

Supporting Young Oil and Gas Workers in Alberta: Lessons from Just Transition

**by
Lewis Lai**

B.A. (International Studies), Simon Fraser University, 2016

Project Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Public Policy

in the
School of Public Policy
Faculty of Arts and Social Sciences

© Lewis Lai 2020
SIMON FRASER UNIVERSITY
Spring 2020

Copyright in this work rests with the author. Please ensure that any reproduction or re-use is done in accordance with the relevant national copyright legislation.

Approval

Name: Lewis Lai

Degree: Master of Public Policy

Title: *Supporting Young Oil and Gas Workers in Alberta: Lessons from Just Transition*

Examining Committee: **Chair: Dominique Gross**
Professor

Nancy Olewiler
Senior Supervisor
Professor

Doug McArthur
Internal Examiner
Professor

Date Defended/Approved: April 15, 2020

Abstract

Young oil and gas workers in Alberta were significantly affected by the 2014 crash in the price of oil and the ensuing downturn. With oil and gas employment unlikely to return to former levels, continued job losses, and high unemployment rates among young male workers in Alberta, this group faces significant labour market challenges. This study examines potential improvements to Alberta's employment services system and its active labour market policies to better support young oil and gas workers in their adjustment. It employs a literature review and multiple case study analysis to identify and evaluate policy options, taking lessons from research on Just Transition. This study recommends a skills matching tool and training grant, to be implemented alongside economic diversification initiatives.

Keywords: young oil and gas workers; active labour market policies; skills matching tool; training grant; economic diversification

Acknowledgements

I would like to express my sincere gratitude to several people.

First, my supervisor, Nancy Olewiler, for her patient guidance and advice over the course of this project.

Second, to my family and friends, whose support and encouragement have been invaluable.

Third, to the faculty and staff of the Master's of Public Policy program and each of my wonderful classmates, whose constant presence, wisdom, and good company have defined my experience in this program. I am grateful to have gone through it with you.

Finally, to Jonathan Poon, Claudia Malinowski, Holly Eksal, and Dennis Anthonipillai. Thank you for your patience, kindness, friendship, and for listening to me talk endlessly about this project.

Table of Contents

Approval.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Table of Contents.....	v
List of Tables.....	vii
List of Figures.....	viii
List of Acronyms.....	ix
Preface.....	x
Executive Summary	xi
Chapter 1. Introduction.....	1
Chapter 2. The Changing Oil and Gas Sector	3
2.1. The 2014 Oil Price Crash	3
2.1.1. Young Oil and Gas Workers	4
2.2. Structural Changes in the Oil and Gas Sector	5
2.2.1. Automation	5
2.2.2. Global Demand for Alberta's Oil	6
2.3. Support for Young Oil and Gas Workers.....	7
2.3.1. Just Transition: A Bottom-up Approach	8
2.4. Characteristics of Young Oil and Gas Workers.....	9
2.4.1. Subsector Composition.....	9
2.4.2. Geography.....	11
2.4.3. Demographics	13
2.4.4. Education	13
2.4.5. Income	13
2.4.6. Summary.....	14
Chapter 3. Methodology.....	15
3.1. Policy Problem	15
3.2. Literature Review.....	15
3.3. Multiple Case Study.....	15
3.3.1. Case Study Selection	15
3.3.2. Lessons from Just Transition	16
3.3.3. Evaluation Framework: Lessons from Just Transition	16
Chapter 4. Supports for Young Oil and Gas Workers.....	18
4.1. The Employment Services System in Alberta	18
4.1.1. Effectiveness of ALMP.....	20
4.1.2. The Need for Additional Action	22
4.2. Summary.....	24
Chapter 5. Multiple Case Study Analysis.....	25
5.1. Canada: the Atlantic Groundfish Strategy	25

5.1.1.	Availability of Jobs	26
5.1.2.	Coordination of Measures	26
5.1.3.	ALMP Measures	27
5.1.4.	Worker Interests and Needs	27
5.2.	United States: Trade Adjustment Assistance	28
5.2.1.	Availability of Jobs	29
5.2.2.	Coordination Between Measures	29
5.2.3.	ALMP Measures and Worker Interests and Needs	30
5.3.	The United Kingdom	31
5.3.1.	Availability of Jobs	32
5.3.2.	Coordination between measures	32
5.3.3.	Worker interests and needs	33
5.3.4.	ALMP Measures	33
5.4.	Discussion of Findings: Lessons for Alberta	34
Chapter 6. Policy Options		37
6.1.	Policy options	37
6.1.1.	Policy Option #1: Amalgamated website	37
6.1.2.	Policy Option #2: Online Skills Matching Tool	38
6.1.3.	Policy Option #3: Training Grant	39
6.2.	Alternatives Considered	40
6.3.	Impact Analysis	40
6.3.1.	Amalgamated Website	40
6.3.2.	Skills Matching Tool	41
6.3.3.	Training Grant	41
6.4.	Availability of Jobs	42
Chapter 7. Evaluation of Policy Options		44
7.1.	Criteria and Measures	44
7.1.1.	Effectiveness	44
7.1.2.	Cost to Government	44
7.1.3.	Administrative Complexity	44
7.2.	Evaluation of Policy Options	45
7.2.1.	Policy Option #1: Combined Website	45
7.2.2.	Policy Option #2: Skills Matching Tool	46
7.2.3.	Policy Option #3: Training Grant	48
7.2.4.	Summary	49
7.3.	Recommendation	50
7.3.1.	Implementation	51
Chapter 8. Conclusion		53
References		54
Appendix. Skills Match Australia		62

List of Tables

Table 1:	Estimate of job losses arising from the 2014 crash in price of oil by age group.....	4
Table 2:	Share of Total National Oil and Gas Workforce by Age Group	5
Table 3:	Economic regions in Alberta where most oil and gas workers reside, 2016	12
Table 4:	Educational attainment of the oil and gas workforce, 2016.....	13
Table 5:	ALMP programs and services in Alberta	19
Table 6:	Summary of case study evaluation.....	34
Table 7:	Comparison of Policy Options	49

List of Figures

Figure 1:	Price of WCS and natural gas, January 2014 to May 2016	3
Figure 2:	Subsector distribution of oil and gas workers aged 24 and under, 2006-2016.....	10
Figure 3:	Subsector distribution of oil and gas workers, 25 and over, 2006-2016, .	11
Figure 4:	Number of clients by age group, ALMP programs and services funded by the LMDA in Alberta, FY2009/2010 to FY2017/2018	23
Figure 5:	Lessons for Alberta	36

List of Acronyms

ALMP	Active Labour Market Policies
EI	Employment Insurance
ESDC	Employment and Social Development Canada
OECD	Organization for Economic Co-operation and Development
TAA	Transition Training Allowance
TAGS	The Atlantic Groundfish Strategy
TTF	Transition Training Fund

Preface

The work for this study was mostly completed before the advent of the coronavirus pandemic. Since then, global oil prices have collapsed amidst sharp drops in demand and an oil price war between the Organization of Petroleum Exporting Countries and Russia. Oil production in Alberta has been heavily impacted, resulting in a significantly worse outlook for both the provincial economy and employment than that which is included in this study. The Alberta government will be challenged to fund additional employment service systems, but the massive increases in unemployment intensifies the need for policies to help oil and gas workers of all ages to transition to new jobs.

Executive Summary

Young oil and gas workers in Alberta were significantly affected by job losses in the aftermath of the 2014 crash of the price of oil and the economic downturn that followed. Structural changes in the oil and gas sector render it unlikely that they will be able to return to employment in that sector. However, they continue to face a tough labour market situation despite the availability of a range of programs and services in Alberta's employment services system. Indeed, the unemployment rate for young men under 25 years of age reached 19.4% in late 2019. As such, this study examines policy options to improve the effectiveness of that system. It takes a bottom-up approach, informed by the concept of Just Transition, to ensure that the perspective of young oil and gas workers and what will be most effective for them, are the basis of analysis.

A review of studies surveying existing evaluations of government active labour market policy interventions from across the world found that such measures, including those available in Alberta, generally have positive impacts. They show that training and private sector employment incentives have greater impacts, particularly over the medium and longer term, compared to job search assistance. However, research also demonstrates that interventions to support young workers are limited in situations of high unemployment rates. Such measures are unable to overcome the widespread lack of demand for young workers in such contexts, as firms seek to retain and hire more experienced workers.

This study conducted a multiple case study analysis, using an evaluation framework derived from research on strategies for Just Transition, to identify policy options and best practices to improve the effectiveness of government active labour market policy interventions. It examined the Atlantic Groundfish Strategy in Atlantic Canada, the Trade Adjustment Assistance program in the United States, and the 2016 Oil and Gas Workforce Plan in the United Kingdom. The cases demonstrated the importance of pursuing a bottom-up approach, with three broad lessons for providing supports to young oil and gas workers. First, interventions should ensure that there are jobs available for affected workers to transition into. This is particularly important for Alberta considering the outsized importance of the oil and gas sector on the provincial economy and employment, and the softer economic conditions and employment growth expected in the next decade per the province's Occupational Outlook. Second,

government interventions should take into account the characteristics, needs, and interests of young oil and gas workers, to ensure that the measures enacted will be accessible and effective for as many amongst the target population as possible. Third, measures should be coordinated, whether by gathering access in one location or by coordinating program delivery.

This study identified a mix of targeted and non-targeted policy options:

1. An amalgamated website that would combine information from disparate federal and provincial websites relating to the employment services in Alberta. This would provide a single online point of entry into the Albertan system and the supports available to workers.
2. An online Skills Matching Tool. Available to all workers, this would allow young oil and gas workers to determine what skills and experience they have developed in their previous jobs and provide them with suggestions for occupations that match well with their existing skillset. Such a tool would help them better direct their job search and training decisions, improving employment outcomes.
3. A Training Grant that would provide \$3,000 to individual oil and gas workers aged 24 and under that lost, or lose, their jobs from 2015 onwards. This would help facilitate their access to more training options.

It then conducted an impact analysis of these options against a profile of young oil and gas workers. It found that while the Training Grant may have some issues with equity of access to training options, the characteristics of the target population generally would not present major obstacles that would impact the reach and effectiveness of these options.

After an evaluation of the of the benefits and trade-offs of each option, this study makes two recommendations. One, that the province of Alberta develop and implement the Skills Matching Tool and the Training Grant. Two, that these options be pursued alongside economic diversification initiatives. This would help address the lack of demand for young workers. Implementation should follow a bottom-up approach, whereby these two sets of actions should be coordinated. For example, the Skills Matching Tool and Training Grant should direct participants into occupations related to

the targeted sectors. Participants should be surveyed after they leave the program to determine what happens to them and whether the above interventions are effective in improving the employment outcomes of young oil and gas workers.

Chapter 1.

Introduction

Oil and gas workers aged 24 and under in Alberta were significantly affected by the 2014 crash in the price of oil and the ensuing economic downturn, due in part to a last-in, first-out, and last hired in mindset in the sector (PetroLMI, 2018c). Accelerated automation and structural changes in the global oil sector render it unlikely that employment will return to its former peaks. Moreover, young oil and gas workers displaced from the oil and gas sector face a tough labour market, as job losses have continued in the sector in 2019 and the unemployment rate for males aged 24 and under reached almost 20% late that same year. This is despite the province's suite of active labour market policies (ALMP) available to this group, including job search assistance, training, wage subsidies, and self-employment training.

This study takes a bottom-up approach in examining policy options to improve the effectiveness of the Alberta employment services system for young oil and gas workers, with a focus on how they would impact participant re-employment rates and earnings. It reviews the literature on evaluations of active labour market policies, identifying which are more effective and factors important for their success. This study then conducts a multiple case study analysis, using an evaluation framework derived from research on strategies for Just Transition, to identify potential policy options and best practices. It applies this framework to three cases: the Atlantic Groundfish Strategy in Atlantic Canada, the Transition Adjustment Assistance (TAA) program in the United States, and the 2016 Oil and Gas Workforce Plan in the United Kingdom. The policies identified are an amalgamated website for the Alberta employment services system, an online skills matching tool, and a training grant for young oil and gas workers. These are assessed against the characteristics of young oil and gas workers in Alberta to determine if they will be accessible and effective for this group. It concludes by recommending a combination of the online skills matching tool and the Training Grant alongside pursuit of economic diversification initiatives.

This study begins in Chapter 2 by outlining the employment losses from the 2014 crash in the price of oil and the structural changes affecting the oil and gas sector. As

well, it sets out a profile of the characteristics of young oil and gas workers. Chapter 3 establishes the policy problem and sets out the methodology followed by this study, including the evaluation framework for the multiple case study analysis. Chapter 4 examines the employment services system in Alberta and provides a literature review of the effectiveness of active labour market policies. The multiple case study analysis is conducted in Chapter 5. Chapter 6 identifies and describes the policy options derived from earlier chapters and conducts an impact analysis against the characteristics of young oil and gas workers. Chapter 7 evaluates these policy options against the criteria of effectiveness, cost to the Albertan government, and administrative complexity, and provides recommendations.

