XODUS

CCUS MARKET OPPORTUNITIES IN CANADA

Scottish Enterprise

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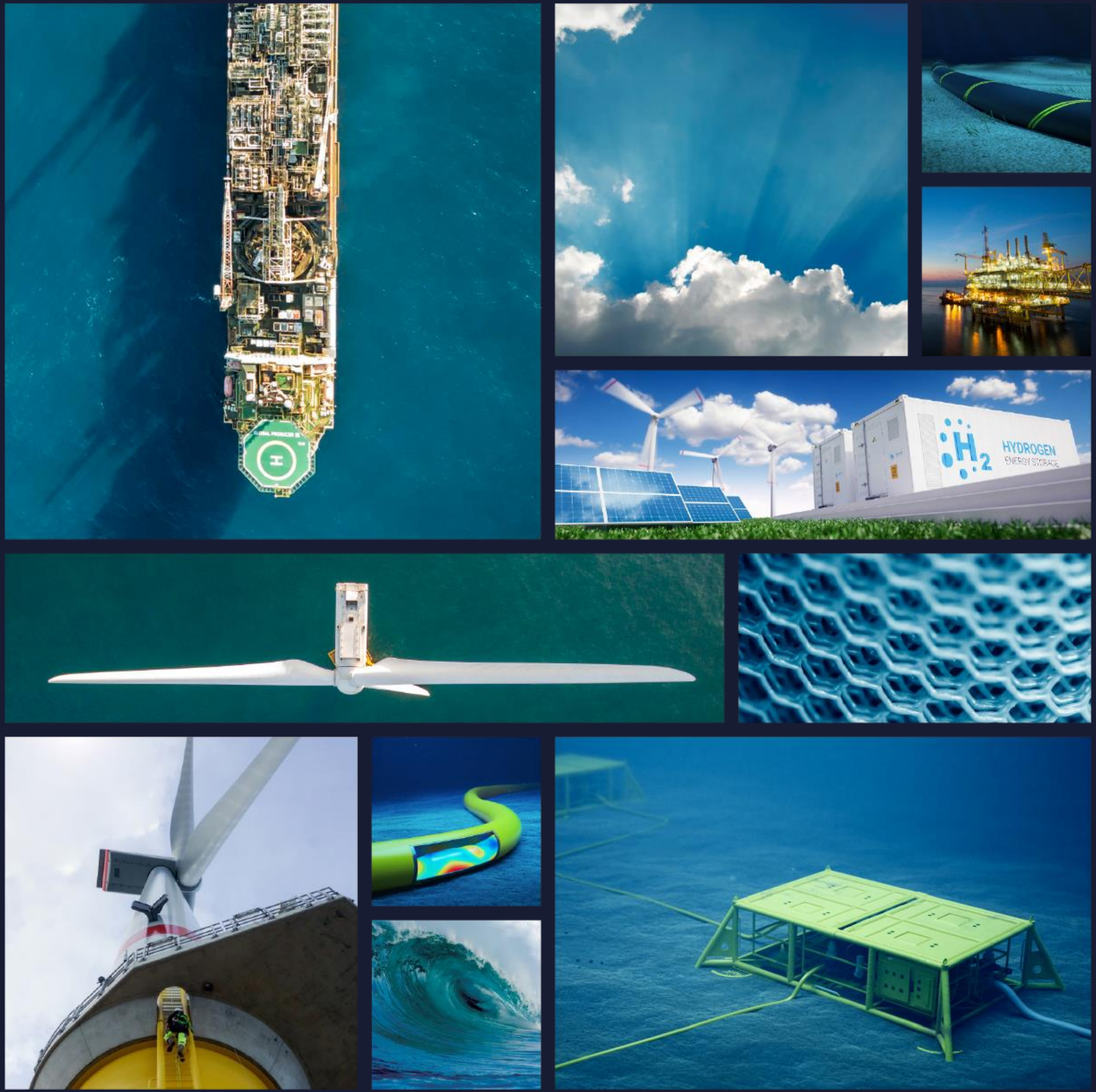

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EXECUTIVE SUMMARY

Scottish Enterprise commissioned Xodus to assess the Canadian Carbon Capture, Utilisation and Storage (CCUS) market and to identify short-, medium- and long-term opportunities for Scottish CCUS supply chain companies. The study draws on regulatory analysis, provincial-level market assessment, stakeholder engagement and a supply chain comparison to determine where Scottish expertise can be most effectively deployed.

Canada's CCUS Market

Canada is one of the world's most advanced CCUS markets, accounting for approximately 15% of global CCUS capacity despite contributing less than 2% of global CO_2 emissions. A project pipeline that could deliver up to 26 Mt of capture capacity by 2030 reinforces this position. Federal policy provides a stable foundation, including a 37% refundable CCUS Investment Tax Credit and the Net-Zero Emissions Accountability Act, creating long-term commercial signals across the value chain.

Canadian CCUS Value Chain

Canada's CCUS activity spans the full value chain, from industrial point-source capture and direct air capture through to CO_2 transport and geological storage. Capture and storage dominate the current project pipeline, with Western Canada leading, underpinned by decades of Enhanced Oil Recovery (EOR) geological expertise and injection infrastructure. Transport infrastructure and utilisation pathways are developing in parallel.

Regulatory Environment

Canada's regulatory environment is shaped by a capture-led federal framework complemented by province-specific regimes that determine pore-space rights, permitting, liability transfer and commercial viability. Alberta has the most mature framework, with clear ownership and liability provisions that support investment at scale. British Columbia's framework is developing but remains centred on capture and utilisation. Saskatchewan has significant storage potential but lacks a dedicated regulatory framework. In Eastern Canada, new legislation including Ontario's Geologic Carbon Storage Act and Atlantic Accord amendments are opening pathways for offshore storage.

Provincial Landscape

Xodus grouped the provinces into four categories based on regulatory and industry maturity, including the number of existing/planned projects, and stated provincial ambitions for CCUS development and energy policy, qualitatively assessing the probability of each province deploying large-scale CCUS by 2035, guiding where Scottish firms should prioritize entry, see summary below.

Provincial Category	Province	Probability of Deployment	Key Reasons
CCUS Leaders	AB	High	Mature regulation, massive emitters, storage certainty, potential for incentive program stacking (ITC + ACCIP)
Established Movers	SK	Medium-High	EOR legacy + new hubs but lacking strong tenure rules
	BC	Medium-High	Technology focus, storage uncertainty, DAC-led rather than industrial capture
Emerging Storage Hubs	ON	Medium	New storage act, strong emitters, weak CCUS history
	NL	Medium	Offshore storage potential but no injection regulation yet
	NS	Medium	Coal phase-out reduces near-term emitters, strong offshore storage potential long-term
Electrification First	QC	Low	Electrification first, niche pilots only
	MB/NB/PEI	Very Low	Electrification, low industrial base, policy misalignment

Key Findings

Scottish strengths in subsurface engineering, offshore instrumentation and professional services are well matched to Canadian needs but fit varies by region. Alberta is the most active market but is heavily onshore EOR-focused, limiting near-term opportunity for many Scottish firms. Eastern and Atlantic Canada offer a stronger entry point, given shared oil and gas heritage, supply chain synergies and improving offshore regulation. Awareness is a potential barrier. Canadian stakeholders currently cite Norway and Germany as reference markets, with Scotland's CCUS credentials not well understood. Addressing this must form part of any market entry strategy.

Recommendations

Stakeholder engagement and supply chain analysis have produced a set of prioritised recommendations for Scottish suppliers and for Scottish Enterprise and SDI. These are summarised in the table overleaf.

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THEME	WHAT IT MEANS FOR THE SCOTTISH SUPPLY CHAIN	WHAT IT MEANS FOR SCOTTISH ENTERPRISE AND SCOTTISH DEVELOPMENT INTERNATIONAL
Targeted Canadian Approach - Due to similar oil and gas experience and supply chain capabilities with Eastern Canada, along with improved accessibility, there is likely more opportunity for Scottish companies in this region.	Ability to prioritise regions, particularly Eastern Canada, where Scottish oil & gas experience, subsea engineering capability, and supply-chain synergies offer a natural competitive advantage. Eastern Canada is a medium-to-long-term target due to the current nascent stage of the CCUS sector. Western Canada, particularly Alberta, is very active in utilising captured CO_2 for EOR. Opportunity for existing Scottish capability in this sector is limited due to the established nature of the sector in Alberta and significant onshore scope.	SE/SDI should tailor market-entry support to regions with the strongest fit, notably Eastern and Atlantic Canada. This includes targeted missions, curated B2B introductions, and providing intelligence that directs companies toward the most accessible provincial ecosystems. SE/SDI can further promote early Scottish experience in offshore carbon storage where eastern provinces are currently developing their frameworks.
Partnerships - Local experience brings significant benefits to projects within Canada. Not only does it support local-content considerations, but it brings specific experience relating to areas such as regulatory compliance and operating conditions. Additionally, it can bring cost-savings and create opportunities for First Nation communities.	Scottish firms should seek partnerships and collaboration with Canadian stakeholders, including operators, research bodies, suppliers and First Nations organisations. These partnerships will help to overcome local-content expectations, reduce entry barriers, and improve competitiveness by combining Scottish technical strengths with Canadian regulatory and field experience. Any examples from the oil and gas sector can be leveraged in the first instance.	SE/SDI should play an active facilitation role - brokering Canadian partnerships, mapping credible local collaborators, and ensuring Scottish suppliers understand regulatory, community, and Indigenous engagement requirements that shape project procurement.
Knowledge sharing - Blind spots exist regarding the opportunity that Canada represents, and the lessons learned from Scottish experience. Facilitating knowledge sharing helps to overcome this barrier.	Enables Scottish companies to demonstrate the maturity of the UK/Scottish CCUS ecosystem, particularly North Sea subsurface, monitoring, and cluster development expertise, helping overcome Canadian stakeholder "blind spots" regarding Scottish capability. This raises visibility and credibility early in the market-entry journey.	SE/SDI should organise structured knowledge-exchange formats (webinars, technical workshops, Canada–Scotland CCUS dialogues, curated case studies) to educate Canadian operators and regulators on Scotland's expertise while simultaneously informing Scottish suppliers about Canadian market gaps and project requirements. Existing oil and gas sector engagements and examples could be leveraged for this as well.
Selling Scotland - Currently countries like Norway and Germany are viewed by Canadian stakeholders as markets to watch. These recommendations aim to bring Scottish experience and capability to the forefront.	Scottish suppliers should proactively showcase their proven CCUS strengths to establish brand awareness in Canada and clearly differentiate themselves from competitors like Norway and Germany. This includes targeted conference attendance and seeking direct meetings with operators in this space.	SE/SDI to develop and promote a coherent Scotland CCUS value proposition for Canada, raising Scotland's profile at conferences, trade missions, provincial roundtables, and through targeted communications pitched at Canadian developers, hubs, and regulators.
Selling Canada - Supply chain companies often choose entry markets based on existing work, where the barriers to entry seem low, or where new regions present clear commercial opportunities for them. For many, Canada is an unknown market.	Scottish suppliers should actively engage with opportunities to gain insight into Canada's provincial landscape to identify the most commercially attractive provinces and hubs. By understanding these regional differences, suppliers can strategically target effort, tailor engagement approaches, and calibrate investment levels and timelines to maximise market impact.	SE/SDI to provide clear signposting on the best-fit provinces for different CCUS technologies and services, producing guidance on regulatory maturity, procurement expectations, storage potential, and strategic opportunities. They should also highlight specific areas of future market potential for Scottish suppliers.
Innovation and early TRL - With many synergies across supply chain capabilities, one route to market for Scottish companies is to focus on innovative solutions or targeting early TRL solutions.	Scottish technology developers (particularly in capture and storage technologies) should seek to secure pilot and demonstration opportunities in Canada where early-TRL solutions are welcomed. This helps companies avoid competing directly in crowded areas such as EOR and instead position themselves as first movers in emerging segments.	SE/SDI to connect with early demonstration projects and innovation-friendly developers. Opportunity to promote collaboration with Scottish innovators, testbeds, grant programmes, Canadian universities, hubs, and technology accelerators. They should also promote Scottish innovation capabilities to Canadian policymakers and developers seeking cost-reducing or next-generation CCUS solutions.

LIST OF ABBREVIATIONS

Acronym	Definition
ACCIP	Alberta Carbon Capture Incentive Program
ACTL	Alberta Carbon Trunk Line
ADIP	Activated Di-Isopropanolamine (solvent process / ADIP-X)
AEM	Alberta Energy and Minerals
AEPA	Alberta Environment and Protected Areas
AER	Alberta Energy Regulator
APEGA	Association of Professional Engineers and Geoscientists of Alberta
ATCO	ATCO Group (Alberta utility company)
B2B	Business-to-Business
BC	British Columbia
BCA	Building Canada Act
BECCS	Bioenergy with Carbon Capture and Storage
CAPEX	Capital Expenditure
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Utilisation
CCUS	Carbon Capture, Utilisation and Storage
CDR	Carbon Dioxide Removal
CEPA	Canadian Environmental Protection Act
CER	Canada Energy Regulator
CO_2	Carbon dioxide
CSA	Carbon Sequestration Agreement / Canadian Standards Association
CSEA	Carbon Sequestration Evaluation Agreement
CTS	CTS Hub (Carbon Transport and Storage project)
DAC	Direct Air Capture
DACCS	Direct Air Carbon Capture and Storage
EIC	Energy Industries Council
EIP	Energy Innovation Program
EOR	Enhanced Oil Recovery
EPC	Engineering, Procurement and Construction
ERA	Emissions Reduction Alberta
ERW	Enhanced Rock Weathering
ESG	Environmental, Social and Governance

Acronym	Definition
FCDO	Foreign, Commonwealth and Development Office
FEED	Front-End Engineering Design
FFD	Fossil Fuel Development (ITC category)
FID	Final Investment Decision
GCCSI	Global CCS Institute
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GW	Gigawatt
IAA	Impact Assessment Act
IEA	International Energy Agency
IPT	In-Pulp Technology (carbonation process)
IRR	Internal Rate of Return
ITC	Investment Tax Credit
KM	KM CDR Process (Mitsubishi Heavy Industries capture technology)
KPO	KALiNA Power Operations
LNG	Liquefied Natural Gas
MHI	Mitsubishi Heavy Industries
MIT	Massachusetts Institute of Technology
MMV	Measurement, Monitoring and Verification
MOF	Metal-Organic Framework
MRV	Monitoring, Reporting and Verification
MUN	Memorial University of Newfoundland
MW	Megawatt
NECCUS	North East Carbon Capture, Usage and Storage
NF/NF&L	Newfoundland and Labrador
NL	Newfoundland and Labrador
NLOER	Canada-Newfoundland and Labrador Offshore Energy Regulator
NRCan	Natural Resources Canada
NS	Nova Scotia
NSTA	North Sea Transition Authority
NWR	North West Redwater (refinery)

Acronym	Definition
OBPS	Output-Based Pricing System
OGCA	Oil and Gas Conservation Act
OGPII	Oil and Gas Processing Investment Incentive
OIIP	Oil Infrastructure Investment Program
ONC	Ocean Networks Canada
OPEX	Operational Expenditure
PEI	Prince Edward Island
PNGA	Petroleum and Natural Gas Act
PSA	Pressure Swing Adsorption
RAG	Red, Amber, Green (status rating)
REEIE	Regulation Respecting a Cap-and-Trade System for Greenhouse Gas Emission Allowances (Quebec)
RETI	RETI East Calgary Region Transportation & Sequestration Hub
RH2C	RH2C Tumbler Ridge Methanol Plant CCS Project
RNG	Renewable Natural Gas
SAF	Sustainable Aviation Fuel
SAGD	Steam-Assisted Gravity Drainage
SDI	Scottish Development International
SE	Scottish Enterprise
SK	Saskatchewan
SWOT	Strengths, Weaknesses, Opportunities and Threats
TC	TC Energy
TOWS	Threats, Opportunities, Weaknesses, Strengths (strategic analysis matrix)
TRL	Technology Readiness Level
TSA	Temperature Swing Adsorption
UK	United Kingdom
US	United States
USA	United States of America
WCSB	Western Canada Sedimentary Basin
XPRIZE	XPRIZE Foundation (Carbon Removal Award)

1.0 INTRODUCTION

1.0 INTRODUCTION

Carbon capture, utilisation and storage (CCUS) forms a central component of decarbonisation pathways for emissions-intensive sectors such as power generation, chemicals and materials. Current Scottish and UK policy and funding commitments to the development of CCUS clusters create a strong strategic opportunity for Scotland, given its concentration of industrial emitters and transferable capabilities from the oil and gas sector. The progression of projects including the Scottish Cluster and Viking CCS indicates the scale of emissions that could be addressed, reinforcing Scotland's potential role as both a national CCUS hub and a provider of CO_2 transport and storage services to wider markets.

However, while project momentum remains credible, delivery timelines remain subject to key risks. These include regulatory approval processes, final investment decisions, infrastructure sequencing, and the alignment of long-term policy support with commercial viability. This makes investment by the supply chain into new equipment, facilities, and capabilities to service the CCUS market more challenging.

To overcome this challenge, one opportunity for the supply chain to consider is that of exporting products and services to other regions where CCUS projects pipelines are growing – such as Canada.

Canada has already proven its potential and leading activities within the CCUS sector, particularly in Western Canada. This now stands to be accelerated further with the Carbon Management Strategy and CCUS Investment Tax Credit (ITC).

In March 2025, Scottish Enterprise commissioned a study into the CCUS supply chain capability within Scotland (see here). This studied identified strengths in engineering, subsea technologies, instrumentation, and professional services, many of which could be directly relevant to the needs of the Canadian market.

As a result, Scottish Enterprise commissioned Xodus to assess the Canadian CCUS landscape as well as to determine short-, medium- and long-term collaboration opportunities for Scottish CCUS supply chain companies in Canada.

1.1 OBJECTIVES

To achieve this aim of identifying the short-, medium-, and long-term collaboration opportunities for Scottish CCUS supply chain companies in Canada, four objectives were set:

1) Collate, analyse and assess both federal and provincial regulatory landscapes and identify the market gaps.
2) Conduct targeted outreach across Scottish and Canadian stakeholders to verify and expand on identified market opportunities and challenges.
3) Conduct a supply chain comparison assessment of Scottish and Canadian capabilities to identify market gaps.
4) Combine insights gained to establish potential routes-to-market for Scottish suppliers within Canada.

1.2 METHODOLOGY

To achieve these aims, the approach implemented by Xodus combined secondary desk-based research (including review of previous scopes commissioned by Scottish Enterprise), primary research in the form of interviews, and inclusion of in-house insights and expertise.

Findings are provided in the subsequent sections of this report, beginning with a summary overview of the Canadian CCUS market. We then dive into each of the value chain areas of CCUS – capture, transport, storage and utilisation – before highlighting regulations and key opportunities at provincial level. The study report ends with a view to Scottish and Canadian capabilities and the resulting overall recommendations for market entry and associated opportunities.

Redwater Fertilizer Facility, Alberta Canada
Source: Nutrien

St. Fergus Gas Terminal, Peterhead Scotland
Source: Px

2.0 CANADA MARKET OVERVIEW

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Canada has emerged as one of the world's most significant markets for carbon capture, utilisation, and storage (CCUS), driven by a combination of geological advantage, established industrial infrastructure, and an increasingly robust policy environment.

Canada already accounts for approximately 15% of current global CCS capacity, despite contributing less than 2% of global CO2 emissions, a disproportionate leadership position that reflects decades of technical investment concentrated in the western provinces.

With its current pipeline of proposed projects, Canada could install up to 26 Mt of CCUS capacity by 2030, making it one of the most consequential jurisdictions for CCUS investment globally.

2.1 SNAPSHOT OF CANADA'S CCUS MARKET

Canada's leading CCUS position was not built overnight. Canada's CCUS story begins with enhanced oil recovery (EOR), a practice through which Western Canadian producers have for decades injected CO_2 into partially depleted reservoirs to extract additional oil.

What started as a production technique became the country's first large-scale experiment in subsurface CO_2 storage, giving the industry geological expertise, injection know-how, and pipeline infrastructure long before carbon capture was a climate policy priority.

That legacy is not merely historical; it is a live competitive advantage. The technical fluency and physical assets built through EOR continue to lower costs and reduce execution risk for new CCUS projects today.

The figures on the right illustrate where this activity is concentrated. Alberta dominates across all project stages active, announced, and planned, with British Columbia (BC) as a secondary hub. Together they account for the vast majority of Canada's capture and storage projects. Nationally, the pipeline is particularly strong on the capture side, with a significant number of announced and planned projects signalling robust near-term momentum.

Sustaining and scaling this momentum, however, requires continued progress across several interlocking dimensions. Four key drivers will determine the pace and depth of Canada's CCUS buildout through 2030 and beyond:

- **Policy & Regulation** Canada's carbon pricing regime and investment tax credits have provided a credible long-term signal for CCUS deployment. Continued regulatory clarity at both federal and provincial level, particularly around storage permitting and liability, will be critical to unlocking the next wave of projects.
- **Financing & Investment** Large-scale CCUS infrastructure demands patient, long-term capital. The ability to structure bankable projects, attract institutional investors, and leverage public co-financing mechanisms will be a defining factor in translating announced projects into operational ones.
- **Technology & Innovation** Cost reduction remains a central challenge. Advances in capture efficiency, compression, and monitoring technologies are progressively improving project economics, with direct air capture and industrial point-source capture both maturing rapidly.
- **Cross-sector Collaboration** No single company or government can build a CCUS ecosystem alone. Shared transport and storage infrastructure, industrial cluster models, and interprovincial coordination will be essential to achieving the scale Canada's project pipeline promises.

Fig 2-1 . Canada CCUS Projects by Development Stage — Active, Announced and Planned

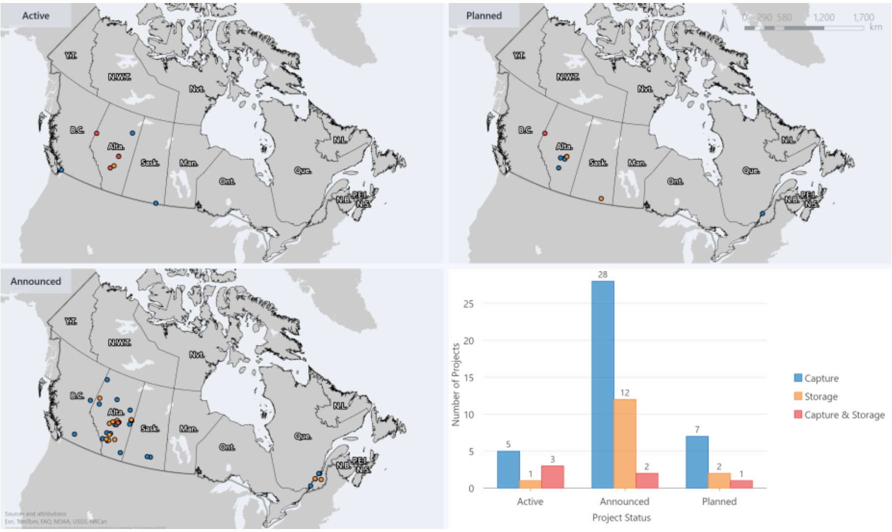
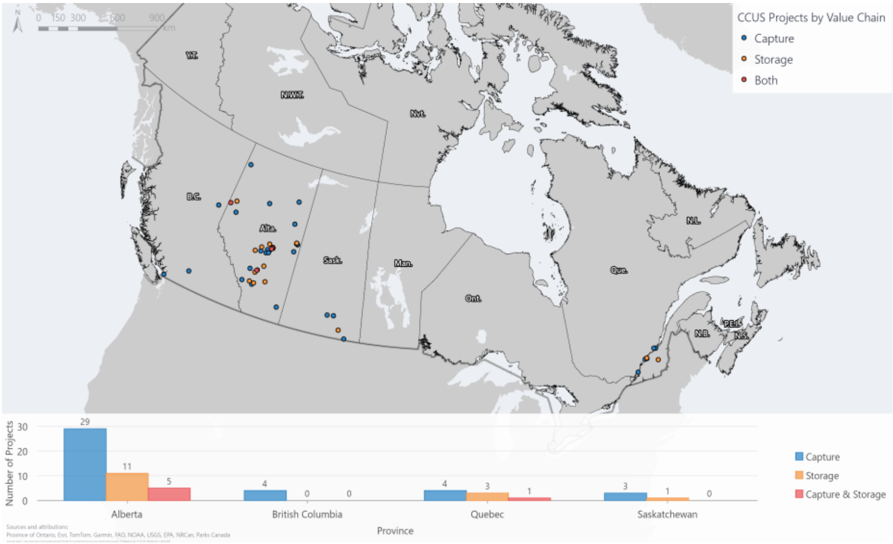


Fig 2-2. Canada CCUS Projects by Value Chain and Provincial Distribution



2.2 GROUPING PROVINCES

Canada's CCUS landscape is not uniform, it is a patchwork of markets at fundamentally different stages of development, shaped by divergent industrial histories, energy systems, and policy priorities.

The provinces that lead today do so because of structural advantages that took decades to accumulate: Alberta's oil sands created a concentrated, high-volume emissions base and an EOR industry that gave operators geological expertise and injection infrastructure long before CCUS became a policy instrument.

British Columbia and Saskatchewan followed adjacent paths, building regulatory frameworks and industrial clusters around hydrocarbon production and processing.

Elsewhere, the picture is different. Provinces with near-fully hydroelectric grids, Quebec, Manitoba, British Columbia's residential base, face a fundamentally different decarbonisation calculus, where electrification is cheaper and more politically straightforward than carbon capture. Ontario sits in between: a large industrial emitter with emerging storage geology but no operational CCUS history.

Understanding these structural differences is essential to reading the Canadian market, not all provinces are on the same trajectory, and the gap between leaders and laggards is likely to widen before it narrows.

The graphic below provides an overview of how, as-of 2026, each Province can be categorised. This categorisation is important as it also determines which Provinces will host the most CCUS activities in the short-term (up to 2030), and how the role and involvement of the other Provinces will change through the 2030s and beyond 2040.

CCUS Leader

Alberta

Alberta stands alone as Canada's only fully operational end-to-end CCUS market. It has active storage, carbon pricing that drives real compliance demand, and a regulatory framework mature enough to support investment decisions at scale. No other Canadian province comes close to this combination of industrial scale, policy certainty, and project momentum.

Established Movers

British Columbia, Saskatchewan

BC and Saskatchewan have earned this label by moving beyond intent into action. Both have functioning regulatory frameworks, identified storage formations, and projects advancing through development stages. They are not yet at Alberta's level of maturity, but the foundations are credibly in place. The remaining challenge is closing the gap between regulatory readiness and bankable project delivery.

Emerging Storage Hubs

Ontario, Newfoundland & Labrador, Nova Scotia

These provinces are in early but genuine motion. Regulatory frameworks are being built, storage potential is being characterised, and policy intent is becoming concrete. They are not yet investment-ready markets, but the structural case for CCUS (particularly large-scale offshore storage) is becoming clearer. Their importance will grow as capture volumes in the west expand and demand for storage capacity increases.

Electrification First

Quebec, Manitoba, New Brunswick, Prince Edward Island

For these provinces, CCUS is not a strategic priority. Hydroelectric grids make electrification the cheaper, simpler decarbonisation pathway across most sectors. Where hard-to-abate industrial emissions exist, notably Irving Oil's Saint John refinery, no credible CCUS framework has emerged to address them. Near-term activity is expected to remain minimal absent a significant shift in federal or provincial policy.

Short term (up to 2030)

CCUS activity will remain concentrated in Alberta, with BC and Saskatchewan advancing selectively. The rest of Canada is unlikely to see material operational progress in this window.

Medium term (2030-2040)

As western markets mature, Ontario and the Atlantic provinces are expected to transition from regulatory development toward early commercial activity, contingent on sustained carbon pricing and federal support.

Long term (beyond 2040)

Canada is likely to develop distinct regional hubs (western, central, and Atlantic) each with its own industrial logic and storage resources, loosely connected by federal policy rather than shared physical infrastructure.

2.3 SUMMARY OF FEDERAL REGULATORY LANDSCAPE

Canada's federal regulatory landscape for CCUS is evolving rapidly as the country positions the technology as a cornerstone of its national decarbonisation strategy. For Scottish CCUS suppliers seeking entry into the Canadian market, understanding this federal framework is essential - not only to navigate compliance requirements, but also to identify where commercial opportunity aligns with policy direction.

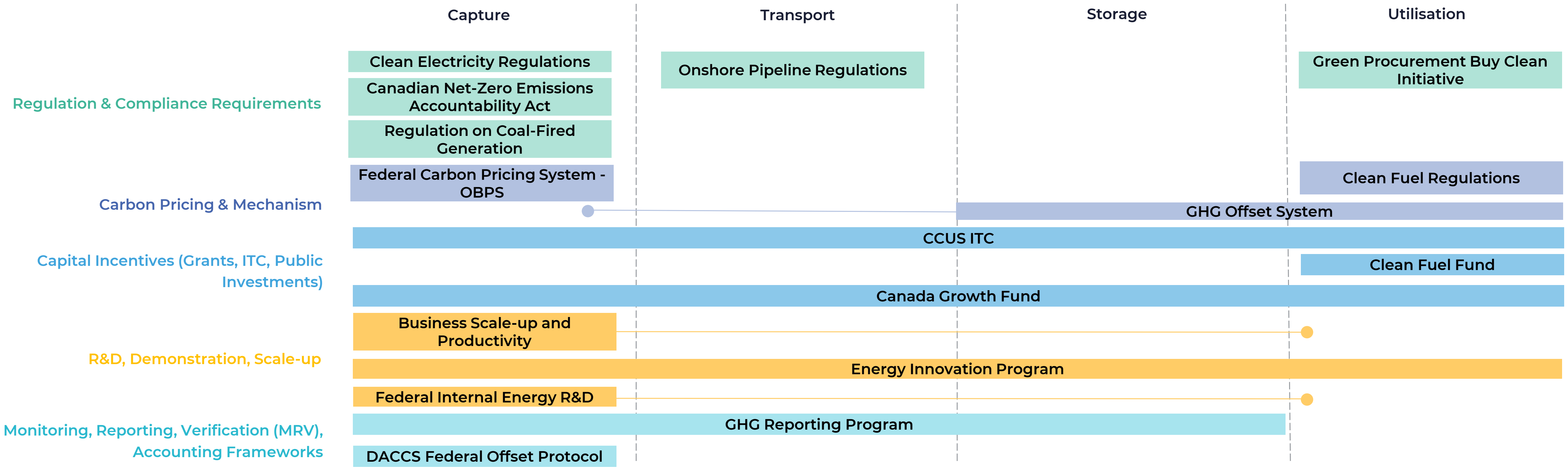
While Canada's provinces exercise significant authority over natural resources and project permitting, the federal government sets the overarching regulatory, fiscal and climate-policy architecture that shapes market conditions nationwide.

