



Oil Sands Pathways to Net Zero

Stakeholder Engagement Deck

March 2022



The Pathways goal

- The **Pathways goal**, working collectively with the Federal and Alberta governments, is to achieve **net zero greenhouse gas (GHG) emissions from oil sands operations by 2050** to help Canada meet its climate goals, including its Paris Agreement commitments and 2050 net zero aspirations.
- The goal is to reduce current total oil sands GHG emissions of **68 Mt of CO₂e/yr¹**, in three phases by 2050.
- The **Oil Sands Pathways to Net Zero** initiative is an alliance between Canada's six largest oil sands producers, accounting for 90% of oil sands production.

¹ Current oil sands emissions estimate based on Government of Alberta emissions inventory (2018). Reconciliation of estimated emissions from different sources available in Supplementals.



Collaboration

Working together, we're confident this unprecedented challenge can and will be solved by Canadian ingenuity and leadership

- The launch of the Pathways initiative follows welcome announcements from the Government of Canada and the Government of Alberta of important support programs for emissions-reduction projects and infrastructure.
- The Pathways initiative is ambitious and will require ongoing collaboration between industry and government, including making significant investments together to advance the research and development of new and emerging technologies.
- The companies involved look forward to continuing to work with the Federal and Alberta governments, and to engaging with local Indigenous communities in northern Alberta, to make this major emissions-reduction vision a reality.
- Natural resources benefit all Canadians, we must work together to preserve the value of this resource while meeting our emissions reductions targets.



Canada: a global ESG leader

ESG relative ratings among countries with proven reserves >3Bbbl
 2019, size of bubble = Billion bbl proved oil reserves

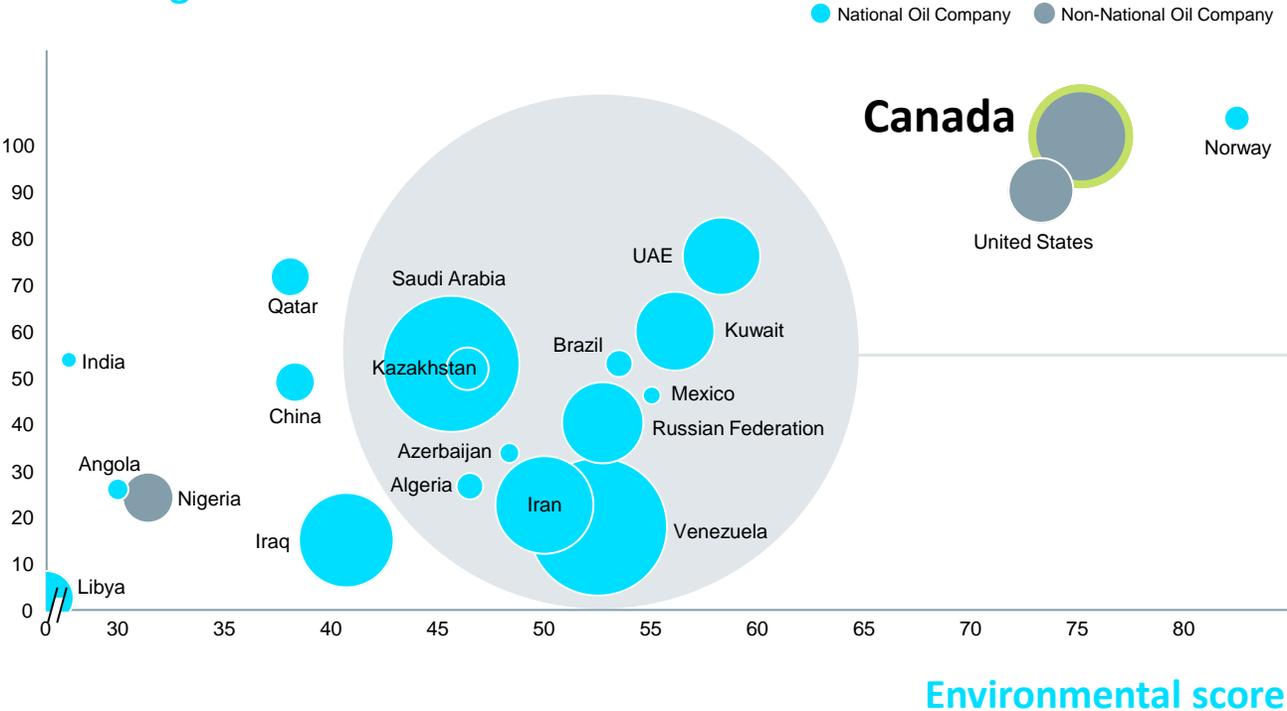
Among large oil-producing countries¹, Canada ranks:



2nd in social and governance
2nd in environmental

The most likely countries to backfill Canadian oil production would be the large reserves of Russia, Saudi Arabia, Venezuela, and Iran with the net impact being a worsening global ESG balance and forgoing Canada's potential to set an enduring benchmark for progressive practices (for oil and other natural resource industries)