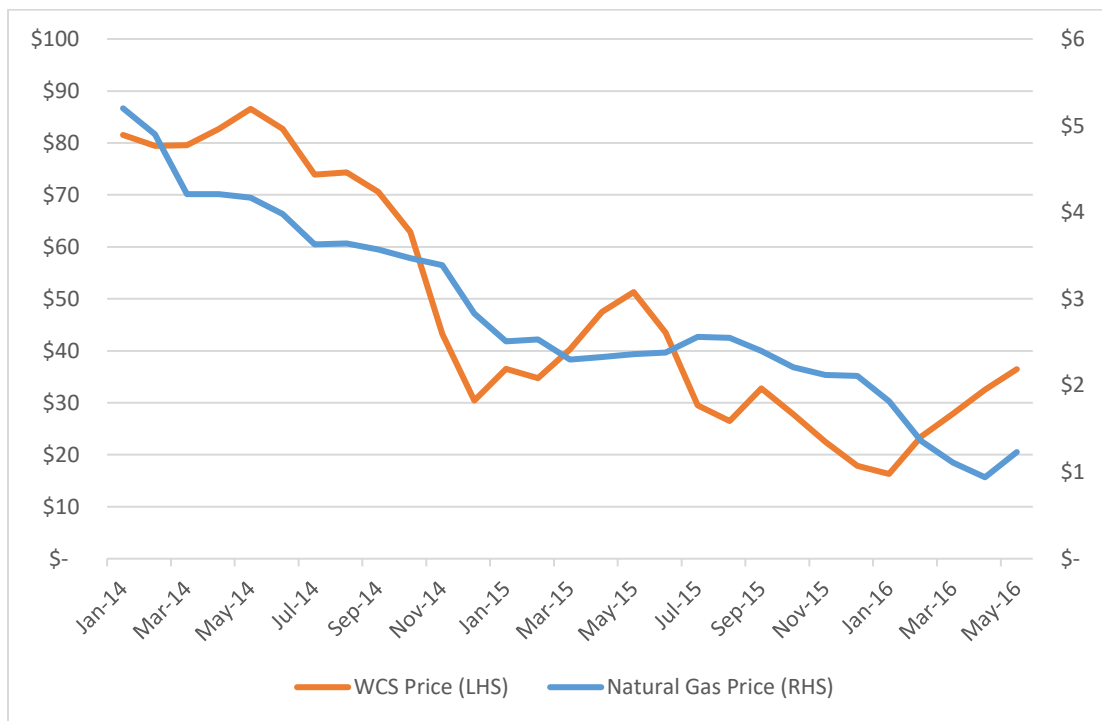
Chapter 2.

The Changing Oil and Gas Sector

2.1. The 2014 Oil Price Crash

Between 2014 and 2016, the price of crude oil fell precipitously. The price of Western Canada Select (WCS), the benchmark for crude oil produced in Alberta, fell 81% (Figure 1). As demand for natural gas in Alberta is closely tied to oil production in the province's oil sands (which consumes 25% of provincial natural gas production), the price of natural gas also fell 67% (Alberta Energy Regulator, 2019; Canada Energy Regulator, 2017; Government of Alberta, n.d.).

Figure 1: Price of WCS and natural gas, January 2014 to May 2016



Note: Data for WCS price from Government of Alberta (2020b), and for natural gas price from Government of Alberta (2020a). Contains information licensed under the Open Government Licence – Alberta.

The collapse in prices caused capital expenditures in the Albertan oil and gas sector to fall 57% from around \$61 billion in 2014 to \$27 billion in 2016, resulting in large-scale losses of direct jobs (Alberta Energy Regulator, n.d.). PetroLMI, a division of

Energy Safety Canada, noted that employment in the national oil and gas sector declined 18% (40,200) in that period (2019). As Alberta constituted 71% of the country's oil and gas employment in 2016, losses have been concentrated there (PetroLMI, 2018b).

2.1.1. Young Oil and Gas Workers

The available evidence suggests that young oil and gas workers were heavily impacted by the 2014 crash. A rough estimate of job losses by age group is provided in Table 1 and shows that workers aged 24 and under may have experienced significant job losses, particularly relative to their small share of the oil and gas workforce. While this estimate is for the national oil and gas sector, the concentration of employment in Alberta means that it is likely representative of the province's oil and gas workforce. It assumes that the different worker age groups maintained their respective shares of the total oil and gas workforce from 2011 to 2014, not impossible considering that workforce expanded by 21% during that time (Careers in Oil and Gas, n.d.).

Table 1: Estimate of job losses arising from the 2014 crash in price of oil by age group

Age Group	Change in Employment, 2014 to 2016*	% Change in Employment, 2014 to 2016*
24 and under	-11,181	-47%
25 to 34	-7,690	-13%
35 to 44	-803	-2%
45 to 54	-10,415	-19%
55-64	4,954	21%
65+	-565	-13%

Note: Calculations and results for this estimate were based on workforce data for 2016 from *Diversifying Canada's oil and gas workforce: A decade in review*, by PetroLMI (2018c, p.21), which uses Statistics Canada data. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

*Estimated by author

Indeed, they are the only age group that saw their share of that workforce decline between 2011 and 2016 (Table 2). It is important to note that this estimate is meant to provide an idea of the job losses that may have happened. As it assumes both a linear growth and then decline in jobs, it does not capture other factors that may have played a role in the estimated declines. For example, some young workers may have simply aged out into the 25 to 34 age group. Or, the sector could have hired fewer young workers compared to other age groups during this period. While the former likely did account for

some of the decline, it is unlikely that it would have constituted all the losses during that period as that would have required that all young workers be 23 or 24 years of age at the start of the crisis. Data to identify in detail the impacts on all age cohorts was unavailable.

Table 2: Share of Total National Oil and Gas Workforce by Age Group

Age group	2006	2011	2016
15 to 24	15% (24,675)	11% (19,065)	7% (12,495)
25 to 34	26% (43,145)	27% (48,855)	27% (50,425)
35 to 44	25% (40,570)	24% (42,595)	27% (50,855)
45 to 54	24% (39,375)	25% (44,290)	23% (43,395)
55-64	9% (14,645)	11% (20,165)	15% (28,630)
65+	1% (2,380)	2% (2,915)	2% (3,740)
Total	164,790	177,885	189,540

Note: Information adapted from *Diversifying Canada's oil and gas workforce: A decade in review*, by PetroLMI (2018c, p.21), which uses Statistics Canada data. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

Qualitative research indicates that young oil and gas workers may be particularly vulnerable to job losses during downturns due to the 'last in, first out, and last back in' mindset that is prevalent in the sector. Young workers are hired last as they have the least experience and must compete with older workers. They are then the first to be let go from their jobs during downturns as firms seek to retain older, more experienced workers. After, they have much greater difficulty in being hired back into the sector as firms again hire older, more experienced workers first (PetroLMI, 2018c). This difficulty has been exacerbated significantly by structural changes in the sector that make it unlikely that employment will return to its former peaks. As such, many young oil and gas workers that lost their jobs likely will have to find new occupations or transition to other sectors.

2.2. Structural Changes in the Oil and Gas Sector

2.2.1. Automation

In response to the 2014 price crash, firms pursued improvements to efficiency and productivity. Amidst a spree of mergers and acquisition and the elimination of excesses and duplicated jobs, they also accelerated the ongoing process of automation in the sector. The adoption of new technologies has eliminated numerous jobs, reducing

the number of workers required and changing the skills in demand (PetroLMI, 2019). As such, demand is declining for traditional occupations in drilling, completing, and equipping new wells, and is increasing for skills in maintaining, updating, and repairing automation systems at remote well sites, along with those relating to IT and software development. For example, increased use of driverless automated heavy haulers in the oil sands could cause the loss of thousands of jobs among heavy equipment operators. Suncor, a major firm, expects to adopt this technology at all three of its oil sands mines in Alberta within the next five years and estimates that it will result in a net loss of about 400 jobs. However, this includes new employment of 100 jobs to oversee remote operations in control centre operations Occupations most likely to be impacted by the increasing pace of technological change include accounting occupations, data entry occupations, plant and field operations, maintenance trades, and heavy haulers (oil sands mining) (PetroLMI, 2019).

2.2.2. Global Demand for Alberta's Oil

Global demand for Albertan oil is likely to be limited by two factors.

The first is the continued expansion of shale oil production in the United States (US), which since 2008 has greatly increased global crude oil supply in competition with Albertan oil exports¹. Between 2008 and 2016, US shale oil production rose from near zero to about 4.25 million barrels per day of crude oil, representing around 48% of total US crude oil production and 5% of total global production. The US Energy Information Agency (EIA) estimates that increases in production will continue until the mid 2030s, reaching over 10 million barrels per day (2019). The International Energy Agency (IEA) forecasts US shale oil to account for up to 75% of growth in global oil production until 2025, after which the Organization of the Oil Producing Countries (OPEC) takes over (2018). As a competitor to Alberta's exports, US shale oil production is cheaper and can more quickly respond to changes in oil price compared to oil sands production. This enables it to better weather fluctuations and sustained periods of lower prices. Projects can be developed and brought to market between six and twelve months, compared to

¹ The US shale expansion has also increased US natural gas production, which has caused a decline in Albertan exports to the US and eastern Canadian provinces in the last several years. Demand within Alberta has largely replaced the lost market share (Alberta Energy Regulator, 2019).

an average of three years for projects in the oil sands (Ellwanger et al., 2017). The boom in shale oil production has also filled US pipeline capacity, limiting the transportation options for Albertan crude (which is mostly heavy oil) to reach the US Gulf Coast. As that is where most available refining capacity for heavy crude oil in North America is located, Albertan producers have resorted to transporting their product by rail. This is much more expensive than transporting by pipeline, and as a result Albertan heavy crude (WCS) is generally sold at a discount compared to US domestic crude (under West Texas Intermediate) to account for this (Oil Sands Magazine, 2018). This has added additional challenges for the Albertan sector, as most of its exports are to the US.

Second, “peak” oil demand is likely to be reached within the next 20 years, whereby growth in demand for crude oil globally reaches a peak and afterwards begins to decline. Several entities are forecasting this to occur, including Saudi Aramco, the world’s largest oil company (Adomaitis, 2019; Martin & Blas, 2019; McKinsey Solutions Sprl, 2019). Factors expected to drive the decline in oil demand include the steady increase in the use of electric vehicles, the rise in alternative fuels, and better fuel efficiency in vehicles (IEA, 2018). Particularly important is the effect of government climate change policies. The Paris Agreement has induced many countries, including Canada, to adopt mitigation measures such as carbon pricing, with more countries likely to follow. Moreover, with the Intergovernmental Panel on Climate Change (IPCC) reporting that commitments made under the Paris Agreement are no longer sufficient to limit global temperature increases, more stringent global action could occur in the coming years (IPCC, 2018).

2.3. Support for Young Oil and Gas Workers

Young workers are thus being displaced from the oil and gas sector, as their job loss is involuntary and permanent, and many will be required to transition into new occupations or industries. Displaced workers face lower re-employment rates and greater post-displacement income declines compared to other job separators, due in large part to losses of firm and/or industry-specific skills and tenure as they transition (Abbott, 2008; Organization for Economic Co-operation and Development, 2015). While this is more severe for older and more experienced workers, the situation for young oil and gas workers may be amplified by the comparatively high average wages in their sector (see Section 2.4.5).

Providing support to these workers is a matter of equity, as this group is bearing heavy costs in the sector's restructuring while the rest of the country enjoys the benefits of lower crude oil prices and the transition to a low-carbon economy. Moreover, extended spells of unemployment early in a worker's career has also been shown to have negative impacts on future employment outcomes, including lower wages and labour market attachment (Caliendo & Schmidl, 2016). While some may argue that oil and gas workers made the choice to enter a sector known for boom and bust cycles, the sector is instead undergoing a permanent restructuring. Its workers should not have been expected to insure themselves against such changes, particularly considering the importance of oil for Alberta's GDP and employment.

Support for these workers should seek to facilitate post-displacement re-employment and help ensure that they are able to find jobs commensurate with their skills. This is generally addressed with active labour market policies (ALMP). Employment Insurance (EI) is also an important part of the services provided to unemployed/displaced workers. However, as it is meant to mitigate economic hardship and replace income during periods of unemployment, it is not the primary focus of this study.

2.3.1. Just Transition: A Bottom-up Approach

Government intervention for workers facing poor labour market conditions can be informed by the concept of Just Transition. This concept takes the view that workers and communities dependent on greenhouse gas-intensive industries will be the most affected by climate change mitigations efforts and argues that they should not bear those costs alone. It argues that any transition of affected workers should engage them and their perspective at all stages and provide them with quality jobs and security (Marvin Shaffer & Associates Ltd., 2016). This denotes the importance of taking a bottom-up approach for government intervention to support workers, whereby worker perspectives and needs, as well as what will be most effective for whom, is the basis of policy development. A key part of this is ensuring that policy options to support these workers align with the characteristics of the target population (see Section 6.3). This will increase the likelihood that these workers will be able to access the supports targeted towards them and improve their effectiveness. These characteristics are outlined in Section 2.4 below.

2.4. Characteristics of Young Oil and Gas Workers

The following profile draws on workforce data from PetroLMI (2018a; 2018b; 2018c). Due to lack of data specific to workers aged 24 and under, this profile assumes that the characteristics of the broader oil and gas workforce are generally representative of its young workers. This results in certain limitations. For one, it does not capture potential differences in workforce composition that may exist between different types of oil and gas operations (e.g., oil sands vs conventional extraction). For another, this data is mostly available only for the national sector, rather than Alberta specifically. Nonetheless, it provides approximations of the characteristics of the young oil and gas workforce, which is useful for assessment against the policy options identified in Chapter 6. As Alberta accounts for 71% of employment in the national sector, it likely drives the composition of the workforce data used.

