CANADA'S CLEAN ENERGY TRANSITION POST-*INFLATION REDUCTION ACT*

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Policy-makers in major economies face the dual challenge of reducing emissions for long-term environmental benefits while maintaining economic stability in the short term. The United States's Inflation Reduction Act *marks a pivotal move for the US in that direction, offering both challenges and opportunities for Canada as it strives to meet its own net-zero emissions target by 2050. This article focuses on Canada's federal policies, the effects of which have been underwhelming thus far. Canada is not on track to meet its emission targets and faces a growing productivity crisis. This article encourages Canadian policy-makers to consider streamlining regulations and clarifying investment tax credits to better stimulate investment in decarbonization and emissions reductions in the energy sector and surrounding industries. Canada should focus on developing a more robust national industrial strategy that directly supports clean energy development and leverages its existing strengths in areas like carbon capture and clean electricity. By aligning with global environmental movements and utilizing its geographical and existing resource strengths, Canada can build a more resilient economy while meeting its environmental targets.*[****]

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[****] Authors' Note: This article was prepared prior to the 2024 United States election. As such, it does not consider any potential impacts of the election's outcome on the legislation, policies, or topics discussed herein.

I. INTRODUCTION

Several of the world's leading economies are rapidly evolving to combat climate change and reduce greenhouse gas (GHG) emissions.[1] Global efforts to combat climate change have created a general shift in many countries toward clean energy. Policy-makers are tasked with determining the best strategies to meet emissions reduction targets while maintaining economic stability.

"Clean energy" generally refers to energy sources that do not pollute the environment, especially by avoiding GHG emissions like carbon dioxide (CO_2).[2] This includes "renewable energy," which is energy that comes from natural sources that are regenerated more quickly than they are consumed, such as solar, wind, and hydro power.[3] Geothermal energy, bioenergy, and green hydrogen energy are also widely accepted as clean energy sources. Finally, nuclear power is often considered a clean energy, though not "renewable energy," due to its low CO_2 emissions and its efficiency in generating large amounts of electricity from a small amount of nuclear fuel.[4]

In August 2022, the United States made a significant advancement in its transition toward a clean energy sector with the introduction of the *Inflation Reduction Act*.[5] This legislation aims to incentivize investment in clean energy technology, primarily through tax credits to build economic resilience, secure a stronger position for the US in international supply chains, and foster a transition to net-zero emissions by reducing the costs of clean technology through scale.[6] *IRA* allocates more than USD$370 billion in a

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1 Department of Finance, *Budget 2023: A Made-In-Canada Plan: Strong Middle Class, Affordable Economy, Healthy Future*, ch 3 (Ottawa: Department of Finance, 2023) at 67.
2 Iberdrola, "What Is Clean Energy?" (2024), online: [perma.cc/QU3Q-P7XF].
3 United Nations, "What Is Renewable Energy?" (2024), online: [perma.cc/L33A-VNBE].
4 National Grid, "What Is Nuclear Energy (and Why Is it Considered a Clean Energy)?," online: [perma.cc/3PNN-RFBL].
5 *Inflation Reduction Act of 2022*, Pub L No 117-169, 136 Stat 1818 [*IRA*].
6 Brendan Haley, "Will the Response to the US Inflation Reduction Act Reveal Canada's Lack of Green Industrial Policy?" (19 March 2023), online: [perma.cc/BF4Z-SMJU].

combination of grants, loans, tax credits, and other incentives to accelerate the deployment of low-emission energy, vehicles, buildings, and manufacturing to combat climate change.[7] Some estimates indicate that *IRA* is on track to encourage approximately USD$3 trillion in clean energy investment.[8] The Financial Post notes that the legislation "almost single-handedly paved the way for some of the world's biggest manufacturing companies to change their supply-chain systems," which surely will have significant ripple effects on Canada's economy.[9]

Canada's ties with the US are deep, dynamic, and multifaceted, with the US being Canada's largest trade and investment partner.[10] According to Statistics Canada, in 2022, exports to the US supported approximately 2.4 million jobs in Canada.[11] Additionally, close to two-thirds of Canada's worldwide trades were directed to the US, accounting for a total trade value of CDN$960.9 billion.[12] In the same year, the US exported USD$427.7 billion worth of goods and services to Canada.[13] Further, in 2022, "U.S. foreign direct investment (FDI) in Canada (stock) was [USD]$438.8 billion … [while] Canada's FDI in the United States (stock) was [CDN]$589.3 billion."[14] Prime Minister Pierre Trudeau once observed that being neighbours with the US is akin to "sleeping with an elephant — we are affected by 'every twitch and grunt.'"[15] Prime Minister Lester Pearson noted, "to live alongside this great country is like living with your wife. At times it is difficult to live with her. At all times it is impossible to live without her."[16] The deep financial interdependence between these two countries means that economic policies or measures in one can have significant implications and consequences for the other.

As *IRA* shapes the competitive landscape, Canada faces both challenges and opportunities in pursuit of its net-zero emissions goal by 2050.[17] This article first reviews Canada's current policies, specifically those aimed at achieving the country's net-zero targets and incentivizing investment in clean energy. It then analyzes the clean energy provisions in *IRA*, along with its observed and potential impacts for both the US and Canada. Following this analysis, this article proposes potential strategies for policy-makers in Canada to respond to *IRA* more effectively. Specifically, Canadian policy-makers should consider strategies designed to develop Canada's clean energy sector, maintain the country's competitive appeal to capital allocators, and accelerate Canada's transition toward a net-zero economy.

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7 The White House, *Building A Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action*, version 2 (Washington, DC: White House, January 2023) at 5, [White House, *Building a Clean Energy Economy*].

8 Goldman Sachs, "The US is Poised for an Energy Revolution" (17 April 2023), online: [perma.cc/8P29-YC7K].

9 Karim, *supra* note 7.

10 Government of Canada, "Canada-United States Relations," online: [perma.cc/Q7JD-4HTF].

11 Statistics Canada, *Value Added in Exports, By Industry, Provincial and Territorial*, Table No 12-10-0100-01 (Ottawa: Statistics Canada, 24 June 2024), online: [perma.cc/62V4-B7VF].

12 Statistics Canada, "Canada and the United States: The Numbers on a Unique Relationship" (21 March 2023), online: [perma.cc/Z29D-PPVZ].

13 Office of the United States Trade Representative, "Canada Trade & Investment Summary," online: [perma.cc/77LL-DPZX].

14 *Ibid*.

15 David Crane, "Canada-US Economic Relations" (9 March 2009), online: [perma.cc/KG7X-XW9H].

16 *Ibid*.

17 Government of Canada, "Net-Zero Emissions by 2050," online: [perma.cc/6J4R-3LF8].

It should be noted that precisely comparing investment activity across jurisdictions is difficult, if not nearly impossible.[18] These challenges stem from differences in timelines and data collection methodologies, as well as the unpredictable nature of forecasting different program adoption rates.[19] Despite these difficulties, this article aims to consolidate the available data from both jurisdictions to offer high-level comparisons of each country's net-zero strategy to offer insights for Canadian policy-makers to consider.

II. CANADA'S CURRENT ENERGY POLICIES

A. THE ROLE OF THE FEDERAL AND PROVINCIAL GOVERNMENTS IN CANADIAN POLICY

The jurisdiction to regulate matters involving energy production and natural resources in Canada is divided between federal and provincial governments in accordance with the *Constitution Act, 1867*.[20] This division of powers distinguishes Canada from other countries and presents unique challenges in implementing uniform policy across Canada.

Under the *Constitution Act*, provinces have jurisdiction over property and civil rights, local works, and natural resources. This gives provinces broad authority over environmental and energy-related regulatory matters.[21] Provinces have the right to explore, develop, and manage their own non-renewable natural resources, and regulate provincial energy supply to consumers. However, provinces only have the jurisdiction to regulate within their provincial borders, which limits their ability to address environmental and energy issues.

The federal government's authority to regulate energy and environmental matters is grounded in its constitutional powers "to make Laws for the Peace, Order, and good Government of Canada" (POGG), along with its jurisdiction over interprovincial trade and commerce, and international and interprovincial energy infrastructure.[22] The POGG authority enables the federal government to legislate matters normally within provincial jurisdiction during emergencies or when there is a matter of national concern.[23] The federal government's jurisdiction over interprovincial trade and commerce gives the federal government the authority to legislate certain projects that cross provincial borders.[24] Further, the federal government's jurisdiction over taxation allows it broader control than its provincial counterparts in implementing environmentally-focused fiscal measures and incentives,[25] although the provincial governments also have certain local taxation powers.[26]

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18 Christian Scheinert, "EU's Response to the US Inflation Reduction Act (IRA)" (June 2023) at 6, online (pdf): [perma.cc/W2ZV-A3UT].

19 *Ibid* at 6–7.

20 *Constitution Act, 1867* (UK), 30 & 31 Vict, c 3, reprinted in RSC 1985, Appendix II, No 5 [*Constitution Act*].

21 *Ibid*, ss 92(10), 92(13), 92A.

22 *Ibid*, s 91.

23 Parliamentary Information and Research Service, *Bill S-7: An Act to Deter Terrorism and to Amend the State Immunity Act* (Legislative Summary), by Jennifer Bird & Julia Nicol, Publication No 40-3-S7-E (Ottawa: Library of Parliament, 26 April 2010) at 20, n 31.

24 *Constitution Act*, *supra* note 20, s 91(2).

25 *Ibid*, s 91(3).

26 *Ibid*, s 92(2).

Despite the distinction between federal and provincial enumerated powers, Canada operates under a system of co-operative federalism.[27] "[T]he principle of co-operative federalism … favours, where possible, the concurrent operation of statutes enacted by governments at both levels."[28] Based on this principle, the federal and provincial governments must coordinate to address issues of energy efficiency, environmental protection, and economic development. This article will focus on key Canadian net-zero energy policies implemented at the federal level.

B. KEY FEDERAL ENERGY POLICIES

Under the *Paris Agreement*, signed in 2016, Canada made international commitments to reduce domestic GHG emissions by "30% below 2005 levels by 2030."[29] As stipulated by article 1, section 9 of the *Paris Agreement*, in 2021, Canada updated its target to reduce emissions by 2030 to levels that are 40 to 45 percent below 2005 levels.[30] Canada has also announced its commitment to reach net-zero emissions by 2050.[31]

The *Paris Agreement* is described by the United Nations as a legally binding international treaty.[32] However, the treaty itself provides minimal enforcement mechanisms and does not impose penalties or fees on countries who fail to meet their emissions reduction pledges.[33] Under the *Paris Agreement*, each member country must update its emissions reduction pledge target every five years, but there is no minimum pledge target requirement, allowing countries to adjust their pledge by any amount.[34] Member countries must also submit national emissions inventories and report their progress toward achieving their pledged targets.[35] If a member country fails to meet its pledged target, the only consequence is a mandated meeting with a global committee to develop a new plan of action.[36] Overall, there are few formal mechanisms under the *Paris Agreement* to hold member countries accountable.

1. TARGETED POLICY PLANS

Canada's ambitious emissions-related commitments have prompted the implementation of a number of targeted federal policy measures over the past decade.[37]

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27 *Reference re Secession of Quebec*, 1998 CanLII 793 at para 56 (SCC).

28 *Rogers Communications Inc v Châteauguay (City)*, 2016 SCC 23 at para 38.

29 *Paris Agreement*, 12 December 2015, 3156 UNTS 79 (entered into force 4 November 2016); International Energy Agency, *Canada 2022: Energy Policy Review* (France: International Energy Agency, 2022) at 12, online: [perma.cc/9XAE-MZZN] [IEA, *Canada 2022*].

30 IEA, *Canada 2022*, *ibid* at 13.

31 *Canadian Net-Zero Emissions Accountability Act*, SC 2021, c 22 [*CNZEAA*].

32 United Nations Framework Convention on Climate Change, "The Paris Agreement," online: [perma.cc/22TQ-PZ9J].

33 Lila MacLellan, "Is the Paris Climate Agreement Legally Binding?," *Quartz* (16 November 2021), online: [perma.cc/59Q7-DVQE].

34 *Supra* note 29, art 4(9).

35 Kathryn Tso & Michael Mehling, "How Are Countries Held Accountable Under the Paris Agreement?" (8 March 2021), online: [perma.cc/5P86-ZZQ7].

36 *Ibid*.

37 See e.g. Natural Resources Canada, *Powering Canada Forward: Building a Clean, Affordable and Reliable Electricity System for Every Region of Canada*, Catalogue No M4-241/2023E-PDF (Ottawa: NRC, 31 August 2023), online: [perma.cc/7MDT-FTK7] [NRC, *Powering Canada Forward*].

In 2016, the federal government introduced the Pan-Canadian Framework on Clean Growth and Climate Change (PCF).[38] The PCF was developed in coordination with the provinces and territories and serves as the initial domestic strategy for meeting Canada's emissions reduction targets.[39] Under the PCF, the federal government and the provincial and territorial governments agreed on specific actions to address climate change in Canada.[40] Key elements of the PCF include: (1) a carbon pricing framework; (2) GHG emissions mitigation measures in various sectors including transportation; (3) buildings and industry; and (4) research and development objectives for clean technologies.[41]

In 2020, the federal government expanded upon the foundation set by the PCF and introduced a new Strengthened Climate Plan, which contained 64 updated federal policies, programs, and focused investment strategies.[42] The Strengthened Climate Plan focuses on:

- increasing energy efficiency in Canadian homes and buildings;
- creating and encouraging cleaner modes of transportation;
- maintaining a price on carbon emissions; and
- building an industrial advantage through performance standards, investments, and incentives.[43]

The *Canadian Net-Zero Emissions Accountability Act*, enacted in 2021, set national targets for emissions reduction.[44] Following this, in 2022, the federal government released its first emissions reduction plan.[45] Known as the 2030 Emissions Reduction Plan (ERP), this document detailed Canada's approach to achieve its emissions reduction target, transition to cleaner energy, and foster a stronger economy.[46] The ERP includes economy-wide measures such as carbon pricing and clean fuel generation, along with targeted measures for specific sectors such as transportation, building, industry, and agriculture.[47] In total, the ERP allocates approximately CDN$9.1 billion in government investment to implement approximately 80 reduction measures, while also aiming to increase job and business opportunities in the energy sector.[48]

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38 Environment and Climate Change Canada, *Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy*, Catalogue No EN4-294/2016E-PDF (Gatineau: ECCC, 2016) [ECCC, *Pan-Canadian Framework*].

39 *Ibid* at 2.

40 *Ibid* at 3.

41 *Ibid* at 2–3.

42 Environment and Climate Change Canada, *A Healthy Environment and a Healthy Economy: Canada's Strengthened Climate Plan to Create Jobs and Support People, Communities and the Planet* (Gatineau: ECCC, 2020) [ECCC, *A Healthy Environment*].

43 *Ibid* at 8.

44 *CNZEAA*, *supra* note 31.

45 Environment and Climate Change Canada, *2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy*, Catalogue No EN4-460/2022E-PDF (Gatineau: ECCC, 2022) [ECCC, *2030 Emissions Reduction*].

46 *Ibid*.

47 *Ibid* at 7.

48 *Ibid*.

2. INVESTMENT STRATEGIES

In support of these overarching policy measures, and similar to *IRA*, the federal government has initiated numerous investment strategies in the form of public financing, tax incentives, grants, and other contributions.[49] Key programs include:

- The Smart Renewables Electrification Pathways Program, which, as of 31 January 2024, has approved over CDN$1 billion in funding for over 106 energy deployment projects and capacity building.[50] The Smart Renewable Electrification Pathways Program is intended to provide up to CDN$4.5 billion in contributions between 2021 and 2035.[51]

- The Strategic Innovation Fund, which is "designed to encourage and de-risk private investments in large-scale transformative projects" such as electric vehicle value chain projects.[52] To date, the Strategic Innovation Fund has provided funding of up to CDN$9.5 billion across 129 industrial transformation projects since its launch in 2017.[53] Notably, as of 2022, the projects that received funding were "expected to generate [upward of] $72 billion of private sector investments in Canada."[54]

- The Low Carbon Economy Fund, which has supported projects to reduce GHG emissions through four streams of funding known as the Low Carbon Economy Challenge, the Indigenous Leadership Fund, The Implementation Readiness Fund, and the Low Carbon Economy Leadership Fund.[55]

- The Investing in Canada Infrastructure Program, which is intended to provide CDN$33 billion in investment in partnership with each province and territory for clean energy infrastructure through to 2033.[56] More than 5,400 projects have been approved under this program since 2020, representing approximately CDN$10 billion in federal investment to date.[57]

The federal government also established the Canadian Infrastructure Bank (CIB) in 2017 to attract private investment for revenue-generating infrastructure projects in

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49 NRC, *Powering Canada Forward*, *supra* note 37 at 20.