This section provides a high-level overview of that federal landscape and discusses three key takeaways.

Federal CCUS policy in Canada is deliberately capture-led. Regulation, carbon pricing and public funding are concentrated on reducing emissions from heavy industry, using compliance obligations, carbon pricing and R&D support to stimulate large-scale CO_2 capture and create an investable supply of captured volumes.

Transport and storage are indirectly enabled rather than explicitly developed. The federal framework largely assumes that increased CO_2 supply from capture will naturally drive demand for transport and storage infrastructure, with regulatory coverage remaining relatively high-level compared to capture-side measures.

Utilisation policy is narrow and targeted. Federal support is primarily focused on clean fuels through capital incentives and innovation funding, with limited utilisation pathways beyond fuels, aside from the *Buy Clean* initiative creating early demand for low-carbon concrete.



2.3 SUMMARY OF FEDERAL REGULATORY LANDSCAPE

The table below summarises the key federal policies, regulations, and initiatives shaping the CCUS development environment in Canada, classified by their impact on industry development across the value chain.

Policy / Regulation / Initiative	Capture	Transport	Storage	Utilisation	Rationale (CCUS Impact)
ENABLER					
CCUS ITC	●	●	●	●	37% refundable federal tax credit covering capital expenditure across the full CCUS value chain (to 2040). Single most impactful federal financial measure, directly reducing project costs and de-risking investment.
Net-Zero Emissions Accountability Act	●	●	●	●	Creates binding long-term regulatory certainty by committing Canada to net-zero GHG by 2050 with interim targets. Underpins investor confidence and drives structural demand for CCUS across all value chain segments.
DACCS Offset Protocol	●	○	●	○	Federal protocol enabling DAC and CCS projects to generate tradeable GHG offset credits. Provides a revenue stream improving economics of otherwise high-cost CDR technologies, critical for storage and capture project viability.
Canada Growth Fund	●	●	●	●	Offers long-term offtake contracts and catalytic capital to de-risk projects unable to reach final investment decision. Complements the ITC by addressing revenue certainty and commercial risk beyond capital cost.
Clean Fuel Regulations (CFR)	●	○	○	●	Requires fuel suppliers to reduce lifecycle carbon intensity, creating structural compliance demand for low-carbon hydrogen and CCUS-processed fuels. Directly incentivises capture and utilisation project development.
Federal OBPS (Carbon Pricing)	●	○	○	○	Output-based pricing system applies carbon price to large industrial emitters, creating direct financial incentive to adopt CCUS. Provides the underlying abatement signal that makes capture economically rational for heavy industry.
Energy Innovation Program (EIP)	●	●	●	●	NRCan grants for CCUS R&D and pre-FID activities across the value chain. De-risks early-stage projects by co-funding feasibility and engineering work; supported Pathways Alliance FEED including the 650km CO_2 trunk line.
NEUTRAL					
Canadian Environmental Protection Act (CEPA)	●	●	●	●	Governs toxic substances and pollution management, setting baseline environmental compliance standards. Not CCUS-specific; sets compliance floor but does not actively enable or block project development.
Atlantic Accord Amendments	○	○	●	○	Expands offshore regulators' mandates in NL & NS to include CO_2 storage licensing. Creates a legal pathway using existing offshore oil & gas frameworks, though implementation timelines and project pipelines remain uncertain.
Hydrogen Strategies (Federal + Provincial)	●	●	○	●	Signal long-term political intent for low-carbon hydrogen, supporting CCUS-enabled blue hydrogen. However, strategies are directional rather than binding, without dedicated funding or mandatory targets, limiting near-term impact on CCUS investment.
BARRIER					
Impact Assessment Act (IAA)	●	●	●	●	Requires full federal environmental and impact assessment for designated projects. Introduces lengthy review timelines, Indigenous consultation requirements, and significant cost, material friction for all large-scale CCUS infrastructure.
Local Content/Benefit	●	●	●	●	Though not a regulation, provinces are increasingly adopting local content requirements. For example, Community Benefit Agreements raise project costs and complicate procurement. Though not a formal regulation, obligations imposed during negotiation add uncertainty at FID.

● = Applies to this value chain segment *○ = Not applicable*

Table 2-1, Overview of federal regulations classified based on enabler/neutral and barrier

3.0 CANADIAN CCUS VALUE CHAIN REVIEW

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The CCUS value chain describes the full sequence of activities required to capture CO_2 emissions from industrial sources, or directly from the atmosphere, and then either utilise the CO_2 in commercial applications or permanently store it to prevent its release into the atmosphere. It comprises four core stages:

1) **Capture** – CO_2 separated from flue gases or process streams using technologies such as post-combustion, pre-combustion, or oxy-fuel capture. This step enables significant emissions mitigation across hard-to-abate sectors including power generation, cement, steel, and chemicals.

2) **Transport** - Once captured, the CO_2 is compressed and transported (typically via pipeline, ship, or road) to a utilisation facility or dedicated storage site. Transport networks are often developed as shared infrastructure to support multiple emitters efficiently.

3) **Utilisation** - CO_2 can be used as a feedstock in industrial processes, enhanced oil recovery (EOR), synthetic fuels, building materials, and various emerging circular carbon pathways. While utilisation can generate economic value, only some applications result in long-term CO_2 sequestration.

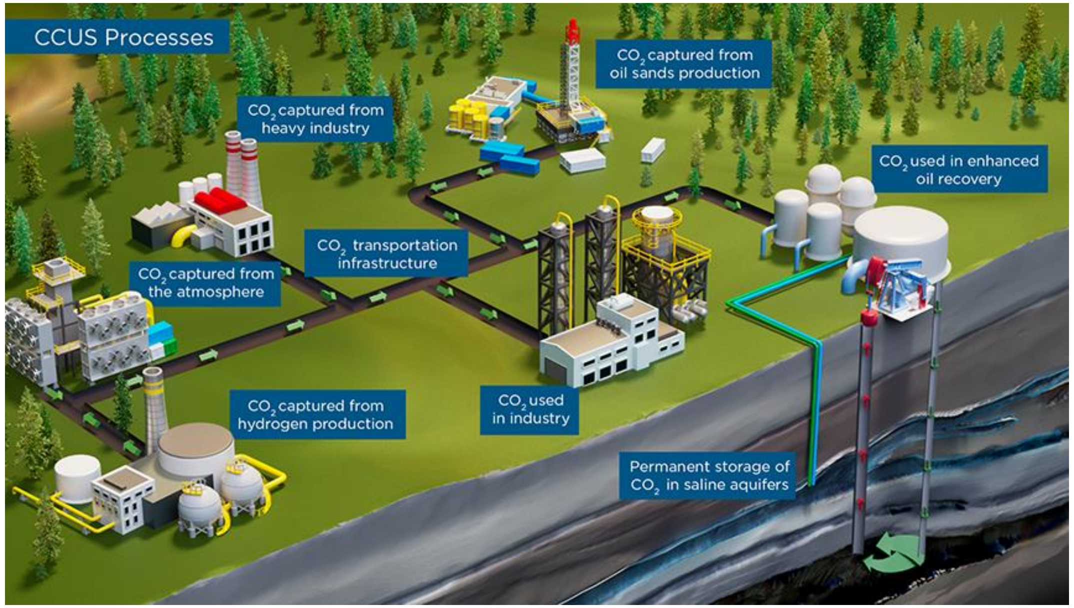
4) **Storage** - For permanent removal, CO_2 is injected into deep geological formations such as depleted oil and gas fields or saline aquifers, where it is securely trapped. Storage sites are rigorously monitored to ensure long-term integrity and regulatory compliance.

Figure 3 provided by the Alberta Energy Regulator provides a visual overview of the process.

In order for a CCUS sector to succeed, the entire value chain needs to be present, regulated, and able to create economic returns. In Canada, different provinces and different parts of the value chain are progressing and different rates. To capture these differences, Section 4 provides a provincial overview. This Section focuses on each of the four core CCUS stages, with an overview provided of the key technologies, projects and applicable regulations.

As highlighted on page 11 in the previous section, Canadian regulation focuses primarily on Capture.

Fig 3.0-1 CCUS Value Chain Overview



Source: Alberta Energy Regulator

3.1 CAPTURE

3.1.1 OVERVIEW OF KEY INDUSTRIES

3.1.1.1 Fossil Fuel Decarbonisation

Fossil fuel decarbonisation represents the largest and most immediate opportunity for commercial-scale carbon capture deployment in Canada. As a major global energy producer, Canada's path to Net-Zero is uniquely tied to its ability to mitigate emissions from the extraction, processing, and combustion of hydrocarbons. This category focuses on modifying existing industrial assets to ensure they remain viable in a low-carbon global economy. Key industries in this category include oil sands and upstream production, natural gas processing, petroleum refining, and fossil fuel fired power plants.

3.1.1.2 Hydrogen and Fertiliser Production

Hydrogen and fertiliser production represent a significant and intuitive area for carbon capture in Canada. Because the chemical processes used in these sectors (primarily Steam Methane Reforming and Autothermal Reforming) naturally produce a highly concentrated stream of CO_2 as a by-product, the cost of capture is significantly lower than in other industrial sectors. This makes these industries the primary engine for Canada's emerging Clean Hydrogen Economy and a critical component in decarbonising the global agricultural supply chain.

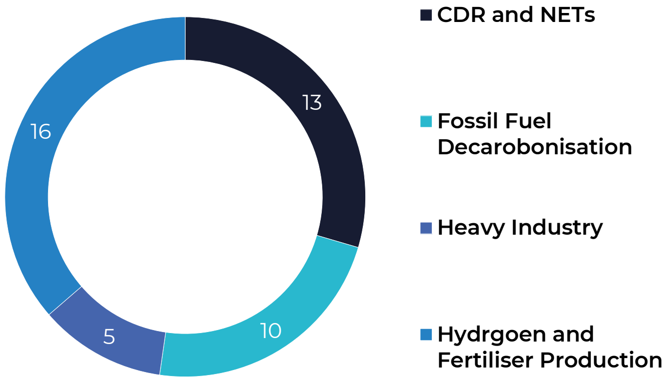
3.1.1.3 Heavy Industry

The heavy industry sector represents industries where carbon emissions are deeply integrated into the manufacturing process itself, rather than just resulting from energy use. For these industries, switching to renewable electricity is not enough; CO_2 is often a fundamental by-product of the chemical transformation of raw materials. Consequently, CCUS is frequently the only technologically viable pathway for these sectors to achieve decarbonization while remaining globally competitive. Industries that fall under this umbrella include cement production, iron and steel manufacturing, pulp & paper, and ore mining, smelting, and processing.

3.1.1.4 Carbon Dioxide Removal (CDR) and Negative Emission Technologies (NETs)

While traditional CCS focuses on preventing new emissions from industrial stacks, Carbon Dioxide Removal (CDR) and Negative Emissions Technologies (NETs) are designed to remove CO_2 that is already present in the atmosphere. These technologies are essential for addressing "legacy emissions" and neutralizing sectors that are virtually impossible to fully decarbonize. In the Canadian context, CDR is emerging as a high-value sector that leverages the country's vast landmass, renewable energy resources, and geological storage expertise to provide permanent carbon removal services to the global market. Specific industries within this group include Direct Air Capture (DAC), Bioenergy with Carbon Capture and Storage (BECCS), Biochar, and enhanced Rock Weathering (ERW).

Figure 3.1-1 Current and Future Projects by Industry

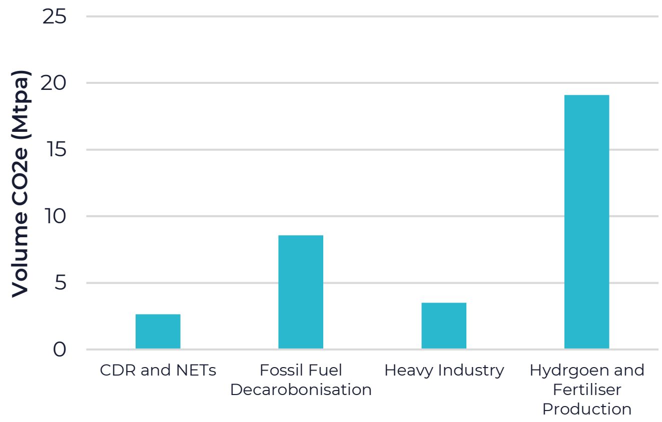


3.1.2 SCALE OF THE CANADIAN CCUS MARKET

Canada is currently undergoing a massive transformation in carbon management. While the nation currently captures approximately 4 Mtpa of CO_2, this volume is projected to scale aggressively, potentially exceeding 50 Mtpa by 2030. To put this growth in perspective, Canada's projected 2030 capacity is roughly equivalent to the entire global capture capacity in 2024. This momentum has positioned Canada as a global leader, currently hosting the third-highest number of CCUS projects in development, trailing only the United States and the United Kingdom.

We are currently tracking 44 active and planned projects specifically within the capture value chain. As illustrated in Figures 3.1-1 and 3.1-2, these initiatives span a diverse array of industrial sectors. While the "low-hanging fruit" has historically been concentrated in fossil fuel decarbonization, the market is shifting. Going forward, we anticipate a significant pivot toward hydrogen and fertilizer production, where high-purity CO_2 by-products offer superior capture economics and technical feasibility.

Figure 3.1-2: Planned Capture Volume (Mtpa) by Industry (by 2031)



3.1.2 SUMMARY OF KEY CAPTURE TECHNOLOGIES

Chemical and physical absorption are deemed the 'industry standard', whilst physical adsorption, membrane separation, and cryogenic distillation are viable alternatives. CDR remains a future pathway to net-zero.

3.1.2.1 Chemical Absorption

Chemical absorption is the most mature and widely deployed technology for CO_2 capture. It involves a reversible chemical reaction between CO_2 in a gas stream and a liquid solvent (typically an amine solution). It is the standard choice for post-combustion applications where CO_2 concentrations and pressures are relatively low.

The Process:

1. **Absorption**: Flue gas enters the bottom of an absorber tower and flows upward through a descending stream of a lean liquid solvent. The CO_2 reacts chemically with the solvent molecules to form a stable compound.

2. **Regeneration**: The CO_2 -rich solvent is then pumped to a stripper tower where heat is applied (usually via steam) to break down the chemical bonds and release the pure CO_2 while regenerating the solvent for reuse.

Key Projects:

- **SaskPower Boundary Dam:** A very early and standard application of post-combustion amine capture. It is the first project globally to apply large scale capture technology to a coal fueled power plant. Much of the captured CO_2 is sold to the Weyburn oil field for enhanced oil recovery. The remaining gas is injected into a deep saline reservoir for permanent geological storage.
- **Heidelberg Edmonton Cement:** Heidelberg has partnered with Mitsubishi Heavy Industries (MHI) to become the world's first net zero cement plant. MHI will be deploying their Advanced KM CDR Process which uses the KS-21 solvent to capture more than 90% of the CO_2 in flue gas streams.

3.1.2.2 Physical Absorption

Physical absorption is a capture process that relies on the solubility of CO_2 in a solvent under high pressure. Unlike chemical absorption, there is no chemical reaction. The CO_2 simply dissolves into the liquid. This method is ideal for pre-combustion applications (e.g., syngas from gasification or steam reforming) where the gas stream is already at high pressure and has a high concentration of CO_2.

The Process:

1. **Absorption**: The high-pressure gas stream (e.g., syngas) enters the bottom of an absorber tower and flows upward through a descending stream of physical solvent (e.g., Rectisol, Selexol, Purisol). Due to the high partial pressure of CO_2, the CO_2 physically dissolves into the solvent without a chemical reaction taking place.
2. **Regeneration**: The CO_2-rich solvent is then moved to a series or flash drums (separators) for staged pressure reduction causing the CO_2 to release from the solvent and turn back into gas. The gas is collected and the solvent is sent back to the absorber for reuse.

Key Projects:

- **Shell Scotford Quest:** The Quest project captures emissions from the hydrogen manufacturing units at the Scotford Upgrader. It utilizes a pre-combustion setup with an activated amine/solvent blend (ADIP-X). While often considered a chemical-physical hybrid, it operates in the high-pressure pre-combustion environment characteristic of physical absorption facilities.
- **Air Products Edmonton Hydrogen Plant:** This project will be the next major evolution in this category, aiming to capture 3.0 Mtpa using similar high-pressure pre-combustion technology, effectively tripling the current capacity of a single facility.
- **NWR Sturgeon Refinery:** This project captures CO_2 from the gasification of refinery residue to produce hydrogen for refining operations. It is a primary supplier for the Alberta Carbon Trunk Line (ACTL). It employs the Rectisol process, which uses chilled methanol as a physical solvent. Rectisol is renowned for its ability to achieve very high CO_2 purity and remove sulphur compounds simultaneously, making it ideal for refinery syngas.

3.1.2.3 Physical Adsorption

Physical adsorption is a surface-based process where CO_2 molecules adhere to the surface of a solid sorbent material via weak intermolecular forces . Unlike absorption, which involves the bulk of a liquid, adsorption is a surface effect. It is typically a cyclic process where the solid material is reused through rapid "swing" cycles of pressure or temperature.

The Process:

1. **Adsorption:** Flue gas or syngas is passed through a bed of solid material (e.g., Zeolites, MOFs, or Activated Carbon). The CO_2 is trapped in the pores of the material while other gases (like N2 or H2) pass through.
2. **Regeneration:** Once the solid is saturated, the CO_2 must be released to refresh the material. This is achieved via a "swing" in conditions:
3. **PSA (Pressure Swing Adsorption):** The pressure is dropped (or a vacuum is applied) to detach the CO_2 from the surface.
4. **TSA (Temperature Swing Adsorption):** The material is heated (often with direct steam) to release the CO_2.

Key Projects:

- **Holcim CO_2MENT Pilot Plant:** Holcim and partners (Total, Svante Technologies) are operating a 1-tonne-per-day CO_2MENT pilot project at the Richmond, BC, cement plant. Using Svante's solid sorbent technology 'Velocys', the project captures CO_2 from cement flue gas to reuse in concrete, aiming to scale up to industrial-level carbon capture and storage.
- **Linde Fort Saskatchewan CCS:** Linde has partnered with Dow to use their proprietary HISORP carbon capture technology to produce clean hydrogen. The CCS facility is expected to capture 2,000,000t of CO_2 emissions from the hydrogen production per year.

3.1.2.4 Membrane Separation

Membrane Separation utilizes thin, semi-permeable barriers to act as a molecular filter. These barriers allow CO_2 to pass through more quickly than other gases like nitrogen or methane. Unlike absorption or adsorption, this is a continuous flow process that does not require regeneration cycles or chemical reagents, making it highly modular and compact.

The Process:
1. **Compression**: The flue gas or syngas is compressed to create a high partial pressure of CO_2 on one side of the membrane.
2. **Selective Permeation**: The gas contacts the membrane and CO_2 molecules diffuse through to the low-pressure side.
3. **Multi-stage Separation**: Depending on the gas composition, it may be required to go through multiple stages of membranes to achieve 95% purity.

Key Projects:
While there are currently no examples of membrane separation being deployed as a primary capture method in Canada, this remains a highly viable technology going forward. The lack of chemical footprint and excellent energy efficiency positions this technology well for future pilot and demonstration projects before commercial implementation.

3.1.2.5 Cryogenic Distillation

Cryogenic Distillation is a separation process that relies on cooling a gas stream to extremely low temperatures (typically below -50°C) to condense and separate CO_2. Unlike other methods that use chemicals or membranes, this is a purely physical process driven by refrigeration and phase change. It is most effective for streams with high concentrations of CO_2.

The Process:
1. **Dehydration and Compression:** The gas stream must first be dried and compressed to high pressure.
2. **Refrigeration and Condensation**: The compressed gas is then cooled in a series of heat exchangers. As the temperature drops, the CO_2 condenses into a liquid, while other gases remain in the gaseous state.
3. **Separation:** The liquid CO_2 is this separated from the remaining gas in a distillation column, ready for transport and storage.

Key Projects:
Similar to membrane separation, cryogenic distillation has not yet made it to commercial scale yet in Canada. This method is being explored primarily for post-combustion capture in highly-concentrated CO_2 streams, but the large electrical load associated with it remains a key hurdle.

3.1.2.6 Direct Air Capture (DAC)

DAC is a technology that removes CO_2 directly from the atmosphere, rather than at the source of emission. Unlike traditional CCS, which prevents new emissions, DAC is a form of CDR that addresses legacy emissions and offsets emissions from decentralized sources like aviation or shipping. The primary technical hurdle for DAC is the low concentration of CO_2 in the atmosphere (roughly 420 ppm or 0.04%). This is significantly lower than a natural gas flue gas (4–10%) or coal flue gas (12–15%), meaning DAC systems must move massive volumes of air to capture the same amount of carbon, making the process highly energy-intensive.

The Process:
Currently, the commercial DAC landscape is dominated by two primary chemical pathways, distinguished by their capture media and thermal requirements:
1. **Solid DAC (S-DAC):** This process utilizes solid adsorbents that chemically bind with CO_2 at ambient temperatures. Once the filters are saturated, the system is sealed under a vacuum (low pressure) and heated to a moderate range of 80°C to 120°C to release the concentrated gas. Because of its relatively low thermal demand, S-DAC can often be powered by waste heat from industrial processes.
2. **Liquid DAC (L-DAC):** This method employs a strong aqueous basic solution, such as potassium hydroxide, to absorb CO_2 as air passes through a contactor. The captured carbon is then liberated through a high-temperature chemical loop. This regeneration process is energy-intensive, requiring specialized units operating between 300°C and 900°C, typically necessitating a dedicated heat source.

Beyond the established methods, several new technologies are being developed to reduce energy consumption and capital costs:
1. **Electrochemical DAC:** These systems use electricity to create a pH gradient across a membrane or electrode, pushing the CO_2 out of a solution without requiring heat. This makes them ideal for integration with renewable energy or Small Modular Reactors (SMRs).
2. **Passive DAC (Mineralization):** Instead of using high-powered fans, this method relies on natural wind flow to expose "carbon-hungry" minerals (like calcium or magnesium oxides) to the air. The minerals naturally carbonate over time, offering a lower-cost but slower removal cycle.

Key Projects:
- **Deep Sky Alpha:** Canada's first dedicated DAC innovation and testing hub. Unlike a traditional plant, it is designed as a tech testing platform to accelerate the commercialization of various carbon removal technologies.
- **Huron DAC E-Fuels Project:** This project focuses on the production of synthetic "E-Fuels" for the aviation and shipping sectors. It uses Carbon Engineering's proprietary Liquid DAC (L-DAC) process, which utilizes a Liquid Alkali (Potassium Hydroxide) solvent loop to bind atmospheric carbon. The captured CO_2 is combined with green hydrogen to produce carbon-neutral liquid fuels, effectively creating a closed-loop fuel cycle for the transport sector.

These projects represent two different sides of the DAC market in Canada: Deep Sky focusing on large-scale permanent sequestration and tech testing, while Huron focuses on immediate commercial utilization through the creation of green fuel.

3.1.2.7 Bioenergy with Carbon Capture and Storage (BECCS)

Bioenergy with Carbon Capture and Storage (BECCS) is a unique carbon removal pathway that combines bioenergy production with geological sequestration. It is categorized as a Negative Emissions Technology (NET) because it removes CO_2 that was recently absorbed from the atmosphere by plants. It is currently the largest non-DAC negative emissions pathway in Canada.

The Process

Biomass is processed in an industrial facility (combustion, gasification, or fermentation) to create heat, electricity, or biofuels. The CO_2 that is emitted during this process is then captured in one of three primary ways:

1. **Post-Combustion (Power & Waste-to-Energy):** This is the most common approach for facilities that burn biomass for heat or electricity. Flue gas from the biomass boiler is captured through chemical (amine) absorption (see Section 3.1.2.1).
2. **Pre-Combustion / Gasification (Hydrogen & Bio-fuels):** This method is used when biomass is converted into a syngas (hydrogen and carbon monoxide) before being used. Biomass is heated in a low-oxygen environment (gasification) to create syngas. The CO_2 is removed from the high-pressure gas stream using Physical Solvents (see Section 3.1.2.2) before the hydrogen is burned or processed further.
3. **Fermentation (Ethanol & Biorefining):** Often considered the purest form of BECCS because the CO_2 generated is a natural by-product of the fermentation process. During the production of ethanol, yeast breaks down sugars in the biomass, releasing a pure stream of CO_2. Because the gas is already concentrated, it requires minimal energy for capture, often only needing dehydration and compression.

Key Projects:

- **AIH1 BECCS Project:** This project is a flagship initiative in the Alberta Industrial Heartland, specifically designed to demonstrate the viability of negative emissions in the power sector. It uses post-combustion capture from biogenic fuel sources.
- **Bright Green CCS Project:** The Bright Green project represents the larger, industrial scale of the BECCS market, focusing on the intersection of forestry and clean fuel production. It utilizes a pre-combustion gasification cycle to convert wood waste into high-value products while capturing a massive volume of CO_2, illustrating the high-capacity potential of gasification over standard combustion.

3.1.2.8 Biochar

Biochar is a stable, carbon-rich, charcoal-like material produced by heating organic biomass in a low-oxygen environment. While it has historical roots in ancient agricultural practices, it is now being deployed in Canada as a high-integrity Carbon Dioxide Removal (CDR) technology.

The Process

1. **Pyrolysis:** Instead of allowing that biomass to rot or burn (which would release the CO_2 back into the air), it is heated to 350°C–900°C in a low-oxygen environment preventing combustion.
2. **Stabilization:** The process converts the organic carbon into a highly stable "aromatic" form that is resistant to biological decomposition.
3. **Permanent Storage:** The resulting biochar is applied to soils or integrated into long-lived materials (like concrete or asphalt). Unlike compost, which degrades in years, the carbon in biochar can remain sequestered for hundreds of years.

Key Projects:

- **CARBONITY:** This project is the largest biochar plant in North America. Phase 1, which is active as of 2025, aims to produce 10,000 tonnes of biochar per year with plans to expand up to 30,000 tonnes per year. For each tonne of biochar, 2-3 tonnes of CO_2 is sequestered in the process, creating a viable method for CDR.

3.1.2.9 Mineralisation

Carbon mineralisation is the process of transforming gaseous CO_2 into solid carbonate minerals (such as calcite or magnesite). Unlike saline aquifer storage, where CO_2 remains a fluid trapped by a caprock, mineralization creates a permanent, solid stone that is chemically stable.

The Process

Crushed alkaline materials (such as mine tailings, industrial slag, or recycled concrete) are exposed to either ambient air or concentrated CO_2 streams. Because the rock is already pulverized, the surface area for the chemical reaction is massive, allowing for rapid carbonation.

Key Projects:

- **Canada Nickel – Crawford Project:** Home of the world's second largest nickel resource and reserve, Canada Nickel is designing a system where CO_2 is stored in the magnesium-rich tailings generated by the mine. The goal is to create a "NetZero Nickel" product by offsetting all mine emissions through the waste rock itself. Crawford's feasibility study includes the ability to store 1.5 million tonnes annually, making it a net negative contributor to the global carbon footprint.

3.1.3 COMPARISON OF KEY CAPTURE TECHNOLOGIES

While chemical absorption remains the established industry standard, we are starting to see a strategic shift towards the use of other technologies. Table 3.1-1 summarises all of our findings from this section.

