PART I. INTRODUCTION

A New Energy Vision for Canada

Reports like this are the kind of thing you think you should get down to reading but rarely do. Most people just want to use energy to make their lives run smoothly, not ponder its future. But we're hoping you stick with it on this one, because this subject is too important to lose you on.

An energy transition is underway – and will continue to roll out over the course of a generation, roughly between now and 2040. It is the greatest shift of this kind the world has seen in generations. For nations like Canada that embrace this shift, it can represent a big change for the better. This transition has the potential to change how you switch on the lights, heat your home and get to work – maybe even the kind of work you do when you arrive there.

This transition is a big deal. And it represents a real opportunity for Canadians – we know it can help us build a better country, avoid the impacts of climate change, and redefine Canada's role in a changing world. This report is a proposition for Canadians – an invitation to imagine Canada's energy future, and then to join together to build it.

What kind of country do you want to be living in a generation from now? What legacy do you want to pass on to your children and grandchildren? Do you want Canada to be a leader or a follower?

In 2017, the Generation Energy dialogues gathered the ideas of more than 380,000 Canadians about Canada's energy future. They said they wanted to see the economic prosperity, diverse social fabric, environmental quality and high international regard that define our country sustained. And they shared a collective vision of our energy future built on three pillars: it must be affordable, reliable and clean.

The first two of these pillars have long been in place, and we all agree they must be maintained. But it is the demand for clean and efficient energy to power our homes, businesses and transportation systems – and the wave of technological innovation underway globally in response to that same demand – that drives the need for a new energy vision in Canada.

TERMINOLOGY

A full glossary has been included at the end of this report. Some of our most frequently used terms:

CLEAN ENERGY – For the purposes of this report, clean energy refers to electricity produced from renewable energy (hydro, wind, solar, geothermal, etc.), as well as energy efficiency solutions

NON-EMITTING – refers to electricity produced from sources that produce no carbon pollution, such as hydro, wind, solar, nuclear, geothermal, and tidal

TRANSITION PATHWAY – A mix of technology, investment, business strategies, and government policy that enables Canada to transition from its current energy system to a low-carbon energy system over the next generation (roughly by by 2040)

CLEANTECH – Emerging knowledge-based products and services that improve operational performance, productivity or efficiency while reducing costs, inputs, energy consumption, waste or pollution

Canada has already made strong commitments to embrace this transition, pledging under the Paris Agreement on Climate Change to substantially reduce its greenhouse gas emissions and agreeing on a plan to do that through the Pan-Canadian Framework on Clean Growth and Climate Change. And across the country, many cities, Indigenous communities, institutions, businesses, and people like you have already begun to adopt ambitious clean energy and low-carbon programs of their own.

This might sound like just feel-good talk, but that framework – which nearly every province and territory has endorsed – represents the broadest consensus on climate and energy issues our country has ever achieved. Along with the shift now underway in the global marketplace for energy and other resources, these commitments require us to act now to transform our energy systems to ensure they can meet changing needs at home and abroad.

CANADA'S CLIMATE COMMITMENTS

At the outset, we want to emphasize that the global energy transition is inspired in part by changing market and technology dynamics for energy products and services but the primary motivation is the urgent need to cut global greenhouse gas emissions to address mounting risks and impacts of climate change. Accelerating the transition to a low-carbon economy today will reduce the costs of inaction.

For these reasons, Canada joined with the vast majority of the world at the Paris climate talks in 2015 in committing to global action, pledging to reduce carbon emissions 30 percent below 2005 levels by 2030, with deeper reductions beyond that.

To achieve this goal, the federal, territorial, and majority of provincial governments all agreed to the Pan-Canadian Framework on Clean Growth and Climate Change. Here are the most important commitments in that plan:

- carbon pricing in all jurisdictions by 2018
- acclerated nationwide coal phaseout by 2030
- nationwide strategy for electric vehicles by 2018, accelerated deployment of charging infrastructure
- implementation of a federal clean fuel standard
- establishment of a nationwide net-zero energy building code by 2030, and energy use labelling for buildings by 2019
- renewed support for industrial efficiency, including the adoption of energy management systems
- reduction in methane emissions from the oil and gas sector of 40-45 percent by 2025

The Global Race is On

We're headed into challenging terrain, and there's still a lot of uncertainty about the pace of change in the Canadian and global energy marketplace. What's certain is that our climate is changing rapidly. Unless we can start to reduce emissions now, we will soon have to grapple with the human and financial costs of more frequent and extreme storms, floods, heat waves, droughts and forest fires.

The transition to a low-carbon economy necessary to overcome these challenges is a global race, and it won't wait for us. Within a generation, countries like Canada will be using less fossil fuels, and renewable power and other non-emitting sources of energy will command a much larger share of the world's energy supply. Leading economies the world over – from China and India to the US and Europe – are investing tens of billions every year to develop the new technologies, services and knowledge that will supply the world with cleaner and more efficient energy. As part of this global boom, Canada's clean energy sector can contribute new energy products and services to developing markets. Oil and gas will also continue to be part of the global energy mix, and Canada must innovate to lower carbon and costs in order to compete for that demand.

There's real risk involved in falling behind in this energy transition, in failing to build the momentum – and public and investor confidence – required to achieve it.

Canada must step on its accelerator.

Two Tracks, One Prosperous Destination

In the face of long-term uncertainties and rapidly changing energy markets worldwide, Canada needs to start out on this journey along two tracks. First, we need to rapidly transform our energy production, distribution and consumption systems at home so that they are as clean and efficient as possible – and do more than they ever have before to protect our air, land and water. This will require governments, businesses and citizens alike to make energy transformation a top priority and step up with the new tools and decisive steps necessary to make it happen.

Navigating this first track successfully will require Canada to speed up its shift to low-carbon solutions for our electricity use, transportation, industrial activities, and heating and cooling needs, as well as nurturing new businesses and developing clean energy technologies and energy efficiency solutions to make the shift possible. By doing this at home, we can also stake out a leading position in some of the fastest-growing sectors of the global economy.

On the second track, we must continue to accelerate the development of low-carbon technologies for use in our existing oil and gas sector to reduce carbon pollution, cut costs, and create new value-added products and services. Oil and gas companies will need to take greater initiative, rapidly innovating to stay competitive in global markets. And that will require them to establish carbon footprints smaller than their competitors.

A GLOBAL CLEANTECH BOOM

The global clean technology market is estimated to grow to $2.2 trillion by 2022. Here are some key metrics for Canadian performance to date in the sector:

- **Canada ranks fourth on the Global Cleantech Innovation Index**
- **Canada's cleantech industry contributed $59.3 billion to GDP in 2016**
- **Canada's cleantech industry employs an estimated 274,000 Canadians**
- **Nearly 80 percent of Canadian cleantech firms are exporters, and together they generated $11.5 billion in exports in 2016**
- **Canada is ranked fourth worldwide and first in the G20 in terms of potential to produce cleantech start-up companies over the next decade**
- **Canada's share of the global clean tech market has fallen 12 percent in the last decade**