50 Natural Resources Canada, "Smart Renewables and Electrification Pathways Program," online: [perma.cc/UYQ3-TY5A].

51 *Ibid*.

52 Innovation, Science and Economic Development Canada, *Strategic Innovation Fund Impact Report*, Catalogue No Iu4-433/2024E-PDF (Ottawa: ISEDC, 2024) at 5[ISEDC, *Strategic Innovation*].

53 Innovation, Science and Economic Development Canada, "Investments: Strategic Innovation Fund," online: [perma.cc/UV8H-NFVX].

54 ISEDC, *Strategic Innovation*, *supra* note 52 at 9.

55 Environment and Climate Change Canada, "The Low Carbon Economy Fund," online: [perma.cc/D6DX-X2RR].

56 Housing, Infrastructure and Communities Canada, News Release, "Building the Infrastructure Canada Needs: The Government of Canada Successfully Works with Provincial and Territorial Partners to Invest More Than $33 Billion in Projects Across the Country" (4 April 2023), online: [perma.cc/C34G-UNHQ].

57 Housing, Infrastructure and Communities Canada, "Investing in Canada Infrastructure Program: Projects Under Review," online: [perma.cc/CR8P-WXX8].

Canada.[58] Under the 2023 federal budget, the CIB planned to invest at least CDN$10 billion in clean power projects for power generation, distribution, use, and storage systems, and another CDN$10 billion in green infrastructure projects such as retrofitting residential and commercial buildings, developing new water and waste water facilities, and developing electric vehicle charging and hydrogen refueling stations, positioning the CIB as the federal government's primary funding source for supporting clean energy infrastructure projects.[59]

Most recently, the Canada Growth Fund has been established as an independent and arm's-length public fund managing CDN$15 billion for the purpose of catalyzing private sector investment in Canadian businesses and clean energy projects, to be deployed over five years.[60] The Canada Growth Fund is designed to "attract private capital to build Canada's clean [energy sector] by using [a variety of] investment instruments that absorb certain risks."[61] For example, the Canada Growth Fund utilizes "contracts for difference" which are intended to provide predictability for investors in emissions reducing projects by backstopping the future price of carbon.[62] For example, carbon credit offtake agreements guarantee the purchase price of carbon credits for abated emissions at a fixed price, thereby alleviating the risk of volatile increases in carbon pricing for investors.[63] To date, under CDN$1 billion of the Canada Growth Fund's CDN$15 billion has been committed to various contracts for difference and offtake agreements.[64]

Finally, over the past three years, the federal government has proposed a collection of investment tax credits (ITCs), each designed to boost investment and stimulate growth in key areas of Canada's clean energy sector, as well as support the development of clean technology. These ITCs are intended to be temporary, covering only pre-2035 expenditures.[65] The primary ITCs include:

- The Clean Technology ITC, which offers up to a 30 percent tax credit on the capital cost of eligible clean technology property.[66] Eligible equipment for the purposes of this ITC includes:

  i. equipment used to generate electricity from solar, wind and water sources;
  ii. stationary electricity storage equipment that does not use fossil fuels in its operation …;
  iii. low-carbon heating equipment, including active solar heating, air-source heat pumps and ground-source heat pumps;

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58 NRC, *Powering Canada Forward*, *supra* note 37 at 21.
59 *Ibid*.
60 Canada Growth Fund Investment Management, "Supporting Canada's Journey to Net-Zero" (2024), online: [perma.cc/RCZ7-WWEC]; Gail J Cohen, "Booming Energy Practices" (13 December 2023), online (blog): [perma.cc/95WX-4LWT].
61 Canada Development Investment Corporation, "Canada Growth Fund Inc.: Innovative Funding to Help Accelerate Canada's Decarbonization Strategy," online: [perma.cc/F7J7-DVBQ].
62 *Ibid*.
63 Clean Prosperity, Press Release, "Budget 2024 Makes Important Progress on Carbon Contracts for Difference" (16 April 2024), online: [perma.cc/WWH5-NS2C].
64 See Canada Growth Fund, *2023 Annual Report* (31 December 2023) at 25, online (pdf): [perma.cc/AMB6-DH8Y] [CGF, *2023 Report*].
65 Government of Canada, "Clean Technology (CT) Investment Tax Credit (ITC)," online: [perma.cc/6J43-7HEH].
66 Government of Canada, "What is the CT ITC," online: [perma.cc/Z6WP-U4FX].

iv. equipment to generate heat or electricity from small modular nuclear reactors; and

v. industrial zero-emission vehicles and related charging or refueling equipment.[67]

- The Carbon Capture, Utilization and Storage (CCUS) ITC, which provides a 37.5 to 50 percent tax credit for expenditures incurred related to carbon capture, storage, transportation, and utilization.[68] The requirements to qualify for this ITC are extremely detailed and complex. At a high level, a taxpayer is required to submit a formal plan including a front-end engineering study for any project they wish to qualify as a "qualified CCUS project," and "[t]he Ministry of Natural Resources [is required to] issue an initial project evaluation."[69] The taxpayer is also required to meet "various ongoing reporting requirements [such as] annual reporting … on project results" relative to the initial estimates.[70] Where the deviation between the project results and estimated outcomes is too large, then some or all of the previously claimed tax credits may be clawed back. Additionally, "[t]he amount of the [tax credit itself] depends on the particular activity undertaken and the year in which the expenditure [occurred]."[71]

- The Clean Hydrogen ITC, which provides a 15 to 40 percent tax credit for investment in hydrogen production projects.[72] Eligible expenditures under this ITC include "expenditures on equipment that produces hydrogen from CO_2 emission-abated natural gas reforming" or electrolysis.[73] Like the CCUS ITC, the amount of the credit depends on the carbon intensity of the hydrogen being produced.[74]

- The Clean Technology Manufacturing ITC, which provides a 30 percent tax credit on investments in eligible property used in clean technology manufacturing and critical mineral extraction and processing.[75] Eligible manufacturing and processing equipment under this ITC must be "used in [one] of two qualifying activities performed in Canada."[76] The first qualifying activity "is extracting, processing or recycling key critical minerals [such as] lithium, cobalt, nickel, copper … and graphite."[77] "The second qualifying activity is … the manufacturing or processing of … various [types] of clean energy equipment," including "electrical energy storage equipment…; equipment used [for] renewable (solar, water, wind, or geothermal) or nuclear energy" generation; zero-emission vehicle components such as batteries and charging

67 Robert Nearing & Greg Rafter, "Canada's 2030 Emissions Reduction Plan and the Expansion of Tax Credits for Green Technology" (7 December 2022), online (blog): [perma.cc/PQK6-JKF3].
68 Steve Suarez, "Canada's 2024 Federal Budget: Update on Green Investment Tax Credits" (25 April 2024), online (blog): [perma.cc/5PW4-MY25].
69 *Ibid*.
70 *Ibid*.
71 *Ibid*.
72 *Ibid*.
73 *Ibid*.
74 *Ibid*.
75 *Ibid*.
76 *Ibid*.
77 *Ibid*.

equipment; and air- and ground-source heat pumps.[78] The 2024 federal budget clarified that when a project involves the extraction, processing, or recycling of multiple minerals, the project must primarily involve critical minerals, and eligibility thresholds for the tax credit will be based on the value of the minerals produced.[79]

- The Clean Electricity ITC, which provides a tax credit of up to 15 percent for investments in projects that generate, store, or transmit clean electricity between provinces and territories.[80] Eligible investments under this ITC may be made in the "non-emitting electricity systems [such as] wind, solar, [or] hydro" systems; equipment used to generate electricity from nuclear fission, geothermal energy, concentrated solar energy, and waste biomass; "stationary electricity storage systems and equipment … such as batteries" that do not operate on fossil fuels; and inter provincial electricity transmission equipment.[81] Notably, equipment used in "natural gas fired electricity generation … is also eligible, but only when": (1) emissions stay below a specified limit; (2) CO_2 emissions are captured and stored in accordance with the requirements of the CCUS ITC; (3) the project is pre-approved by Natural Resources Canada; and (4) reporting requirements are met.[82]

The 2024 federal budget also announced a new ITC to support the establishment of electric vehicle supply chains in Canada (the Electric Vehicle Supply Chain ITC).[83] The Electric Vehicle Supply Chain ITC will provide an additional 10 percent tax credit on the cost of buildings used for electric vehicle assembly, battery production, and cathode active material production.[84] The timing of the Electric Vehicle Supply Chain ITC's introduction is crucial, considering the recent pullback by auto-makers in the production of electric vehicles.[85] In 2023, General Motors scrapped its target of producing approximately 1 million new electric vehicles by mid-2024, and Ford extended its timeline to reach its sales target of 600,000 new electric vehicles per year.[86] Sales forecasts and ambitious targets for electric vehicle growth projected by auto-makers in previous years are looking to be overly optimistic and based on temporary spikes in demand during 2021 and 2022.[87] Despite the continued rise in electric vehicle sales, growth rates are slower than expected.[88] According to a study undertaken by the Boston Consulting Group, potential consumers expect to see shorter charging times (under 20 minutes), longer driving range (over 550 kilometers), and lower prices (under USD$50,000), before they will seriously consider switching to an

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78 *Ibid*.
79 *Ibid*.
80 *Ibid*.
81 *Ibid*.
82 *Ibid*.
83 Emma Jarratt, "Federal Budget Highlights: Money for ZEV Rebates, EV Plant Construction, Clean Electricity Production and Storage," *Electric Autonomy Canada* (17 April 2024), online: [perma.cc/P9HW-5LW6].
84 PwC, "2024 Federal Budget Analysis" (16 April 2024), online: [perma.cc/LQ42-EUT2].
85 Michael Wayland, "EV Euphoria is Dead. Automakers are Scaling Back or Delaying their Electric Vehicle Plans," *CNBC* (13 March 2024), online: [perma.cc/2N6G-5KHZ].
86 Meghan McCarty Carino, "Electric Vehicles Face Reality Check as Automakers Dial Back Production Targets," *Marketplace* (2 November 2023), online: [perma.cc/AL5M-Q8SK].
87 Wayland, *supra* note 85.
88 Peter Lyon, "EV Sales Slow as Buyers Want 20-Minute Charging And 350-Mile Range," *Forbes* (24 March 2024), online: [perma.cc/ZSF7-BMDV].

electric vehicle.[89] Further development and increased innovation in the electric vehicle sector will be necessary to ensure future electric vehicles are meeting consumer expectations.

In total, the proposed ITCs are expected to cost the federal government approximately CDN$93 billion between their implementation in 2024 and ultimate phase out in 2034.[90]

Beyond ITCs, the 2024 federal budget also announced a CDN$607 million top-up for zero-emission vehicle rebates, "[CDN]$800 million for a new Canada Greener Homes Affordability Program that will support the direct installation of energy efficiency retrofits for Canadian households," CDN$73.5 million to "modernize existing energy efficiency programs and [develop] better, more ambitious business codes," and CDN$30 million to "support a nation-wide approach to home energy labelling."[91]

3. SPECIFIC MEASURES

Using overarching policy plans and investment strategies, the federal government has established several specific measures in the following key areas:

- carbon pricing;
- transitioning electricity generation;
- CCUS;
- decarbonizing upstream oil and gas production;
- efficiency within the building and transportation sectors; and
- clean fuels.[92]

This section on specific measures will briefly address certain key clean energy regulations in Canada, though a detailed review and analysis of such regulations are largely outside the scope of this article. The purpose of addressing these regulations is to provide better insight into Canada's net-zero strategy from a policy perspective, and how such strategy will affect Canada's overall competitiveness in the energy sector.

a. Carbon pricing

The carbon pricing scheme established under the Pan-Canadian Approach to Pricing Carbon Pollution (PCA) is a cornerstone of Canada's clean energy policies.[93] The PCA requires that all provinces and territories implement a carbon pricing system that adheres

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89 *Ibid*.

90 Government of Canada, *Budget 2024: Fairness for Every Generation*, Catalogue No 1719-7740 (Ottawa: Department of Finance, 2024) at 177.

91 Clean Energy Canada, Media Release, "A Budget for Building Homes—and Clean-Energy-Powered Affordability" (16 April 2024), online: [perma.cc/R8FK-32UT].

92 IEA, *Canada 2022*, *supra* note 29 at 11–17.

93 *Ibid* at 57.

to a minimum stringency standard known as the "federal benchmark."[94] Each province and territory may either implement its own carbon system, like a cap-and-trade system, or opt for the federal backstop system, which is a carbon pricing system.

The federal backstop system consists of an output-based pricing system (OBPS) for large industrial emitters and a fuel charge system.[95] The OBPS works by pricing the amount of carbon pollution emitted from industrial facilities which emit 50,000 tonnes or more of CO_2 equivalent per year.[96] Other facilities that emit less than 10,000 tonnes per year are also eligible to participate on a voluntary basis.[97] Facilities are capped at an annual emissions limit and are charged for any emissions exceeding that limit.[98] Where facilities emit less than their designated limit, they are granted surplus credits by the Minister of Environment, which can be used to offset charges on emissions in following years.[99] Additionally, surplus credits can be purchased and transferred to other facilities covered under the OBPS.[100]

The fuel charge system, on the other hand, involves a fuel charge being applied to 21 fossil fuels.[101] This is generally paid by fuel producers and distributors. Although producers and distributors are directly affected by the federal fuel charge, the resulting cost increase tends to partially be passed on to end consumers.[102] In 2023, for every litre of gasoline purchased, end consumers paid approximately CDN$0.14 of carbon levies.[103] With the rise in carbon prices as of April 2024, end consumers are expected to pay an additional approximately CDN$0.033 cents per litre of gasoline.[104]

Revenue collected under the federal backstop system is supposed to be returned to the province where it was collected. Ninety percent of proceeds generated by the federal government through the federal fuel charge are returned directly to Canadian families through the Canada Carbon Rebate, which is a quarterly tax-free payment.[105] The amount received in rebates for each household depends on the household size, the province, and whether the household is in a rural or metropolitan area.[106] The amount of fuel consumed by each household does not affect the rebate they receive. The remaining 10 percent of

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94 *Ibid* at 13.
95 *Ibid*.
96 *Ibid*.
97 *Ibid* at 162.
98 Government of Canada, "Output-Based Pricing System," online: [perma.cc/T3XZ-FKRZ].
99 *Ibid*.
100 *Ibid*.
101 Environment and Climate Change Canada, *Greenhouse Gas Pollution Pricing Act: Annual Report to Parliament for 2020*, Catalogue No En11-17E-PDF (Gatineau: ECCC, 2022) at 4.
102 Robson Fletcher, "How Do Your Federal Carbon Tax Costs Compare to Your Rebates? This Tool Helps You Calculate That," *CBC News* (20 July 2023), online: [perma.cc/39GT-QWXC]; The Canadian Press, "Carbon Pricing in Canada: What It Is, What It Costs and Why You Get a Rebate," *CTV News* (1 November 2023), online: [perma.cc/E2BM-5AA2].
103 *Ibid*.
104 Fiona Campbell, "Canada's Carbon Tax Increase: What You Need to Know," *Forbes* (3 April 2024), online: [perma.cc/8PXY-SP9K].
105 The Canadian Press, *supra* note 102.
106 Fletcher, *supra* note 102.

proceeds generated by the federal fuel charge are returned to businesses, farmers, and Indigenous groups.[107]

Under its Strengthened Climate Plan, the Canadian government has announced that it will continue to increase the carbon emissions price annually until 2030.[108] Carbon emissions were initially priced at CDN$20 per tonne in 2019 and will continue to rise by CDN$15 per tonne per year until the price reaches CDN$170 in 2030.[109] As may be expected, rising carbon prices have led to significant commentary focused on industry operating costs and loss of competitiveness.

