

Facing Fossil Fuels' Future:

Challenges and Opportunities for Workers in
Canada's Energy and Labour Transitions



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EXECUTIVE SUMMARY

Canada has a climate plan but it does not lay out a plan for the future of oil and gas extraction that aligns with the goal to limit global warming to 1.5°C, leaving workers and communities with an uncertain future. The Canada Energy Regulator warns that the future of oil sands extraction, which makes up 62 percent of Canada's oil output, is uncertain due to the projected drop in the future oil demand as the global pace of decarbonization increases.¹

Meanwhile, a study backed by the UN Environment Programme further states that global oil and gas output would have to decline by over one third by 2030 and over one half by 2040 to achieve the goal of limiting warming to 1.5°C.² In early 2021, the International Energy Agency, one of the world's foremost authorities on global energy forecasting, published a landmark report, *Net Zero by 2050*, in which the agency declared that oil and gas output should be constrained to existing operations in order to meet the 1.5°C temperature goals articulated in the Paris Agreement. Constraining Canadian oil and gas output to existing fields approximates a similar rate of phaseout to that proposed by the UNEP-backed report.

The Canadian oil and gas industry, including upstream activities, pipe-lines, and services, provides approximately 405,000 jobs - 167,000 direct jobs³ and 238,000 jobs across supply chains.^{4,5} In response to oil price crises, industry's solution to protect profits has historically been to slash jobs while maintaining output. As a result the number of jobs per barrel of output has already fallen by 20% since 2000.⁶

While oil and gas jobs have significantly better compensation and training provisions than most sectors in the economy, these jobs are also somewhat more precarious and have higher health and safety risks.⁷ Union density is higher but is also falling at a more rapid rate than in other industries.⁸ Finally, automation is

projected to threaten between 33%-53% of Canadian oil and gas jobs by 2040.

Increased automation alongside a managed phaseout of oil and gas ex-traction would **affect approximately half of Canadian**

oil and gas jobs by 2030 with a slower reduction thereafter. In the next decade, 56,000 alternative jobs need to be created for current oil and gas workers across Canada. Creating tens of thousands of new jobs is no small task, particularly being mindful to respect that each job is held by a real person whose livelihood, family and community relationships are intimately tied to the work they are able to do. Provincial and federal investment and supportive policy are therefore required urgently - today, not years down the line - to create new, high quality jobs in the future clean economy this decade and beyond.

Nearly 3 in 4 oil and gas workers affected by the transition have a direct skills match to alternative clean industries or IT occupations elsewhere. Another 7% require minor to moderate retraining to

refocus their careers. Jobs hardest to transfer to alternative industries include reservoir engineers, hydrologists, and dispatchers. Based on skills matching, geothermal energy could redeploy a significant majority of the affected workforce with no, minimal or moderate retraining but this sector needs significant public investment to create jobs in the time frame in which they are needed.



+56,000

**In the next decade,
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RECOMMENDATIONS

By 2030, Canada may only have half as many oil and gas jobs as it does today. Governments urgently need to present a clear pathway for the future of Canada's oil and gas sector and its workers, and they must use all tools available to boost new, clean, good job creation.

1

Federal and provincial governments must give employers and workers certainty on likely future constraints on production, by planning for a 1.5°C aligned oil and gas output pathway that addresses Canada's fair share contribution to global climate action. Workers need governments to be honest about the future of work under a globally equitable 1.5-degree aligned framework. Meeting this temperature goal, and doing so at an accelerated pace relative to other countries, as is Canada's fair share obligation, requires constraints on fossil fuel production which will limit the number of jobs in this sector in the future. But at the same time, new opportunities are emerging for clean industries that will provide new jobs and can be a path to mutual worker and employer success.

2

Recognizing the expertise of workers, through consultation with workers and communities, Canada must create Just Transition policy / legislation that holds the government accountable to developing transition strategies. Similar policy / legislation should be adopted by all provinces with an emphasis on the oil and gas producing provinces of British Columbia, Alberta, Saskatchewan, and Newfoundland and Labrador.

3

Adopt a principle of inclusion for fossil fuel workers and community representatives in planning for the energy and labour transitions, implement the recommendations of the Taskforce for the Just Transition of Coal Workers and Communities, and broaden them to include all fossil fuel types.

4

Use COVID-19 recovery packages and the Canada Infrastructure Bank to **create at least 56,000 new jobs in the next five years** in compatible industries, including industrial construction and maintenance, geothermal, wind and solar energy, energy efficiency, well decommissioning and chemicals.

5

Tie public investments to employers meeting conditions on job quality, including pay, access to training, job security, union access and representation through mandatory joint committees.

6

Public support for decommissioning and geothermal sectors should be **designed to keep existing oil and gas workforces in work** for existing employers without losses in pay, conditions, or collective bargaining.

7

As part of government efforts to stimulate new, clean jobs, **governments must improve the rigour, compliance, administration and implementation of fossil fuel reclamation and remediation funds.** In particular, better enforcement of industry's compliance with paying into these funds is required, as is the application of these funds to creating jobs for projects that actually remediate and restore ecosystems.



Foreword

Canada has a long history of riding the waves of natural resource economy booms, and failing to plan for the eventual busts that so often follow. In the wake of resource economy downturns, the country as a whole, and in particular local communities, wrestle with the economic and societal dislocation that results.

In recent decades, the forestry industry in BC and Ontario, commercial saltwater fishing in BC and the Atlantic Provinces and freshwater fisheries in Ontario, and asbestos in Quebec provide just a few examples of such once-thriving resource sectors that have faltered or failed outright. A recent report by economist Jim Stanford, *Employment Transitions and the Phase-Out of Fossil Fuels*, details past employment transitions in Canadian history that result from resource economy collapses, across many sectors.⁹

All too often, Canadian governments have failed to heed scientists' and policymakers' warnings when concerning trendlines have emerged. Markets have been left to dictate industry fortunes, while affected communities are left to the often impossible task of attending to the well-being and fate of workers left stranded. Government mismanagement that ignored the advice of scientists has also contributed to past resource collapses, as in the case of the 1992 collapse of the North Atlantic cod fishery. In this case, the federal scientists warned in 1989 that without 50% cuts to fishing quotas, the North Atlantic cod stocks would collapse, but quotas remained perilously high, to the ultimate detriment of the fishery.¹⁰ Similar failures have marred protection of old-growth

forests, while health concerns catalyzed declining demand for asbestos. In each of these examples, Canada did not effectively read the signs and support workers in advance of the collapse of these industries, leaving workers, communities, and governments scrambling.

This time we can do things differently. Science indicates that, in order to avoid catastrophic climate disasters, we must keep global temperature change below 2°C and as close to 1.5°C as possible. 196 countries have agreed to this by signing the Paris Agreement in 2015. In 2018, the IPCC's Special Report on Global Warming of 1.5°C¹¹ demonstrated that global CO₂ emissions must be halved by 2030 and reduced to (net) zero by 2050, becoming net negative thereafter, in order to attain the Paris Agreement's 1.5°C temperature goal, with no overshoot. Since then, Canada, and many more countries have pledged to hit net-zero emissions by 2050. Failure to achieve these goals isn't an option as, put bluntly, failure spells our collective demise.

Reducing GHG emissions to zero by 2050 means that the demand for, and production of, oil and gas will be effectively nil. While proponents of emissions offsets and carbon removal schemes argue that fossil fuel production could theoretically continue with reliance on these technologies, reducing emissions from the production of oil and gas is a poor attempt to justify sustained export of the product that causes climate change. Furthermore, the reality is that such technologies are not proven at scale, not ready for near-term deployment and will be exceptionally costly to implement. Rather than a



A smarter and more thoughtful economic strategy for Canada's fossil fuel workers is to work with them to build a plan to support their contributions and smooth integration into an economy built on clean, non-emitting industries that are aligned with a 1.5°C economic future.

lifeline for an industrial sector that will need to align to net zero by 2050 and net-negative thereafter, offsets and carbon removal technologies are more likely to be a costly diversion in prolonging a small subset of the sector at the expense of other forward-thinking clean energy investments. Given these circumstances, it would be unfair to communities and workers to build an economic plan based on promises of a bustling future fossil fuel sector. A smarter and more thoughtful economic strategy for Canada's fossil fuel workers is to work with them to build a plan to support their contributions and smooth integration into an economy built on clean, non-emitting industries that are aligned with a 1.5°C economic future.

We know from the many solid recommendations that emerged from Canada's 2018 Just Transition Task Force for Canadian Coal Power Workers and Communities¹² that building that plan requires a whole-of-government approach from the federal, provincial, and municipal governments and working, at every step, with workers and affected communities. It requires immediate but durable government support, centred around

workers, including social programs such as training and employment insurance, relocation and real estate support, and investments in jobs of the future.

As a first step, we need to understand the scope of the challenge ahead. How many people in the major oil and gas producing provinces will be impacted by the phase out of fossil fuels? When do governments need to start putting in place the economic and social programs needed to ensure workers and their families are supported as Canada and the world moved through this transition?

This report strives to answer these questions using the best available data from governments, industry analytics and peer reviewed reports. In the years to come this analysis should be revised and updated to ensure the most comprehensive understanding of the employment impacts of phasing out the use of oil and gas. For now, this report seeks to illustrate the timescale and scope of government action needed to ensure the people who work directly or indirectly in the oil and gas industry move seamlessly to the low carbon future.

Methodology

1 A 1.5°C-aligned future for oil and gas?

To plot the future trajectory of Canada's oil and gas output that would be consistent with 1.5°C global warming according to the Production Gap Report, this report uses current output volumes reported in 2020 by CER and applies the proportional year-on-year decline suggested by the Production Gap Report through to 2050.

To plot future output rates in the No New Fields scenario, data from the Rystad UCube database (published by Stockholm Environment Institute) was used to reflect oil and gas output in already producing fields.

2 Canada's oil and gas jobs

The number of supply chain jobs supported by Canada's oil and gas industry was estimated on a province-by-province basis using Statistics Canada's input-output multipliers (Table 36-10-0595-01 Input-output multipliers, provincial and territorial, detail level).

3 The need for job creation

Future industry job numbers (Figure 7) are projected forward for each industry sector (expro, services, and pipelines) and for each province, based on:

- Projected industry capital and operational expenditure using Rystad UCube data (Stockholm Environment Institute publication) on the No New Fields scenario;
- Jobs multipliers (separately for capex and opex for each sector and province) that reflect the current estimated number of jobs per \$1 million in industry expenditure. This is derived empirically using Rystad UCube data (Stockholm Environment Institute publication) and Statistics Canada data on industry employment over the past ten years;
- A year-on-year proportional reduction to account for the impacts of automation;
- For indirect jobs, Statistics Canada multipliers (Statistics Canada. Table 36-10-0595-01 Input-output multipliers, provincial and territorial, detail level).

Assumptions deployed:

- Industry cost-cutting measures and automation continue at the pace predicted by EY, but slow down as the industry enters managed phaseout: with automation resulting in a 4% year-on-year drop in jobs per dollar spent on capital and operating expenses to 2025 (as per the rate of automation described by EY), decreasing to 2% per year (current rate) in 2030 and to none in 2040.
- Cost-cutting measures that reduce labour demand affect direct and supply chain jobs to the same degree.

The impacts of retirement (i.e. the proportion of current industry workers retired by 2030, 2040, and 2050, as shown on Figure 10) are estimated using Statistics Canada data from the 2016 Census (Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016290) which provides the age profile of the workforce by industry sector. It is assumed that the age profile of the workforce has not changed since 2016 (no workforce aging has occurred), making this a conservative estimate.

4 Skills, retraining, and job quality considerations

The numbers of oil and gas workers that may require an alternative job by 2030, by occupation, is estimated using:

- Reduction in overall job numbers, by industry sector, to 2030, as modelled in the previous section;
- Proportions of occupations within industry sectors derived from Census and PetroLMI data;
- Projected retirements by occupation, using Census data on age profile by occupation (Statistics Canada. Table 36-10-0595-01 Input-output multipliers, provincial and territorial, detail level). It is assumed that the age profile of the workforce has not changed since 2016.

For the purposes of this calculation it is assumed that each industry sector's proportional labour requirements by occupation remain unchanged, i.e. that any effects of automation, cost-cutting, and phase-out of new fields affect each occupation within a sector similarly.

The skills transferability to alternative sectors, for each occupation, is assessed using PetroLMI's Career Transitions tool.

1

A 1.5°C-aligned future for oil and gas?

