**ENERGY, DECARBONIZATION, & THE ECONOMY – Perry Kinkaide concluding the series on Decarbonization (February 2023)**

 Climate change presents an extraordinary challenge. The need to reduce the human global carbon footprint - how energy impacts the environment and simultaneously the need to fuel ever increasing global energy demand - how energy impacts the economy.

 Balancing energy, environment, the economy is critical. Yet current climate policies and plans - including Canada’s, are designed to phase out fossil fuel (hydrocarbon) production entirely and as rapidly as possible largely ignoring the several decade long transition period to develop reliable alternative energy systems. These climate plans need to broaden their focus from primarily just energy sources/mix to also include focus on energy availability/reliability and energy affordability. Otherwise, it will not be possible to secure ongoing public, investor, and political support. Quite simply, hydrocarbons are required to effect an orderly transition to low carbon, net zero emissions energy systems.

 Why hydrocarbons - oil and natural gas? Because hydrocarbons are the only energy option given that renewables, hydropower, large scale electrification and hydrogen are inadequate to meet immediate high temperature thermal and power generation needs. Nuclear should not be ignored as an option, particularly given recent advances in safety, small nuclear reactors (SMRs), and fusion research.

Motive power sources such as electric vehicles and hydrogen powered fuel cells will take time to fully develop the infrastructure for required minerals, facilities and distribution systems.

Hydrocarbons will remain a source of energy and materials even after transitioning to Net Zero. There is no ready non-hydrocarbon source to produce petrochemicals (plastics and many derivative products), fertilizers, paving asphalt and specialty carbon materials (e.g.: carbon fibre, graphene, etc.). In addition, the premature shutdown of hydrocarbon energy ignores domestic and international geopolitical realities, supply disruptions, and unusual weather patterns that can trigger unacceptable energy shortages leading to very volatile, high energy prices and “energy crises” as experienced recently in Western Europe and China. Again, hydrocarbons will remain a source of energy and materials even after transitioning to Net Zero

 Is any jurisdiction getting it right? Consider Canada. The federal government has introduced extraordinary regulatory requirements limiting access to export markets (eg pipeline cancellations). Burdensome energy decision processes — including regulatory approvals that are subject to reversal — destroy investor confidence and have caused the flight of foreign investment capital from Canada’s natural resources and energy sectors. The pricing of carbon emissions is already underway for reducing the usage of hydrocarbons for energy. While such pricing serves to motivate innovations for greener and cleaner energy, mechanisms are not yet in place to avoid placing Canadian energy at a competitive disadvantage with other hydrocarbon producing countries.

       Canada’s oil sands has the world’s 3rd largest proven reserves of oil; is the 5th largest producer/exporter; and has a proven track record for significant greenhouse (GHG) emissions reductions due to emerging technologies.  Our oil sands industry is in the rarified category of a global business worth in excess of $1 Trillion.  Oil sands operations are a major driver of the Western Canada economy and a significant contributor to Canada’s GDP. Of note, the oil sands are a large employer of world-class technical, financial and management experts, offering high quality career opportunities over the longer term.  The oil sands could sustain current rates of production for at least 200 years, with the potential to triple production through ongoing development of an enormous resource base.

Canada’s natural gas resource base is equally impressive, with a developable resource base of more than 1300 trillion cubic feet, roughly comparable to the natural gas resource base of the United States.  Canada’s natural gas production is currently one-sixth that of the USA: the opportunity to grow Canada’s natural gas production is comparable in scale to that of the oil sands.  The Deep Basin and Montney plays of northwest Alberta and northeast BC are two of the most attractive natural gas opportunities worldwide, with potential economic value of more than one trillion dollars.  Like natural gas plays in the United States, the Deep Basin and Montney benefit from the extraordinary technical expertise and advanced development practices that are unique to North America.  Like the oil sands, the development of North American natural gas is technically sophisticated and employment-intensive, offering high-value career opportunities to Canadians.

While the United States has aggressively developed its natural gas resources and emerged as the world’s largest exporter of LNG, western Canadian gas development has lagged due to regulatory and social delays and higher costs of LNG construction in Canada.  The development of Deep Basin and Montney natural gas for export to Asia is a massive economic and environmental opportunity: LNG produced in western Canada could displace coal as a power generation fuel in China, India and elsewhere in Asia, with a 50% reduction in GHG emissions compared to equivalent production from existing coal-fired plants.

