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SUMMARY FOR DECISION-MAKERS

CLIMATE CHANGE ADAPTATION AND THE LOW CARBON ECONOMY IN BC

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S U M M A R Y R E P O R T

**CLIMATE CHANGE
ADAPTATION AND
THE LOW CARBON
ECONOMY IN BC**

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ACT (the Adaptation to Climate Change Team) is a five-year series of six-month sessions that brings leading experts together with decision-makers and experts from industry, community, academia, and government, to explore the risks posed by climate change and generate policy recommendations for sustainable adaptation.

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SUMMARY FOR DECISION-MAKERS

There is no lack of ideas and policy prescriptions on this subject; however, we sense a complacency that is particularly concerning given the magnitude of the challenge we face.



This Summary Report is based on the exhaustive research documented in the accompanying *Climate Change Adaptation and the Low Carbon Economy in BC: Background Report*. We strongly recommend that these documents be read together in order to appreciate the full case that has been made to support the thoughts and opportunities we identify here in the summary version.

INTRODUCTION



There is an urgent need to address the broader sustainability challenge, for there can be little debate that oil production outside the Organization of Petroleum Exporting Countries (OPEC) has peaked and has started to decline.

This report seeks to encourage dialogue about three major challenges that must be addressed if we are to pass on a sustainable world to our children:

- The ENERGY challenge – our heavy reliance on oil will present significant challenges now that the era of cheap and easy oil has passed;
- The CLIMATE CHANGE challenge – the abundance of heat-trapping greenhouse gas emissions, which we have pumped into the atmosphere, are changing our climate and threatening to destabilize the delicate balance that makes life on Earth possible; and
- The ECOSYSTEM challenge – the majority of the ecosystem services that nature provides are not currently being used in a sustainable manner. We are currently exceeding the carrying capacity of the Earth and degrading the ecosystems we rely upon for life. We are running a substantial ecological deficit.

(NB: For convenience, we routinely refer to these three challenges collectively as *the sustainability challenge* throughout this report, with the acknowledgement that sustainability as a concept can include a far more complex set of issues, including social justice).

The preponderance of scientific data overwhelmingly points to significant human influence on climate change. Despite the evidence, however, there remain some who do not recognize anthropogenic climate change. Regardless of individual beliefs on climate change, there is an urgent need to address the broader sustainability challenge, for there can be little debate that oil production outside the Organization of Petroleum Exporting Countries (OPEC) has peaked and has started to decline. Moreover, it is clear that many of the ecosystems that support life on earth are facing significant stress. Therefore, we believe that addressing the sustainability challenge makes sense regardless of one's views on climate change and its origins.

The answer to the sustainability challenge is clear: it is imperative that we significantly reduce our ecological footprint and move to a low-carbon economy.

Contrary to popular assumption, reducing our ecological footprint does not necessarily require a lower quality of life. Other countries around the world have managed to maintain a standard of living very similar to our own but with significantly smaller ecological footprints. The Netherlands, for example, has a per capita ecological footprint that is almost half the size of Canada's, but maintains a high standard of living.¹ Fear that our quality of life must be sacrificed in order to protect the environment should not stand in the way of action, because a high quality of life clearly does not require a massive ecological footprint.

1 Global Footprint Network, 2009

Among our advantages in BC are not only our geography and abundance of renewable energy sources, but also the many individuals and organizations have led the way to date in creating relatively progressive public policy.



Reducing our ecological footprint is one important way in which we can help to enhance our resilience in the face of the sustainability challenge:

- If we reduce our demand for oil, we reduce the effect of the energy challenge and we reduce the amount of GHG emissions we are pumping into the atmosphere.
- If we reduce the amount of our GHG emissions, we reduce the rate of climate change and its consequent effects, a response that will help reduce the extent of environmental degradation.
- If we reduce the extent of environmental degradation and refrain from using ecosystem services unsustainably, we reduce the effects of the ecosystem challenge and move toward the elimination of our ecological deficit, while giving ecosystems the best chance to adapt to any climate shifts that occur.

Clearly, just as the issues of energy security and supply, climate change and protection of our ecosystems are intricately interwoven, so too are the solutions that we must implement.