SUMMARY

- ▶ Canadian federal and provincial governments have not yet laid out a plan for the future of oil and gas extraction that aligns with the target to limit global warming to 1.5°C.
- ▶ The Canada Energy Regulator warns that the future of oil sands extraction is challenged due to the projected drop in future oil demand as decarbonisation picks up pace.
- ▶ Based on a UN Environment Programme backed study, in order for Canada to achieve a 1.5°C-aligned target, its oil and gas output would have to decline by over 1/3 to 2030 and over 1/2 to 2040.
- ▶ This report finds that constraining oil and gas extraction to already operational projects approximates the UNEP-backed rate of phaseout, although this does not take into account Canada's responsibility as a Global North country to take climate action faster.
- ▶ Achieving Canada's fair share on 1.5°C-aligned climate ambition would require accelerated output declines.

What pathway is the Canadian government planning on?

The official source reflecting projections of oil and gas extraction (as well as other energy sources, and energy consumption) is Canada's Energy Future, an annual modelling report published by Canada Energy Regulator (CER) - the federal government body also responsible for reviewing proposed interprovincial and international pipeline and electricity transmission projects, regulating energy imports and exports, and enforcing environmental and safety standards.¹³ CER's Reference Case, which assumes no new climate policies are put in place by any level of government, has consistently forecast gradual growth in both oil and gas activity through the next three decades (see Figure 1). In the latest iteration of Canada's Energy Future, published in 2020, CER presented an Evolving Case, reflecting a future where climate action measures continue to be implemented at the same pace as in recent years. For example, the carbon price continues to rise in modest increments to \$125 / tonne by 2050.¹⁴ In this scenario, oil and gas output plateaus throughout the 2030s and begins to decline slowly by 2040 (see Figure 2).

FIGURE 1. Canada Energy Regulator's reference scenario

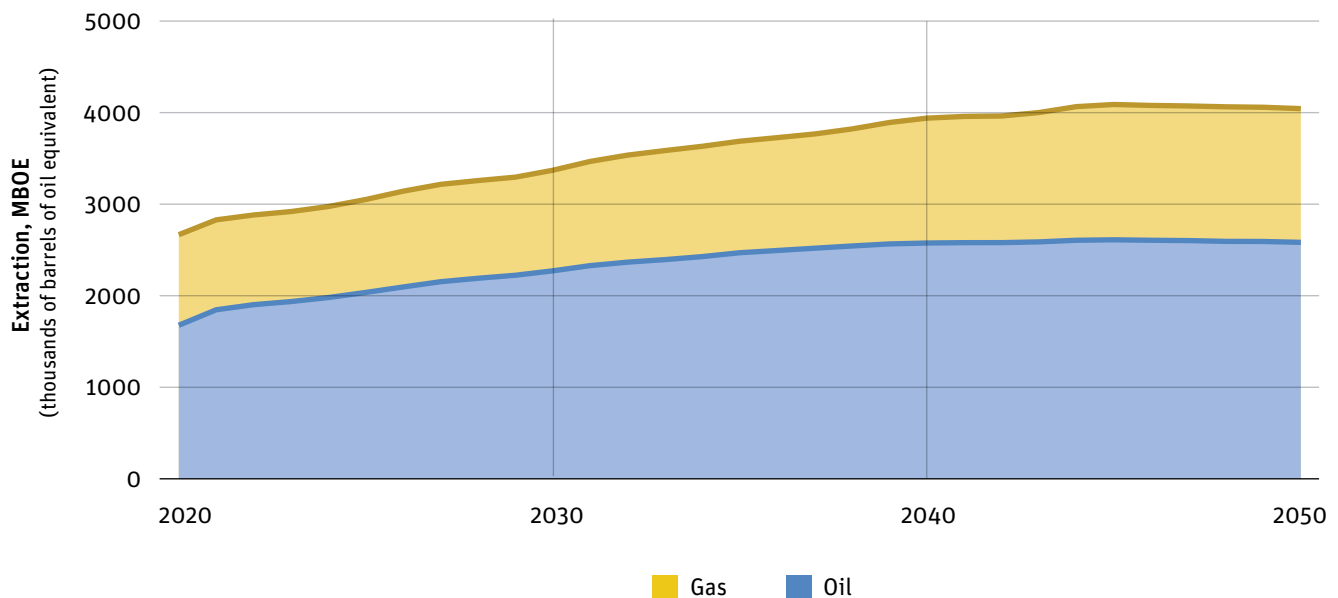
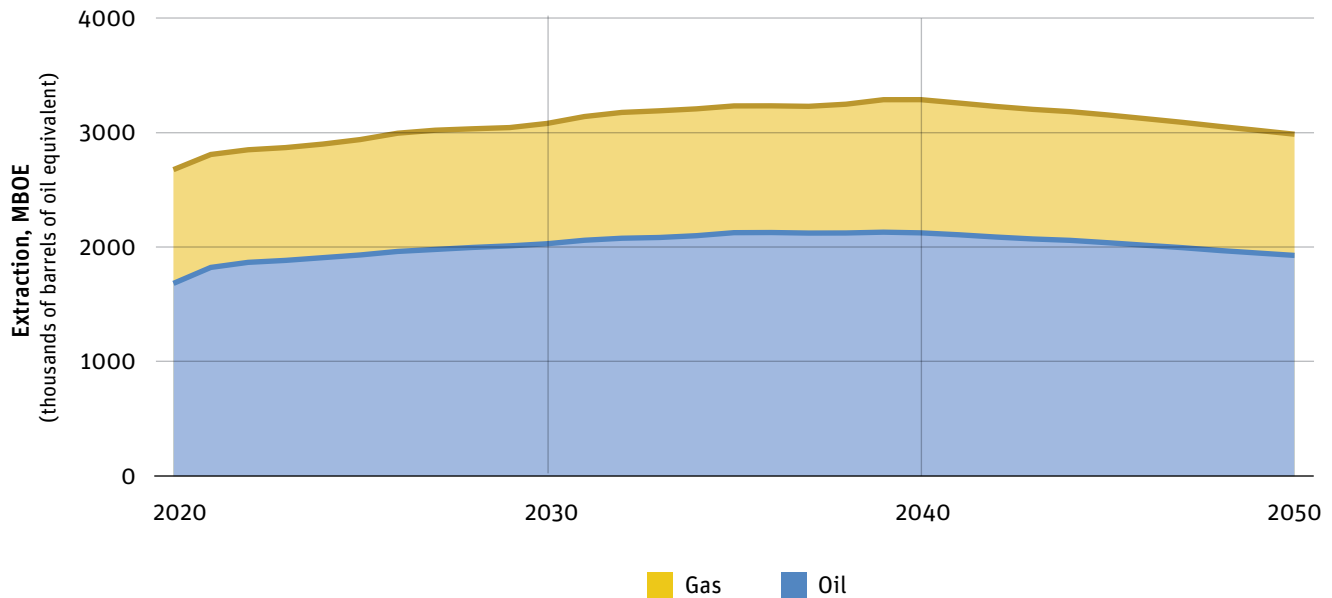


FIGURE 2. Canada Energy Regulator’s Evolving Scenario (historical pace of climate action)



CER acknowledges that the evolving scenario does not correspond to meeting net-zero emissions commitments by 2050,¹⁵ and that greater climate action measures are necessary. In relation to oil sands production in particular, CER warns that:

In a global energy system that does move towards net-zero, global crude oil use is very likely to decrease compared to current levels. If demand is decreasing, global crude oil prices, and hence the price received by Canadian producers, will likely be lower than they would be if demand were higher. Technologies to achieve net-zero oil sands production can be more costly than traditional methods. A lower price environment may create challenges for producers to afford those investments and remain competitive.¹⁶

In other words, as the world moves towards net zero, Canada’s oil sands will no longer be competitive in the global market as the price per barrel drops and the costs of capturing emissions increases the costs of production.

Canada has not yet committed to an official pathway to net-zero emissions. The most recent federal climate plan, a *Healthy Environment, Healthy Economy*¹⁷ presents a suite of actions including carbon pricing, climate accountability legislation, regulations to reduce emissions, and investments in everything from emerging industries, to battery production, to carbon capture and storage. While the new climate plan is the most

ambitious to date, it does not define the rate of the phase out of fossil fuel output that will result from international market conditions, policies that restrict production, and the implications of reduced demand. In fact, the politics of climate action means the federal government’s response to the climate emergency is conflated with the need to maintain some sense of unity with subnational governments that rely heavily on oil and gas, leaving a plan that is trying to appease provincial governments while also reducing emissions.

There is a very live discussion within all levels of government for the need for carbon capture use and storage technology (CCUS) and direct air capture (DAC) as a major component of a net-zero plan. CCUS technology targets process emissions, which make up about 20% of end-use emissions from Canada’s fossil fuel products, while DAC targets some domestic downstream emissions - that is, those emissions that come from burning oil and gas within Canada’s borders. Neither technology addresses the 80% of emissions that come from burning Canada’s exported fossil fuels, and both are very costly and do not yet exist at scale. The technologies are, nevertheless, often used to justify continued extraction of oil and gas. For workers, this is largely a dead-end pathway.

In the absence of an official projection for oil and gas output that is consistent with a 1.5°C-aligned goal, we must look to other analyses to model such a trajectory.

What does a 1.5°C-aligned pathway for oil and gas look like?

This report uses the conclusions of studies, some of which are global in scope, that model an average rate of phaseout of oil and gas output - the UN Environment Programme’s annual Production Gap Report, the Canada Energy Regulator’s (CER) annual Canada’s Energy Future Report, the International Energy Agency’s Net Zero by 2050 Report, and data from the Rystad Energy UCube database as published by the Stockholm Environment Institute.

None of these models explicitly considers Canada’s fair share obligations on climate action. As a wealthy nation and large historical and current emitter, and in accordance with the principles of Common But Differentiated Responsibility and Respective Capabilities,¹⁸ Canada has a moral responsibility to move faster than the global average to curb our emissions. Canada’s per capita emissions are among the highest in the world, largely due to the emissions intensity of our oil and gas sector, and in particular, the oil sands, and our transportation emissions. Climate Action Network Canada proposes that Canada’s domestic greenhouse gas emissions must be cut by 60% by 2030 to meet Canada’s fair share of decarbonisation, alongside an annual commitment of \$4bn USD in financing decarbonisation in the Global South.¹⁹

The Production Gap Report, produced annually by leading environmental research institutions in collaboration with the UN Environment Programme, quantifies the rates of fossil fuel extraction that would be consistent with the pathways to 1.5°C or 2°C of warming. It concludes that, “Between 2020 and 2030, *global* [emphasis our own] coal, oil, and gas

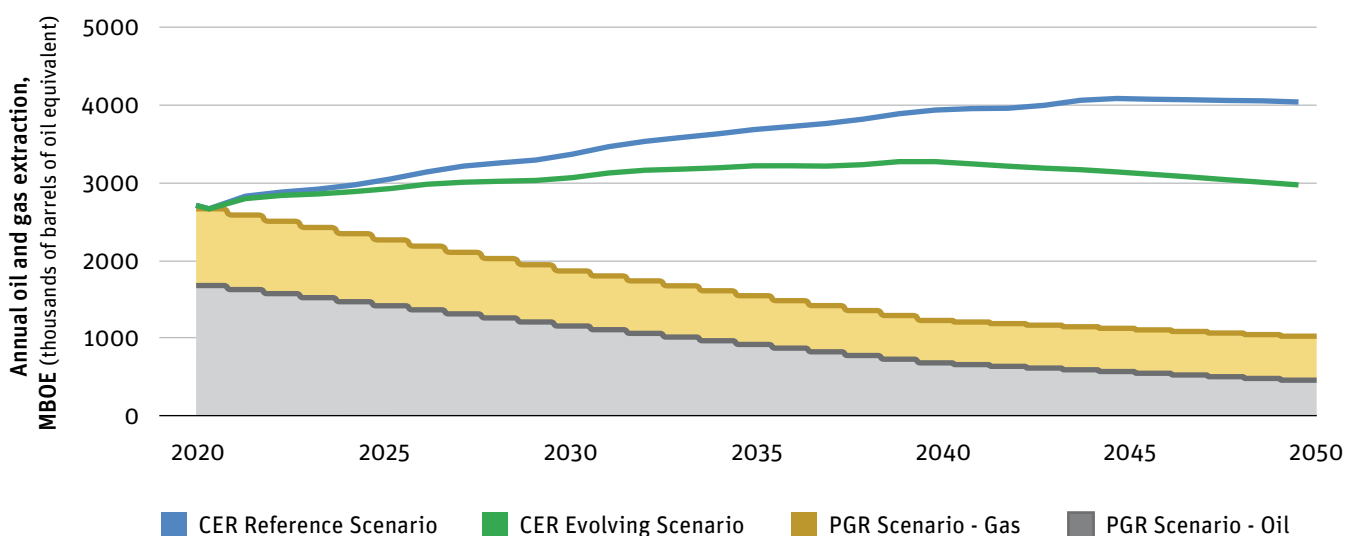
Canada’s per capita emissions are **among the highest in the world**, largely due to the emissions intensity of our oil and gas sector, and in particular, the oil sands, and our transportation emissions.

production would have to decline annually by 11%, 4%, and 3%, respectively, to be consistent with a 1.5°C pathway.”²⁰

Instead, fossil fuel producing countries’ plans and projections (the equivalents of CER’s scenarios) worldwide result in twice the oil and gas output as compared to the 1.5°C pathway.²¹

If Canada adopts the pace of phase-out suggested by the Production Gap report, the national rates of oil and gas output would decline by just under one third by 2030, and to under a half of current output in 2040. This is shown in Figure 3 (with CER scenarios displayed for comparison).