Capture Technology	Capture Mechanism	Pros	Cons	Typical Applications	Examples

Chemical Solvent	Absorption through chemical reaction between the solvents (commonly amines) and CO_2. Solvent is then heated up to separate the CO_2 for storage.	• Industry standard, well understood technology
		• Highly effective, even in dilute streams (<5% CO_2)
		• High pressure flue gas not required for high absorption
			• High energy requirement to reheat the solvent for CO_2 separation	• Post-combustion capture from:
				  • Cement processing facilities
				  • Coal power plants
				  • Natural gas and LNG processing
				• CO_2 Enhanced Oil Recovery
					• Monoethanolamine
					• Shell ADIP-X
					• Shell CANSOLV
					• Entropy23
					• KS-21 (MHI)

Physical Solvent	Relies on the solubility of CO_2 within a liquid solvent. Follows Henrys Law which means that the amount of gas dissolved in the liquid is directly proportional to the partial pressure of that gas.	• Low energy requirement for separation • High energy efficiency with high pressure gases • High absorption capacity and lower solvent recirculation requirements	• Low energy efficiency with low pressure gases • Gas composition important as other compounds (H_2S) can be absorbed into the fluid • High pressure gas required	• Syngas and hydrogen production • Natural gas production • Pre-combustion capture • CO_2 Enhanced Oil Recovery	• Rectisol • Selexol • Purisol
Physical Adsorption	Uses solid materials (sorbents) to catch CO_2 on the surface.	• Less energy required to release the CO_2 • Modern materials able to capture CO_2 while ignoring other gases • Fast capture release cycles	• Requires the flue gas to be dry • Less effective in low CO_2 concentration flue gas • Expensive materials	• Hydrogen production • Chemicals manufacturing • CO_2 Enhanced Oil Recovery	• Metal Organic Frameworks (MOFs) • Zeolites • Pressure Swing Adsorption (PSA)
Membrane Separation	Membranes act as physical filters that allow CO_2 to permeate through while blocking nitrogen and other gases.	• Modular and require a smaller footprint than chemical towers • No chemical reaction means less energy required to separate the CO_2 • Process has no shutdown/startup	• High pressure requirement means gas must be heavily compressed entering the membrane • Sensitive to trapping other gases • Needs high CO_2 concentration	• Hydrogen and syngas production • Natural gas processing • Oxy-fuel combustion capture	• Polymer • Carbon • Zeolite • Palladium • Inorganic

Cryogenic Distillation	Cools the flue gas to temperatures below -50°C to freeze or liquefy the CO_2 for separation.	• Produces some of the highest CO_2 content available
		• No chemical solvents required
		• Resulting CO_2 is already in a liquid state ready for transport
			• High electrical load
			• Requires gas to be very dry
			• Requires special materials that will not become brittle at cryogenic temperatures
			• Still in the pilot and demonstration phase in Canada, but gaining traction
				• Post-combustion capture from:
				  • Cement processing facilities
				  • Coal power plants
				  • Natural gas and LNG processing
					• Ammonia
					• Methanol

Carbon Dioxide Removal (CDR)	CDR is a distinct category that focuses on removing CO_2 that has already been emitted into the atmosphere.	• Removing CO_2 that has already been released is considered vital for addressing legacy emissions and reaching net zero goals • Location flexibility • Small geographical footprint	• Often requires power through renewable sources to not be considered redundant • Currently operating on much lower scales compared to proven technologies	• DAC • BECCS • Biochar • Mineralisation	• Electrochemical DAC • Solid DAC • Liquid DAC • Mine Tailings • Biomass • Concrete

Table 3.1-1, Overview of key capture technologies

Project Name	Locality	Operator(s)	Volume CO_2e (Mt/yr)	CO_2 Source	Capture Method	Solvent / Sorbent Type	Status	Start Up Year
Operating as of January 2026								
Boundary Dam CCS	Saskatchewan	SaskPower	1	Power Generation and Heat	Chemical Solvent (post-combustion)	ADIP-X (Shell)	Active	2014
Quest Carbon Capture and Storage	Alberta	Shell	1	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	ADIP-X (Shell)	Active	2015
Sturgeon Refinery CCS Project	Alberta	Northwest Redwater Partnership	1.2	Oil Refining	Physical Solvent (pre-combustion)	Rectisol	Active	2020
Still in Planning as of January 2026								
Edmonton Hydrogen Plant CCS Project	Alberta	Air Products & Chemicals Inc	3	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	N/A	Future	2026
Edmonton Cement Plant CCUS Project	Alberta	Heidelberg Materials	1	Power Generation and Heat	Chemical Solvent (post-combustion)	KS-21 (MHI)	Future	2026
Saskatchewan CCS Project	Saskatchewan	Strathcona Resources	1.98	Oil Sands	Chemical Solvent (post-combustion)	TBC	Future	2027
Grande Prairie Ammonia and Methanol Plant CCS Project	Alberta	Northern Petrochemical Corp	2	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2027
Fort Saskatchewan CCS Project	Alberta	Linde Group	2	Hydrogen/Ammonia/Fertiliser	Physical Adsorption (post-combustion)	Zeolite	Future	2028
Edmonton Hydrogen Plant CCS Project	Alberta	Mitsubishi Corp	1.5	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2028
Alberta Industrial Heartland CCS Project	Alberta	Marubeni Corporation	1.5	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2028
Polaris Carbon Capture Project (Shell)	Alberta	Shell	0.65	Hydrogen/Ammonia/Fertiliser	Chemical Solvent (post-combustion)	Shell CANSOLV	Future	2028
Myers Energy Park CCS Project	Alberta	KALiNA Power Limited (KPO)	0.65	Natural Gas Processing	Chemical Solvent (post-combustion)	TBC	Future	2028
Methanex Medicine Hat CCUS Project	Alberta	Entropy Inc, Methanex Corp	0.8	Hydrogen/Ammonia/Fertiliser	Chemical Solvent (post-combustion)	TBC	Future	2029
Crossfield Energy Park CCS Project	Alberta	KALiNA Power Limited (KPO)	2	Natural Gas Processing	Chemical Solvent (post-combustion)	TBC	Future	2029
Alberta Industrial Heartland CCS Project (ATCO)	Alberta	ATCO Group	2	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2029
Crawford Nickel Pilot CCS Project	Ontario	Canada Nickel	1.5	Stainless Steel Production	Physical Adsorption (post-combustion)		Future	2029
Bright Green CCS Project	BC	Hydrogen Naturally	1.2	Biorefinery	BECCS (Gasification)	TBC	Future	2029
Alberta CCS Project	Alberta	Itochu Corporation, Petronas, Inter Pipeline Ltd	1	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2029
RH2C Tumbler Ridge Methanol Plant CCS Project	BC	Canadian Methanol Corp	1	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2029
Belle Plaine Ammonia Plant CCS Project	Saskatchewan	Genesis Fertilizers LP	0.7	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2029
Alsike Energy Park CCS Project	Alberta	KALiNA Power Limited (KPO)	0.65	Natural Gas Processing	Chemical Solvent (post-combustion)	TBC	Future	2029
Alberta Industrial Heartland CCS Project	Alberta	Hydrogen Canada	1.5	Hydrogen/Ammonia/Fertiliser	Physical Solvent (pre-combustion)	TBC	Future	2030
Exshaw Cement Plant CCUS Project	Alberta	Lafarge	1	Cement Production	Physical Adsorption (post-combustion)	TBC	Future	2030
Regina Renewable Diesel Plant	Saskatchewan	Federated Co-operatives Ltd	0.5	Biorefinery	Physical Solvent (pre-combustion)	TBC	Future	2031

Table 3.1-2, Overview of Key Capture Projects (>0.5 Mt/yr). Source: Global Data / EICDataStream

3.3.2 Capture – Regulations

Canada's federal regulatory framework for carbon capture is broad in scope. Legislation such as the Net-Zero Emissions Accountability Act and the Canadian Environmental Protection Act establishes the overarching legal and compliance environment, while the Impact Assessment Act governs project approvals for major infrastructure.

Together these create the policy foundation that makes CCUS a regulatory necessity for large emitters.

The most direct federal enablers are financial rather than regulatory. The CCUS ITC is the single most impactful measure, covering up to 37% of eligible capital expenditures and materially improving project economics across all capture sectors.

Carbon pricing through the Federal Output-based pricing systems (OBPS) creates the underlying incentive to abate, while offset mechanisms, particularly the DACCS Offset Protocol and GHG Offset Credit System, provide additional revenue pathways for CDR projects.

The Canada Growth Fund further complements this by offering long-term offtake contracts and catalytic capital to de-risk projects that would otherwise struggle to reach final investment decision.

Policy / Regulation / Initiative	Type	Description	Capture Area				Impact Timeframe	Impact Level	Rationale
CCUS ITC	Tax Incentive	Refundable federal tax credit supporting eligible capital expenditures for CCUS projects up to 2040.	HI	FFD	CDR	H&F	S	High	Hydrogen has its own dedicated ITC, making this the primary capital incentive for CCUS deployment.
Impact Assessment Act	Legislation	Requires federal environmental and impact assessment for designated projects, including major interprovincial pipelines, with Indigenous consultation obligations.	HI	FFD	CDR	H&F	S	High	Affects project timelines and costs; compliance is mandatory for all major CCUS infrastructure.
Net-Zero Emissions Accountability Act	Legislation	Legally commits Canada to net-zero GHG emissions by 2050, with binding interim reduction targets at five-year intervals.	HI	FFD	CDR	H&F	L	High	Creates long-term regulatory certainty and investor confidence underpinning all CCUS investment.
Canadian Environmental Protection Act	Legislation	Governs the assessment and management of toxic substances and pollution, establishing baseline environmental standards for industrial operations.	HI	FFD	CDR	H&F	M	Medium	Sets compliance floor for emissions and substance management across all capture industries.
Federal OBPS	Carbon pricing	Output-based pricing system applies a carbon price to large industrial emitters, incentivising emissions reductions and CCUS adoption.	HI	FFD	CDR	H&F	M	Medium	Creates direct financial incentive for heavy industry to adopt CCUS by pricing unabated emissions.
GHG Offset Credit system	Regulation	Establishes tradeable offset credits for verified GHG reductions.	HI	FFD	CDR	H&F	M	Medium	Broadens revenue opportunities for CCUS operators through carbon credit market participation.
DACCS Offset Protocol	Regulation	Federal protocol enabling DAC and CCS projects to generate tradeable GHG offset credits under the federal carbon market.	HI	FFD	CDR	H&F	S	High	Provides a revenue stream for CDR projects, improving economics of otherwise high-cost removal technologies.
Buy Clean Strategy	Initiative	Government procurement initiative prioritising low-carbon materials and products.	HI	FFD	CDR	H&F	S	Medium	Drives market demand for low-carbon industrial outputs, improving commercial viability of CCUS-enabled products.
Clean Fuel Regulations	Regulation	Requires fuel suppliers to reduce the carbon intensity of fuels, incentivising CCUS integration into the fuel supply chain.	HI	FFD	CDR	H&F	S	Medium	Creates a compliance mechanism that directly rewards low-carbon hydrogen and CCUS-processed fuels.
Energy Innovation Program	Funding Support	NRCan grants funding CCUS R&D and pre-FID activities including technology development and FEED.	HI	FFD	CDR	H&F	M	High	De-risks early-stage CCUS projects by co-funding feasibility and engineering work critical to final investment decisions.

HI = Heavy Industry, FFD = Fossil Fuel Decarbonisation, CDR = Carbon Dioxide Removals, H&F = Hydrogen and fertiliser
S = Short Term (0-2 y) , M = Medium term (3-5 y) , L = Long term (5+ y)

Table 3.1-3, List of federal carbon capture regulations

3.2 TRANSPORT

3.2 SUMMARY OF CO_2 TRANSPORT WITHIN CANADA

The transport value chain in the CCUS industry refers to the essential infrastructure that bridges the gap between where the CO_2 is captured and where it is permanently stored. Without robust transport, the market remains siloed, and large-scale decarbonization is technically impossible. The landscape is currently undergoing a pivotal evolution, shifting away from isolated, project-specific pipelines toward integrated, province-wide open-access networks that allow multiple emitters to share common infrastructure. While Saskatchewan demonstrated much of the early transport infrastructure as a result of the Boundary Dam and Weyburn-Midale EOR, Alberta has emerged as the pioneer in CO_2 pipelines primarily through the Alberta Carbon Trunkline (active 2020) and the proposed Pathways Alliance Project (planned 2030).

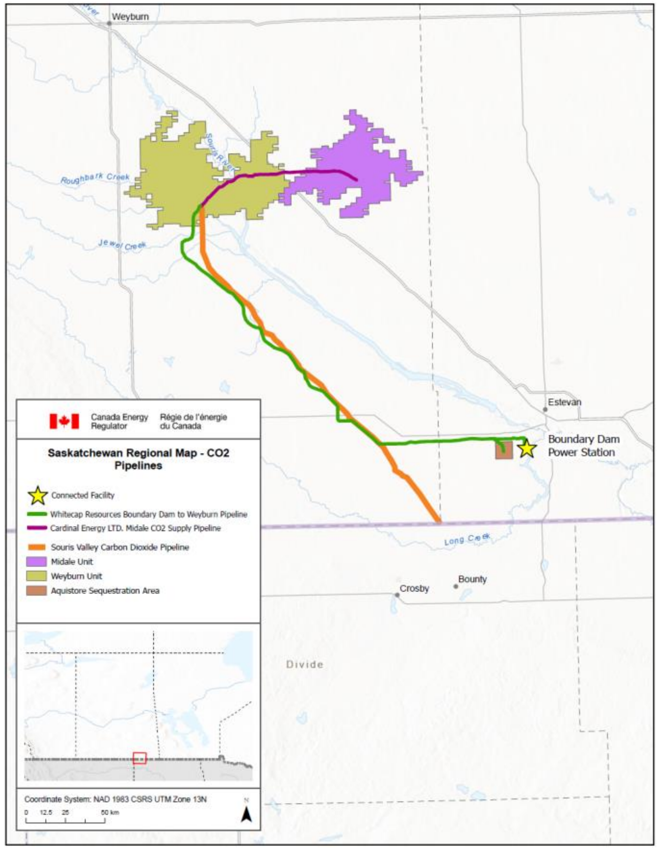
Table 3.2-1, List of Active and Future Transport Projects

Project Name	Locality	Length (km)	Capacity (Mt CO_2/yr)	Operator(s)	Start Up Year
Weyburn-Midale Pipeline (Souris Valley Pipeline)	Saskatchewan	61	3.0	Whitecap Resources	2000
Cardinal Energy Midale Pipeline	Saskatchewan	25	0.3	Cardinal Resources Ltd	2005
Boundary Dam Pipeline	Saskatchewan	74	1.0	Whitecap Resources, SaskPower	2014
Quest Pipeline	Alberta	64	1.2	Shell	2015
Alberta Carbon Trunk Line (ACTL)	Alberta	240	1.6-14.6	Wolf Midstream	2020
Southeast Saskatchewan Carbon Hub	Saskatchewan	200	1.8-3.6	Entropy Inc	2027
Alberta Carbon Grid CCS Project (Phase 1)	Alberta	650	10	TC Energy, Pembina	2028
Open Access Wabamun Carbon Hub	Alberta	70	1-2	Enbridge	2029
Pathways Alliance Pipeline	Alberta	550	12	Pathways Alliance	2030

3.2.1 Saskatchewan Overview

As seen in Figures 3.2-1 and 3.2-2, Saskatchewan as a province is currently underdeveloped compared to the likes of Alberta. The addition of the Southeast Saskatchewan Carbon Hub (not shown here), being developed by Entropy Inc, demonstrates the future plans to mirror the strategy being deployed in Alberta to create local storage hubs.

Fig 3.2-1: Major Active CO_2 Pipelines in Saskatchewan, 2025

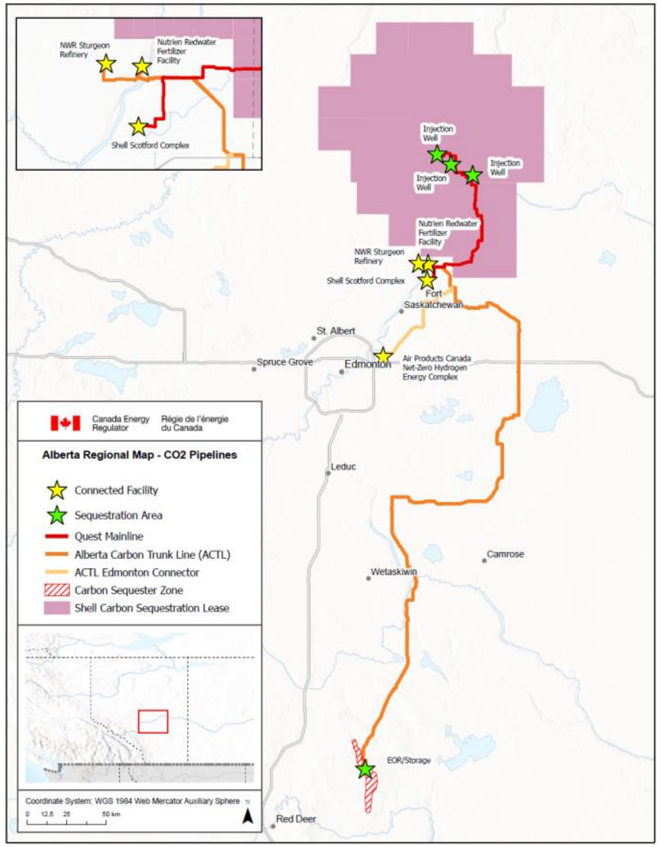


Source: Canada Energy Regulator

3.2.2 Alberta Overview

Alberta, through the signature transport project to date, the Alberta Carbon Trunk Line has demonstrated the strategy of open-access hubs by connecting multiple industrial emitters and transporting the CO_2 to EOR fields in Central Alberta. This pipeline has a future capacity of 14.6 Mt CO_2/yr, allowing for the expansion of more projects down the road.

Fig 3.2-2: Major Active CO_2 Pipelines in Alberta, 2025



Source: Canada Energy Regulator

3.2.3 National Transport Landscape – Beyond the Leaders

Outside of Alberta and Saskatchewan, the transport value chain is characterized by a lack of connectivity and a reliance on decentralized, localized solutions.

British Columbia

- **Current State:** Transport is largely non-existent. Projects like Huron DAC are being sited directly adjacent to their utilization or sequestration targets to avoid the need for long distance pipelines.
- **The Virtual Pipeline Opportunity:** There is significant discussion in BC regarding moving CO_2 via truck or rail from smaller inland emitters to coastal hubs.
- **Offshore Potential:** Future transport will likely focus on short, high-pressure lines moving CO_2 from coastal DAC plants directly to offshore basalt injection sites in the Cascadia Basin.

Ontario, Quebec, and Manitoba

- **Current State:** Ontario and Quebec have massive industrial emitters but zero existing CO_2 transport infrastructure.
- **Quebec's Hub Strategy:** Deep Sky is leading the charge in Quebec, but their transport plan currently relies on localized storage. Currently there is not enough of a demand in this region to incentivise the creation of a dedicated CO_2 pipeline..
- **Manitoba:** Currently has little need for transport infrastructure. The Deep Sky Manitoba project (Planned 2026 construction) utilizes DAC, which can be sequestered anywhere with suitable geology. Deep Sky is building the capture facility directly on top of the deep saline aquifers in the Westman region.
- **Ontario (Sarnia-Lambton):** The Sarnia-Lambton industrial cluster is exploring a shared infrastructure model similar to the Alberta Carbon Grid, but it is currently in the early feasibility stage. This region serves as Ontario's hydrogen hub, positioning it as a key area for CCUS if the transport and storage infrastructure is in place.

NL, NS, NB, and PEI

- **Transport Strategy:** The primary opportunity lies in maritime CO_2 shipping and subsea pipelines. Similar to the Northern Lights project in Norway, these provinces are exploring the use of specialized tankers to move liquefied CO_2 from industrial coastal hubs (like Halifax or St. John's) to offshore storage sites.
- **Passive Role:** As of 2026, little tangible progress has been made to the transport infrastructure in these provinces.

3.2.4 Case Study: The Pathways Alliance Project

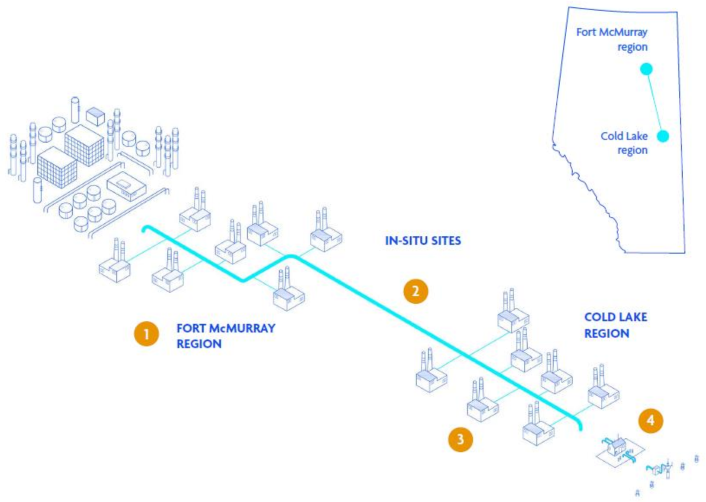
The Pathways Alliance project is arguably the most significant single transport infrastructure project in the Canadian CCUS market, representing the transition from pilot to gigaton scale.

Scope and Scale

The project involves a 400 km main trunk line that will connect over 20 oil sands facilities in the Fort McMurray, Christina Lake, and Cold Lake regions to a central carbon storage hub.

- Initial Capacity by 2030: 12 Mtpa
- Maximum Capacity by 2050: 40 Mtpa

Fig 3.2-3: Pathways Alliance Overview



Source: Pathways Alliance

Transport Infrastructure

The proposed transportation network would include:

Pathways Laterals

Currently there are 16 proposed pipeline segments that would connect the carbon capture facilities at the various oil sands locations in the Fort McMurray, Christina Lake, and Cold Lake regions to the main transportation line.

- Diameter ranging from 8-20 inches (pending CO_2 volumes)
- Length ranging from 1-49 km

Pathways Transportation Line

The main trunkline is proposed to have a diameter between 16 and 30 inches and would connect the Pathways Laterals to the Pathways Distribution Line.

- Approximately 330 km long

Pathways Hub Distribution Line

The distribution line is proposed to have a diameter between 16 and 30 inches and would connect the Pathways Transportation Line to the Pathways Storage Hub.

- Approximately 120 km long

Strategic importance

- **The Open Access Plan:** Post-2030, this pipeline is expected to serve as the backbone for Third-Party Access. Non-oil sands industries (like heavy industry capture projects or new hydrogen plants) could tie into the Pathways line, significantly lowering the barrier to entry for smaller emitters.
- **Sequestration Hub:** The line terminates in the Cold Lake region, where a saline aquifer storage hub is being developed. This hub-and-spoke model is the blueprint for how Canada expects to reach its Net Zero 2050 goals.

3.3.2 Transport – Regulations

Pipeline is the only commercially viable transport mode for CO_2 at the scale required for CCS in Canada. The country's geography, with vast distances between emission sources and suitable storage formations, makes truck and rail impractical beyond small demonstration volumes, unlike some European contexts where shorter distances allow more flexible logistics. CO_2 pipelines are therefore the critical infrastructure link in any national CCS value chain.

Canada's federal regulatory framework for CO_2 transport is functional but not purpose-built. Interprovincial CO_2 pipelines fall under the Canadian Energy Regulator's jurisdiction, governed by the Onshore Pipeline Regulations which apply hydrocarbon-era standards by default, with no CO_2-specific technical provisions. This creates uncertainty around material specifications, pressure management, and fracture control for dense-phase CO_2 transport. The CCUS Investment Tax Credit covers 37% of eligible transport expenditure and represents the most tangible federal enabler for pipeline investment. The Building Canada Act can accelerate project delivery by streamlining federal approvals, partially offsetting delays historically associated with federal permitting.

However, friction points remain significant. The Impact Assessment Act introduces lengthy review timelines, with Indigenous consultation and environmental assessment requirements adding complexity and cost. Pipeline routing is further constrained by the Fisheries Act and the Species at Risk Act, which impose approval obligations wherever routes intersect with fish-bearing waterways or sensitive habitats. The Energy Innovation Program provides useful early-stage funding but at a scale insufficient to de-risk full project development.

Canada has decades of pipeline engineering expertise and an established CO_2 transport track record, demonstrated by infrastructure such as the Alberta Carbon Trunk Line. The challenge is not execution capability but regulatory modernisation. Scaling CO_2 transport will require CO_2-specific technical standards and more streamlined approval processes to match project ambition.

Policy / Regulation / Initiative	Type	Description	Impact Timeframe	Impact Level	Rationale
CCUS ITC	Funding Programme / Support Scheme	Refundable federal tax credit supporting eligible capital expenditures for CCUS projects (up to 2040).	S	High	Covers 37% of eligible CO_2 transport CAPEX. Directly reduces pipeline development costs and improves project economics for CO_2 trunk lines.
Onshore Pipeline Regulations	Legislation / Regulation	Federal safety, design, construction, operation and abandonment standards for interprovincial pipelines under the CER Act, applying CSA Z662 as the primary technical standard.	S	Medium	Primary technical and safety compliance framework for any interprovincial CO_2 pipeline. No CO_2-specific provisions exist, hydrocarbon standards apply by default.
Building Canada Act (BCA)	Legislation / Regulation	Federal legislation enabling accelerated approval of infrastructure projects designated as being in the national interest, overriding standard regulatory and permitting timelines.	S	Medium	Can fast-track CER and IAA review for major CO_2 pipeline infrastructure, if they qualify as eligible projects. Significantly reduces permitting risk and timeline for interprovincial CO_2 transport projects. However, BCA primary intention is for classical civil infrastructure projects, rather than CCUS.
Impact Assessment Act (IAA)	Legislation / Regulation	Requires federal environmental and impact assessment for designated projects, including major interprovincial pipelines, with Indigenous Knowledge and Crown consultation obligations.	S	High	Any significant CO_2 pipeline will trigger IAA review. Determines permitting timeline and conditions; BCA can partially override but baseline assessment obligations remain.
Pipeline Safety Act 2015	Legislation / Regulation	Strengthens federal pipeline safety through prevention, preparedness and response, and liability provisions. Requires operators to demonstrate minimum financial resources for incident response.	M	Medium	Establishes the liability and financial assurance framework CO_2 pipeline operators must satisfy under CER jurisdiction. Applies to CO_2 pipelines the same as hydrocarbon pipelines.
EIP	Funding Programme / Support Scheme	NRCan grants and funding for CCUS R&D and pre-FID activities, including technology development and front-end engineering for carbon transport infrastructure.	M	Medium	EIP granted CAN$7M for Pathways Alliance FEED, including the 650km CO_2 trunk line. Supports early-stage pipeline development before commercial financing is secured.

S = Short Term (0-2 y) , M = Medium term (3-5 y) , L = Long term (5+ y)

Table 3.2-2, List of carbon transport regulations

3.3 UTILISATION

3.3 UTILISATION PATHWAYS – CURRENT USES AND FUTURE POTENTIAL

Today, CO_2 utilisation is dominated by a small number of mature uses (EOR, food & beverages, urea). Long-term growth potential lies in building materials, synthetic fuels and chemicals, but most pathways remain emerging and policy-dependent.

While the current market for CO_2 utilization is dominated by urea production and EOR, accounting for approximately 250 Mtpa of demand, the future of the sector is shifting toward high-growth alternative pathways.

By 2040, the utilization market is projected to expand to between 430 and 840 Mtpa, driven by a transition from "using" carbon for resource extraction to "recycling" it into the circular economy. This evolution is underpinned by a material evolution where CO_2 becomes a standard industrial feedstock, potentially making up 10–33% of all captured carbon by 2050.

Utilisation Technology	Description (+ example products)
Direct Use	This pathway involves using captured CO_2 in its original form without changing its chemical structure. It is often compressed or liquefied for transport and then utilised in industrial processes that rely on the specific physical properties of the gas. **Products:** Carbonated beverages, dry ice for refrigeration, and pressurised gas for Enhanced Oil Recovery (EOR)
Mineralisation	In this process, CO_2 is reacted with alkaline minerals (like magnesium or calcium oxides) or industrial waste to form solid carbonates. This is a permanent storage solution because the carbon becomes chemically bound into a stable, rock-like mineral. **Products:** Carbon-negative concrete, synthetic aggregates for road construction, and stabilised mine tailings.
Chemical Conversion	Captured CO_2 serves as a raw material (feedstock) that is transformed into higher-value chemicals through catalytic reactions. This process replaces traditional fossil fuel feedstocks, helping to "circularise" the carbon economy for everyday industrial materials. **Products:** Urea (for fertiliser), methanol, plastic polymers, and various pharmaceutical intermediates.
Fuel Synthesis	This technology combines CO_2 with low-carbon hydrogen (usually produced via electrolysis) to create synthetic fuels. These "e-fuels" act as drop-in replacements for traditional hydrocarbons, providing a carbon-neutral energy source for sectors that are difficult to electrify. **Products:** Sustainable Aviation Fuel (SAF), e-methanol for shipping, and synthetic diesel/gasoline.

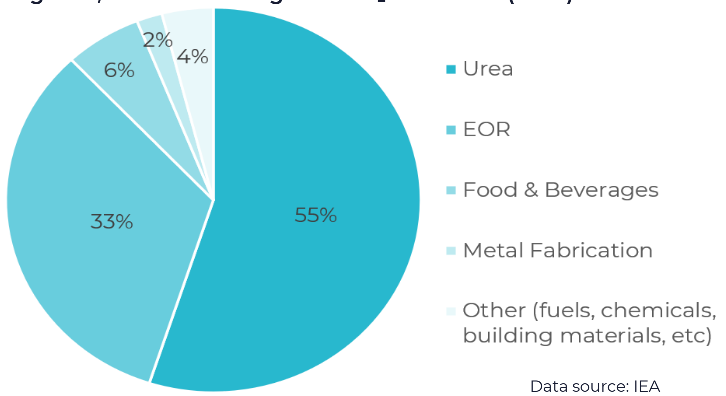
Table 3.3-1, Overview of key utilisation technologies

Source: IEA, GCCSI

The two most significant growth sectors are building materials and synthetic fuels (e-fuels):

- **Mineralisation in Construction**: This is emerging as the largest potential market by volume, with the capacity to utilize up to 1.41 Gt of CO_2 annually by 2050. By reacting CO_2 with industrial waste to create carbon-negative aggregates and concrete, this pathway offers permanent sequestration.
- **Fuel Synthesis**: Driven by strict blending mandates in aviation, the demand for e-kerosene and e-methanol is set to explode. These "drop-in" fuels are critical for decarbonizing the maritime and aviation sectors where direct electrification is not yet feasible.

Fig 3.3-1, Breakdown of global CO_2 utilisation (2023)



Data source: IEA

3.3.1 Future Utilisation Pathways in Canada

Carbon utilisation in Canada is at an inflection point. While current activity remains concentrated in established oil-linked applications, policy, industrial strategy, and market signals are beginning to broaden the opportunity set.

Canada's CO_2 utilisation market is currently dominated by EOR, which accounts for the vast majority of utilised volumes. Activity is concentrated in Western Canada, where established oil and gas infrastructure, subsurface expertise, and proven commercial models have enabled CO_2 injection at scale. In the near term, EOR is expected to remain the principal source of utilisation demand, supported by existing assets and operating know-how, particularly in Alberta and Saskatchewan.

