouse gas emissions, below levels that could be catastrophic not only for the earth's biodiversity but also for the comfort and quality of life in human societies.

If one accepts that the climate crisis is fundamentally an energy crisis – and that we can't solve the former without addressing the latter – then the most simplistic solution someone can provide is to say “stop building pipelines” or “big oil is bad.” But for many Canadians who care about climate change and the environment, that is their starting point, and the major national parties' platforms have reflected this.

Focusing on reducing Canadian demand or emissions is not a bad thing, but frankly it will do very little to impact global warming. That's why much of western Canada is frustrated with the national discussion: they see political platforms that propose more and more stringent regulations, which have high domestic costs but minimal practical effect on climate change, and conclude that such measures are political and performative, and should therefore be dismissed.

If we can accept that a green transformation requires an energy transformation, what is Canada's best and highest role in that? There are four things Canada should do that would provide tangible impact on mitigating climate change:

Promote carbon capture

Most experts expect carbon capture, utilization and storage (CCUS) to play a significant role in meeting climate targets. CCUS involves the capture of CO₂ from large point sources, such as the oil sands or at refineries. It can be used on site, for example to provide enhanced oil recovery (EOR); reinjected and permanently stored in deep formations on site, for which Canada has

favourable geological conditions; or captured, compressed and transported by pipeline to be used in a range of applications. There are immediate commercial uses for the carbon arising from this; for example, many aggregate/cement companies, high emitters in their own right, are already using carbon pellets to fortify concrete (recycled plastic can be used for this purpose too).

A price on carbon that provides predictable demand and price per tonne for CCUS is an economic opportunity for Canadian oil and gas companies and one that could quickly become scalable with the appropriate domestic political commitments on price; a carrot, rather than a stick, to reduce emissions.

Paving the path for Canada to become a leader in CCUS and provide advances in the technology would be of real benefit to global climate change mitigation.

Export nuclear

Canada is blessed with world class deposits of uranium in northern Saskatchewan, and the majority of the Indigenous communities in the region are engaged with and on board with the mining industry there. Efforts are well underway, within industry and among federal and provincial governments, to promote Canadian leadership in small modular reactors (SMRs). These have the potential to provide non-emitting energy for a wide range of applications necessary to the energy transformation, from grid-scale electricity generation to use in heavy industry and remote communities.

Further improving the safety of nuclear energy, increasing public awareness of its safety record, expanding its application, and bringing down its costs, are absolutely key to a successful global energy transformation. As the second biggest exporter of uranium, behind only Kazakhstan, Canada is well positioned to lead in the area. But much more needs to be done to increase the social acceptance of nuclear energy.

Increase mining

Transitioning from fossil fuels on a global scale will require unfathomable amounts of raw materials. Not just for obvious things, like rare earths, lithium and copper for batteries, although we will need to dramatically increase their development as well; but for every kind of commodity as we repurpose, rebuild and replace the energy infrastructure (and everything that goes with it) that we have been accumulating on a global scale for over a century.

Canada has a sophisticated mining industry with operational capacity not only domestically but globally as well. And we have large, commercial grade deposits of dozens of minerals and metals. A successful global energy transition will require affordable and timely access to Canadian mineral products; a NIMBY approach would only be cutting off Canadians' noses to spite our faces.

Electrify the US grid

Electrification of our energy sources is a good and necessary part of the climate solution. Canada actually has some of the cleanest and cheapest electricity in the world, with almost 80 percent coming from non-emitting sources, owing to our access to hydro and nuclear power. As we close down the last remaining coal plants, our grid will become even cleaner.

The American grid, by contrast, is not nearly as green. About 60 percent of its electricity is derived from fossil fuels, and only 7 percent from hydropower. There is potential to help green the American grid by increasing exports of Canadian hydroelectricity. However, transmission lines, like pipelines, are linear projects that are expensive and hard to get approved across jurisdictional boundaries. Improving the conditions under which we can export hydro to the US would have tangible impacts on global climate emissions by greening their energy sources.

But can we build it?

All of these solutions have one thing in common: they are hamstrung by the Canadian regulatory system. The same burdens, delays, and risks that have made it so hard to get pipelines built in Canada also affect every other kind of resource and linear development in the country, from hydropower dams and transmission lines to uranium and rare earths mining. Did you cheer the fact that a hummingbird nesting area delayed construction on the TMX pipeline for four months? That same system means that windfarms are delayed or blocked because of bat habitats.

We simply do not have the framework in place today that will allow for a speedy evolution from our fossil fuel infrastructure. As an example, we don't have the capacity in our electricity grid today to fulfill the federal government's mandate to have all new light-duty cars and passenger trucks to be zero-emission by 2035, and no national plan to build such capacity. Because major projects in Canada regularly take 10 years to complete, we need to start on them today if we're going to meet the goals being pitched in this election cycle.

If climate change is considered an urgent issue by our political leaders, then they need to dramatically reform our approvals process to allow new infrastructure projects to be financed and built, and ultimately provide affordable energy to consumers, in a timely manner. This will pit conservationists against clean energy advocates. An inability to bridge that gap will mean we are stuck with our status quo of fossil fuel infrastructure, or it will result in an energy crisis, or both.

Big oil is not the problem – it is the solution

It is a common saying in military circles that “amateurs talk strategy; professionals talk logistics.” The Canadian climate/energy discussion has been woefully stuck in the strategy phase of things. Leaders and activists are more invested in driving the narrative than in implementing concrete solutions to the challenges we face. And for that to occur we need the professionals in the energy sector.