FIGURE 3. Production Gap Report’s 1.5°C pathway for oil and gas extraction, compared to CER’s projections





The International Energy Agency - an international body supported by 30 member countries including Canada, and which produces the world’s most influential global-scale energy models - has recently published its first report to model a Paris Agreement-aligned pathway, focused on achieving net zero global carbon dioxide emissions by 2050.²² The IEA concluded that

“There is no need for investment in new fossil fuel supply in our net zero pathway. Beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our pathway, and no new coal mines or mine extensions are required.”

Furthermore, the IEA projects that “oil and natural gas supplies become increasingly concentrated in a small number of low-cost producers.”²³ That is, higher-cost oil and gas sources like the oil sands would likely need to contract faster than lower-cost, conventional operations.

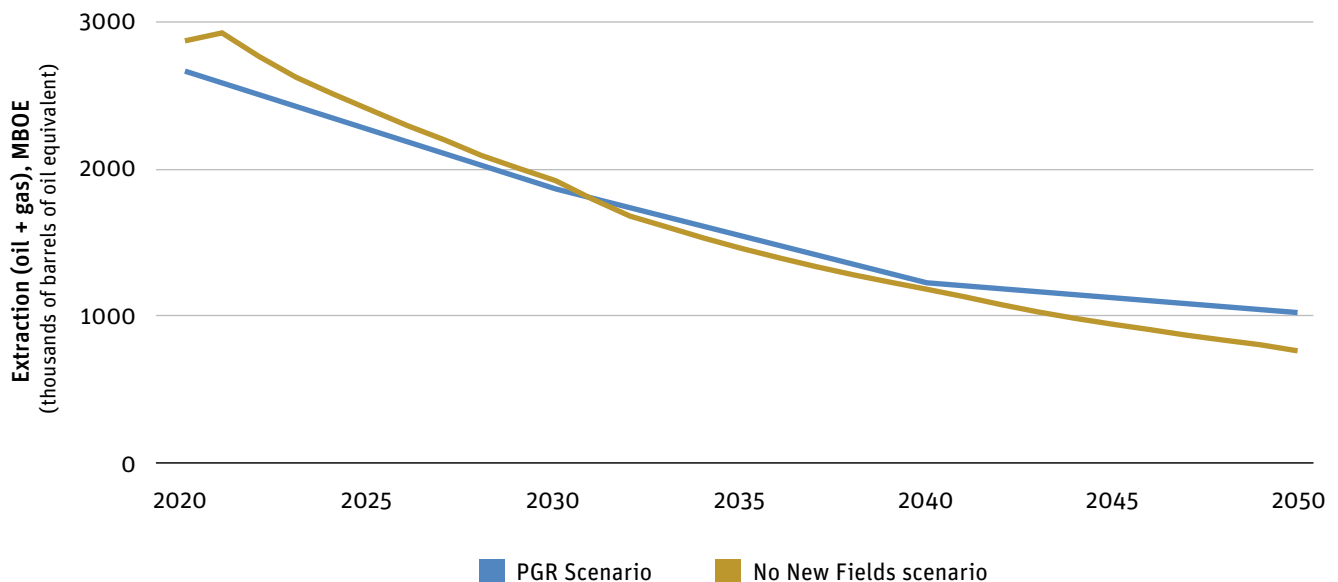
Based on the IEA’s conclusions, it is safe to say that constraining oil and gas output to existing fields is a first step towards a 1.5°C, Paris Agreement-aligned energy future (alongside “driving a historic surge in clean energy investment”).

In Canada’s case, the two approaches outlined above yield remarkably similar results on the national scale. Figure 4 below uses data from Rystad Energy’s UCube database, published by Stockholm Environment Institute, to sum up a pathway where industry makes no new investment decisions to “unlock” new oil and gas projects. The cumulative Canada-wide rates of oil and gas output are closely aligned with those suggested by the Production Gap Report.

The Rystad-derived “no new fields” scenario differs slightly from the Production Gap Report’s projections because of assumptions about the relative roles of oil and gas in the energy mix. In the “no new fields” scenario, gas output declines sharply and oil output steadily. The Production Gap Report pathway, on the other hand, suggests a faster phase-out of oil and a shallower phase-out of gas. For this reason, the “no new fields” scenario should not be used as a policy pathway, only a rough approximation of the overall minimum phase-out rates needed. Nevertheless, it is a useful tool for estimating 1.5°C-aligned production phaseout implications on Canada’s oil and gas workforce, the focus of Section 3 of this report.

In the next section, we look at the current size of the oil and gas workforce in Canada, as well as conditions and issues Canada’s oil and gas workers face. Section 3 then uses the “no new fields” scenario to estimate the implications of a 1.5°C aligned oil and gas phaseout for jobs in the industry.

FIGURE 4. Production Gap Report’s 1.5°C compliant pathway for oil and gas extraction, compared to “no new oil and gas fields” scenario



2 Canada's oil and gas jobs

SUMMARY

- ▶ The Canadian oil and gas industry (upstream, pipelines, and services) provides approximately 167,000 direct jobs, and a further 238,000 jobs across supply chains.
- ▶ The industry has historically slashed job numbers in response to oil price slumps, while maintaining output. As a result the number of jobs provided per barrel of output has fallen by 20% since 2000.
- ▶ Oil and gas jobs have significantly better compensation and training provision than the economy on average, but have higher health and safety risks and are somewhat more precarious. Union density is higher than in the rest of the private sector, but is also falling more rapidly.
- ▶ Between 33%-54% of oil and gas jobs are threatened by automation by 2040.

What does Canadian oil and gas employment look like today?

According to official statistics compiled by industry labour market intelligence body PetrolMI, as of 2020, the Canadian oil and gas industry provided approximately 167,000 direct jobs, including:

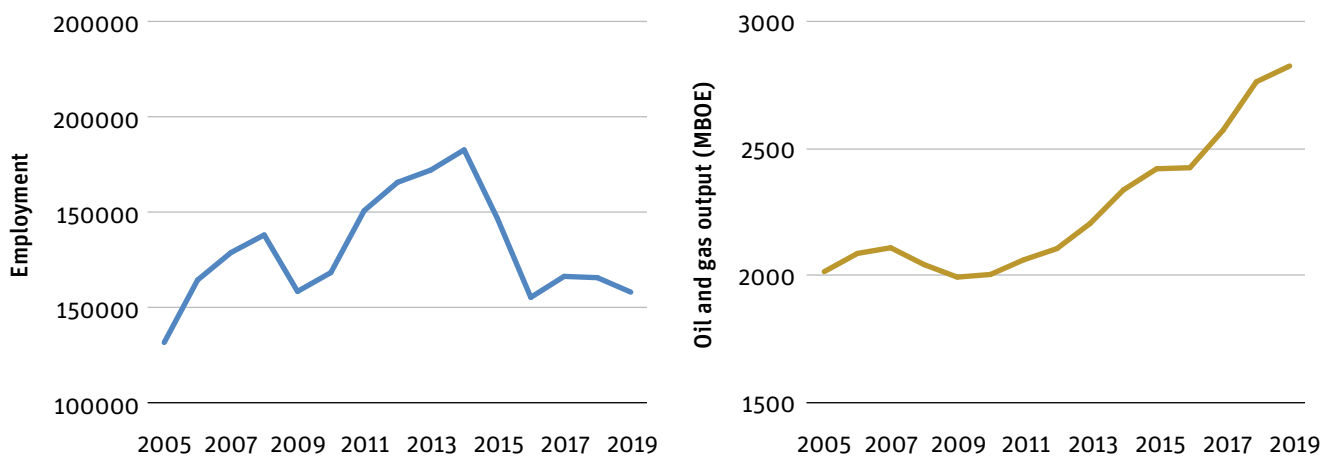
- 90,000 in exploration and production, or the upstream industry
- 65,000 in oil and gas and mining services
- 12,000 in pipelines.²⁴

We estimate that a further 238,000 jobs in Canadian supply chains currently depend on the oil and gas industry. These include jobs in specialist construction, catering, IT, and other services used by the industry.²⁵

Over 90% of Canada's upstream industry jobs and 62% of oil and gas and mining services jobs are concentrated in Alberta, with a further 4% and 8% respectively in British Columbia, and 4% and 7% respectively in Saskatchewan.²⁶

As new oil and gas deposits have opened up over the past twenty years, employment in the sector has grown modestly. However, at several times during this period, employment shrank dramatically as the industry shed its workforce during oil price swings (see Figure 5). In this way, 15,000 jobs were lost during the 2008 downturn, and 39,000 jobs lost during the oil price crash of 2015-2016.²⁷ PetrolMI published data suggests the loss of about 21,000 jobs in the crisis of 2020.²⁸

FIGURE 5. Oil and gas employment (upstream plus services) over time; Canadian oil and gas output over time



Source: Statistics Canada Table 14-10-0202-01; Canada Energy Regulator; Government of Alberta.

While the numbers of oil and gas jobs crashed during past crises, output rates dipped only slightly, or increased. By comparing the graphs in Figure 5, we can infer that industry has made a concerted effort to reduce its labour demand per barrel of output by an estimated average of 2-4% year on year since 2005. This has effectively reduced the oil and gas sector's contribution to Canadian jobs (per volume of output) by around 20% during this period. Meanwhile, the oil and gas extraction industry's contribution to Canadian GDP over the same time period did not change significantly, going from 5% in 2001 to 5.5% in 2020.²⁹

Labour rights and job quality in oil and gas

Planning for future changes to the fossil fuel jobs landscape must reflect the competing realities that shape employment in this sector. Available data on job quality in oil and gas paint the contradictory picture of a sector with high pay but also high fatalities, precarious work that nevertheless offers good benefits, higher than average trade union density while also a rapid decline of trade unions.

The primary industry sector (comprising forestry, mining, and oil and gas) scored higher than the economy's average on most metrics of job quality in a study published by Statistics Canada in 2018, performing particularly well on the availability of paid training, and income and benefits criteria like disability insurance and workers' compensation.³⁰ Despite this, more workers in the primary industry sector said they might lose their jobs in the following six months than average across the economy.³¹

In recent years there has not only been the usual fluctuation in job demands, but technology is playing a significant role in the reduction of working union members. Drones doing inspection and surveillance as well as the introduction of autonomous vehicles continues to reduce the workforce.

The mining, oil and gas sectors have always been labour intensive and extremely dangerous. A troubling statistic, in 2018, 63 workers died on the job in the mining and oil and gas sector. This is five times more fatalities (per 100,000 employees) than the average rate for the Canadian economy.³² Historically, this level of risk has driven workers to belong to a union because unions act as the "watchdog" on issues of

health and safety for regulation compliance and to bargain beyond the law for better safety protocols. It is unsurprising, then, that union density and representation in mining and oil and gas are higher than the private sector average (20.7% as compared to 15.8%).³³ Yet since 2000, union density in the sector has fallen by a third (by 9.5%; from 30.2% to 20.7%), the fastest rate of any sector.³⁴

Compounding this trend, recent legislation changes have eroded trade union power in Alberta, the province where fossil fuel trade union density has historically been high. Alberta's Bill 32, passed into law by the provincial government in July 2020, restricts trade union rights, including those that affect the oil and gas workforce in Alberta, including:

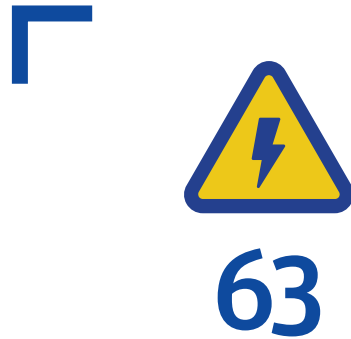
- Eliminating timelines for union certification votes, which critics allege gives employers time to "dissuade and intimidate workers to vote against unionization",³⁵
- Restricting secondary picketing (where workers protest at a site related to their workplace, rather than at their immediate place of work), and
- Restricting unions' ability to spend budgets on advocacy, by requiring them to obtain each individual member's consent for this specific use of their membership dues.³⁶

While available statistical information does not allow a direct comparison of job quality in oil and gas and in other industries where

oil and gas workers of the same occupation might also find a job, e.g. between oil and gas and chemical manufacturing, or oil and gas and geothermal energy, it is worth noting that legislative changes apply to all unionized sectors. Such barriers to trade union activities hinder the ability for workers to move freely across sectors and impede the evolution of a just transition for today's workers.