Social and governance score

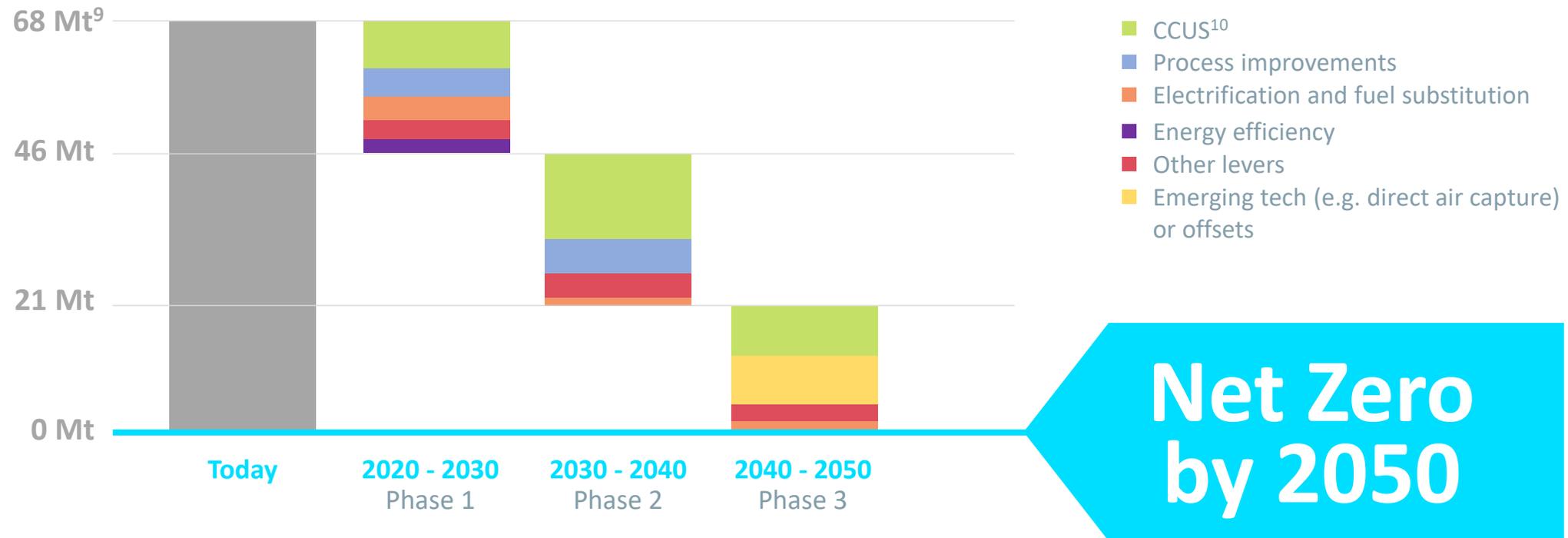


1. United Kingdom not included due to oil reserves less than 3 billion barrels
 Source: EIA, Yale Environmental Performance Index, World Governance Indicators, Social Progress; 2019 BP Statistical Review of World Energy

The Pathways to net zero

No single solution gets us to net zero – multiple parallel pathways are needed.

Proposed emissions reductions by phase, Mt CO₂e/yr⁸



**Net Zero
by 2050**

⁸ Magnitude of reductions in each decade can be adjusted based on chosen investment level.

⁹ Alberta GHG emissions for 2018, plus 1Mt of CO₂e from incremental upgrading excluded under the 100 Mt cap methodology

¹⁰ CCUS in Phase 1. In Phase 2 or 3, could include CCUS, nuclear and/or hydrogen



A phased approach

Phase 1 (2021 – 2030) 22 Mt reduction

- **Enabling infrastructure corridor - CO₂ trunkline and CO₂ sequestration hub in Cold Lake - (~\$1.5B)**
- **CO₂ capture on oil sands facilities**
- **Deployment of advanced in situ oil sands recovery technologies (process improvements)**
- **Significant R&D investment to lower costs of GHG reduction technologies**
- **Continued deployment of energy efficiency & cogeneration projects**

