The Pathways Alliance Vision

Pathways Alliance

Confidentiality and advisory

The attached materials include confidential information (including financial, commercial, scientific and/or technical information) that is proprietary to one or more of Canadian Natural Resources Limited, Cenovus Energy Inc., ConocoPhillips Canada Resources Corp., Imperial Oil Resources Limited, MEG Energy Corp., Suncor Energy Inc. and Pathways Alliance Inc. (the "Pathways Companies") that has been treated consistently in a confidential manner and is being provided subject to the terms and conditions of a non-disclosure agreement between the Pathways Companies and the Government of Canada, effective April 19, 2023. Disclosure of the information included in the attached materials may reasonably be expected to result in material financial loss or gain to, or could reasonably be expected to prejudice the competitive position of, at least one of the Pathways Companies, and/or could reasonably be expected to interfere with the contractual or other negotiations of at least one of the Pathways Companies.

Statements of future events or conditions included in the attached materials, including projections, targets, expectations, estimates, and business plans are forward-looking statements. Forward-looking statements can be identified by words such as achieve, aspiration, believe, anticipate, intend, propose, plan, goal, seek, project, predict, target, estimate, expect, forecast, vision, strategy, outlook, schedule, future, continue, likely, may, should, will and/or similar references to outcomes in future periods. Forward-looking statements in the attached materials include, but are not limited to, references to the viability, timing and impact of the net zero plan and the development of paths forward in support of a net-zero future and support for same from the Government of Alberta and the Government of Canada; the ability to enable net zero emissions from oil production and preserve economic contribution from the industry; the deployment of technologies to reduce GHG emissions; the ability to create jobs, accelerate development of the clean tech sector, provide benefits for other sectors and help maintain Canadians' quality of life; and making economic investments to ensure a successful transition to a net zero world and delivering long term value to shareholders. All net-zero references in the attached materials apply to emissions from oil sands operations (defined as scope 1 and scope 2 emissions).

Forward-looking statements are based on current expectations, estimates, projections and assumptions at the time the statements are made. Actual future results, including expectations and assumptions concerning: demand growth and energy source, supply and mix; amount and timing of emissions reductions; the adoption and impact of new facilities or technologies, including on reductions to GHG emissions; project plans, timing, costs, technical evaluations and capacities, and the ability to effectively execute on these plans and operate assets; that any required support for the pathways from the Government of Alberta and the Government of Canada will be provided; applicable laws and government policies, including climate change and restrictions in response to COVID-19; production rates, growth and mix; general market conditions; and capital and environmental expenditures, could differ materially depending on a number of factors. These factors include global, regional or local changes in supply and demand for oil, natural gas, and petroleum and petrochemical products and the resulting price, differential and margin impacts; political or regulatory events, including changes in law or government policy and actions in response to COVID-19; the receipt, in a timely manner, of regulatory and third-party approvals including for new technologies; lack of required support from the Government of Alberta and the Government of Canada; environmental risks inherent in oil and gas exploration and production activities; environmental regulation, including climate change and GHG regulation and changes to such regulation; availability and allocation of capital; availability and performance of third-party service providers; unanticipated technical or operational difficulties; project management and schedules and timely completion of projects; reservoir analysis and performance; unexpected technological developments; the results of research programs and new technologies, and ability to bring new technologies to commercial scale on a cost-competitive basis; operational hazards and risks; general economic conditions, including the occurrence and duration of economic recessions; and other factors referenced by the companies' in their most recent respective annual reports and management's discussion and analysis, as applicable. Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to the Pathways Companies. Actual results may differ materially from those expressed or implied by forward-looking statements and readers are cautioned not to place undue reliance on them.

The Pathways Alliance

- The **Pathways Alliance** is a collaboration between Canada's six largest oil sands producers, which operate facilities representing 95% of oil sands production. The companies are working together on responsible development, including achieving the goal of **net-zero carbon dioxide (CO_2) emissions from oil sands operations by 2050.**
- **Pathways Alliance** works with the Government of Canada and the Government of Alberta to help Canada meet its climate goals, including its Paris Agreement commitments and 2050 net-zero aspirations.
- Our plan includes reducing current CO_2 emissions from oil sands operations by about **22 million tonnes of CO_2 per year by 2030**, and moving towards achieving net-zero CO_2 emissions from operations by 2050.
- Canada's Oil Sands Innovation Alliance **(COSIA), is the innovation arm of Pathways Alliance**. It brings together innovators in industry, government, science and academia to make Canadian energy part of a sustainable environment.

Canadian Natural

cenovus ENERGY

ConocoPhillips Canada

Imperial

MEG Energy

SUNCOR

Pathways Alliance

What are oil sands?

Natural bitumen deposits in Alberta

Alberta's oil sands are the 4th largest proven crude oil reserves in the world, next to Venezuela, Saudi Arabia and Iran