How will automation affect oil and gas jobs?

Corporate measures to reduce labour costs have already significantly reduced the oil and gas industry's demand for workers per volume of oil or gas extracted, in our estimate by about 2% a year since 2002 (see Figure 5). If the existing trend continues, then workforce demand (assuming level output) would fall by 33% to 2040.



In 2018, 63 workers died on the job in the mining and oil and gas sector.

This is five times more fatalities (per 100,000 employees) than the average rate for the Canadian economy.

Automation is often cited with the potential to radically reduce and transform the industry's demand for jobs and skills over the coming decades, slashing companies' demand for workers with manual equipment handling skills. Driverless automated heavy hauler trucks have begun displacing jobs for truck drivers in oil sands operations,³⁷ although these still require a remote (desk-based) operator.³⁸

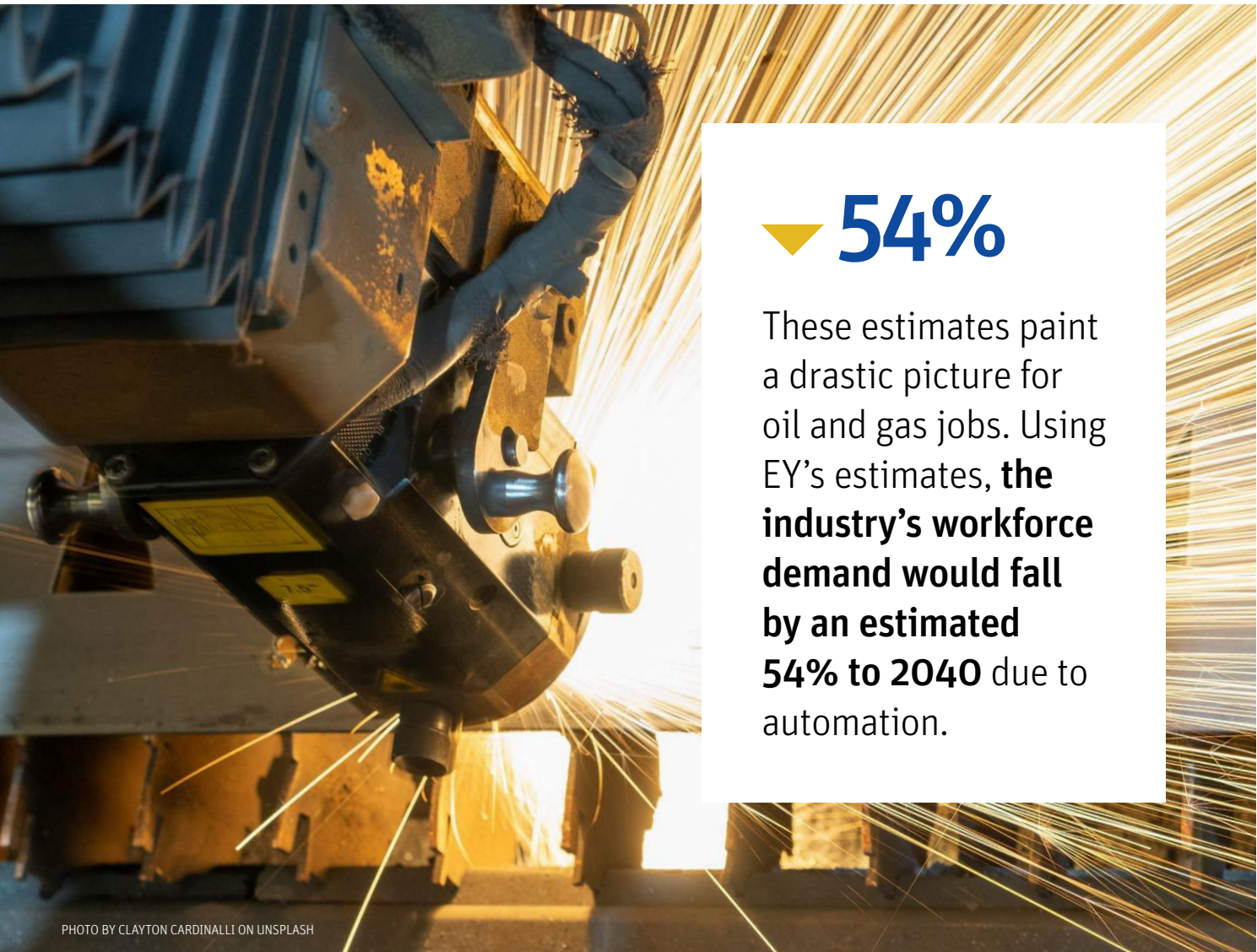
Research by management consultancy EY with PetroLMI quantified the potential for automation of different roles in the Canadian oil and gas sector. The estimated potential for workforce reduction by 2040 varies by occupation, for example:

- 65% for equipment operators
- 60% for technicians
- 38% for human resources and
- 29% for public and stakeholder relations specialists.³⁹

McKinsey and Company estimate the proportion of tasks that can be automated by occupation as follows:

- 41% for instrumentation technicians and mechanics;
- 93% for welders and related machine operators;
- 68% for well service workers;
- 85% for petroleum, gas, and chemical process operators.⁴⁰

These estimates paint a drastic picture for oil and gas jobs. Using EY's estimates, the industry's workforce demand would fall by an estimated 54% to 2040 due to automation.⁴¹ Even just projecting out the same 2% year-on-year labour demand contraction we have seen since 2002, as described above, the workforce demand would fall by 33% to 2040. **These are labour contractions driven by automation and they are occurring in the absence of strengthened climate policy.** This reinforces the need for Canada to develop transition strategies - including strategies to address workforce impacts of automation - for oil and gas workers and jobs.



▼ **54%**

These estimates paint a drastic picture for oil and gas jobs. Using EY's estimates, **the industry's workforce demand would fall by an estimated 54% to 2040** due to automation.

PHOTO BY CLAYTON CARDINALI ON UNSPLASH

3 The need for job creation

SUMMARY

- ▶ Increased automation alongside a managed phase-out of oil and gas extraction would affect approximately half of Canadian oil and gas jobs by 2030.
- ▶ The greatest need for creating alternative jobs is observed in the decade to 2030. 56,000 jobs need to be created for direct oil and gas industry workers across Canada by 2030.
- ▶ Provincial and federal investment and supportive policy are required urgently to create these jobs and ensure their quality.

What does oil and gas phase-out mean for numbers of jobs?

Knowing that roughly 1/3 to 1/2 of oil and gas sector jobs in Canada will be lost to automation by 2040, we also wanted to explore the additional jobs impacts associated with a 1.5°C-aligned managed phase-out of Canadian oil and gas output. In this section, we present this analysis.

Job numbers were modelled into the future in correlation to capital and operational expenditure, using Rystad UCube data, as summarized in a publication by the Stockholm Environment Institute,⁴² on projected capital and operational expenditures.

We assume that:

- In keeping with a 1.5°C-compatible pathway for Canada, only already operational oil and gas projects continue. No new projects are added.
- Industry cost-cutting measures and automation continue at the pace predicted by EY, but slow down as the industry enters managed phaseout: with automation resulting in a 4% year-on-year drop in jobs per dollar spent on capital and operating expenses to 2025 (as per the rate of automation described by EY), decreasing to 2% per year (current rate) in 2030 and to none in 2040.
- Cost-cutting measures that reduce labour demand affect direct and supply chain jobs to the same degree.

Examining the impacts of the first of these assumptions in isolation, Figure 6 demonstrates the effect on industry expenditure of not opening any new oil and gas fields from now on. Both capital and operational expenditure are projected to decline more rapidly in the first 5-10 years, with a slower decline thereafter.

Foregoing new exploration and opening up no new fields entails an immediate-term reduction in expenditures (seen on Figure 6 between 2020-2030), followed by a gradual phase-out as existing oil and gas projects run to the end of their expected commercial life.

Next, we can look at the jobs impacts of applying job losses due to automation, within the diminished industry expenditure landscape of the “no new fields” scenario. In this estimate, by 2030, increased automation affects just over 26% of industry

FIGURE 6. Industry expenditures and output decline under a ‘No New Fields’ scenario

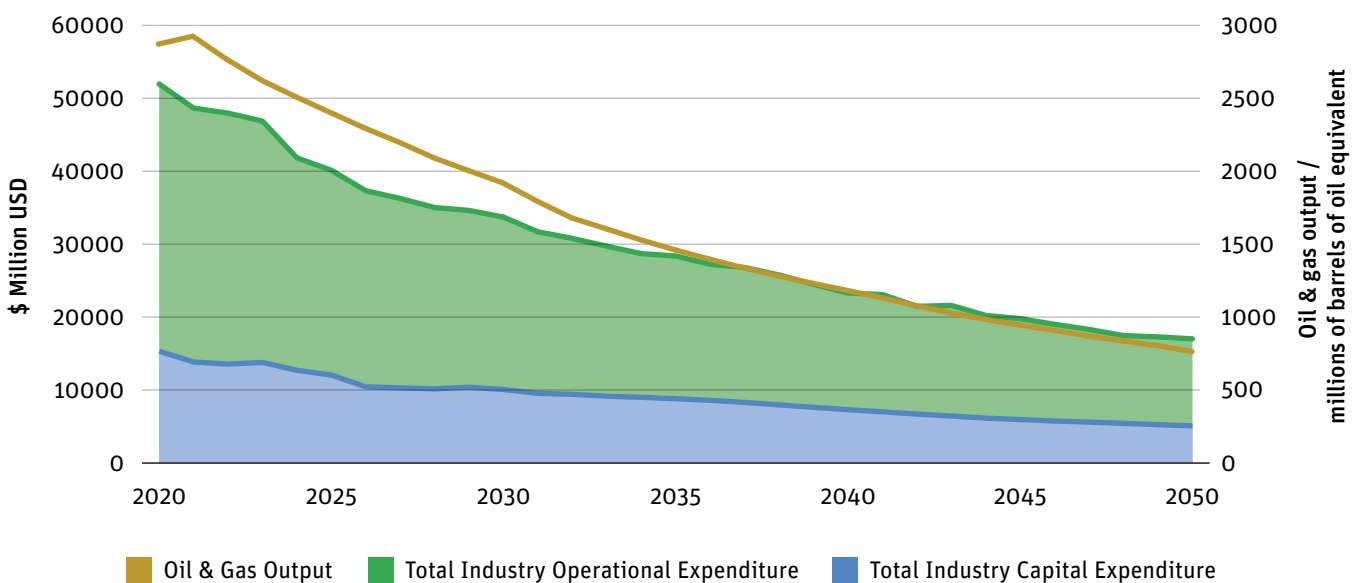
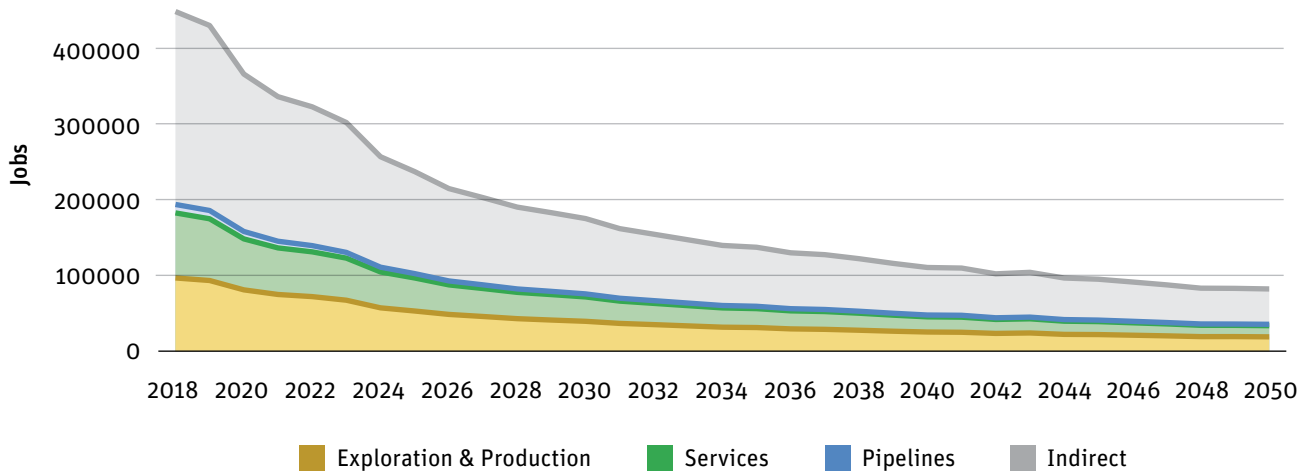


FIGURE 7. Projected industry job numbers to 2050, Canada wide



jobs, with a further 25% affected by industry contraction due to managed phase-out. Figure 7 demonstrates that **the combined impact of phasing out new oil and gas projects and increased automation leads to job numbers going down by approximately one half by 2030, with a slower decline thereafter.**

Job creation measures to help redeploy the workforce must focus on the decade to 2030.