Currently, Manitoba, Prince Edward Island, Yukon, and Nunavut are the only provinces and territories that have opted solely for the federal backstop system.[110] Alberta, Saskatchewan, Ontario, New Brunswick, Nova Scotia, and Newfoundland have each opted to use the federal fuel charge but have their own pricing systems for industrial facilities, and British Columbia, Quebec, and the Northwest Territories have their own carbon pricing system altogether.[111] As a result of provinces and territories being able to choose and design their own carbon pricing system, "there are now five distinct carbon pricing [systems] co-existing" across Canada.[112]

Differences in the available exemptions and application thresholds between the provincial and territorial systems and the federal system have led to a lack of uniformity in carbon pricing across Canada. For example, Saskatchewan's large emitter program automatically applies to facilities emitting 25,000 tonnes or more of CO_2 equivalent per year, while facilities emitting between 10,000 to 25,000 tonnes of CO_2 equivalent per year can opt in voluntarily.[113] Conversely, Alberta's large emitter program only applies mandatorily to facilities that emit 100,000 tonnes or more of CO_2 equivalent per year and applies to other emitters on a voluntary basis.[114]

Similar to the general application thresholds, the coverage of emissions sources, and the available exemptions from the carbon price also vary across jurisdictions. In British Columbia, some exemptions to the fuel charge include fuels used for agriculture, fuels sold on reserve land, and fuels used in industrial processes that are not combusted.[115] In the Northwest Territories, fuels used for aviation, containers of fuel under ten litres, and fuel purchased by visiting military forces are exempt from the fuel charge.[116] Nova Scotia's regulations exempt GHG emissions from non-combustion sources in the waste and agriculture sectors, and offshore oil and gas production.[117] Though there are similarities

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107 Environment and Climate Change Canada, "How Carbon Pricing Works," online: [perma.cc/5X8T-SA3S].

108 ECCC, *A Healthy Environment*, *supra* note 42 at 8.

109 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 24.

110 The Canadian Press, *supra* note 102.

111 *Ibid*.

112 Environment and Climate Change Canada, *2020 Expert Assessment of Carbon Pricing Systems*, Catalogue No En4-434/2021E-PDF (Gatineau: ECCC, 14 June 2021) at 16 [ECCC, *2020 Expert Assessment*].

113 *Ibid* at 20.

114 Alberta, Ministry of Environment and Protected Areas, "Technology Innovation and Emissions Reduction Regulation" (2023), online: [perma.cc/REL5-8EEM].

115 ECCC, *2020 Expert Assessment*, *supra* note 112 at 21.

116 *Ibid*.

117 *Ibid* at 22.

between many of the provincial systems, the overall carbon pricing system in Canada is scattershot based on the design choices of the various provinces and territories.

b. Clean electricity transition

Canada has implemented a plan to phase out coal-fired power generation by 2030.[118] In 2012, Canada was the first country to enact federal regulations for unabated coal-fired electricity, with these regulations taking effect for new coal-fired electricity generation units starting in 2015.[119] In 2018, the regulations were amended to require higher performance standards and introduce new rules requiring new natural gas-fired generators to meet a higher standard than the coal-fired units they replaced.[120] Alongside phasing out coal-fired electricity generation, the federal government committed to phasing out tax measures that favour non-renewable fossil fuels.[121] These include reclassifying certain oil and gas development expenses to be exploration expenses (which receive more favourable tax treatment),[122] the use of flow-through shares for oil and gas companies that allow the initial purchasers to claim a tax deduction equal to their investment,[123] and tax incentives such as the deep drilling infrastructure credit in British Columbia.[124]

The federal government is working to replace coal and other unabated fossil fuels with hydro and other renewable energy sources, including nuclear power. As of 2023, wind and solar energy account for less than 10 percent of Canada's electricity generation.[125] To expand these energy sources, the federal government initiated the Emerging Renewable Power Program, which aims to allocate up to CDN$200 million toward the expansion of commercially viable renewable energy generation projects across the provinces and territories.[126] Eligible or "commercially viable" projects are defined as: (1) being technologically proven projects comprised of eligible power generating technologies including offshore wind, geothermal, instream tidal, or concentrated photovoltaic; (2) having "a minimum net capacity of at least 4 megawatts"; and (3) producing "electricity intended for sale or use in Canada."[127]

Additionally, the federal government is in the process of developing the proposed *Clean Electricity Regulations* (*CER*), which are aimed at a gradual phase-out of unabated fossil fuel-based electricity generation.[128] The purpose of *CER* is to help ensure progress toward a cleaner energy grid. *CER* introduces a performance standard for electricity generators, requiring any electricity generating facility that uses fossil fuels to generate over 25

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118 IEA, *Canada 2022*, *supra* note 29 at 47.
119 *Ibid* at 162.
120 *Ibid* at 162–63.
121 Office of the Auditor General of Canada, *2017 Spring Reports of the Auditor General of Canada to the Parliament of Canada: Fossil Fuel Subsidies*, Report 7 (Ottawa: OAGC, 28 February 2017), exhibit 7.1.
122 *Ibid*.
123 *Ibid*.
124 Vanessa Corkal & Philip Gass, "Unpacking Canada's Fossil Fuel Subsidies: Their Size, Impacts, and Why They Must Go" (11 December 2020), online (blog): [perma.cc/8B47-ACV7].
125 Statista, "Electricity Generation in Canada in 2022, by Energy Source" (28 June 2024), online: [perma.cc/Q2ZU-U4ZM].
126 Natural Resources Canada, *Emerging Renewable Power Program: Applicant Guide*, Catalogue No M164-14/2018E-PDF (Ottawa: NRC, 2018), online: [perma.cc/U6PC-7WYL].
127 *Ibid* at 3–4.
128 Government of Canada, "Clean Electricity Regulations," online: [perma.cc/USZ7-UNN5].

megawatts of electricity to emit less than 30 tonnes of CO_2 per gigawatt hour.[129] Within the regulations, distinct categories have been created to differentiate applicability timelines of the performance standard for different facilities.

c. CCUS

The Canadian government has identified carbon management as a crucial strategy for reducing emissions to meet Canada's 2030 and 2050 targets.[130] The federal government uses the following five technology-based strategies for carbon management:

- using point-source carbon capture to reduce emissions in industrial sectors such as cement, iron and steel, and fertilizer industries where fixed process emissions and high temperatures create challenges for reducing emissions;[131]
- increasing hydrogen production by using "low-cost natural gas, paired with [carbon capture] to mitigate emissions";[132]
- incentivizing the pairing of gas-fired power generation and other dispatchable power generation with CCUS technologies as a way to significantly reduce emissions from the electricity grid;[133]
- utilizing captured carbon by converting it into fuels, chemicals, building materials or integrating it into industrial processes as a way to strengthen the business case for investment into carbon management projects;[134] and
- investing heavily in the growth and innovation of carbon dioxide removal technologies in support of its goals to offset emissions in industrial sectors.[135]

In support of these strategies, Canada's 2021 federal budget proposed approximately CDN$319 million over seven years to fund research and development into CCUS technologies.[136] To date, a total of just over CDN$50 million of government funding has been applied to CCUS projects across Canada.[137] Further, in 2023, draft legislation was produced for the CCUS ITC, which provides an income tax credit of between 37.5 percent and 50 percent for expenditures incurred related to carbon capture, storage, transportation, and utilization projects.[138]

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129 Evan Pivnick & Jason Dion, "Understanding the Proposed Clean Electricity Regulations (Part 1)" (9 June 2023), online (blog): [perma.cc/5D5C-YDTR].

130 Natural Resources Canada, *Capturing the Opportunity: A Carbon Management Strategy for Canada,* Catalogue No M144-327-/2023E-PDF (Ottawa: NRC, 2023), online: [perma.cc/93MM-H8X9].

131 *Ibid* at 13.

132 *Ibid* at 14.

133 *Ibid*.

134 *Ibid*.

135 *Ibid*.

136 IEA, *Canada 2022*, *supra* note 29 at 70.

137 Natural Resources Canada, "Current Investments," online: [perma.cc/N4EQ-Q3ZS].

138 Finance Canada, "Legislative Proposals Relating to the Income Tax Act and the Income Tax Regulations" (4 August 2023), online (pdf): [perma.cc/X7EF-QZ9R].

d. Decarbonizing upstream oil and gas

In 2022, Canada's oil and gas sector was responsible for approximately 25 percent of the country's total GHG emissions.[139] According to the ERP, the federal government aims to reduce oil and gas sector emissions to 31 percent below 2005 levels by 2030.[140] Efforts to decarbonize the oil and gas sector can be seen in economy-wide policy initiatives such as the carbon pricing scheme, carbon management strategy, and clean fuel regulations. Additionally, the CDN$675 million Emissions Reduction Fund Onshore Program (ERFOP) has been launched to incentivize Canadian onshore oil and gas companies to invest in efficient emissions reduction solutions.[141] The ERFOP provides funding for investment in green solutions and infrastructure targeted at reducing methane emissions.[142] If a project is approved, the ERFOP will fund up to 75 percent of the project's cost, which must be repaid within five years of the project's completion.[143] Similarly, the Clean Growth Program has allocated CDN$155 million for investment into clean technology research and development for the oil and gas sector, the mining sector, and the forestry sector.[144] The Clean Growth Program focuses on five key environmental challenges affecting Canada's natural resource operations, namely:

- Reducing greenhouse gas and air-polluting emissions
- Minimizing landscape disturbances and improving waste management
- Producing and using advanced materials and bioproducts
- Producing and using energy efficiently
- Reducing water use and impacts on aquatic ecosystems[145]

Methane-specific regulations targeting Canada's oil and gas sector were adopted in 2020, which aimed to reduce methane emissions from "oil and gas facilities [by] 40–45% below 2012 levels by 2025."[146] Since these methane regulations have come into effect, Canada has set a more ambitious "methane emissions reduction target [of] at least 75% … below 2012 levels by 2030."[147]

To further reduce carbon emissions in the oil and gas sector, the federal government has launched specific initiatives under the ERP. These initiatives include setting emissions caps at a rate required to reach net-zero emissions by 2050, advancing CCUS technologies, and phasing out public financing for inefficient fossil fuels.[148] On 7 December 2023, the federal government published a regulatory framework for an oil and gas sector GHG emissions cap,[149] which outlines key design details of the proposed approach to setting

139 IEA, *Canada 2022*, *supra* note 29 at 13.
140 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 84.
141 *Ibid* at 49.
142 Natural Resources Canada, "Emissions Reduction Fund: Onshore Program" (1 April 2022), online: [perma.cc/N6BZ-6FBT].
143 *Ibid*.
144 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 49.
145 Natural Resources Canada, "Clean Growth Program," online: [perma.cc/GLW4-YWG6].
146 IEA, *Canada 2022*, *supra* note 29 at 14.
147 *Ibid*.
148 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 50–51.
149 Environment and Climate Change Canada, *A Regulatory Framework: To Cap Oil and Gas Sector Greenhouse Gas Emissions*, Catalogue No En4-625/2023E-PDF (Gatineau: ECCC, 7 December 2023).

emissions caps, and solicits public comments. The deadline for these comments was 5 February 2024.[150]

The emissions cap will require oil and gas producers to reduce emissions to 35 percent to 38 percent below 2019 levels, with the cap to be phased between 2026 and 2030.[151] Oil and gas facilities covered by this policy will receive emissions allowances, which will decrease over time as the federal government issues fewer of them. Facilities must either reduce their emissions to stay within their allowances, or purchase allowances from other facilities that have managed to reduce their emissions.[152] The federal government plans to release a preliminary draft of these regulations by mid-2024.[153]

Reactions to the proposed emissions cap have been mixed. The Premier of Saskatchewan has publicly stated that these emissions regulations "would 'burden' the oil and gas sector with 'red tape'."[154] Similarly, "the Alberta government released a statement calling the cap 'punitive' and an 'intentional attack' on the Alberta economy."[155] Conversely, British Columbia's Minister of Environment and Climate Change Strategy reported that he was "pleased to see this announcement [of the federal emissions cap]," and sees it as "an important step for combatting the global climate crisis."[156]

e. Energy efficiency (buildings and transportation)

The federal government has made several strides in increasing the efficiency of buildings and transportation. In 2017, the federal government launched a building strategy known as "Build Smart," which, in collaboration with the provinces and territories, aims to decarbonize Canadian homes and buildings.[157] Aligned with the PCF, the Build Smart strategy includes plans for the implementation of a stringent national model energy code for new and existing buildings and specifies a "net-zero energy ready" requirement for all new buildings by 2030.[158] Multiple federal government investments have also been made in recent years, including CDN$950 million in 2019 to help municipalities improve the efficiency of buildings and homes, CDN$2.6 billion over seven years to provide grants to homeowners for energy-efficient home improvements, CDN$1.5 billion "for green and inclusive community buildings," and CDN$2 billion for financing energy efficient improvements and retrofits to commercial buildings.[159]

For transportation, under the ERP, the federal government has set out sales targets and requirements for new zero-emission vehicles, aiming for 100 percent of "light-duty vehicle sales to be zero-emission vehicles by 2035," and 100 percent of medium- and heavy-duty

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150 *Ibid* at 2.
151 *Ibid* at 5.
152 *Ibid*.
153 *Ibid* at 1.
154 Aaron Wherry, "A Federal Cap Forces a Reckoning with Oil and Gas Emissions," *CBC News* (8 December 2023), online: [perma.cc/3BPH-DMR3].
155 *Ibid*.
156 Government of British Columbia, Statement, "Ministers' Statement on New Federal Emissions Cap Framework" (7 December 2023), online: [perma.cc/C9TX-VTNJ].
157 IEA, *Canada 2022*, *supra* note 29 at 66.
158 *Ibid*.
159 *Ibid*.

vehicle sales to be zero-emission by 2040.[160] To meet this goal, the federal government has proposed numerous incentives aimed at increasing the availability and affordability of zero-emission vehicles, building the proper infrastructure to sustain zero-emission vehicles, and generally support research and development in this area.[161] In 2022, through the Zero-Emission Vehicles Program, the federal government allocated CDN$1.7 billion over three years to incentivize individual consumers to purchase zero-emission vehicles.[162] Further, CDN$547.5 million was invested by the federal government to provide incentives for "Canadian businesses to adopt medium- and heavy-duty zero-emission vehicles."[163] In 2021, the Zero-Emission Transit Fund was launched, which is a CDN$2.75 billion program created to assist "transit agencies and school bus operators plan for and [purchase] zero-emission [vehicles] and related infrastructure."[164] Additionally, prior to 2022, the federal government allocated CDN$376 million to increase the accessibility of charging and refueling stations for zero-emission vehicles, and a further CDN$400 million after 2022, specifically "to Natural Resources Canada for deploying [necessary] zero-emission vehicle infrastructure."[165] CDN$500 million has also been invested by the CIB for revenue generating zero-emission vehicle charging and refueling infrastructure.[166]

In conjunction with zero-emission vehicle investment and sales mandates, the federal government has also developed the Critical Mineral Strategy supported by a nearly CDN$4 billion investment toward research and development in, and building sustainable infrastructure related to, the production and processing of critical minerals for electric vehicle batteries.[167] Specific funding programs under the Critical Minerals Strategy include the Critical Minerals Infrastructure Fund, which "will provide up to $1.5 billion in federal funding over seven years [toward] clean energy and transportation infrastructure projects" required for the development of critical minerals in Canada.[168] An additional CDN$1.5 billion of funds targeted at the development of critical minerals, "with priority given to … lithium, graphite, nickel, cobalt, copper, and rare earth elements" will be deployed through the Strategic Innovation Fund.[169] Coupled with these hefty investments, the federal government has also introduced a 30 percent Critical Mineral Exploration Tax Credit for 15 critical minerals used in the production of batteries and permanent magnets used in zero-emission vehicles, including nickel, lithium, cobalt, graphite, copper and others.[170]

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160 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 134, 168.

161 Canada, Ministry of Transport, *Canada's Action Plan for Clean On-Road Transportation,* Catalogue No T42-30/2022E-PDF (Ottawa: Transport Canada, 14 December 2022) at 4.

162 *Ibid* at 7.

163 *Ibid* at 8.

164 *Ibid*.

165 *Ibid* at 9.

166 *Ibid*.

167 *Ibid* at 15.

168 Government of Canada, "Critical Minerals Infrastructure Fund" (2024), online: [perma.cc/9WY3-3H23].

169 Innovation, Science and Economic Development Canada, "Critical Minerals" (2023), online: [perma.cc/8MRF-2SNS].

170 Natural Resources Canada, *The Canadian Critical Minerals Strategy*, Catalogue No M34-82/2022E-PDF (Ottawa: NRC, 9 December 2022) at 20, online (pdf): [perma.cc/8E4W-75J5]; Emmanuel Sala, Shereen Cook & Victor Qian, "Canada's New 30% Critical Mineral Exploration Tax Credit: Recent Updates" (27 February 2023), online (blog): [perma.cc/7JV5-44EL].

