

Vision for Clean Growth in B.C.

Five key priorities for economic security and prosperity

May 2017

Summary

A strong British Columbia requires a strong economy that's well positioned to be competitive in the rapidly evolving global marketplace. Building on our core strengths and successes to date, B.C. can be a leader in the world economy. However, the province is at risk of being left behind. Our *Vision for Clean Growth in B.C.* outlines five key priorities for building the clean economy:

1. Build a strong clean tech sector
2. Position B.C. to be competitive in the changing global economy
3. Make clean choices more affordable
4. Stand up for healthy and safe communities
5. Grow sustainable resource jobs

Taking action on these priorities will help propel B.C. back to forefront of international progress, while building and maintaining healthy, thriving communities across the province.

1. Build a strong clean tech sector

The global clean technology market is currently worth \$1.15 trillion, according to Analytica Advisors.¹ In 2015, the sector in Canada reported \$13.3 billion in revenue. Roughly 80% of the products from Canadian clean tech companies are exported — valued at \$16.5 billion. Yet, while exports are growing in this sector, Canada's overall share of the clean tech pie shrunk by 12% between 2008 and 2015.

The story is more positive in B.C., which today is home to 14% of clean tech jobs in Canada. B.C.'s clean tech sector reaped an estimated \$1.8 billion in revenue in 2016, an increase of 20% from 2014. A recent report from the B.C. Cleantech CEO Alliance establishes that the sector is growing in the province: the number of clean tech companies is up 35% in the past six years,

¹ Analytica Advisors, *2017 Canadian Clean Technology Industry Report – Synopsis* (2017). <http://analytica-advisors.com/sites/default/files/2017%20Canadian%20Clean%20Technology%20Industry%20Report%20Synopsis%20FINAL.pdf>

and the amount of equity raised is also up 25% to \$6 billion.² There is huge potential to grow here, but B.C. is at risk of falling behind if we don't act now.

Leading clean tech CEOs in the province have called on the government to play an active role in making B.C. a global magnet for investment in clean tech ventures, and scaling-up technologies through loan guarantees, tax credits, and government procurement, among other actions. Clean tech CEOs have also identified consistent and predictable pricing of carbon pollution as a key factor in supporting the growth of the sector.³

(B.C. was the first jurisdiction in the world to introduce a revenue-neutral carbon tax, and others have caught on. Today, 25% of global carbon pollution is already or about to be covered by a carbon price.⁴ This represents over 40 countries, including seven of the world's 10 largest economies. Clearly, carbon pollution pricing has gone mainstream. Governments worldwide now recognize it as a key component of any effective emissions reduction strategy.)

In addition, policies and incentives that spur innovation and drive demand for low-carbon goods and services are necessary. Examples include an aggressive building retrofit strategy for B.C., and a new zero emission vehicle standard.

Recommendations

1. Provide loan guarantees and grants for demonstration and commercialization projects
2. Offer higher tax credits for research and development
3. Leverage the procurement power of government (municipal, provincial, or federal) to support early-stage commercial deployment and scale-up of clean technologies
4. Establish a target of 100% renewable electricity by 2025
5. Commit to the federal carbon pricing schedule at a minimum
6. Put in place policies that spur development and demand for clean technologies

² KPMG, *British Columbia Cleantech 2016 Status Report* (B.C. Cleantech CEO Alliance, 2017).

<https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2017/03/14179-cleantech-status-report-bc.pdf>

³ Penelope Comette, Dan Woynillowicz, and Ed Whittingham, *Competing in Clean Energy* (Pembina Institute, 2013).

<http://www.pembina.org/pub/competing-clean-energy>

⁴ World Bank and Ecofys, *Carbon Pricing Watch 2016* (2016). doi:10.1596/978-1-4648-0930-9-1

The building sector: a foundational example

Canada's building sector has embraced the move to low-carbon, low-energy homes and buildings, while providing nearly 300,000 jobs nationwide (more than oil and gas, mining, and forestry combined). In B.C., we estimate there are currently over 23,000 jobs in the green building sector, contributing to the construction of new buildings and the upgrading of existing buildings.⁵

We know that for every \$1 million invested, 13 jobs are created in energy efficiency.⁶ Programs and associated funding that accelerate upgrading our homes and buildings and make constructing low-carbon, low-energy buildings the norm will ensure the green building sector continues to thrive. The path forward needs to include:

- Adoption of the B.C. Energy Step Code to ensure net-zero ready buildings become the norm by 2032⁷
- Development and implementation of an aggressive retrofit and electrification strategy to reduce emissions by 60% in 3% of buildings each year from now to 2050⁸
- Implementing key programs to support the strategy, such as benchmarking and incentives

2. Position B.C. to be competitive in the changing global economy

Today, five of the six largest manufacturers of solar panels are based in China. Last year, the world added more clean power than we currently have in all of Canada. In India, 44% of new electricity capacity came from renewable sources in 2016.⁹

These trends indicate that the global energy landscape is changing rapidly. Now is the time to ensure B.C.'s economy is future-proofed and is positioned to competitively provide the goods and services needed to meet future demand — not reliant on legacy products with less-than-certain demand forecasts.