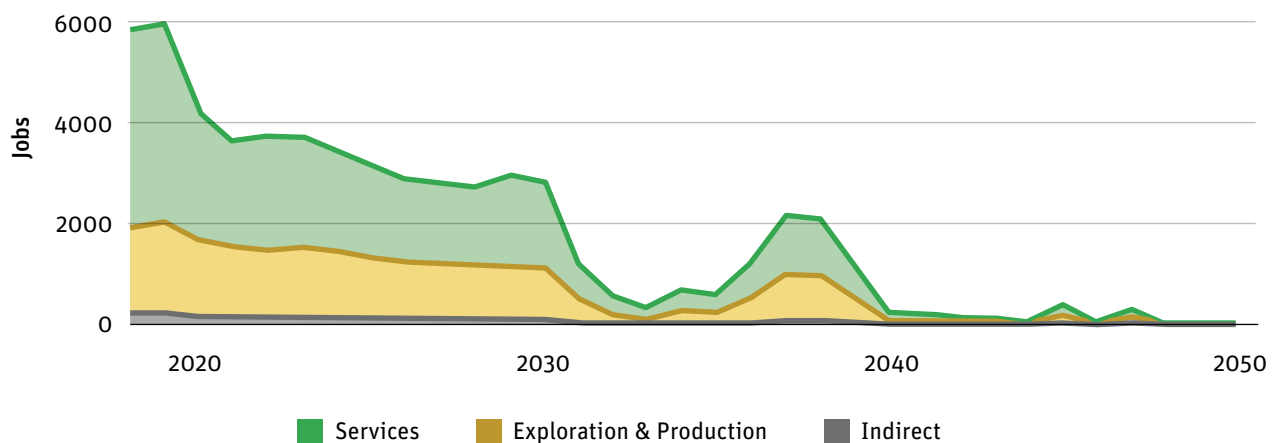
Economist Jim Stanford detailed current and anticipated employment levels for Canada’s fossil fuel sector to 2040 in a recent report, *Employment Transitions and the Phase-Out of Fossil Fuels*.⁴³ Stanford’s estimates of the size of Canada’s present-day oil and gas sector align with our estimates that the Canadian oil and gas industry, including upstream activities, pipelines, and services, provides approximately 167,000 direct jobs⁴⁴ and 238,000 jobs across supply chains.⁴⁵ These direct jobs represent 0.94% of Canada’s 2019 paid workforce. Our analysis illustrates that 108,000 new jobs are needed by 2030 across the Canadian economy to replace the economic contribution of the oil and gas industry. We estimate the number of affected supply chain jobs at

82,000, though it is worth noting that direct job creation in other industries can also replace supply chain jobs. As Stanford noted:

“Fossil fuel advocates often include these indirect jobs in their inflated estimates of the supposed number of jobs held to “depend” on fossil fuels. But none of these upstream, downstream, or complementary positions can truly be considered “fossil fuel” jobs. The businesses and workers involved in those activities produce goods and services which are not inherently connected to the extraction and use of fossil fuels.”⁴⁶

Sufficient job creation to replace direct oil and gas jobs will also lead to job creation in supply chain industries. While the need for job creation is greatest in the decade to 2030 for nearly all significant oil and gas producing provinces, Newfoundland and Labrador is an exception. Here, according to Rystad UCube data, output from already producing fields is expected to continue at pace until 2030, with a sharper decline in the following decade (see Figure 8), which means the bulk of this province’s job creation needs will be somewhat delayed relative to the rest of the country.

FIGURE 8. Projected industry job numbers to 2050, Newfoundland and Labrador



What is the impact of retirement?

In addition to implementing the “no new fields” production constraints and jobs impacts from automation, we can also look at the impact that expected retirements will have on the oil and gas workforce in the coming years. Retirement, particularly in an aging workforce, can provide a natural, gradual path to job attrition in a contracting sector. Understanding workforce retirement expectations can help us to better prepare to allocate resources, create the right jobs, and meet the needs of new, young, incoming workers, and those who will not be of retirement age by 2030.

Jobs that are 1.5°C-compatible will need to be created for tomorrow’s workforce, including young people entering work for the first time, and mid-career oil and gas workers currently employed in the industry. Ensuring a just transition for existing oil and gas workers means creating jobs that are compatible with their skills and expectations, and so needs to be considered additionally to general job creation.

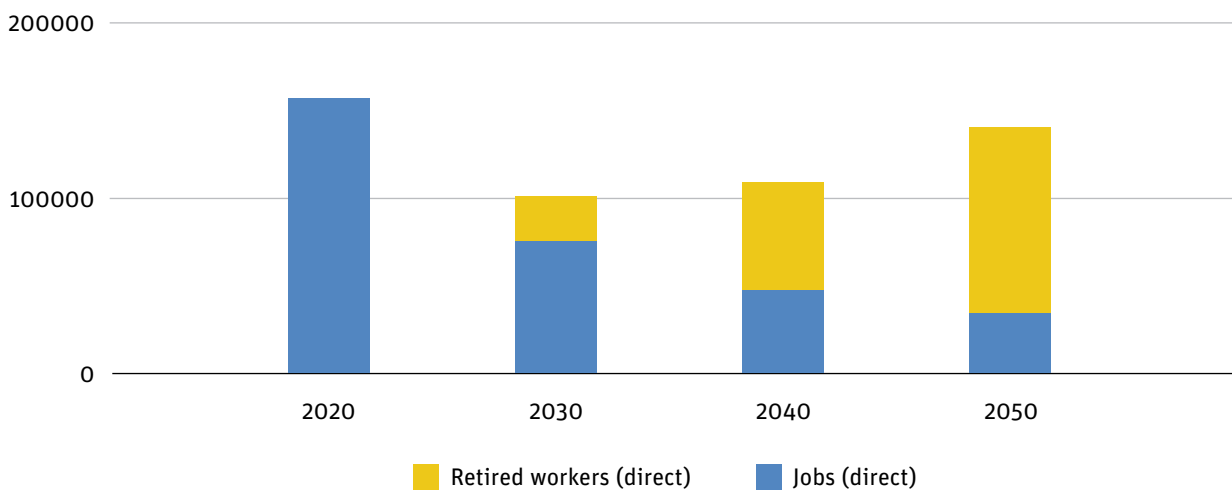
The oil and gas workforce has slightly fewer older workers than the Canadian workforce as a whole. 17% of the oil and gas workforce can be expected to retire by 2030, compared to 22% in the Canadian workforce as a whole (based on 2016 census data).⁴⁷

On the other hand, relatively few younger workers are entering the oil and gas industry - recognised as a reputational problem by industry executives and associations.⁴⁸ According to census data, only 39% of the industry’s workforce is under 35, compared to 46% in the wider workforce.⁴⁹



Figure 9 shows how, in a “no new fields” scenario (including automation impacts), the need for new jobs for current oil and gas workers is partially displaced by retirements. 40% of the current workforce is expected to retire by 2040 and 67% by 2050. Indeed, economist Jim Stanford’s analysis of fossil fuel jobs indicates that 55% of current fossil fuel workers are over age 40, while 17-18% have been in their jobs for less than a year, and the annual rate of turnover in the sector is about 20%.⁵⁰ **The greatest need for creating alternative jobs is observed in the decade to 2030.**

FIGURE 9. Oil and gas jobs vs projected retirements

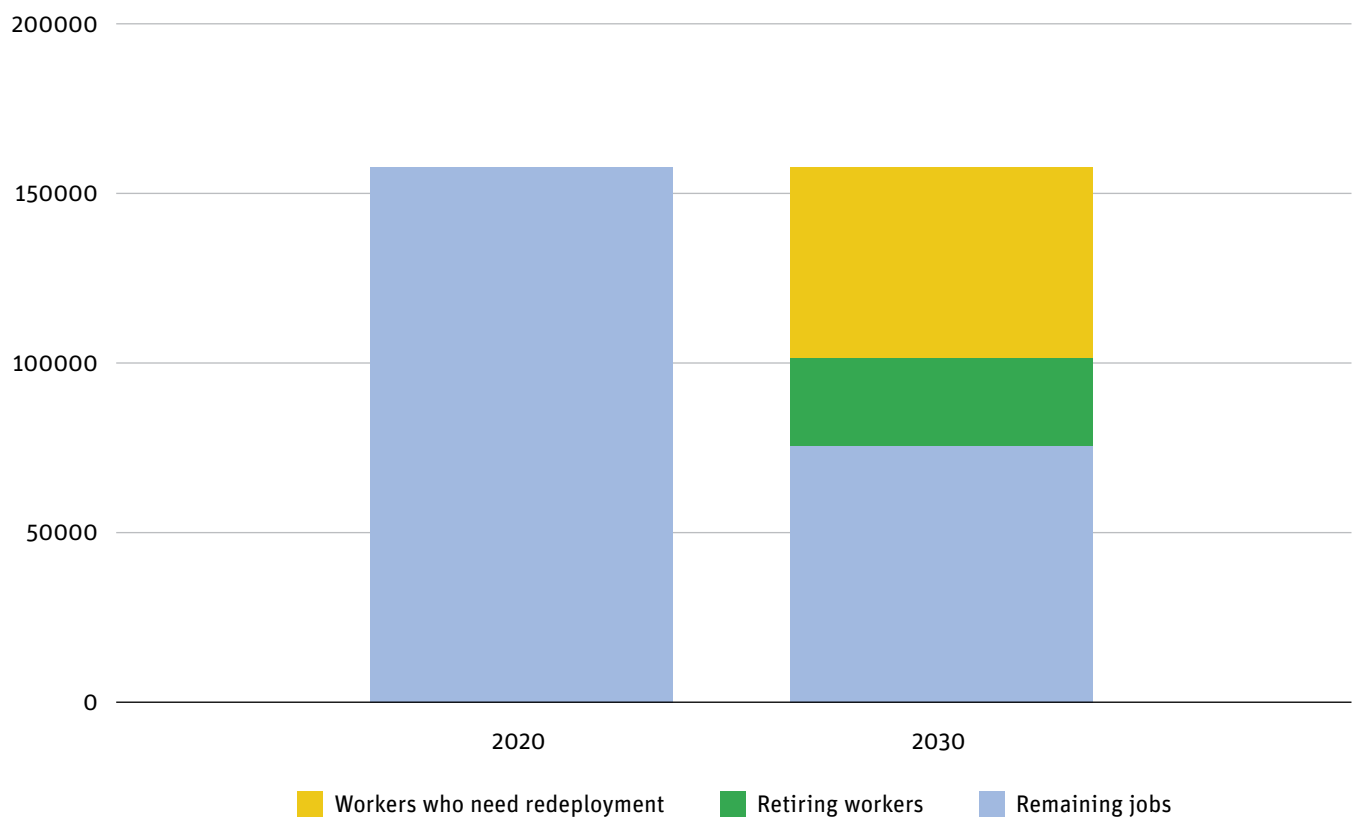


How many alternative jobs need to be created?

Based on the estimates above (a “no new fields scenario”, accounting for attrition through retirement and the impacts of automation and phaseout), **56,000 alternative jobs need to be created for current oil and gas workers in Canada by 2030** (Figure 10). A further estimated 63,000 jobs are affected across the industry’s supply chains, though as we describe below, there is some resilience to indirect, supply chain jobs. For this reason, our analysis focuses on direct job creation.

For all provinces, the oil industry supports a similar number of indirect (supply chain) jobs per \$ million in output as is seen on average for other industries and sectors across the economy. That is, creating value in alternative industries should also lead to a similar number of supply chain jobs, unless alternative industries perform worse than the oil industry in creating supply chain jobs in Canada. Investments that give supply chain industries the support they need to retool can help to ensure their durability and sustainability through larger industrial system changes.