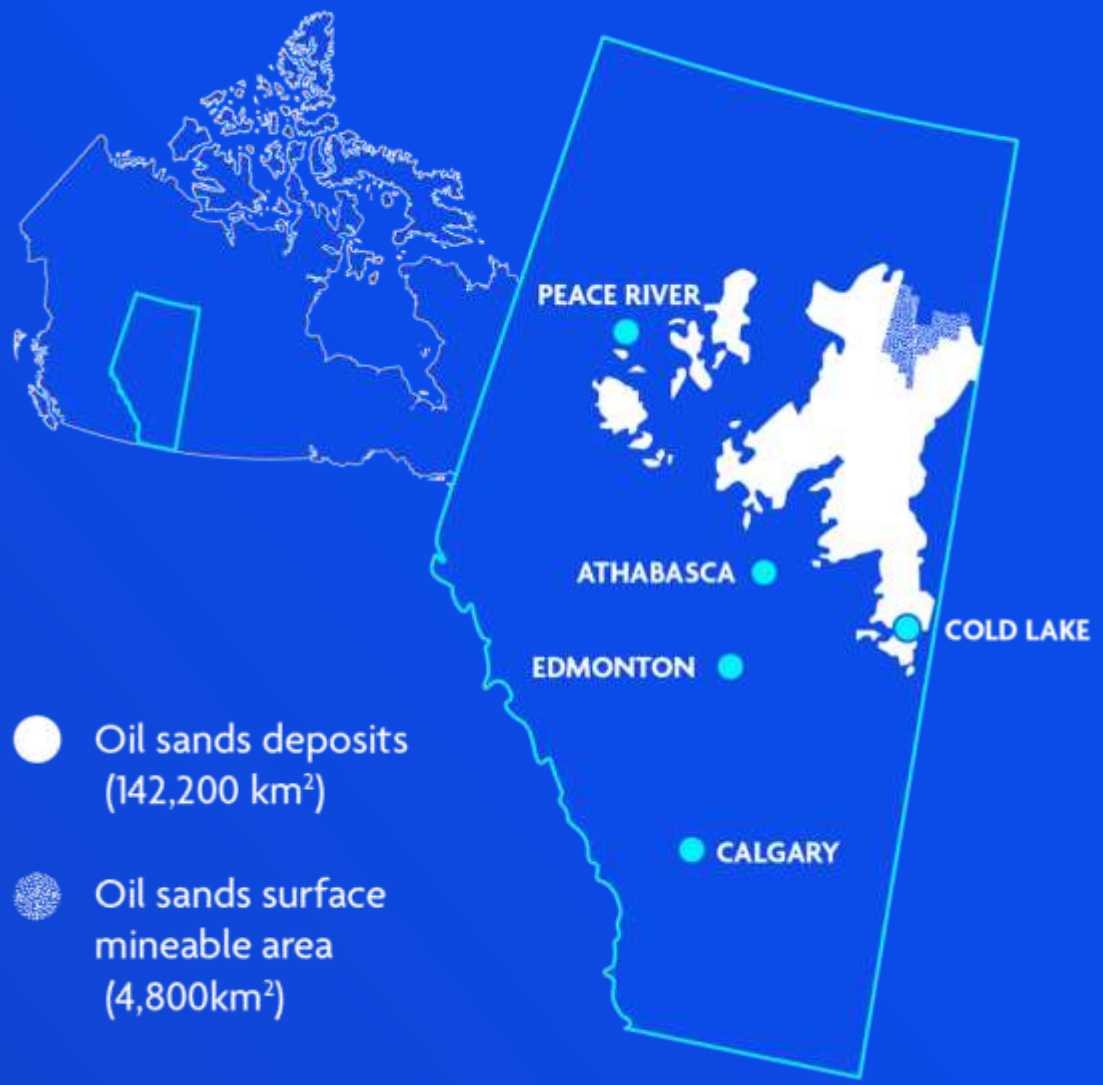
Oil sands is a mixture primarily consisting of hydrocarbon (bitumen), sand, clay and water. Because of its unique characteristics, it can't be extracted using traditional drilling techniques.

Industry employs two different techniques of extraction based on the geology of the oil sands deposit.

- Surface mining: Using heavy equipment to dig and transport the material to an extraction plant where the oil is removed from the sand.
- In-situ extraction: Use of steam assisted-gravity drainage involving wells to inject steam and mobilize the oil to be pumped to the surface. This is how the 80 per cent of the resource will be produced.

Crude bitumen production (mined and in-situ) totaled about 3.3 million barrels per day in 2022

Source: Government of Alberta



Pathways Alliance

A phased approach

A phased approach

Phase 1

2021-2030

- Enable a carbon capture network, CO_2 transportation line and carbon storage hub near in the Cold Lake region.
- Utilize CO_2 capture at multiple oil sands facilities.
- Deploy innovative in-situ oil sands recovery technologies (e.g. use of solvents such as propane to reduce the amount of steam needed in production).
- Make significant R&D investment to lower the costs of emissions-reduction technologies.
- Continue deployment of energy efficiency and cogeneration projects.
- Advance R&D on potential use of hydrogen and/or small modular reactors (SMRs) for oil sands power generation.

A phased approach

Phase 2

2031-2040

- Expand carbon capture within infrastructure corridor and progress next-generation carbon capture technologies toward commercialization.
- Expand application of low-emissions-intensity in-situ oil sands recovery/process improvements.
- Commercialize potential use of hydrogen and/or SMRs for oil sands power generation.
- Continue exploring potential non-combustion uses of bitumen.

Pathways Alliance

A phased approach

Phase 3

2041-2050

- Further expand carbon capture on remaining accessible streams.
- Continue process improvements and innovations including fuel switching and electrification projects.
- Advance emerging technologies and expand hydrogen and/or SMRs capacity if successful.
- Use carbon removal technologies such as Direct Air Capture (DAC).

Pathways Alliance

The Pathways foundational project

Benefits of the foundational project

- Together and with governments, we expect to invest $16.5 billion in a a proposed CCS project by 2030.
- Enables technology development to lower the cost of carbon capture projects.
- Accelerates opportunities to deploy innovative capture solutions and positions Canada to export this technology and expertise.
- The network will also accommodate other industries in the region interested in capturing and storing CO_2 emissions.
- Expected to be a key economic driver with construction supporting key economic activity between now and 2030*
  - $16.5B GDP in Canada ($13.3B in Alberta)
  - $10.3B in labour income in Alberta
  - 105,640 person years of employment (between 15,000 and 35,000 annually) in Alberta
- The CCS transportation network would be able to be expanded in phases to gather captured CO_2 from 20+ oil sands facilities.
  - Phase 1: Volumes of 10–12 million tonnes per year from multiple existing facilities.