⁵ Pembina Institute, *British Columbia Green Buildings Map* (2015). <http://www.pembina.org/pub/bcgreenbuildings>

⁶ For more facts, see: Pembina Institute, *The Many Benefits of Energy Efficient Homes and Buildings* (2017). <http://www.pembina.org/efficiency>

⁷ Stretch Code Implementation Working Group, *Energy Step Code Implementation Recommendations* (Building and Safety Standards Branch, 2016). http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/reports/step_code_sciwg_report_final.pdf

⁸ For our recommendations, see: Tom-Pierre Frappé-Sénéclauze, Dylan Heerema, and Karen Tam Wu, *Deep Emissions Reduction in the Existing Building Stock* (Pembina Institute, 2017). <http://www.pembina.org/pub/building-retrofits>

⁹ Clean Energy Canada, *The Transition Takes Hold* (2017). http://cleanenergycanada.org/wp-content/uploads/2017/03/CEC_TER-Report-Spring-2017_web.pdf

The policies required to avoid the worst impacts of climate change and keep global warming below 2°C will limit future demand for fossil fuels, including natural gas. As the International Energy Agency (IEA) puts it, “even gas is too carbon intensive for long-term growth in a decarbonising energy system. Gas may be a supporting fuel for the transition to a low-carbon energy system but this should not be misunderstood as a sustainable growth opportunity in a 2°C world.”¹⁰

In B.C., this means we must carefully consider the role liquefied natural gas (LNG) might play in our low-carbon future. In B.C.’s proposed LNG export markets, coal use is declining and renewable energy is rising rapidly, due to the increasing cost competitiveness of these alternative energy sources.¹¹ In China, wind power is already cost-competitive with LNG, with solar power costs not far behind, and LNG demand is at its slowest pace in 17 years.¹² If LNG development does go ahead in B.C., the longevity of demand is certainly in question.

Meanwhile, in order to attract LNG investment, the B.C. government has provided incentives, exemptions, and direct transfers to the natural gas industry.¹³ Measures that lessen the incentive to reduce carbon pollution¹⁴ — as the world increasingly demands that polluters pay for their emissions — are a poor investment for B.C.’s future.

Instead, the government should invest in removing barriers to clean innovation and green jobs. For instance, energy efficient buildings are one of B.C.’s biggest opportunities for real and lasting job creation. Across Canada, the shift to low-carbon, low-energy buildings is already generating growth in goods and services that has created almost 300,000 jobs. Renewable energy projects currently employ over 14,000 people across B.C.¹⁵

At the same time, B.C. must ensure that its policies do not cause carbon leakage — the movement of carbon intensive industries or processes to jurisdictions with more lenient climate policies. A mechanism that maintains the incentive to reduce carbon pollution while

¹⁰ International Energy Agency, *World Energy Outlook 2016* (2016).

<http://www.iea.org/newsroom/news/2016/november/world-energy-outlook-2016.html>

¹¹ Nina Chestney, “Growth in global coal demand to slow over next five years: IEA,” *Reuters*, December 12, 2016.

<http://reut.rs/2grtAe1>

¹² Anjali Raval, “Slowing China demand stalls ‘golden age of gas’,” *Financial Times*, June 7, 2016.

<https://www.ft.com/content/fe83a638-2c8f-11e6-bf8d-26294ad519fc>

¹³ Maximilian Kniewasser, “Six troubling subsidies that support B.C.’s LNG industry,” Pembina Institute, May 5, 2017. <http://www.pembina.org/op-ed/bc-lng-subsidies>

¹⁴ Joshua MacNab, “Will B.C. LNG exports reduce global carbon pollution?” Pembina Institute, April 27, 2017.

<http://www.pembina.org/blog/lng-global-emissions>

¹⁵ Maximilian Kniewasser, *British Columbia Clean Energy Jobs Map* (Pembina Institute, 2015).

<http://www.pembina.org/reports/bc-clean-jobs-map-methodology-background-27042015.pdf>

avoiding carbon leakage should be put in place for emissions intensive, trade exposed (EITE) industries and should be targeted, transparent, and transitional.¹⁶

Recommendations

7. Develop an economic growth plan for B.C. that identifies strategic areas for clean growth to position B.C. to be competitive in a decarbonizing global economy
8. Invest in incentives, tax credits, and grants to develop clean tech businesses and end targeted support for fossil fuel development
9. Articulate a clear plan for LNG development while meeting B.C.'s climate targets
10. Adopt an EITE mechanism that maintains the incentive to reduce carbon pollution and is targeted, transparent, and transitional

3. Make clean choices more affordable

Action on climate change represents an opportunity to create new jobs and innovative technologies. A sustainable economy needs to work for everyone, and making clean choices easier and more affordable must be a top priority. There are many ways to do this. Here are some examples.