Notably, eligibility for the Critical Mineral Exploration Tax Credit is not available for 16 of the critical minerals named on Canada's Critical Minerals List of 2021.[171]

f. Clean fuels

Clean fuels such as hydrogen, renewable natural gas, biofuels, and synthetic fuels have been identified as key to decarbonising sectors that are difficult to modify, such as heavy-duty transport, oil and gas, cement, and steel.[172] In 2021, the federal government launched the Clean Fuels Fund, committing CDN$1.5 billion over five years to assist with the building and expansion of clean fuel production facilities.[173] Additionally, the Clean Fuel Regulations proposed by the federal government in 2020 will require the gradual reduction of carbon intensity in liquid fossil fuels such as gas and diesel that are either produced in or imported into Canada.[174]

Regarding hydrogen fuels specifically, the Minister of Natural Resources published a Hydrogen Strategy designed to stimulate investment in hydrogen production and foster global partnerships for the supply of Canadian hydrogen abroad.[175] This strategy was premised on the critical role that hydrogen fuels are expected to play in achieving net-zero emissions.[176] In total, the Hydrogen Strategy includes 32 recommendations that focus on expanding applications of hydrogen fuels to sectors such as long-range transport, developing new infrastructure, and blending hydrogen and natural gas projects.[177]

C. ECONOMIC AND ENVIRONMENTAL IMPACTS OF CANADA'S CURRENT POLICIES

Canada's evolving energy policy will shape the country's economic landscape. The federal government's approach to managing the transition toward a net-zero energy sector has the ability to influence investment patterns, capital allocation, employment opportunities, trade dynamics, and of course, environmental sustainability. This section will examine the realized economic impacts of Canada's energy policy and will explore expected impacts for 2024 and beyond.

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171 Natural Resources Canada, *Canada's Critical Minerals List 2021*, Catalogue No M31-19E-PDF (Ottawa: NRC, 2021), online (pdf): [perma.cc/R8LU-4SH9].

172 IEA, *Canada 2022*, *supra* note 29 at 71.

173 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 28.

174 *Clean Fuel Regulations*, (2020) C Gaz I, 3868 (vol 154, no 51).

175 ECCC, *2030 Emissions Reduction*, *supra* note 45 at 28.

176 *Ibid*.

177 Natural Resources Canada, *Hydrogen Strategy for Canada: Seizing the Opportunities for Hydrogen*, Catalogue No M134-65/2020E-PDF (Ottawa: NRC, December 2020), online (pdf): [perma.cc/ED5Q-U4AX].

1. ECONOMIC IMPACT

a. Capital expenditure, gross domestic product, and investment in the energy sector

A significant portion of private sector capital expenditure in Canada is spent in the energy sector, which totalled approximately CDN$80 billion in 2022.[178] This expenditure is up roughly 35.6 percent from an 11-year low of approximately CDN$59 billion in 2020, and 21.2 percent from CDN$66 billion in 2021.[179] Oil and gas extraction remains the dominant area of investment, accounting for roughly 39 percent of the total investment in the energy sector, followed by electrical power generation at 34.5 percent.[180]

One might be led to believe that these upward trends show that private investment in Canada's energy sector is positively correlated with the restrictions and incentives recently introduced by the federal government. However, empirical evidence to support that conclusion is not readily available. Information from Statistics Canada classifies the above-noted expenditures in oil and gas extraction as "exploration and evaluation, capitalized or expensed (leases and licences, seismic, exploration drilling)."[181] However, the statistics do not specify whether these expenditures included spending related to innovation or technological advancement. Therefore, further information is needed on whether the uptick in expenditures relates to innovation or technological advancements aimed at emission reductions, or whether it relates to increased spending in traditional production methods.

Canada also experienced a dramatic rise in the energy sector's gross domestic product (GDP), which grew from CDN$159 billion in 2020 to CDN$304 billion in 2022 — a 91 percent increase.[182] In net-zero projection scenarios, the GDP of the Canadian clean energy sector is expected to expand up to six times its current value by 2050, while in the same time frame, the GDP of the Canadian fossil fuels sector would be cut in half.[183] Such projections suggest that while Canadians are seeing a decrease in GDP from a more traditional energy mix, that decrease is expected to be more than counteracted by the growth in clean energy.

Looking specifically at energy-related projects, in 2023, a total of 223 planned major energy projects valued at approximately CDN$294 billion were either announced, under review, or already approved.[184] Concurrently, 120 major energy projects worth approximately CDN$180 billion were already under construction in 2023.[185] Of the 343

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178 Natural Resources Canada, *Energy Fact Book 2023–2024*, Catalogue No M136-1E-PDF (Ottawa: NRC, 2023), online (pdf): [perma.cc/VJS6-S25D] [NRC, *Energy Fact Book 2023–24*].

179 Natural Resources Canada, *Energy Fact Book 2021–2022*, Catalogue No M136-1E-PDF (Ottawa: NRC, 2021) at 19, online (pdf): [perma.cc/9CUP-HBN7] [NRC, *Energy Fact Book 2021–22*]; Natural Resources Canada, *Energy Fact Book 2022–2023*, Catalogue No M136-1E-PDF (Ottawa: NRC, 2022) at 20, online (pdf): [perma.cc/77K9-6PNK].

180 NRC, *Energy Fact Book 2023–24*, *supra* note 178 at 20.

181 Statistics Canada, "Quarterly Survey of Capital Expenditures: Oil and Gas Activities," online: [perma.cc/EYT6-K9RR].

182 Natural Resources Canada, *Energy Fact Book 2024–2025*, Catalogue No M136-1E-PDF (Ottawa: NRC, 2024) at 11, online (pdf): [perma.cc/8XBS-KT24].

183 Clean Energy Canada, *A Pivotal Moment* (Vancouver: CEC, March 2023) at 7 [CEC, *A Pivotal Moment*].

184 NRC, *Energy Fact Book 2023–24*, *supra* note 178 at 24.

185 *Ibid*.

major energy projects either planned or under construction in 2023, 233 of them, or 68 percent, were clean energy projects with an approximate value of CDN$159 billion.[186] In comparison, in 2021, a total of 305 major energy projects worth approximately CDN$449 billion were in the planning stage, while 97 major energy projects worth CDN$139 billion were already under construction.[187] Of the 402 major energy projects, 168 were clean energy projects worth a total of CDN$92.1 billion — making up 42 percent of all projects, but only 15 percent of total value.[188]

This data suggests that although total private investment in clean energy projects has increased by nearly 75 percent, the overall value of major energy projects generally has declined by 19.4 percent between 2021 and 2023. These figures indicate a marked transition toward clean energy projects, but a significant decrease in private investment in energy as a whole. Such decrease in overall investment suggests that non-government capital typically allocated to oil and gas energy projects is not being similarly invested in clean energy projects. Incentives and investment opportunities in clean energy projects under Canada's current energy policy may not be seen to have the same appeal as those of oil and gas energy projects under previous policy regimes. However, the effect of ITCs announced in the federal government's 2023 budget will not be visible until after their full implementation in 2024.

Despite the decreasing value of energy-related projects in 2023, figures show that from 2021 to 2022, FDI in the Canadian energy sector increased by 11.9 percent, reaching a total of CDN$146 billion.[189] In 2022, FDI in the energy sector made up 12 percent of overall FDI in Canada, which was a 1 percent increase from the previous year.[190] However, as noted, such figures do not consider the economic response to policy implementations under the ERP or suggested policy plans set to be implemented in 2024.

b. Impact of carbon pricing

Estimates suggest that Canada's carbon pricing regime has a negligible impact on overall GDP.[191] According to the Bank of Canada Governor, Tiff Macklem, only 0.15 percent of the inflation increase can be attributed to carbon pricing.[192] However, this relatively small number is associated with the direct impact of the carbon tax, meaning only the direct increases in the price of fossil fuels such as gasoline and natural gas. This statistic does not consider ripple effects that the carbon tax has throughout the economy, such as the increase in product prices due to the increase in fuel costs for producers or suppliers.

Additionally, the carbon price in Canada will continue to increase from CDN$80 per tonne, where it currently sits in 2024, to CDN$170 per tonne by 2030.[193] As the carbon

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186 *Ibid*.
187 NRC, *Energy Fact Book 2021–22*, *supra* note 179 at 22.
188 *Ibid*.
189 *Ibid*.
190 *Ibid*.
191 CEC, *A Pivotal Moment*, *supra* note 183.
192 Jason Markusoff, "There's Now a Bank of Canada Number for Carbon Tax's Impact on Inflation. It's Small," *CBC News* (8 September 2023), online: [perma.cc/EXS2-J4HT].
193 *Ibid*.

price increases, its effect on prices for Canadians and on overall GDP will become more substantial. While increasing the price of carbon to CDN$170 per tonne is expected to reduce emissions upward of 25 percent by 2030, projections suggest that this price will also reduce the country's overall GDP by an average of 1.8 percent.[194]

Notably, the federal government's current pricing model, on its own, leads to approximately 164 million tonnes of reduced emissions, falling 63 million tonnes short of Canada's target under the *Paris Agreement*.[195] In order to meet Canada's emissions reduction target under the *Paris Agreement*, the carbon price would need to increase to upward of CDN$240 which would reduce total GDP by 3.6 percent.[196] Avoiding such high economic costs may require the federal government to explore other options in attempting to meet its 2030 and 2050 targets.

Carbon pricing may also have unintended negative effects on financial lenders and borrowers involved in carbon intensive businesses.[197] The rise in carbon prices may result in greater risk of default for high emitting carbon industries. As estimated in a study undertaken by the University of Waterloo, approximately CDN$256 billion is at risk of being lost by borrowers and banks as a result of these potential defaults.[198] Additionally, the potential loss by borrowers and banks will inevitably have a spillover effect in the form of general price increases, based on the tendency of companies to pass increased costs onto the end consumers. To combat this risk, banks may start to consider carbon pricing effects in their credit risk assessments, leading to lower overall investments in carbon heavy industries.

c. Employment

In projection scenarios where Canada's policy remains stagnant relative to those existing in 2023, there are projected to be a total of 3.56 million energy jobs in Canada by 2050, including both clean energy and oil and gas related jobs.[199] Clean energy jobs, specifically, are expected to grow from a total of 484,000 in 2025, to 2.44 million in 2050.[200] This number increases to 2.68 million in net-zero projection scenarios.[201] Of the clean energy jobs available in 2050, clean transportation jobs are expected to make up more than half.[202] Aside from clean transportation, clean energy supply will be the second largest job generator in the clean energy sector[203]. With the rise in clean energy jobs, there is expected to be a corresponding fall in fossil fuel related jobs. Projections suggest that in 2025 approximately 2.25 million jobs will be available in the fossil fuel sector.[204] However, in a net-zero scenario, only 776,000 jobs will remain in the fossil fuel sector by 2050.[205]

194 Ross McKitrick & Elmira Aliakbari, *Estimated Impacts of a $170 Carbon Tax in Canada*, Revised Edition (Canada: Fraser Institute, 2021) at 13.
195 *Ibid* at 15.
196 *Ibid*.
197 Media Relations, "Canada's Carbon Pricing Poses a $256 Billion Financial Risk for Borrowers and Banks," *Waterloo News* (12 June 2023), online: [perma.cc/VNX5-9GAN].
198 *Ibid*.
199 CEC, *A Pivotal Moment*, *supra* note 183 at 11.
200 *Ibid*.
201 *Ibid* at 7.
202 *Ibid* at 9.
203 *Ibid* at 10.
204 *Ibid* at 7.
205 *Ibid*.

Notably, even if parts of the federal government's current energy policy are rolled back, specifically carbon pricing measures, oil and gas jobs are still expected to decline by as much as 93 percent.[206] This suggests that regardless of whether certain climate policies are in place, jobs in the fossil fuel sector will inevitably decline.

d. Conclusion

Overall, the priorities of the federal government's current energy policy have initiated an obvious transition toward clean energy projects and a shift away from traditional sectors like oil and gas as evidenced by the near 75 percent uptick in the value of planned clean energy projects between 2021 and 2023. As Canada continues through this energy transition, ongoing assessment and adjustment to policy measures will be imperative to balance the country's economic and environmental objectives. Any policy adjustments moving forward must strive to optimize investment incentives, foster innovation, and mitigate potential economic disruptions.

2. ENVIRONMENTAL IMPACT

Recent studies indicate that Canada is not reducing its emissions quickly enough to reach the 2030 target of 40 to 45 percent below 2005 levels by 2030. Canada's emissions in 2022 were 685 million tonnes of CO_2 equivalent, an increase of 2.1 percent from 2021.[207] Further, Canada's 2022 emissions levels are only 6.3 percent below 2005 levels.[208] The rise in emissions between 2021 and 2022 can primarily be attributed to GHG emissions from the oil and gas sector and from energy used for constructing, heating, cooling, and lighting homes and businesses, which accounted for nearly three-quarters of the total increase.[209] Both sectors have displayed longer-term trends of rising emissions as shown by a 15.5 percent increase in emissions from oil and gas production and an 8.8 percent increase in emissions from buildings since 2005.[210] Despite not being on track with Canada's emissions reduction target, there is evidence that Canadian energy policies, as of 2022, have reportedly led to a reduction of approximately 22.9 million tonnes of CO_2 equivalent.[211]

Various projection scenarios also suggest that, even with the policies implemented and announced under the ERP, Canada is unlikely to meet its pledged emissions reduction target under the *Paris Agreement* without more stringent action.[212] Under policies legislated as of December 2023, projections show that emissions will decrease to roughly 549 million tonnes of CO_2 equivalent by 2030, only 25 percent below 2005 levels.[213] When recently announced and developing policies as of December 2023 are also considered, greater

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206 *Ibid* at 11.

207 Dave Sawyer et al, *Independent Assessment of Canada's 2023 Emissions Reduction Plan Progress Report* (Canada: Canadian Climate Institute, December 2023) at 10.

208 *Ibid* at 6.

209 *Ibid* at 10.

210 Seton Stiebert and Dave Sawyer, "Emissions from Oil and Gas, Buildings Undercut Canada's Climate Progress" (28 September 2023), online: [perma.cc/Y67M-7JQ8], citing *ibid* at 10.

211 *Ibid* at 11.

212 Office of the Auditor General of Canada, *Canadian Net-Zero Emissions Accountability Act: 2030 Emissions Reduction Plan* (Independent Auditor's Report), Report 6, Catalogue No FA1-26/2023-1-6E-PDF (Ottawa: OAGC, 2023) at 23.

213 Sawyer et al, *supra* note 207 at 19, 20.

reductions in emissions are expected.[214] In scenarios where oil and gas emissions caps and adjustments to large-emitter performance standards are implemented, emissions are expected to decrease to roughly 467 million tonnes of CO2 equivalent by 2030, approximately 36 percent below 2005 levels.[215]

According to these projections, Canada's policy measures lack the stringency and effectiveness required to reach its pledged emissions reduction targets under the *Paris Agreement*. Updates to Canadian policy will be required to meet the country's international commitments. However, such policy updates must carefully consider potential implications for the Canadian economy and investment appeal.

III. *IRA* AND ITS IMPACTS

A. *IRA*

IRA marked the "most significant action Congress has taken on clean energy and climate change in the [US's] history."[216] It seeks to address climate change while stimulating economic growth and reducing economic inequality. President Biden, who spearheaded the legislation, set the following goals:

- achieve "100 percent carbon pollution-free electricity by 2035";
- reduce net GHG pollution by 50 to 52 percent from 2005 levels by 2030; and
- reach "net zero emissions economy-wide by no later than 2050."[217]

To achieve these goals, *IRA* allocated more than USD$370 billion over ten years for investments aimed at promoting clean energy and climate resilience.[218] This includes several tax provisions and significant grant and loan programs to support the development and deployment of clean energy technology.[219] Specifically, it includes tax credits, a USD$27 billion allocation to the Greenhouse Gas Reduction Fund, and USD$40 billion in loan guarantees for pioneering clean energy projects.[220] The tax credits cover various initiatives, including renewable electricity generation, renewable technology investments, carbon capture, renewable fuel production, and clean energy manufacturing.[221] Almost all of these tax credits can be directly paid or transferred, "[allowing] state, local and Tribal governments, as well as other tax-exempt organizations" to benefit.[222]

Central to *IRA* is the 30 percent investment tax credit for qualifying renewable projects that comply with specific labour standards, with additional bonus credits available for projects located in economically disadvantaged and fossil fuel-dependent areas.[223] It also

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214 *Ibid* at 20.
215 *Ibid*.
216 White House, *Building a Clean Energy Economy*, *supra* note 7 at 5.
217 *Ibid* at 9.
218 *Ibid* at 5.
219 *Ibid* at 2.
220 *Ibid* at 10.
221 *Ibid* at 9–10.
222 US Department of the Treasury, Press Release, "Fact Sheet: How the Inflation Reduction Act's Tax Incentives Are Ensuring All Americans Benefit from the Growth of the Clean Energy Economy" (20 October 2023), online: [perma.cc/J28L-QKA8].
223 *Ibid*.

extended significant tax incentives for energy-efficient property upgrades and solar installations, expected to lower energy bills and enhance economic stability for families and small businesses.