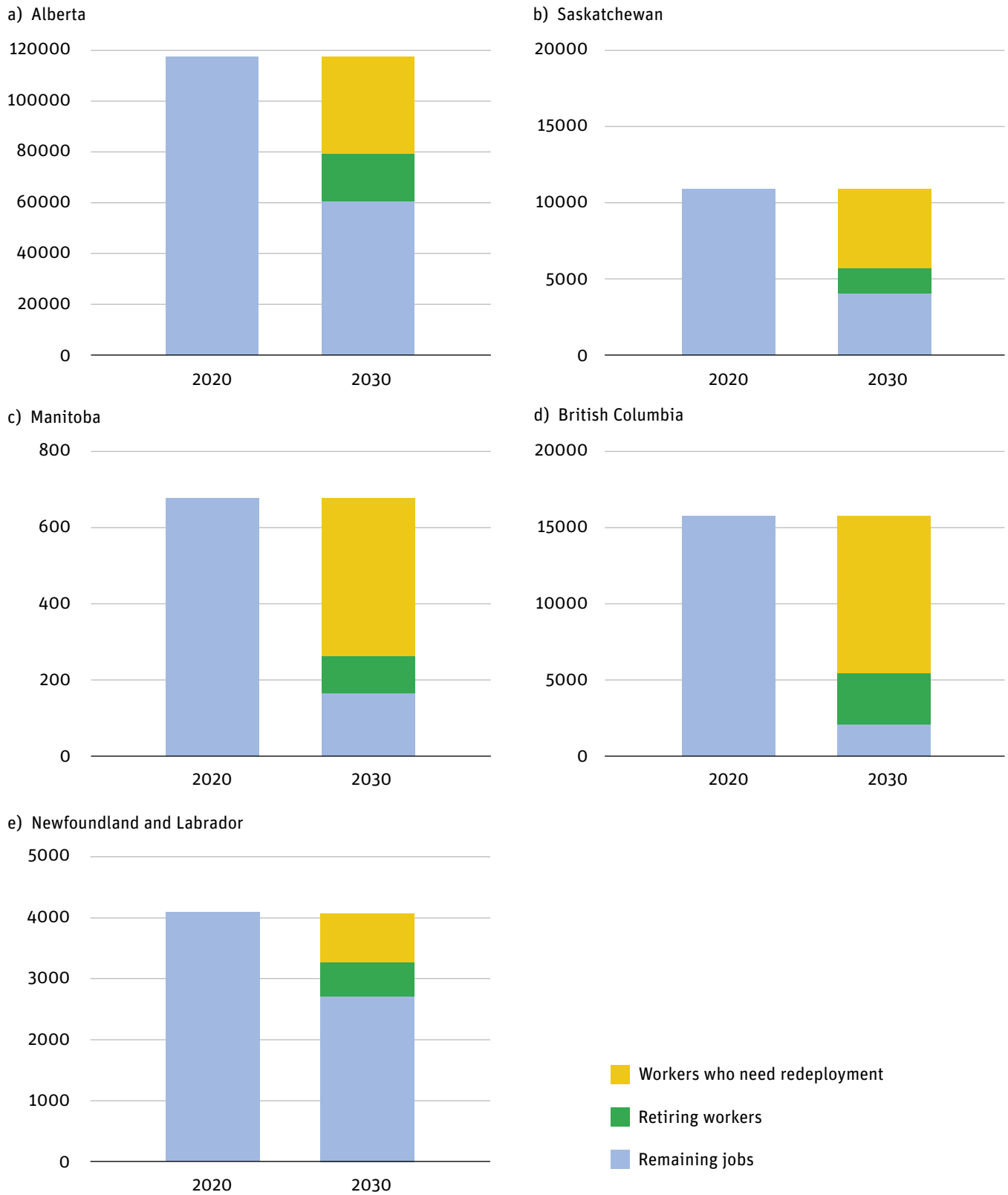
FIGURE 10. The need for direct fossil fuel worker redeployment by 2030 (accounting for no new fields scenario, impacts of automation, and retirement)



By province, the job creation requirement is as follows:

- **Alberta:** 38,000 direct, 35,000 supply chain
- **BC:** 10,000 direct, 2,000 supply chain
- **Saskatchewan:** 5,000 direct, 1,500 supply chain
- **Newfoundland and Labrador:** 1,000 direct.

FIGURE 11. The need for oil and gas worker redeployment by 2030 by province



4

Skills, retraining, and job quality considerations

SUMMARY

- ▶ Nearly 3 in 4 oil and gas workers affected by the transition have a direct skills match to alternative clean industries or IT occupations elsewhere. 7% more require minor to moderate retraining to refocus their careers.
- ▶ Jobs hardest to transfer to alternative industries include reservoir engineers, hydrologists and dispatchers.
- ▶ Based on skills matching, geothermal energy could redeploy a significant majority of the affected workforce with no, minimal, or moderate retraining, but needs a significant increase in investment to create jobs.
- ▶ Not all jobs in alternative sectors come with the same provisions, security, wages and benefits as current jobs in the fossil fuel sector.

How much retraining will oil and gas workers need to enter other industries?

The final section of this report scopes out the scale of the job transition challenge for direct (not supply chain) oil and gas workers, by estimating the retraining needs of the transitioning workforce, as well as highlighting the job quality concerns the workers are likely to encounter in alternative industries.

If 56,000 alternative jobs need to be created by 2030 for current oil and gas workers, how many of these workers will need retraining in order to access the alternative jobs?

Using a combination of Census and PetroLMI data on the current distribution of the workforce across occupations and sub-sectors of the industry (extraction, services, and pipelines), alongside our projection of the numbers of jobs in sub-sectors to 2030, for this section we have estimated the respective proportions of occupations across the 56,000 workers in need of alternative jobs.

The transferability of skills in most industry jobs can be assessed using tools provided by industry association Energy Safety Canada's labour market information division, PetroLMI.⁵¹ According to PetroLMI's Career Transition⁵² tool, for example:

- Instrumentation technologists and technicians working in oil and gas can directly (with no or minimal retraining)



PHOTO BY DENNIS SCHROEDER / NREL

transfer to working in industrial construction and maintenance, renewable energy, energy efficiency, or chemicals industries.

- Electricians can similarly move across the alternative sectors, but would require more retraining if moving into working in wind or solar energy.
- Heavy equipment operators have direct transfer pathways into industrial onsite construction, renewable energy, and well decommissioning.
- B-pressure Welders only have direct transfer pathways into industrial construction and maintenance.

The occupations where major retraining is most likely to be needed, from PetroLMI's assessment, are reservoir engineers and hydrologists. For these roles, major retraining is needed to work in either geothermal or wind energy, and no other pathways are identified into non-fossil-fuel-energy production roles. Oil well decommissioning is deemed to be the only direct redeployment (i.e. no retraining) pathway for some of the least well paid and least high-skill occupations - labourers and dispatchers - which would likely create problems down the line as decommissioning is, by its nature, a time-bound activity.

The occupations with no direct transfer routes but a variety of 'refocus' routes in non-fossil-fuel-production roles are: lab technicians, construction managers, production accountants,

tax accountants, business development / marketing / sales specialists, purchasing managers, and process engineers.

For the purposes of this report, we exclude PetroLMI's assessment of transferability into work within oil and gas producing activities, e.g. methane emissions reduction and LNG facility operation, as we assume these have limited long-term job creation potential given the need to phase out oil and gas output.

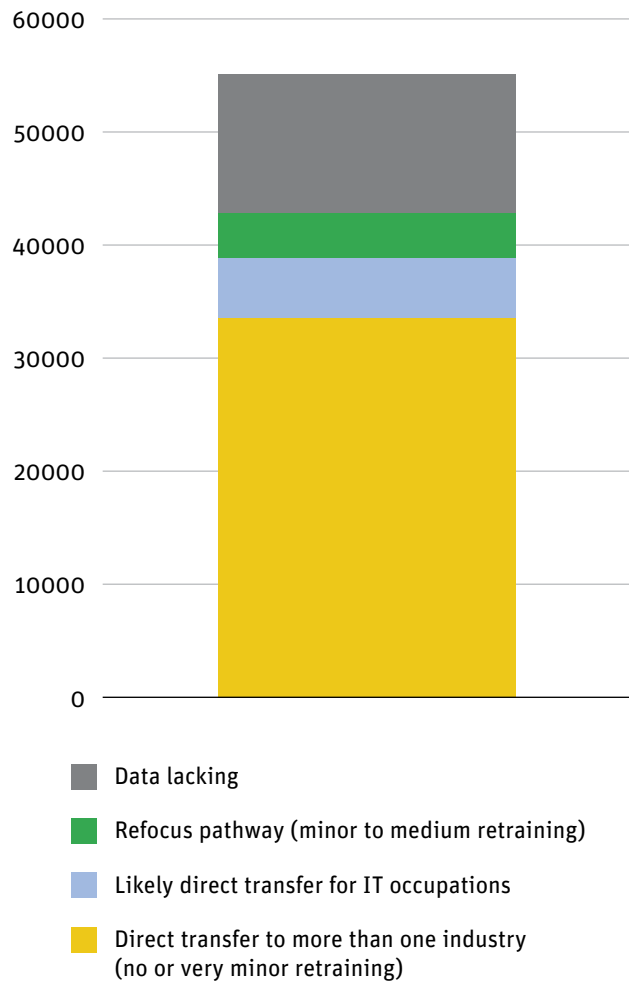
In addition to the occupations covered by PetroLMI's assessments, in our assessment, just under one in ten of the transitioning workers work in Information Technology occupations, which are highly transferable and in high demand across the economy according to LinkedIn research.⁵³ LinkedIn also identifies Calgary as one of the two main hubs in Canada where emerging IT roles are in demand.

We projected future retirements by occupation using Statistics Canada census data on age profile by occupation. We projected future demand for each occupation by subsector by assuming the current mix of occupations in a subsector stays unchanged, and that demand for each occupation within a subsector correlates directly to capital and operational expenditure. Using our projection alongside data from PetroLMI's tools, the following overview emerges (see Figure 12):

- Just under three quarters of the transitioning workforce (39,000) either have a direct skills match to more than one alternative industry, or work in highly transferable IT occupations.
- 4,000 more workers would need minor to medium training to refocus their careers.
- Data is unavailable to assess the transferability of the remaining 13,000.

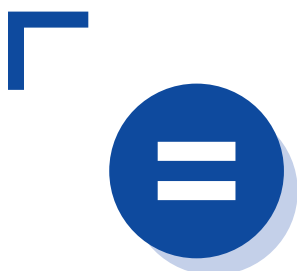
It should be noted that a direct skills match should not be taken to mean that the workers concerned need no support whatsoever. Even with a direct skills match, individuals may need support with applying for and induction in roles in other industries, or other forms of support (e.g. wage or pension protection for a transition period). Transition planning in consultation with the affected workers and their trade unions is still crucial.

FIGURE 12. Job creation and training requirements to 2030, summarised



Sources: Transition Economics calculations based on Statistics Canada and PetroLMI data.

The challenge is therefore *not* one of mass-scale retraining. The challenge is to create the right numbers of jobs, make sure they are quality jobs and a viable alternative to working in the oil and gas sector, put the right support in place, and remove any qualification barriers workers might face.



Just under three quarters of the transitioning workforce (39,000) either have a **direct skills match** to more than one alternative industry, or work in **highly transferable IT occupations**.



PHOTO BY SCIENCE IN HD ON UNSPLASH

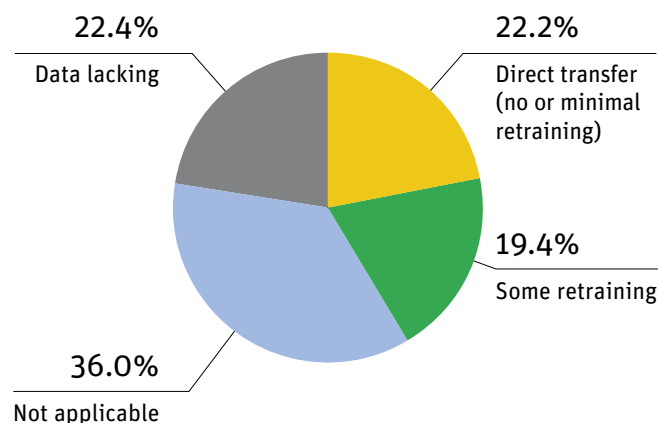
How do alternative industrial sectors compare as re-employment destinations?

We have been able to estimate how well different industrial sectors can re-employ oil and gas workers (excluding IT occupations) by using our projections of future demand and retirements by occupation, alongside data from PetroLMI’s tools. Note that these are assessments of compatibility, *not* of whether the jobs already exist to be filled. This report calls on the federal and provincial governments to create at least 56,000 extra roles in compatible industries by 2030.

INDUSTRIAL CONSTRUCTION AND MAINTENANCE

One-fifth of the transitioning workforce, including civil and electrical engineers, industrial mechanics, pipefitters, and welders, are estimated to have a direct skills redeployment pathway to industrial construction and maintenance. Another one-fifth (construction managers, labourers, purchasing occupations) needs minor retraining. (See Figure 13.)