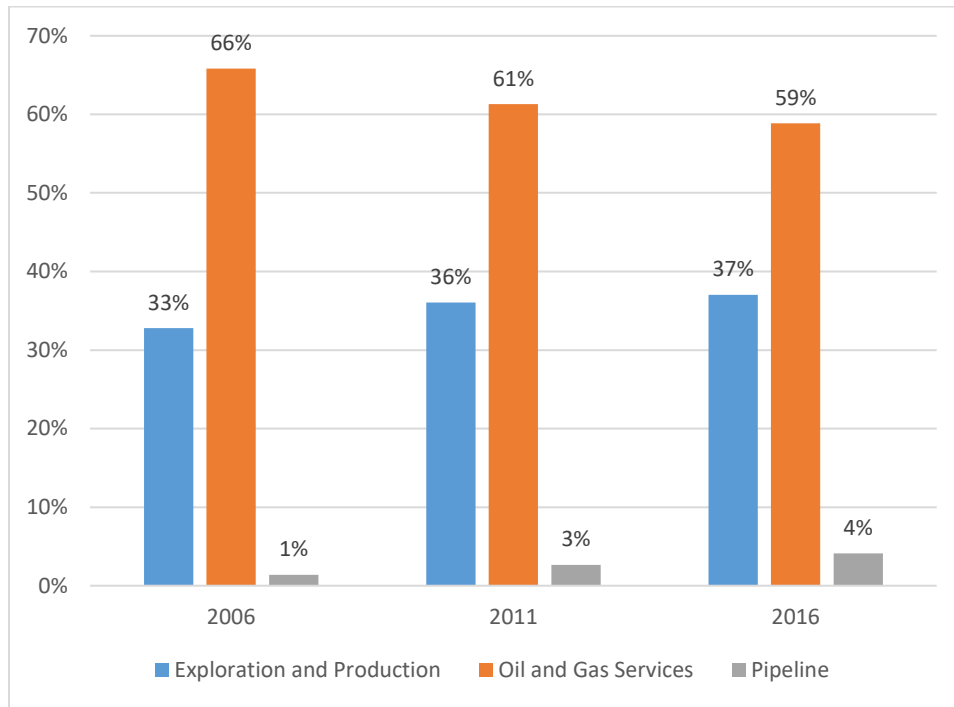
PetroLMI separates direct employment in the oil and gas sector into three subsectors (Careers in Oil and Gas, 2019).

- a) Exploration and production: identifies oil and gas resources, negotiate access, and then extracts the resource. This includes the oil sands.
- b) Oil and gas services: provides support services and products to the exploration and production sub-sector, including “drilling, testing, producing, maintaining and reclaiming oil and natural gas wells” (Careers in Oil and Gas, 2019, para 13).
- c) Pipelines: transports oil and gas from the extraction point to the various processing and storage facilities, and then onwards for export or into homes and businesses.

2.4.1. Subsector Composition

As of 2016, most oil and gas workers aged 24 and under were employed in the oil and gas subsector (Figure 2). While the share of all young workers in exploration and production increased from 2006 to 2016, the actual number of workers in this subsector declined. The share only increased due to there being an even larger decline in absolute numbers in the oil and gas services subsector (PetroLMI, 2018c).

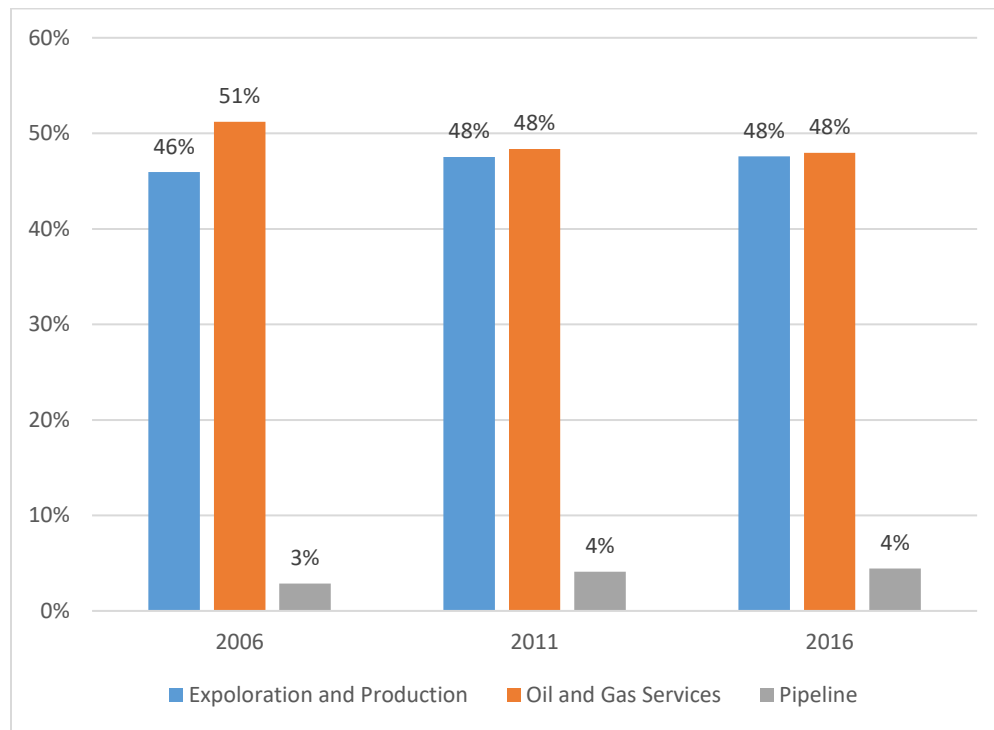
Figure 2: Subsector distribution of oil and gas workers aged 24 and under, 2006-2016



Note: Information adapted from *Diversifying Canada's oil and gas workforce: A decade in review*, by PetroLMI (2018c, p.21), which uses Statistics Canada data. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

This difference in subsector concentration may have contributed to the impact of the 2014 crash on young oil and gas workers, as the oil and gas services subsector saw the largest job losses after the 2014 crash (Careers in Oil and Gas, n.d.). This may have been in part due to its dependence on capital spending and activity in the exploration and production sector.

Figure 3: Subsector distribution of oil and gas workers, 25 and over, 2006-2016,



Note: Information adapted from *Diversifying Canada's oil and gas workforce: A decade in review*, by PetroLMI (2018c, p.21), which uses Statistics Canada data. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

2.4.2. Geography

Most Albertan oil and gas workers in 2016 lived in economic regions close to major industry operations (Table 3). Edmonton and Calgary together accounted for 58% of the Albertan total, likely due to the concentration of head office roles and the fly-in, fly-out nature of the workforce at many oil sands operations (PetroLMI, 2018b).

Table 3: Economic regions in Alberta where most oil and gas workers reside, 2016

Economic region	Number of workers	Percentage of Alberta total
Calgary	53,930	40%
Edmonton	23,645	18%
Wood Buffalo-Cold Lake ²	17,690	13%
Athabasca-Grand Prairie-Peace River	12,575	9%
Red Deer	8,270	6%
Camrose-Drumheller	7,570	6%
Lethbridge-Medicine Hat	5,210	4%

Note: Information adapted from *Canada's oil and gas workforce: Distribution, work patterns and income*, by PetroLMI (2018b, p.10), which uses Statistics Canada data. Retrieved from https://careersinoilandgas.com/wp-content/uploads/2019/06/FINAL_PetroLMI_Distribution_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

Interprovincial Workers

Due to the remoteness of many oil and gas projects, many depend on a workforce comprised of workers that travel large distances in and out of project sites for extended periods at a time. These fly-in, fly-out and drive-in, drive-out (FIFO) workers largely hail from different parts of Alberta, but some are from other provinces (PetroLMI, 2015; PetroLMI 2018b). A study by Statistics Canada on interprovincial employees showed that as of 2008, around 9% of all workers in Alberta's oil and gas extraction and support activities sector were from other provinces (Laporte, Lu, & Schellenberg, 2013). In 2016, 40% of the broader Wood-Buffalo Cold Lake region's oil and gas workers did not reside within the region. Of the region's total oil and gas workforce, 24% lived elsewhere in Alberta, 9% in other Western Canadian provinces, 5% in the Atlantic provinces, and 2% in Central Canada. Workers in the region's oil and gas services sub-sector appeared to have a comparatively higher level of mobility, with 25% of workers in that sector residing outside of Alberta compared to 13% of the exploration and production sub-sector (PetroLMI, 2018b).

² This region includes Fort MacMurray.

2.4.3. Demographics

The oil and gas workforce is predominantly male, at 88% in 2016. Moreover, 16% of the workforce was comprised of immigrants and non-permanent residents, and 6.3% was Indigenous (PetroLMI, 2018c).

2.4.4. Education

The oil and gas workforce is well-educated³, with 68% of workers having some form of post-secondary education in 2016. Table 4 shows the variety in educational attainment, indicating the highly skilled and varied work done in the sector. There were differences between subsectors, with more oil and gas services workers possessing trades certifications or only high school-level education compared to other sectors (PetroLMI, 2018c).

Table 4: Educational attainment of the oil and gas workforce, 2016

Educational attainment	Oil and Gas Total	Exploration and Production	Oil and Gas Services	Pipeline
No certificate, diploma, or degree	8%	4%	13%	2%
High school diploma or equivalent	24%	19%	30%	14%
Trades certificate or registered apprenticeship certificate	18%	15%	20%	11%
College diploma or university diploma below bachelor	24%	27%	21%	28%
University degree	26%	34%	16%	45%

Note: Information adapted from *Diversifying Canada's oil and gas workforce: A decade in review*, by PetroLMI (2018c, p.16), which uses Statistics Canada data. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf. Copyright 2018 by PetroLMI. Permission granted in source document.

2.4.5. Income

Alberta's oil and gas workers earn high incomes, averaging \$135,000 in 2016. Nationally, oil and gas incomes averaged \$125,300 that year, which were significantly

³ For information on the occupational composition of the sector, see PetroLMI (2018b).

higher than other trade-intensive industries such as utilities (\$90,400), construction (\$64,300), and manufacturing (\$56,000) (PetroLMI, 2018b). However, average incomes for interprovincial workers is likely lower. In 2009, average income for interprovincial workers in the oil and gas extraction and support activities sector was 59% of that of resident workers for males and 55% for females. This may have been partly due to the seasonal nature of some employment in this sector. Younger workers were more likely to have earnings in other provinces and who may have depended less on their income in Alberta. For example, 69% of all interprovincial workers in Alberta aged 18 to 24 had earnings from other provinces in 2009, compared to 41% of those aged 55 to 64. Similarly, income earned in Alberta also constituted smaller shares of total family income for younger, married interprovincial employees. This share was 38% for those in the 18-24 age group and 49% for those in the 25 to 34 age group. It accounted for a majority of family income for all other age groups (Laporte, Lu, & Schellenberg, 2013).

2.4.6. Summary

- The 2014 crash in the price of oil and the ensuing economic downturn resulted in the loss of thousands of jobs in the Alberta oil and gas sector. Employment in the sector is unlikely to return to its former levels due to accelerated technological change, continued competition from US tight oil production, and the potential for peak global oil demand within the next twenty years.
- Government response for this group can be aided by using the principles associated with a just transition. This requires that intervention take a bottom-up approach to ensure that the perspectives of the target population are taken into account in policy development and implementation.
- Young workers were heavily impacted during the crisis and downturn. Most of this group was employed in the oil and gas services subsector, which saw the largest amount of job losses. Generally, the oil and gas workforce is well-educated, has high average incomes relative to other sectors, and resides in several of Alberta's economic regions, though most live in Calgary and Edmonton.

Chapter 3.

Methodology

3.1. Policy Problem

Young oil and gas workers in Alberta have been heavily impacted by the 2014 crash in the price of oil and the structural changes affecting the global oil sector, and improvements to the Alberta employment services system are needed to support them.

3.2. Literature Review

This review constitutes Chapter 4 and has two parts. For one, it conducts a scan of the ALMP programs and services available in Alberta and identifies the need for improvements. For the other, it examines studies that survey available evaluations of ALMP enacted in numerous countries, with the goal of determining which are more effective and major factors that may impact that effectiveness.

3.3. Multiple Case Study

Constituting Chapter 5, this considers the factors that make government ALMP interventions to support displaced workers more effective. The goal is to identify options and best practices to improve the existing programs and services in Alberta to better support young oil and gas workers and their transition out of the oil and gas sector and find suitable employment. It focuses on cases of industrial restructuring where governments intervened to help workers transition to other industries. Where possible, impacts on employment outcomes such as re-employment rates or earnings are considered.

3.3.1. Case Study Selection

The cases were selected in part using three broad criteria: a) the jurisdiction should be a developed country, b) it should have experienced significant job losses arising from industrial/economic restructuring; and c) it must have enacted a number of

ALMP measures to support workers that lost their jobs. This study will focus on three cases: the Atlantic Groundfish Strategy in Canada, the Trade Adjustment Assistance program in the United States, and the Oil and Gas Workforce Plan enacted in the United Kingdom.

3.3.2. Lessons from Just Transition

As the goal of this study is the improvement of the Alberta employment services system, it seeks to learn from cases where a suite of ALMP measures were used. It uses a case evaluation framework derived from research by Botta and Marvin Shaffer & Associates Ltd. on previous strategies for Just Transition, which provides lessons regarding government ALMP interventions (2018; 2016). Here, a bottom-up approach is taken, whereby the perspective of the target population and what will work for them in their specific situation is the primary focus.

3.3.3. Evaluation Framework: Lessons from Just Transition

Availability of Jobs

Measures to help workers require that there be jobs available for them to transition into. In some cases of industrial restructuring, existing and growing industry sectors can absorb affected workers. For example, clean energy/tech sectors are often looked to as alternative sectors for transitioning coal and oil and gas workers. In other cases, government action is necessary to help communities/regions plan, invest, and diversify away from the sector that is being phased out (Marvin Shaffer & Associates Ltd., 2016). As such, initiatives to develop alternative industries and sources of jobs for areas affected by concentrated job losses are important in government interventions. Cases will be evaluated by whether such measures are present or not.