Pathways Alliance

*Source: “Economic impacts of the Pathways Alliance Carbon Capture and Storage Project.” Nichols Applied Management Inc. April 2023.

Proposed transportation line

Pathways Alliance

[1] CCS involves using safe and proven technologies to capture CO_2 from fuel combustion or industrial processes, transport it via pipeline or other methods and use the CO_2 to create valuable products or permanently store it deep underground in geological formations.

Foundational project work to date

- Engagement and formal consultation with 25 Indigenous groups along the proposed transportation and storage network corridor.
- Selected by the Government of Alberta to continue exploratory work on the CCS hub to safely and permanently store CO_2 captured from oil sands operations and other interested industries.
- Formally working to acquire a carbon sequestration agreement from Alberta.
- Conducting engineering studies for the Phase 1 CO_2 capture facilities.
- 12 feasibility studies completed on oil sands sites with engineering work advancing.
- Engineering work continues on the 400-kilometre pipeline that will carry captured CO_2 to the storage hub.
- Ongoing discussions about potential economic opportunities with Indigenous communities
- Second season of environmental field programs conducted to support a regulatory application in late 2023.

Pathways Alliance

For illustration purposes only. Not a detailed representation of the Pathways CO_2 storage hub boundaries.

Working with Governments

Government of Canada

- The Investment Tax Credit announced in the Government of Canada's fall 2022 budget is a positive and welcome support for carbon capture and storage.

- We are in discussions with governments on different fiscal and policy tools for large-scale projects, such the proposed Pathways project. This will help de-risk the investments needed to build a competitive clean economy and help meet Canada's climate goals.

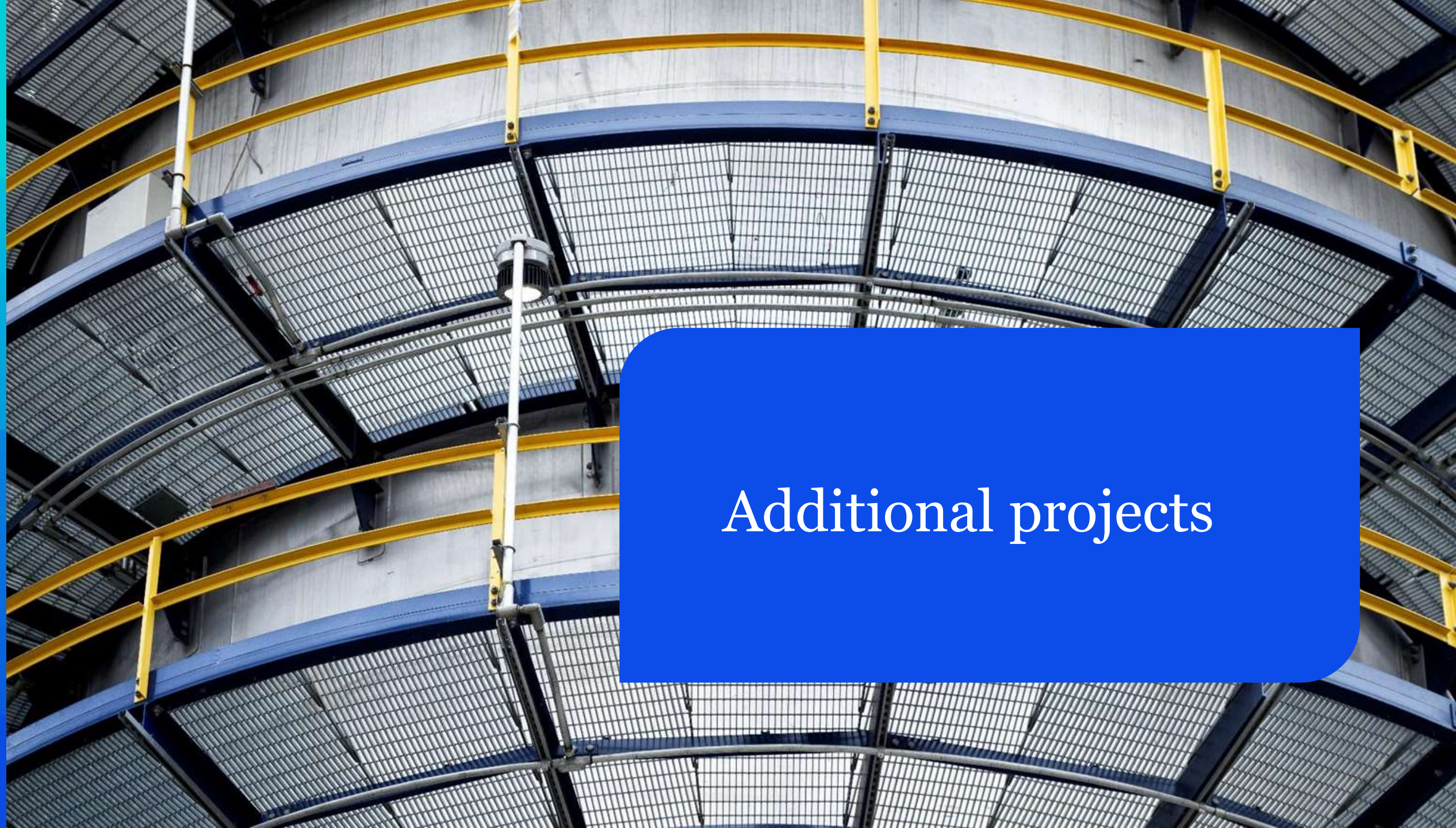
Province of Alberta

- Actively discussing other emissions-reduction programs with the Government of Alberta.

