

The Role of Federal and Provincial Governments in the Development of Wind Energy in Canada – Lessons for the Bioeconomy?

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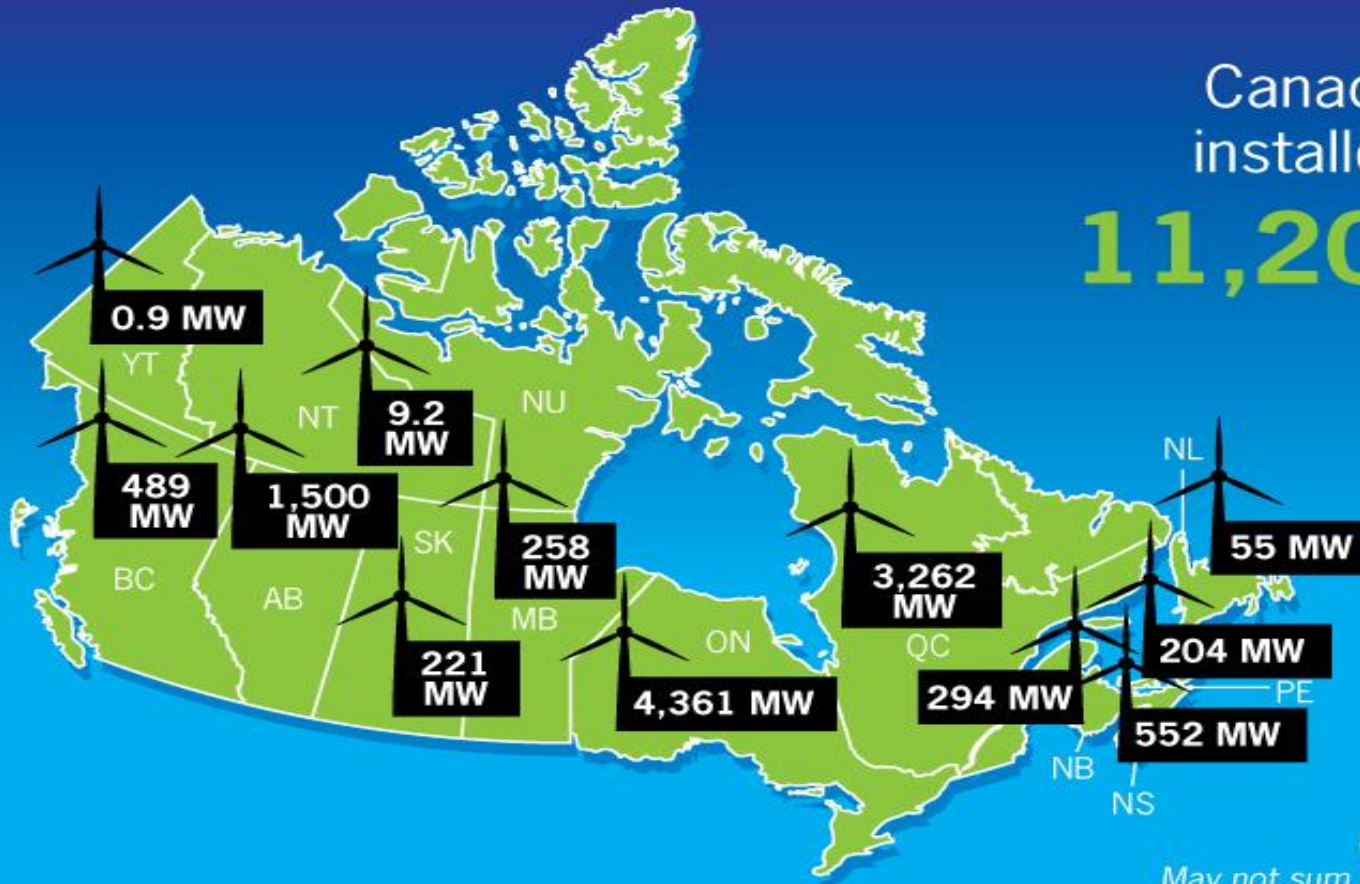
The Growth of Wind Energy in Canada