BC is well positioned to meet the sustainability challenge and provide leadership to the rest of Canada and the world. We have many advantages to assist us in leading the way to maintain and enhance our economically prosperous, high-quality lifestyle while also addressing the sustainability challenge. Among these are not only our geography and abundance of renewable energy sources, but also the many individuals and organizations which have led the way to date in creating relatively progressive public policy.

We conclude this report by outlining current policy opportunities for the Government of British Columbia and other decision-making bodies across the country that we believe will be helpful in addressing what has already become an urgent situation. We recognize that the sustainability challenge will require global responses that are not necessarily discussed in this report, as our focus is on BC in particular.

It should also be noted that the policy opportunities are drawn from our own experience, but that they reflect many of the ideas that have been put forth by a wide range of individuals and groups including non-governmental organizations, academics, business and government leaders. There is no lack of ideas and policy prescriptions on this subject; however, we sense a complacency that is particularly concerning given the magnitude of the challenge we face.

THE CHALLENGES



To address the energy challenge, we will need to implement alternative energy solutions, increase end-use energy efficiency, and institute unprecedented demand-side measures.

Humanity faces three interrelated challenges that threaten our health and well-being and demand urgent action:

THE ENERGY CHALLENGE

Our heavy reliance on oil will present significant challenges now that the era of cheap and easy-to-access oil has passed.

We consume about 31 billion barrels of oil every year.² Assessments of when we reached or when we will reach a peak in global oil production vary from 2005 to around 2030;³ already, fifty-six oil-producing countries have experienced a peak in their oil production.⁴ Just to offset the decline rate in existing oilfields, we would need to bring the equivalent of another Saudi Arabia into production every three years.⁵ The magnitude of this challenge is highlighted by the fact that the International Energy Agency estimates that two-thirds of current crude oil capacity will need to be replaced by 2030 simply to keep production constant. Much of the remaining oil deposits are in tar sands or under ultra-deep water, requiring great financial and environmental expense, technological advancements, long lead-in times to bring projects on-stream, and leading to lower energy returns on energy invested.⁶ Additionally, these ‘scraping-the-barrel’ methods of petroleum extraction and the increasing incursion into ecologically sensitive areas carry a much higher ecological risk than conventional production. This was most recently made evident by the catastrophic oil spill in the Gulf of Mexico.

To address the energy challenge, we will need to implement alternative energy solutions, increase end-use energy efficiency, and institute unprecedented demand-side measures, specifically energy conservation, as well as regulatory provisions, such as building codes.⁷

2 Lardelli, 2010; Homer-Dixon and Garrison, 2009.

3 Sorrell et al., 2009.

4 Sorrell et al., 2009.

5 Sorrell et al., 2009.

6 Sauven, 2010.

7 Tertzakian, 2009.

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising average sea level.



THE CLIMATE CHANGE CHALLENGE

The abundance of heat-trapping greenhouse gas emissions we have released and are releasing into the atmosphere are changing our climate, and threatening our immediate safety as well as the delicate balance that makes life on Earth possible.

The most recent report by the Intergovernmental Panel on Climate Change (IPCC) concludes that, “warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising average sea level”.⁸ The IPCC report also states that “most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.”⁹

The global average surface air temperature has increased by 0.6°C since 1900 and climate models project an increase between 1.4°C and 5.8°C by 2100, relative to 1990.¹⁰ Recent scientific studies indicate that a global average increase of 2°C is a tipping point, beyond which irreversible damage to the global climate would occur.¹¹ There is general consensus among scientists that we must stabilize atmospheric GHG concentrations at 450 parts per million (ppm), in order to avoid a global average increase in excess of 2°C. The scenario developed by the International Energy Agency (IEA) for stabilizing GHG concentrations at 450 ppm requires a peak in our fossil fuel use to occur before the year 2020.¹²

But there is increasing concern that even stabilizing GHG concentrations at 450 ppm may not be adequate. Approximately 2,000 scientists attended the Copenhagen Climate Science Congress at the end of 2009 and came to the following conclusion:

Recent observations confirm that, given high rates of observed emissions, the worst-case IPCC scenario trajectories (or even worse) are being realised. For many key parameters, the climate system is already moving beyond the patterns of natural variability within which our society and economy have developed and thrived. These parameters include global mean surface temperature, sea-level rise, ocean and ice sheet dynamics, ocean acidification, and extreme

8 IPCC, 2007, p. 5.

9 IPCC, 2007, p. 10.

10 IPCC, 2007.

11 WBCSD, 2009.

12 International Energy Agency, 2009.

climatic events. There is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts.¹³

Therefore, in order to avoid runaway climate change, there is a growing call for atmospheric GHG concentrations to be brought below 350 parts per million¹⁴ and to rapidly move toward zero emissions within about 45 years.¹⁵ Notably, our use of energy accounts for more than 80% of our GHG emissions in BC.¹⁶ But energy is not only a driver of climate change; it will also be affected by it.