- Alberta has shown leadership on carbon pricing as the first province to implement output-based pricing in 2007.

- Alberta has cap on oil sands emissions, which aligns with the federal commitment to cap all oil and gas emissions.

- Alberta directs industry Technology Innovation and Emissions Reduction (TIER) Regulation payments to potential emissions-reduction technologies.



Additional projects

Additional major projects

- With anticipated co-funding with governments, Pathways Alliance plans to spend an additional $7.6 billion on other significant emissions reduction projects by 2030.
- These projects are also key to our goal of a 22-million-tonne reduction by the end of the decade.
- This planned funding would be for major decarbonization projects advanced by member companies such as:
  - Wider use of steam-reduction technologies in production
  - Increased energy efficiency
  - Additional cogeneration and electrification projects
- Pathways members are also investing in R&D to enable future phases of the path to net-zero emissions from operations to be achieved.

Pathways Alliance

Additional technologies

Technical working groups are studying and advancing more than 80 technologies that could potentially be deployed to help reduce emissions in later phases.

Examples include:

Electrification

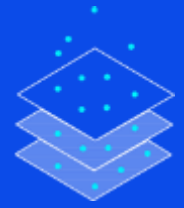
An alternative, efficient fuel source for mine haul trucks, to reduce their reliance on diesel.

Hydrogen

An alternative fuel source that could reduce the need for natural gas in industrial processes.

Small modular reactors

A safe, scalable source of zero-emissions energy for heat, steam, and electricity applications.

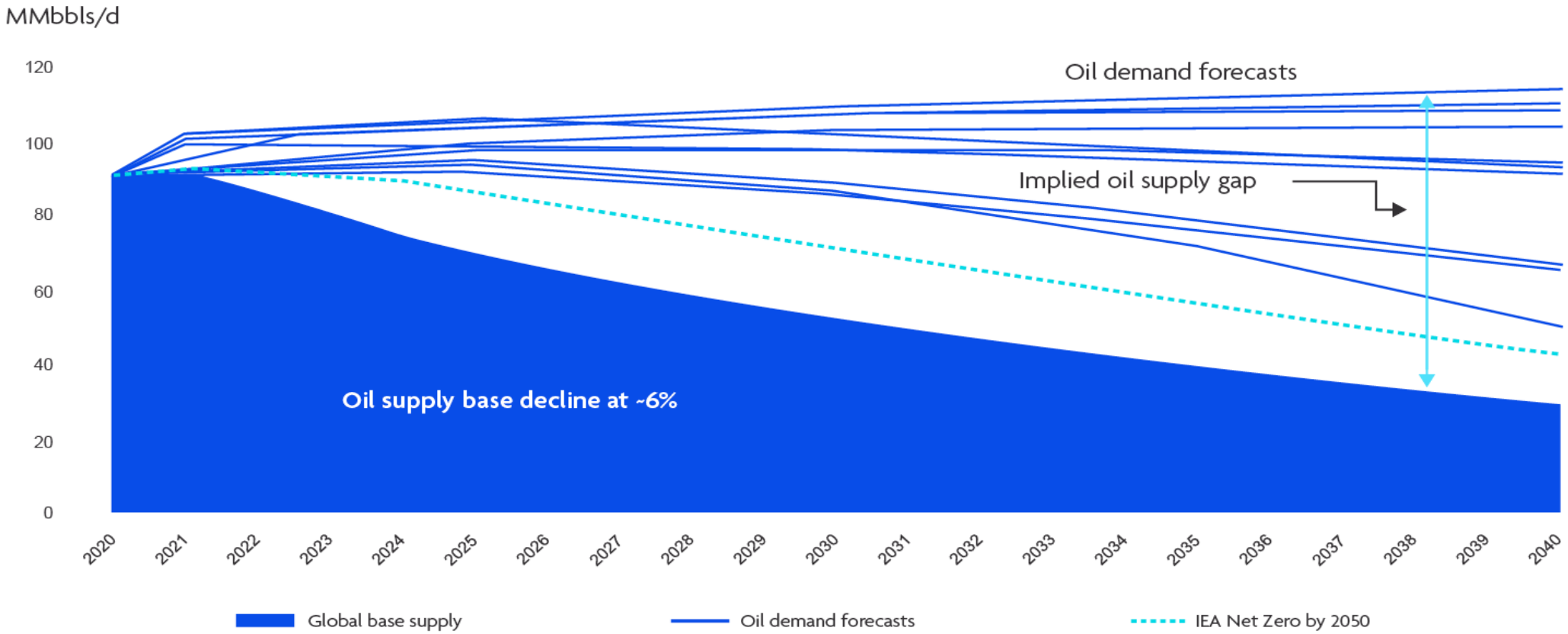


Direct air capture

A new technology that can remove CO_2 directly from the air, transport it and store it permanently underground.