Over the next 10–20 years, however, the market is expected to continue to gradually diversify beyond oil-linked utilisation. As net-zero commitments tighten and capital allocation increasingly favours low-carbon products and permanent abatement solutions, growth in EOR-linked utilisation is likely to plateau. At the same time, federal investment tax credits, carbon pricing mechanisms, Clean Fuel Regulations, and public procurement initiatives such as "Buy Clean" are beginning to create stronger incentives for non-EOR applications. This policy and market shift is expected to reorient utilisation toward industrial decarbonisation and product substitution rather than incremental hydrocarbon recovery.

Non-EOR pathways therefore represent a major growth opportunity for Canada's CCUS market. While currently concentrated in pilot, early-stage and small projects, these pathways are being driven by industrial emitters seeking compliance solutions, product differentiation, and access to low-carbon markets. Innovation funding, provincial climate strategies, and increasing demand for low-carbon materials further support this trajectory.

Within non-EOR utilisation, mineralisation and fuel synthesis are expected to lead future expansion. Mineralisation technologies, particularly in the cement and concrete sector, offer permanent storage benefits and align with Canada's sizeable construction materials market and public procurement signals. Fuel synthesis pathways, including e-fuels, methanol, and sustainable aviation fuel, leverage Canada's existing petrochemical capabilities and export infrastructure, while aligning with domestic Clean Fuel Regulations and rising global demand for low-carbon fuels.

Together, these segments combine relative technical maturity, policy alignment, and integration with existing industrial value chains, positioning them as the most commercially credible non-EOR growth areas over the medium to long term.

Project	Company	Utilisation Type	Status	Province
Huron DAC E-fuels	Oxy Low Carbon Ventures	Fuel Synthesis	Announced	BC
RH2C Tumbler Ridge Methanol	Canadian Methanol Corp	Fuel Synthesis	Announced	BC
Methanex Medicine Hat	Entropy, Methanex	Fuel Synthesis	Planning	AB
Genesis Fertilizer Belle Plaine	Genesis Fertilizer	Chemical Conversion (Urea)	Announced	SK
Carbon 1 Mississauga	Ash Grove / Carbon Upcycling	Mineralisation	Planning	ON
Aylmer CCU	Air Liquide	Direct (Food)	Operational	ON
CO_2MENT	Inventys	Mineralisation	Development	BC
CarbonCure	CarbonCure	Mineralisation	Operational	NS
Recyclage Carbone Varennes	StormFisher	Fuel Synthesis	Operational	QB

Table 3.3-2, List of non-EOR carbon utilisation projects

Case Study – CarbonCure Technologies

Headquarted in Halifax, Nova Scotia, CarbonCure Technologies is a global leader is carbon mineralisation for the concrete industry.

Their system retrofits existing concrete plants that injects CO_2 into the concrete during the mixing stage, Once injected the CO_2 undergoes a chemical reaction to fore calcium carbonate (CaCO3).

They have installed hundred of systems over 25 countries, though primarily in the USA. In Canada, seven of their systems are installed across British Columbia, Nova Scotia and Newfoundland.

CarbonCure have been a key beneficiary of the Federal 'Buy Clean Initiative', prioritising low-carbon concrete.

3.3.2 Utilisation – Regulations

Canada's carbon utilisation framework is primarily federal and built from a mix of tax incentives, fuel standards, innovation funding, and procurement policy. It is enabling overall, reducing upfront cost risk and creating early demand signals for low-carbon products. However, utilisation remains smaller and more commercially complex than storage, so success depends on securing durable revenue and offtake.

The Clean Fuel Regulations are the key demand driver. They reward lower lifecycle carbon intensity and support CO_2-derived fuels such as e-methanol and SAF. Federal "Buy Clean" procurement can also support mineralisation by favouring low-carbon cement and concrete. These measures help move projects beyond pilot scale.

On the supply side, the CCUS Investment Tax Credit and programmes such as the Energy Innovation Program and Clean Fuel Fund reduce capital risk and support scale-up. This is critical given higher technology and integration risk in utilisation pathways.

The main constraint is revenue certainty. Projects rely on stable credit eligibility, lifecycle accounting rules, and compliance markets. While carbon pricing and offsets can add value, evolving methodologies create bankability risk. Strategically, Canada has a solid base for growth, but clearer long-term monetisation frameworks will be key to unlocking scale.

Policy / Regulation / Initiative	Type	Description	Utilisation Area	Impact Timeframe	Impact Level	Rationale
CCUS ITC	Funding Support / Tax Incentive	Refundable federal tax credit supporting eligible capital expenditures for CCUS projects (up to 2040).	**DU** **M** **CC** **FS**	S	High	The ITC reduces upfront capital costs for eligible CCUS projects, including CO_2 utilisation (37% of qualifying CAPEX across transport, storage and use). Although more generous for capture, inclusion of direct use and other utilisation expenditures lowers overall project cost and strengthens the investment case for integrated systems.
CFR	Legislation / Market-Based Regulation	Federal regulation requiring primary fuel suppliers to reduce the lifecycle carbon intensity of liquid fossil fuels through a national credit trading system.	DU M CC **FS**	M	High	The CFR establishes a durable compliance market that creates structural demand for low-carbon fuels, including CO_2-derived synthetic fuels such as e-methanol and SAF.
Buy Clean Strategy	Public Procurement Policy	Federal procurement initiative requiring disclosure of embodied carbon in construction materials used in government-funded infrastructure projects.	DU **M** CC FS	S	High	Buy Clean strengthens market demand for low-carbon cement and concrete, where CO_2 mineralisation is a key decarbonisation pathway.
EIP	RD&D Funding Programme	NRCan-administered programme providing grants for research, development, and demonstration of clean energy technologies, including CCUS and carbon utilisation innovations	DU **M** **CC** **FS**	S	Medium	EIP supports early-stage technology maturation across mineralisation, chemical conversion, and fuel synthesis pathways. While funding volumes are typically insufficient for full commercial deployment, the programme reduces technical risk, advances technology readiness levels.
GHG Offset System	Carbon Pricing Instrument	Federal system allowing generation of offset credits for approved emissions reduction projects outside the Output-Based Pricing System (OBPS)	DU **M** CC FS	M	Medium	Where eligible methodologies exist (particularly for permanent mineralisation), offset credits can provide an additional revenue stream. As methodologies mature, this mechanism could become increasingly relevant for mineralisation-based projects.
Clean Fuel Fund	Capital Grant Programme	Federal funding programme supporting construction and expansion of domestic clean fuel production facilities to increase supply of low-carbon fuels.	DU M CC **FS**	M	Medium	The Clean Fuel Fund reduces upfront capital barriers for synthetic fuel projects that incorporate captured CO_2 as a feedstock. By lowering initial investment risk, it complements the revenue-side incentives created by the Clean Fuel Regulations.

DU = Direct Use, M = Mineralisation, CC = Chemical Conversion, FS = Fuel Synthesis
S = Short Term (0-2 y) , M = Medium term (3-5 y) , L = Long term (5+ y)

Table 3.3-3, List of carbon utilisation regulations

3.4 STORAGE

3.4 STORAGE

3.4.1 Geological Storage Potential

Canada possesses one of the world's largest prospective geological carbon storage endowments, with approximately 389 Gt of onshore CO_2 storage, primarily in deep saline aquifers. This resource base is several orders of magnitude greater than Canada's annual emissions, indicating that geology is unlikely to constrain long-term carbon storage deployment at a national scale.

As illustrated in Figure 3.4-1, Canada's onshore storage potential is highly concentrated within three sedimentary regions: the Western Canada Sedimentary Basin (WCSB), the Appalachian Basin (Ontario), and the St. Lawrence Lowlands Basin (Quebec).

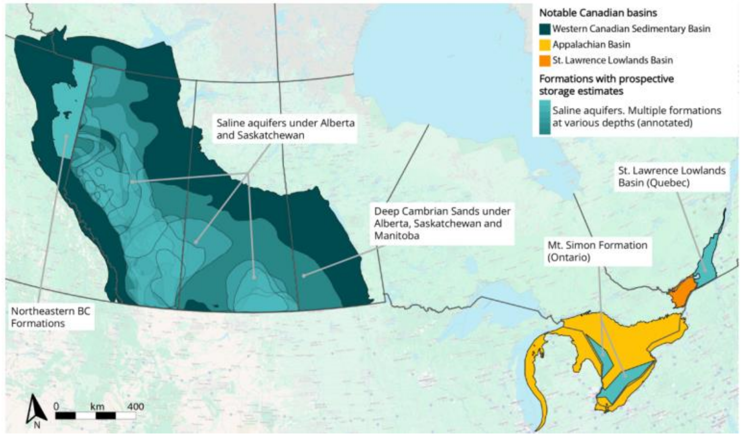


Fig 3.4-1, Map of basins with CCUS storage potential. (Clean Prosperity, "Evaluation of CCS potential in Canada", 2024)

Western Canada Sedimentary Basin (WCSB)

The WCSB forms the geological backbone of Canada's storage potential. It spans northeast British Columbia, Alberta, southern Saskatchewan, and southwestern Manitoba, and contains the overwhelming majority of identified prospective storage resources.

Within the WCSB, the Deep Cambrian Sands represent the single largest storage system, extending across Alberta, Saskatchewan, and Manitoba. These formations consist of porous sandstones at sufficient depth to maintain CO_2 in a supercritical state, overlain by competent sealing formations. Additional saline aquifers at varying stratigraphic levels provide further storage potential.

Saskatchewan alone accounts for approximately 70% of Canada's prospective onshore storage, largely within the Deep Cambrian system. Alberta contains the second-largest resource base, followed by Manitoba and northeast British Columbia.

Ontario – Appalachian Basin (Mt. Simon Formation)

Ontario's storage potential is confined primarily to the Mt. Simon Formation within the Appalachian Basin.

Estimated prospective storage ranges between 146 Mt and 1,104 Mt, depending on assumed storage efficiency (sweep efficiency), with a commonly cited mid-range estimate of ~730 Mt. The wide range reflects significant geological uncertainty and limited characterization relative to Western Canadian formations. The Mt. Simon sandstone is overlain by the Eau Claire Formation, typically considered a regional sealing unit, though further characterisation would be required to refine capacity estimates.

Quebec – St. Lawrence Lowlands Basin

Quebec's storage resource lies primarily within the Cairnside and Mt. Covey formations of the St. Lawrence Lowlands Basin. Prospective storage is estimated between 2,800 and 3,200 Mt. These sandstones exhibit suitable porosity and depth for supercritical CO_2 injection, although detailed reservoir characterisation remains limited compared to the WCSB.

Offshore Atlantic Canada – Mesozoic–Cenozoic Basins

Offshore Atlantic Canada contains extensive Mesozoic–Cenozoic sedimentary basins across the Scotian Shelf, Sable Sub-basin, Labrador Margin and Jeanne d'Arc Basin, characterised by thick sandstone reservoirs overlain by marine shale seals favourable for long-term CO_2 containment.

A 2025 Energy Innovation Program study led by Memorial University of Newfoundland is currently advancing regional assessment of carbon storage potential in Atlantic Canada, including offshore reservoirs. The project aims to address geochemical and geomechanical knowledge gaps, develop formation evaluation datasets, and improve monitoring approaches to strengthen long-term sequestration confidence.

Unlike Western Canada, storage potential in Atlantic offshore basins has not yet been quantified in volumetric terms; instead, assessments rely on qualitative chance-of-success mapping. While volumes remain unreported, geological characteristics suggest these basins could provide significant large-scale storage potential pending further appraisal and characterisation.

Province/Region	Prospective Storage (Mt CO_2)
Saskatchewan	290,000
Alberta	79,000
Manitoba	13,500
British Columbia	3,000
Quebec	3,000
Ontario	1,000
Offshore Atlantic Canada	Study underway
Total (onshore)	**~389,000**

Table 3.4-1, Prospective carbon storage potential of provinces in Canada (Clean Prosperity, 2024)

3.4.2 Storage Types & Technology

Geological storage of captured CO_2 relies on injecting compressed CO_2 into deep subsurface formations where it is retained through structural, capillary, solubility and, over longer timescales, mineral trapping mechanisms. Suitable formations are typically deeper than ~800–1,000 m to ensure supercritical conditions and adequate pressure confinement.

Globally, five principal geological storage options are recognised. In the Canadian context, deep saline aquifers, depleted oil and gas reservoirs, and mature oil fields (associated with enhanced oil recovery, EOR) are the most technically relevant. Basalt formations and ocean storage remain either geographically limited or at early development stages.

Prioritisation of Storage Types in Canada

Storage scalability is the defining constraint. In Canada, only deep saline aquifers offer the spatial extent and pressure regime required for sustained, multi-decade injection at industrial scale, particularly within the Western Canadian Sedimentary Basin. Their suitability lies less in novelty and more in volume and continuity.

Depleted reservoirs and EOR fields, by contrast, are valuable for operational learning and early infrastructure development, but are inherently finite. Their injection performance is influenced by prior production history, reservoir pressure depletion, and well legacy risks, which constrain long-term expansion potential.

Basalt and ocean storage remain technically interesting but peripheral to Canada's near-term storage market.

Storage Type	How CO_2 is stored	Profile	Canadian relevance
Deep Saline Aquifer	CO_2 is injected into brine-filled porous rock and trapped structurally and residually, with gradual dissolution and long-term mineralisation.	Requires deep permeable formation and competent caprock. Injection wells, compression and detailed reservoir modelling are essential. Characterisation effort is higher than for hydrocarbon fields.	Primary long-term option. Very large theoretical capacity in the Western Canadian Sedimentary Basin and parts of Quebec. Only storage type capable of gigatonne-scale deployment.
Depleted Oil & Gas Reservoirs	CO_2 occupies pore space previously filled with hydrocarbons, retained by proven geological traps.	Strong subsurface data and known seals. Lower reservoir pressure can limit injectivity. Legacy well integrity must be managed carefully.	Technically attractive and well understood. Moderate capacity relative to saline aquifers. Regionally relevant in Alberta and Saskatchewan.
Mature Oil Fields (EOR)	CO_2 is injected to enhance oil recovery; most injected CO_2 remains underground.	CO_2 is injected to enhance oil recovery; most injected CO_2 remains underground.	CO_2 is injected to enhance oil recovery; most injected CO_2 remains underground.
Basalt Formation	CO_2 reacts with basalt to form stable carbonate minerals, locking carbon into solid rock.	CO_2 reacts with basalt to form stable carbonate minerals, locking carbon into solid rock.	CO_2 reacts with basalt to form stable carbonate minerals, locking carbon into solid rock.
Ocean Storage	CO_2 is injected into deep ocean waters where it dissolves and disperses.	CO_2 is injected into deep ocean waters where it dissolves and disperses.	CO_2 is injected into deep ocean waters where it dissolves and disperses.

Table 3.4-2, Comparison of geological carbon storage types (Clean Prosperity, 2024)

MMV Considerations

Across all storage classes, successful deployment depends on:

- Reservoir characterisation and modelling (porosity, permeability, injectivity)
- Pressure management and plume migration modelling
- Well integrity assessment (particularly for legacy hydrocarbon wells)
- Robust measurement, monitoring and verification (MMV) systems

MMV typically includes seismic monitoring, pressure surveillance, groundwater sampling, and atmospheric detection.

From a technical perspective, long-term containment confidence is strongly linked to site characterisation quality and monitoring design rather than storage type alone.

Alignment with Scotland

There is meaningful geological and technical crossover between Canada and Scotland:

- Both regions utilise sedimentary basin saline aquifers as primary long-term storage targets.
- Experience from the UK North Sea (offshore depleted reservoirs and saline formations) translates directly to WCSB subsurface characterisation, reservoir simulation, and MMV design.
- Depleted field management and well integrity expertise developed in the UK Continental Shelf is applicable to Western Canadian reservoirs.

While Canada's current storage is predominantly onshore, the underlying subsurface engineering challenges(injectivity modelling, plume behaviour, caprock integrity, and long-term monitoring) are closely aligned. Offshore storage is emerging as a topic for Eastern Canada.

3.4.3 Carbon Storage Projects

Project Name	Locality	Operator(s)	Storage Type	Estimated Capacity (Mtpa)	Start Up Year
Active as of January 2026					
Weyburn-Midale EOR	Saskatchewan	Whitecap Resources	EOR	1.8	2000
Aquistor	Saskatchewan	Petroleum Technology Research Centre	Deep Saline Aquifer	0.1	2014
Quest Carbon Capture and Storage	Alberta	Shell	Deep Saline Aquifer	1.1	2015
Alberta Carbon Trunk Line - ACTL	Alberta	Wolf Midstream, Enhance Energy Inc.	EOR	1.6	2020
Deep Sky Alpha Direct Air Capture Project	Alberta	Deep Sky	Deep Saline Aquifer	Pilot Scale (<0.1)	2025
Still in Planning as of January 2026					
RETI East Calgary Region CO_2 Storage project	Alberta	RETI East Calgary Region Transportation & Sequestration Hub LP	Deep Saline Aquifer	10.0	2026
Meadowbrook CCS Project	Alberta	Bison Low Carbon Ventures	Deep Saline Aquifer	0.5	2026
Glacier CCS Project (Phase 2)	Alberta	Entropy Inc	Deep Saline Aquifer	0.2	2026
Bow Valley Carbon Hub	Alberta	Entropy Inc	Deep Saline Aquifer	5.0	2026
Lamont Carbon Hub	Alberta	Wolf Midstream	Deep Saline Aquifer	3.0	2027
CTS Hub CCS Project	Alberta	Sumitomo Corporation	Deep Saline Aquifer	10.0	2027
Central Alberta Carbon Hub	Alberta	Whitecap Resources	Deep Saline Aquifer	TBD	2027
Southeast Saskatchewan Carbon Hub	Saskatchewan	Entropy Inc	EOR	3.0	2027
Atlas Carbon Storage Hub	Alberta	Shell, ATCO	Deep Saline Aquifer	0.8	2028
Alberta Carbon Grid CCS Project	Alberta	TC Energy, Pembina	Deep Saline Aquifer	10.0	2028
Origins Carbon Sequestration Hub Project	Alberta	Enhance Energy Inc.	Deep Saline Aquifer	20.0	2029
Deep Sky Thetford Mines CO_2 Storage Project	Quebec	Deep Sky	Mineralisation	0.5	2029
Deep Sky Becancour CO_2 Storage Project	Quebec	Deep Sky	Deep Saline Aquifer	TBD	2029
Open Access Wabamun Carbon Hub	Alberta	Enbridge	Deep Saline Aquifer	4.0	2029
Solid Carbon DAC Project	British Columbia	Pacific Institute for Climate Solutions	Mineralisation	TBD	2030
Rolling Hills Carbon Sequestration Hub	Alberta	Entropy Inc	Deep Saline Aquifer	3.0	2030
Industrial Heartland CCS Project	Alberta	Inter Pipeline Ltd, Rockpoint Gas Storage	Deep Saline Aquifer	6.0	2030
Drumheller CCS Project	Alberta	Bison Low Carbon Ventures	Deep Saline Aquifer	TBD	2030
Pathways Alliance CCS Project	Alberta	Pathways Alliance	Deep Saline Aquifer	22.0	2030

Table 3.4-3, Overview of Key Storage Projects. Source: GlobalData, EICDataStream

3.4.4 Storage – Regulations

Canada's framework for geological carbon storage is primarily provincial, with limited storage-specific legislation at the federal level. Federal measures focus on environmental protection and financial incentives, while provinces allocate pore space rights, issue permits, and manage long-term liability. Regulatory maturity therefore varies across jurisdictions.

Long-term liability is a central issue for storage investment. Developers must know whether stored CO_2 remains a perpetual liability or can transfer to the state after closure. Alberta has addressed this most clearly. Through the Carbon Capture and Storage Statutes Amendment Act and Carbon Sequestration Tenure Regulation, the province confirmed Crown ownership of pore space, established defined sequestration agreements, and created a post-closure liability transfer mechanism. This significantly reduces legal uncertainty and positions Alberta as Canada's most mature storage jurisdiction.

Other provinces are progressing but remain less developed. Amendments to the Atlantic Accord enable offshore storage in Newfoundland & Labrador and Nova Scotia, using established offshore regulatory institutions. Ontario has introduced a Geological Carbon Storage Act, though implementation is ongoing. Several provinces still lack detailed saline storage regimes, creating uneven investment conditions.

Carbon pricing mechanisms such as the federal OBPS are not storage laws but indirectly drive demand by incentivising capture.

Overall, Canada's storage regime is evolving but fragmented, with regulatory clarity around pore space ownership and liability transfer remaining the key determinant of storage bankability.

Policy / Regulation / Initiative	Type	Description	Geography	Impact Timeframe	Impact Level	Rationale
CCUS ITC	Funding Support / Tax Incentive	Refundable federal tax credit supporting eligible capital expenditures for CCUS projects (up to 2040).	Federal	S	High	Provides 37% CAPEX credit rate for storage projects. This reduces reliance on carbon prices to justify investment.
Canadian Environmental Protection Act (CEPA)	Primary Legislation	Federal environmental protection law governing pollution control and CO_2 management.	Federal	M	Medium	Sets environmental standards and reporting requirements that storage projects must meet. While not storage-specific, it ensures regulatory consistency and environmental oversight.
Energy Innovation Program (EIP)	RD&D Funding Programme	NRCan-administered programme providing grants for research, development, and demonstration of clean energy technologies, including CCUS.	Federal	S	Medium	Supports early-stage storage pilots, monitoring technologies, and innovation in MMV. Reduces technology risk and helps de-risk first-of-a-kind saline storage projects before commercial scale deployment.
Atlantic Accord	Primary Legislation	Amendments expand offshore regulators' mandates in Newfoundland & Labrador and Nova Scotia to include CO_2 storage, enabling licensing and oversight of offshore storage projects.	NF&L and NS	M	High	Creates a legal pathway for offshore storage licensing using an established offshore oil and gas regulatory model, reducing institutional uncertainty.
Carbon Capture and Storage Statutes Amendment Act	Primary Legislation	Establishes the legal basis for CCS in Alberta. Confirms Crown ownership of pore space, enables permanent CO_2 storage, and creates the framework for post-closure liability transfer and stewardship funding.	Alberta	M	High	Removes structural legal uncertainty around subsurface ownership and long-term liability by defining who owns pore space and how liability transfers to the Crown.
Carbon Sequestration Tenure Regulation	Implementing Regulation	Sets out how carbon sequestration agreements are issued/managed. Covers permits, leases, MMV, closure planning, financial security, and stewardship fund contributions.	Alberta	S	High	Reduces execution and regulatory risk for developers, improving project bankability and enabling multi-user storage hub development.
Geological Carbon Storage Act	Primary Legislation	Still in development, Act establishes a framework for CO_2 storage in saline aquifers and depleted reservoirs. Covers permitting, MMV, environmental protection, closure, and long-term stewardship.	Ontario	M	High	Introduces a clear provincial storage framework, reducing legal uncertainty for future projects.

S = Short Term (0-2 y) , M = Medium term (3-5 y) , L = Long term (5+ y)

Table 3.4-4, List of carbon storage regulations

3.5 SCALE OF CCUS MARKET BY VALUE CHAIN

3.5 SCALE OF CCUS MARKET BY VALUE CHAIN

The Canadian CCUS landscape from 2026 through 2032 is defined by a significant divergence in capital intensity between dedicated capture and large-scale transport and storage. Based on the analysis of over 60 projects, it is estimated that the total investment of ~£26bn is distributed across the value chain.

3.5.1 Methodology and Valuation Framework

The Capex estimates presented in this report are derived from a combination of public disclosures, regulatory filings, and industry benchmarking. Because many operators (particularly for projects in the pre-FID stage) do not disclose cost data for competitive reasons, a "best estimate" approach was utilised to form a picture of the industry.

For this assessment, each project in our database was assigned, and where required split, into the individual building blocks of the value chain. For this reason, many projects will fall under multiple categories and have had estimations applied to the Capex split across the value chain.

3.5.2 Capital Expenditure and Value Chain Dynamics

Capture

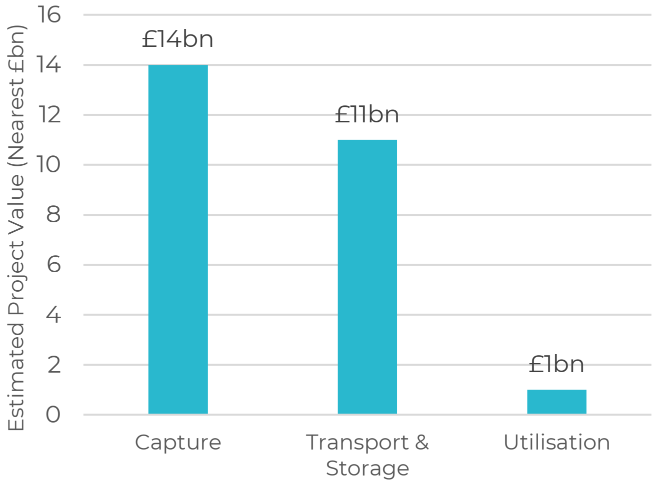
Capture remains the most capital-intensive segment, with capture related projects accounting for nearly two-thirds of all project spending. For brownfield sites (majority of Canadian CCUS projects) costs are elevated due to complex space constraints and the need for extensive steam/heat integration and the additional energy supply associated with it. Along with this, these plants require massive towers (absorber columns) often exceeding 60 meters in height to achieve.

As a result of the high cost of amine-based systems, we are seeing a move toward Autothermal Reforming (ATR) (pre-combustion capture) in the hydrogen sector (Air Products, Shell Polaris). ATR allows for higher pressure and higher concentration CO2 streams, which reduces the per-tonne capture Capex compared to post-combustion amine systems used in power or cement.

Transport & Storage

The transportation segment is shifting from single-use pipelines to massive open-access trunklines. While it typically represents a smaller percentage of total Capex than capture (15% to 25%), it carries unique logistical and regulatory risks that can dictate the FID for the entire project. As of result of the shift towards regional trunklines, there are less projects dedicated to the transport of CO2, but these projects are often larger in value.
Corrosion management is considered the most important technical aspect of this value chain. For this reason, much of the Capex comes from material selection, dehydration, and compression to ensure that the pipeline will be functional throughout its life.

Figure 3.5-1: Value (£bn) of Projects by Value Chain (2026 -2032)



The sequestration or "Storage" segment is the final destination in the value chain. It is closely associated with the transport segment, as the transition towards regional hubs is again very relevant here. The expected Capex through the end of the decade is second only to Capture, but it is expected that after the initial large-scale regional storage hubs are established this could slow down until the capture supply is large enough.

Utilisation

Utilisation currently accounts for a small fraction of total project volume compared to permanent sequestration; however, it is a high-value alternative that can turn a waste product into a revenue-generating feedstock. Currently, this is being explored in smaller, demonstration level projects that are exploring green concrete creation and mineralisation. With EOR also being considered a utilisation pathway, less of this is being predicted compared to permanent sequestration.

3.5.3 Investment Outlook Through 2032

The bulk in spending is projected to peak between 2027 and 2030. This period aligns with the final windows for the federal CCUS Investment Tax Credit (ITC), where the 50% capture credit is at its maximum before the 2031 phase-down. For investors, the biggest opportunity lies in the capture value chain, where a majority of the total projects lie and operators are looking to decarbonise in an efficient and affordable manner. However, the most stable returns may be found in the Transport and Storage Hubs, which provide critical, open-access infrastructure for a diverse range of industrial customers. We can likely expect a heavy concentration of Final Investment Decisions (FIDs) in the next 18 months for massive anchor projects like the Pathways Alliance and the Shell Atlas Hub, which could potentially create a snowball effect for other operators across the country as the industry and existing infrastructure is developed.