Worker Interests and Needs

It is important to understand and incorporate worker interests and needs when delivering measures to help workers transition (Botta, 2018; Marvin Shaffer & Associates Ltd., 2016). This can include determining the sectors they want to work in and barriers to adjustment, such as educational levels, family situations, willingness to relocate, and others. Doing so helps to ensure that the measures enacted can support as many

among the target population as possible, as well as be more effective in achieving the desired outcomes for affected workers. Cases will be examined to see whether worker interests and needs are taken into consideration.

Coordination Between Policies

While a variety of policy measures may be used to support displaced workers, coordination between them is important in improving their effectiveness. This can include coordinated delivery of services and ensuring that priorities between programs don't conflict with one another. Such coordination helps build synergies between different programs, which allows for better co-operation and coherence among them (Botta, 2018). Cases will be measured in terms of whether such coordination was present.

ALMP Measures

ALMP are core to any government intervention. Botta identifies job search assistance and training as having shown particular importance (2018). For the former, this can include a variety of services, with online tools gaining increasing attention. (2018). For the latter, it is important that they are targeted at labour market demand, otherwise they risk developing irrelevant skillsets in jobseekers (Botta, 2018; Marvin Shaffer & Associates Ltd., 2016). The more targeted they are, the greater likelihood of improved employment and/or earnings outcomes for participants. Cases will be measured by whether they enacted job search assistance and training measures, and whether training is targeted.

Chapter 4.

Supports for Young Oil and Gas Workers

4.1. The Employment Services System in Alberta

ALMP programs and services in Alberta are funded by the federal government through the bilateral Labour Market Development Agreement (LMDA) and Workforce Development Agreement (WDA). However, they are delivered by the province through its employment services system. These programs and services fall into four broad ALMP categories (Table 5), which are dominated by job search assistance and training (Employment and Social Development Canada, 2017; Government of Alberta, 2019b). While there may be some concerns in designing ALMP interventions for young oil and gas workers surrounding the federal-provincial split in jurisdiction, this did not appear as a concern in the literature. Moreover, it is beyond the scope of this study to examine the above agreements.

Most programs and services delivered by the province are provided by contracted third parties. For example, while the province's network of Alberta Supports/Works Centres provides some needs determination services, individuals are largely referred out to third party providers to receive additional services (Employment and Social Development Canada, 2017). The province does provide extensive labour market information through its ALIS (Alberta Learning Information Service) website⁴, accessible by the public. Similarly, the province provides financial assistance to cover training-related costs but does not itself deliver training programs. This assistance includes small scholarships⁵ for those training in apprenticeships and certain technical trades, student loans, and funding for students attending organizations that have contracts with the province to provide training for certain in-demand occupations. To receive this latter type of funding, participants must undergo assessments through the job search assistance counseling services and are then referred to this training. This also allows them to receive EI benefits while in these programs. However, the availability

⁴ <https://alis.alberta.ca/>

⁵ <https://tradesecrets.alberta.ca/financial-assistance/scholarships/apprentice-scholarships/>

of this funded training is limited, as few organizations have such contracts. For example, there are none in Grande Prairie⁶, a city in a census division with large numbers of oil and gas workers (Section 2.3.2).

Table 5: ALMP programs and services in Alberta

ALMP Measure	Description	Alberta Equivalents
Training	To help participants obtain labour market skills. Classroom or on-the-job training.	<p>Alberta provides financial assistance to help cover training costs under the following and other programs:</p> <p><u>Classroom training</u></p> <ul style="list-style-type: none"> • <i>Work Foundations/Occupational Training</i>. Includes <i>Apprenticeship</i> programs. • <i>Integrated Training</i> and <i>Immigrant Bridging</i>: provide unemployed/marginally employed workers or immigrants with occupational training or foundational skills <p><u>On-the-job training</u></p> <ul style="list-style-type: none"> • <i>Canada Job Grant, Workplace Training</i>: these fund training of workers at employer job sites
Job Search Assistance	Programs and services to help workers find jobs or obtain additional services. Includes counseling and information services.	<ul style="list-style-type: none"> • <i>Information Services</i>: labour market information, occupational and training information. • <i>Needs Determination Services</i>: provides advice, guidance, and access to services • <i>Employability Services</i>: employability assessments, career counselling, and service/case management
Private Sector Incentive Programs	Financial incentives for employers to hire target population	<ul style="list-style-type: none"> • <i>Canada Job Grant</i>: employer selects employee to receive the funded training • <i>Workplace Training</i>: individual finds and selects employer • <i>Paid Work Experience</i>: short-term subsidized work experience • <i>Federal hiring/wage subsidies</i>: the federal government offers several incentives to hire specific groups of workers
Self-employment programs	Support for self-employment	<ul style="list-style-type: none"> • <i>Self-Employment Training</i>: helps facilitate entry into self-employment

Note: Information regarding Canada Job Grant adapted from Government of Alberta (2019b), and other information regarding programs and services delivered by Alberta is adapted from Employment and Social Development Canada (2017).

⁶ <https://www.alberta.ca/employment-training-services-directory.aspx>

4.1.1. Effectiveness of ALMP

Several surveys have been conducted of available evaluations⁷ of ALMP impacts on participant employment outcomes, which include re-employment rates and earnings. Yeyati et al. conducted a systematic review of evaluations that used randomized control trials, and Card et al. and Kluve conducted meta-analysis of experimental and non-experimental⁸ evaluations (2019; 2018; 2010). They agree that ALMP generally have positive incremental impacts. Card et al. and Yeyati et al. both show that training (the latter focuses on vocational training) and private sector employment incentives have much larger average positive impacts on employment outcomes than job search assistance (2018; 2019). For Yeyati et al., these effects are consistent for both post-participation earnings and re-employment rates (2019). Card et al. also found that the impacts for training started small and then significantly improved in the medium and longer term, likely due to participants suspending their job search while in training and returning to it afterwards (2018). Kluve did not examine degree of impact, instead finding that job search assistance and private sector employment incentives had significantly higher probabilities of positive impacts compared to training (2010). The authors disagree on the relationship between ALMP effectiveness and periods of high unemployment, with Card et al. and Kluve both finding a positive relationship and Yeyati et al. finding the opposite (2018; 2010; 2019).

Young Workers

The above studies also disagree on impacts for younger workers (24 and under), with Card et al. and Kluve arguing that ALMP are less effective or show negative impacts for this group compared to others (2018; 2010). Caliendo and Schmidl show that this may be due to the specific experience of young workers during periods of high unemployment (2016). In such circumstances, firms are more likely to hold on to, and hire, workers with more experience and tenure, leading to a widespread dearth of demand for young workers. In normal circumstances, ALMP measures are targeted towards different aspects of youth unemployment. Training aims to address the skills

⁷ There is some overlap in the evaluations included by these authors.

⁸ Card et al. found no significant differences between average program effects of experimental and non-experimental studies; Kluve did find that experimental studies had lower probability of yielding significant positive effects (2018; 2010).

mismatch between vacancies and jobseekers, as well as improve their human capital, which then results in higher re-employment rates and earnings. Wage subsidies incentivize firms to hire young workers and/or provide them with training, helping these workers obtain potentially higher paying jobs they might not have been able to otherwise. These subsidies do so by lowering the potential financial loss if those workers leave before redeeming costs of hiring and training them. Job search assistance services help young workers find jobs more quickly and efficiently, such as by providing them with counsellors or information that direct them to training or occupations that match their skillset or where there is labour market demand (Caliendo & Schmidl, 2016).

However, in their review of evaluations of youth-targeted programs or those with a sub-group analysis for youth in Europe, Caliendo and Schmidl show that such measures are have much weaker impacts for young workers during periods of high unemployment (i.e., recessions) (2016). They argue that this is because such programs are unable to overcome the lack of demand for the labour of young workers; when economic conditions are better, ALMP measures do have positive impacts. This is echoed by Yeyati et al., who found that ALMP measures are more effective during periods of economic growth and that training programs may be more effective for younger participants (2019). This may be due to in part to this group being more adept at finding jobs, as well as a higher propensity of this group to undertake training as they have the longest time horizon to enjoy the benefits of investment in their human capital (Schochet et al., 2012).

Displaced Workers

Available research regarding ALMP effectiveness for displaced workers focuses on training programs. Jones provides a survey of experimental and non-experimental studies, arguing that the results are mixed (2011). Experimental evaluations of the US Department of Labor's Dislocated Worker Demonstration Project, which sought to help displaced manufacturing workers in several locations in the decades before 1990, found negative or insignificant results. This may have partly been due to flaws in study design and issues such as a mismatch of training to participant interests and characteristics. In one of the projects, displaced white-collar workers from high-paying petrochemical roles were provided with training in skilled manual trades such as air conditioning installation and maintenance, which they had little interest in, and which did not well suit their

existing skillset. This impacted their employment outcomes afterwards. Non-experimental studies examining the impacts of self-financed classroom training post-displacement found positive results. One such study on displaced workers in Washington found long run positive impacts on participant earnings; course content was important, with the largest impacts for those that took courses in technical trades, technical professions, and health (Jones, 2011).

Effectiveness of Supports in Alberta

Employment and Social Development Canada (ESDC) conducted an experimental evaluation of the programs and services in Alberta funded by the LMDA (2017). It showed that the broad ALMP program categories had positive incremental impacts on participant (former and active EI claimants) re-employment rates and earnings in the years after participation ended. The degree of impacts was similar to those outlined by the above studies.

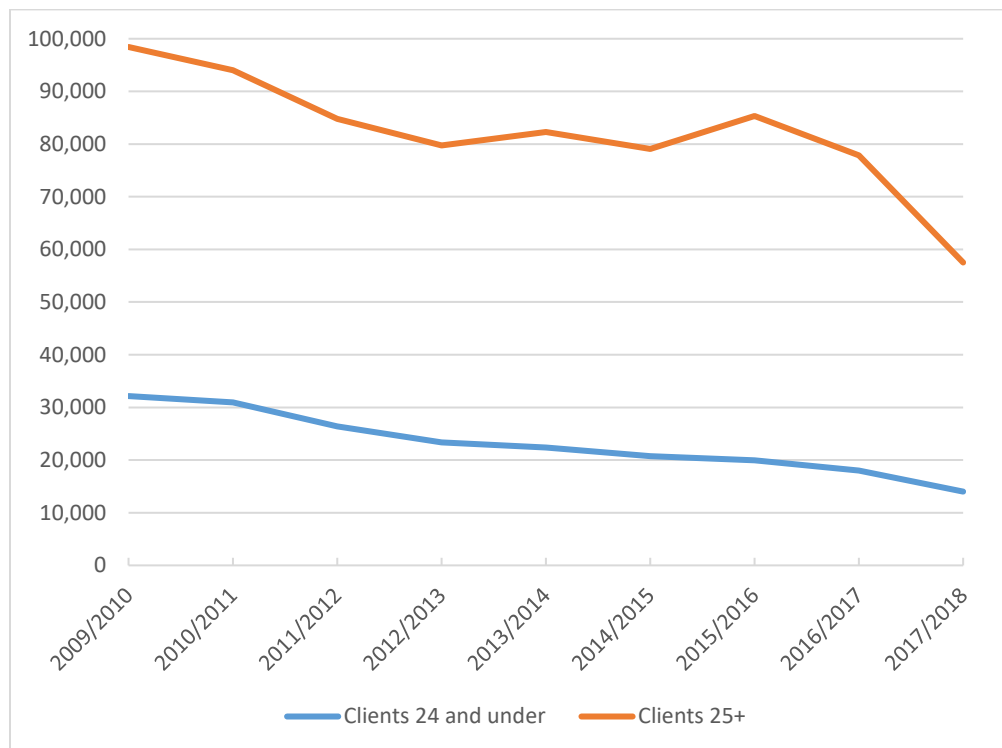
4.1.2. The Need for Additional Action

During the economic downturn that followed the 2014 crash, the Alberta government invested heavily in its employment services. This ranged from expanding job search assistance services into additional rural regions and providing short-term targeted programs to youth under 30 (ESDC, 2019). Despite this and the GDP growth since 2017, young oil and gas workers still face uncertainty in the labour market. Job losses in the sector continued in 2019, whilst the unemployment rate for men aged 24 and under in Alberta reached 19.4% in November 2019 and has remained high since. The general rate of unemployment has averaged around 7% since early 2018 (Fletcher, 2019; PetroLMI, 2019; Statistics Canada, 2020b). The above indicates that the employment services system may not be working adequately for young oil and gas workers.

Moreover, usage of Alberta's employment services system has declined amongst young workers. From fiscal year 2009/2010 to 2017/2018, the number of individuals aged 24 and under using the province's LMDA-funded programs and services declined 54% (Figure 4). Decreases happened every year regardless of economic growth or decline in the province. While there has been a parallel decline in the overall number of

clients using these services in that period, that decline has been smaller and was interspersed with increases during the recent downturn (ESDC, 2019). There is no clear explanation for this decline, particularly since the data in Figure 4 includes both EI clients and non-insured individuals. Indeed, the number of EI Regular Benefits recipients in this age group increased significantly after 2014 (Statistics Canada, 2020a). While the total population for those aged 15 to 24 and under has decreased since the 2014 crisis began, perhaps due to the workers leaving the province, so too has the number of unemployed in this age group increased significantly during this period in excess of the population change (Statistics Canada, 2019b and 2019c). There may instead be issues of effectiveness or access for this age group.