The demand for energy will change as climate change reduces winter heating needs and increases summer cooling needs for buildings.¹⁷ The production and supply of energy will also be affected through more intense extreme weather events, water scarcity and temperature increases.¹⁸

Energy systems need to be ‘climate-proofed’ – adapted to withstand the effects of climate change by reinforcing technical equipment; diversifying energy supply sources; locating power equipment more appropriately; expanding regional linkages; expanding disaster preparedness planning; managing demand; addressing the additional operational constraints that less predictable water inflows will place upon the electricity grid; and investing in technological change including renewable energy and energy efficiency, in order to expand the portfolio of options.¹⁹

THE ECOSYSTEMS CHALLENGE

We are currently exceeding the carrying capacity of the Earth and degrading the ecosystems we rely upon for life. We are running a substantial ecological deficit.

The World Wildlife Fund’s 2010 Living Planet Report tells us that we are consuming the resources that the world provides to us too fast – faster than they can be replenished. The report suggests that our global ecological footprint now exceeds the world’s capacity to regenerate by 30 percent. Humankind is currently using the equivalent of 1.3 planets to provide the resources we consume and to absorb the wastes we produce.²⁰ If our current global population and consumption trends continue, we will need the equivalent of two planet Earths by the year 2050.²¹

However, if everyone consumed resources and produced waste at the rate Canadians do, we would need *4.3 planet Earths*.²² Canada has the fourth highest ecological footprint per person in the world – after the United Arab Emirates, the US, and Finland.²³

According to the Millennium Ecosystem Assessment, the manner in which we are using 15 of 24 ecosystem services – including *provisioning* services (food, water, timber, fibre, etc.), *regulating* services (water quality, waste treatment, etc.), and *supporting* services (soil formation, pollination, etc.) is currently unsustainable.²⁴ We will need to increase the efficiency of our resource use and reduce the negative effects on our ecosystems. This will require increased energy conservation and energy efficiency on a sustained basis that has never before been achieved.²⁵

13 Climate Congress, 2009.

14 McKibben, 2010.

15 Weaver, 2008, p. 254.

16 Government of British Columbia, 2009.

17 Wilbanks et al, 2008.

18 Wilbanks et al, 2008.

19 Williamson et al, 2009.

20 Williamson et al, 2009.

21 Mitchell, 2007.

22 Mitchell, 2007.

23 Mitchell, 2007.

24 Millennium Ecosystem Assessment, 2005.

25 Millennium Ecosystem Assessment, 2005.

ADDRESSING THE SUSTAINABILITY CHALLENGE

To re-cap then, there is no doubt that the three interrelated challenges outlined in this report will have profound effects on all aspects of human society. Oil prices will increase substantially because more and more of the oil we consume will be obtained from oil deposits that are more difficult and costly to access, including tar sands and under ultra-deep water.²⁶ We will experience the effects of climate change, including increasing climate chaos, flooding, drought, intense heat, and water scarcity.²⁷ Because of our overconsumption of resources and the subsequent ecological degradation, we will experience declines in the services provided to us by ecosystems. The effects of the energy, climate change and ecosystems challenges are far-reaching.

The main problem underlying the sustainability challenge is this: humans have an almost unquenchable desire for better lives and improved circumstances, but natural resources are finite. As a result, we must grapple with how the quality of life of people around the world can be improved, without continuing to exceed the carrying capacity of our planet.²⁸

The answer to all three interrelated challenges is clear: we must significantly reduce our ecological footprint and move to a low-carbon economy.