- Canada had 684 MW of installed wind energy capacity in 2005. By 2015, this had increased to 11,205 MW.
- More wind energy generating capacity was installed in Canada in the last ten years than any other form of electricity generation (> \$20 billion in investment).
- Canada is now the 7th largest producer of wind energy in the world and wind energy now meets 5% of Canadian electricity demand (40% in PEI, 10% in NS).
- Wind energy is now one of the two least expensive options for new electricity supply in Canada (with natural gas)



Wind Energy in Canada at the Start of 2016

Canada's current
installed capacity:
11,205 MW



(as of December 2015)
May not sum to total due to rounding



The Role of Government Policy in Wind Energy Development in Canada

- **Government policy has played an important role in the development of wind energy in Canada**
- **While the Federal Government played a key role in “kickstarting” the industry, provincial government policies have been the key drivers for wind energy dev’t (electricity is largely an area of provincial jurisdiction)**
- **The role of government policy has evolved, and continues to evolve, over time**



Phase 1 – Research, Development + Demonstration

- **The Federal Government and some Provincial Governments, particularly the Governments of Alberta and Quebec, supported research and development in wind energy and the deployment of “pilot projects” that enabled the deployment of Canada’s first wind energy projects in the 1990s and early 2000s**
- **These efforts helped to demonstrate the technical viability of wind energy as a form of electricity generation**



Phase 2 – Removing Barriers to Deployment (1)

- In the early 2000s, wind energy was viewed as an expensive technology destined to play a marginal role in electricity supply in Canada
- The Federal Government sought to increase wind energy deployment with a view to enabling a large enough market to enable economies of scale and cost-reductions



Phase 2 – Removing Barriers to Deployment (2)

- To do this, the Federal Government took action on cost concerns through the introduction of a production incentive (WPPI, EcoEnergy for Renewable Power) that was in place until 2011 as well as tax reforms designed to “level the playing field” (e.g., CRCE, ACCA) with conventional energy development
- The wind industry supported a production incentive over a tax incentive because it was broadly applicable



Phase 3 – Creating Markets for Wind Energy (1)

- **Federal action to reduce cost concerns encouraged Provincial Governments to create markets for wind energy through Renewable Portfolio Standards or government directives to Crown utilities that allowed wind energy to secure the economies of scale to drive costs downward**
- **Provincial Governments took these actions for a variety of reasons: energy independence (PEI), regional economic development (QC), environmental benefits (NS), manufacturing opportunities (ON), cost concerns (SK) – benefits not always recognized in electricity markets**



Phase 3 – Creating Markets for Wind Energy (2)

- Most provinces (with the exception of Ontario's FIT program) also used extremely competitive tendering processes to procure this power with a view to driving down costs – this effort was successful
- Today, Provincial Governments (e.g., Alberta and Saskatchewan) continue to create new markets for wind energy development – but the main drivers now are environmental benefits AND a desire to invest the lowest possible cost for new electricity supply



Phase 4 – Creating New Markets for Wind Energy (1)

- **Wind energy has moved from the margins to the mainstream – its cost-competitiveness means it is certain to make an important contribution to any future needs for electricity supply**
- **But....future electricity supply needs will not be driven by increases in electricity demand in a period of slow economic growth with an increased emphasis on energy efficiency**



Phase 4 – Creating New Markets for Wind Energy (2)

- **Future electricity supply needs will be driven by the desire of governments to transition to a low carbon economy**
 - Reducing fossil fuel use in electricity generation (e.g., Alberta, Saskatchewan, New England)
 - Reducing fossil fuel use in other sectors like transportation, buildings and industrial processes (e.g., Ontario, Quebec)
- **As a result, future government policy is more likely to support wind energy indirectly by sending signals into the market that encourage the deployment of cost-competitive low carbon sources of electricity generation**



Lessons for the Bioeconomy

- No single policy stimulated wind energy development in Canada – it was a group of complementary policies, pursued by different governments, that made it happen
- Policies must recognize / reward positive attributes that are not recognized in markets (e.g., environmental benefits), but must also ultimately encourage the ability to compete in markets (i.e., reduce costs)
- Policies must evolve in conjunction with the evolution of the industry – no policy will be permanent – and will likely evolve from “direct” to “indirect” support over time

