SUSTAINABLE ENERGY: A DRIVER FOR ECONOMIC, ENVIRONMENTAL AND SOCIAL WELL-BEING

Daniel Gagnier

Canada needs to resolve the debate over what it is we want to extract from our position as the fifth-largest energy producer on the planet. We have the ability to improve our regulatory structures, invest additional resources in innovation and clean technologies, diversify our markets to secure our energy independence, recognize that carbon needs to be priced and accelerate energy conservation and literacy, while still respecting our constitutional jurisdictional division of powers.

Le Canada doit régler la question de ce qu'il entend vraiment tirer de sa place de cinquième producteur d'énergie du globe, soutient Daniel Gagnier. Car tout en respectant la répartition des pouvoirs et compétences inscrite dans notre Constitution, nous sommes parfaitement en mesure d'améliorer nos structures de réglementation, d'investir davantage dans les technologies propres et innovantes, de diversifier nos marchés pour renforcer notre autonomie énergétique, d'établir un prix pour le carbone ainsi que d'accroître nos économies d'énergie et notre compréhension du secteur.

Sustainable energy is defined by Wikipedia as "the provision of energy that meets the needs of the present without compromising the ability of future generations to meet their needs." Other terms that are used to focus on energy sources mostly regarded as renewable include "green energy" or "clean energy." Most often mentioned as green energy sources are hydro, wind, solar, geothermal, bioenergy and tidal as well as technologies that either reduce the environmental impacts of these sources or improve energy efficiency.

In the last decade, because of the global economy and the global energy system, countries have had challenges with respect to supplies (energy security) and have had to diversify their sources of supply, meet developmental and equity issues for their consumers and reduce environmental risks. In fact the term *sustainable energy* is politically laden and tied to the delivery and creation of economic revenues (wealth), social benefits and improvements in the quality of life and coping with environmental impacts in a responsible manner.

Small wonder that with the global economy traumatized recently by the recurring financial crisis, increasing levels of public debt and persistent unemployment, "many governments have increased efforts to promote development of renewable energy-low carbon that can strengthen energy security." This has, according to a 2011 report by the International Energy Agency (IEA), "stimulated [an] unprecedented rise in deployment, and renewables are now the fastest growing sector of the energy mix."

On reflection, we are in a decades-long transformation of our economic, technological and energy systems mix in order to deal with population growth and a lower carbon footprint. Canada can play a key role in this transformation both as a supplier of energy and a source of innovation throughout the energy-innovation chain. Our reality as a resource rich country is that sustainable energy is the provision of energy from a multitude of sources in order to meet the economic, social and environmental interests of Canadians in a responsible manner.

The issue is how can we innovate and at what cost, as we evolve over the coming decades to meet our needs and those of people who are much less well endowed than we are with natural resources. Some claim we simply have to eliminate our dependence on fossil fuels and invest massively in renewables. Canada needs simply to find the political will to accelerate all forms of renewable energy and the rest will follow.

Would that it were as simple as portrayed. Two independent sources, the National Energy Board's (NEB)

"Canada's Energy Future: Energy Supply and Demand Projections to 2035" (2011) and the International Energy Agency's (IEA) *World Energy Outlook 2011*, offer projections based on existing or about to be introduced energy policies.

The base case scenario is not necessarily picture perfect on a projected energy world out as far as 2035, but these models reflect underlying realities that we should take into account in moving toward a desirable, sustainable energy future,

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The World Outlook 2011 ranks Canada the fifth-largest energy producer on the planet, with surpluses that will increasingly be in demand due to economic growth coupled with population increases in the emerging and developing economies. Projections include the following:

- Investments of $38 trillion of will be required to meet the projected demand to 2035, with power generation taking a 45 percent ($16.9 trillion share) followed by oil at $10 trillion (26 percent share), natural gas at $9.5 trillion (25 percent share), coal at $1.1 trillion (3 percent share) and bio-fuels at $0.3 trillion (1 percent share).
- Primary energy demand will increase by one-third to 2035 with 90 percent of the growth in non-OECD countries.
- China will consolidate its position as the largest energy consumer, with 70 percent more consumption than the US by the end of the period.
- Subsidies in 2035 for renewable energy will reach almost $250 billion, with off-shore wind competitive in the European Union by 2020 and in China by 2030. The US is not expected to be competitive in these two renewables in this period.
- Oil demand will rise from 87 million barrels per day (mb/d) in 2010 to 99 mb/d in 2035, with all the net growth coming from the transport sector in emerging economies.
- All other renewable technologies will continue to require subsidies; fossil fuel consumption subsidies worldwide in 2010 alone amounted to $409 billion, with oil representing close to 50 percent of this total.

We should also take into account that many governments can ill afford to go off cheap oil — in developing economies fossil fuels drive many aspects of economic growth and consumer expectations.