Figure 4: Number of clients by age group, ALMP programs and services funded by the LMDA in Alberta, FY2009/2010 to FY2017/2018



Note: Information adapted from *Evaluation of the Canada-Alberta Labour Market Development Agreement*, by ESDC (2019, p.218). Retrieved from <https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/labour-market-development-agreement-alberta.html>. Copyright 2019 by ESDC.

4.2. Summary

- Alberta possesses a wide range of ALMP programs and services. Such measures have been shown to have positive incremental impacts on participants employment outcomes. However, such measures are less effective for young workers during periods of high unemployment.
- Young oil and gas workers face an uncertain labour market, with high unemployment for young Albertan men and continued job losses in the oil and gas sector. In addition, usage of Alberta's LMDA programs and services has declined consistently amongst those aged 24 and under from 2009/2010 to 2017/2018, relative to those of other age cohorts, suggesting issues with effectiveness.

Chapter 5.

Multiple Case Study Analysis

This chapter presents the case study analysis. The three cases were chosen for their similarities to the situation of the oil and gas sector in Alberta, as well as their respective successes and failures. Other cases may also provide useful insights into the effectiveness of ALMP interventions, such as various transitions of coal workers in countries such as Poland, Germany, and Canada (Alberta). These are not included due to limitations of time and space. More details about the selection of each case is provided below.

5.1. Canada: the Atlantic Groundfish Strategy

The Canadian government enacted the Atlantic Groundfish Strategy (TAGS) in 1994 in response to the collapse and closure of the northern cod fishery (and others). This was a \$1.9 billion, five-year program comprising a mix of measures intended to transition half of all fishery workers (fishers and processing workers) in the Atlantic provinces and Quebec out of the industry (Greenspon, 1995). Impacts were felt heavily in Newfoundland and Labrador, as 70% of all eligible clients at the start of TAGS were located there (Government of Newfoundland and Labrador, 1997). TAGS included income support in addition to Unemployment Insurance (UI), relocation assistance, wage subsidies, payments for fishers to retire their groundfish licences, and job search assistance (Government of Newfoundland and Labrador, 1997). This case was selected because TAGS was widely deemed a failure. A study by the Government of Newfoundland and Labrador found that of the TAGS clients that had employment income in 1996, most (e.g., 73% of fishers) was earned exclusively within the fishery, indicating that transition to non-fishery employment at that point had been limited (1997). This was the last year training was available to clients⁹, suggesting low benefit from participation. By 2002, while the number of processing workers in Newfoundland and

⁹ The federal government underestimated the number of eligible clients by 50%, leading to cost overruns that forced it to end ALMP measures in August 1996 and shift remaining funds to income support (Andersson, 1997).

Labrador did fall significantly from 1991 numbers, the number of fishers remained almost unchanged (Schrank, 2004).

5.1.1. Availability of Jobs

The dependence of many communities in the Atlantic region on the fishery sector meant that economic diversification efforts to ensure that jobs were available for workers to transition into were necessary. However, while economic diversification was part of the TAGS strategy, actual efforts were limited. There were no concrete plans two years into the program, and only \$50 million was budgeted and spent for this purpose in the entire region. In comparison, the federal government spent \$1.75 billion on income support (Ruseski, 2006). While one could not have expected economic diversification efforts to have borne fruit quickly, the lack of significant efforts in this area and of consideration for how that would affect TAGS participants limited the program's impacts on employment outcomes.

5.1.2. Coordination of Measures

The above was exacerbated by the program's conflicting priorities and messages (White, 2003). For example, despite its goal of transitioning 50% of all fishery workers out of the sector, the federal government did not identify which workers would leave the fishery and which processing plants would be closed (Greenspon, 1995). In addition, it also provided TAGS participants the opportunity to retrain for roles inside the fishery sector. It designated some fishers and processing workers as part of the 'fishery of the future' and expected them to enroll in a program to strengthen their employment prospects in the fishery. This led to confusion about what would happen to the sector. Combined with a lack of economic diversification efforts, the results were twofold. For one, there was a widespread belief amongst TAGS clients (up to 50%) that the fishery would return within a few years, generating a disinclination against transitioning out of the sector (Greenspon, 1995; Glavine & Wernheim, 2002; Human Resources Development Canada, 1996). For the other, there was no possibility of coordinating the retraining of workers "relative to labour market opportunities that might have been created through economic development initiatives" (White, 2010, p. 500).

5.1.3. ALMP Measures

Job Search Assistance

Under TAGS, Human Resources Development Canada (HRDC) provided counsellors to help participants assess employment needs, lifestyles, and education/career goals (Government of Newfoundland and Labrador, 1996). After developing a career action plan with a counsellor, participants could choose between the different ALMP measures, depending on their eligibility (Glavine & Wernerheim, 2002). Over 10,000 TAGS clients utilized HRDC counsellors, with the department finding that those that used the services were more likely to participate in training (HRDC, 1996). However, as noted below, the recommendations of counsellors regarding training and occupations were often not in line with labour market information, which likely affected the employment outcomes for participants.

Targeted Training

TAGS directed many workers into training programs for industries in which there were few employment opportunities. For example, many women were trained in skills “for which supply outstripped local demand”, such as clerical/secretarial, hairstylists, housekeepers, nannies, and other personal service occupations (Glavine & Wernheim, 2002, p. 24). Moreover, a report by Price Waterhouse in 1995 found that as of that year the federal government had taken labour market information and employment goals into account in the purchase of only one in five training courses for TAGS participants (Greenspon, 1995). In conjunction with TAGS efforts to train fishery workers for fishery roles, this highlights the top-down approach of the federal government. It lacked consideration of the reality of the Atlantic Canada labour market and what would be most effective for TAGS participants.

5.1.4. Worker Interests and Needs

The design and implementation of TAGS did not appear to consider the needs and interests of the program’s target population. For example, they did not take this group’s low educational attainment into account. As of 1998, the last year of ALMP measures, the vast majority had not completed high school, limiting the training that could be provided until basic educational levels had been achieved by participants.

Some received only basic education that did little to help them prepare for new occupations (Glavine & Wernheim, 2002; Higgins, 2008; Newfoundland and Labrador, 1997).

Another example was the focus of HRDC counsellors on participant mobility and relocation for work, as participants were mostly against the idea of relocation (HRDC, 1996). In a survey conducted by HRDC in 1996, only 38% of TAGS clients indicated that they would be willing to move outside of their community for work, and 27% indicated they were willing to move outside of their province (HRDC, 1996). MacDonald notes that this disconnect between participants and program officials arose due to the latter's lack of consideration of the situation of many participants (2004). For example, an HRDC survey in 1996 showed that 23% of TAGS participants noted that the work or plans of other family members presented a barrier to mobility; 33% noted that childcare/eldercare were barriers (1996).

5.2. United States: Trade Adjustment Assistance

The US Trade Adjustment Assistance (TAA) program supports trade-displaced workers in certain manufacturing sectors in finding “rapid and suitable employment” (D’Amico, 2012, p.1). It provides tuition assistance for training, benefits payments after UI is exhausted (to support full-time training); a relocation allowance; a health coverage tax credit, and other supports (D’Amico, 2012). This case was selected due to the similarity in the institutional setup of employment services in the US compared to Canada. In both, the federal government provides funding and general direction whilst design and delivery are handled by the province or state. Most importantly, an experimental evaluation of the TAA conducted by Mathematica¹⁰ found that young participants (defined by Mathematica as those aged 29 and under) saw the greatest success among all age groups (Berk, 2012; D’Amico, 2012; Schochet et al., 2012). Within a few quarters after participation ended, most young workers had positive incremental re-employment rates relative to a comparison non-participant control group and had caught up in post-participation earnings.

¹⁰ Mathematica focused on the TAA post-2002, when several major amendments were made to the program.

5.2.1. Availability of Jobs

The TAA does not provide economic development support. This is left to established agencies/organizations at the state or local level, which provide funds and/or guidance to trade-affected communities (Dunham, 2009; US General Accounting Office, 2001). This approach allows communities to pursue initiatives based on their needs. However, such efforts are limited in some communities by lack of access to major transportation arteries and inferior transportation infrastructure, inadequate educational infrastructure, and a lack of college-educated workers. These make it difficult to attract businesses in desired higher-skilled sectors, and for trade-displaced workers to participate in these new sectors. For example, in El Paso, the local government attempted to attract high-skilled industries to the city after NAFTA decimated the city's manufacturing sectors after 1994. However, most trade-displaced workers in this period had limited English proficiency and less than a high school education, requiring remedial education before taking other types of training. A lack of available bilingual training designed for adults hindered training efforts, with many TAA participants unable to make enough progress to move on to occupational training. As such, despite El Paso seeing a net increase in jobs since 1994, these jobs have been beyond the capabilities of most trade-displaced workers (US General Accounting Office, 2001).

5.2.2. Coordination Between Measures

The TAA program has extensive linkages with other workforce support programs funded by the US government, including UI and Worker Investment Act programs (WIA) (such as the Dislocated Worker¹¹ program). This is due largely to the physical colocation of the different programs in one-stop American Job Centers at the state and local level, aided by formal administrative arrangements between partner programs and state and local initiatives that promote coordination. Moreover, there is a "consolidated management information system that enabled partners to track participants' progress" (D'Amico, 2012, p.15). Altogether, these linkages greatly aid coordination between programs and improve client access to supports, helping them get referred to, and co-

¹¹ This program provides employment and training services to certain unemployed or soon-to-be unemployed workers and other individuals, in part through intensive career counselling and other services. <https://labor.hawaii.gov/wdd/home/job-seekers/wia/dw/>

enrolled in, multiple programs at once (Claggett, 2006; Schochet, 2012). As an example, the evaluation by Mathematica showed that 99% of participants aged 29 and younger received at least one job search assistance service, which is not provided by the TAA, compared to only 76% of the comparison control group (UI-receiving, non-TAA) (Schochet, 2012).

5.2.3. ALMP Measures and Worker Interests and Needs

Job Search Assistance

TAA participants have access to extensive job search assistance services through the TAA's partnerships with other programs in the American Job Centers network. These include counselling on training, labour market information, career assessments, and case management. Although younger workers are quicker and more adept at finding work on their own compared to older workers, they nonetheless likely benefited from accessing these services (Schochet et al., 2012). Participants under 30 years of age had the highest rate (99%, compared to average of 94%) of participation in job search assistance services, as well as the highest participation for training. These rates were significantly greater than those of their non-participant comparisons, whom they eventually overtook in re-employment rates.

The high uptake in these services allow participants to better direct their choice of training programs and post-displacement job search efforts based on their interests and needs. For example, 56% of all participants completed tests to see what jobs they were qualified or suited for (Schochet et al., 2012). Those that took these assessments prior to taking occupational training had significantly higher rates of post-TAA employment in the occupations for which they had trained compared to those that did not take such assessments. Finding employment in one's training field generally resulted in better employment outcomes compared to those that were not able to do so, including higher incomes and more weeks worked (Berk, 2012). The Alberta employment services system provides similar services. For example, the ALIS website has a career planning section¹² that contains tests that individuals can take to find out what occupations would suit their interests and skills. However, the range of occupations suggested for an

¹² <https://alis.alberta.ca/careerinsite/know-yourself/>

individual can vary widely due to the numerous and far-reaching questions asked on these tests.

Targeted Training

The above job search assistance services helped direct many TAA participants to in-demand occupations. For example, most participants received labour market information about occupations in demand locally (Schochet et al., 2012). Around 37% of those that participated in occupational training found employment in the occupations for which they trained, which lead to better employment outcomes (Berk, 2012). The success of participants varied by occupational program, with over half of those that enrolled in programs for healthcare practitioners, production, and transportation and material moving (three common training programs) finding jobs in their training field. However, the results may have been negatively impacted by the fact that many of the participants surveyed exited the TAA during the global financial crisis, which may have limited employment opportunities (Berk, 2012; Schochet et al., 2012). Although there was no concentration of young participants in any specific occupation, they nonetheless had the highest rate of participation in occupational training at 74%. The 30 to 39 cohort had the next highest rate, at 65%. As noted earlier, higher participation rates in training is a common characteristic of younger participants in ALMP interventions (Section 4.1.1) (Schochet et al., 2012).

Relocation Allowance

In comparison to the high uptake of the above programs and services, only around 1% of participants used the TAA's relocation allowance. Although the evaluation by Mathematica makes no suggestions as to the reason, the characteristics of this population likely played an important role. For example, 60% of participants were married at the point of unemployment, and 72% owned their own homes/had a mortgage, both of which likely constrained decisions to relocate (Schochet et al., 2012).

5.3. The United Kingdom

The United Kingdom (UK) enacted its 2016 Oil and Gas Workforce Plan to support oil and gas workers that lost their jobs due to the 2014 collapse in the price of oil. Measures included lowering the eligible age for higher education loans from 24 to 19

and the adaptation of the online Talent Retention Solution and Skills Connect tools for oil and gas workers. The Talent Retention Solution is a job brokerage service for high-skilled workers (i.e., engineers) and is used by over a thousand companies, including major manufacturers such as Airbus and Rolls-Royce. Skills Connect complements this job brokerage service, as it will help oil and gas workers understand how their skills are transferable to other sectors and roles (Government of the United Kingdom, 2016). In addition to the above, the Government of Scotland introduced the Transition Training Fund (TTF) in 2016. Open until March 31, 2019, the £12 million program provided funding to oil and gas workers that had lost their jobs from 2015 onwards, or who were at risk of redundancy. This program has had some success, with 68% of participants employed six months after training ends (Skills Development Scotland, 2019a). This case was chosen as it is similar to the situation in Alberta. Capital spending in the UK oil and gas sector declined two-thirds from 2014 to 2017 and employment fell around 24% (and has continued to fall since) (Oil & Gas UK, 2019). Young workers have been heavily affected, as the number of workers under 24 fell by 44% from 2012 to 2017 (Oil & Gas UK, 2018).