IRA also strongly encouraged the introduction of new, high-paying jobs. It did this by offering increased credit and deduction amounts to qualifying project owners that meet specified labour standards.[224] *IRA*'s climate and clean energy tax incentives are projected to support over one million jobs in the energy sector and related manufacturing.[225]

In response to rising energy costs, *IRA* provided significant financial relief for families and small businesses that undertake energy-efficient property upgrades and the installation of rooftop solar panels. This included credits of up to USD$1,200 for eco-friendly renovations and a 30 percent tax rebate for rooftop solar and battery storage.[226] This is expected to lower energy costs for participants and help protect them against energy price volatility.

Further, *IRA* enables "state, local and Tribal governments, [along with] non-profit organizations and other tax-exempt groups," to obtain funds directly from the government for clean energy projects.[227]

1. TAX CREDITS

IRA made certain tax credits directly payable and others transferable.[228] Directly payable tax credits are akin to a grant and are only available for certain types of entities, like non-profit organizations.[229] Transferable tax credits enable taxpayers to transfer the credit to a third party for cash, meaning that if a taxpayer invests in a project that does not have a large enough tax bill to use the credit, they are able to monetize the credit by transferring it to a taxpayer that does have a large enough bill to use it, and can receive cash from that taxpayer in return for the transfer of the credit.[230]

There are bonus credits available for almost all of *IRA*'s credits, for projects that use domestic content, are in low-income or energy communities, or meet specific labour requirements.[231] These bonus credits are designed to incentivize domestic production and support communities affected by the energy transition.

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224 *Ibid*.
225 *Ibid*.
226 *Ibid*.
227 *Ibid*.
228 John Bistline, Neil Mehrotra & Catherine Wolfram, "Economic Implications of the Climate Provisions of the Inflation Reduction Act" (2023) National Bureau of Economic Research, Working Paper No 31267 at 9.
229 *Ibid*.
230 *Ibid* at 10.
231 *Ibid*.

a. Production Tax Credits

IRA introduced several new tax credits relating to the production of clean energy, including the:

- Clean Hydrogen Production Tax Credit;
- Advanced Manufacturing Production Tax Credit;
- Nuclear Power Production Tax Credit; and
- New Clean Electricity Production Tax Credit.[232]

The Clean Hydrogen Production Tax Credit provides a "10-year incentive for clean hydrogen production with four tiers" ranging from a maximum hydrogen tax credit of USD$0.60 per kilogram of hydrogen for carbon intensities between 2.50 and 4.00 kilograms of CO_2 equivalent per kilogram of hydrogen, and USD$3.00 for carbon intensities between 0.00 and 0.45 kilograms of CO_2 equivalent per kilogram of hydrogen.[233] To be eligible, projects must begin construction by 2033.[234]

The Advanced Manufacturing Production Tax Credit is available for projects involving the "production of clean energy technology components" by US corporations.[235] "Eligible components include solar components, wind turbine and offshore wind components, inverters, many battery components, and the critical minerals needed to produce these components."[236]

IRA extended the existing production tax credit through to 2024 for renewable energy sources such as solar, wind, geothermal, biomass, landfill gas, municipal solid waste, hydropower, and marine and hydrokinetic facilities.[237] Beginning in 2025, *IRA* introduced a new technology-neutral Clean Electricity Production Tax Credit.[238] This credit offers a rate of USD$0.15 per kilowatt hour, offers a 10 percent bonus for using domestic materials and for facilities in energy communities, and increases certain credits to full value (they were previously halved).[239]

b. Clean Energy Investment Tax Credits

IRA also amended and introduced several tax credits related to clean energy investment. *IRA* extended the existing energy investment tax credit (Energy IRA ITC) through 2024 for various technologies, which will be replaced by a technology-neutral clean electricity tax credit in 2025.[240] It maintained a 30 percent credit for properties like solar, geothermal, wind, and several others constructed before 1 January 2025, and introduced a similar 30 percent credit for new technologies like energy storage and biogas.[241] Additionally, it

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232 Bipartisan Policy Center, "Inflation Reduction Act Summary: Energy and Climate Provisions" (4 August 2022) at 3–5, online (pdf): [perma.cc/RM93-JSHL] [BPC, "IRA Summary"].
233 *Ibid* at 3.
234 *Ibid*.
235 *Ibid* at 4.
236 *Ibid*.
237 *Ibid*.
238 *Ibid* at 5.
239 *Ibid* at 4.
240 *Ibid* at 5.
241 *Ibid* at 6.

provided a 30 percent credit for geothermal heat pump projects until 2033, which decreases to 26 percent in 2033 and 22 percent in 2034.[242]

IRA also extended the existing 30 percent investment tax credit available for clean energy projects, to support the production and recycling of clean energy projects.[243] Further, it expanded the credit to include projects at manufacturing facilities committed to reducing their GHG emissions by at least 20 percent.[244] This applies to manufacturing facilities relating to low carbon industrial heat, carbon capture, and energy efficiency systems.[245] It also includes provisions for transferability.[246]

IRA established a "tech-neutral" investment tax credit, which will replace the existing Energy IRA ITC at the end of 2024, offering an emissions-based, flexible incentive available for various clean electricity technologies.[247] The Energy IRA ITC will provide a 30 percent credit on investments made during the year the facility is placed in service, along with additional bonuses for projects in energy communities, using domestic materials, and located in low-income areas or Tribal land.[248] Taxpayers can choose between a Production Tax Credit and this Energy IRA ITC.[249]

c. Vehicle and Fuel Tax Credits

The new clean fuel production credit offers a two-year tax credit for producing low carbon transportation fuels, with a maximum credit of USD$1 per gallon, or USD$1.75 per gallon for sustainable aviation fuel, depending on the emissions factor.[250] *IRA* also extended incentives for second generation biofuels and biodiesel through 2024.[251] This credit amount begins at USD$1 per gallon if labour requirements are met, with increases available depending on the emissions and intensity of the fuel.[252]

With respect to clean vehicles, *IRA* maintained the existing USD$7,500 credit for anyone purchasing a *new* electric, plug-in hybrid, or hydrogen fuel cell vehicle that meets specific conditions regarding the sourcing and assembly of vehicle components to encourage local production.[253] Further, a portion of the critical minerals and battery components must originate from North America or a US free-trade partner, with the required portion increasing post-2024.[254] USD$3,750 of the credit depends on the battery components and another USD$3,750 depends on the critical minerals.[255] Additionally, the

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242 *Ibid*.
243 *Ibid* at 7.
244 *Ibid*.
245 *Ibid*.
246 *Ibid*.
247 *Ibid* at 6.
248 *Ibid*.
249 *Ibid*.
250 *Ibid* at 7.
251 *Ibid*.
252 Bistline, Mehrotra & Wolfram, *supra* note 228 at 8.
253 Glen Hodgson, "Game On: The Implications of the US *Inflation Reduction Act* for Canadian Competitiveness" (18 April 2023) at 3, online (pdf): [perma.cc/9E9K-ZR3M].
254 *Ibid*.
255 Bistline, Mehrotra & Wolfram, *supra* note 228 at 8.

individual's income and the manufacturer's suggested retail price of the vehicle must not exceed certain limits.[256]

IRA also provided a USD$4,000 credit for used electric vehicles that are over *two years old* and have a purchase price under USD$25,000, subject to the buyer meeting certain income requirements.[257] Additionally, it extended credits up to USD$1,000 for home electric vehicle charging for individuals and up to USD$100,000 for business installations, subject to labour standards.[258]

d. Carbon Storage Tax Credit

IRA extended the existing tax credit for carbon capture and direct air capture, known as the Carbon Capture and Sequestration Tax Credit (section 45Q), which "has existed since 2007 and provides an incentive for corporations to capture and store carbon underground."[259] It extended the construction deadline for projects to 1 January 2033.[260] Additionally, it increased the credit amount from USD$50 to USD$85 per ton for carbon capture and storage at industrial facilities and power plants using saline geologic formations.[261] It increased the credit amount from USD$35 to USD$60 per ton for utilization of captured CO_2 and its precursor carbon monoxide to produce low and zero-carbon fuels, chemicals, building materials and other products, or for enhanced oil recovery.[262] For direct air capture, the credit amount has increased from USD$50 to USD$180 per ton for storage and from USD$35 to USD$130 per ton for utilization or enhanced oil recovery.[263] It also made the credit directly payable and transferable.[264]

External modelers anticipate that this will encourage significant investment in carbon management across both industrial and power sectors.[265] This is because "[t]he combined cost of carbon capture, transport, and storage varies greatly by application. [Usually], the more dilute[d] the stream of CO_2, the more expensive it is to capture."[266] These projects also often already have very thin profit margins.[267] As such, "developers must extract as much value as possible from the credit to finance the greatest number of carbon capture facilities."[268] Since the new section 45Q credit is directly payable, developers without a sufficiently large tax liability to offset the credit against "can opt to receive a fully refundable tax credit."[269] Previously, they would have had to "enter a tax equity partnership to essentially sell the right to use their tax credits to a larger investor in exchange for …

256 *Ibid*.
257 *Ibid* at 9.
258 *Ibid*.
259 Graham Diedrich, "How Will the Inflation Reduction Act Impact Forest and Carbon Management?" (22 August 2022) at 3, online (pdf): [perma.cc/GYN2-85J9].
260 *Ibid*.
261 BPC, "IRA Summary," *supra* note 232 at 9.
262 *Ibid*.
263 *Ibid*.
264 *Ibid*.
265 Bistline, Mehrotra & Wolfram, *supra* note 228 at 7.
266 Matt Bright, "The Inflation Reduction Act Creates a Whole New Market for Carbon Capture" (22 August 2022), online: [perma.cc/Y3BG-SS9Z].
267 *Ibid*.
268 *Ibid*.
269 *Ibid*.

financing [introducing] additional transaction costs and … reducing the appetite of investors for carbon capture projects."[270]

e. Residential energy efficiency

IRA maintained the existing credit for residential solar, wind, geothermal, and biomass fuel, and adjusted the project dates so a 30 percent credit applies for projects starting between 2022 and 2032, with the credit decreasing to 26 percent for projects starting in 2033 and 22 percent for projects starting in 2034.[271] *IRA* also enhanced the existing credit for energy efficient home improvements, extending the credit through to 2032 and increasing the credit from 10 percent to 30 percent.[272] It replaced the lifetime cap on credits with a USD$1,200 annual limit.[273]

Individuals are projected to use almost USD$40 billion in tax credits for investments in clean energy and energy efficiency, including home solar, battery storage, and energy-efficient upgrades, with rebates varying by energy savings and household income.[274]

Individual taxpayers have limits on claims for certain investments (such as USD$150 for a home energy audit and USD$2,000 for a heat pump) and for the total annual credits.[275] However, there is no limit on the overall amount of credits.[276]

2. DIRECT EXPENDITURES

IRA allocated over USD$20 billion to boost agricultural and forestry conservation projects, with a significant amount of these funds being flowed through existing programs.[277] *IRA* also expanded the US Department of Energy's (DOE) loan capabilities by about USD$100 billion, creating a new Energy and Infrastructure Reinvestment Program that aims to retool existing energy infrastructure.[278] It also offers support for renewable energy adoption among farmers and rural landowners.[279]

Further, *IRA* invested over USD$10 billion in energy efficiency programs, including grants for "whole-house energy saving retrofits programs" and for energy savings for other existing affordable housing programs.[280] It provided USD$5 billion for industrial decarbonization, supporting projects that reduce emissions in high-emission industries.[281]

Other notable investments include USD$27 billion for the Environmental Protection Agency's (EPA) Greenhouse Gas Reduction Fund, which will award competitive grants

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270 *Ibid*.
271 BPC, "IRA Summary," *supra* note 232 at 11.
272 *Ibid*.
273 *Ibid*.
274 Bistline, Mehrotra & Wolfram, *supra* note 228 at 8.
275 *Ibid*.
276 *Ibid*.
277 *Ibid* at 11.
278 *Ibid*.
279 *Ibid*.
280 *Ibid*.
281 *Ibid* at 12.

for clean energy projects that benefit low-income communities.[282] *IRA* also includes a Methane Emissions Reduction Program, which introduces a charge on methane emissions to encourage regulatory compliance.[283]

a. Low carbon materials and buildings

IRA allocated USD$4.5 billion to federal investments for low carbon materials in federal buildings and projects to promote sustainable practices and standardized environmental impact disclosures.[284] This includes:

- USD$250 million to EPA for developing standardized GHG emission declarations for construction materials.[285]
- USD$100 million for EPA, in collaboration with the Federal Highway Administration and General Services Administration, "to identify and label low-carbon … materials for used for federal buildings and transport projects."[286]
- USD$2 billion to offer "a 2% incentive in federal transportation projects for the use of low-carbon construction materials," provided these materials "cost the same or [slightly] more than traditional construction materials."[287]
- "[USD]$2.15 billion to the Federal Buildings Fund for [the General Services Administration] to acquire and install low-carbon building materials and products."[288]

Additionally, USD$150 million in grants were allocated to forest management and biomass utilization, with the aim of carbon removal and innovative uses of forestry residues.[289]

b. Energy efficiency

In addition to the tax credits designed to incentivize investments that increase residential energy efficiency, *IRA* allocated "[USD]$4.3 billion through 2031 to DOE to help state energy offices" in administering a Home Energy Performance-Based Whole House Rebates (HOMES) rebate program, which provides for comprehensive energy-saving retrofits in residential buildings.[290] Under the HOMES program, households can receive up to USD$14,000 in rebates, which includes various rebates for heat pumps, water heaters, electric stoves, electric panel wiring, and improving home insulation or sealant.[291]

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282 *Ibid*.
283 *Ibid*.
284 Diedrich, *supra* note 259 at 4.
285 BPC, "IRA Summary," *supra* note 232 at 10.
286 *Ibid*.
287 *Ibid*.
288 *Ibid*.
289 *Ibid*.
290 *Ibid* at 11.
291 *Ibid*.