Canada’s oil sands

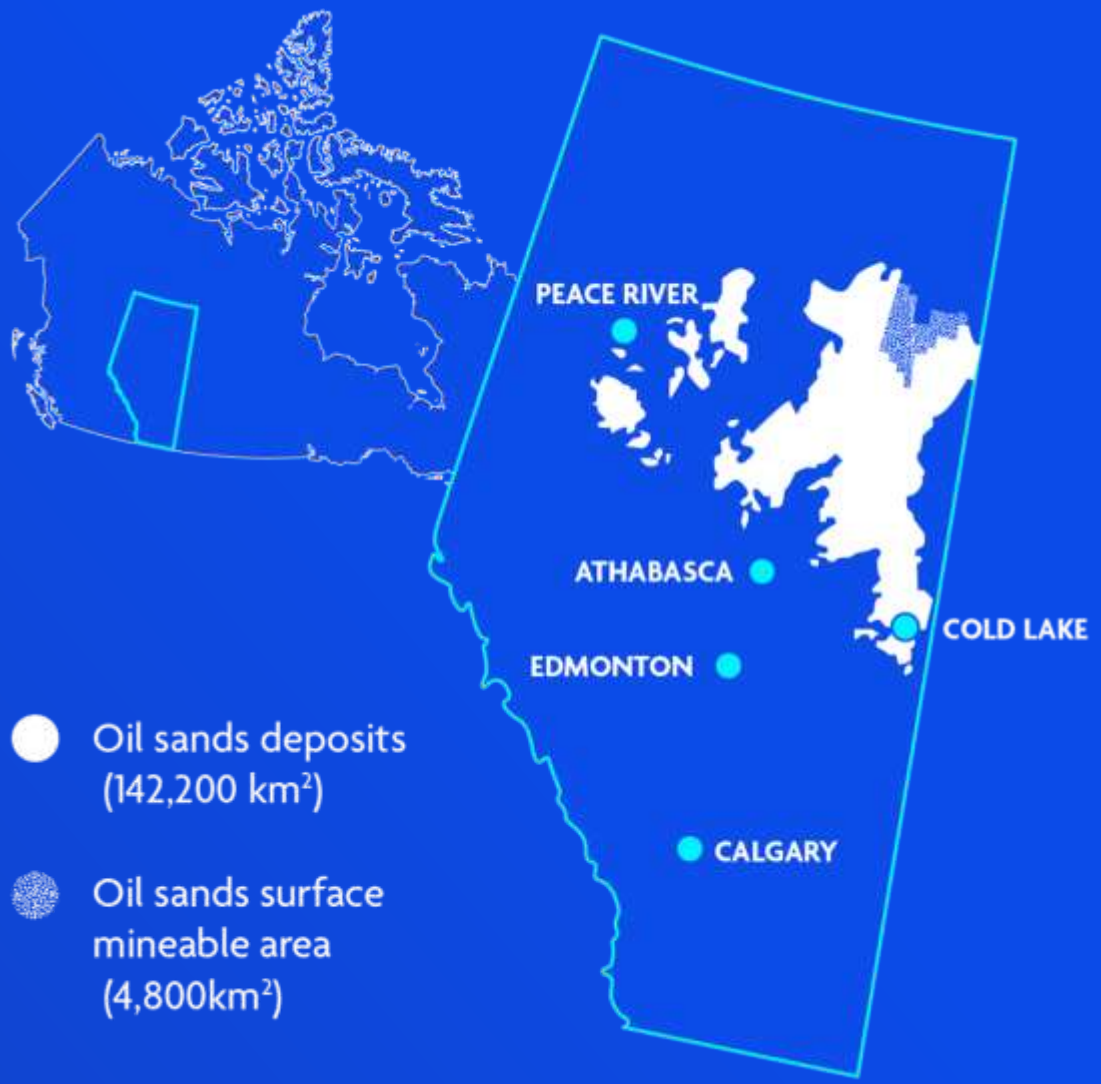
The world will continue to require oil



Pathways Alliance

Canada's oil sands are produced responsibly

- 80% of resource recoverable using in-situ methods[1], including steam-assisted gravity drainage (SAGD).
- Working to reduce emissions and water use and accelerate land reclamation.
- Investing in potentially game-changing technologies.
- Operating under stringent environmental and governance regulations.
- Through new technologies and innovations, emissions intensities have dropped 22% (average per barrel) between 2011 and 2019[2].



Pathways Alliance

Sources: 1. Government of Alberta stage one
2. Government of Alberta 2021-24 Fiscal Plan (Alberta Budget 2021) - February 25, 2021

Canadian oil should be preferred barrel globally

Pathways Alliance

Sources: ESG Scores – aggregation using an equal weighting (1/3) for each of Yale Environmental Performance Index (2022 EPI Results), Social Progress Index (2022) and World Bank Governance Index (2021, most recent available year). Reserves – EIA, where U.S. reserves are 2020 due to data availability; all other reserves are 2021.

Canada is the preferred global supplier of energy

A 2022 global study about energy security, respondents ranked eight oil-producing nations.

- Canada was ranked in the top three preferred suppliers of oil 55% of the time.
- Canada had the most top three selections of any supplier in three of the five regions surveyed.

Source: IPSOS Context Energy Study (2022): https://www.ipsos.com/en-ca/Canada-preferred-supplier-for-countries-that-import-oil