3.5.4 CCUS Projects by Value Chain and Capex

Project Name	Locality	Operator(s)	Value Chain	Start Up Year	Value Million £
Meadowbrook CCS Project	Alberta	Bison Low Carbon Ventures	Storage	2026	263
Bow Valley Carbon Hub	Alberta	Entropy Inc	Storage	2027	248
Edmonton Cement Plant CCUS Project (HeidelbergCement)	Alberta	Heidelberg Materials	Capture	2026	780
Northern Petrochemicals Grande Prairie Ammonia and Methanol Plant CCS Project	Alberta	Northern Petrochemical Corp	Capture	2027	450
Lamont Carbon Hub	Alberta	Wolf Midstream	Storage	2027	375
CTS Hub CCS Project	Alberta	Sumitomo Corporation	Storage	2027	375
Central Alberta Carbon Hub	Alberta	Whitecap Resources	Storage	2027	150
Air Products Edmonton Hydrogen Plant CCS Project	Alberta	Air Products & Chemicals Inc	Capture	2027	300
Saskatchewan CCS Project (Strathcona Resources)	Saskatchewan	Strathcona Resources	Capture	2027	225
Southeast Saskatchewan Carbon Hub	Saskatchewan	Entropy Inc	Transport and Storage	2027	1125
Deep Sky One DAC Hub	Quebec	Deep Sky	Capture	2027	375
Polaris Carbon Capture Project (Shell)	Alberta	Shell	Capture	2028	560
Huron British Columbia Direct Air Capture E-Fuels Project	British Columbia	Oxy Low Carbon Ventures LLC	Capture	2028	825
Mitsubishi Edmonton Hydrogen Plant CCS Project	Alberta	Mitsubishi Corp	Capture	2028	450
Fort Saskatchewan CCS Project (Linde)	Alberta	Linde Group	Capture	2028	375
Atlas Carbon Storage Hub	Alberta	Shell, ATCO	Storage	2028	150
Alberta Carbon Grid CCS Project (Phase 1)	Alberta	TC Energy, Pembina	Transport and Storage	2028	750
Alberta Industrial Heartland CCS Project (Marubeni)	Alberta	Marubeni Corporation	Capture	2028	300
RH2C Tumbler Ridge Power Plant CCS Project	British Columbia	Canadian Methanol Corp	Capture	2029	300
RH2C Tumbler Ridge Methanol Plant CCS Project	British Columbia	Canadian Methanol Corp	Capture	2029	375
Genesis Fertilizers Belle Plaine Ammonia Plant CCS Project	Saskatchewan	Genesis Fertilizers LP	Capture	2029	375
Peace River Pulp Mill CCS Project	Alberta	Svante	Capture	2029	150
Origins Carbon Sequestration Hub Project	Alberta	Enhance Energy Inc.	Storage	2029	1500
Deep Sky Thetford Mines CO2 Storage Project	Quebec	Deep Sky	Storage	2029	150
Deep Sky Becancour CO2 Storage Project	Quebec	Deep Sky	Storage	2029	1050
Alberta Industrial Heartland CCS Project (ATCO)	Alberta	ATCO Group	Capture and Storage	2029	150
Open Access Wabamun Carbon Hub	Alberta	Enbridge	Transport and Storage	2029	450
Alberta CCS Project (Itochu)	Alberta	Itochu Corporation, Petronas, Inter Pipeline Ltd	Capture	2029	225
Southwestern Manitoba DAC Project (Phase 1)	Manitoba	Deep Sky	Capture	2030	107
Medicine Hat Ammonia Plant CCS Project	Alberta	CF Industries Holdings Inc	Capture	2030	300
Solid Carbon DAC Project	British Columbia	Pacific Institute for Climate Solutions (PICS)	Capture and Utilisation	2030	150
Rolling Hills Carbon Sequestration Hub	Alberta	Entropy Inc	Capture and Storage	2030	150
Industrial Heartland CCS Project (Inter Pipeline/ Rockpoint)	Alberta	Inter Pipeline Ltd, Rockpoint Gas Storage	Storage	2030	375
Alberta Industrial Heartland CCS Project (Hydrogen Canada)	Alberta	Hydrogen Canada	Capture and Storage	2030	150
Drumheller CCS Project	Alberta	Bison Low Carbon Ventures	Storage	2030	248
Regina Renewable Diesel Plant CCS	Saskatchewan	Federated Co-operatives Ltd	Capture	2031	375
Pathways Alliance CCS Project	Alberta	Pathways Alliance	Capture, Transport, and Storage	2032	9150
Southwestern Manitoba DAC Project (Phase 2)	Manitoba	Deep Sky	Capture	2033	375
Exshaw Cement Plant CCUS Project	Alberta	Lafarge	Capture	2033	113

Table 3.5-1, Overview of Key Projects (Value >£100m, 2026-2033) Source: GlobalData, EICDataStream

4.0 PROVINCIAL-LEVEL REVIEW

4.0 PROVINCIAL-LEVEL REVIEW

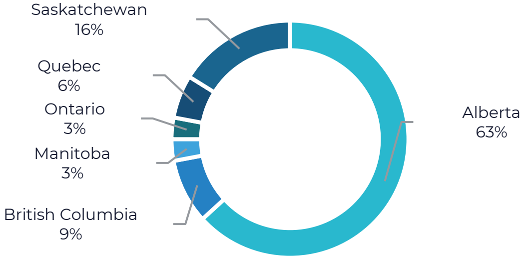
The following section provides an overview of each Canadian province. The provinces have been put in order of the provincial categories which were developed within Section 2.

Due to Alberta, closely followed by British Columbia and Saskatchewan, having the most mature regulatory landscape more detail has been provided on them in comparison to the others.

Table 4.0-1 provides a summary of the provincial review. More detail relating to each province can be found within the signposted sections.

For Alberta, British Columbia, and Saskatchewan, the role of CCUS and the history of the sector has been summarised. Key projects have been highlighted, and a regulatory overview has been provided.

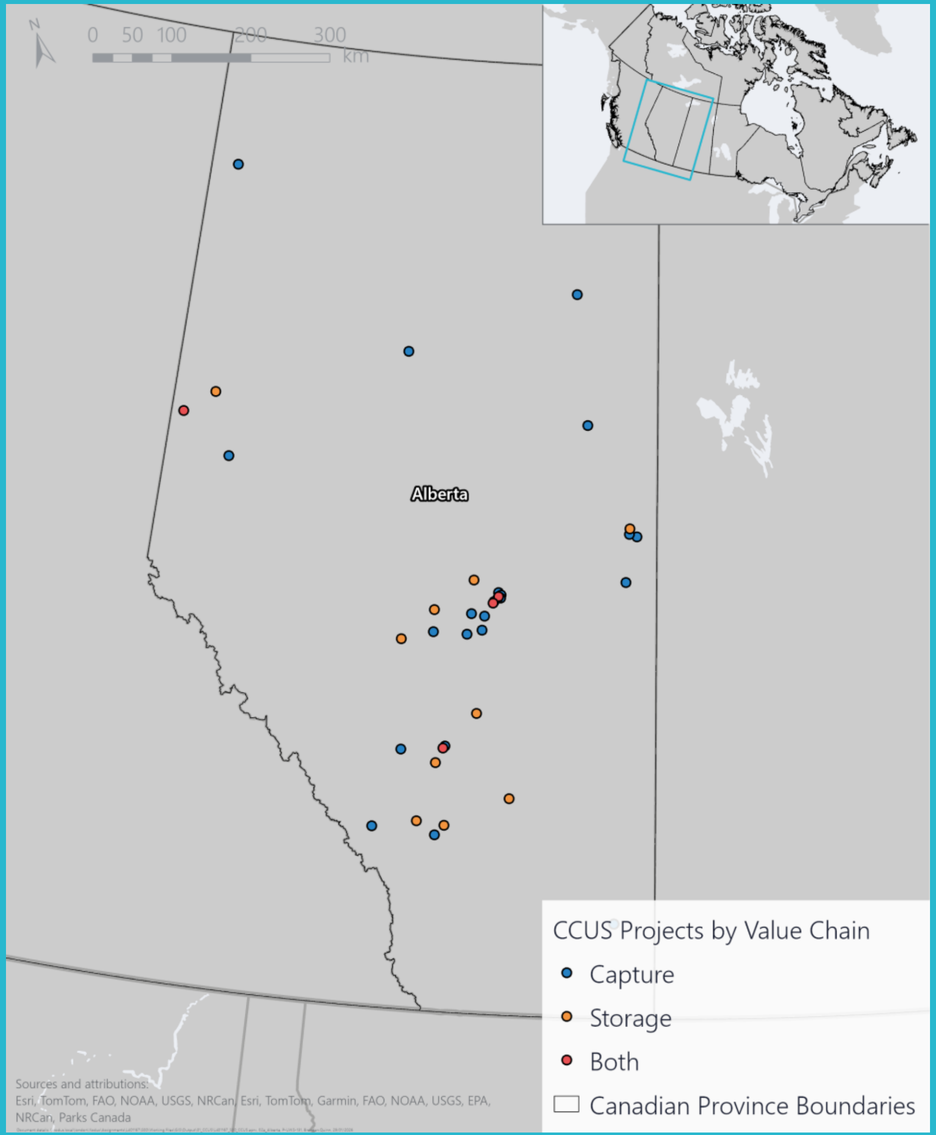
Figure 4.0-1: Active and Planned Projects by Province
(Province, No. of Projects, Percentage of Total Projects)



PROVINCIAL CATEGORY	PROVINCE(S)	What does this mean for Scottish companies / suppliers?
CCUS Leader	Alberta Section 4.1	*Alberta is Canada's most active, bankable CCUS market.* • **The regulatory pipeline creates real near-term demand for** subsurface characterisation, MMV design, and Directive 065 compliance across projects already in evaluation or CSA stages. • **The shift to deep saline storage is a direct North Sea analogue** — Scottish subsurface, well integrity, and long-term stewardship expertise transfers directly and is scarce in the domestic supply chain. • **Scale creates opportunity across the full value chain:** from capture technology and CO_2 pipeline engineering to storage monitoring and post-closure planning, Alberta supports diverse Scottish firm profiles.
Established Movers	British Columbia Section 4.2 Saskatchewan Section 4.3	*Two distinct markets requiring different entry strategies: Saskatchewan for near-term project work, BC for technology and innovation partnerships.* • **Saskatchewan offers near-term, accessible project opportunities** — its local injection model means projects like Entropy's Southeast Hub and Strathcona's SAGD-linked CCS are moving faster than Alberta's long-pipeline approach. • **BC's novel technology focus creates early-mover space** for Scottish technology providers and test/demonstration partners, particularly in solid sorbent capture, offshore basalt mineralisation, and DAC. • **Saskatchewan's unresolved pore space tenure is the single most important regulatory gap to track** — its resolution would unlock transformational dedicated storage investment and large-scale supply chain demand.
Emerging Storage Hubs Section 4.4	Ontario Newfoundland & Labrador Nova Scotia	*Not yet a procurement market, but Scottish firms have a rare capability advantage in offshore storage that positions them ahead of the competition when frameworks mature.* • **Ontario's new Geologic Carbon Storage Act is an immediate trigger:** Scottish geoscience and subsurface firms can engage now on storage feasibility, subsurface characterisation before large-scale projects are funded. • **Scottish firms have a direct capability advantage in NL and Nova Scotia** — North Sea basin analysis, offshore storage characterisation, and well data interpretation are scarce in Canada's domestic supply chain and directly applicable to Atlantic offshore basins. • **The North Sea analogy is the most powerful framing for market entry:** positioning Scottish firms as experienced offshore storage partners (not just vendors) resonates with the hub-import model these provinces are developing.
Electrification First Section 4.5	Manitoba New Brunswick Prince Edward Island Quebec	*No active CCUS market exists: monitor selectively, do not prioritise.* • **Manitoba and Quebec are the only watch items:** Manitoba for DAC-specific technology opportunities (monitoring, sorbents, modular systems); Quebec for a potential compliance-driven market in cement, aluminium, and pulp & paper if cap-and-trade pressure intensifies. • **New Brunswick's Irving refinery is the most significant latent opportunity in this group** — a single large point-source that cannot electrify. Scottish refinery decarbonisation expertise should be held in reserve for when federal pressure and a provincial framework eventually converge. • **Treat this category as a regulatory intelligence function, not a sales pipeline** — monitoring provincial policy developments costs little and ensures Scottish firms are not caught flat-footed if CCUS rapidly becomes politically viable post-2030.

Table 4.0-1, Summary of the provincial CCUS review

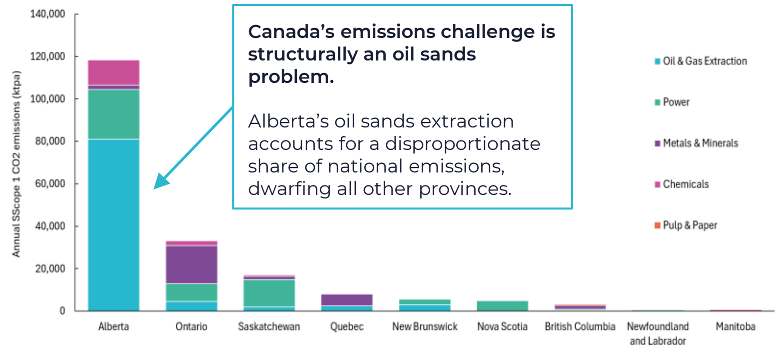
4.1 CCUS LEADER - ALBERTA



4.1.1 Why Alberta Matters for CCUS

Alberta's Oil & Gas extraction and power sectors account for 55% of Canada's industrial and power emissions. With ~31% of Canada's industrial and power emissions concentrated in just 10 Alberta facilities, CCUS hubs can achieve scale quickly through shared transport and storage infrastructure.

Fig 4.1-1, Large industries emissions by province and sector in 2022.
(Source: Open Government Portal – GHG emissions from large facilities)



Note: Small emission sources (less than 250ktpa) were not included

Oil & Gas

Alberta's oil sands dominate both provincial and national industrial emissions and anchor Canada's CCUS opportunity. As shown in Figure 4.1-2, oil sands emissions have risen steadily over the past decade, increasing from around 50 Mt to roughly 80 Mt.

A small number of operators account for a large share of emissions, which supports hub-scale capture. The sector also creates CO_2 demand through EOR. Given oil sands' importance to GDP, exports and public revenues, CCUS is central to maintaining competitiveness under rising carbon prices and stricter market access conditions.

Chemicals

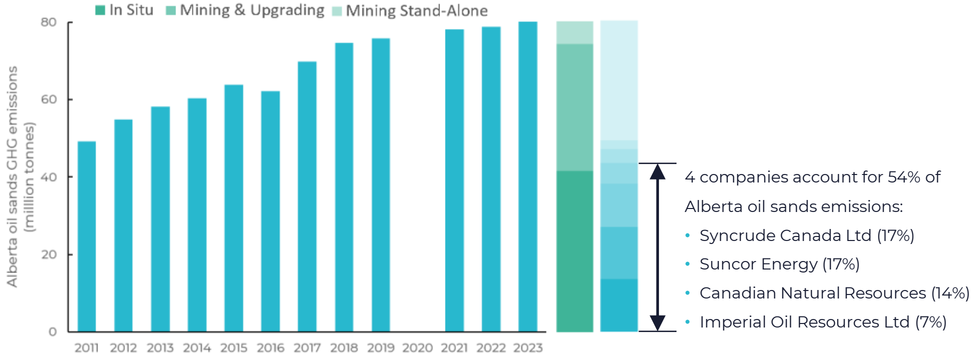
Alberta's chemicals and refining sector is significant due to the province's hydrocarbon base. Alberta produces most of Canada's natural gas and liquids, supporting large-scale hydrogen, ammonia, fertiliser and petrochemical production in the Edmonton Industrial Heartland for refining and oil sands upgrading generates concentrated CO_2 streams, unlike more dispersed industrial activity in other provinces.

Power

Gas-fired power is a major emissions source in Alberta because the province relies far more on natural gas than most of Canada, where hydro and nuclear dominate. After coal phase-out, combined-cycle gas plants became the backbone of the grid. Key facilities include the 900 MW Cascade plant, the 800 MW Genesee units converted to gas, and the 530 MW Shepard Energy Centre.

Alberta has over 10 GW of installed gas capacity, making gas the primary source of dispatchable power. This explains why power emissions are higher than in hydro- and nuclear-based provinces. Large plants near industrial corridors could connect to shared CO_2 networks over time as carbon pricing rises and demand grows.

Fig 4.1-2, Evolution of oil sand emissions in Alberta.
(Source: Government of Alberta – Open Data)



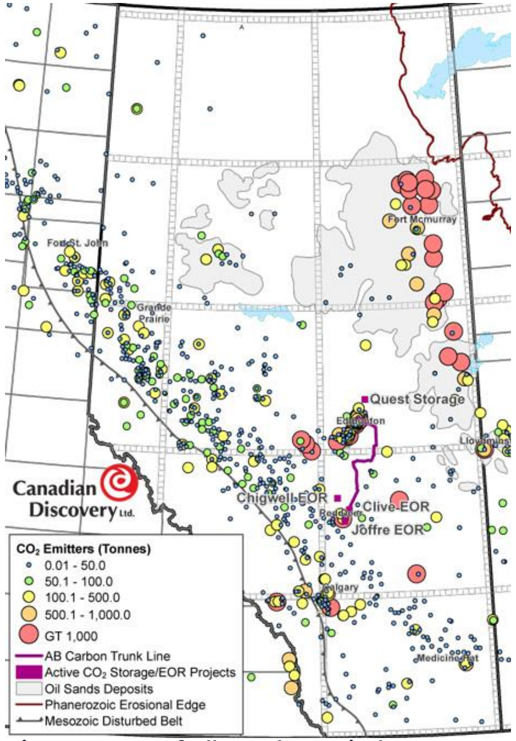


Fig 4.1-3, Map of Alberta heavy industry CO_2 emissions. (Source: Canadian Discovery Ltd)

Structural CO_2 Supply and Demand Drivers

Canada's CCUS opportunity is anchored in Alberta's scale, clustering, and industrial demand.

Over two-thirds of Alberta's industrial emissions originate from oil sands operations, with in-situ production driving sustained CO_2 demand for EOR. This concentration of high-volume emissions creates a clear anchor for large-scale capture. Alberta's industrial heartland around Edmonton represents the second major emissions source, driven by hydrogen, fertiliser, refining and gas-fired power, forming the core of the province's CO_2 supply base.

Emissions are geographically clustered, centred on Fort McMurray for oil sands production, the Edmonton–Calgary corridor, and secondary hubs including Medicine Hat, Grande Prairie and Joffre / Red Deer. This spatial concentration reduces transport distances and strengthens the case for shared infrastructure. Together, large CO_2 demand via EOR, diverse industrial supply, and dense cluster networks position Alberta as Canada's most advanced and investable CCUS market.

4.1.1 Carbon Storage History

Alberta up to this point has been dominated by two large-scale CCUS projects, namely the Shell Quest and the Alberta Carbon Trunk Line (ACTL). As a province, Alberta has sequestered ~16Mt of carbon since 2004, with Quest and ACTL contributing to >80% of cumulative storage in Alberta (as shown in Figure 4.1-5).

4.1.2 Alberta CCUS Ecosystem & Project Evolution

Figure 4.1-4 highlights the major CCS projects in Alberta; however this region is also home to many projects scaling from small demonstration level to large-commercial. From our tracking, Alberta is home to ~43 active CCUS projects (63% of our total).

The transition from EOR to Dedicated Geological Sequestration represents a significant strategic shift in the Canadian carbon value chain over the last decade. While EOR provided the initial economic incentive for CCUS, the future of the industry is firmly rooted in permanent storage.

In early projects (like the ACTL), CO_2 injection served a dual purpose: increasing oil production and sequestering carbon. This does continue to be an incentive going forward, but we will be seeing less of it.

- **Economics:** The sale of CO_2 to oil producers helped offset the high cost of the relatively new capture equipment.
- **Carbon Balance:** While EOR does sequester CO_2, the net benefit is lower because the process enables the production of additional fossil fuels.

Modern projects, particularly the Pathways Alliance and the Alberta Carbon Sequestration Hubs, are moving away from oil fields and into Deep Saline Aquifers.

- **Scale:** Saline aquifers (like the Basal Cambrian Sands) offer orders of magnitude more storage capacity than depleted oil fields.
- **Simplicity:** Pure sequestration avoids the operational complexity of cycling CO_2 through oil-bearing formations, focusing solely on permanent storage.
- **Regulatory Alignment:** To qualify for the highest tiers of the Federal CCUS ITC and clean fuel regulations, projects must often demonstrate permanent geological storage that is not linked to enhanced fossil fuel production.

Figure 4.1-4, Key CCS projects Alberta

Past – Proof of Concept

Quest CCS (Shell)
First comment CCS project at an oil sands upgrader. Since commissioning in 2015, it has capture over 9Mtpa

Alberta Carbon Trunk Line (ACTL)
240km "open-access pipeline designed to be Alberta's carbon economy backbone. Gathers CO_2 from Sturgeon Refinery and Nutrien Fertilizer plant. Capacity to transport 15Mtpa.

Glacier CCS (Entropy)
World's first gas power carbon capture project. Currently planning Phase 2 to triple capture capacity.

Present – Scaling Industrial Networks

Net-Zero Hydrogen Energy Complex
Developed by Air Products, the Edmonton-based C$1.3b facility will produce blue hydrogen, capturing 90% of its emissions, equivalent to 3Mtpa. Expected to be operation 2026.

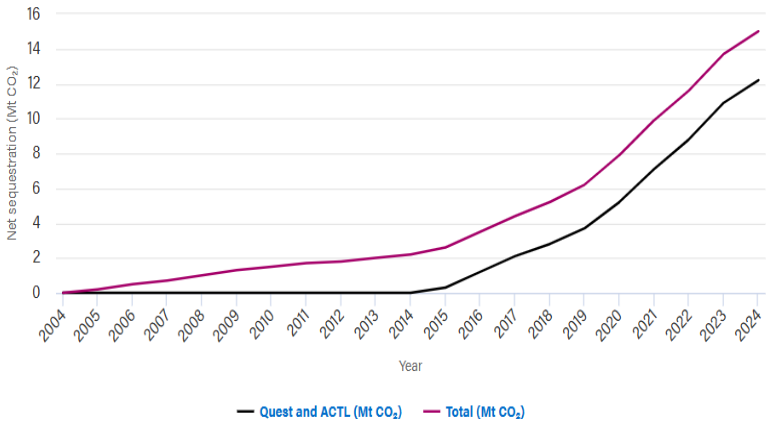
Shell Polaris
To be operational in 2028, capturing 650ktpa from Shell's refinery and chemical plants, utilising the Atlas Storage Hub

Edmonton Cement Plant (Heidelberg)
Expected to be North America's first carbon neutral cement plant, capturing 1Mtpa by 2027.

Future – Full Industrial Integration

The Pathways Alliance
Consortium of the 6 largest oil sands players, with a +650km proposed foundation pipeline connect oil sand facilities around Cold Lake.

Figure 4.1-5, Cumulative Net Total of CO_2 sequestered in Alberta



Source: Alberta Energy Regulator

Project Name	Operator(s)	Facility / Industry	Start Up Year
Deep Sky Alpha Direct Air Capture Project	Deep Sky	DAC	2025
RETI East Calgary Region CO_2 Storage project	RETI East Calgary Region Transportation & Sequestration Hub LP	CO_2 Storage	2026
Meadowbrook CCS Project	Bison Low Carbon Ventures	CO_2 Storage	2026
Glacier CCS Project (Phase 2)	Entropy Inc	Natural Gas Processing	2026
Bow Valley Carbon Hub	Entropy Inc	CO_2 Storage	2026
Edmonton Cement Plant CCUS Project (HeidelbergCement)	Heidelberg Materials	Cement	2026
Athabasca Leismer Oil Sands CCS	Athabasca Oil Corp	Oil Sands	2026
Phlair Alberta Dawn Direct Air Capture Project	Phlair GmbH	DAC	2027
Northern Petrochemicals Grande Prairie Ammonia and Methanol Plant CCS Project	Northern Petrochemical Corp	Hydrogen and Fertilizer Production	2027
Lamont Carbon Hub	Wolf Midstream	CO_2 Storage	2027
CTS Hub CCS Project	Sumitomo Corporation	CO_2 Storage	2027
Central Alberta Carbon Hub	Whitecap Resources	CO_2 Storage	2027
Air Products Edmonton Hydrogen Plant CCS Project	Air Products & Chemicals Inc	Hydrogen and Fertilizer Production	2027
Polaris Carbon Capture Project	Shell	Chemical Plant	2028
Mitsubishi Edmonton Hydrogen Plant CCS Project	Mitsubishi Corp	Hydrogen and Fertilizer Production	2028
Fort Saskatchewan CCS Project	Linde Group	Hydrogen and Fertilizer Production	2028
Atlas Carbon Storage Hub	Shell, ATCO	CO_2 Storage	2028
Alberta Carbon Grid CCS Project (Phase 1)	TC Energy, Pembina	CO_2 Storage	2028
Alberta Industrial Heartland CCS Project	Marubeni Corporation	Hydrogen and Fertilizer Production	2028
Peace River Pulp Mill CCS Project	Svante	Biorefinery	2029
Myers Energy Park CCS Project	KALiNA Power Limited (KPO)	Power	2029
Methanex Medicine Hat CCUS Project	Entropy Inc, Methanex Corp	Chemical Plant	2029
Crossfield Energy Park CCS Project	KALiNA Power Limited (KPO)	Power	2029
Origins Carbon Sequestration Hub Project	Enhance Energy Inc.	CO_2 Storage	2029
Alsike Energy Park CCS Project	KALiNA Power Limited (KPO)	Power	2029
Alberta Industrial Heartland CCS Project (ATCO)	ATCO Group	Hydrogen and Fertilizer Production	2029
Alberta Industrial Heartland (AIH1) BECCS Project	Varme Energy	Power	2029
Open Access Wabamun Carbon Hub	Enbridge	CO_2 Storage	2029
Alberta CCS Project (Itochu)	Itochu Corporation, Petronas, Inter Pipeline Ltd	Hydrogen and Fertilizer Production	2029
Varme Innisfail Waste-to-Energy Plant CCS Project	Varme Energy Inc	Power	2030
Medicine Hat Ammonia Plant CCS Project	CF Industries Holdings Inc	Hydrogen and Fertilizer Production	2030
Rolling Hills Carbon Sequestration Hub	Entropy Inc	CO_2 Storage	2030
Industrial Heartland CCS Project (Inter Pipeline/ Rockpoint)	Inter Pipeline Ltd, Rockpoint Gas Storage	CO_2 Storage	2030
Alberta Industrial Heartland CCS Project (Hydrogen Canada)	Hydrogen Canada	Hydrogen and Fertilizer Production	2030
Drumheller CCS Project	Bison Low Carbon Ventures	CO_2 Storage	2030

Table 4.1-1, Overview of Alberta Projects 2025-2030. Source: GlobalData, EICDatastream

4.1.4 How CCUS is regulated in Alberta?

Alberta operates the most structured and mature CCUS regulatory framework in Canada, built on clear Crown pore space ownership and a competitive hub allocation model. The system separates tenure rights from technical injection approval, providing regulatory certainty while maintaining strict environmental oversight.

Regulatory stakeholders

1. Alberta Energy and Minerals (AEM)

Alberta Energy and Minerals administers CCUS tenure and controls Crown pore space under the *Mines and Minerals Act*. It issues CSEAs and CSAs, runs the competitive hub allocation process, embeds open-access obligations, and oversees the Post-Closure Stewardship Fund.

2. Alberta Environment and Protected Areas (AEPA)

AEPA administers Alberta's TIER carbon pricing system. It provides the emissions accounting and credit framework that underpins the commercial viability of CCUS projects.

3. Alberta Energy Regulator (AER)

The AER is the technical regulator for CCUS operations. It approves wells, sequestration schemes (Directive 065), MMV and closure plans, and oversees compliance throughout injection and post-injection phases.

Core Tenure & Regulatory Instrument

Tenure = Crown-owned pore space rights granted under the Mines and Minerals Act, providing legal control over subsurface storage areas.

Carbon Sequestration Evaluation Agreement (CSEA) = Grants the exclusive right to evaluate and test a defined pore space area. No injection permitted.

Carbon Sequestration Agreement (CSA) = Grants the legal right to use pore space for CO_2 storage, subject to separate technical approval for injection.

Implications for the Canadian CCUS Market

Alberta's model is an advantage because it provides clear pore space ownership, structured access, and regulatory certainty, which many other provinces lack. The competitive hub allocation process prevents fragmentation, supports large-scale clustering, and enables coordinated infrastructure planning.

Compared to provinces with less defined tenure pathways, Alberta offers stronger investor confidence, clearer liability management, and a mature regulator with decades of subsurface injection experience. This makes it the most bankable and scalable CCUS jurisdiction in Canada.

Capability Requirements & Supply Chain Entry Points

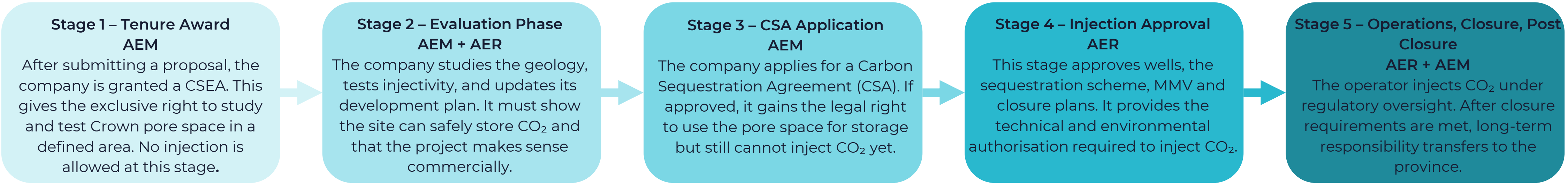
- **Subsurface expertise:** Geological characterisation, reservoir modelling, injectivity testing and risk assessment
- **Commercial & planning capability:** Hub Development Plans and economic modelling
- **Regulatory & permitting expertise:** Directive 065, MMV design, closure planning
- **Drilling & infrastructure delivery:** Well design, drilling, surface facilities and pipeline engineering
- **Monitoring & data systems:** Seismic, plume tracking, pressure monitoring and reporting platforms
- **Environmental & long-term stewardship:** ESG advisory and liability management

Supply chain engagement intensifies from evaluation (Stage 2) onwards and becomes most significant during injection approval and operations.

Implications for Scottish Market Entry

Scottish firms are unlikely to compete for tenure but can target evaluation, subsurface modelling, MMV design, storage expertise. The opportunity lies in partnering with awarded hub operators rather than seeking direct pore space control.

Figure 4.1-6, High-level flow diagram of CCUS regulatory process in Alberta



Source: Government of Alberta, *Carbon Sequestration Agreement Application Guidelines* (2024); *Carbon Sequestration Agreement Template* (2024); *Hub Development Plan Template*; *Small-Scale and Remote Carbon Sequestration Tenure – Application Guidelines* (2025); and Alberta Energy Regulator, Directive 065 regulatory framework

4.1.5 Regulatory RAG

Alberta's regulatory landscape creates a uniquely bankable environment for CCUS through two critical de-risking pillars. First, the Carbon Sequestration Tenure Regulation and CCS Statutes Amendment Act provide world-leading clarity by vesting "pore space" ownership in the Crown and enabling the transfer of long-term storage liability to the government. This effectively removes the "perpetual risk" that often deters private investment in large-scale sequestration.