Going forward we will need a range of tools to address the sustainability challenge, including governance, energy conservation, adaptation and insurance:

- **Governance:** adequately addressing great challenges requires tapping into the innovation potential of many people. Governments are uniquely suited to make that happen. A critical element to successfully addressing the challenges we face will be a long-term, extensive public dialogue about both the extent of these challenges and how to address them.^{29, 30, 31} The role of government includes engaging in stakeholder consultations, selecting priorities, framing the issues, raising public awareness, setting standards, developing legislation and regulations, providing incentives and enforcing sanctions.³²

Governments also have a role to play in **pricing**: based on fundamental microeconomic principles, pricing tools can be effective in guiding human behavior towards environmental objectives without reliance on stringent regulations and continuous oversight. Through the incorporation of negative externalities, the pricing of negative environmental commodities, the valuation of ecological services, and the elimination of misguided subsidies (all of which are explained further below), pricing tools can lead to more sustainable behavior.^{33, 34, 35}

Another important role for governments is to ensure that decisions about adaptation to climate change or moving to a low-carbon economy are not made in isolation but are rather coordinated across orders of governments and relevant agencies.³⁶ Governments have a critical role to play in ‘mainstreaming’ adaptation – incorporating it as a key factor in all relevant decisions – and ensuring that barriers to adaptation are removed.³⁷

- Since Crown corporations play a major role in many jurisdictions with regard to energy, governments can use Crown corporations wherever possible to demonstrate strong leadership in addressing the three interrelated challenges we face.³⁸
- **Energy conservation and shifting to renewable energy:** Reducing our ecological footprint and moving to a low-carbon economy is essential to addressing the sustainability challenge. A key element of this approach is energy

26 Sauven, 2010.

27 David Suzuki Foundation, 2010.

28 Global Footprint Network, 2009.

29 Turner, 2007.

30 James and Lahti, 2004.

31 Meadowcroft, 2008.

32 Institute of Public Administration of Canada, 2009.

33 Thompson and Bevan, 2010.

34 Barde and Honkatukia, 2003.

35 Costanza et al., 1997

36 Smith et al., 2010

37 Smith et al., 2010.

38 Smith et al., 2010.



Important components of an energy strategy include a demand-side call for energy reduction, electrification of the transportation sector, energy retrofits, and an aggressive move to renewable energy sources.

conservation.^{39,40} Important components of an energy strategy include a demand-side call for energy reduction, electrification of the transportation sector, energy retrofits, and an aggressive move to renewable energy sources.⁴¹

- **Adaptation:** According to the Intergovernmental Panel on Climate Change, “adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.”⁴² In other words, adaptation seeks to reduce vulnerability and enhance resilience. Our efforts to mitigate climate change should strategically align with our efforts to adapt to the adverse effects that will result, and are already being felt, from it. Important components of adaptation in the energy sector include funding for research and development to ensure technology and infrastructure—including reservoirs and transmission lines—are capable of handling increased strain, both in terms of changes in demand and physical impacts from extreme weather. As outlined in ACT’s Biodiversity report, published in 2008, it is also key to ensure that energy production does not adversely affect ecosystems that are also experiencing stress from climate change.
- **Insurance:** while climate change presents challenges to the insurance industry,⁴³ it also presents an opportunity because the insurance tool can be used to promote behavioural change.^{44, 45} Through awareness and risk education, risk pricing, setting enabling conditions, financing risk and reduction measures, and requiring risk reduction as a prerequisite for insurance, insurers can assist public and private sector policy makers reach both their adaptation and mitigation objectives.^{46,47}

39 Williamson et al., 2009.

40 Lovins, 2005.

41 Tertzakian, 2009.

42 IPCC, 2007.

43 Herweijer, Ranger and Ward, 2009.

44 Herweijer, Ranger and Ward, 2009.

45 Mills, 2007.

46 Warner et al., 2009.

47 Cook and Dowlatabadi, 2010.

POLICY OPPORTUNITIES

We will need to devote more resources to community engagement and develop innovative methods of engaging the public to build support for the magnitude of the change required.



The following list of policy opportunities is by no means fully comprehensive or necessarily original. BC is blessed with a wide range of competent NGOs, academics and policy makers that are constantly evaluating our situation and providing policy recommendations, some of which have been included here. The goal of this report is to emphasize the urgent need to **act now** and to lay out just some of the key policy opportunities that exist.

Acting now makes good economic sense. In 2005, the United Kingdom government commissioned Sir Nicolas Stern to conduct a review of the economics of climate change. Stern concluded that the costs of urgent and decisive action to reduce GHG emissions, in order to avoid serious consequences of climate change, are significantly less than the costs associated with the consequences that will be avoided.⁴⁸ If we act now, it will cost us less than if we fail to act.