Global demand for natural gas is growing faster than readily available supply.  With a sound LNG export strategy and overdue regulatory improvements Canada would be well positioned to realize both social and economic benefits and contribute to a 50% reduction in Asian power generation emissions, through conversion from coal to Canadian natural gas in the form of LNG.

Unfortunately, Canadian regulatory and climate policy has gone in the wrong direction over the past decade.  Canada’s regulatory constraints and narrowly focused climate policies do not reflect global realities.  The unwise application of carbon taxes on natural gas is preventing Canadian power generators from building high efficiency combined cycle plants; steeply escalating carbon taxes are a significant and uncompetitive burden on Canadian industries and manufacturers competing in the North American economy.  Simply put, our American and Mexican competitors do not face the same carbon taxes or regulatory burdens that Canadians are increasingly facing.  This is not just a problem for oil and gas producers; it is a serious competitive issue for any Canadian enterprise that consumes hydrocarbons.  We are no longer competitive in many sectors that consume increasingly expensive Canadian oil, natural gas or electricity.

 Technology innovation and know how is another potentially major area for Canada’s energy sector to contribute to not only meeting domestic climate change targets but also to provide a smoother energy transition globally. Canada’s energy industry is a world leader in the development of emissions reduction technology. Key areas include methane emissions reduction; carbon capture utilization and sequestration (CCUS), hydrogen and net zero emission petrochemicals; LNG exports; and development of small-scale modular nuclear reactors (SMR’s). Innovative Forestry practices and Agriculture technology advancements are also enhancing Canada’s natural carbon “sinks” while, at the same time, improving global food security.

 The industry recognizes the urgency for action and has responded proactively to market forces including the collapse of energy prices, anti-oil sands and climate change activism. Adversity is the mother of innovation. And collaboration amongst industry, governments and academia is the cornerstone for success.

 But Technological Innovation by itself is not enough. Canada needs to expand that focus on innovation to include Institutional innovation. By far, the most voiced concern is Canada’s burdensome and politically uncertain energy decision making process including regulatory requirements and approvals for major resource developments. This will be a common priority concern for the projects to meet expanded electricity usage including inter-jurisdictional interconnections; expansion of hydrogen based infrastructure; pipelines; export terminals; mineral resource mining projects (e.g.: lithium, battery-grade nickel, copper, cobalt, rare Earth metals, uranium), manufacturing facilities and distribution systems.

 The objective here would be a significant streamlining of bureaucratic regulatory and approval processes, clear roles and responsibilities for all the stakeholders, and political certainty needed for timely decisions and securing high levels of investor confidence. This initiative should be led by the Federal government; with strong input and representation from Provincial and Territorial governments; Industry (e.g.: Canadian Association of Petroleum Producers (CAPP), Mining Association of Canada (MAC), Canadian Nuclear Association, Canadian Exporters and Manufactures, and banking/investing/insurance industry); Municipalities; and Community (with a special emphasis on Indigenous communities).

 Here is an outline of a proposed Path To Energy, Environment and Economic Sustainability:

1. Balance between Domestic Adaptation and Emissions Reduction (Mitigation) efforts and resources — ensures Canada and Canadians are better prepared to prevent and respond to extreme weather events (which will always be occurring due to Mother Nature);

2. Collaboration and Incentives to foster/accelerate technological innovations for reducing GHG emissions and advancing low carbon alternative energy systems — specifically, methane emissions reduction; carbon capture utilization and sequestration (CCUS) and hydrogen system “build out”; and SMR’s;

3. Streamlining energy decision making — including regulatory systems and approval processes — to permit timely decisions and large project approvals to secure investor confidence and make good progress on the major resource projects, manufacturing facilities, supply chains and distribution systems associated with the transition to a lower carbon economy and alternate energy systems;

4. Messaging — branding Canada’s pristine environment and bounty of natural resources while leading in innovation to “finance” Canada’s energy transition and globally, helping others to achieve their emissions targets and a smoother energy transition;

And finally,

5. Inclusive Planning with collaboration as the cornerstone of success — immediately engaging in an integrated, inclusive planning process with the overall objective of aligning all stakeholder groups to achieve energy, environment and economic sustainability throughout the energy transition period over the next several decades.

The future of Canada and the globe are intertwined. We need bold leadership to meet our domestic climate change targets and to commit to helping others globally. With our vast natural resources including oil and gas, technology leadership, and proven track record for innovation, we can do so much more than just reducing domestic GHG emissions. Canada has a moral obligation to the rest of the world to do so.