Complementing this legal certainty is a robust financial stack. The TIER Regulation provides the mandatory carbon price signal required to drive demand, while the ACCIP offers a 12% capital grant. Crucially, ACCIP can be stacked with the Federal CCUS ITC, allowing developers to significantly reduce upfront CAPEX and bridge the "bankable gap" necessary for final investment decisions

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Amber (neutral) = No direct impact on CCUS
Red (barrier) = Impedes or limits the growth of CCUS

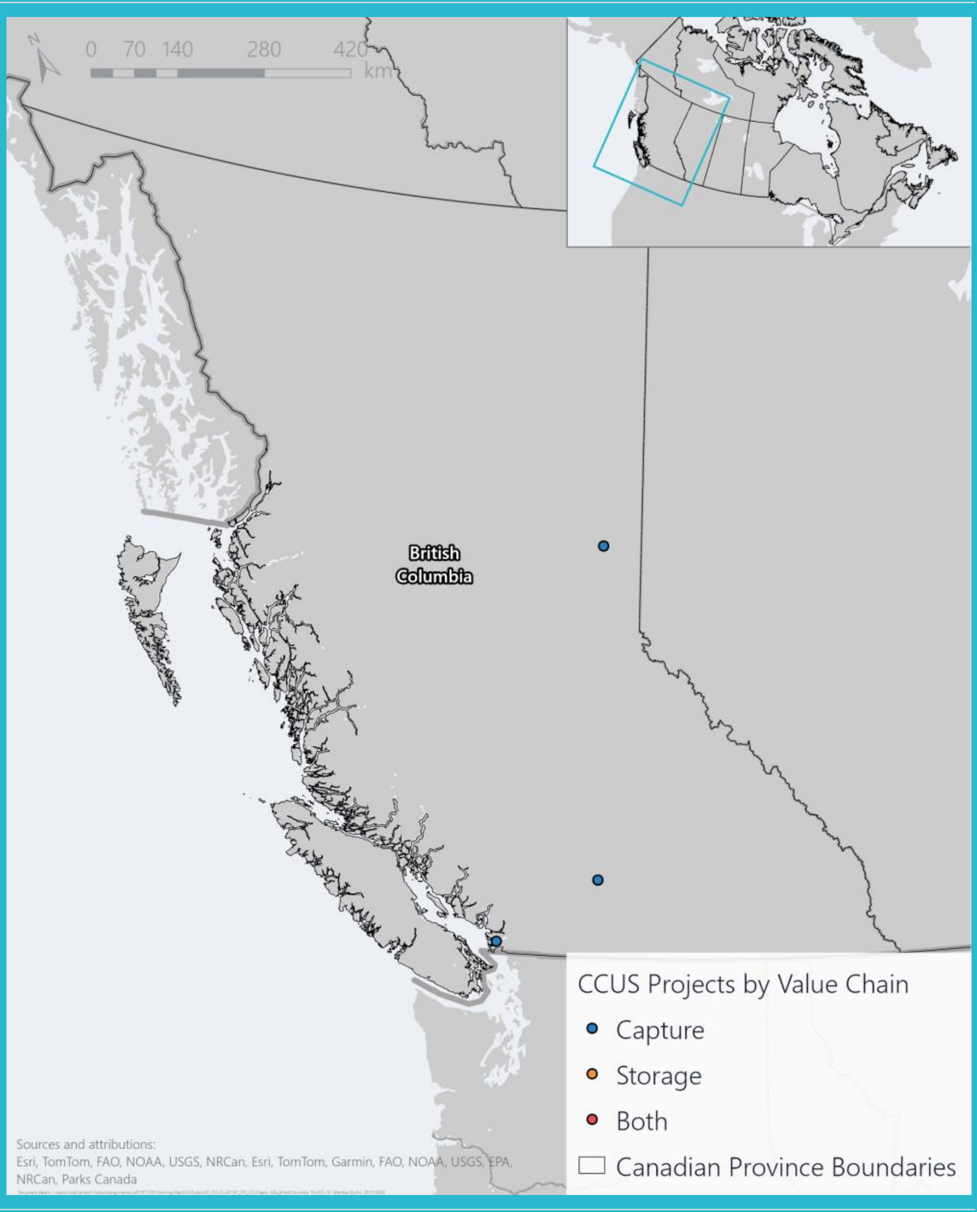
C = Capture, T = Transport, U = Utilisation, S = Storage
S = Short Term (0-2 y) , M = Medium term (3-5 y) , L = Long term (5+ y)

Policy / Regulation / Initiative	Type	Description	CCUS Supply Chain	Impact Timeframe	Classification	Rationale
Emissions Management and Climate Resilience Act	Primary Legislation	The primary legal authority for regulating greenhouse gases and industrial reporting in Alberta.	C T S U	M		Provides the essential legal bedrock for all emissions rules; however, the current price freeze creates a "policy gap" that requires federal backstopping to maintain investor confidence.
Carbon Capture and Storage Statutes Amendment Act	Primary Legislation	Establishes the legal foundation for subsurface ownership and liability transfer for CCS projects.	C T S U	L		De-risks development by standardising the path from exploration to long-term storage, removing technical "pore space" ambiguity that previously stalled project financing.
Carbon Sequestration Tenure Regulation	Regulatory Framework	Sets the technical rules for securing CO_2 storage leases and managing long-term reservoir safety.	C T S U	S		Solves the "perpetual liability" problem by transferring long-term storage responsibility to the Crown, allowing private firms to exit projects without infinite risk exposure.
Environmental Protection and Enhancement Act	Regulatory Framework	The master regulation for industrial environmental approvals, air emissions, and land reclamation	C T S U	L		Ensures social license and environmental integrity for capture facilities, though its rigorous permitting process remains a primary bottleneck for rapid deployment timelines.
Alberta Emission Offset System	Market-Based Compliance	A market mechanism allowing facilities to buy carbon credits to meet their regulatory obligations.	C T S U	L		Improves project economics by allowing CCS operators to sell credits to non-regulated entities, though price volatility makes it a secondary rather than primary bankable revenue stream.
Technology Innovation and Emissions Reduction (TIER) Regulation	Market-Based Compliance	Alberta's industrial carbon pricing system that benchmarks performance and penalizes excess emissions.	C T S U	M		The primary driver for growth; it creates a mandatory "cost of doing nothing" for heavy industry, making the multi-billion-dollar investment in CCS a rational cost-avoidance strategy.
Technology Innovation Emissions Reduction (TIER) Fund	Funding Programme	A reinvestment program that funnels carbon pricing revenue back into clean-tech initiatives.	C T S U	L		Directly recycles industrial carbon costs into capital support. Since inception, TIER Fund has provided grant funding to 22 carbon capture projects and 13 carbon storage projects.
Alberta Carbon Capture Incentive Program (ACCIP)	Funding Programme	A capital grant program providing 12% funding for eligible CCUS project construction costs.	C T S U	L		Significantly improves the Internal Rate of Return (IRR) by stacking a 12% provincial grant on top of federal tax credits, specifically targeting the high upfront CAPEX barrier.

For additional detail and links, open regulation data file with deliverable package

Table 4.1-2, Regulatory RAG assessment for Alberta CCUS

4.2 ESTABLISHED MOVERS - BRITISH COLUMBIA

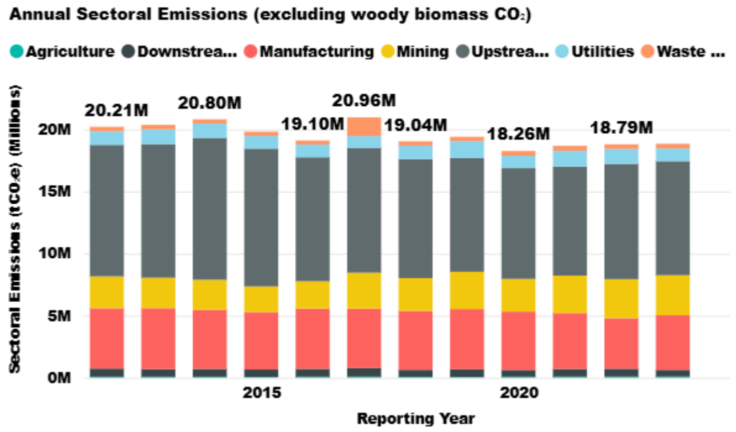


4.2.1 Why CCUS Matters?

British Columbia's CCUS opportunity is defined by two strategic emission corridors with fundamentally different economics and business models.

The province presents concentrated natural gas operations in the northeast and dispersed hard-to-abate manufacturing in the south. This geographic split creates distinct deployment pathways: the Montney basin offers immediate hub-scale potential through industrial clustering, while the Lower Mainland faces transport economics challenges. BC's smaller emissions scale (~20 Mt/yr) is offset by genuine concentration within these corridors. Success depends on making saline storage commercially viable without enhanced oil recovery revenues.

Figure 4.2-1. BC Annual Sectoral Emissions by Source, 2011-2023
Source: BC Government – Industrial facility GHG reporting



Tale of Two Clusters

1 - Northeast Montney Corridor

The northeast represents BC's most compelling CCUS opportunity. Dense gas processing and LNG infrastructure clusters along Highway 97 to coastal export terminals (see top right map). Gas sweetening and combustion turbines produce high-concentration CO_2 streams ideal for capture. Co-located emissions and prospective saline storage within the sedimentary basin minimize transport distances. Just 5 companies account for 37% of provincial emissions, creating natural anchor tenants for shared infrastructure. The business model centres on hub-scale saline storage with revenue from carbon credits and compliance, making carbon pricing trajectory critical to viability.

2 - Lower Mainland Industrial Belt

The Lower Mainland and interior corridor hosts BC's diversified heavy industry: cement, refining, chemicals, and pulp and paper (see bottom right map). These facilities produce process emissions that cannot be eliminated through electrification alone. CCUS is the key pathway to deep decarbonisation. However, geographic dispersion increases transport costs to storage sites. The model likely requires point-to-point systems for large emitters or smaller regional hubs.

Strategic CCUS opportunity

BC's CCUS viability hinges on infrastructure sharing and regional clustering. The northeast Montney offers immediate scale through gas/LNG co-location, while Lower Mainland industry faces a longer-term decarbonization imperative that only CCUS can solve. Success requires:

- Saline storage proving commercial without EOR revenues.
- Policy mechanisms (carbon pricing, low-carbon fuel standards) creating sufficient value.
- Coordinated infrastructure to overcome transport economics.

Figure 4.2-2 Map of large emission facilities with CO_2 emission > 10,000 t per year.
Source: BC Government – Industrial facility GHG reporting

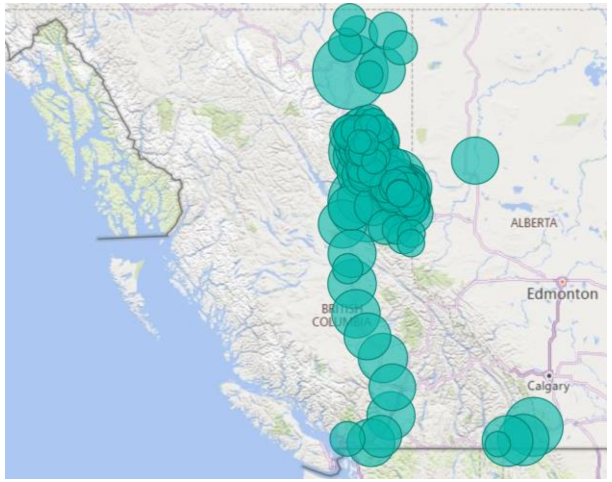
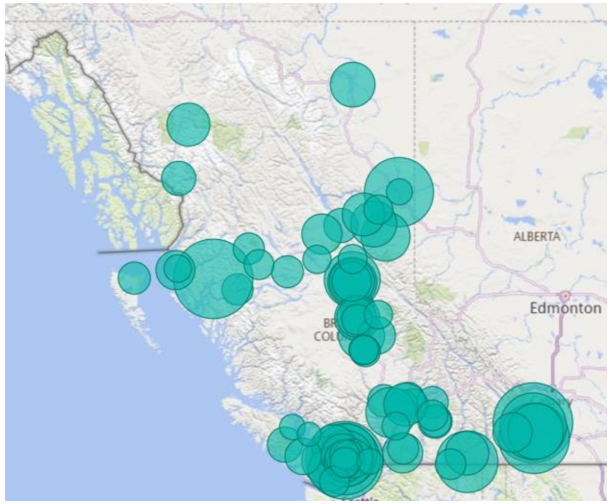


Figure 4.2-3 Map of emissions from non-oil & gas extraction industrial sites (cement, hydrogen, refining, metals, and petrochemicals)
Source: BC Government – Industrial facility GHG reporting



4.2.2 List of Projects

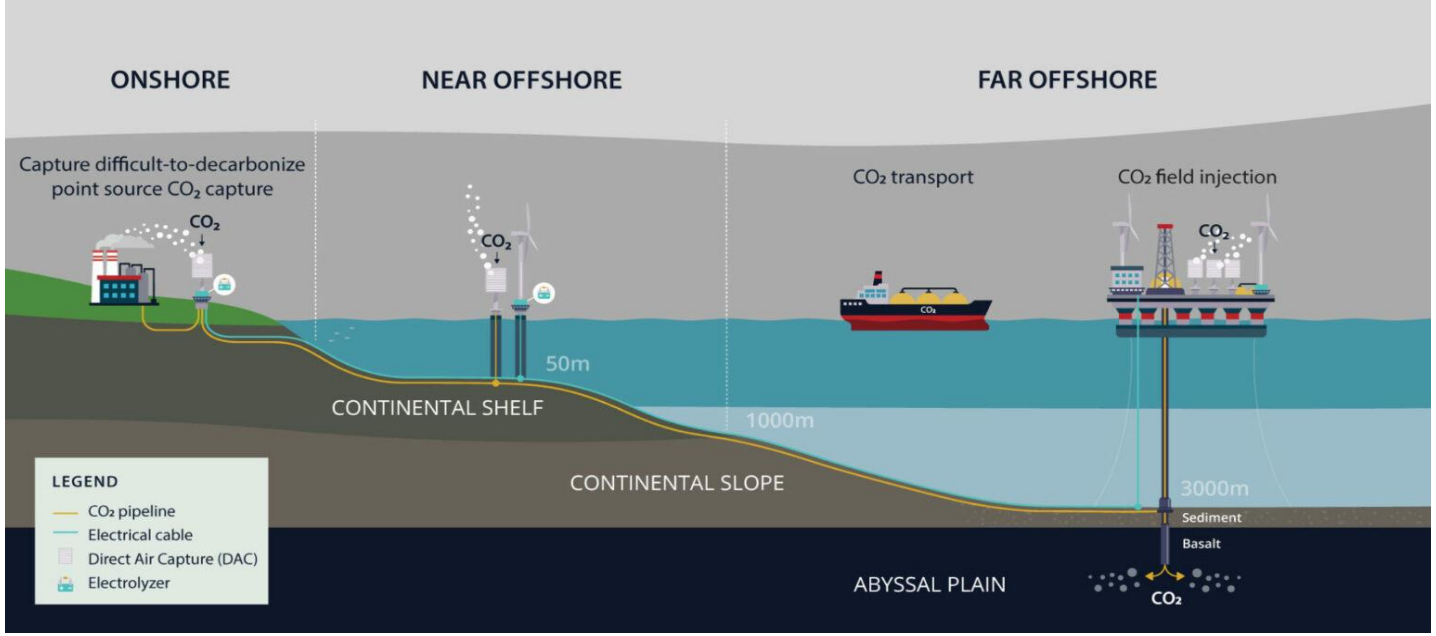
BC is carving out a unique identity in the Canadian carbon landscape. While Alberta focuses on high-volume industrial capture and pipeline networks, BC has become more of a cutting-edge tech region for DAC, Negative Emissions Technologies (NETs), and carbon utilisation. From our tracking, BC is home to ~6 active CCUS projects (9% of our total).

CO_2MENT (Richmond, BC)
This is a high-profile industrial pilot aimed at decarbonizing a key sector: cement production. Lafarge Canada, in partnership with Svante and TotalEnergies is currently in the Pilot/Demonstration phase testing out Svante's proprietary Solid Sorbent technology in solid nanomaterials to pick CO_2 from the kiln's flue gas. It serves as a real-world test for Svante's rapid-cycle adsorption. The captured CO_2 is currently being used for research into "re-mineralization" within concrete, effectively locking the carbon back into the building material.

Huron DAC E-Fuels Project (Merritt, BC)
This project is the primary commercial-scale application of Direct Air Capture for the creation of synthetic fuels. Huron Clean Energy (partnered with Carbon Engineering and Oxy Low Carbon Ventures) aims to start-up in 2028, deploying a L-DAC capture method that utilises a potassium hydroxide solution to absorb CO_2 from the atmosphere.

Like many of the projects in BC, this is aimed at the Utilisation value chain as opposed to long term storage.

Figure 4.2-4, Solid Carbon Offshore Basalt Mineralisation, Source: Ocean Networks Canada



Bright Green CCS Project (Fort Nelson, BC)
This is a massive-scale BECCS initiative that leverages BC's forestry residues to produce negative emissions and clean energy. It involves heating wood waste in a controlled environment to produce a hydrogen-rich syngas, with the CO_2 by-product captured before the hydrogen is used. At ~1.2 Mtpa, it is one of the largest planned carbon removal projects in Canada. It demonstrates how NETs can scale beyond pilot levels to provide significant offsets for global carbon markets. Hydrogen Naturally is aiming for a 2029 start-up date.

Solid Carbon DAC (Cascadia Basin, BC)
While currently in the advanced research and feasibility stage, this is arguably Canada's most significant offshore CO_2 storage concept. Ocean Networks Canada (ONC) and the Pacific Institute for Climate Solutions (University of Victoria) are planning a combination f DAC and Basalt Mineralisation. The project envisions floating platforms powered by offshore wind that capture CO_2 from the air and inject it into the basaltic rock of the Cascadia Basin seafloor. It is unique because it solves the "transport" and "storage" issues simultaneously by sequestering the carbon exactly where it is captured—in a rock formation with virtually unlimited capacity.

The Future of CCUS in BC

As a result of the focus on utilisation over storage, it appears unlikely that BC intends to follow the hub-like model established in Alberta. This also indicates that there could be a lack of large-scale pipelines, and that the emphasis on DAC and NETs is likely to continue.

4.2.3 Regulatory RAG

British Columbia has built a progressively maturing CCUS framework, combining legislative reform, carbon pricing, and strategic policy commitments. The 2022 Energy Statutes Amendment Act established the foundational tenure and oversight architecture for CO_2 storage, while the BC Output-Based Pricing System, Low Carbon Fuels Act, and emerging CCS Sequestration Protocol create layered financial incentives across compliance credits, offset revenues, and fuel lifecycle value.

The overall regulatory picture is broadly enabling, with the majority of assessed measures classified as Green. BC's framework is less mature than Alberta's, notably lacking a post-closure liability transfer mechanism, but the direction of travel is clearly supportive. For project developers, the near-term priority is converging incentive streams across carbon pricing, fuel standards, and offset markets, with the finalisation of the CCS sequestration protocol representing a key catalyst for dedicated storage investment.

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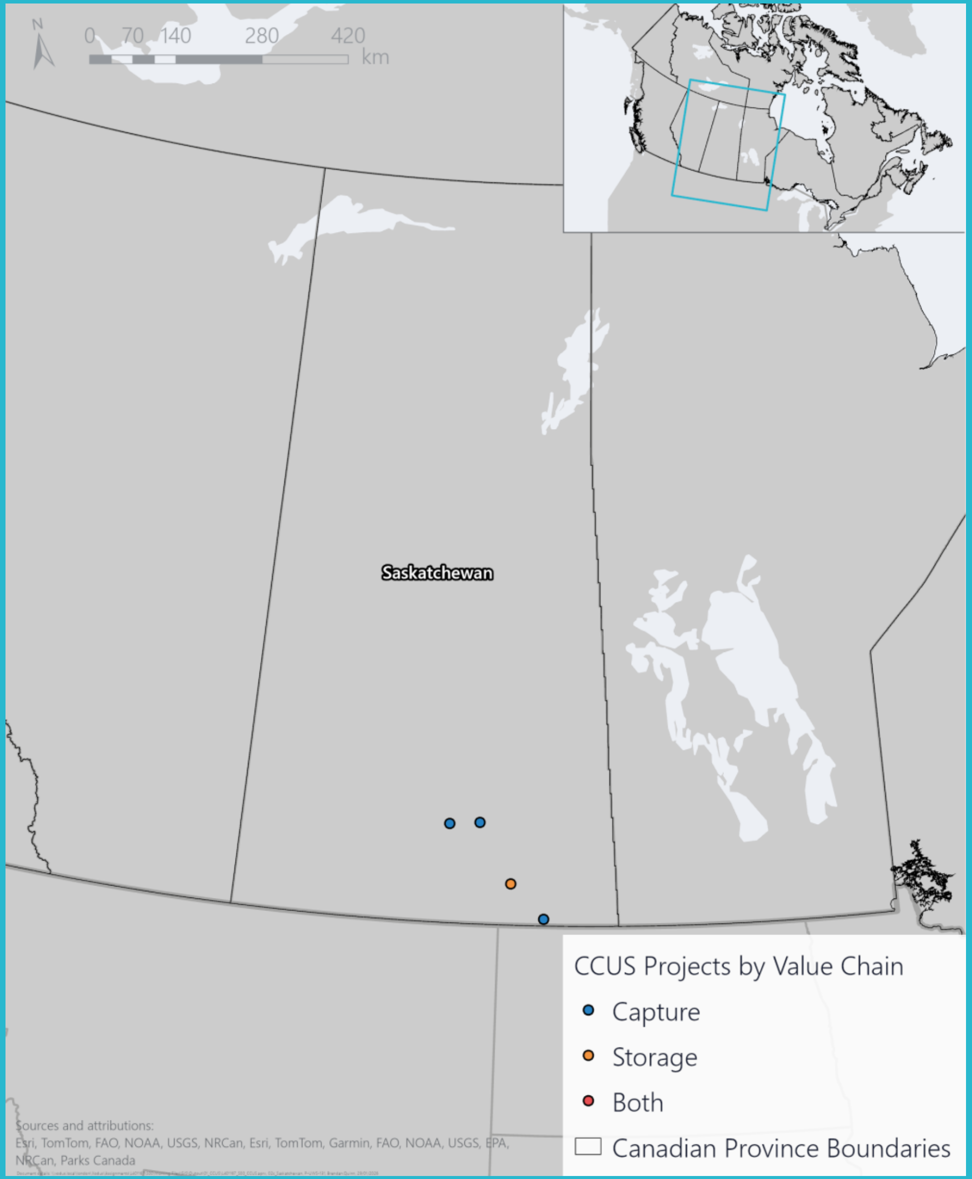
Policy / Regulation / Initiative	Type	Description	CCUS Supply Chain	Impact Timeframe	Classification	Rationale
Greenhouse Gas Industrial Reporting and Control Act	Legislation / Regulation	Requires large industrial facilities to report and verify GHG emissions, forming the legal basis of BC's industrial carbon pricing system.	C T S U	M	Amber	Provides the MRV foundation for carbon pricing and future CCS integration but does not itself create price signals or capital support.
Petroleum and Natural Gas Act (PNGA)	Legislation / Regulation	Governs subsurface oil and gas rights and licensing. Amended in 2022 to place pore space under Crown control and enable a CO_2 storage tenure pathway.	C T **S** U	L	Amber	Clarified pore space ownership and CO_2 tenure. However, BC lacks a full post-closure liability transfer regime, limiting parity with Alberta's framework.
Energy Statutes Amendment Act 2022	Legislation / Regulation	Omnibus legislation amending the PNGA and Energy Resource Activities Act to establish a regulatory framework for CO_2 geological storage.	C T **S** U	S	Green	Materially advances CCS regulation by formalising CO_2 storage tenure and confirming the BC Energy Regulator's oversight role.
Low Carbon Fuel Act	Legislation / Regulation	Requires fuel suppliers to reduce lifecycle carbon intensity through declining benchmarks and credit trading. CCS/CCUS recognised as a compliance pathway.	C T S **U**	S	Green	Creates indirect CCUS value through credit generation where capture lowers fuel lifecycle emissions (e.g., hydrogen, RNG, refined fuels)
BC Output-Based Pricing System	Legislation / Regulation	Industrial carbon pricing system applying emissions-intensity benchmarks to large emitters, with credit generation below benchmarks.	**C** T S U	L	Amber	Functions as the primary operating incentive for CCS by reducing chargeable emissions and carbon payments.
Carbon Capture and Sequestration Protocol (under BC Offset Program)	Legislation / Regulation	Offset protocol defining MRV rules for CO_2 storage, mineralisation and conversion to generate tradable credits.	**C** T **S** U	M	Green	Provides the specific MRV ruleset needed to unlock tradeable offset credit generation from geological storage, mineralisation and chemical conversion.
CleanBC Industry Fund	Funding Programme	Provincial fund recycling carbon tax revenues into competitive grants for industrial emissions-reduction projects.	**C T S U**	M	Green	Offers targeted capital support for pilot and early CCS projects, but not scaled to underpin province-wide infrastructure.
CleanBC Roadmap to 2030	Strategy / Policy Initiative	Provincial implementation plan outlining sector pathways to meet 2030 targets and net zero by 2050, including CCUS.	**C T S U**	M	Green	Provides strategic alignment and long-term policy signal for CCUS, though electrification remains the primary focus.

For additional detail and links, open regulation data file with deliverable package

Table 4.2-1, Regulatory RAG assessment for BC CCUS

4.3 ESTABLISHED MOVERS - SASKATCHEWAN



4.3.1 Why CCUS Matters?

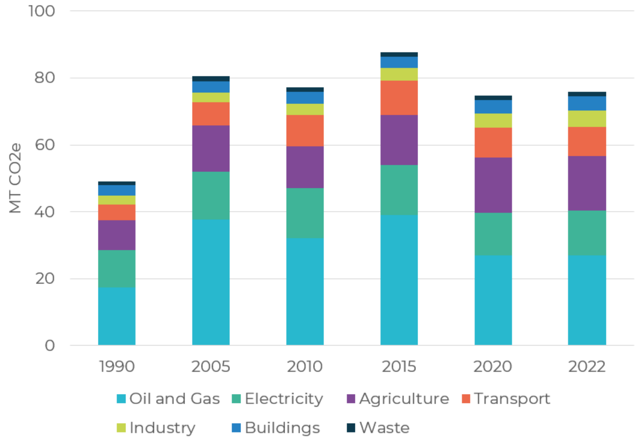
Saskatchewan is Canada's most underappreciated CCUS province, a pioneer with 25+ years of operational EOR-CCUS experience and one of the world's largest geological storage potential, but a uniquely dispersed emission geography that makes hub economics challenging.

Saskatchewan's total GHG emissions in 2022 were 76 Mt CO_2e. The largest emitting sectors are oil and gas production at 36%, agriculture at 21%, and electricity generation at 18%.

Oil & Gas

Saskatchewan's GHG emissions from the oil and gas sector in 2022 were 27.0 Mt CO_2e. Unlike Alberta's oil sands mega-emitters, Saskatchewan's oil production is lighter and more dispersed, conventional and thermal heavy oil around Lloydminster, tight oil in the southeast. This dispersion is the central CCUS challenge.

Figure 4.3-1. Saskatchewan GHG emissions by sector
Source: Environment and Climate Change Canada – National Inventory Report



Power

Saskatchewan has the dirtiest power grid per capita in Canada after Alberta, driven by coal and gas dependence. SaskPower is not just a major emitter; it is the province's existing proof-of-concept. Boundary Dam Unit 3, opened in 2014, was the world's first fully integrated post-combustion CCS project on a power station. That legacy gives Saskatchewan industry credibility.

Regina–Moose Jaw–Weyburn Corridor (Southeast)

The Southeast Saskatchewan CCUS Hub targets up to 4.2 Mt CO_2/year from the Co-op Refinery, Moose Jaw refinery, potash operations, and SaskPower assets, transported to the proven Weyburn and Belle Plaine sequestration sites, where EOR has already stored over 40 million tonnes. The geology is proven, the challenge is building the shared transport spine.

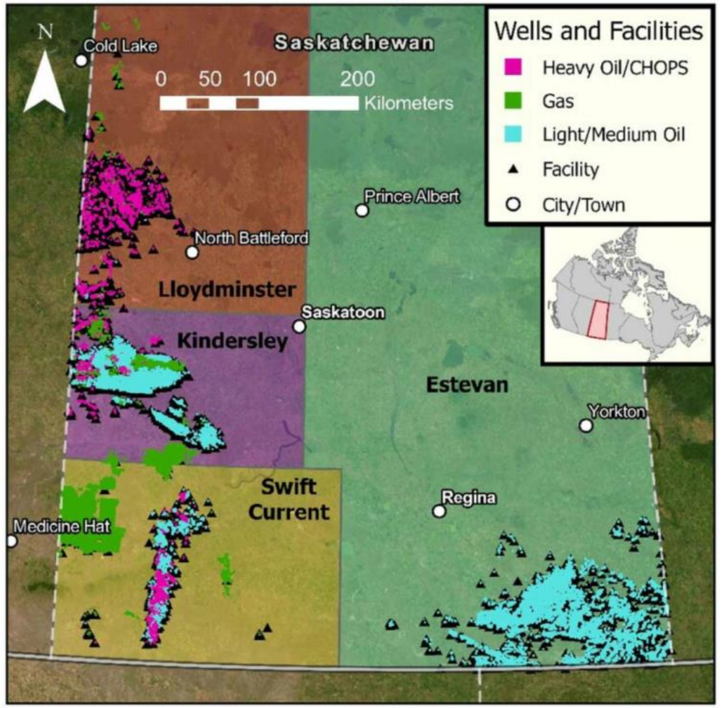
Greater Lloydminster Corridor (Northwest)

Saskatchewan has a unique cross-border opportunity. Cenovus's large upgrader at the Alberta boundary creates a concentrated emissions source that could integrate with Alberta's trunk line network, making this a natural bi-provincial hub.

Potash

As suppliers of 37% of the world's potash, Saskatchewan's underground potash mines produce only half the emissions of other jurisdictions.

Figure 4.3-2. Map of Saskatchewan's upstream oil and gas industry (2022)
Source: Research Paper - "Saskatchewan's oil and gas methane: how have underestimated emission in Canada impact progress toward 2025 climate goals" S.P. Seymour



Why CCUS Matters: The Pioneer Paradox

The province pioneered CO_2 EOR two decades before CCUS became a policy priority: over 40MT sequestered, 100 million barrels of incremental production, and the world's first commercial post-combustion CCS power project at Boundary Dam in 2014.

Yet the opportunity ahead is larger than the legacy. Saskatchewan sits atop 290,000 Mt of prospective geological storage (70% of Canada's estimated total) but its industrial emitters are widely spread. This mismatch between storage abundance and emission dispersion highlights the need for CO_2 transport infrastructure that aggregates dispersed sources and routes them to large sinks.

