

# Critical Analysis of Canada's Energy Landscape in 2023: How Energy Security Shapes Canadian Climate Policy

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## Abbreviations

**LNG:** Liquefied Natural Gas

**CCS:** Carbon Capture and Storage

**CCUS:** Carbon Capture Utilization and Storage

**CER:** Canada Energy Regulator

## 1. Introduction

### 1.1. Canada's Long Energy Arc

Currently, Canada faces a divide between its reliance on carbon-based energy sources and its commitment to the scaling of renewables and the gradual phasing out of contaminating energies. The current-day policy and regulation push-and-pull between the proponents of decarbonization and their counterparts in deregulation has its roots in Canada's rich and polemic energy history. In the first half of the twentieth century, hydro chiefly powered Canada, generating 97% of electricity by 1920 [1]. The oil industry gained momentum at the turn of the 20th century with promising discoveries in Turner Valley, Waterton, Wainwright, and Lloydminster. The Leduc era (1950–70s) ushered in a modern petroleum period characterized by intense exploration and expansion that soon warranted coast-to-coast infrastructure like the Trans-Canada natural-gas pipeline [2]. The OPEC pricing shocks of the 1970s and their devastating economic effects forced the Canadian government to adopt increasingly interventionist and regulatory policies on the domestic oil, carbon, and gas industries [2]. Consequently, price controls and export taxes driven by the 1980 National Energy Program were highly scrutinized by some provinces, quickly leading to the 1985 Western Accord, which scrapped the interventionist policies in favor of market pricing for oil and gas [2]. The policy spotlight officially shifted to climate when Canada signed the 1997 Kyoto Protocol. However, Canada withdrew in 2011 after falling short of targets. More recently, a similar outcome occurred with the 2009 "Green Energy Act"

and its repealed and revised 2018 counterpart. This decades-long history set the stage for a 2023 landscape defined by both high hydrocarbon output and growing clean-power ambition.

### 1.2. Setting the Table for 2024–2025

In the coming year, the Canadian economy and oil industry can look forward to the erection of a new LNG\* terminal on the B.C. coast, which aims to establish an Asian and Pacific outlet for LNG distribution [3]. Today, provincial energy networks heavily rely on non-carbon energies like hydro, nuclear, wind, and solar to provide electricity needs Alberta recently retired its last coal unit [4]. The Pathways Alliance project and its work with CCSs\* exemplify a clean-energy policy influencing the private Canadian energy industry [5]. The above policies clearly illustrate that the current and the past decade of policy seems to promote a gradual phasing out of hydrocarbon energies and a more diverse national energy portfolio to ensure climate and energy security.3. Be specific.

### 1.3. 2023: Canada's Energy and Policy Snapshot

Now, I will focus on Canada's 2023 policy and energy landscape. Next, I will provide a critique of the 2023 policy framework. Ultimately, I propose that the Canadian energy landscape of 2023 and the last few decades is a story of climate ambitions colliding with regional economics, material feasibility, and societal acceptance. In 2023, Canada ranked among the top five producers of crude oil (5 million barrels per day in 2022) and natural gas (17.4 billion cubic-feet per day) [4]. About four-fifths of electricity generation was decarbonized; hydro (61% of national generation) and nuclear (14%) led the way [4]. The Canada Energy Regulator's 2023 report suggests that electricity needs will double in the coming half-century due to energy-intensive AI, electric vehicles, and hydrogen production, among other areas [4]. Therefore, scaling a low-carbon energy supply is both a technical challenge and

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an imperative solution to climate concerns and energy demand. Policy levers tightening. Accordingly, policies tightened. The carbon price (\$65 per tonne CO<sub>2</sub>-e in 2023) increased to anchor nationwide abatement; it's slated to increase by \$15 each year until 2030 [4]. Moreover, the Draft Clean Electricity Regulations aim to push the grid to net-zero emissions by 2035 [4]. Additionally, investment into clean energies was palpable in 2023, emphasizing scaling wind, solar, modular reactor technologies, and CCSs [6].

#### 1.4. Strengths of the 2023 Framework

Canada's 2023 energy policy framework regarding climate security is extremely forward-looking and coherent. The framework includes many climate-conscious policies like annually climbing carbon taxes, net-zero grid targets, zero-emission-vehicle sales mandates, a 2030 national "net-zero ready" building-code, and tax credits for CCUSs\* and CCSs, clean hydrogen and other technologies these mandates give companies stern rules to abide by, but opportunities for innovation and growth [4]. Since Canada already generates around 85% of its electricity from non-carbon sources, policymakers are afforded a strong head-start when negotiating expectations with provinces, utilities, investors, private companies, and societal or Indigenous communities [7]. Canada is an extremely privileged nation because it possesses vast carbon-based resources and has forward-looking policymakers who intend to foster energy and climate security. However, two salient obstacles to this vision are technological improvement and regional socioeconomics.

#### 1.5. Frictions and Constraints

On the socioeconomic side, grid reliability and affordability concern recently allowed Alberta to persuade Ottawa to delay the zero-emissions grid deadline from 2035 to 2050 [7]. Similarly, equity critics have warned that rising energy costs and unequal clean-tech access could magnify socioeconomic differences. On the other hand, Stats Canada reports that the impact of the carbon levy on national inflation was considerably smaller than that of global oil swings or volatility in mortgage rates in 2023 [8]. On the technological-efficiency and economic side, the IEA calculates that global grid investment must jump from about USD 330 billion in 2023 to USD 620 billion by 2030 to stay on a reasonable climate security path [9]. We also must add, as challenges to Canada's strategy, events beyond which Canada has efficient economic or strategic control the Ukraine war, extreme weather conditions affecting hydro, wind, or solar, shocks affecting the access to and abundance of critical minerals, and the actions of autocratic regimes on supply chains. It is only by stressing the importance of a long-term outlook on diverse, self-sufficient, and strategic energy plans that justify the economic and social distresses that clean-energy ambitions produce in quotidian life.

#### 1.6. Policy Direction: Framing the Trade-Offs

Canada's 2023 energy blueprint integrates rising carbon prices, clean-power targets, and generous tax incentives. Still, my review shows that economic costs, social-equity trade-offs, and provincial politics are the most challenging roadblocks. To navigate these pressures, Ottawa should rebrand its mandates as a strategic diversification with energy security-first benchmarks that provinces can meet with the most cost-effective mix. Future policy must account for geopolitical shocks, critical-mineral scarcity, and extreme weather. Policymakers should pay special attention to tracking impacts across income groups and provinces so that Canada can pursue energy security and lower emissions without neglecting domestic needs [10-12].

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