Eligibility for these rebates requires household income to be below 150 percent of the area median income.[292] Additional financing is available for low- and moderate-income individuals earning less than 80 percent of the area's median income.[293]

IRA also provided "[USD]$200 million through 2031 for DOE to provide state energy offices with grants for the training of contractors to carry out energy efficiency upgrades."[294]

c. Energy innovation

The advanced industrial facilities deployment program, managed by the Office of Clean Energy Demonstration, is designed to fund projects that "[reduce] emissions from energy intensive industries [such as] iron, steel, concrete, glass, pulp, paper, ceramics, and chemical production."[295] The program provides "[USD]$5.8 billion [through] grants, rebates, direct loan, or cooperative agreements," and "[r]equires 50% non-federal cost share."[296] It prioritizes projects that achieve the greatest GHG reductions and that offer the greatest benefits to the most people at a project location.[297]

IRA also funded infrastructure improvements at the DOE National Laboratories, which host facilities and equipment that advance technological development.[298] It appropriates funding as follows:

- USD$133.2 million for laboratory infrastructure projects.
- USD$321.6 million for facilities.
- USD$800.7 million for construction and equipment.
- USD$294.5 million for energy sciences projects.[299]

Additionally, USD$150 million was allocated to each of the DOE's Offices of Fossil Energy and Carbon Management, Nuclear Energy, and Energy Efficiency and Renewable Energy "for infrastructure and general plant projects." [300]

IRA also allocated USD$700 million to the DOE's "Advanced Nuclear Fuel Availability Program through 2026 [to] increase availability of [high-assay low-enriched uranium (HALEAU)] fuel for civilian domestic research, development, demonstration, and commercial use."[301] HALEAU allows "US advanced reactors to achieve smaller designs

292 *Ibid*.
293 *Ibid*.
294 *Ibid*.
295 *Ibid* at 12.
296 *Ibid*.
297 *Ibid*.
298 *Ibid*.
299 *Ibid*.
300 *Ibid* at 12–13.
301 *Ibid* at 13.

that [generate] more power per unit of volume."[302] It also allowed developers to maximize their system's life cores, increase efficiency, and achieve better fuel utilization.[303]

d. Offshore wind and oil and gas systems

IRA allocated USD$100 million for the development of infrastructure to support energy generated from offshore wind, "available for the planning, modeling, analysis, and development of interregional transmission and optimized integration of energy generated from offshore wind."[304] For oil and gas, *IRA* increased the minimum offshore royalty rates from 12.5 percent to 16.66 percent, and the onshore leasing bid from USD$2 to USD$10 per acre, effective until 2022.[305] It also raised the "annual rental rates for new onshore oil and gas leases."[306]

The methane emissions reduction program is set to receive USD$1.55 billion in funding from *IRA* to support various activities aimed at reducing methane emissions, including monitoring, source plugging, and environmental restoration. *IRA* established a cap on annual methane waste emissions at 25,000 metric tons of CO_2 equivalent (vented, released, or flared) per facility, with penalties "starting at [USD]$900 per ton in 2024 and increasing to [USD]$1,500 per ton by 2026" for emissions that exceed that limit.[307]

e. Community investment

IRA earmarked substantial funds to ensure there is investment in clean energy that benefits the community. The legislation set aside USD$1 billion for clean heavy-duty vehicles, with USD$400 million allocated to rural communities for them to purchase heavy duty vehicles like school buses and garbage trucks.[308] The funds will also cover the associated maintenance, workforce training, and planning in relation to these vehicles.[309]

IRA introduced the Low Emissions Electricity Program, providing "[USD]$68 million in total … for education, … technical assistance, … and partnerships within low-income and disadvantaged communities related to GHG emissions reductions."[310] An additional USD$18 million was also allocated "to carry out activities of the program and ensure GHG emissions reductions are achieved from domestic electricity generation and use."[311]

IRA also provided the US Department of Agriculture with USD$9.7 billion of financial assistance, including loans, for rural electric co-operatives to enhance the "resiliency, reliability, and affordability of rural electric systems" through either the purchase and deployment of, or improvements to existing, renewable and zero-emission energy

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302 Office of Nuclear Energy, "What is High-Assay Low-Enriched Uranium (HALEU)?" (7 April 2020), online: [perma.cc/RUQ8-QSKP].
303 *Ibid*.
304 BPC, "IRA Summary," *supra* note 232 at 13.
305 *Ibid*.
306 *Ibid*.
307 *Ibid* at 14.
308 *Ibid* at 15.
309 *Ibid*.
310 *Ibid*.
311 *Ibid*.

systems.[312] The maximum award per project is capped at USD$970 million, and the award can not exceed 25 percent of the total project cost.[313] Moreover, the Rural Energy for America Program was allocated USD$2 billion until 2031 by *IRA* "to provide competitive grants and loan guarantees to farmers, ranchers, and rural small businesses for renewable energy systems or energy efficiency improvements."[314] "More than [USD]$300 million is set aside to provide grants" in order to promote "underutilized renewable energy technologies," with the "[f]ederal cost share for grants [increased] from 25% to a maximum of 50 percent."[315]

f. Permitting process

IRA provided funds to enhance the efficiency and speed of environmental reviews and the permitting process:

- The DOE will receive USD$760 million "to facilitate and accelerate the siting and permitting of interstate [electricity] transmission projects."[316]
- The Federal Permitting Improvement Steering Council will receive USD$350 million under the "Environmental Review Improvement Fund of the Fixing America's Surface Transportation (FAST) Act that seeks to accelerate and streamline the environmental review process."[317]
- The EPA will receive USD$140 million "to invest in staffing and equipment," and to develop a process that provides for more accurate and timely review. The National Oceanic and Atmospheric Administration will also receive USD$20 million for staffing and equipment for the same purpose.[318]
- The EPA will also receive another USD$2.25 billion in funding for the purchase and installation of zero emission equipment at ports.[319]

3. CLEAN ENERGY FINANCING

a. DOE Loan Programs Office

IRA expanded the Loan Programs Office's (LPO) eligibility and lending capacity for financing clean energy and environmental justice projects.[320] "*IRA* provided an additional [USD]$40 billion of loan authority for eligible … loan guarantees under the Title 17 [Clean Energy Financing Program (Title 17 Program)] through September 30, 2026," and allocated "[USD]$3.6 billion in credit subsidy to support the cost of those loans."[321] The

312 *Ibid*.
313 *Ibid*.
314 *Ibid* at 16.
315 *Ibid*.
316 *Ibid*.
317 *Ibid*.
318 *Ibid*.
319 *Ibid*.
320 Jigar Shah, "Transforming Clean Energy Financing and Supply Chains in the United States: LPO One Year After the IRA" (16 August 2023), online: [perma.cc/AWZ3-2TCY].
321 *Ibid*.

Title 17 Program finances projects across the US that support the deployment of clean energy and the reinvestment in energy infrastructure, aiming to reduce GHG emissions and air pollution.[322] *IRA* expanded the scope of the Title 17 Program to include state-supported projects and the reinvestment in legacy energy infrastructure.[323] The Title 17 Program now offers four categories of project financing, each with their own specific eligibility criteria, including innovative energy, innovative supply chain, institution supported state energy financing, and energy infrastructure reinvestment.[324] Through the Title 17 Program, borrowers can access either direct loans from US Treasury's Federal Financing Bank backed by 100 percent "full faith and credit" DOE guarantees or DOE partial guarantees of debt.[325] With the expanded loan authority provided by *IRA*, the LPO states that it has received applications for billions in financing for previously ineligible energy projects across the US[326]

IRA also allocated USD$3 billion for the Advanced Transportation Vehicle Manufacturing Loan Program (ATVM Loan Program) "through September 30, 2028, to support credit subsidy of direct loans under the ATVM [Loan Program], estimated to provide [approximately USD]$40 billion in [additional] loan authority, allowing LPO to finance more eligible projects."[327] The ATVM Loan Program has provided USD$8 billion in loans to support the production of over four million advanced technology vehicles and qualifying components.[328] In August 2023, the LPO has stated that since the passage of *IRA*, it has offered "nearly [USD]$13.5 billion in conditional commitments" to various companies covering various aspects of "the electric vehicle and stationary storage supply chain."[329] These projects aim to onshore and re-shore manufacturing for zero emissions vehicles and related technologies, potentially creating tens of thousands of jobs and displacing approximately "1.09 billion gallons of gasoline annually once fully operational."[330]

Finally, *IRA* provided the LPO's Tribal Energy Finance Program with USD$20 billion in lending authority.[331] The LPO facilitates "Tribal investment in energy-related projects by [offering] direct loans or partial loan guarantees to federally recognized tribe, including Alaska Native village or regional or village corporations; or a Tribal Energy Development Organization … that is wholly or substantially owned by [such entities]."[332]

b. Greenhouse Gas Reduction Fund

IRA "provide[d] EPA funding for grants to state, local, regional, and Tribal programs that provide financial support to low and zero carbon technologies and can act as seed capital for regional, local, state, or Tribal green banks that provide financial support for

322 *Ibid*.
323 *Ibid*.
324 *Ibid*.
325 *Ibid*; US Department of Energy, "Title 17 Clean Energy Financing," online: [perma.cc/A53G-LEPP].
326 *Ibid*.
327 *Ibid*.
328 Loan Programs Office, "Advanced Transportation Financing," online: [perma.cc/A59L-A3ZE].
329 Shah, *supra* note 307.
330 *Ibid*.
331 *Ibid*.
332 Loan Programs Office, "Tribal Energy Financing," online: [perma.cc/Q6AF-4KCY].

low or zero emission projects."[333] As part of this investment, the EPA launched three different programs:

- National Clean Investment Fund;
- Clean Communities Investment Accelerator; and
- Solar for All.[334]

Under the National Clean Investment Fund, a USD$14 billion program, "EPA has selected three applicants to [create] national clean financing institutions."[335] These will offer "affordable financing for clean technology projects nationwide, partnering with private … investors [and] community organizations … to deploy projects [that] mobilize private capital," save energy costs, improve air quality, create jobs, and deliver other benefits to millions of Americans.[336]

The Clean Communities Investment Accelerator is a USD$6 billion program through which "EPA has selected five applicants to establish hubs that [support] community lenders … in low-income and disadvantaged [areas]."[337] These hubs "provide funding and technical assistance," facilitating immediate project deployment and enhancing the long-term financing capabilities "of hundreds of community lenders."[338]

In the Solar for All, a USD$7 billion program, "EPA has selected 60 [recipients,] including states, territories, Tribal governments, … and nonprofit[s]," to enhance distributed solar investment in "low-income and disadvantaged communities."[339] These "[g]rantees will use [the] funds to [broaden] existing low-income solar programs," or launch new nationwide Solar for All initiatives, "enabling millions of low-income households to access affordable … and clean solar energy."[340]

B. ABSENCE OF CARBON PRICING

IRA heavily relies on financial incentives, such as tax credits and subsidies, to influence consumer behaviour and industry trends toward adopting technologies that reduce emissions, rather than introducing nationally implemented mechanisms like nationwide carbon pricing.[341] Notably, 13 US states have some form of carbon pricing, however, the absence of a national policy creates a fragmented landscape with substantial gaps and inconsistencies.[342]

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333 BPC, "IRA Summary," *supra* note 232 at 18.
334 United States Environmental Protection Agency, "About the Greenhouse Gas Reduction Fund," online: [perma.cc/S5TL-FCT3].
335 *Ibid*.
336 *Ibid*.
337 *Ibid*.
338 *Ibid*.
339 *Ibid*.
340 *Ibid*.
341 Hodgson, *supra* note 253 at 4.
342 Center for Climate and Energy Solutions, "U.S. State Carbon Pricing Policies," online: [perma.cc/9CKC-LDP7].

Economic studies have consistently shown that carbon pricing, through its influence on price signals, offers a more cost-effective and transparent method for transitioning to a low carbon economy.[343] However, carbon pricing can be politically contentious and often becomes a focal point for criticism. Therefore, the decision to exclude a national carbon pricing scheme from *IRA* was likely made early in the legislative process in an effort to ensure *IRA*'s passage in Congress.[344] The CD Howe Institute notes that although *IRA*'s subsidy-driven approach may still meet its objective of reducing GHG emissions, the strategy used may be less transparent and more costly to the federal budget, and could ultimately lead to higher economic inefficiencies and missed opportunities for GDP growth due to reduced efficiency.[345]

Internationally, the relevance of carbon pricing becomes even more pronounced, as countries increasingly implement carbon tariffs to combat "carbon leakage" — where businesses relocate operations to avoid stringent domestic climate policies.[346] The European Union (EU) has already introduced some of these mechanisms.[347] Polls suggest 74 percent of Americans are in support of a carbon border adjustment mechanism similar to the EU.[348] As such, Canada's carbon tax might not only prove to be efficient in ensuring Canada is able to reduce emissions, but it could also help Canada remain competitive internationally in the long term as countries adopt these carbon tariffs.

C. *IRA*'S ECONOMIC AND ENVIRONMENTAL IMPACTS IN THE US

IRA aims to build crucial domestic manufacturing and supply chains to compete globally in the clean energy sector, reduce air pollution in low-income areas, and cut household energy costs nationwide.[349] It has already created hundreds of thousands of jobs, launched numerous clean energy and transportation projects, and started reclaiming supply chains that had been previously running overseas.[350]

Notably, however, *IRA* could cost the federal government much more than the estimated USD$370 billion, with some analysts asserting the real cost could range between USD$800 billion and USD$1.3 trillion.[351] This is because *IRA* includes many uncapped tax credits that could extend over a decade or more, making the total expenditures potentially limitless.[352]

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343 Kevin M Kennedy, *Putting A Price on Carbon: Evaluating a Carbon Price and Complementary Policies for a 1.5°C World* (Washington, DC: World Resources Institute, 19 September 2019).
344 Hodgson, *supra* note 253 at 4.
345 *Ibid*.
346 Eric Van Rythoven, "A Conservative Government May Axe the Carbon Tax but Then May Have to Bring It Back," *Policy Options* (23 May 2024), online: [perma.cc/55MH-ZB65].
347 *Ibid*.
348 Mary Sagatelova, John Milko & Ryan Fitzpatrick, "Americans Support a Carbon Border Adjustment" (20 June 2023), online: [perma.cc/G2R4-W3RJ].
349 United States Environmental Protection Agency, *supra* note 334.
350 Amanda Levin & Jackie Ennis, "Clean Electricity Tax Credits in the Inflation Reduction Act Will Reduce Emissions, Grow Jobs, and Lower Bills" (September 2022) at 1, 6, online (pdf): [perma.cc/HLV2-FKX9].
351 Hodgson, *supra* note 253 at 5.
352 *Ibid*.

1. ECONOMIC IMPACT

a. Investment and jobs in the energy sector

Between *IRA*'s enactment in August 2022 and March 2024, there have been 305 new projects announced, representing nearly USD$121 billion in private investments and creating over 104,000 jobs in the energy sector.[353] The projects announced broken down by sector include the following:

- 68 new projects in the battery and storage sector, representing USD$41 billion in investments and 23,946 jobs;
- 141 new projects in the electric vehicle sector, representing USD$79.8 billion in investments and 60,783 new jobs;
- 16 new grid, transmission, and electrification sector projects, representing USD$1.8 billion in investments and 2,348 new jobs;
- 16 new hydrogen sector projects, representing USD$5.1 billion in investments and 3,338 new jobs;
- 67 new solar sector projects, representing USD$13.5 billion in investments and 24,179 new jobs;
- 20 new wind sector projects, representing nearly USD$3.0 billion in investments and 2,674 new jobs; and
- Five total projects in each of the biofuel, energy efficiency, geothermal, and semiconductor sectors, representing USD$5.4 billion in investments and 2,210 new jobs.[354]

2. ENVIRONMENTAL IMPACT

The US has set a climate target of reducing GHG emissions by 50 to 52 percent from 2005 levels by 2030.[355] However, an independent analysis by the Rhodium Group indicates that, taking all provisions of *IRA* into account, US net GHG emissions are projected to decrease only by 32 to 42 percent within the same time frame.[356] This projection is comparable to Canada's current policies which, as stated, are projected to reduce GHG emissions by 36 percent by 2030. Consequently, like Canada, the US will need to implement additional measures to achieve its ambitious 2030 climate goals.

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353 E2, "301 Major Clean Energy Projects Announced Since IRA; Companies Announced 1,700 Jobs, $3B for 8 Projects in March" (11 April 2024), online: [perma.cc/8U8E-9LLC].

354 *Ibid*.

355 Ben King, John Larsen & Hannah Kolus, "A Congressional Climate Breakthrough" (28 July 2022), online: [perma.cc/2ZHZ-D2QP].

356 John Larsen et al, *A Turning Point for US Climate Progress: Assessing the Climate and Clean Energy Provisions in the Inflation Reduction Act* (New York: Rhodium Group, 12 August 2022) at 1.

D. *IRA*'S ECONOMIC IMPACTS ON CANADA

Canada is currently spending more than the US on a proportional basis relative to GDP, indicating the federal government's current efforts to remain competitive with the US[357] However, from a policy perspective, Canada's approach lacks a streamlined regulatory framework for energy projects, is more segmented, and includes a variety of financial and regulatory tools.[358]

1. ECONOMIC ANALYSIS OF THE APPROACHES

To contextualize Canada's economic response to *IRA*, TD Economics published a comparative financial analysis in April 2023 (the TD Report).[359] The TD Report estimates that Canada has committed a total of CDN$139 billion in spending since the 2021 budget, which accounts for 5 percent of its nominal GDP, significantly higher than *IRA*'s commitment of 1.5 percent of the US's nominal GDP.[360] This higher proportional spend is likely necessary for Canada, which needs to "punch above its weight" in order to remain competitive on the global stage, especially against "industrial powerhouses such as the U.S., Germany, and China, [which] historically … attract more capital and form centers of innovation."[361]

The TD Report suggests that Canada has announced subsidies that were comparable or better than those offered in the US on a sector-by-sector basis. Both the US and Canada offer significant tax credits to encourage the adoption of renewable energy technologies, with *IRA* allocating over USD$161 billion to this effort, representing over 40 percent of its total spend.[362] In contrast, Canada's Budget 2023 committed CDN$26 billion to similar initiatives, which is a higher proportion of its GDP compared to the US[363] Additionally, both countries also provide substantial support for clean technology manufacturing, with the US offering up to USD$41 billion in credits and incentives, and Canada committing approximately CDN$21 billion through various programs including ITCs and reduced corporate income rates.[364]

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357 Francis Fong, "A Sober Second Look: Taking Stock of the Competitiveness of Canada's Climate Policy Framework Relative to the US" (24 April 2023), online (pdf): [perma.cc/8UCU-CKNL].
358 Haley, *supra* note 6.
359 Fong, *supra* note 357.
360 *Ibid* at 1.
361 *Ibid*.
362 *Ibid* at 4.
363 *Ibid*.
364 *Ibid*.