Of course, actions in BC cannot solve the global sustainability challenge, but we can help lead to global movement to take action.

Successfully addressing the sustainability challenge will require us to adjust our risk profile and start to adopt policies more quickly at every level of government. To do this we will need to devote more resources to community engagement and develop innovative methods of engaging the public to build support for the magnitude of the change required.

We must also be ever-cognizant of the fact that, just as the three challenges we currently face – energy, climate change and ecosystems – are all deeply interconnected, so too are the solutions. In brief – a low-carbon economy and a more resilient energy system can work together to reduce the effect of the energy challenge and the amount of GHGs being pumped into the atmosphere, thereby helping to address both the climate change and ecosystems challenges. In addition, shifting our economy to react to the sustainability challenge will better position BC to compete in the 21st century economy, since all jurisdictions will need to find similar solutions.

While action needs to take place at many levels, we have concentrated our recommendations on the four policy areas emphasized in this report: **governance, energy conservation, adaptation, and insurance**. The policy opportunities in each of these areas are based on thorough research on current provincial policy, the goals of the Climate Action Secretariat, approaches being considered around the world, and practical measures that are open to BC in the coming months.

48 Stern, 2006.

GOVERNANCE

1. **Establish a National Centre for Sustainable Energy Solutions** to lead the nation in the transition to clean energy. In addition to making connections and building key relationships, the Centre could fund research and pilot projects and aggressively promote the transition to clean energy and a low-carbon economy. The Centre should build on environmental leadership already underway in Canada, marshalling the venture capital industry, utilities, all orders of government, business and post-secondary resources to fund and promote resilient, sustainable, clean energy technology development and commercialization.
2. **Raise the price of carbon.** The BC government should raise the price of carbon by at least \$5 per tonne per year after 2012, while evaluating our progress on our emission reduction targets by 2015. The carbon tax should continue to be revenue-neutral in the sense that it should not be used to fill the province's General Revenue Fund and it should continue to ensure that low-income individuals and households are protected. Surplus funds from the carbon tax – those funds remaining after low-income rebates are paid – should be devoted to ease and quicken BC's transition to a low-carbon economy, including assistance with energy retrofits and promotion of innovation. The BC government could also provide leadership through the Council of the Federation in order to establish a national framework for the effective pricing of not only carbon but also water and ecosystem services.
3. **Establish a timeframe in which to move electricity prices to more accurately reflect the market price or cost of new supply.** The timeframe should be sufficient to allow for the economy and individual British Columbians to adjust. The additional revenue could be used to offset the impact on low-income individuals and households with additional surplus funds used to support the transition to a low carbon economy. In the interim, the BC government should direct BC Hydro to expand their two-tier pricing strategy to all classes of customers and ensure that the top-tier reflects market prices for at least 30% of BC Hydro's customer load (this should be coupled with an increased focus on energy conservation, including retrofit programs).
4. **Establish a system of ecosystem-specific carbon offsets,** in order to restore or at least conserve those ecosystems that sequester carbon.
5. **Establish a Natural Capital Index,** similar to the Nature Index of Norway, which would supplement our current reliance on GDP as a measure of progress to ensure that ecosystem services are taken into account.
6. **Tighten the building code and increase the requirements for zero emission buildings throughout the province.** The BC government should also require new public buildings to be evaluated using a lifecycle-cost methodology that incorporates consideration of climate change projections.
7. **Provide leadership through the Council of the Federation to implement a national mandatory energy-emissions labelling requirement.** This could be similar to Germany's Blue Angel program, implemented over thirty years ago, that works as an innovative force as well as a reliable aid to consumers by providing them with important information on the life-cycle emissions of products.⁴⁹
8. **Establish a world-class biennial competition for the best sustainable development plan created by Regional Districts which focuses on transitioning to a low carbon economy.** Funding to assist in the implementation of this program should be derived from surplus funds resulting from the carbon tax and electricity prices that more accurately reflect the market price. This program should encourage building upgrades, district energy systems, and zero carbon transportation alternatives.
9. **Facilitate an ongoing, extensive, province-wide public dialogue and the development of a sustainable development action strategy.** This could be based on models already developed in BC, such as QUEST, Sustainable Cities, and MetroQuest.