Phase 2 (2031 – 2040) 25 Mt reduction

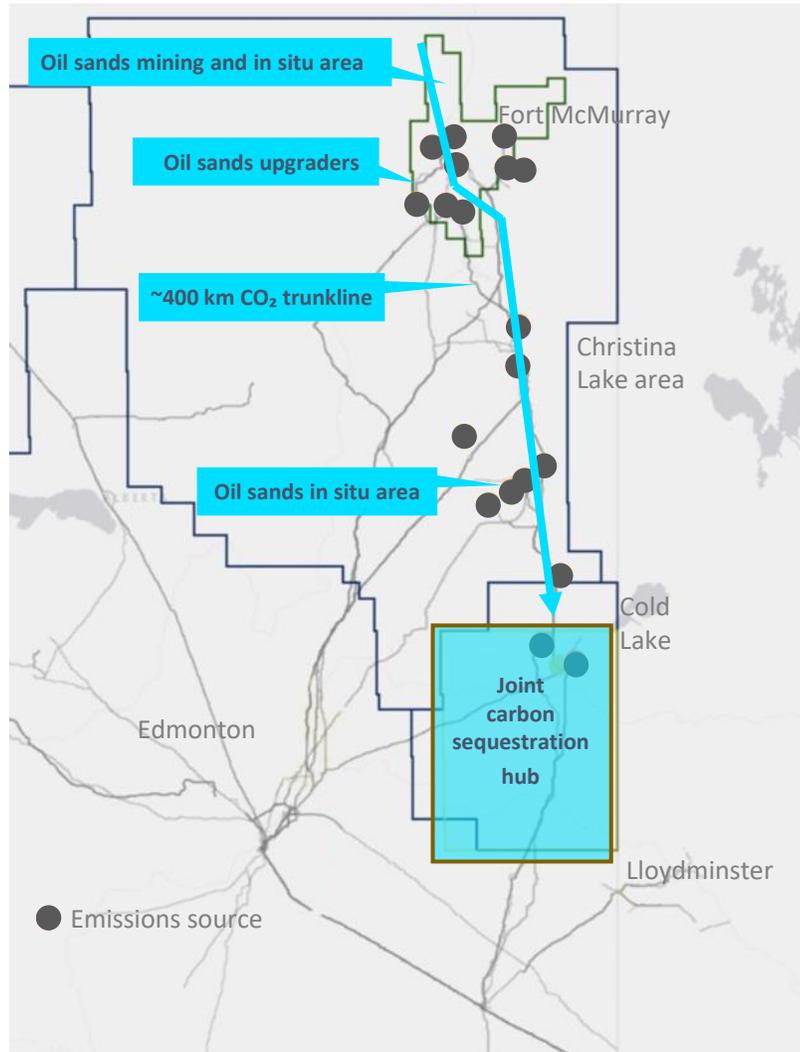
- Expand CO₂ capture within infrastructure corridor
- Expand application of low GHG intensity in situ oil sands recovery/process improvements
- Advance research and development on potential use of hydrogen or small modular nuclear reactors for oil sands power generation

Phase 3 (2041 – 2050) 21 Mt reduction

- CO₂ capture on remaining accessible streams
- Continued process improvements, energy efficiency, fuel switching and electrification projects
- Emerging technologies, including direct air capture
- Expansion of hydrogen or small modular nuclear capacity if successful



The Pathways foundational project



- The Pathways vision is anchored by a **major carbon capture, utilization and storage (CCUS)³ trunkline** connecting oil sands facilities in the Fort McMurray, Christina Lake and Cold Lake regions of Alberta to a carbon sequestration hub near Cold Lake.
- The CCUS trunkline would have **phased expansion capability** to gather captured CO₂ from 20+ oil sands facilities and transport it to the Cold Lake sequestration hub for underground storage.
 - Phase 1 - volumes of 8.5 Mt/yr from 8 facilities
 - Phases 2/3 - expansion capability for a total of up to 40 Mt/yr
- The trunkline and sequestration site would also be available to other industries interested in capturing and sequestering CO₂.

³ CCUS involves using safe and proven technologies to capture CO₂ from fuel combustion or industrial processes, transport it via pipeline or other methods and use the CO₂ to create valuable products or permanently store it deep underground in geological formations.



Leveraging industry technology collaboration



Applying technology and innovation to make the oil and gas industry more efficient and competitive, decreasing GHG emissions from source to end use, with the potential for global export.

cleanresourceinnovation.com



Focused on accelerating the pace of environmental performance improvement in Canada's oil sands through collaborative action and innovation. This includes cooperating to reduce GHG emissions.

cosia.ca



Facilitates R&D and advanced technology development, transforming challenges into opportunities. This leads to enhanced environmental stewardship and improved operational efficiencies.

ptac.org



Advisory

Cautionary Statement: Statements of future events or conditions in this presentation, 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 this presentation include, but are not limited to, references to the viability, timing and impact of the Oil Sands Pathways to Net Zero initiative collaboration and the development of pathways in support of a net-zero future; support for the pathways 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 continued role of fossil fuels as part of a diversified energy mix; and the deployment of technologies to reduce GHG emissions, such as CCUS, process improvements, energy efficiency, fuel switching, electrification, infrastructure corridors and new emissions-reducing technologies. All net-zero references in this announcement 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 companies. Actual results may differ materially from those expressed or implied by its forward-looking statements and readers are cautioned not to place undue reliance on them. The companies undertake no obligation to update any forward-looking statements contained in this presentation, except as required by applicable law.