5.3.1. Availability of Jobs

The measures under the UK Oil and Gas Workforce Plan did not contain any initiatives for economic development in response to the collapse in the price of oil. This was despite the concentration of oil and gas jobs (both direct and indirect) in Aberdeen, Scotland, and the continued decline in those jobs since the crisis started (Oil & Gas UK, 2018). Nor are there any indications that such programs were pursued outside of the 2016 Oil and Gas Workforce Plan. This may have been due to the low unemployment rate in the region despite the oil crash (2.2% in Aberdeen City and 3.1% in Scotland, June 2019), and the belief that this downturn is part of the cyclical nature of the oil and gas industry (Aberdeenshire Council, 2019; Government of the United Kingdom, 2016).

5.3.2. Coordination between measures

There is little evidence of coordination among the different policies enacted by the United Kingdom to help its oil and gas workers adjust. For example, despite the fact that the Scottish Transition Fund has now terminated, and the Advanced Learner Loans program has been amended, adaptation of Skills Connect and the Talent Retention

Solution is still not complete four years after it was announced. There is also no indication that the measures enacted by the UK and Scotland have strong connections with existing/other programs or supports. Despite this, the Scottish Transition Training Fund boasts a re-employment rate similar to the range achieved under the TAA, which may have been aided by the country's low unemployment rate (Skills Development Scotland, 2019a).

5.3.3. Worker interests and needs

Information on this is unavailable for most of the measures enacted in the United Kingdom. However, the Scottish TTF does well in this regard. Trainees were able to pick the fields and training they wanted to pursue, provided they were able to prove to the program that this training would help them obtain a job (Skills Development Scotland, 2019a). Over half (56%) preferred to return to working in the oil and gas sector and were able to obtain training that enabled them to do so. This preference is likely due to the relatively higher wages in that sector, along with their existing familiarity with it (Skills Development Scotland, 2019a). However, this might not apply for younger workers, as the share of the oil and gas workforce under the age of 30 has continued to decline since the 2014 downturn began (Oil & Gas UK, 2018; Oil & Gas UK, 2019).

5.3.4. ALMP Measures

Job Search Assistance

The Talent Retention Solution is a job brokerage service, which would allow oil and gas workers seeking to move into other industries to provide their CV and other information in an online portal. Companies interested in recruiting workers with oil and gas skillsets would then be able to directly access this information (Government of the United Kingdom, 2016). This is supported by the Skills Connect tool, which would allow oil and gas workers to find out what occupations in other sectors would be a match for their skillsets. Moreover, this tool would help them identify what training they may need to adapt their skillsets to work in other industries (Botta, 2018). Should they become functional, these tools would reduce the time required for oil and gas workers to find new jobs, as well as make this search more efficient.

Targeted Training

While the Advanced Learner Loans do provide jobseekers with access to training loans, these are general loans, not targeted towards any industries. However, should the Skills Connect and Talent Retention Solution come online (see Section 4.4.5), they would provide oil and gas workers with the tools and information to help them target their training and employment decisions. In comparison, the Scottish TTF requires participants themselves to prove in their applications to the program that the training they wish to enroll in will help them get a job. This is monitored and enforced by advisers for the TTF, who ensure that the training requested by applicants is relevant to labour market demand (Hall Aitken, 2019).

Table 6: Summary of case study evaluation

	The Atlantic Groundfish Strategy	Trade Adjustment Assistance	Oil and Gas Workforce Plan
Availability of Jobs	No	No	No
Coordination between Measures	No	Yes	No
Workers Interests and Needs	No	Yes	Yes (TTF)
Job search assistance	Yes	Yes	Yes
Targeted training	No	Yes	Yes

5.4. Discussion of Findings: Lessons for Alberta

The case studies confirmed that efforts to improve the effectiveness of Alberta's employment services system for young oil and gas workers should pursue a coordinated, bottom-up approach. There are three aspects to this.

First, any such intervention should begin with ensuring that there are suitable and available jobs into which young oil and gas workers would be able to transition. This is important for Alberta, considering the dependence of its economy on oil and gas extraction and the high unemployment rates facing young male workers in the province.

As of 2018, oil and gas extraction accounted for around a quarter of provincial GDP¹³ and directly and indirectly employed hundreds of thousands of workers (Canadian Association of Petroleum Producers, n.d.; Government of Alberta, n.d.; PetroLMI, 2018c). The case of TAGS demonstrated that in regions where specific industries constitute a significant portion of regional employment, a lack of such considerations may greatly constrain the effectiveness of ALMP. The findings of Caliendo and Schmidl show that this can be particularly important for young workers (2016). As a corollary to the above, the case studies demonstrate the importance of targeting training to labour market demand. TAGS participants, for example, were directed into training for occupations for which there was already a surplus of workers. This undoubtedly added to the other difficulties participants had in finding employment outside of the fishery. In comparison, a significant proportion of TAA participants were able to find employment in the field for which they trained. Many were likely assisted by the job search assistance they received, such as career assessment tests.

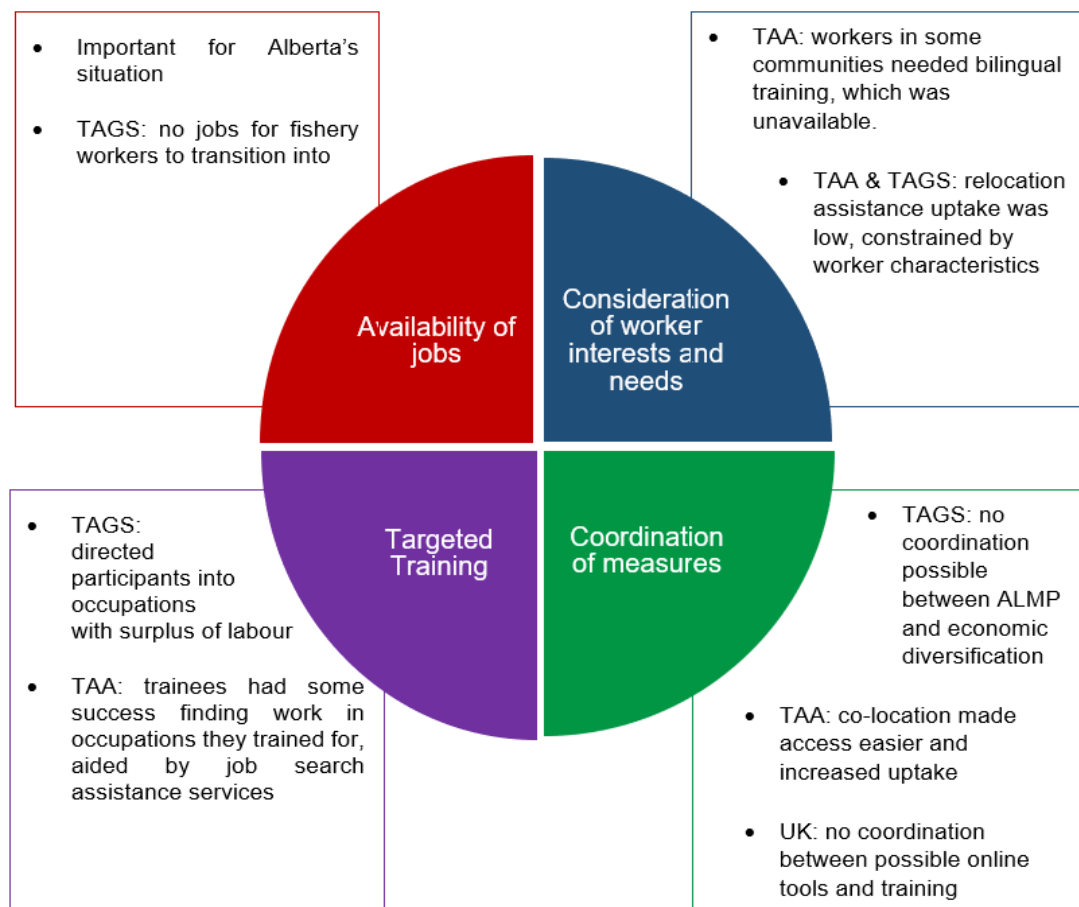
Second, ALMP should take into consideration the interests, needs, and characteristics of young oil and gas workers to ensure that they will be effective for those that need it. While the TAA does this in part by providing access to job search assistance services, which help direct them to suitable training and occupations, training available to participants in some communities did not suit their needs. In those cases, participants were not proficient in English and bilingual training options were lacking. As a result, they found the training they were able to obtain of little use. Moreover, while relocation allowances are often important parts of government supports for displaced workers, both TAGS and the TAA showed that uptake may be limited by the community, family, and financial obligations of the target population. While the above might not necessarily be concerns for young oil and gas workers, they nonetheless denote the importance of taking the characteristics, needs, and interests of this group into account in designing and implementing support measures. This includes ensuring that supports are in place for a sufficient duration for the target population to benefit.

Third, interventions should be coordinated. This is important in Alberta, considering the federal-provincial split and delivery of programs and services by third parties. Coordination can take different forms. One is the coordination of access, such

¹³ <https://economicdashboard.alberta.ca/GrossDomesticProduct#type>

as by providing multiple services and programs in one location. This would improve the ability of the target population to access them and would likely result in increased uptake. The TAA's co-location with other programs in America Job Centers, the linkages formed between them, and high rates of co-enrollment in those programs, all likely contributed to the high uptake and strong employment outcomes of young participants. Second is the coordination of program delivery. For example, if economic diversification initiatives are pursued, ALMP measures should be coordinated to direct some participants into the sectors in question as jobs begin opening up. In Atlantic Canada, the lack of government efforts to diversify the local economy and provide jobs to transition into precluded any possibility of coordination with TAGS training programs. Similarly, the lack of progress on the online job search assistance tools in the UK case prevented any improvement in employment outcomes they could have provided to participants of the Scottish TTF.

Figure 5: Lessons for Alberta



Chapter 6.

Policy Options

This chapter presents the policy options derived from the preceding chapters. The goal of these options is to improve the employment services available to young oil and gas workers.

Targeted and Non-Targeted Measures

The issue of whether to target employment services to specific groups of workers is controversial. Policies that focus on younger workers may be useful to displaced older workers, who also face tough re-employment prospects. Moreover, the restructuring of the oil and gas sector has had a large effect on various industries that supply it, considering the contractions in Alberta's GDP that occurred during the crisis (Government of Alberta, n.d.). A targeted approach to help only young oil and gas workers would provide them with an advantage over other workers during the ongoing economic situation and into the future. They are not a distinct group with different needs compared to other workers, which the Organization for Economic Co-operation and Development (OECD) argues would justify targeted support (2005). However, it is beyond the scope of this study to examine the employment impacts affecting multiple groups of workers, within the oil and gas sector or otherwise. To balance these concerns with the focus of this study on the employment outcomes of young oil and gas workers, the following sections will consider both targeted and non-targeted measures to support this group.

6.1. Policy options

6.1.1. Policy Option #1: Amalgamated website

While it would be desirable to replicate the American Job Center system of co-location in Alberta, this would be an extremely costly and complex endeavour. It would require the relocation of large numbers of personnel, the purchase or renovation of buildings, and the integration of third-party service providers into such locations. A lower cost and less complex alternative that would provide some coordination and access

benefits would be to set up a website to act as a centralized source of information regarding programs and services available to Albertans. This option emulates the website for the American Job Centers¹⁴, which provides extensive information on the employment services available to workers. In order to ensure a wider reach, this website would be provided to Albertans upon their application for EI.

This website would amalgamate the information contained in multiple websites (Alberta Supports, Alberta Learning Information Service, Government of Canada – EI, Government of Canada – Job Bank, and others). It would provide detailed information on the different programs and services available to Albertans, what they entail, eligibility, how to access them, and other information, for both provincially and federally delivered programs. While it would not replace the existing websites for federal services (such as the Job Bank and EI), it would have the important information about them in one place for Albertans to access.

This would provide an easy reference for provincial staff and third-party service providers to find information about available programs and services and provide that to clients. From a bottom-up perspective, an amalgamated website would make it easier for Albertan workers (and employers) to find out about programs and services and then access them. This is in comparison to the federal and provincial governments each keeping information on their own websites which, while logical due to the split in jurisdictions, embodies a system-oriented, top-down perspective (OECD, 2015).

6.1.2. Policy Option #2: Online Skills Matching Tool

This option is a non-targeted job search assistance measure. It would provide an online tool to help young oil and gas workers understand what skills they likely developed in previous jobs and the occupations they could potentially transfer into. This would help them would direct their efforts towards those occupations for which they already have some or many of the required skills, which would make their job search more efficient and improve employment outcomes. Third-party service providers and Alberta Works Centre staff may also find the tool useful, as they would be able to provide additional targeted advice to clients.

¹⁴ <https://www.careeronestop.org/>

This tool is inspired by the Skills Connect system in the United Kingdom. The design of this option emulates the Skills Match¹⁵ tool in Australia, which is available to all Australians. That tool allows users to enter their occupation into a searchbar and see what kind of skills and experience they likely gained during their previous jobs, and then suggests potential occupations based on the match between skills (Appendix A). It also provides average wage information, educational requirements, projected growth in demand, and other labour market information on the suggested occupations, in one page. The Alberta equivalent would provide similar information. By doing so, it would help identify potential skill gaps and the steps that workers need to take to successfully transition into a new occupation. It would also include a regional filter so that occupation suggestions can be further refined to those in greater demand in the user's region. The Tool would be integrated into the ALIS website and provide a more focused alternative to the existing career exploration pages¹⁶.