TABLE 1:
COMPARISON OF SPENDING IN CANADA AND THE US ON RENEWABLE ENERGY TECHNOLOGIES AND CLEAN TECHNOLOGY MANUFACTURING SUPPORT[365]

	Canada	US
Total Spend	5 percent of GDP	1.5 percent of GDP
Renewable Energy Technologies Spending	CDN$26 billion	USD$161 billion
Clean Technology Manufacturing Support	CDN$21 billion	USD$41 billion

There are, however, notable differences when comparing Canada's approach to *IRA*. Canada employs a broad array of funding and regulatory tools, making its framework more complex than that of the US, which primarily relies on subsidies and direct funding.[366] Canada's policy framework incorporates carbon pricing and clean fuel regulations that pass costs to consumers to encourage environmentally friendly consumer behaviour. This is complemented by subsidies and direct funding aimed at incentivizing investment in clean energy technology.

2. *IRA*'S POSITIVE IMPACTS

Anecdotally, *IRA* has facilitated some investment into Canada, especially investment related to electric vehicle batteries. For example, one month after the law's enactment, South Korean battery manufacturer LG Energy Solution Ltd. secured agreements with three Canadian junior mining companies to obtain the necessary materials for electrical vehicle batteries.[367] A spokesperson for the company stated that *IRA* helped to close this deal.[368]

Further, in November 2023, General Motors Co. (GM) signed an agreement with Brazil-based Vale SA to purchase 25,000 tons of battery-grade nickel annually from Vale's planned facility in Bécancour, Quebec.[369] This nickel will supply the cathodes for batteries in approximately 350,000 electric vehicles each year.[370] Last year, a GM representative cited *IRA* as one of the reasons for entering into the agreement.[371]

IRA helps to incentivize these investments through a tax credit of USD$3,750 that it offers for vehicles with batteries that use critical minerals either extracted or processed in countries that have a free trade agreement with the US, or minerals that were recycled in North American facilities.[372] Additionally, there is another USD$3,750 tax credit available

365 *Ibid* at 1, 4.
366 *Ibid* at 4.
367 Karim, *supra* note 7.
368 *Ibid*.
369 *Ibid*.
370 *Ibid*.
371 *Ibid*.
372 *Ibid*.

"for vehicles [with] battery components [that] were either manufactured or assembled in North America."[373]

3. CHALLENGES INTRODUCED BY *IRA*

However, again anecdotally, *IRA* has also caused some businesses to relocate to the US or scrap projects in Canada.[374] For instance, in March, Parkland Corporation, a fuel distributor based in Calgary, announced its decision not to construct a separate renewable diesel facility at its Burnaby Refinery.[375] The company cited increasing costs and *IRA*, which it claimed favoured US producers, as reasons for this decision.[376]

Concerns that *IRA* will have negative effects on the Canadian energy sector are widespread among many stakeholders in Canada. For example, the Explorers and Producers Association of Canada highlighted Canada's role as a leader in decarbonization efforts; however, it warned that Canada might lose its leadership to the US due to "the *IRA*'s [USD]$850 million in incentives for methane monitoring and mitigation in the U.S. oil and gas sector."[377] Currently, Canada lags behind in the value offered by its methane-reduction related credits.[378] However, "by 2030, the expected value of [Canada's] incentives … will meet or exceed that expected in Texas."[379]

Furthermore, Canada's Building Trades Unions noted that the legislation positions the US as a dominant force in clean energy investment and production, with *IRA*'s incentives making the US a highly appealing market for investment.[380]

The Canadian Chamber of Commerce expressed concerns that *IRA*'s increasing labour demand would challenge Canada's ability to attract and retain the skilled workers needed to further its goal of a clean economy.[381] This concern was shared by the Canadian Association of Energy Contractors and the Smart Prosperity Institute, which highlighted "the need to prevent Canadian energy firms and employees from relocating to the United States [due to the] new economic and employment opportunities" promised by *IRA*.[382]

The Canadian Chamber of Commerce also stated that *IRA*'s incentives aimed at boosting US development and production of clean fuels and technologies might erode the competitiveness of Canadian businesses.[383] It pointed out specific supports in *IRA*, such as tax credits for the production of hydrogen, biofuels, and other clean fuels, as well as technologies like CCUS.[384] Moreover, it noted that *IRA* includes "credit multipliers" for

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373 *Ibid*.
374 *Ibid*.
375 *Ibid*.
376 *Ibid*.
377 House of Commons, *The United States'* Inflation Reduction Act of 2022*: Trade Impacts on Certain Canadian Sectors: Report of the Standing Committee on International Trade* (May 2023) (Chair: Honourable Judy A Sgro) at 14.
378 Janetta McKenzie & Scott MacDougall, *Comparing Canadian and American Financial Incentives for CCUS in the Oil Sector* (Canada: Canadian Climate Institute and Pembina Institute, March 2023) at 11.
379 *Ibid*.
380 House of Commons, *supra* note 377 at 14.
381 *Ibid* at 15.
382 *Ibid*.
383 *Ibid*.
384 *Ibid*.

clean energy and technologies that satisfy certain domestic content and labour conditions.[385]

Despite the criticisms, a closer examination reveals that Canada's financial commitment compared to *IRA* is robust, suggesting that concerns may be somewhat misplaced. The TD Report suggests that Canada's competitive future on the global stage may hinge less on the size of production subsidies per unit and more on broader issues.[386] These broader issues include the complexity of accessing the programs Canada currently has in place, regulatory obstacles, and a potential underemphasis on industries where Canada has a competitive edge. This nuanced view suggests that enhancing subsidy frameworks and regulatory processes could be key in leveraging Canada's strengths and ensuring it remains competitive in attracting investors, as compared to our southern neighbour.

IV. POLICY CONSIDERATIONS FOR BOOSTING CANADA'S COMPETITIVENESS IN LIGHT OF NET-ZERO EMISSIONS GOAL

A. CHALLENGES IN CURRENT POLICY LANDSCAPE

Canada's existing policies are insufficient to ensure that it meets its 2030 *Paris Agreement* commitments to reduce emissions by 40 to 45 percent below 2005 levels. This challenge is compounded by a national productivity crisis, highlighting the need for comprehensive strategies that not only ensure reductions in emissions, but also promote economic growth. Additionally, as briefly mentioned, there are broader systemic challenges that should also be considered as Canada evaluates potential changes to its policy.

1. HIGHER INTEREST RATES

A recent report by Wood Mackenzie highlights the challenges Canada's clean energy sector faces due to rising interest rates.[387] The report notes that clean and low carbon energy projects, being capital-intensive and often subsidy-dependent, are more vulnerable to high borrowing costs compared to the more financially robust oil and gas sector.[388] The substantial upfront costs for clean energy projects such as solar farms and wind turbines result in heavy reliance on financing for their development.[389] These elevated costs could slow down the growth of the sector.

2. UNCERTAINTY IN REGULATORY CONDITIONS

Similarly, a report by the Fraser Institute suggests that "100 per cent of respondents for Newfoundland and Labrador, 93 per cent for British Columbia, and 50 per cent for Alberta [agreed] that uncertainty concerning environmental regulations [acted as] a deterrent for

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385 *Ibid*.
386 Fong, *supra* note 357 at 2.
387 Amanda Stephenson, "High Interest Rates Threaten Rollout of Green Economy: Wood Mackenzie Report" (18 April 2024), online: [perma.cc/PS2H-JNL7].
388 *Ibid*.
389 *Ibid*.

investment."[390] In comparison, in Oklahoma and Texas, only 6 percent and 11 percent of respondents, respectively, thought that regulations acted as a deterrent for investment.[391]

Overall, Canada's regulations are complex, overlapping, and at times uncoordinated, which leads to higher costs and difficulties for businesses and investors in the energy sector.[392]

3. CARBON LEAKAGE

Carbon leakage occurs where a business decides to move their projects or production from one jurisdiction with stringent policies, to another jurisdiction that has more lenient policies, mitigating the effects of stricter climate policies.[393] The Canadian federal government is currently using carbon pricing as its primary mechanism to curb emissions, while the US does not have a national carbon pricing scheme. This may detract both Canadian and foreign businesses from investing in Canadian projects. The increase operating costs for businesses due to carbon pricing may result in lower profit margins and higher price goods for consumers.[394] Ultimately, the continually increasing carbon price may hurt the competitiveness of Canadian products in both domestic and foreign markets.[395]

Through an environmental lens, the Canadian carbon pricing system, especially in light of the lack of clarity and certainty in pricing, may push Canadian and foreign businesses to expand or relocate to other countries with less stringent policies.[396] Consequently, Canadian businesses could potentially fail to reduce their emissions to avoid Canadian policy. In making policy decisions, the federal government will need to consider the impact too strict of policy will have on deterring businesses and the potential shifting of negative environmental impacts to other jurisdictions.

4. ELECTRIC VEHICLE SECTOR LOGISTICAL AND RESOURCE CHALLENGES

Despite the significant amount that the federal government has committed to the electric vehicle sector, layoffs in the industry suggest that there are broader challenges at play.[397] First, there are reports that by 2035, electric vehicle could raise "electricity demand by 15.3 per cent in Canada, which would require the construction of either ten mega hydroelectric dams or 13 new 500-megawatt gas plants.[398] "[T]he timelines and costs associated with such projects are [extensive]."[399] For example, the construction of the

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390 Julio Mejía and Elmira Aliakbari, "Red Tape and Uncertainty Hurting Oil and Gas Investment in Canada" (6 March 2024), online: [perma.cc/3BKN-QWMC].

391 *Ibid*.

392 Canadian Chamber of Commerce, "Policy Matters: Regulatory Reform" (7 July 2024), online (blog): [perma.cc/2KVF-PEZF].

393 CLEAR Center, "What is Carbon Leakage?" (24 April 2020), online: [perma.cc/7QDH-9C4N].

394 Chartered Professional Accountants Canada, "What the Border Carbon Adjustment Will Mean for Business – A Primer," online: [perma.cc/K9Z4-X7E5].

395 *Ibid*.

396 *Ibid*.

397 Elmira Aliakbari & Julio Mejía, "EV Transition Stalls Despite Government Mandates and Billion-Dollar Handouts" *EnergyNow* (25 May 2024), online: [perma.cc/A5BV-45YC].

398 *Ibid*.

399 *Ibid*.

British Columbia Site C dam "took more than a decade to plan and comply with environmental regulations and approximately another decade to construct."[400] To date, the project is expected to cost upward of CDN$16 billion.[401]

Secondly, meeting the mineral needs for electric vehicle batteries poses a considerable challenge. Projections suggest that to fulfil global electric vehicle adoption mandates by 2030, including those in Canada and the US, the world would need 388 new mines.[402]

B. POLICY CONSIDERATIONS

This article has highlighted the myriad policy measures and financial commitments that the federal government has announced since first signing the *Paris Agreement* in 2016. Those announcements make great headlines and suggest that considerable work has been done to champion clean energy, stimulate economic growth, and respond to *IRA* in a meaningful way. However, if those measures are going to prove effective (namely, achieve their stated objectives in a real and meaningful way) then it may be prudent for Canadian policy-makers to consider how they can better align, integrate, and action those policies objectives to better address the challenges that Canada's energy sector faces. This would include:

- unifying and simplifying Canada's current regulations;
- simplifying Canada's green tax credits;
- developing a stronger national industrial strategy; and
- focusing on Canada's competitive advantages.

1. UNIFY AND SIMPLIFY POLICY INCENTIVES AND REGULATIONS

The incentives and regulations stemming from Canada's current energy policy, especially in comparison to *IRA*, are scattershot and complicated. Energy transition incentives and regulatory measures are widespread across different sectors of the economy including transportation, heavy industry, electricity generation, agriculture, construction, and others. Within each of these sectors, separate government agencies, community groups, environmental organizations, businesses, and other stakeholders are involved in developing and implementing policy and incentive programs, which has led to fragmentation in some areas and the duplication of effort in others.

Generally, little analysis has been done on the interaction between different policy measures. For example, when carbon pricing and tax credits are combined, carbon pricing reduces the size of the tax credit incentive required to drive decarbonization.[403] Carbon pricing on its own incentivizes a shift toward clean energy projects. Therefore, combining

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400 *Ibid*.
401 *Ibid*.
402 *Ibid*.
403 Marisa Beck, Dale Beugin & Calvin Trottier-Chi, "Seven Recommendations to Leverage Public Investment to Help Canada Compete in the Global Energy Transition" (March 2023) at 24, online (pdf): [perma.cc/UC77-MYQC].

carbon pricing with investment tax credits doubles down on incentivizing the same action. If a smaller tax credit is required, when combined with carbon pricing, to incentivize a shift toward clean energy, government funds allocated to the tax credit incentives may be better utilized in other areas. Conversely, emissions reductions from projects that were incentivized through investment tax credits may result in an overflow of carbon pricing credits available under the federal OBPS.[404] When an abundance of carbon pricing credits are available, heavy emitters are not incentivized to reduce emissions because they can make use of tradable credits instead. This would undermine the effectiveness of the carbon pricing system. This example, among others, illustrates inefficiencies in Canadian energy policy where multiple incentives either provide the same effects or counteract each other. Such overlap and inefficiencies also exist due to a lack of policy uniformity among provinces and territories.

Further, the incentive programs and regulations under Canada's energy policy are accompanied by complex eligibility criteria, reporting requirements, compliance mechanisms, and differing applicability timelines. Understanding and navigating these complex incentive programs increases cost and creates challenges for Canadian businesses, especially small and medium-sized enterprises (SMEs) that may lack the required resources and expertise.[405] Reducing the red tape around incentive programs and regulations should allow for greater uptake and adherence among Canadian businesses and would also have a positive impact on overall productivity in Canada.[406]

To even be considered for support from the CIB, a project must be new or have primarily new components, fall within one of the five designated categories (which are green infrastructure, clean power, public transit, trade and transportation, or broadband), be in the public interest, have a reasonable potential to generate revenue, utilize a proven technology at a technology readiness of level eight or above, be able to attract private investment and commercial viability, and be fully or partially located in Canada.[407] Beyond these eligibility criteria, the project must also satisfy commercial due diligence requirements and will be analyzed against other projects based on market testing results, attractiveness to institutional and private investors, and deliverability, including the proposed procurement strategy.[408] Such extensive criteria make it burdensome for SMEs to approach investment opportunities because they lack the resources to navigate the application process, and the due diligence and reporting requirements. The further requirement of "[being] able to attract private sector investment and demonstrate commercial viability" may limit the reach of the CIB to projects that are already well-positioned to access external financing, thereby preventing less developed and earlier-stage projects from receiving the funding they need.[409]

The structure and mandate of the Canada Growth Fund attempts to fill some of the gaps missed by other investment programs by focusing directly on projects that feature less

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404 McKenzie & MacDougall, *supra* note 378 at 10.

405 Simon Gaudreault, "Canada's Productivity: How to Free Up WAY More Time and Resources in Our Economy" (4 April 2024), online (blog): [perma.cc/9PGC-EQB3].

406 *Ibid*.

407 Canada Infrastructure Bank, "Frequently Asked Questions: About the CIB" (2024), online: [perma.cc/38LC-TU2V] [CIB].

408 *Ibid*.

409 *Ibid*.

mature technologies, such as CCUS, hydrogen, and biofuels and SMEs that are scaling less mature clean technologies.[410] For a project to be considered for investment under the Canada Growth Fund, the project's potential impact must align with the Canada Growth Fund's mandate, the project should be likely to draw additional private and institutional investment that may not have been secured without the Canada Growth Fund's involvement, and the project must have a reasonable expectation of capital returns.[411] Though the Canada Growth Fund is a step in the right direction for developing technologies and SMEs that are typically disadvantaged in Canadian incentive programs, there is a risk that the Canada Growth Fund will conflate its mandate with the goal of increasing private and institutional investment.[412]

Finally, Canada's energy policy, especially in relation to carbon pricing, also lacks general clarity and fails to provide certainty for investors. Carbon pricing across the country does not uniformly apply to emitters due to differing application thresholds and exemptions. There is a lack of transparency as to the purpose of the differences between carbon pricing systems and why certain design choices for these systems were made. Such lack of clarity and transparency creates risk for investors interested in any carbon-related industry due to their inability to forecast future pricing and may lead to carbon leakage.