FIGURE 13. Oil and gas workers’ skill transferability to industrial construction and maintenance



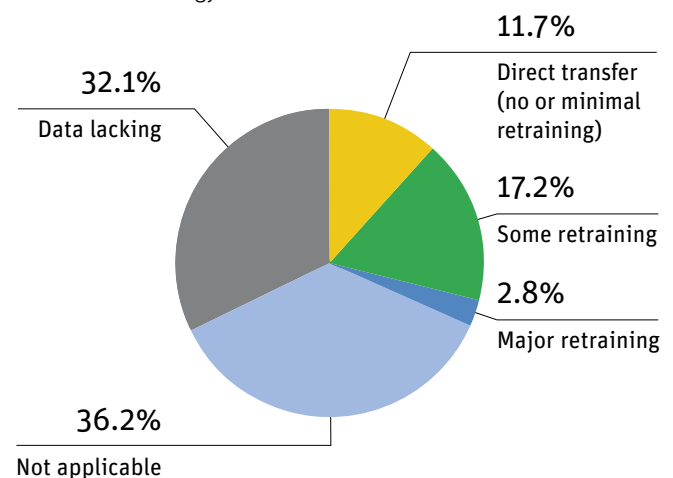
Source: Transition Economics estimates, Statistics Canada, PetroLMI data

WIND AND SOLAR ENERGY

Just over one in ten oil and gas workers, including heavy equipment operators, power engineers / power systems operators, and instrumentation technicians, have relevant skills to be directly re-employed in wind and solar energy projects, if the labour demand exists. Transferability is higher for the design and construction stages of wind and solar projects (which also create more, but time limited, jobs) than for the operations and maintenance stages.⁵⁴ Another 17% of workers (including construction managers, facility managers, and purchasing agents) would need ‘refocus’ training, and 3% (purchasing managers and some supply chain professionals) would need major retraining. (See Figure 14.)

On average across North America, wages in renewable projects are significantly lower than in oil and gas across the board of occupations. For example, in 2018, electrical / instrumentation engineers earned US \$83,000 a year on average in renewable projects and US\$ 114,000 in oil and gas. Maintenance technicians earned US\$ 66,000 in solar energy, \$70,000 in wind energy, and \$82,500 in oil and gas.⁵⁵ These data may not accurately represent the respective pay differences in Canada (country-specific data is unavailable), but they point to the importance of ensuring as far as possible that conditions are levelled up between oil and gas jobs and alternative sectors.

FIGURE 14. Oil and gas workers’ skill transferability to wind or solar energy



Source: Transition Economics estimates, Statistics Canada, PetroLMI data

GEOTHERMAL ENERGY

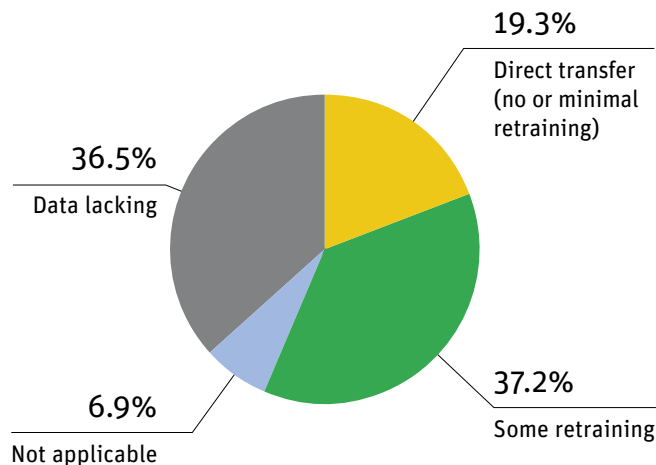
The skills required for geothermal projects match those of the majority of the affected oil and gas workforce. One in five workers (including electrical and mechanics engineers, process operators, and shippers and receivers) could be directly re-employed with no or minimal training. Another 37% could transfer with little or medium retraining (including drilling specialists, petroleum engineers and construction managers). (See Figure 15.)

Moreover, some of Canada’s geothermal resources best suited to utility-scale electricity and heat are in the Western Canada Sedimentary Basin (covering much of Alberta, some of Manitoba, Saskatchewan, BC and Northwest Territories). And rather than requiring individual retraining or job transition, geothermal energy is a viable diversification strategy for workplaces in the oil and gas supply chain⁵⁶ - a less disruptive transition pathway where workers continue working for the same employer and maintain current terms and conditions at work.

The challenge is that the Canadian geothermal industry is in its infancy. The world’s first horizontal well for geothermal power, recently drilled in Saskatchewan, is said to be capable of supplying enough heat to generate energy for 3,000 homes, but full-scale construction on the project is only slated to begin in 2023.⁵⁷ Geothermal energy would need large-scale public investment⁵⁸ in order to scale up to create the jobs needed by 2030. The pioneering well in Saskatchewan is approximately 50% financed by the federal government.⁵⁹

As a result of its current small scale, job quality questions and standards remain unclear in geothermal.

FIGURE 15. Oil and gas workers’ skill transferability to geothermal industry



Source: Transition Economics estimates, Statistics Canada, PetroLMI data

Geothermal energy would need **large-scale public investment** in order to scale up to create the jobs needed by 2030.

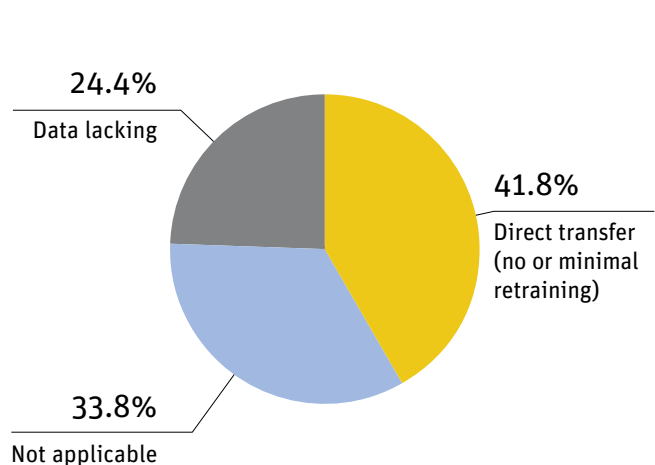
WELL DECOMMISSIONING

The federal government has already attempted to tap the job-creating potential of decommissioning as part of its COVID-19 economic crisis response,⁶⁰ targeting around 8,200 suspended wells in Alberta. But much more remains to be done, with as many as 88,000 suspended wells awaiting decommissioning.⁶¹

If enough jobs were created, 42% of the affected oil and gas workforce to 2030 have appropriate skills to be directly re-employed in well decommissioning efforts: including drilling occupations, heavy equipment operators, and transport truck drivers. (See Figure 16.)

If decommissioning is carried out by existing employers, this would maintain the existing collective bargaining provisions, pay and conditions for oil and gas workers. But decommissioning programmes need to guard against the possibility of companies laying off workers to then re-hire them (or others) to work on decommissioning on reduced pay and conditions. Additionally, the finite nature of decommissioning work necessitates re-skilling and transition planning for some workers down the line, which should be considered and built into decommissioning programmes at the outset.

FIGURE 16. Oil and gas workers’ skill transferability to well decommissioning



Source: Transition Economics estimates, Statistics Canada, PetroLMI data

INDUSTRIAL ENERGY EFFICIENCY

8% of the transitioning oil and gas workers (including industrial and electrical engineers, industrial mechanics, and shippers and receivers) have skills enabling direct re-employment in industrial energy efficiency, and a further 5% with some retraining (including chemical engineers, purchasing agents, and construction managers). See Figure 17.

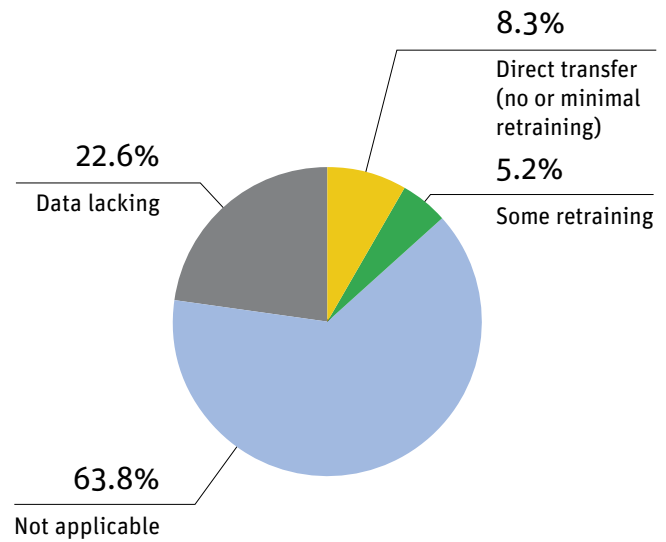
CHEMICALS INDUSTRY

One in twelve transitioning oil and gas workers (e.g. civil, industrial, and mechanical engineers) have a direct transfer pathway into the petrochemical sector, and over one in five have a ‘refocus’ pathway, including chemical process operators and facility managers (see Figure 18).

As a ‘hard-to-abate’ greenhouse gas emitter, the petrochemicals industry also faces a fundamental technological transformation. Zero-emissions solutions do exist (using hydrogen from electrolysis⁶² or organic material or wastes⁶³ as feedstock) that do not fundamentally change the skills requirements of chemical industries.

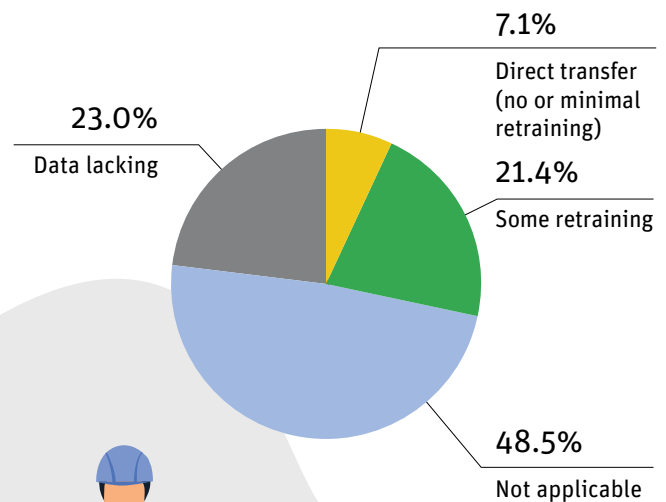
However, the petrochemicals industry is unlikely to be a growth sector, and decarbonisation opens questions on how it will continue employing its own existing workforce. This creates a limitation to how many transitioning workers the sector would likely take on from oil & gas.

FIGURE 17. Oil and gas workers’ skill transferability to energy efficiency



Source: Transition Economics estimates, Statistics Canada, PetroLMI data

FIGURE 18. Oil and gas workers’ skill transferability to chemicals industry



Source: Transition Economics estimates, Statistics Canada, PetroLMI data



What will it take to create the jobs that are needed?

It takes time for new industries to get going, and a combination of private and public support through federal and provincial policies and investments are needed now to ensure Canada invests in the right mix to support our net-zero goals. While the specific recommendations for policy pathways are beyond the scope of the current analysis, some excellent thinking on this matter has been contributed by the Transition Accelerator and the Canadian Institute for Climate Choices. The federal government's new Net-Zero Advisory Body is further tasked with helping to advise the government on the most effective and appropriate pathways to achieve Canada's emissions reduction goals.

As the Transition Accelerator describes in their report, *Pathways to Net Zero: A Decision-Support Tool*,

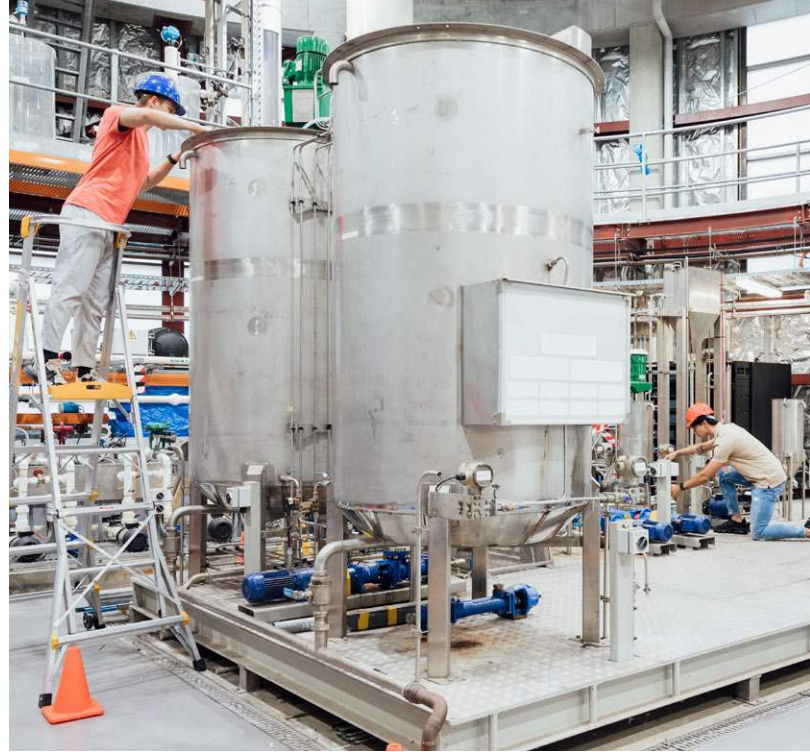
“A transition and energy systems approach also emphasizes the importance of conceptualizing what a viable net zero energy system could look like in the future. Then, by working backwards, it is possible to define the most promising pathways to get there. While it is not possible to fully anticipate technological and economic developments decades in advance, critical elements of what is needed to achieve net zero are already clear. These include:

- *Decarbonizing electricity generation and expanding electricity supply while electrifying as much of energy end-use as possible*
- *Developing and deploying net zero fuels to replace fossil fuels in situations where electrification is difficult or expensive*
- *Enhancing energy efficiency to reduce the new net zero energy needed to meet demand*
- *Addressing non-energy emissions (waste, industrial processes, and agriculture), and*
- *Testing and deploying carbon removal approaches to offset residual emissions.”⁶⁴*

The Canadian Institute for Climate Choices has presented an analysis of “safe bets” and “wild cards” to be considered for Canada's net zero pathways in its report, *Canada's Net Zero Future*.⁶⁵ This report does not specify policies or pathways, but discusses the factors that will influence Canada's success or struggle in meeting long-term emissions reduction goals.