Invest in energy efficiency

Innovation has played an important role in the move to low-carbon, low-energy buildings, and B.C. is a North American hotspot for the construction of buildings to the Passive House standard.¹⁷ One benefit of this shift: living in an energy efficient home can reduce energy bills by up to 50%. Making these kinds of savings available to all British Columbians, especially those living in energy poverty, should be a priority.

For example, adapting the Energiesprong approach to the mass retrofitting of social housing (i.e. achieving cost savings by pooling together similar types and ages of homes, and guaranteeing energy savings) could provide a successful model for B.C. and across Canada.¹⁸ This blueprint for mass retrofitting could then be transferred to other housing types for the benefit of all British Columbians.

¹⁶ Josha MacNab, Erin Flanagan, Maximillian Kniewasser, and Sara Hastings-Simon, *Putting a Price on Carbon Pollution Across Canada* (Pembina Institute, 2017). <http://www.pembina.org/pub/carbon-pollution-pricing-canada>

¹⁷ Tom-Pierre Frappé-Sénéclauze, Dylan Heerema, and Karen Tam Wu, *Accelerating Market Transformation for High-Performance Building Enclosures* (Pembina Institute, 2016). <http://www.pembina.org/pub/passive-house-report>

¹⁸ For more information, see: <http://energiesprong.eu/>

For homeowners, it's crucial to ensure that creative financing models are available to ease the challenge of upfront investments and that useful information on energy-efficiency upgrades is accessible in a central location.

Invest in transportation options

Increasing public transit capacity in our urban and suburban centres will relieve traffic congestion, and create clean transportation options that connect our communities and generate employment. New transit options will save time and money for commuters who are already stretched on both. Investment from the provincial government is needed to increase the capacity, frequency, and quality of service to provide the choices British Columbians need. In Metro Vancouver, the Mayors' Council on Regional Transportation's 10-year plan for transit improvements offers a blueprint for next steps and should be supported by the provincial government.¹⁹

Target support to low-income families

It is important to recognize the specific challenges faced by low-income, northern, and rural families in terms of increasing energy costs and stronger carbon pollution pricing. When carbon taxes are increased, an appropriate adjustment of the rates for low-income households must follow so that they do not bear a disproportionate burden. B.C. already has the Low Income Climate Action Tax Credit and a northern and rural homeowner benefit. These should be adjusted as the carbon tax increases in accordance with the best available data to ensure appropriate levels of support.

Recommendations

11. Implement creative financing models to help homeowners make energy-efficiency upgrades
12. Develop and implement an aggressive retrofit strategy and prioritize investment in large-scale retrofitting of publicly owned buildings, specifically social housing
13. Invest in clean transportation options across the province and specifically the Mayors' Council's 10-year plan for transit improvements in Metro Vancouver
14. Adjust the existing low-income and northern/rural tax credits to help support vulnerable communities to sustain their disposable income when the carbon tax rate

¹⁹ Mayors' Council on Regional Transportation, *Regional Transportation Investments* (2014).

<http://tenyearvision.translink.ca/downloads/10%20Year%20Vision%20for%20Metro%20Vancouver%20Transit%20and%20Transportation.pdf>

rises. These adjustments should be based on the best available data to ensure appropriate levels of support.

4. Create healthy and safe communities

A clean growth strategy for B.C. must have at its core the goal of making our communities safer and healthier. A changing climate poses a serious risk to this objective.

In 2011, the National Round Table on the Environment and Economy (NRTEE) assessed the economic cost to Canada if we didn't take action to adapt to climate change.²⁰ Considering that climate change will affect air quality and sea levels, NRTEE analyzed potential impacts to health and infrastructure and calculated the resulting costs. The projected impacts and costs are staggering.

For example, the cumulative health-care costs in Vancouver due to air quality impacts from climate change were estimated at \$46–140 million for the years 2010–2100. The cumulative cost of premature deaths due to heat and air quality impacts in Vancouver was pegged at \$36–48 billion. NRTEE estimated 8,900 to 18,700 homes in B.C. will be at risk of flooding, partially due to climate change, by the 2050s, causing \$3–13 billion in damage annually. Indigenous populations face a disproportionate risk of flooding; it's predicted that Indigenous people will represent 10% of the population facing a flooding risk by the 2050s.