It may be beneficial for Canada to select or create a national advisory board or expand the mandate of the Net-Zero Advisory Body to specifically review, monitor, and compare the effectiveness of the federal, provincial, and territorial energy policies when considered in combination. To address the various shortcomings of Canada's complex energy policy initiatives, there is a need for greater communication, coordination, and information sharing between government agencies and levels of government. Such coordination would decrease redundancies in energy transition incentives, help identify gaps in the existing policy regime, and increase the overall uniformity in Canadian energy policy. Further, greater transparency in policy design choices and decision-making will also reduce risk and create price certainty for both Canadian and international investors.

2. TAX CREDIT CLARITY

Providing clear tax credit guidelines for both domestic and international investors will help to incentivize investment in Canada's clean energy sector. The tax credits in *IRA* are much simpler, and provide investors with long-term clarity and predictability, which likely helped facilitate the billions of dollars of private sector investment since *IRA*'s enactment. The tax credits under *IRA* are widely available, have long and defined timelines, and only allow tax credits to decline after emissions reduction targets are planned to be achieved.[413]

Conversely, the proposed Canadian ITCs present differing timelines, narrow and confusing eligibility criteria, hefty continuous disclosure requirements, and claw back provisions.[414] Potential investors may be unable to understand and therefore be discouraged from using these credits, in order to avoid the complicated requirements and overall

410 CGF, *2023 Report*, *supra* note 64 at 4.
411 *Ibid*.
412 Beck, Beugin & Trottier-Chi, *supra* note 403 at 23.
413 Business Council of Canada, "Measures to Grow Canada's Clean Economy" (8 September 2023), online: [perma.cc/RYB3-LMYR].
414 *Ibid*.

uncertainty of their application. For example, under the Clean Electricity ITC, a competent jurisdictional authority is required to commit to achieving the federal government's net zero electricity goal.[415] Such requirement may be seen as a political overreach and may result in delays in uptake for this tax credit.[416] Further, many Canadian ITCs require project owners to pay third parties to measure their impact in order to prevent the credits from being clawed back, which is burdensome and increases overall costs for project owners. The tax credits in *IRA* do not have such cumbersome continuous reporting obligations or claw back provisions. Most of the credits offered by *IRA* "require [either] a thorough application [where the taxpayer] details the qualifying investment, while others simply require filing a tax form."[417]

Ultimately, Canada should consider simplifying eligibility requirements and increasing the duration of tax credits in order to give investors certainty about their applicability in the long term.[418]

3. DEVELOP A STRONGER INDUSTRIAL STRATEGY

As previously set out, Canada's ability to incentivize and regulate within the energy sector is divided between the federal, provincial, and territorial governments. This division of powers creates a unique challenge for Canada's competitiveness in the energy sector and has the potential to result in converse or counteracting policy initiatives. To ensure greater alignment between the federal, provincial, and territorial governments, the federal government must increase its consultation efforts and ensure there is intensive dialogue regarding potential policy measures.[419] Stronger communication between all levels of government will allow for more efficient implementation and greater effectiveness of energy incentives and policies.

Using findings from these communications, the federal government can better position itself to develop and adopt a comprehensive national strategic industrial policy that caters to the needs and addresses the concerns of *all* Canadians. In this regard, "'[i]ndustrial policy' refers to government efforts to shape the economy by targeting specific industries, firms, or economic activities."[420] This can be achieved through "subsidies, tax incentives, infrastructure development, [and] regulations."[421] In the first half of the twentieth century, Canada's industrial policy advanced "the development of railways, roads, airlines, housing, and other [essential] urban infrastructure necessary for economic [growth]," and the US did the same.[422] Though the use of industrial policy declined in the 1980s and 1990s,

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415 *Ibid*.

416 *Ibid*.

417 Bloomberg Tax, "What Qualifies for Business Energy Tax Credits?" (26 January 2024), online: [perma.cc/U827-HPLP].

418 Francis Bradley, "Clean Electricity Investment Tax Credit Consultation" (6 September 2023) at 3–4, online (pdf): [perma.cc/8GJ8-NAVS].

419 International Energy Agency, "IEA Commends Canada's Competitive Energy Markets and Calls on the Federal Government to Strengthen its Efforts in Shaping Consensus on Important Energy Policy Issues" (31 January 2005), online: [perma.cc/C2TV-Q3F9] [IEA, "IEA Commends Canada"].

420 Ruchir Agarwal, "Industrial Policy and the Growth Strategy Trilemma," *Finance & Development Magazine* (21 March 2023), online: [perma.cc/SGS6-WE5J].

421 *Ibid*.

422 Bentley Allan, "Taking a Strategic Approach to Industrial Transition: A Vision for Canadian Net-Zero Industrial Strategy" (White Paper delivered at Canada's Net-Zero Industrial Strategy Summit, 27 October 2022) at 2, online (pdf): [perma.cc/9J26-G9XU].

Canada did use an industrial policy in its public, coordinated support to develop Alberta's oil sands.[423]

"Modern strategic industrial policy" has evolved from its "nationalist and protectionist" roots and is often employed by countries to adopt "innovation-focused strategies that seek to position their [economies] in global value-chains in an ongoing process of action, learning, and adaptation."[424] This approach is characterized by its flexibility and responsiveness, aiming to continually refine strategies through error detection and correction, rather than selecting and supporting specific "winners."[425] The principles of modern industrial policy are especially relevant in the context of a net zero strategy, where policies and investments are tailored to meet the unique challenges of decarbonizing the economy using new technologies, which inherently requires adaptable and robust strategies to manage long-term political and economic uncertainties.[426]

Several Canadian organizations, including "the Business Council of Canada, Canadian Manufacturers & Exporters, the Canadian Steel Producers Association, Global Automakers of Canada, and the Canadian Global Affairs Institute [have] proposed the development and implementation" of a national strategic industrial policy.[427] Canadian Manufacturers & Exporters expressed strong support for a comprehensive industrial strategy and recommended using the "blueprint" from the Industry Strategy Council's 2020 report to transition from a reactive to a proactive approach.[428] Canada has seen previous success with national strategies such as the Hydrogen Strategy for Canada, developed in 2020, which spurred investments in hydrogen production and use, and cemented Canada's competitive advantage in the hydrogen sector.[429]

Although Canada has committed a larger proportional amount per capita on incentives for clean energy than the US has offered under *IRA*, *IRA* remains a force to be reckoned with from an investment and capital allocation perspective. Further, Canada is still not on track to meet its emissions reduction target under the *Paris Agreement*. These factors suggest that something further needs to be done to ensure Canada's federal policy initiatives are *effective*.[430] While Canada is making positive strides in shaping a competitive investment atmosphere compared to the US, Canada's piecemeal approach does not indicate a clear industrial strategy, and may provide a contradicting message.[431] For example, Canada's recent hikes in the capital gain tax further the perception of Canada's "tax and spend" approach, whereby they offer tax credits on the one hand but tax industries on the other hand to fund those credits.[432] There does not appear to be a clear indication to

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423 Sara Hastings-Simon, "Industrial Policy in Alberta: Lesson from AOSTRA and the Oil Sands" (2019) 12:38 U of Calgary School of Pub Pol'y Publications 1, online (pdf): [perma.cc/U9U2-937N].

424 Allan, *supra* note 422 at 2.

425 *Ibid*.

426 *Ibid* at 3.

427 House of Commons, *supra* note 377 at 23.

428 *Ibid*.

429 Natural Resources Canada, "Hydrogen strategy for Canada: Progress Report" (May 2024), online: [perma.cc/TJ4B-GA2G].

430 Steve Lafleur, "Industrial Policy May Have Part of the Answer to Canada's Productivity Problem," *Policy Options* (24 April 2024), online: [perma.cc/4A9M-BVCH].

431 Robert Asselin, "Canada Needs a Bold Industrial Strategy," *The Globe and Mail* (8 December 2022), online: [perma.cc/EF8B-HCTU].

432 BNN Bloomberg, "2024 Federal Budget Will Inhibit Growth and Hold Back Canada's Potential" (17 April 2024) at 00h:01m:08s, online (video): [perma.cc/R8T9-5KWW].

market participants that Canada offers a friendly and easily navigable investment environment, unlike *IRA*'s clear, united goal.

Additionally, between 1981 and 2022, most countries in the Organization for Economic Co-operation and Development (OECD) have outpaced Canada with regard to annual productivity growth.[433] As of 2023, Canada ranked eighteenth compared to other OECD countries where productivity was measured as GDP per hour worked.[434] In 2024, Carolyn Rogers, a senior deputy governor of the Bank of Canada, stated that the need to improve productivity in Canada has reached emergency levels.[435] Canada is facing a productivity crisis that cannot be addressed without a clear, comprehensive, and unified strategy.

Canada should consider creating "net-zero competitiveness" quantitative targets which measure improvement, production, and development of technologies.[436] These targets should be tied to the national strategic industrial policy and serve as a way to guide the policy design at a sectorial level.[437] Targets should also "be supported by a clear supply chain strategy that seeks to build economic value in Canada, while identifying export opportunities."[438]

Further, a comprehensive and clear "modern industrial strategy [should] involve a dynamic process of collaboration with the sector that integrates the tools into a clear strategy."[439] Global best practice in developing industrial policy highlights the importance of strong public-private partnerships in key sectors, facilitated by discussion forums and neutral intermediaries which establish "collaborative clusters" within specific industries to "align strategy, policy, and funding."[440] The tax credits in *IRA* are accompanied by a clear target to "organize supply chains and *work with industries directly* to identify and solve challenges."[441] Canada should ensure its approach involves other stakeholders including industry, subject matter experts, the provinces, territories, and Indigenous communities.[442]

In our view, Canada has an immediate opportunity to integrate, refine, and adjust its policy framework to better balance environmental outcomes with economic growth and stability. This exercise should seek to set clear targets (not just those based on emissions reductions) and increase communication and collaboration among stakeholders. Target-setting can serve as a mechanism for Canada to measure policy effectiveness, and when they are falling short, for stakeholders to quickly collaborate, thereby allowing the federal government to course correct, reallocate resources, and support meaningful change.

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433 Simon Gaudreault, "Canada's Productivity: How to Free Up WAY More Time and Resources in our Economy" (4 April 2024), online (blog): [perma.cc/9MFL-5992].

434 Barry Cross, "Canada's Lagging Productivity Will Take Years to Remedy" (12 June 2023), online: [perma.cc/A95Z-PJE4].

435 Lafleur, *supra* note 430.

436 Allan, *supra* note 422 at 6.

437 *Ibid*.

438 *Ibid*.

439 Bentley Allan & Derek Eaton, "The Three Keys to Kickstarting Canada's Net-Zero Industrial Policy," *Corporate Knights* (19 June 2023), online: [perma.cc/YT9V-86X7].

440 *Ibid*.

441 *Ibid* [emphasis added].

442 *Ibid*.

4. FOCUS ON CANADA'S COMPETITIVE ADVANTAGES

Canada's Building Trade Unions and Clean Energy Canada recommended that the federal government should better leverage Canada's competitive strengths in its response to *IRA*.[443] Canada should consider using a national industrial policy to do this.[444] The competitive advantages that Canada should focus on are detailed further below.

a. Battery supply chain

The TD Report stated that "Canada is beginning to establish itself as a player in the global battery supply chain."[445] It estimates "there have been [CDN]$17.4 billion in [electric vehicle] and battery plant investment announcements since March 2022," including "[CDN]$2.7 billion … to build active cathode material production, [CDN]$7.7 billion [for] battery production, and [CDN]$7 billion [for electric vehicle] production."[446] The TD Report noted that this compares well, on a proportional basis, to similar announcements in the US — where, "since the passing of the *IRA*…, [USD]$52 billion in [electric vehicle] and battery manufacturing investments have been announced."[447]

A key advantage for Canada as it relates to battery manufacturing is its proximity to critical minerals, making it an attractive location for investment. BloombergNEF ranks Canada second, only behind China — the global leader — and ahead of the US, in its annual battery supply chain ranking.[448] The research "specifically noted Canada's access to raw materials, commitment to [environmental issues, social issues, and corporate governance], and [Canada's] 'industry, innovation, and infrastructure' as key factors behind the high placement."[449]

b. Carbon capture

Canada can also leverage its existing competitive advantages by developing CCUS facilities. Canadian start-ups are well-established leaders in carbon management, and Canada's geological features are ideal for CCUS.[450] There is approximately 389 gigatonnes "of prospective onshore storage [capacity], located mostly in Saskatchewan, Alberta, and Manitoba," representing nearly 600 times the mass of Canada's total 2021 emissions.[451]

The oil sands and electricity and cogeneration sectors have immediate opportunities to utilize CCUS facilities due to their proximity to the geological storage points, and the existing infrastructure that has already been developed.[452] However, these sectors also exhibit lower CO_2 concentrations in emissions, which increases the associated costs.

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443 House of Commons, *supra* note 377 at 21.
444 Cynthia Leach & Colin Guldimann, "Policy Insight: How Canada Can Win in the Post-IRA Economy" (21 March 2023), online: [perma.cc/TWL9-F39T].
445 Fong, *supra* note 357 at 6.
446 *Ibid*.
447 *Ibid* at 7.
448 *Ibid*.
449 *Ibid*.
450 Leach & Guldimann, *supra* note 444.
451 Melissa Felder, Anastasia Hervas & Chris Noyahr, *Research Report: Evaluation of Carbon Capture and Storage Potential in Canada* (Toronto: Clean Prosperity, April 2024) at 10.
452 *Ibid* at 51.

Therefore, developing open hub models which can connect several emitters to a centralized injection site is necessary to enable economies of scale for CCUS development, and therefore lower associated costs.[453]

Additionally, carbon capture technologies have the potential to assist the decarbonization of other carbon-emitting sectors like oil and gas extraction (outside the oil sands), manufacturing, and mining, helping these industries transition toward lower carbon outputs and contributing to overall emissions reductions.[454] Developing CCUS in these sectors may be worthwhile in some regions, but would require additional infrastructure due to their distance from existing facilities.[455]

Investing in CCUS technology not only positions Canada to lower the emissions of the energy sector in Canada, but could also position Canada as a global leader in CCUS technology, allowing it the opportunity to export CCUS technology and expertise worldwide.[456]

c. New sectors

Canada should consider expanding beyond its existing sectors and targeting new ones. This strategy could help mitigate some of the negative fallout observed as a result of *IRA*, such as certain businesses moving investments to the US, as Canada's existing energy sector transitions.[457] One area that Canada could focus on is developing the world's cleanest, most reliable, and efficient electricity grid by using its electricity mix that is already one of the cleanest in the world, and its ability to decarbonize its grids faster than most countries.[458] Additionally, Canada could focus on building out its power grid infrastructure to ensure it can support the increased demand that electric vehicles are expected to generate.[459]

V. CONCLUSION

IRA represents a transformative moment in the US's commitment to clean energy and environmental sustainability, with implications for Canada due to its close economic and trade relationships with the US. Canada already spends more than what *IRA* offers, on a proportional GDP basis, to incentivize investment in clean energy. Despite this, reports suggest that Canada's current policies are insufficient to hit its emissions reduction target, and the country is experiencing a productivity crisis. To address this, Canadian policy-makers should consider further changes to the existing policies.

Canadian policy-makers should consider improving the regulatory framework, clarifying Canada's tax credits, and implementing a more cohesive national strategy that leverages its geographic and technological advantages. Canada should streamline its

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453 *Ibid*.
454 *Ibid*.
455 *Ibid*.
456 Leach & Guldimann, *supra* note 444.
457 *Ibid*.
458 NRC, *Powering Canada Forward*, *supra* note 37 at 13.
459 *Ibid* at 6.

regulations and simplify its complex incentives and regulatory requirements in order to make Canada more appealing to both domestic and international investors.

Additionally, deploying a unified national strategy, similar to that introduced by *IRA*, would further attract investors. Such a strategy should focus on Canada's competitive advantages, offering Canada the potential to become a leader in areas such as CCUS, battery manufacturing, and clean electricity. This could help position Canada in the global value-chain as it relates to clean energy. Such policy adjustments could help ensure Canada reaches its emissions targets while also driving economic growth and innovation within the clean energy sector.