4.3.2 List of projects

Saskatchewan is considered the birthplace of commercial CCUS, having hosted the world's first fully integrated carbon capture and storage project at a coal-fired power plant. While Alberta is the volume leader, Saskatchewan is the pioneer, focusing heavily on EOR and deep saline sequestration research. From our tracking, Saskatchewan is home to ~11 active CCUS projects (16% of our total).

Weyburn-Midale CO_2 EOR

This is one of the longest-running and most studied CCUS projects in the world. It receives CO_2 via a 320km pipeline from the Dakota Gasification Company in North Dakota. The CO_2 is injected into the Weyburn and Midale oil fields to increase production. To date, it has permanently sequestered over 35 million tonnes of CO_2, serving as the global benchmark for the safety and permanence of geological storage.

Boundary Dam CCS (Unit 3)

The world's first commercial-scale CCS project on a coal-fired power unit. Operated by SaskPower, this project came online in 2014 with the target of capturing ~1.0 Mtpa, but has typically only captured ~0.6-0.8 Mtpa. This project uses a post-combustion amine solvent to capture CO_2 from the exhaust of the Boundary Dam Power Station. The captured CO_2 is sold to Whitecap for EOR or injected into the Aquistore deep saline research well nearby. It proved that large-scale industrial capture at a power plant was technically viable, though it faced early operational hurdles.

Southeast Saskatchewan Carbon Hub (Entropy)

A key part of the new "Hub" wave, moving away from single-source projects to regional networks. Entropy Inc. (who acquired the regional assets from Whitecap in late 2024/2025) is a key stakeholder in the Canadian CCUS market, focusing on sequestration, facility design, and solvent development. This project focuses on the Regina-Moose Jaw industrial corridor. It aims to capture CO_2 from industrial emitters in the area (such as fertilizer and chemical plants) and transport it via a new trunk line to the established sequestration sites in the southeast. It represents the future focus on Saskatchewan as a key hub in Canada capable of building on past projects and lessons learned.

Strathcona Resources Saskatchewan CCS Project

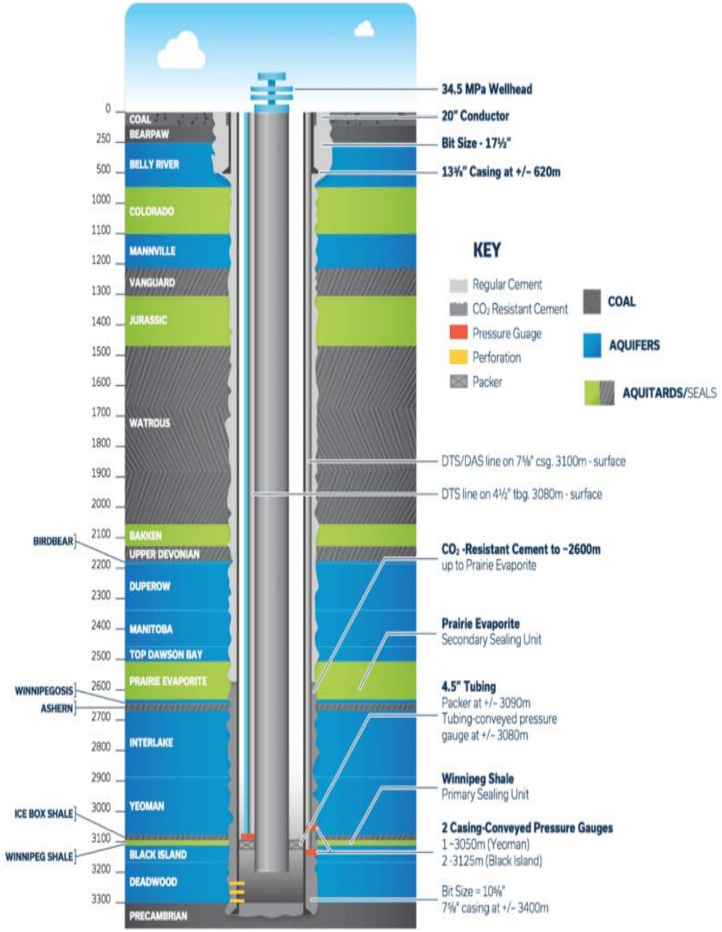
Strathcona Resources (Partnered with Canada Growth Fund) are planning multiple capture and storage projects on their steam-assisted gravity drainage (SAGD) oil sands assets in both Saskatchewan and Alberta. The first project is currently being developed in Saskatchewan, and will target 2.0 Mtpa when completed. Unlike the Pathways Alliance, which requires a 400km pipeline, Strathcona's SAGD (Steam-Assisted Gravity Drainage) facilities sit directly atop suitable storage rock. This project also uses a unique risk-sharing model with the Canada Growth Fund (CGF), where the government helps fund the capital costs in exchange for a guaranteed carbon price, de-risking the project for the operator.

Local Injection Advantage

While Alberta struggles with the logistics of its 400km pipeline, Saskatchewan projects like Strathcona and Entropy are moving faster because they can inject CO_2 locally.

This reduces the CapEx significantly and avoids the long regulatory delays associated with cross-regional pipeline permitting.

Figure 4.3-3 Aquistore Injection Schematic
Source: International CCS Knowledge Centre



4.3.3 Regulatory RAG

Saskatchewan has built a strong enabling environment for CCUS, underpinned by decades of world-leading operational experience at Weyburn and Boundary Dam.

The provincial framework combines carbon pricing through the Output-Based Pricing System, dedicated transport infrastructure incentives via the OIIP, and a CCUS Credit Standard that unlocks tradeable compliance credits: creating layered financial incentives across the capture and transport supply chain.

The overall regulatory picture is broadly enabling, with the majority of assessed measures classified as Green. The most significant gap is pore space tenure, Saskatchewan lacks an explicit province-wide storage ownership regime, creating regulatory uncertainty for commercial-scale dedicated storage on freehold lands. Resolving this tenure ambiguity represents the key catalyst for unlocking large-scale storage investment beyond EOR.

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Policy / Regulation / Initiative	Type	Description	CCUS Supply Chain	Impact Timeframe	Classification	Rationale
Management and Reduction of Greenhouse Gases Act	Legislation / Regulation	Establishes Saskatchewan's output-based pricing system. Sets performance standards, reporting rules, and compliance obligations for large industry and power facilities.	C T S U	M		Creates a carbon price signal that supports CCS by lowering compliance costs. However, it provides no CCS-specific incentives or dedicated storage framework.
Oil and Gas Conservation Act (OGCA)	Legislation / Regulation	Regulates oil and gas exploration, production, processing, and abandonment. Governs well licensing, flaring, venting, and environmental controls.	C T S U	L		Supports emissions control in oil and gas operations but does not create a formal CO_2 storage regime or direct CCS incentives.
CCUS Credit Standard	Legislation / Regulation	Defines MRV rules and crediting methodology for CO_2 storage and EOR. Sets eligibility, liability, and credit allocation requirements.	C T S U	M		Enables tradable CCUS credits within the OBPS framework. Supports project development, but participation is voluntary.
Saskatchewan Output-Based Pricing System	Carbon Pricing	Applies emissions intensity benchmarks to large industrial and power facilities. Compliance via reductions, credits, or payments.	C T S U	L		Main economic driver for CCS by pricing emissions above benchmarks. Narrower in scope than Alberta TIER and lacks dedicated funding support.
Oil Infrastructure Investment Program (OIIP)	Funding Programme / Support Scheme	Provides transferable Crown royalty and tax credits (up to 20% of eligible costs) for oil, gas, and CO_2 pipeline projects.	C T S U	L		Reduces capital costs for CO_2 transport infrastructure, a key barrier to hub development. Explicitly supports pipeline deployment.
Oil and Gas Processing Investment Incentive (OGPII)	Funding Programme / Support Scheme	Offers 15% royalty and tax credits for eligible greenfield and brownfield oil and gas processing projects, including CCS-linked facilities.	C T S U	M		Reduces upfront costs for capture-linked projects, particularly CCS with EOR in upstream and fertiliser sectors.
Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy	Strategy / Policy Initiative	Provincial climate strategy focused on sector-based regulation, technology deployment, and innovation. Identifies CCS as a priority technology.	C T S U	M		Signals long-term policy support for CCS, especially in power and heavy industry. However, it lacks direct funding tools and an updated storage framework.

For additional detail and links, open regulation data file with deliverable package

Table 4.3-1, Regulatory RAG assessment for Saskatchewan CCUS

4.4 EMERGING STORAGE HUBS

4.4 EMERGING STORAGE HUBS

4.4.1 Ontario

Context

Ontario accounts for approximately 22% of Canada's national GHG emissions, making it the second-largest emitting province. The three largest single emitters are steel plants: ArcelorMittal Dofasco in Hamilton, Algoma Steel in Sault Ste. Marie, and Stelco's Lake Erie facility, which together emitted 11.6 Mt in 2022. The sectors most relevant to CCUS are steel, cement, gas-fired power, and petrochemical refining.

Ontario's power grid is among the cleanest in Canada, with coal fully phased out by 2014 and nuclear and hydro now providing the majority of generation. However, natural gas capacity has grown steadily since, and power sector emissions, while low, are rising again.

Critically, much of Ontario's storage potential lies beneath southwestern Ontario, specifically under Lake Huron and Lake Erie, in the same region as many of the province's largest point-source emitters. This geographic alignment between emitters and storage formations is one of Ontario's most important structural advantages.

Role of CCUS in the province

Ontario is an early stage CCUS province covered in this report. With no operating CCUS facilities today, its role is currently limited to technology demonstration and early regulatory development. That said, Ontario's industrial base makes it a natural next frontier: its concentration of steel, cement, refining, and gas generation assets in southwestern Ontario represents a large and geographically concentrated emissions opportunity that no other emerging province can match.

Key drivers include:

- **Steel decarbonisation:** Blue hydrogen pathways using CCS have been explored for direct reduction of iron at facilities in Hamilton.
- **Gas-fired power:** Six of Ontario's 25 biggest emitters are gas-fired plants, collectively emitting 4.5 megatonnes annually. These are natural CCUS candidates, particularly as the province builds more gas capacity to meet electricity demand growth.
- **CO_2 transport infrastructure:** Enbridge Gas has been active in exploring pipeline infrastructure to transport captured CO_2 to storage sites, leveraging its existing knowledge of Ontario's subsurface.

Regulation

Ontario has taken a phased approach to enabling CCUS. In 2022, the province removed the prohibition on carbon storage from the Oil, Gas and Salt Resources Act. In 2023, further amendments enabled test and demonstration projects. In July 2024, the province released a discussion paper on regulating commercial-scale storage and sought stakeholder input. The Geologic Carbon Storage Act was passed in December 2025, and its implementing regulations came into force shortly after, with commercial-scale project applications open as of February 2026.

Figure 4.4-1 Ontario power generation and power GHG emissions

Source: Environment and Climate Change Canada – National Inventory Report

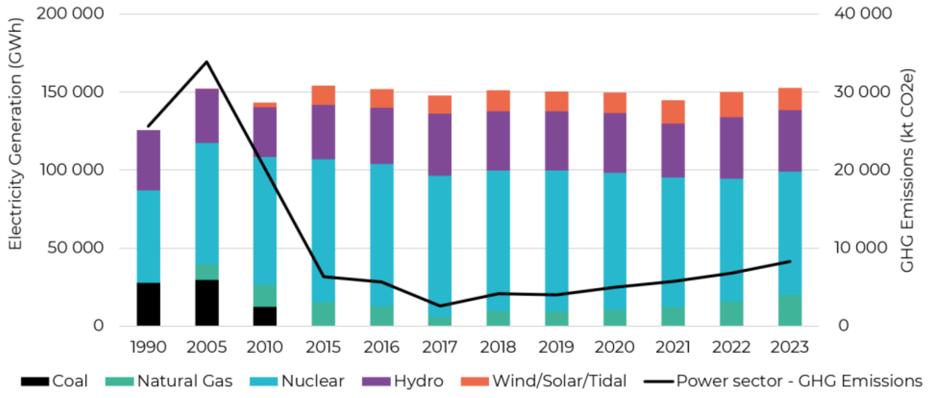


Figure 4.4-2. CCUS projects in Nova Scotia

1 Carbon Upcycling / Ash Grove Cement – Utilisation in Cement – Under Construction

Canada's first commercial carbon capture cement facility, now under construction in Mississauga, backed by $10M in federal funding. The project mixes captured CO_2 with steel slag to create a low-carbon cement substitute, storing up to 150 kg of CO_2 per tonne of product.

2 Crawford Nickel Project – Tailings Carbonation – In Development

Canada Nickel has received $3.4M in federal funding to advance its IPT Carbonation technology with potential to sequester up to 1.5 Mt p.a. The carbon utilisation process permanently mineralises CO_2 into nickel mill tailings, potentially making Crawford one of Canada's largest carbon storage facilities.

Ontario Geologic Carbon Storage Act: Commercial Applications Open (February 2026)

Ontario passed the Geologic Carbon Storage Act in December 2025, with commercial-scale project applications opening in February 2026. For the first time, industrial emitters can formally propose CO_2 injection into deep geological formations in the province. The Act supports both standalone and hub models, targeting southwestern Ontario's Cambrian saline aquifers, co-located with the province's largest steel, cement, and refining emitters. The province estimates deployment could reduce annual emissions by 5Mt – 7Mt and support over 4,000 jobs.

4.4.2 Newfoundland & Labrador

Context

Newfoundland and Labrador is a relatively low-emitting province. Its electricity grid is almost entirely hydroelectric, and its main emission sources are road transport, marine activity, and upstream oil and gas. None are large enough to anchor a major domestic CCUS industry. Offshore projects (Hibernia, Hebron, Terra Nova, White Rose) account for roughly 14% of provincial emissions but represent a modest capture volume in absolute terms.

As a result, the strategic case for CCUS rests less on domestic capture demand and more on the scale of offshore geological storage capacity available, and the external demand that capacity could serve.

Role of CCUS in the province

Initial estimates place NL's offshore CO_2 storage potential in the gigaton range, across three key basins:

- **Jeanne d'Arc Basin** — closest to existing production infrastructure
- **Orphan Basin** — large, underexplored storage candidate
- **Flemish Pass** — emerging frontier with active exploration data

This positions NL less as a domestic decarbonisation play and more as a regional storage hub for imported CO_2, comparable to the North Sea model.

The provincial government's $6-million CCUS Innovation Challenge (2023) reflects this logic, with one stream focused on decarbonising active production and a second exploring hub feasibility. The first funded project, a Memorial University partnership with Hibernia and Hebron, is building laboratory capacity to characterise offshore storage potential.

Regulation

Offshore activity is governed through the Atlantic Accord (1985), a federal-provincial joint management agreement. The regulator, now renamed the Canada-Newfoundland and Labrador Offshore Energy Regulator (C-NLOER) following June 2025 amendments, holds oversight of safety, environmental protection, and resource management, with its mandate now extended to offshore renewable energy.

Key regulatory gap: no framework yet exists for offshore CO_2 injection and permanent storage. Natural Resources Canada has initiated a regulatory roadmap for Atlantic offshore carbon storage, but it remains in progress. This is the most critical prerequisite for any commercial CCUS project in the province.

Figure 4.4-3 Newfoundland & Labrador – Offshore Sedimentary Basins.
Source: C-NLOER

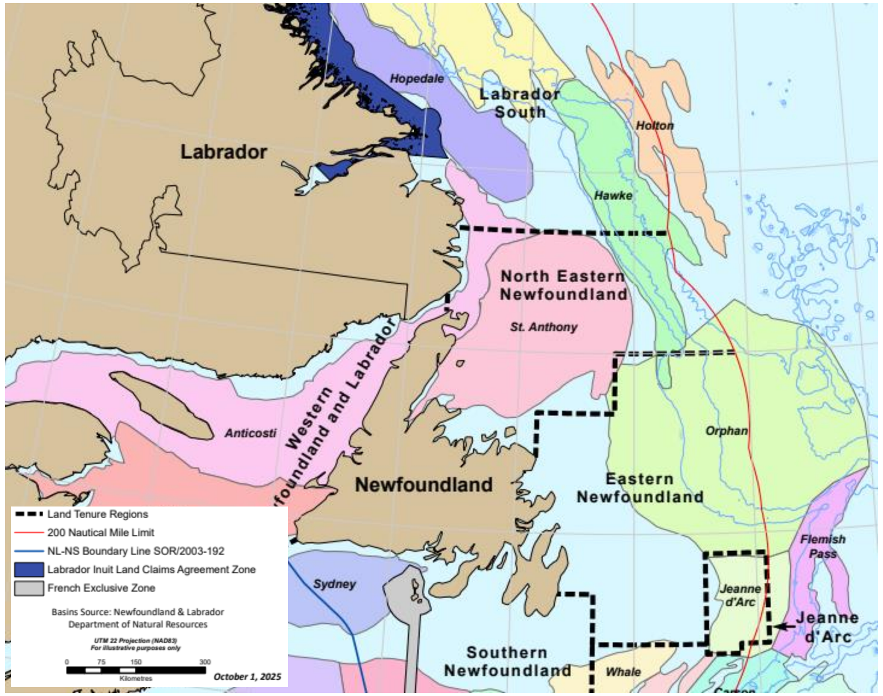


Figure 4.4-4 CCUS Innovation Challenge streams

1 — CCUS Innovation Challenge – Stream 1

With up to $3 million grant, the aim of this stream is to study the potential for employing CCUS in active production and reservoirs to decarbonise ongoing oil production. Applications extended to January 2025; funded projects under review as of mid-2025. No publicly named Stream 1 awardees confirmed at time of writing.

2 — CCUS Innovation Challenge – Stream 2

Announced April 2025, this first project funded under the CCUS Innovation Challenge goes to joint-project between Memorial University and Hibernia/Hebron. Aim to builds laboratory capacity at MUN's Bruneau Centre to characterise offshore CO_2 storage potential, evaluate subsurface storage via new equipment, and train the next generation of CCUS researchers.

4.4.3 Nova Scotia

Context

Nova Scotia's total GHG emissions have declined 35% since 2005. Unlike NL, the province's emissions profile is dominated by its electricity sector, which relies heavily on coal-fired generation. Electricity generation accounts for 39% of provincial emissions, followed by transport at 35% and buildings at 14%. The province has committed to phasing out coal-fired generation entirely by 2030, which will significantly reduce the largest single point-source emission concentration.

This transition creates a dual dynamic for CCUS. Domestic large-emitter volumes are meaningful today but are expected to shrink as coal exits the grid. As a result, Nova Scotia's longer-term CCUS proposition, like NL's, rests substantially on its capacity to serve as a storage hub for CO_2 imported from larger emitting regions in eastern Canada and the northeastern United States.

Role of CCUS in the province

The offshore Scotian Basin is data-rich with strong geological storage prospectivity. Decades of production at Sable Offshore Energy, Cohasset-Panuke, and Deep Panuke have generated an extensive subsurface dataset. These decommissioned fields are now considered low-risk CO_2 storage assets, and Nova Scotia has 33 active significant discovery licences in the Scotian Basin.

Nova Scotia's current CCUS activity is concentrated in early-stage research and novel CDR technologies rather than large-scale point-source capture. The province hosts innovative companies mineralising CO_2 into concrete and enhancing ocean alkalinity. The longer-term proposition is as a storage hub for imported CO_2, backed by a median offshore storage estimate of 177 Gt CO_2, but realising this depends on regulatory frameworks and transport infrastructure that do not yet exist.

Regulation

Nova Scotia's offshore is jointly managed under the Atlantic Accord framework, mirroring the NL arrangement. In 2025, the Accord Acts were updated to include offshore clean energy, and the Canada-Nova Scotia Offshore Energy Regulator now holds responsibility under this expanded mandate.

NRCan leads a federal working group evaluating the legislative amendments needed to establish an offshore CCUS regime, with Dalhousie University separately funded to develop a regulatory roadmap for Atlantic offshore storage. Closing this gap is the most critical prerequisite for commercial progress, and the province's proximity to US markets adds cross-border complexity that also requires resolution.

Figure 4.4-5. Nova Scotia power generation and power GHG emissions

Source: Environment and Climate Change Canada – National Inventory Report

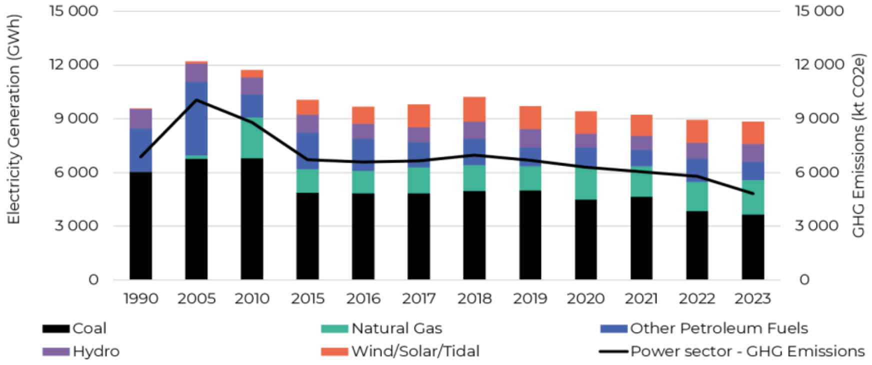


Figure 4.4-6. CCUS projects in Nova Scotia

1 CarbonCure Technologies – CO_2 Utilisation in concrete – Operational

Dartmouth-based company permanently mineralising captured CO_2 into concrete. Over 10 million truckloads of lower-carbon concrete delivered across two dozen countries, keeping 690,000+ tonnes of CO_2 out of the atmosphere.

2 Planetary Technologies – Ocean Alkalinity Enhancement - Pilot

Dartmouth startup adding alkalinity to seawater to permanently remove atmospheric CO_2. Completed a field trial at Nova Scotia Power's Tufts Cove station in Halifax. Winner of the US$1 million XPRIZE Carbon Removal Milestone Award.

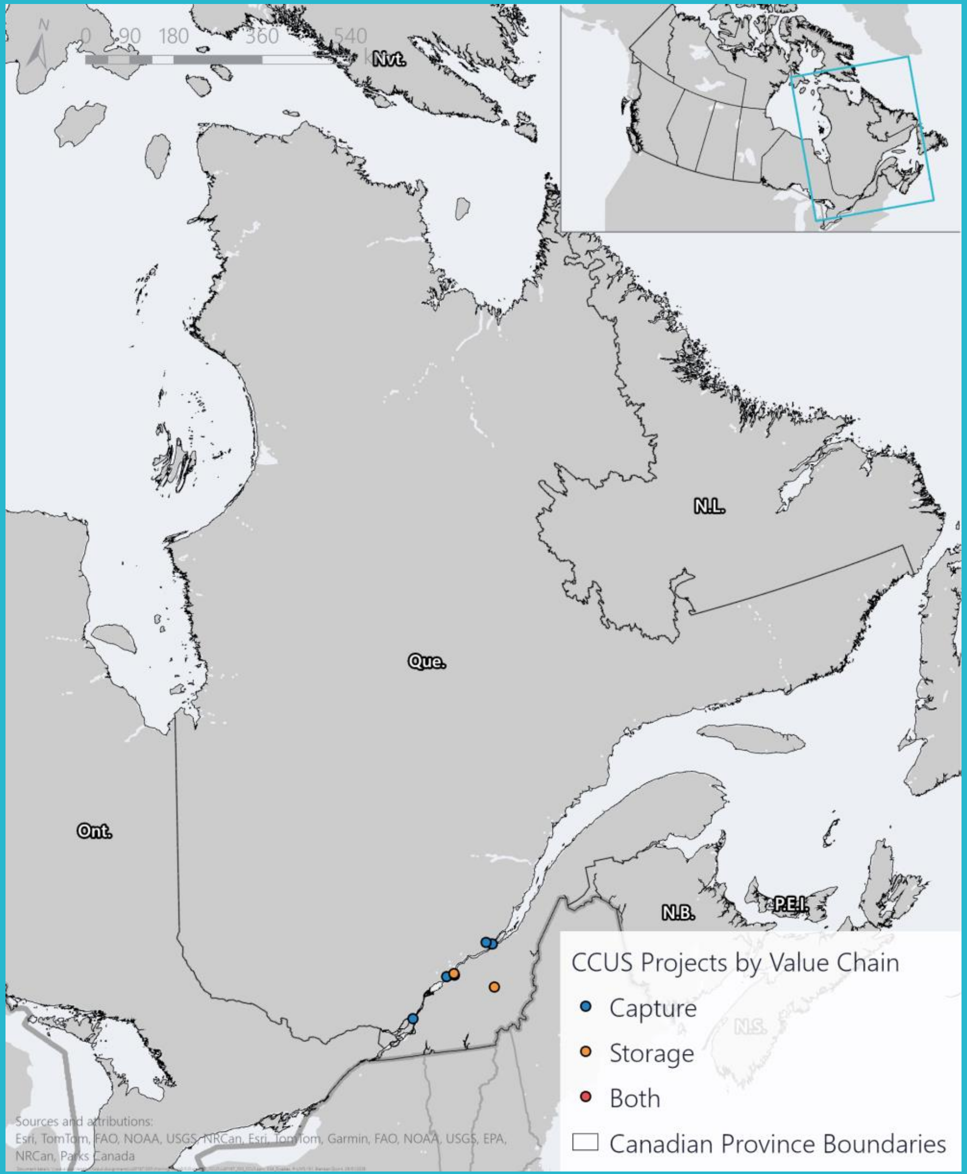
3 CarbonRun – Enhanced Rover Weathering – Early Commercial

Halifax company adding crushed limestone to rivers to remove CO_2 and restore freshwater chemistry. Projects expected to prevent ~55,000 tonnes of CO_2 between 2025 and 2029, backed by US$25.4 million in funding.

4 Dalhousie University, Basin & Reservoir Lab

The Basin & Reservoir Lab is the primary body quantifying offshore storage capacity in the Scotian Basin, including modelling of deep saline aquifers and depleted gas fields. Dalhousie has also received federal NRCan funding to develop the regulatory framework needed to enable commercial offshore CO_2 storage in Atlantic Canada.

4.5 ELECTRIFICATION FIRST



4.5 ELECTRIFICATION FIRST

4.5.1 Manitoba

Manitoba's near-fully hydroelectric grid makes electrification the natural and dominant decarbonisation pathway, leaving it firmly in the Electrification First camp. While the province has taken a notable legislative step toward enabling CCUS through its 2024 Captured Carbon Storage Act, this reflects industrial optionality rather than strategic commitment.

Manitoba's grid is nearly 100% hydroelectric, making electrification a viable and cost-effective decarbonisation pathway across buildings, transport, and industry. The province's strategy has centred on expanding clean electricity use rather than developing carbon capture infrastructure, placing it closer to Quebec and Prince Edward Island than to the emerging storage hub provinces.

Manitoba is not indifferent to CCUS. In June 2024, the province passed the Captured Carbon Storage Act, establishing a licensing regime for subsurface CO_2 storage and vesting pore space ownership in the Crown. The Act followed consultations with industrial stakeholders including Koch Fertilizer, Tundra Oil and Gas, and Canadian Kraft Paper, sectors where electrification alone is insufficient. Manitoba also sits on the western fringe of the Western Canadian Sedimentary Basin, giving it geological storage potential that PEI and Quebec lack.

This legislative progress has attracted investment. In October 2025, Montreal-based Deep Sky selected southwestern Manitoba for one of the world's largest Direct Air Capture facilities, targeting 500,000 tonnes of CO_2 removal annually at full scale. Deep Sky is a tech-agnostic developer, testing multiple DAC technologies at its Alberta facility before deploying them commercially, with ambitions to scale Canada into a global carbon removal hub.

The project nonetheless reflects important caveats. Deep Sky targets atmospheric CO_2 rather than emissions from Manitoba's own industrial sources, it exploits the province's clean energy and geology rather than decarbonising its industrial base. The Captured Carbon Storage Act remains unproclaimed, and the project has attracted local opposition on water quality and technology maturity grounds. Manitoba is best characterised as an Electrification First province whose natural assets are drawing carbon removal investment, but where CCUS remains peripheral to provincial decarbonisation strategy.

Fig 4.5-1, Deep Sky – Alpha facility. Source: Deep Sky

4.5.2 New Brunswick

New Brunswick's decarbonisation strategy is firmly electrification-focused, but the province carries a significant industrial overhang in the form of Irving Oil's Saint John refinery (Canada's largest) which electrification cannot resolve and for which no credible CCUS pathway currently exists.

New Brunswick's decarbonisation plan centres on renewable energy, building efficiency, and transport electrification. On paper, it sits comfortably in the Electrification First camp. The complicating factor is Irving Oil's Saint John refinery, responsible for roughly 25% of the province's total greenhouse gas emissions and not electrifiable. Irving has pursued incremental steps with a TC Energy partnership and a renewable natural gas agreement, but no credible CCUS programme has emerged at the facility. A 2024 Atlantic Economic Council report concluded the refinery can survive the net-zero transition only with significant government support, and Irving has signalled openness to a partial or full sale, adding uncertainty to its long-term trajectory.

There is no provincial CCUS framework, no identified storage sites, and no active CCS projects in New Brunswick. CCUS remains a theoretical option for Irving rather than a policy priority for government. New Brunswick is Electrification First in strategy, but carries a hard-to-abate industrial overhang that makes it one to watch if federal decarbonisation pressure on heavy industry intensifies.

4.5 ELECTRIFICATION FIRST

4.5.3 Prince Edward Island

Prince Edward Island is the simplest province with a small, agriculture-based economy with no significant industrial base, no geological storage potential, and a decarbonisation strategy entirely focused on renewable energy and electrification. CCUS is not a consideration.

PEI's climate framework, anchored by the Net-Zero Carbon Act, Climate Leadership Act, and Net Zero Action Plan, is built around fuel switching, building efficiency, and transport electrification. The province is subject to the federal Output-Based Pricing System rather than operating its own industrial carbon pricing regime, reflecting its minimal heavy industrial footprint.