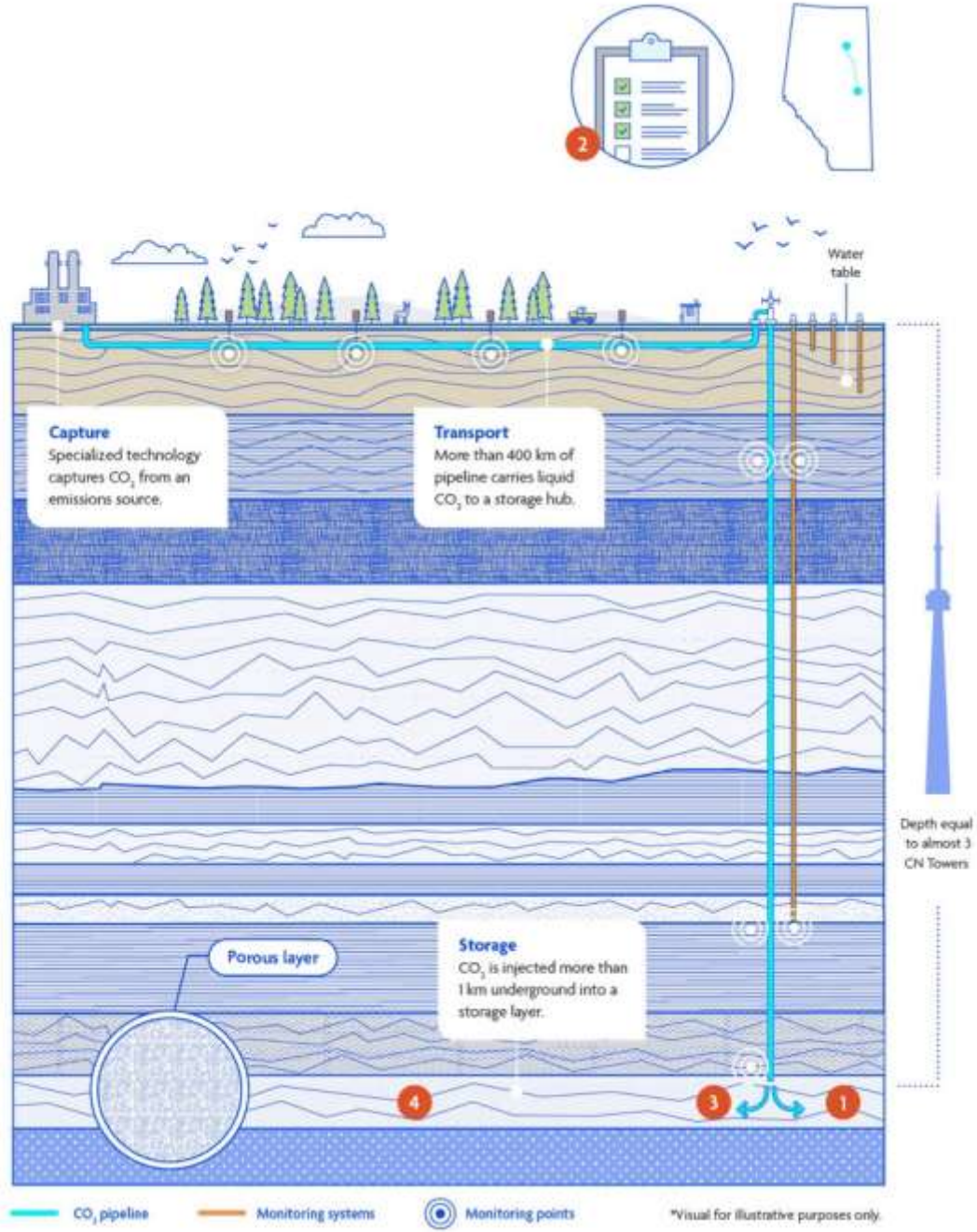
Safety

A multi-layered safety system

Layer 1: Prevention

Risk management begins at the design stage and continues through construction and operations. Engineers and other experts must build multiple safety layers into these plans. That means every potential problem has a solution, as well as additional backup solutions.

1. **Suitable geological formation**
2. **Monitoring, Measurement and Verification (MMV) plans**
3. **Safe injection pressure**
4. **Permanent CO_2 storage**