NRTEE concluded the total tab for climate change impacts would grow from an average of \$5 billion per year in 2020 to \$21–43 billion per year by the 2050s. However, there's a flip side. If we take steps to address climate change, we can save money, prevent damage, and protect our families and communities.

It is, therefore, incumbent on the B.C. government to put forward a plan that articulates how we are going to get B.C.'s carbon pollution under control and adapt to a changing climate. The current Climate Leadership Plan misses the mark. Carbon pollution in B.C. is forecasted to hit 66 megatonnes (Mt) in 2050, compared to the province's legislated target of 12.6 Mt. Under the plan, fossil fuels will continue to supply the majority of the province's energy until at least 2030.²¹ The B.C. government will need to commit to stronger policies across all sectors of the economy to bridge the sizable gap, in addition to creating a climate change adaptation plan to address the impacts that are already underway.

²⁰ National Round Table on the Environment and the Economy, *Paying the Price: The Economic Impacts of Climate Change for Canada* (2011). <http://nrt-trn.ca/wp-content/uploads/2011/09/paying-the-price.pdf>

²¹ Navius Research, *Modelling the Impact of the Climate Leadership Plan & Federal Carbon Price on British Columbia's Greenhouse Gas Emissions* (Pacific Institute for Climate Solutions, Pembina Institute, and Clean Energy Canada 2016). <http://www.pembina.org/pub/bc-climate-modelling>

Recommendations

15. Invest in monitoring systems and develop a policy framework for climate change adaptation
16. Introduce and implement a new climate plan that gets B.C. back on track to meeting its targets for reducing carbon pollution

5. Grow sustainable resource sector jobs

A strong economy in tomorrow's B.C. will be a diverse economy. B.C. has a rich history of natural resource development, and these industries provide employment for British Columbians across the province. Many of B.C.'s resource jobs fit in a low-carbon B.C.

According to a 2015 Clean Energy Canada jobs plan, strong climate policies would result in an estimated 32,000 jobs in 2025 in B.C. — and another 30,000 by 2050 — in mining, forestry, and agriculture.²² Under these policies, these industries would continue to grow, but would do so more efficiently, using less energy and producing less carbon pollution as new technologies and processes are used in each sector. Meanwhile, the Canadian Centre for Policy Alternatives suggests that agriculture and forestry are two sectors where there are opportunities to reduce carbon pollution and to reverse the trend of falling local employment.²³

All of these resource industries have an important role to play in transitioning B.C. to a clean economy, and can capitalize on the competitive advantage of being cleaner and more efficient as B.C. puts in place stronger climate policy. Their growth will be enabled by strong climate policy as well as policies that prioritize clean and efficient resource development in B.C.

Recommendations

17. Protect farmland across B.C.
18. Incentivize and increase local value-added processing and manufacturing of wood products
19. Promote the use of locally harvested and milled wood products to build energy efficient buildings throughout B.C.

²² Clean Energy Canada, *A Clean Economy and Jobs Plan for British Columbia* (2015).

http://cleanenergycanada.org/wp-content/uploads/2015/10/4868-CEC-Job-Report-vf-WEB_RevisedNov5.pdf

²³ Seth Klein, *A Good Jobs Economy in BC: Ideas from the CCPA-BC's Jobs Conference* (Canadian Centre for Policy Alternatives, 2016). <https://www.policyalternatives.ca/publications/reports/good-jobs-economy-bc-summary-papers-and-ideas-presented-ccpa%E2%80%93bc-jobs-conference>

20. Support clean energy policies that ensure a competitive low-carbon advantage for B.C. resource production – resources that will be needed to make clean energy technology like wind turbines and batteries

Conclusion

B.C. is at risk of being left behind as the global economy shifts and the costs of a changing climate begin to mount. Building a strong clean growth economy is imperative to ensure B.C. remains competitive. The five priorities outlined in our *Vision for Clean Growth in B.C.* provide a framework by which to move the province forward.

First, B.C. must build on the early successes of the clean tech sector by providing a supportive policy environment for this sector to reach its potential. Second, B.C. must shift support away from fossil fuel development and towards industries that are creating green jobs, while ensuring that emissions intensive, trade exposed industries are not contributors to carbon leakage elsewhere. Third, B.C. must make it easier and cheaper for British Columbians to make clean choices, and pay particular attention to protecting and supporting vulnerable populations, so they can take advantage of the benefits of a clean growth economy. Fourth, B.C. must put in place a plan to address rising carbon pollution and deal with the changes to our forests, agriculture, and water systems that we are already seeing. Fifth, B.C. must articulate a plan for growing sustainable resource jobs in a way that is compatible with a clean growth economy.

Taking action on these five priorities will help propel B.C. back to forefront of international progress, while building and maintaining healthy, thriving communities across the province. Not doing so will put B.C.'s future economic prosperity at risk.