6.1.3. Policy Option #3: Training Grant

This option would provide a \$3,000 training grant to Albertan workers that lost, or lose, their jobs in the oil and gas sector from 2015 onwards while under the age of 25. The amount is the average that the province spent per participant in its Occupational Training Work Foundations program in FY2017/2018 (ESDC, 2019). This grant would help facilitate access to a greater range of training programs and institutions for young oil and gas workers, thereby helping them obtain the training necessary to find new jobs or enter new occupations. Currently, available non-repayable funding is either relatively low or limited by region and program type (see Section 4.1).

This grant would be usable for training programs at accredited universities, colleges, technical schools, and private career colleges (ESDC, 2017). Applicants must be residents of Alberta and formerly directly employed in the Albertan oil and gas sector for at least one year. They must also demonstrate that their choice of programs/courses would help them obtain a job in in-demand occupations. This includes obtaining referral

¹⁵ <https://joboutlook.gov.au/skills-match.aspx>

¹⁶ <https://alis.alberta.ca/careerinsite/know-yourself/>

to training programs via third-party service providers¹⁷, who already give training and job search advice targeted towards local labour market demand (ESDC, 2017). The criteria for this option are based on the Scottish TTF.

6.2. Alternatives Considered

This study ruled out a hiring subsidy for young oil and gas workers. This was due to concerns with risks of displacement, where subsidized workers take market share from unsubsidized workers, and deadweight costs, where those subsidized would have been hired anyways without the subsidy. While all ALMP may be susceptible to these risks, Card notes that subsidized employment (including hiring subsidies) have the highest risks of displacement (n.d.). The aforementioned concerns with targeted and non-targeted measures make this particularly relevant. Moreover, a study on targeted wage subsidies provided under the United Kingdom's "New Deal" ALMP programs for young unemployed workers found that 33% of beneficiaries would have found jobs without the subsidies, raising questions about their effectiveness (Bell, 1999).

6.3. Impact Analysis

To address the needs and interests of young oil and gas workers, this section assesses the policy options set out in the preceding sections against the characteristics of young oil and gas workers discussed in Chapter 2. This is to determine if those characteristics would limit the ability of young oil and gas workers to access the above options, which would limit their effectiveness.

6.3.1. Amalgamated Website

Most young oil and gas workers would be able to access and use this website. The Canadian Radio-Television and Telecommunications Commission (CRTC) reported in 2017 that around 99% of Albertan households had access to broadband at speeds that allowed basic web browsing and video streaming (CRTC, 2019; Tran et al., 2019).

¹⁷ Such referrals are one of the permitted ways that unemployed EI beneficiaries can receive benefits while in training (ESDC, n.d.). Here, it is assumed that in giving advice and referrals to young oil and gas workers, third-party service would be using labour market information provided by the province. Participants thus could potentially receive the grant in addition to EI benefits.

Moreover, almost 100% of those aged 30 and under use the Internet daily, indicating that online options are well-suited for younger individuals (Statistics Canada, 2019a). However, a small number of young oil and gas workers may have difficulty accessing the website if they live in rural areas, as only 88% of rural households have access to the aforementioned speeds (CRTC, 2019).

6.3.2. Skills Matching Tool

As this Tool is also online, the characteristics of the young oil and gas workforce would not prevent most young oil and gas workers from accessing it.

A large portion of the young oil and gas worker population is likely dispersed across several census divisions. As such, the region filter, if chosen, would focus occupation suggestions to those in demand within a region and help ensure that participants can to better target their job search or training efforts.

While the Alberta government is not responsible for the employment outcomes of non-Albertan workers, the Skills Matching Tool would be useful for young oil and gas workers that have returned to their home provinces. Occupations are unlikely to differ too greatly between provinces, though the regional filter would not be available unless they wish to return to Alberta.

6.3.3. Training Grant

The oil and gas workforce is well-educated, though the oil and gas services subsector has a slightly higher proportion (13%) with less than a high school diploma compared to the oil and gas average (8%) (PetroLMI, 2018c). While these individuals may need to obtain adult basic education first, which may limit their training options, the vast majority of grant recipients would not be affected.

In terms of training options, the Albertan system performs relatively well. A majority (58% in 2016) of oil and gas workers reside in Edmonton and Calgary, which allows them easier access to training due to the concentration of options (PetroLMI, 2018). ALIS shows that of the 2,716 post-secondary programs currently listed as available in Alberta, 80% are accessible (online or in person) by those living in these two

cities¹⁸. Nonetheless, young oil and gas workers residing outside of those two cities still have access to a significant amount of training options, though these are more dispersed. Of the currently available options listed, 63% are available in person or online to this group. While one would not expect equal access to all program types in all regions, there is still a significant array of options available to young oil and gas workers.

Considering the high income of oil and gas workers, there is a question of whether funding is necessary. These workers may already have significant savings and investments and could afford training on their own. However, this likely would not apply to young workers. This population likely worked at most for a few years in the oil and gas sector before losing their jobs, making it less likely that most were able to build significant savings during that time. In addition, higher incomes generally result in higher costs of living, whether in fixed assets or lifestyle. To lose that source of income and take on likely significantly lower-paying jobs in other industries would require adjustment that may have drained what savings these workers could have had.

6.4. Availability of Jobs

In 2015, the Alberta government forecast that by the year 2025, there could be a labour shortage of 49,000 workers in a large range of occupations and fields (Government of Alberta, 2015). In a 2019 update, it forecast that by 2028 labour shortages could reach at most 7,200 workers, with these openings concentrated in a few occupations. These include some trade and engineering occupations related to construction and oil and gas, as well as health occupations. These changes were driven by expectations of continued soft economic conditions as well as higher post-secondary enrolment and graduation over the next decade, which will increase the number of young workers in the province competing with young oil and gas workers. Indeed, most of the potential shortages are expected to be driven by retirements rather than economic growth (Government of Alberta, 2019a).

¹⁸ <https://alis.alberta.ca/occinfo/post-secondary-programs/?offset=0&letter=all&sort=title>

As its primary approach to diversify its economy, Alberta is currently cutting corporate tax rates to stimulate investment¹⁹. There are limitations to this. For one, it would likely benefit industries closely related to oil and gas, the performance of which would be limited by the structural changes in that sector outlined in Chapter 2. Other jurisdictions are also trying to attract investment, with which Alberta must compete (Morgan, 2019; Morton & McDonald, 2015). These include several US states, such as Texas, which have much lower corporate tax rates than Alberta.

¹⁹ The province recently terminated its previous strategy of tax credits targeted towards specific sectors, such as the Alberta Investor Tax Credit, which was attributed with helping startup companies in those sectors (Valleau, 2020).

Chapter 7.

Evaluation of Policy Options

7.1. Criteria and Measures

This section sets out the criteria and measures against which each policy option will be evaluated. Each option will be given a colour based on how well they perform: the strongest will be scored green, followed by yellow, and then the weakest will be scored red. Options that have the same results will be scored the same colour.

7.1.1. Effectiveness

Effectiveness is the key criteria against which the policy options will be evaluated. It will be measured by the extent to which the policy options are expected to improve re-employment outcomes and earnings for young oil and gas workers that use it. Evidence is drawn from the literature review and case study conducted earlier in this study. The option with the strongest predicted positive impact for each measure will be scored green, followed by yellow, and then red for the weakest.

7.1.2. Cost to Government

This considers the estimated total dollar cost of each policy option to the Alberta government, which is important due to the province's current prioritization of fiscal restraint (Graney, 2019). For this option, the lower the cost, the better. Hence, the option with the lowest cost will be scored green and the option with the highest cost will be scored red.

7.1.3. Administrative Complexity

This criterion considers the administrative complexity of each option. It will be scored based on the number of actors involved and the intensity of their involvement. Key actors will be those playing an integral part in leading, developing, or implementing the option. The greater the number of actors with key roles, the more complex it would

be to develop and implement. Thus, the option with the fewest key actors will score green, and the option with the most will score red.

7.2. Evaluation of Policy Options

This section will evaluate each of the policy options in Chapter 5 using the criteria and measures set out in Section 7.1.

7.2.1. Policy Option #1: Combined Website

Effectiveness

This option scores **red**. It would improve access to information about the different programs and services available to young oil and gas workers in Alberta. While this may result in some young oil and gas workers accessing services they may not have known about before, it makes no changes or additions to the actual programs and services available, nor the ability of this group to access them. As such, it would have an indirect, and likely the weakest, impact on re-employment rates and earnings.

Cost to Government

This option scores **yellow**, as it has the second highest cost. One provincial ministry would develop and maintain the website. This would likely be the Ministry of Labour and Immigration, as it would have the most webpages to migrate over, estimated at over 17,000. This is based on 13,200 indexed webpages from ALIS; 4,550 indexed pages from the webpages dedicated to Alberta Works; and 21 webpages from the main Alberta government website dedicated to employment services. An estimate of the cost of setting up the website, migrating webpages over, and then integrating them, is derived from the federal government's experience putting together its Canada.ca website. The design of the website was contracted out to a private sector firm, and multiple government departments then migrated their web content over to it, which provides an instructive parallel. As of July 2017, the federal government had migrated 230,542 webpages to the new site. The costs of the project up to that point included \$14.9 million paid to the contractor for the design, construction, and hosting of the website, and \$32 million spent by the eight largest federal departments on migrating webpages over (Roman, 2017). The former is calculated as \$32.32 per webpage per year paid to the

contractor, which includes the costs of hosting the website for two years (the project was started in 2015), and \$138.80 to migrate and integrate each webpage. Multiplied against the estimated number of webpages to be brought over, the Amalgamated Website would cost around \$3 million to develop and implement, as well as host for the first year. The largest portion of the costs are likely to be the initial set-up of the website and the integration of migrated pages, after which approximately \$574,000 per year would be needed for hosting and maintenance.

Administrative Complexity

This option scores **yellow**, as it would require that two actors be heavily involved: a provincial ministry and a private firm. This is based on the development and implementation of the Government of Canada's website, where Service Canada (a part of ESDC) handled the rollout of the website and Adobe Corp. was contracted to design the underlying platform (Postmedia News, 2016). Then, individual federal departments were tasked with migrating their webpages over to the new website. The development and implementation of the Amalgamated Website option would follow a similar structure. The provincial ministry would lead the project and its maintenance, and the private firm would be responsible for the website's development. Several other actors would have some minor involvement, including a few other provincial ministries that are responsible for different programs and services and who would provide information for the website. ESDC would also be involved, as they would provide the pages on EI, wage subsidies, and the Job Bank. In addition, they would include the website in their initial communications with EI applicants.

7.2.2. Policy Option #2: Skills Matching Tool

Effectiveness

This option scores **yellow**. The Skills Matching Tool would direct the job search and/or training decisions of young oil and gas workers towards occupations for which they already have a match in prior experience and skills. This would likely to help them find jobs more suitable to their skills and find them quicker, compared to occupations where there is a large gap in existing and required skillset. However, the Tool would have smaller impacts than the Training Grant. While it would improve the propensity of

young oil and gas workers to find employment, it would not help them overcome barriers such as skills mismatch or lower demand for their labour. ESDC reported in its evaluation of the Alberta employment services system that job search assistance programs and services had an average incremental impact of 3.3 percentage points on re-employment rates in each of the five years after participation (2017). Impacts on post-use earnings were not positive until the fourth year and remained negligible afterwards. This is comparable to Yeyati et al.'s findings, which show negligible median impacts on earnings and a median 2.6% impact on re-employment rates across reviewed studies (2019).

Cost

This option scores **green**. It is estimated that the Skills Matching Tool would cost between \$1 million and \$2.5 million for development and implementation. This is based on the Facilitating Access to Skills and Talent (FAST) online skills assessment and development platform created by the Immigration and Employment Council of BC (IECBC). This tool allows incoming immigrants to assess their skills and knowledge against standards in Canada required for work, identify competency gaps, and better understand and prepare for their chosen industry/occupation in Canada. IECBC was granted \$2.84 million to expand the tool from three occupations in skilled trades to a much wider range of occupations in multiple fields (Future Skills Centre, n.d.). There are similarities between the Tool and FAST. Both involve developing an online tool for skills assessments and identifying competency gaps, and both already have a web platform onto which they will be incorporated. However, FAST likely required comparatively more work in its expansion and thus cost more than the Tool because it required the development of extensive occupation and industry profiles and assessment material. In comparison, development of the Tool involves expanding some of the information in the existing occupation profiles on ALIS, which already contains data on skills and experience required and gained, as well as a way to match occupations.

Administrative Complexity

This option scores **green** as it would require only one provincial ministry to develop and implement. This is based on the Australian version, which, along with the Jobs Outlook website (their version of ALIS, and where their tool is located) was

developed and implemented by the country's Department of Education, Skills, and Employment (Government of Australia, 2019). As noted previously, the tool would likely not be very difficult to develop, as Alberta already has much of the necessary information in its ALIS website.

7.2.3. Policy Option #3: Training Grant

Effectiveness

This option scores **green**. It would help young oil and gas workers improve their human capital and obtain the skills necessary to enter new jobs/occupations. As such, it is expected to have stronger impacts on employment outcomes compared to the other two options as it would help participants obtain jobs they otherwise would not have been able to get. The aforementioned ESDC evaluation found that classroom training (including occupational training but excluding apprenticeships) had positive incremental impacts of 6.9 percentage points on re-employment in the five years after training ended (2017). It also found average incremental impacts on earnings of \$1,711 in each of the five years. Yeyati et al. found comparable results (2019).