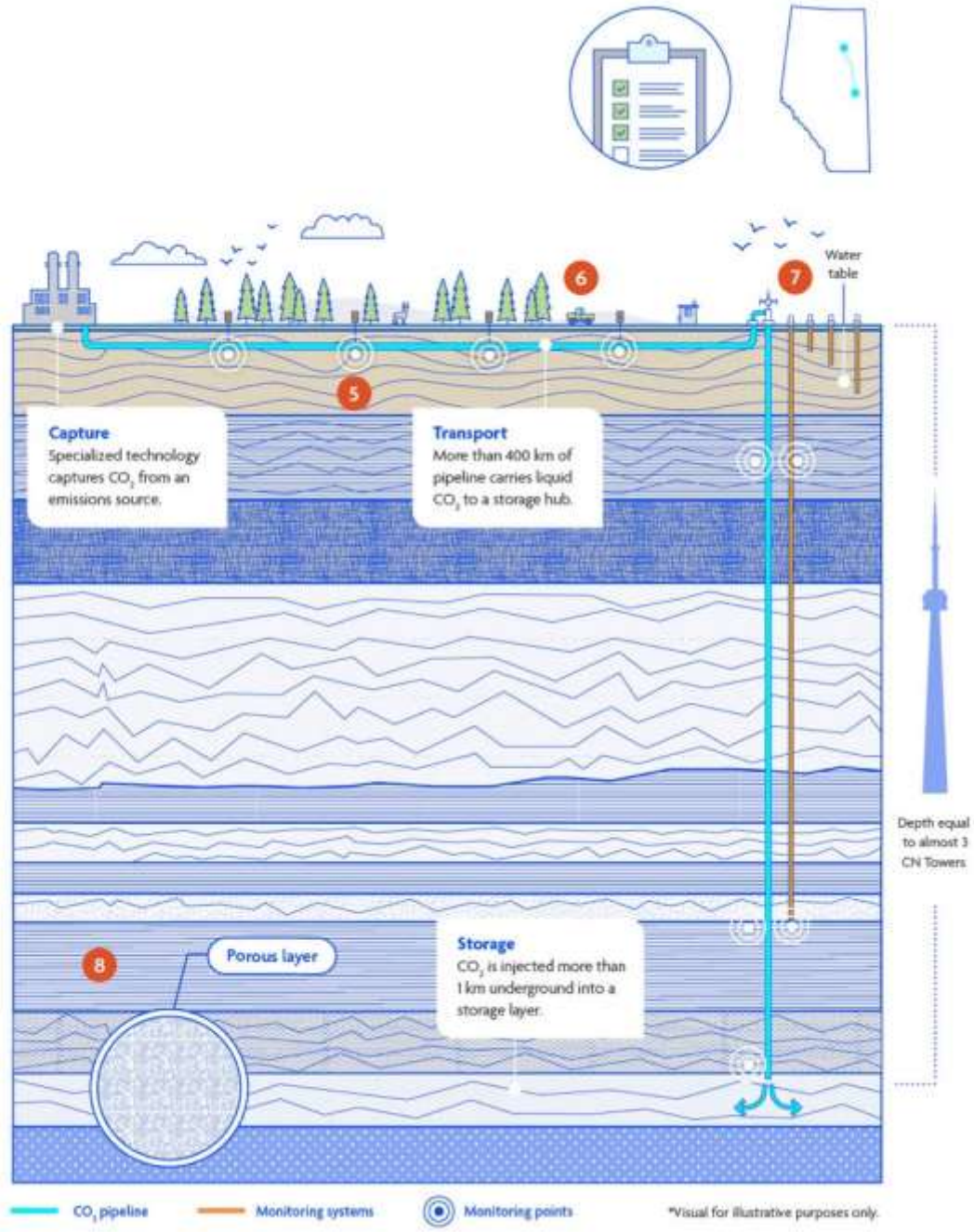
Pathways Alliance

A multi-layered safety system

Layer 2: Detection

The second layer in the safety system is careful and constant monitoring. This technology is placed along the underground transportation pipeline, at the CO2 injection site and down into the storage hub. Any unusual activity triggers an immediate response.

5. **Autonomous leak detection**
6. **Manual leak detection**
7. **Managing pressure in the hub**
8. **Seismic imaging**



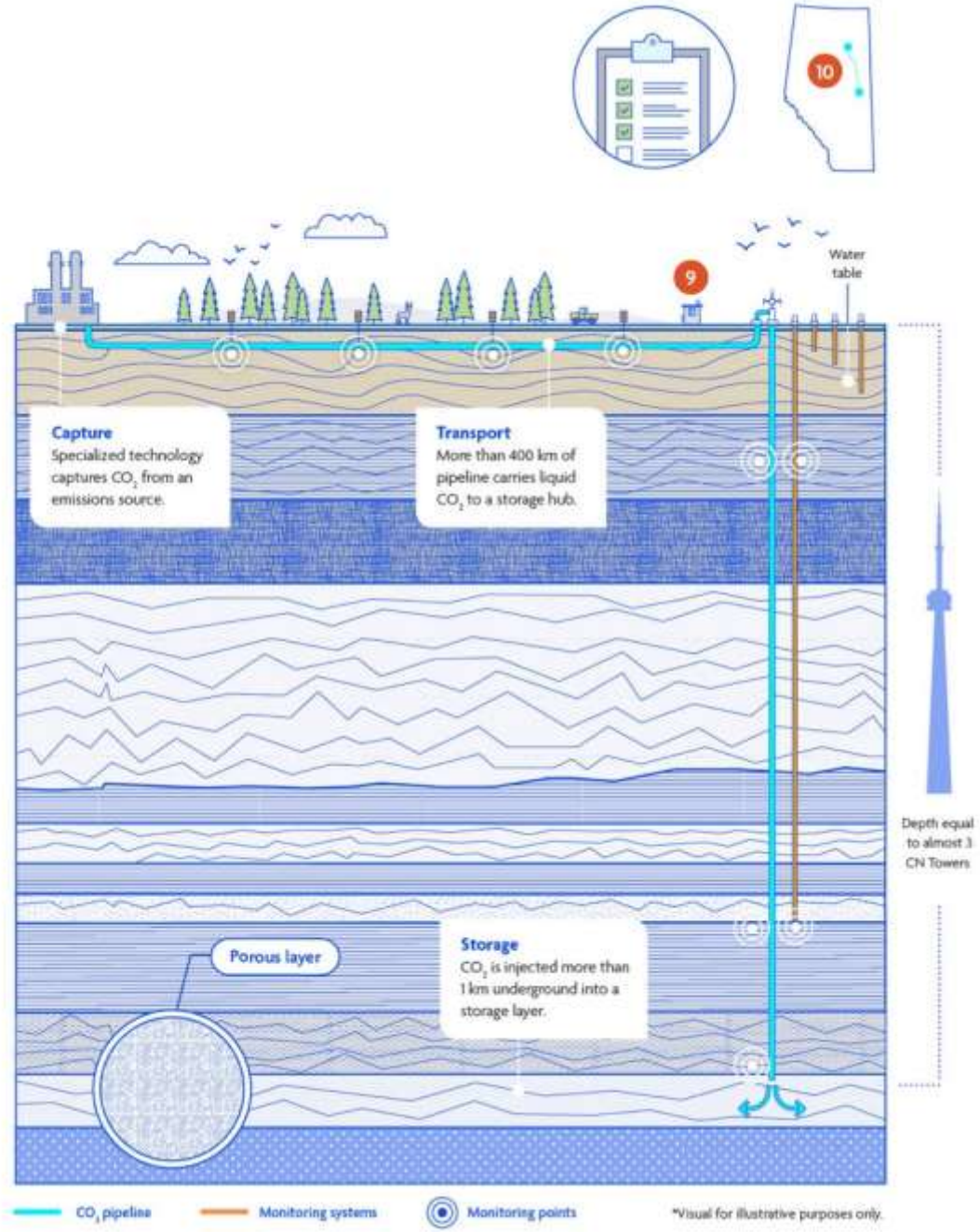
Pathways Alliance

A multi-layered safety system

Layer 3: Response

The final layer of the safety system is response planning. If an incident occurs, detailed response plans set out actions to mitigate its effects.