49 For more information, see: http://www.blauer-engel.de/en/blauer_engel/balance/success_stories.php

10. **Provide leadership through the Council of the Federation to drive establishment of a national adaptation framework in cooperation with other bodies considering this concept, such as the National Round Table on the Environment and the Economy.** The national adaptation framework could encourage increased coordination of adaptation efforts across all sectors and government departments, including energy.

ENERGY CONSERVATION AND A SHIFT TO RENEWABLE ENERGY

11. **Encourage energy conservation and efficiency.** This is undoubtedly the most important component of any energy strategy. BC Hydro is already a world leader in encouraging conservation and efficiency but they could enhance those efforts by implementing a demand-side call for energy reduction of 5,000 GWH/year of energy savings.
12. **Encourage increased energy retrofits by promoting the already-proven business case for energy retrofits and making it worth it for homeowners to undertake them.** Strategic retrofits can increase building resilience to extreme weather as well as reduce emissions. Unfortunately, upfront costs often act as a barrier to undertaking energy retrofits. The BC government should provide increased education about the business case for retrofits, and put in place appropriate incentives to undertake them.
13. **Develop the full suite of clean, renewable energy sources available in British Columbia.** This is in keeping with *The Clean Energy Act (2010)* and is essential as we move towards a zero carbon world. In order to accomplish this, the provincial government should establish a framework to guide this development. We urge the provincial government to adopt the recommendations for clean energy development produced by a consortium of non-governmental organizations including the David Suzuki Foundation, Pembina Institute and Watershed Watch Salmon (see Appendix B of background report). It is also important to establish a hierarchy for fossil fuels based on fit with purpose. For example, aviation, ships, plastics and fertilizers will require fossil fuels for the foreseeable future; cars, homes and public transportation can more easily convert to renewable energy. Because we cannot wean ourselves off fossil fuels immediately, we need a game plan to get us there.
14. **Develop a feed-in tariff program.** This is also in keeping with *The Clean Energy Act (2010)* and would target community renewable energy close to markets. This could include bio-energy from municipal sewage and organic solid waste, agricultural waste and forest waste.
15. **Support increased electrification of the transportation sector.** The BC government should develop a program to provide infrastructure and other support to electric vehicles (both individual and commercial vehicles; both battery and hybrid vehicles). This should include the subsidization of metered recharging equipment for public areas (throughout BC) and assistance for industry and households with on-site installation of recharging equipment. This would require the BC government to direct BC Hydro to establish the necessary infrastructure and to direct the British Columbia Utilities Commission (BCUC) to allow such expenditures. The BC government should also create a revenue neutral fee-bate system for zero emission vehicles, using the initial licensing fee or the annual licensing fee.

ADAPTATION

16. **Increase funding for research and development to ensure technology and current as well as new infrastructure—including reservoirs and transmission lines—is capable of handling increased strain resulting from the effects of climate change.** This would require provincial government direction to BC Hydro, and would build on investments already made by the former British Columbia Transmission Corporation (BCTC).



If we act now, it will cost us less than if we fail to act.

17. **Commission a study to examine the value of assets at-risk and the economic costs of coping with and adapting to climate change by 2100, if the world continues on its business-as-usual path.** This study should include a sea-level rise assessment report, which should consider a range of scenarios for 2050 and 2100 and advise on the cost of planning for future sea-level rise, as California is doing. The results of this study should be publicized widely in order to increase awareness of the urgent need to act.⁵⁰
18. **Require and support each of BC's municipal governments to prepare a regional version of the same report with a financial update every five years.** The BC government could support municipal governments in this regard by providing a common planning framework, online access to current downscaled climate data, and provincial grants.
19. **Mainstream adaptation and climate data/impact projections into all decision making and planning.** The BC government should work to ensure that mitigation efforts and adaptation efforts are complementary whenever possible and support research into ways to combine these two inter-related paradigm shifts.

INSURANCE

20. **Collaborate with the insurance industry to ensure full utilization of the insurance tool in both adaptation and mitigation of climate change. Resist, as much as possible, any government interference that undermines or distorts the incentives within the insurance market that are designed to mitigate and manage risk.** Insurance can be an effective tool to encourage risk-averting behaviour and foster the innovation of new ideas and technologies that rise to the challenges of climate change. However, these mechanisms can only be effective if public policy decisions do not undermine their efficacy.
21. **Develop a distance-based vehicle insurance program.** This would require provincial government direction to the Insurance Corporation of British Columbia (via a special direction to British Columbia Utilities Commission).