In this country the NEB projects there will be a tripling of production from the oil sands by 2035, along with a material increase in shale gas development. Due to federal and provincial policies, our energy is also expected to be cleaner, with increases in renewable, carbon capture and storage technologies and continuing investments in innovative clean technologies across both the traditional and renewable energy sources.

Demand is, however, expected to slow due to lower population growth, higher energy prices, lower rates of economic growth and enhanced efficiency and conservation programs and practices. The reality in Canada is that, while we have abundant natural resources, energy markets are in flux and will continue to constantly evolve. Most likely, according to the NEB,

- Canadian oil production will double to 2035;
- Record levels of natural gas are projected due to shale production;
- Electricity production is forecast to grow with wind, hydro and biomass driving increases;
- There will be slowing demand through enhanced efficiency and conservation.

All in all, Canada will have more and more sizeable surpluses available for export.

For various reasons Canada imports $40 billion worth of oil and gas from a number of foreign states annually. This is because domestic supplies are not always accessible (lack of infrastructure) and domestic sources are more expensive than imports (for example, US electricity prices for off-peak power). The Energy Policy Institute of Canada (EPIC), a not-for-profit research group that includes over 45 CEOs from traditional and renewable energy companies, large consumers, manufacturers and the service sector, is currently completing over two years of research. This research confirms inefficiencies in our internal market as well as a lack of flexibility. Both findings point to opportunity lost and a continuing weakness in interprovincial trade in energy.

Two other factors are important. I raise them with the caveat that all of EPIC's work reflects an acceptance of the existing jurisdictional and constitutional reality that recognizes the fact that energy is a provincial jurisdiction. There is political resistance to market diversification initiatives and a general lack of appreciation among Canadians to secure our energy independence. There is also a lack of focus on interprovincial trade in energy. We have an embedded comfort level, secure in the knowledge that our country has both geography and an abundance of natural resources. So why worry?

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overly complex regulatory models. The IEA and others have recognized this state of affairs is an impediment to the country securing more economic, social and environmental value from our resource base.

On electricity alone, with long-term and capital intensive projects the IEA estimates that we will need $7.6 billion annually to upgrade our electricity infrastructure. Our internal market for electricity, oil and gas is small. Our agenda has therefore been predicated on an international trade agenda rather than on an interprovincial one. History and inclination, as well as a desire to supply our largest market to the south, have dictated a "more efficient north-south trading regime for energy" (EPIC).

Jan Carr in his 2010 paper "Power Sharing: Developing Inter-Provincial Electricity Trade" argues:

> *[It is] more economical for one province's energy-limited hydro system to import some of the energy surplus available from a neighbouring province's fuelled system than to build and operate to ensure energy self-sufficiency. At the same time, it would be more economical for the capacity-limited fuelled system to import some of the capacity surplus from the neighbouring hydroelectric system than to build and operate to ensure capacity self-sufficiency.*

The implication of this logic is that the hydro-based provinces (British Columbia, Quebec and Manitoba) need to do more and work with fuel-based provinces (Alberta, Ontario and New Brunswick).

As a large energy producer, Canada employs some 650,000 people in the sector. In order to expand our value and competitiveness in a changing and demanding energy world, we will have to

- Work to overcome the patchwork of organizational and regulatory structures governing markets in this country;
- Ensure and enhance clarity and certainty in infrastructure decision-making;
- Diversify our export markets;
- Invest in innovation and clean technologies in partnership with industry and entrepreneurs;
- Resolve the confusion or build new models on Aboriginal consultations and ensure better treatment of our native communities through partnerships; and
- Agree to make energy a priority in strategic discussions between governments in order to drive the full value of our resources at both the policy and regulatory levels.

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As a country we need to get beyond some of our history and develop a consensus on what we can do above and beyond the business as usual case. We need to do this in both the national and regional interests if only to better manage the risks and opportunities that will come from an energy-hungry world.

As a country we need to get beyond some of our history and develop a consensus on what we can do above and beyond the business as usual case. We need to do this in both the national and regional interests if only to better manage the risks and opportunities that will come from an energy-hungry world. We also need to do it recognizing that the revenues from lost economic opportunity amount to billions of dollars that could be used by governments for hospitals, schools and modernization of infrastructure.

This is why the road map being finalized by EPIC will focus on critical components of our energy future — regulatory reform, market diversification, innovation, carbon pricing and energy conservation and literacy.

In *The Empathic Civilization: The Race to Global Consciousness in a World in Crisis*, Jeremy Rifkin articulates our broader challenge as follows: "The rising cost of fossil fuel energy and the increasing deterioration of the Earth's climate and ecology are the driving factors that will condition all of the economic and political decisions we make in the course of the next half-century."

Our ability as Canadians to carve out a role for ourselves, to select how we can influence the coming half century while continuing to prosper, begins with a strategy on energy that leads to a better understanding of our national interest and a consensus on the path we must take. It is time to discuss and agree on a national energy strategy as a first step to meet our full potential as a responsible global energy provider.

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