The line of thinking that says the oil industry is dead and the best we can do is transition workers to other fields is utterly lacking in practicality and creativity. First of all, the oil industry isn't dead. Demand is still growing, and even after peak oil hits, it will be decades until all of the world's energy infrastructure has transitioned to use other sources. As an example, the majority of the heavy machinery being built today is dependent on diesel or gasoline, with no electric versions expected in the near term; they typically have a lifespan of 10-30 years depending on the use. Commercial aircraft are usually operable for 30 years before retirement. Natural gas lines provide energy for millions of residential, commercial and industrial consumers in Canada alone, and changing that would require expensive retrofits. So the demand is baked in; we haven't even begun the transition with many things.

On top of that, although the average Canadian only thinks of petroleum use in terms of pumping gas into their own vehicle – and therefore subscribe to the fallacy that if we all rode bikes or drove electric vehicles, the climate change problem would be solved – there are infinite uses for hydrocarbons. They are an incredibly flexible, available, and useful molecule, and even when we stop using them for combustion, demand for them for other uses will continue to grow.

As an example, efforts are now underway to use the components in Alberta's oil sands' heavy oil to make advanced materials such as carbon fibre. A competitor to steel and plastic, but with a better strength to weight ratio, expanding the Canadian carbon fibre industry could create a huge new market, while helping mitigate some of the environmental impacts of producing steel (which almost always requires metallurgical coal). It would also make many products lighter, and therefore less energy intensive to transport. Around 770 kilograms of coal is used to make the steel for a mid-sized car, regardless of whether it is an electric vehicle or not. Making carbon fibre (derived from petroleum!) more cost competitive is absolutely part of the pathway to achieving our climate targets.

Finally, if a person truly believes that we are in a climate crisis and we urgently need to have an energy transformation, then it is hugely self-defeating to eliminate the energy industry – “big oil” – from the task. They are the ones that have the most capacity and expertise to develop new technologies, build new infrastructure on a continental scale, and secure the investment to make it feasible. If the crux of the problem is our energy habits, then it will do us no good to eliminate the experts in energy from the conversation.

Will any of this matter in the 2021 election?

This election, like those before it, has taken to reducing this discussion into whether you care about climate change or not, based on the proxy position of whether you think Canada should have an oil and gas industry or not. This is not sophisticated, and it is not helpful.

We spend too much time talking about perfect solutions to the climate crisis, instead of implementing good ones. The simple slogans we favour (“climate leaders don’t buy pipelines”) totally gloss over the fact that the human costs of rapidly eliminating the current fossil fuel-based supply of affordable and reliable energy would be enormously high, and in fact – as many political leaders around the world acknowledge – would be much higher than the human costs of a warming planet in the short- and medium-term.

The fact that cost of living and affordability is the most important issue to voters in the 2021 election (Coletto 2021), and that housing is close to the top of the list among young urban dwellers, illustrates the fact that voters on neither the right nor the left have much appetite for self-imposed compromises in quality of life. It is unlikely Canadian voters would tolerate the costs of having dramatically more expensive energy; we want a better environment, unless it costs us something.

We are stuck with incremental progress. Domestic emissions are not the most important measure, in spite of the fact that it is almost always the main metric against which we measure our progress. Canada needs to be a leader in the global energy transformation, and it can do that most effectively through nuclear and carbon capture technology. All of our leaders should be communicating that and planning for it.

That means they can’t put their heads in the sand and declare that our oil and gas industry is dead. Even if you could successfully eliminate fossil fuel use in Canada in the short-term (and let’s be honest, you can’t), it simply won’t happen in Asia, where the actual demand for oil and gas is increasing based on the emergence of hundreds of millions of people into the middle class. It is not because humans are greedy or malevolent that GHG emissions continue to rise. It is because the quality of life, and indeed the survival, of human society today depends on access to affordable energy – and right now that source is overwhelmingly in the form of fossil fuels. It will take decades to build the infrastructure to replace it.

If we are to find solutions that allow eight billion people on earth to live with some degree of material well-being and comfort, then we need advances in technology and we need new infrastructure built. This requires science, turned into engineering, and turned into capitalism, so solutions can be implemented at scale. It is foolish to think any of this can occur without the leadership of energy companies.

Whoever forms our next government should make big oil a partner, not a pariah, in the transition. I expect they will find willing partners. We should all be more careful about turning what are the most practical solutions into politically unpalatable ones.

About the author



Heather Exner-Pirot has over 15 years of experience in Indigenous and northern economic development, governance, health, and post-secondary education. She has published and/or presented on Indigenous economic and resource development, urban reserves, telehealth, Indigenous workforce development, First Nations taxation and own source revenues, distributed and distance education, Indigenous health care, Arctic human security, regional Arctic governance, Indigenous engagement in the Arctic Council, and Arctic innovation.

She obtained a PhD in Political Science from the University of Calgary in 2011 and has held positions at the International Centre for Northern Governance and Development, the University of Saskatchewan, and the University of the Arctic Undergraduate Studies Office. She currently works on strategy and research for pro-development Indigenous groups in Western Canada, and consults directly for First Nations, Métis organizations and municipalities through Morris Interactive, a consulting firm based out of Saskatoon. She is also a Fellow at the Macdonald-Laurier Institute in Ottawa, and a Global Fellow at the Wilson Centre in Washington DC.

She sits on the boards of the Saskatchewan Indigenous Economic Development Network, the Canadian Rural Revitalization Foundation and The Arctic Institute. She is the Managing Editor of the *Arctic Yearbook* (an international, peer-reviewed annual volume), and the former Chair of the Canadian Northern Studies Trust.

She has published over 40 peer-reviewed journal articles, book chapters, and edited volumes, and presented at over 50 conferences and events nationally and internationally. She has chaired several provincial, national and international workshops and conferences, including the 2018 Canadian Rural Revitalization Foundation conference.

She currently splits her time between Calgary and Saskatoon.

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