50 BCSEA recommendation #58.

PROPOSED BENEFITS

Achieving a sustainable future, will mean not only substantial reductions in GHG emissions from today's levels, but also other significant environmental, social, and economic benefits.



Addressing these three interrelated challenges, and achieving a sustainable future, will mean not only substantial reductions in GHG emissions from today's levels, but also other significant environmental, social, and economic benefits, including:

- More cost-competitive BC businesses through improved resource and energy efficiency and the easier movement of goods, as well as diminished risk of business interruption by climate change impacts.
- Major improvements in local air quality from the reduction of smog precursors and particulates.
- Healthier, safer and more liveable communities for existing citizens and skilled workers from outside the province seeking a place to live.
- Greater preservation of BC's unique wilderness and natural areas as a result of more sustainable resource extraction and land use practices.
- Increased tourism and business location successes due to a high quality of life.
- Enhanced attractiveness for international investment.

CONCLUSION



Through a strong focus on government leadership, energy conservation, adaptation and appropriate use of pricing and insurance mechanisms, we can address the “sustainability challenge”.

The scope of the interrelated global challenges we face is enormous. Cheap, easy oil is a thing of the past; our climate is changing; and we are placing too great a strain on the planet’s ecosystems. But BC is better positioned than most jurisdictions in the world to fully embrace the sustainable development path that all regions and countries must embrace immediately and aggressively if we are to address these global challenges.

Through a strong focus on government leadership, energy conservation, adaptation and appropriate use of pricing and insurance mechanisms, we can address the sustainability challenge. We can reduce our dependence on fossil fuels and de-carbonize those fuels that we do use. We can do our part to reduce the rate of climate change while also enhancing our resilience to its effects. And we can wipe out our ecological deficit.

Make no mistake: we have no time to lose. But we also have the wealth, knowledge and natural environment to position BC as a world leader in the inevitable energy paradigm shift that will be one of the main identifiers of 21st century innovation.

A POSTCARD FROM THE FUTURE

By 2030, the BC economy is more diversified and resilient, and highly cost-competitive in the maturing global sustainability market.



By 2030, many more British Columbians are employed in the service and information sectors. People live closer to their workplaces, in denser, quieter communities with more parks and green space. They walk or cycle to work or take an efficient transit system. Most people commute electronically at least two to three days a week, drastically cutting down congestion. Meetings can be held electronically with 3D holograms that have made telecommuting completely viable and acceptable for a large part of the population. Most people drive electric or hydrogen-powered vehicles, powered by 100% carbon-free electricity. Homes are completely networked and most are net energy producers at least part of the year. Building standards have reduced energy consumption by over 70 percent; virtually all hot water is solar-heated and most homes have low-cost photovoltaic systems incorporated during construction. Whole subdivisions are designed around geothermal systems to achieve economies of scale, and waste heat of all kinds is captured and used in district heating systems. LED lighting systems are ubiquitous and have not only reduced energy use but have also dramatically cut maintenance costs.

By 2030, the BC economy is more diversified and resilient, and highly cost-competitive in the maturing global sustainability market. Freight and passengers are moved over an effective transportation network that includes zero emission trucks, trains and ground support equipment. Natural gas has played a significant role in the transition from oil as petroleum costs have gone up dramatically. Many trucks and freight companies have switched their diesel fleets to natural gas and electric where practical. All process emissions from the production of natural gas have been sequestered. The forest products sector is self-sufficient in biomass energy and provides sustainable building products for the local construction industry.

By 2030, ecosystem services provided by nature have come to be valued in our market economy, and purchasing ecosystem offsets by government and business has provided the money to preserve and protect rich ecosystems throughout the province. This has played a major role in protecting the high quality of life enjoyed in BC. Fish stocks have returned and our streams and rivers and watersheds are the envy of the world and also support a vibrant tourist industry. Rising energy prices have encouraged a much higher percentage of food to be grown locally, and farmers markets and organic produce are thriving and widespread.

By 2030, GDP measures have been replaced with a genuine progress indicator (GPI) index, which better reflects an improved quality of life. Most people work shorter work-weeks and have more time to spend with their friends and family, pursuing their personal interests.

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