Canada's new Net Zero Advisory Body is also expected to publish related reports and research throughout 2021.

Complementing these policy pathways, Canadian and international trade unions have also invested decades of effort



into articulating foundational tenets of just transition policies and pathways, which we summarize below. Just transition must be at the core of planning for new job creation.

In 2019, **Canada's Just Transition Task Force for Canadian Coal Power Worker and Communities** published its final report and recommendations.⁶⁶ In the list of Just Transition Task Force recommendations below, we have substituted the words “fossil fuels” for the word “coal” in brackets, as the same principles that apply to the current coal transition are equally applicable to the broader fossil fuel transition. While all the principles are essential to guide the transition through the coming decade(s), in the context of new job creation, points 4-6 are most critical, and support the Transition Accelerator's finding that solutions must be tailored to specific regions and communities, as one-size-fits-all solutions will not be tenable.

1. Embed just transition principles in planning, legislative, regulatory, and advisory processes to ensure ongoing and concrete actions throughout the [fossil fuels] phase-out transition

- Develop, communicate, implement, monitor, evaluate, and publicly report on a just transition plan for the [fossil fuels] phase-out, championed by a lead minister to oversee and report on progress.
- Include provisions for just transition in federal environmental and labour legislation and regulations, as well as relevant intergovernmental agreements.
- Establish a targeted, long-term research fund for studying the impact of the [fossil fuels] phase-out and the transition to a low-carbon economy.

2. Ensure locally available supports

- Fund the establishment and operation of locally-driven transition centres in affected communities.

3. Provide workers a pathway to retirement

- Create a pension bridging program for workers who will retire earlier than planned due to the [fossil fuels] phase out.

4. Transition workers to sustainable employment

- Create a detailed and publicly available inventory with labour market information pertaining to [fossil fuels] workers, such as skills profiles, demographics, locations, and current and potential employers.
- Create a comprehensive funding program for workers staying in the labour market to address their needs across the stages of securing a new job, including income support, education and skills building, re-employment, and mobility.

5. Invest in community infrastructure

- Identify, prioritize, and fund local infrastructure projects in affected communities.

6. Fund community planning, collaboration, diversification, and stabilization

- Establish a dedicated, comprehensive, inclusive, and flexible just transition funding program for affected communities.
- Meet directly with affected communities to learn about their local priorities and to connect them with federal programs that could support their goals.

The Fédération des travailleurs et travailleuses du Québec (FTQ), who contributed to reviewing the present report, aligns with the International Trade Union Confederation in contending that just transition planning must be informed by, and centred on, workers. FTQ recommends the following structural processes of engagement that must underpin transition planning.

- 1. Legislative backstops** are required to ensure that within the workplace, just transition plans, processes and pathways are developed through joint committees of workers and employers. One such legislative backstop could be to require companies meet this joint committee requirement as a condition of eligibility for government subsidies or incentives.

- 2.** Following the example of just transition commissions in Scotland and Ireland, **government must establish working groups on just transition** that include trade union representation. This working group would be tasked with drawing the lines of just transition legislation and providing government with proposed draft legislation. The working group's mandate would be to address the process, funding and results indicators of just transition.

3. Just transition planning must define the role of private and public funding and investment.

Finally, **Unifor**, Canada's largest private sector labour union, has articulated seven principles for a Just Transition, listed below.⁶⁷ Unifor's seven principles provide more detailed recommendations for the types of supports needed to ensure the creation of new, good jobs. Unifor suggests that financial support for Just Transition implementation could flow from a portion of revenues collected through the federal carbon pricing program (necessitating a revision to the current revenue recycling regimen) or by augmenting the budget for the Low Carbon Economy Fund. Unifor recommends:

- 1. Labour market impact assessments** to monitor the emergent effects of climate related policy;
- 2. Community benefit agreements**, to support regions that are more heavily dependent on carbon-intensive economic activities;
- 3. The promotion of green economy retraining and skills upgrading**, through appropriate funding for postsecondary institutions. This includes mandatory apprenticeship ratios linked to college training programs and skills trades certification processes;
- 4. Preferential hiring for carbon-displaced workers**, including relocation assistance;
- 5. Income support, employment insurance flexibility and pension bridging** for workers in carbon-intensive economic regions and industries;
- 6. Tax credits, accelerated depreciation, grants and/or investment support** for firms and industries that bear an extraordinary burden of change;
- 7. In unionized workplaces, there needs to be a role carved out for the bargaining agent in negotiating and facilitating workplace transition.** In non-unionized workplaces we need to envisage a role for workers to provide input on adjustment processes and procedures.

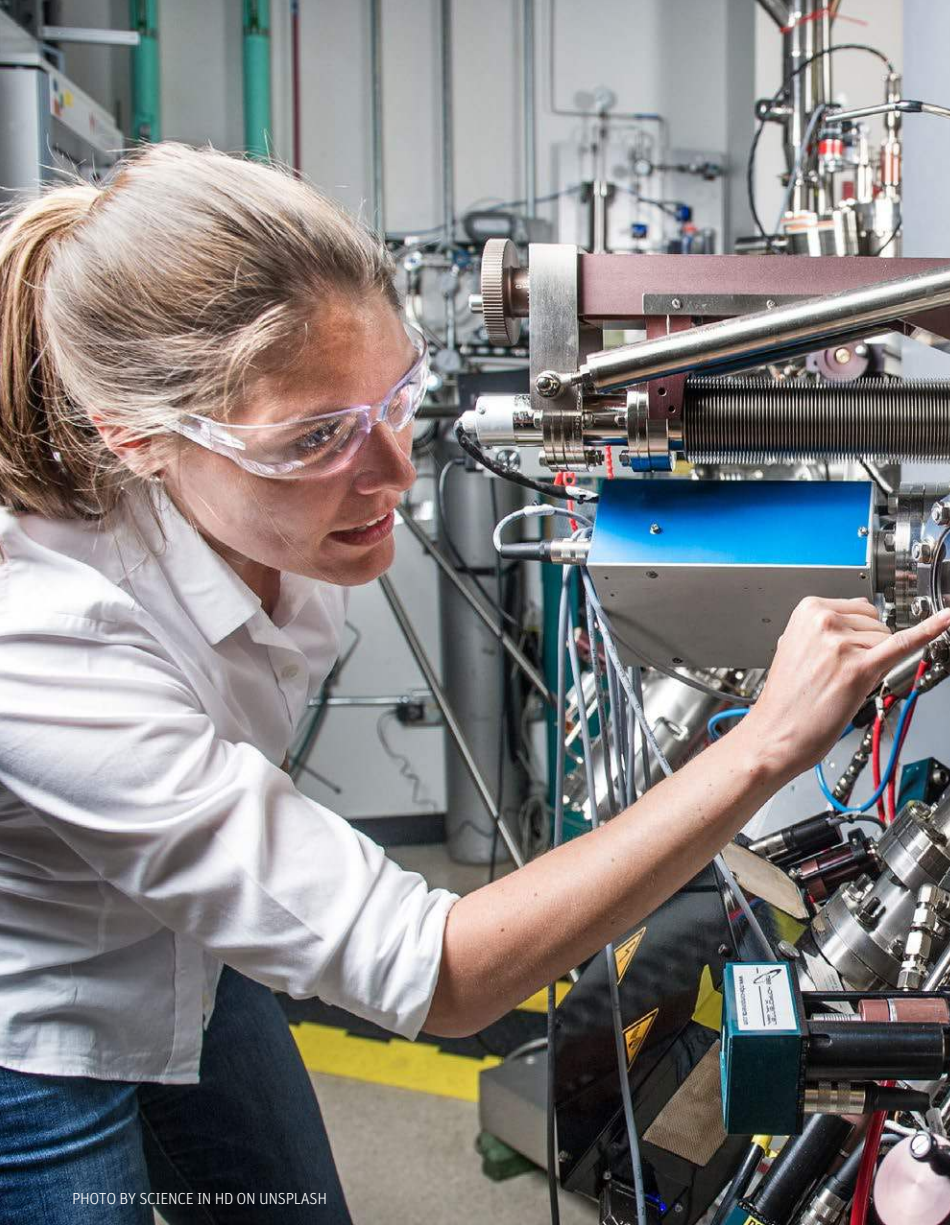


PHOTO BY SCIENCE IN HD ON UNSPLASH

56,000

This report calls on government to use COVID-19 recovery packages and the Canada Infrastructure Bank to **create at least 56,000 new jobs in the next five years** in compatible industries.

RECOMMENDATIONS

Canadian and international trade unionists have devoted decades to developing strong recommendations to guide Just Transition processes for workforces on the cusp of economic change. Within Canada, Just Transition recommendations have been articulated by Canada's Just Transition Task Force for Coal Workers and Communities, the Fédération des travailleurs et travailleuses du Québec, and Unifor, which we present in detail in this report.

In addition, Canadian think tanks like the Transition Accelerator, the Canadian Institute for Climate Choices, and Canada's Net Zero Advisory Body are developing policy pathways to achieve Canada's near-term and mid century climate goals, bearing in mind impacts to the workforce.

This paper combines climate policy approaches with deeply considered Just Transition guidance to examine projections for the future of work in Canada's oil and gas sector. The following seven recommendations emerge, given the pace of change workers and workplaces face this decade.

RECOMMENDATIONS (CONT'D)

By 2030, Canada may only have half as many oil and gas jobs as it does today. Governments urgently need to present a clear pathway for the future of Canada's oil and gas sector and its workers, and they must use all tools available to boost new, clean, good job creation.

1

Federal and provincial governments must give employers and workers certainty on likely future constraints on production, by planning for a 1.5°C aligned oil and gas output pathway that addresses Canada's fair share contribution to global climate action. Workers need governments to be honest about the future of work under a globally equitable 1.5-degree aligned framework. Meeting this temperature goal, and doing so at an accelerated pace relative to other countries as is Canada's fair share obligation, requires constraints on fossil fuel production which will limit the number of jobs in this sector in the future. But at the same time, new opportunities are emerging for clean industries that will provide new jobs and can be a path to mutual worker and employer success.

2

Recognizing the expertise of workers, through consultation with workers and communities, Canada must create Just Transition policy / legislation that holds the government accountable to developing transition strategies. Similar policy / legislation should be adopted by all provinces with an emphasis on the oil and gas producing provinces of British Columbia, Alberta, Saskatchewan, and Newfoundland and Labrador.

3

Adopt a principle of inclusion for fossil fuel workers and community representatives in planning for the energy and labour transitions, implement the recommendations of the Taskforce for the Just Transition of Coal Workers and Communities, and broaden them to include all fossil fuel types.

4

Use COVID-19 recovery packages and the Canada Infrastructure Bank to **create at least 56,000 new jobs in the next five years** in compatible industries, including industrial construction and maintenance, geothermal, wind and solar energy, energy efficiency, well decommissioning and chemicals.

5

Tie public investments to employers meeting conditions on job quality, including pay, access to training, job security, union access and representation through mandatory joint committees.

6

Public support for decommissioning and geothermal sectors should be **designed to keep existing oil and gas workforces in work** for existing employers without losses in pay, conditions, or collective bargaining.

7

As part of government efforts to stimulate new, clean jobs, **governments must improve the rigour, compliance, administration and implementation of fossil fuel reclamation and remediation funds.** In particular, better enforcement of industry's compliance with paying into these funds is required, as is the application of these funds to creating jobs for projects that actually remediate and restore ecosystems.

ENDNOTES

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FACING FOSSIL FUELS' FUTURE: CHALLENGES AND OPPORTUNITIES FOR WORKERS IN CANADA'S ENERGY AND LABOUR TRANSITIONS

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