9. **Emergency shutdown procedures**
10. **Community emergency response**



Pathways Alliance


COSIA

COSIA

Canada’s Oil Sands Innovation Alliance (COSIA), is the innovation arm of Pathways Alliance.

For more than 10 years, COSIA has brought together innovative thinkers in industry, government, science and academia to make Canadian energy part of a sustainable environment.

It’s a collaborative, open-source model for innovation that has accelerated the pace of improvement in environmental performance.

Since its creation, COSIA has invested $1.8 billion in tech development, and contributed more than 1,140 new clean technology projects.

cosia with Pathways Alliance

Pathways Alliance

COSIA

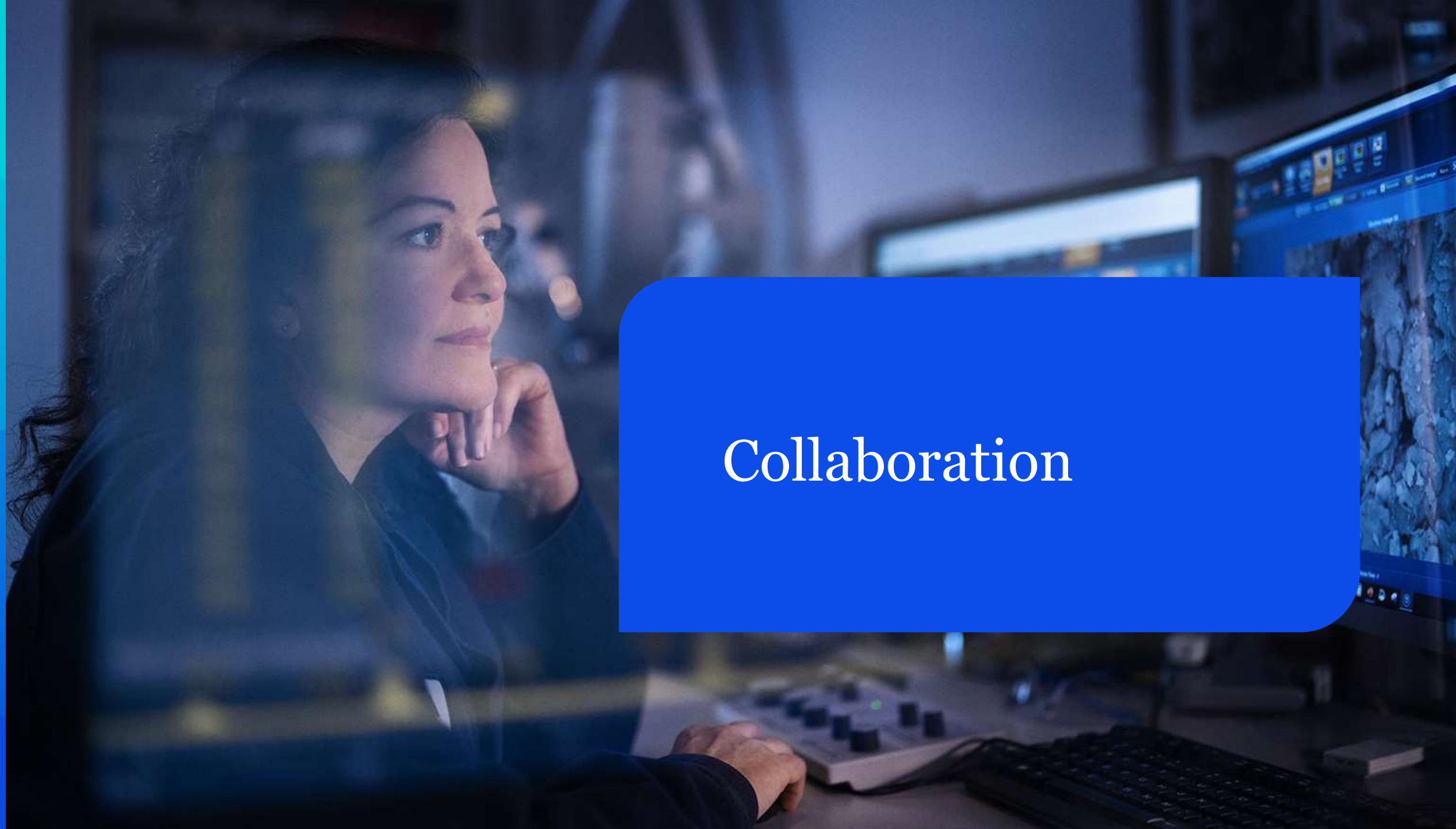
As a division of Pathways Alliance, COSIA is responsible for significant ongoing innovation work in the following environmental priority areas.

- **Greenhouse gases**
- **Land**
- **Tailings**
- **Water**

COSIA is part of the Oil Sands Monitoring (OSM) program, which monitors and reports on the cumulative effects of oil sands development in the region on air, land and water.

It is also the cornerstone of our ambitious plan to reduce CO_2 emissions from oil sands production by 22 million tonnes annually by 2030, and achieve net-zero emissions by 2050—a key step toward meeting Canada's climate commitments.

Pathways Alliance



Collaboration

We will continue working in collaboration with Canada's federal and provincial governments on an effective fiscal and policy framework. Together, we'll work to meet the world's demands for lower CO_2 emissions, as well as the oil necessary to the energy mix.

Thank you

PathwaysAlliance.ca

Canadian Natural
cenovus ENERGY
ConocoPhillips Canada
Imperial
MEG Energy
Suncor