Its energy transition investments focus on wind generation, grid interconnection with New Brunswick, and demand-side efficiency. There are no large point-source emitters, no identified geological storage formations, no provincial CCS framework, and no active or planned CCUS projects.

PEI has no credible pathway to CCUS relevance and is the most unambiguous Electrification First province in Canada.

4.5.4 Quebec

Quebec is Canada's most committed Electrification First province, with a near-fully decarbonised grid and a climate strategy built around hydroelectric power. CCUS plays no central role in provincial policy, though a cluster of recent project and legislative developments signals the earliest stirrings of a carbon capture sector.

Quebec's decarbonisation framework centres on the 2030 Plan for a Green Economy, targeting a 37.5% reduction in emissions below 1990 levels through large-scale electrification of transport, buildings, and industry. Hydro-Quebec's Action Plan 2035 commits up to $185 billion to expanding clean electricity generation. The province's cap-and-trade system, fully linked with California, creates compliance incentives for industrial emitters but treats carbon capture through offset credits rather than as a standalone policy priority. There is no provincial CCUS strategy and no decarbonisation pathway that relies on carbon capture at scale.

Quebec does have sectors where electrification is insufficient, including cement, aluminium, and pulp and paper, which produce unavoidable process emissions. Activity in these sectors is beginning to emerge. In November 2024, Kruger launched the world's first demonstration-scale carbon capture project in the pulp and paper industry at its Wayagamack Mill in Trois-Rivieres, a $23.75 million initiative co-funded by federal and provincial governments, testing a novel molten borate salt technology developed by MIT-founded Mantel Capture. Deep Sky has also completed the first geological injection of captured carbon in Quebec and is conducting pre-feasibility storage studies in Becancour and Thetford Mines, targeting the province's industrial corridor.

These developments have prompted legislative action. In early 2026, Quebec introduced Bill 17 to create a formal legal framework for carbon storage. Taken together, these developments place Quebec in a similar position to Manitoba: a province whose industrial base and geology are beginning to attract carbon capture interest, prompting reactive rather than proactive regulatory development. Quebec remains firmly Electrification First but is no longer a province with no carbon capture activity.

Fig 4.5-2, Photo of the Kruger pulp and paper plant with demonstration carbon capture project, alongside a Mantel Capture system

Source: Canada National Observer

5.0 STAKEHOLDER ENGAGEMENT

5.0 STAKEHOLDER ENGAGEMENT

In order to verify the findings and assumptions derived from the desk-based research, gain further details, and understand real-life challenges and experiences, a series of stakeholder sessions were hosted by Xodus. This section will discuss the approach to stakeholder engagement, as well as the themes and key takeaways that emerged from the engagement.

5.1 APPROACH

In total, 15 stakeholders were engaged within this study. Stakeholders were given the option of either attending a group session with other similar stakeholders or attending a one-on-one interview. Most participants preferred a shorter one-on-one interview.

Interviews were held virtually on Microsoft Teams, and attended by at least two people from the research team; an experienced interviewer plus another team member to ensure accurate notes/ minutes were taken.

Although over 80 stakeholders were invited to participate, engagement was challenging resulting in a lower than anticipated sample size. The organisations which agreed to participate can be seen to the right.

5.1.1 Stakeholder Group Breakdown

To focus the stakeholder engagement, five stakeholder groups were established. Each stakeholder group had slightly different focus areas and therefore questions were tailored for each group. The stakeholder groups and their focus areas were as follows:

- **Canadian Trade Associations** – Industry, province-level, and national view of CCUS challenges and opportunities..
- **Canadian Regulators and Policy Makers** – Insights into current CCUS trends, as well as to understand the future of the industry in their regions.
- **Canadian Project Developers** – Insight into supply chain bottlenecks and to gain further insight into the opportunities and challenges presented by the CCUS industry.
- **Supply Chain**
  - **Canadian** – Insights into challenges and opportunities within the CCUS industry, as well as understand current partnerships and/or their openness to partnerships.
  - **Scottish** – Insight into conducting business in Canada, as well as perceived and realized barriers to entry.
- **Scottish Regulators and Industry Bodies** – Insight into lessons learned relating to supply chain development and international collaboration.

5.1.2 Questions

Questions were tailored, removed, or added to depending on the appropriateness or perspective in relation to who was being interviewed.

5.2 INTERVIEW SUMMARY

A summary of the main outcomes from the stakeholder engagement can be found on the next page.

Stakeholder Groups	Stakeholders Engaged
Canadian Trade Associations	Energy NL; net-zero atlantic
Canadian Regulators/ Policy	Government of Saskatchewan; BCER British Columbia Energy Regulator; British Columbia Ministry of Energy and Climate Solutions
Canadian Project Developers	*Alberta-based project developer* *
Supply Chain	NOVAPORTE; Angler Solutions; subsea 7; Precision Impulse Digitizing the Subsurface; The Carbon Removers; Backwater
Scottish Regulators and Industry Bodies	Crown Estate Scotland Oighreachd a' Chrùin Alba; North Sea Transition Authority; NECCUS

* Meeting was with a consultant who held a leadership role within the developer. Developer name withheld to maintain anonymity as a result of only one Developer participating.

THEME	DESCRIPTION	APPLICABLE STAKEHOLDER GROUP				
		Canadian Trade Associations	Canadian Regulators/ Policy	Canadian Project Developers	Supply Chain	Scottish Regulators and Industry Bodies
The role of CCUS in transitioning talent from the oil and gas sector	The CCUS industry is seen a great opportunity to support the transition of workforce away from oil and gas. Across both Canada and Scotland, there are applicable skills and capabilities which can be directly applied to the CCUS sector, particularly offshore storage. As a result, stakeholders are keen to see the sector succeed, not only from a decarbonisation-perspective, but also a social-impact-perspective.	●	●			●
Need for regulatory certainty to advance the industry	Due to the nascency of the CCUS sector, regulation is still evolving. There is a call for more regulatory alignment across provinces and countries, and for more certainty to come with that. Stakeholders emphasised that “we cannot operate on promises”, and the lack of regulatory maturity and clarity heightens investment risk.	●	●	●	●	●
Unknown storage capacities, therefore unknown possibilities	In provinces such as British Columbia and Nova Scotia, there is a lack of current visibility relating to the overall potential storage capacity. As a result, it is still being studied with a significant focus currently on innovation, research and development and partnerships with academia to help create a clearer picture of what the sector could look like, and how it may operate.	●	●		●	
Project Economics and Investment Risk	A lack of clear revenue pathways is a limitation for ongoing commercial development. While provinces have varying carbon pricing measures, it appears that they do not provide adequate financial incentive for commercial-scale CCUS projects, especially beyond EOR. This as impacts developers, and also the supply chain who have to invest key resources into supplying this new market.	●	●	●	●	
Supply chain bottlenecks and barriers to entry	Vessels for CO_2 transport. CO_2 compressors and electrical component supply (such as of HV transformers, cable, and busbars) were highlighted as key supply chain bottlenecks due to a lack of vendor options and other industries competing for capacity (such as data centres). Furthermore, federal and provincial regulations and certification requirements create barriers to entry from international suppliers.	●		●		
Why Canada?	It became evident that to many Scottish-based suppliers their knowledge about the Canadian market is limited – with focus instead being on markets closer to home, and where CCUS markets are more mature.				●	
Indigenous communities, local content, and local knowledge	Canada is committed to engagement with Indigenous communities, and has strict protocols around consultation and the duty to inform. Operating in Canada also has unique challenges, for example, with design temperatures approaching -50°C in Alberta. Through partnerships, Scottish suppliers can benefit from local knowledge, experience, and familiarity. Identify the correct partners, and gaining access to local knowledge and work force was identified as a barrier by Scottish suppliers.		●	●	●	
The need for collaboration	Within Canada, stakeholders emphasised the need for provinces to not only align regulation but also align capabilities across the CCUS value chain. Furthermore, international collaboration was seen as a necessity to overcome supply chain bottlenecks, and to de-risk and reduced the costs of Canadian projected through the lessoned learned from more mature markets (such as Europe).	●	●	●	●	●

6.0 CCUS CAPABILITY ASSESSMENT

6.0 CCUS CAPABILITY ASSESSMENT

6.1 APPROACH

The outputs of the Scottish CCUS Supply Chain Capabilities Study were combined with Xodus' in-house expertise and a contracts review to establish a high-level capabilities assessment. Additional insights were sought from stakeholder engagement sessions and supplier databases, including EICDataStream and GlobalData. Results were captured using a Red, Amber, Green (RAG) approach, enabling the comparison of UK and counterpart Canadian capabilities across the CCUS value chain. The assessment was used to inform considerations on Scottish market opportunities within the wider context of the Canadian CCUS sector.

A combined summary of the RAG scoring can be viewed in the table to the right and on the next page.

6.2 INPUT OPPORTUNITIES

This initial category covers early development and design activities, detailed component aspects, installation support and overall operations and maintenance. Strong Canadian capabilities exist for each of the categories. This is based on existing onshore CCS and transport track record across key provinces with upcoming activity (AB, SK) and transferable capabilities from the offshore oil and gas sector on the Atlantic Coast. Design and early development services – such as onshore environmental studies – further benefit from a local advantage required to effectively win work in these scopes.
Limitations within the Canadian supply chain are found in post-processing and storage equipment design, which could be supported by Scottish capabilities. In addition, the emerging offshore carbon storage and transport sector could leverage early Scottish experiences and track record – particularly within component design, feasibility studies and survey data interpretation.

6.3 SUPPORT FUNCTIONS

Similar to input opportunities, there is strong existing capability in Canada for overall project support functions. Local advantages come into play for legal, policy and planning related services, and local business development. There are some opportunities for Scottish companies within the ancillary equipment scope – such as fire & safety systems, lifting/mooring equipment - as well as with health & safety and certification/inspection related services. However, given the existing oil and gas and wider CCUS value chain in Canada, similar capabilities have been assumed to be present locally. This competitive environment would favour Scottish companies who may already be operating in Canada.

6.4 VALUE CHAIN CAPABILITIES

There are several opportunities across the value chain to leverage Scottish expertise and capability. These are predominantly focused within the value chain component supply, incl. pumps, values, heat exchangers and control instrumentation. Track record within injection systems, subsea wells, manifolds and associated equipment and services can further be leveraged. These capabilities would primarily service the Canadian storage, transport and capture value chain.

Green = Strong Scottish capability or in relevant transferable / adjacent markets

Amber = Moderate Scottish capability, but requirement for investment or dedicated partnership / investment strategies; more limited local advantage for Canadian suppliers

Red = Limited / No Scottish capability identified or a strong competitive advantage for local Canadian suppliers

Supply Chain Aspect	Primary	Secondary & Tertiary Summary	Scottish Capability	Canadian Capability
Input Opportunities	Development	**Design & Engineering Consultancy**, incl. onshore & offshore environmental surveys, feasibility and pre-concept studies	Amber	Green
		Engineering, Procurement and Construction (EPC), incl. pipelines, process plant design, technology licensing and civil construction	Amber	Green
		Detailed Component Design, incl. for capture system, post-processing and storage equipment, electrical, control & safety system and metering	Green	Green
	Installation	**System(s) Installation (incl. platform infrastructure)**, incl. installation, commissioning and indirect construction services	Amber	Green
		Pipeline Installation, incl. pipeline retrofit, installation, commissioning and indirect construction services	Amber	Green
	Operations & Maintenance	Incl. asset management services, monitoring and controls, logistics, health & safety, emissions auditing, software	Green	Green

Value Chain	Primary	Secondary	Scottish Capability	Canadian Capability
Support Functions	Professional Services	Incl. certification and inspection, testing organisations, environmental and design consultancy, health & safety, GIS	Amber	Green
	Ancillary Services	Incl. legal and financial services, planning and policy advisory, business development	Red	Green
	Ancillary equipment	Incl. general fabrication, machining, tooling, lifting and mooring equipment, fire and safety systems	Amber	Green

Canada's existing oil and gas as well as CCS project track record means local suppliers for key equipment and services will already exist across the value chain. A local advantage exists fabrication related scopes, such as tanks and pipes, as well as support services and modifications for topsides. A more limited capability and reliance on overseas suppliers is presented in capture and transport equipment. This covers wider components such as skimmers, filters and coolers, cooling and distillation columns and condensers.

The early-stage nature of considerations for offshore carbon storage means Scottish companies can leverage their 'first-mover' status relative to Canada in this value chain. With development timeframes of 10+ years, Scottish companies have an opportunity to bring shipping, port infrastructure, and subsea infrastructure and equipment modifications knowledge to the market. This is particularly the case for Scottish companies with existing track record on both sides of the Atlantic.

6.5 EASTERN CANADA DIFFERENTIATION

There is a strong difference in CCUS market maturity between Western and Eastern parts of Canada, with respective implications for supply chain capability. A second consideration is the focus on onshore oil and gas in Western Canada and offshore projects on the Atlantic Coast.

As a result of these aspects, the Eastern Canadian supply chain indicates a more limited overall capability for key capture components and services. Specialist component supply gaps for Eastern Canada include a lack of subsea component, rental and bending equipment supply, valves and compressors. Supply for these components is mainly import-driven. Stakeholder engagement further indicated a lack of vessel capability owing to long-term contracts for the current Canadian fleet. Canada's cabotage rules, however, would require a trading licence and associated permitting process for non-Canadian vessels and associated monthly fees – representing a key cost and gap for operators.

Eastern Canadian suppliers will see higher capability in subsea, topside and injection system aspects given the offshore oil and gas sector track record. Provinces such as Newfoundland & Labrador and New Brunswick also offer existing port and shipping capabilities from the processing and export of oil and gas products. This provides a solid foundation for future CCUS application.

Value Chain	Primary	Secondary	Scottish Capability	Canadian Capability
Storage	Storage Infrastructure	Injection systems		
		Subsea wells, (subsea) manifolds and equipment		
		Topsides		
	Value Chain Components	Wellheads, blow-out preventers, safety valves, pressure sensors and monitoring equipment, casings/liners/tubing		
	Mode	Depleted oil and gas fields, saline aquifers		
		Salt caverns, gas and oil wells		

Value Chain	Primary	Secondary	Scottish Capability	Canadian Capability
Capture	Mode	Pre-/Post-Combustion		
		Oxyfuel Combustion		
		Direct Air Capture		
	Key Equipment	Flue gas pre-treatment, gasifier, liquid solvents		
		Balance of Plant, CO_2 compression and conditioning, post-capture conditioning		
	Value Chain Components	Compressors, valves, heaters, duct and piping, control and instrumentation, skimmers, filters, coolers, pumps, fans and column vessels, chemical solvents		
Transport	Transport Infrastructure	Pipeline		
		Road and rail		
		Shipping, port infrastructure		
	Value Chain Components	Pumps, valves, condensers, heat exchanger, distillation and cooling columns		
		Pipe fabrication, insulation, rolling stock, storage tanks, specialist trailers		
		Control instrumentation, leakage detectors, telemetry		
Utilisation	Enhanced Oil Recovery	Equipment and services		
	Fuels	Hydrogen supply, synthesis and separation		
	Mineralisation	Carbonisation system, curing and finishing		
	Chemicals	Synthesis and purification		

7. RECOMMENDATIONS

7.1 RECOMMENDATIONS

To establish recommendations a SWOT analysis was conducted. To transform the outcomes from the SWOT into actionable next steps, a SWOT-TOWS analysis was conducted. The strategies and recommendations which emerged from that analysis were then grouped and streamlined into the following recommendations.

The recommendations have been separated into key themes, with identified action owners, implementation timeframes (Short - <2 years, Medium – Up to 2030, and Long – Post 2030), and implementation effort. (a relative comparison of effort required).

THEME	ROUTES-TO-MARKET AND RECOMMENDATIONS	ACTION OWNER	IMPLEMENTATION TIMEFRAME	IMPLEMENTATION EFFORT
Targeted Canadian Approach Due to similar oil and gas experience and supply chain capabilities with Eastern Canada, along with improved accessibility, there is likely more opportunities for Scottish companies in this region.	Tailor market entry support for Canada using a coastal or provincial view. Utilise this approach to align market opportunities with commercially ready businesses to ensure investment is targeted and worthwhile.	SE/SDI	Short-term	Low
	Specifically target engagement with Newfoundland & Labrador industry and government stakeholders to foster and identify early opportunities that align with Scottish offshore storage and transport capabilities.	SDI/ FCDO	Short-term	Low
	Leverage existing track–record and history of working together on oil and gas projects as a route into supporting with upcoming CCUS projects. Utilise support offered by SE/SDI to develop partnerships and share this experience with key stakeholders.	Scottish Supply Chain	Short-term	Medium
	With a targeted approach towards Eastern Canada, highlight the strength of Scottish early concept and development capabilities. Priority to be given to those that already have a local presence or have worked in Canada before within other industries.	Scottish Supply Chain/ FCDO/ SDI	Short-term	Low
	During webinars or when providing market entry support, highlight the long-term opportunity for Scottish companies given early-stage nature of sector in Atlantic Canada.	SE/SDI	Short-term	Low
	As the CCUS sector within Western Canada grows and expands beyond predominately focusing on EOR, begin a targeted effort to expand Scottish design, engineering, component supply, and capture technology into the region.	SDI/ Scottish Supply Chain	Long-term	Medium

THEME	ROUTES-TO-MARKET AND RECOMMENDATIONS	ACTION OWNER	IMPLEMENTATION TIMEFRAME	IMPLEMENTATION EFFORT
Partnerships Local experience brings significant benefits to projects within Canada. Not only does it increase local-content levels, but it brings specific experience relating to areas such as regulatory compliance and operating conditions. Additionally, it can bring cost-savings and create opportunities for First Nation communities.	Within Eastern Canada, identify local fabrication partners for component design, installation support and operational activity. This could be aided by SE/SDI partnering with organisations such as NetZero Atlantic who have substantial supplier networks across the region.	Scottish Supply Chain/ SDI	Short-to-medium term	Low
	SE and SDI to develop local partnerships specifically with those with experience in rural Canada and Frist Nations communities. Host information and guidance sessions through local stakeholders.	SE/SDI	Short-to-medium term	Medium
	Due to most Scottish suppliers likely being contracted with Tier 1 contractors, rather than directly through the project developer, Scottish suppliers should seek to leverage existing Tier 1 connections and experience to help reduce the barriers to entry within Western Canada. Utilise existing networks to gain exposure and experience within onshore and oil sands operations to take advantage of long-term opportunity in Western Canada.	Scottish Supply Chain	Short-to-medium term	Medium
	Promote establishment of joint ventures and consortiums between Scottish design and engineering companies and local project development services. This would be built on the back of having invested resource into developing and understanding of the Canadian market and in-person networking.	Scottish Supply Chain/ SDI	Medium-to-long term	High
Knowledge sharing Blind spots exist regarding the opportunity that Canada represents, and the lessons learned from Scottish experience. Facilitating knowledge sharing helps to overcome this barrier.	Host trade missions to Canada to bring knowledge, experience and technology together to bridge local-knowledge gaps and increase the perceived value of working with Scottish Companies. Trade missions should be targeted, ensuring provincial and supplier capability alignment.	SDI	Short-term	Medium
	Masterclasses or information sessions from companies with previous experience working in Canada, or with Canadian trade bodies, to facilitate lessons learned regarding market entry and operating within Canada. These could be virtual or in-person.	SE/SDI	Short-term	Low-to-medium
	Through Canadian-based trade bodies, host a lessons-learned webinar targeted towards Canadian suppliers and project developers. Focus on technical, commercial and regulatory lessons learned / best practices for offshore storage based on early Scottish projects (Acorn / Viking) and early industrial decarbonisation projects.	SDI	Short-to-medium term	Low
	Bi-lateral engagements at national and provincial level to identify areas of collaboration and knowledge exchange.	FCDO/ Scottish Government/ SE	Medium-to-long term	Medium-to-high

THEME	ROUTES-TO-MARKET AND RECOMMENDATIONS	ACTION OWNER	IMPLEMENTATION TIMEFRAME	IMPLEMENTATION EFFORT
Selling Scotland Currently countries like Norway and Germany are viewed by Canadian stakeholders as markets to watch. The purpose of these recommendations is to bring Scottish experience and capability to the forefront.	Utilise knowledge sharing trade missions, timed to align with national conferences, to showcase to project developers, tier 1s and potential local partners Scottish experience and capabilities across design, component supply, subsea, industrial infrastructure, and O&M. As part of the trade mission, identify a shortlist of Canadian CCUS projects for Scottish companies to have 1-to-1 sessions with.	SDI/ Scottish supply chain	Short-to-medium term	Medium
	When looking to sell themselves, Scottish suppliers where possible should highlight their experience in offshore North Sea, specifically in pipes and shipping. Using Acorn CCS as a key selling point and extensive subsea infrastructure to mitigate capability and capacity limits in fabrication.	Scottish supply chain	Short term	Low
	Leverage existing relationships and experience within oil and gas to highlight continued shared learnings and success. Specifically identify Scottish suppliers already operating in Canada to use as examples of the success that Scottish suppliers can bring to Canadian projects/ partnerships.	SDI	Short term	Low
	Utilise partnerships with industry bodies in Canada to advertise Scottish capabilities – focus on Scottish innovation, lessons learned, and project cost-savings. Could be via webinars, videos, or newsletters for Canadian audiences.	SDI	Short-to-medium term	Low
Selling Canada For supply chain companies deciding on which markets to enter is often based on where they currently have work, where the barriers to entry seem low, or where new regions present clear commercial opportunities for them. For many, Canada is an unknown market.	Host webinars targeted towards Scottish suppliers to provide information regarding the state of the Canadian CCUS market, market trends, and market opportunities.	SE/SDI	Short term	Low
	Identify Scottish companies that would be a good fit for the Canadian market and invite on trade missions to Canada.	SE/SDI	Short-to-medium term	Medium
	Co-ordinate with Canadian trade bodies who are bringing delegations to Scotland, UK, or Europe to have networking and knowledge exchange sessions.	SE/SDI	Short-to-medium term	Low-to-medium

THEME	ROUTES-TO-MARKET AND RECOMMENDATIONS	ACTION OWNER	IMPLEMENTATION TIMEFRAME	IMPLEMENTATION EFFORT
Innovation and early TRL With many synergies across supply chain capabilities, one route to market for Scottish companies is to focus on innovative solutions or targeting early TRL solutions. This would overcome the challenge of competing in areas such as EOR and could provide first-mover advantage. Additionally, by focus on innovative solutions it could attract global attention for new technologies.	Focus on provinces/ regions with less established CCUS markets – seek out local partners and focus on capture opportunities.	Scottish supply chain	Medium-term	Medium
	Explore research and development partnership options with local suppliers or with universities to enhance TRL of specific solutions/ technologies.	SDI/ Scottish supply chain	Medium-term	Medium
	SE or SDI to establish a provincial and technology matrix to identify specific Scottish suppliers who may be well positioned to take advantage of early-stage opportunities.	SE/SDI	Short-to-medium term	Low
	Support specialist, start-ups, and advanced technology companies in capture technologies by increasing access to innovation funding both in Scotland and Canada and by facilitating collaboration with Canadian equivalents.	SE/SDI	Short-to-medium term	Medium
	Provide grant funding towards feasibility, techno-commercial, and/or cost-benefit studies for technologies with Canadian partners to identify cost reduction opportunities with Scottish solutions.	SE/SDI	Short-to-medium term	Medium-to-high
	Connect key capture industries/emitters with early carbon technology providers and licensors to explore demo/pilot programmes.	SDI	Medium-term	Medium

7.2 NEXT STEPS

In summary, to focus resources towards entering the Canadian CCUS market, a provincial and coastal-view should be taken towards identifying opportunities, and partnerships and knowledge sharing will be required (including sharing with Canadian stakeholders what Scotland has to offer and sharing with Scottish suppliers what Canada has to offer). This final section provides and overview of what SE and SDI, and Scottish suppliers should do next.

7.2.1 For Scottish Enterprise and Scottish Development International

Short-term (<2 years)

- Establish partnerships with Canadian counterparts – such as trade and industry bodies who have access to market intel and local suppliers.
- Host webinars targeted towards Scottish suppliers highlighting the Canadian opportunity.
- Tailor the approach to Canadian market-entry around either a coastal or provincial approach.

Medium-term (Before 2030)

- Identify Scottish suppliers that represent a good fit for the Canadian market to bring on a trade mission to Canada.
- Develop grant funding available to support the development of innovative CCUS solutions and technology in partnership with Canadian projects and/or research partners.

Long-term (Post 2030)

- Support the development of bi-lateral knowledge exchange and technology development agreements between Scotland and Canada/ specific provinces.
- Support development of joint venture and consortiums between Scottish design and engineering companies and local project development services

7.2.2 For Scottish suppliers

Short-term (<2 years)

- Western Canada (i.e. Alberta), is a leader in utilising captured carbon for EOR. Utilise existing networks to gain exposure and experience within onshore and oil sands operations to take advantage of long-term opportunity in Western Canada.
- Due to most Scottish suppliers likely being contracted with Tier 1 contractors, rather than directly through the project developer, Scottish suppliers should seek to leverage existing Tier 1 connections and experience.
- Attend webinars which highlight the CCUS opportunity in Canada, as well as which increase awareness of regulatory barriers and trends.

Medium-term (Before 2030)

- Within Eastern Canada, where the CCUS market is less mature, begin to identify local fabrication partners for component design, installation support and operational activity.
- Attend trade missions in order to increase understanding of Canadian market and to identify potential partners and clients.
- Leverage existing track–record and history of working together on oil and gas projects as a route into supporting with upcoming CCUS projects. Utilise support offered by SE/SDI to develop partnerships and share this experience with key stakeholders.

Long-term

- Seek out opportunities to develop joint ventures and consortiums with local project development services.

7.2.2 Events on the horizon

The Canadian CCUS market is constantly evolving, in 2026 we anticipate further regulatory updates, such four key commitments under the November 2025 Canada-Alberta Memorandum of Understanding (MOU), covering carbon pricing, methane regulation, the Pathways CCUS project, and impact assessment reform.

The MOU also commits to extending the CCUS ITC to include EOR, which once legislated would further cement Alberta as Canada's dominant CCUS hub. The federal government has signalled some deadlines may slip, but how these negotiations resolve will materially shape the CCUS investment environment.

One way to keep up-to-date with market opportunities is to attend Canada-based conference. Key events in the 2026 calendar include:

- Carbon Capture Canada 2026 (Sept 15–17, 2026, Edmonton, AB): Held at the Edmonton Convention Centre, this is the premier pan-Canadian event showcasing CCUS innovation through exhibitions, technical sessions, "knowledge bars," and site tours. It brings together government and industry leaders to discuss policy, investment, and projects like Heidelberg's cement plant capture.
- Canadian Carbon Capture Summit 2026 (June 22–23, 2026, Calgary, AB): Focuses on commercialization, regulatory frameworks, CO_2 storage/utilization, and economic assessments to reduce carbon footprints.
- Canadian Hydrogen Convention - CCUS Track (April 21–23, 2026, Edmonton, AB): While focused on hydrogen, this major event includes dedicated exhibitions and discussions on CCS technology and its role in energy decarbonization.

7.3 Provincial Prioritisation – Recommended Engagement Tiers

Based on the research and subsequent recommendations, a provincial summary can be seen below.

Tier 1: Short-term Opportunity

Immediate Engagement

Alberta

Canada's only end-to-end operational CCUS market; near-term demand across subsurface characterisation, MMV design, and saline storage.

Key Scottish supply chain fit:

- Subsurface / saline aquifer expertise
- MMV systems
- ESG & long-term liability advisory
- Post-closure stewardship

Trigger: Pathways Alliance FID and ACCIP stacking signal immediate pipeline for Scottish specialists.

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●●●●	●●●●	●●●○	●●●●

Nova Scotia + Newfoundland & Labrador

Strongest strategic fit for Scotland due to offshore geology similarity and shared supply chain experience.

Key Scottish supply chain fit:

- Offshore storage design
- Subsea engineering
- Platform integration
- Import-terminal design (North Sea analogues)

Trigger: Atlantic Accord amendments and CNOLER permitting framework publication will be key catalysts.

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●○○○	●○○○	●●●●	●●●○

Tier 2: Medium-term Opportunity

Build Presence Now, Scale Later

British Columbia

Technology-pilot and DAC-led market; entry via innovation partnerships and component supply

Key Scottish supply chain fit:

- DAC integration
- Mineralisation (cement sector)
- Technology pilots
- Component supply

Trigger: BC CCS Sequestration Protocol finalisation

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●●○○	●●●○	●●●○	●●●○

Saskatchewan

EOR legacy and growing project pipeline.

Key Scottish supply chain fit:

- Subsurface storage monitoring
- Compression & conditioning

Trigger: Pore-space tenure resolution would unlock dedicated storage investment.

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●●●○	●●○○	●●●○	●●●○

Ontario

New Geologic Carbon Storage Act creates early engagement window for Scottish geoscience firms

Key Scottish supply chain fit:

- Feasibility studies
- Pipeline system design for future hubs
- Capture system integration

Trigger: Ontario hub announcements and Storage Act permitting regulations expected 2026–27.

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●○○○	●●○○	●●●○	●●○○

Tier 3: Long-term Opportunity

Monitor Only

Manitoba, Quebec, New Brunswick, PEI

No active CCUS procurement market. Engage only on a major policy shift or project-specific trigger.

Key Scottish supply chain fit:

- MB: DAC monitoring / sorbent tech if Deep Sky scales
- QC: cap-and-trade pressure may drive cement / aluminium capture
- NB: Irving Oil refinery is the single latent large point-source opportunity

Trigger: Direct engagement only if a major policy shift occurs or a specific project reaches FID.

Market Size	Regulatory Readiness	Scottish Capability Fit	Time-to-Market
●○○○	●○○○	●○○○	●○○○

●●●● High ●●●○ Med-high ●●○○ Medium ●○○○ Low