Cost to Government

This option scores **red**, as it has the highest cost. This is determined as follows. First, it assumes a 35% take-up rate amongst unemployed young oil and gas workers during the tenure of the program, as it is likely not all eligible individuals will access this grant. This is based on the take-up rate of eligible young trade-displaced workers that participated in TAA-funded training during Mathematica's evaluation period (Schochet et al., 2012). Second, it is assumed that 71% of all young oil and gas workers in Canada are in Alberta, since the province has this proportion of the national oil and gas workforce. This results in an eligible population of 17,252, consisting of the 8,381 young Albertan workers that are assumed to have lost their jobs due to the 2014 crash and ensuing downturn, and the remaining 8,871 still employed as of 2016 (Tables 1 and 2) (PetroLMI, 2018b; PetroLMI, 2018c). Taking 35% of this would be 6,038 individuals; multiplying by \$3,000 each would result in a total cost of approximately \$18 million. This option would likely be administered by one of the provincial ministries responsible for parts of the employment services system, including Labour and Immigration and

Advanced Education, or by Alberta Student Aid. These organizations already have expertise in the delivery of related programs and services, which would reduce the need for significant additional staffing needs. It is important to note that the above does not account for new young workers that may enter the industry and then leave. It is assumed that they would be hired into the new technical roles increasingly preferred by the industry and have less danger of losing their jobs (see Section 2.2.1).

Administrative Complexity

This option scores **green**. It would likely require a single provincial ministry to administer the grants and co-operation from third-party service providers, the latter of which would need to advise unemployed young oil and gas workers of its availability. The single ministry requirement is based on the Scottish TTF, which was implemented and delivered by Skills Development Scotland. This agency has a portfolio and range of services and programs similar to Alberta’s Ministry of Labour and Immigration (Hall Aitken, 2019). Moreover, it appears that the personnel administering the Fund itself were drawn from the agency itself.

7.2.4. Summary

Table 7: Comparison of Policy Options

Criteria		Website	Skills Matching Tool	Training Grant
Effectiveness	Re-employment rate	Indirect impacts	3.3 percentage points	6.9 percentage points
	Earnings	Indirect impacts	Negligible	\$1,711
Cost to Government		\$3 million	\$1 million to \$2.5 million	\$18 million
Administrative Complexity		2 key actors	1 key actor	1 key actor

7.3. Recommendation

This study makes two recommendations.

First, that the Alberta government develop and implement the Skills Matching Tool and the Training Grant. The Training Grant is expected to generate the largest positive impacts on employment outcomes, and providing the Skills Matching Tool alongside it increases costs by a relatively modest amount. Moreover, the Skills Matching Tool may further improve employment outcomes of training participants, considering the experiences of the US TAA case (see Section 5.2.3). There are limitations with this recommendation. For one, there may be some equity concerns relating to access. This mostly applies to the Training Grant, as those living in Edmonton and Calgary would have more choices in training programs and institutions compared to those living in other regions. However, this would not change the above recommendation, as a significant array of options does exist in those other regions, in-person or online. For the other, the higher cost of the Training Grant may impact political support, considering the Alberta government's current fiscal restraint (Graney, 2019). This may be balanced by the potential accumulation of increased benefits (i.e., earnings) for young oil and gas workers, which over several years could be greater than initial costs. Moreover, the implementation of the Training Grant for young oil and gas workers could be used as a pilot program to assess impacts, cost effectiveness, and the suitability of the amount provided. Should it prove successful, the Grant could be expanded to include other workers displaced from the oil and gas or other sectors.

Second, that the above be implemented alongside provincial economic diversification efforts. This would help address the availability of jobs and the widespread lack of demand for youth labour during periods of high unemployment. It is beyond the scope of this study to discuss the details of such initiatives, such as what sectors they should focus on or how they should be implemented. However, they should follow the principles outlined by Morton and McDonald, who conducted a review of economic diversification projects in Alberta over the last several decades (2015). They argue that initiatives are more likely to be successful if they a) do not introduce government competition to existing industries in the region; b) are viable in the long-run without continuing subsidization; c) are connected to local advantages, including access to raw

materials, labour productivity, agglomeration of economies, or others; and d) use existing labour and skills in the province (Morton & McDonald, 2015).

7.3.1. Implementation

The above should be implemented with a bottom-up approach to improve their effectiveness, using the lessons from Just Transition outlined in Chapter 3.

As the availability of jobs is a key consideration for ALMP for young workers, economic diversification initiatives should be developed and pursued immediately, particularly since this will likely be an ongoing process over several years. Such initiatives may take some time to have significant impacts on employment.

The Skills Matching Tool and Training Grant should be implemented together after economic diversification strategies have been developed and initiated. Both the Tool and Grant would take a year or less to develop and implement, based on the timelines of both the Australian version of the Tool and the Scottish TTF, which took around a year from inception/announcement to launch (Government of Australia, 2019; Skills Development Scotland, 2019b). One benefit of this would be that young oil and gas workers would immediately be able to identify and enter training for occupations better suited to their existing skillset and experience. This can be strengthened by automatically notifying users of the Tool that enter oil and gas-specific occupations into the searchbar that the Grant is available; this would not be able to catch all young oil and gas workers, considering the range of occupations in the sector. Another benefit would be the ability to coordinate these options with economic diversification efforts. For example, the Tool should, where there is a strong match with a user's skillset, put occupations in demand in the targeted industries near or at the top of the suggested occupations list. In addition, as the Grant will require that applicants demonstrate how the training program they wish to take will help them obtain a job, the province should provide funding to applicants indicating they wish to enter the targeted sectors. This can also be accomplished by ensuring that third party service providers advise young oil and gas workers of the increased demand in the targeted sectors and direct them to the Grant and relevant training if agreed to by the participant. This would not restrict young oil and gas workers using the Tool and Grant to only those occupations related to the targeted sectors. There may be improved employment prospects in other sectors from

spillover or other effects, allowing significant freedom for young oil and gas workers to pursue their interests.

Finally, a bottom-up approach should evaluate if the above options are working as intended for young oil and gas workers or if changes are necessary. One way to do this would be to conduct surveys of Training Grant participants six months to a year after participation. This would be done to collect information about re-employment rates, incomes in post-participation jobs, occupation of employment, and whether participants had used the Skills Matching Tool before selecting their training program.

Chapter 8.

Conclusion

This study examined the impacts of the 2014 crash in the price of oil and structural changes in the oil and gas sector on the sector's young workers in Alberta and detailed the tough labour market conditions they face. It conducted a literature review to determine the effectiveness of ALMP, finding that they are less effective for young workers during periods of high unemployment. It also found that Alberta's employment services system delivers a wide range of ALMP programs and services and performs within the range found in the literature. To identify policy options and best practices, a case study of TAGS in Canada, the TAA in the US, and the UK Oil and Gas Workforce Plan was conducted using a framework derived from research on Just Transition. It confirmed the importance of pursuing a coordinated, bottom-up approach to government intervention to support workers. This includes ensuring that there are jobs available for young oil and gas workers to transition into.

Three policy options were identified, assessed against the profile of young oil and gas workers in Alberta, and evaluated. This study recommended a combination of an online skills matching tool, available to all Albertan workers, and a training grant targeted towards young oil and gas workers that lose/lost their jobs from 2015 onwards. It then recommended that the above be implemented with economic diversification initiatives in Alberta, which would help ensure that young oil and gas workers have jobs to transition into. The above should be done in a bottom-up approach, such as by implementing the skills matching tool and training grant after the economic diversification efforts have been initiated and coordinating their delivery with those efforts. In addition, the effectiveness of these options for the target population should be evaluated post-participation, to ensure changes can be made if needed.

References

- Abbott, M. (2008). *Worker displacement: A literature review and potential policy responses* (A Festschrift In Honour of David Dodge). Bank of Canada. Retrieved from https://www.bankofcanada.ca/wp-content/uploads/2010/09/discussion_abbott.pdf
- Aberdeenshire Council. (2019). *What's happening in Aberdeenshire's Economy—Quarter 3 2019*. Retrieved from <https://www.aberdeenshire.gov.uk/media/24635/aberdeenshireseconomyq32019.pdf>
- Adomaitis, N. (2019, September 10). Oil demand to peak in three years, says energy adviser DNV GL. *Reuters*. <https://www.reuters.com/article/us-oil-demand-dnv-gl-idUSKCN1VV2UQ>
- Alberta Energy Regulator. (n.d.). Capital expenditures. Retrieved from <https://www.aer.ca/providing-information/data-and-reports/statistical-reports/st98/prices-and-capital-expenditure/capital-expenditures>
- Alberta Energy Regulator. (2019). *ST98: Alberta Energy Outlook*. <https://www.aer.ca/providing-information/data-and-reports/statistical-reports/st98>
- Anderssen, E. (1997, October 8). Fishery-relief program slammed. *The Globe and Mail*, A8. ProQuest Historical Newspapers. <https://www.theglobeandmail.com/>
- Bell, B., Blundell, R., & Van Reenen, J. (1999). Getting the unemployed back to work: The role of targeted wage subsidies. *International Tax and Public Finance*, 6(3), 339–360. DOI: 10.1023/A:1008787013977
- Berk, J. (2012). *Understanding the employment outcomes of trainees in the Trade Adjustment Assistance (TAA) program under the 2002 amendments*. Mathematica. Retrieved from https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2013_11.pdf
- Botta, E. (2018). *A review of “Transition Management” strategies: Lessons for advancing the green low-carbon transition* (Inclusive Solutions for the Green Transition) [Issue Paper]. Organization for Economic Co-operation and Development. Retrieved from https://www.oecd.org/greengrowth/GGSD_2018_IssuePaper_Transition_Management.pdf
- Caliendo, M., & Schmidl, R. (2016). Youth unemployment and active labor market policies in Europe. *IZA Journal of Labor Policy*, 5(1). <https://doi.org/10.1186/s40173-015-0056-3>
- Canada Energy Regulator. (2017). Market Snapshot: Natural gas plays an important role in Alberta's oil sands. Retrieved from <https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/snpsht/2017/04-03ntrlgslbtrlsnd-eng.html?&wbdisable=true>

- Canadian Association of Petroleum Producers. (n.d.). *What oil and natural gas mean to Canada's economy*. Retrieved from https://context.capp.ca/energy-matters/2017/btn_what-oil-and-gas-mean-to-the-economy
- Canadian Radio-television and Telecommunications Commission. (2019). *Communications Monitoring Report 2018*. <https://crtc.gc.ca/eng/publications/reports/policymonitoring/2018/cmr3c.htm>
- Card, D. (n.d.). *Active labor market programs: What have we learned?* Retrieved March 25, 2020, from https://travail-emploi.gouv.fr/IMG/pdf/1-David_CARD-2.pdf
- Card, D., Kluve, J., & Weber, A. (2010). Active labour market policy evaluations: A meta-analysis. *The Economics Journal*, 120(November), F452–F477. <https://doi.org/10.1111/j.1468-0297.2010.02387.x>
- Careers in Oil and Gas. (n.d.). Employment + labour data. Retrieved February 26, 2020, from <https://careersinoilandgas.com/what-is-lmi/employment-labour-data/>
- Careers in Oil and Gas. (2019, July 16). Upstream. Retrieved from <https://careersinoilandgas.com/oil-gas-101/upstream/>
- Clagett, M. G. (2006). *Workforce development in the United States: An overview*. National Centre on Education and the Economy. Retrieved from http://ncee.org/wp-content/uploads/2011/08/ACII_WIA_Summary.pdf
- Cost of federal government's website renewal six times over budget, half way through project. (2016, August 15). *National Post*. <https://nationalpost.com/news/politics/cost-of-federal-governments-website-renewal-six-times-over-budget-half-way-through-project>
- D'Amico, R. & Schochet, P. Z. (2012). *The evaluation of the Trade Adjustment Assistance program: A synthesis of major findings*. Mathematica. Retrieved from <https://www.mathematica.org/our-publications-and-findings/publications/the-evaluation-of-the-trade-adjustment-assistance-program-a-synthesis-of-major-findings>
- Dunham, K. (2009). *Linkages between TAA, One-Stop Career Center partners, and economic development agencies* [Final Report]. Social Policy Research Associates. Retrieved from https://wdr.doleta.gov/research/FullText_Documents/Linkages%20Between%20AA%20One-Stop%20Career%20Center%20Partners%20and%20Economic%20Development%20Agencies%20-%20Final%20Report.pdf
- Ellwanger, R., Sawatzky, B., & Zmitrowicz, K. (2017). *Factors behind the 2014 oil price decline* (Bank of Canada Review). Bank of Canada. Retrieved from <https://www.bankofcanada.ca/wp-content/uploads/2017/11/boc-review-autumn2017-ellwanger.pdf>

- Employment and Social Development Canada. (n.d). *Employment Insurance (EI) and courses or training programs* [Program descriptions]. Aem. Retrieved November 18, 2019, from <https://www.canada.ca/en/employment-social-development/programs/ei/ei-list/courses-training.html#AuthorizationServiceCanada>
- Employment and Social Development Canada. (2017). *Evaluation of the Canada-Alberta Labour Market Development Agreement*. [Synthesis Report]. Retrieved from <https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/labour-market-development-agreement-alberta.html>
- Employment and Social Development Canada. (2019). *Employment Insurance Monitoring and Assessment Report for the fiscal year beginning April 1, 2017 and ending March 31, 2018*. Retrieved from <https://www.canada.ca/en/employment-social-development/programs/ei/ei-list/reports/monitoring2018.html>
- Fletcher, R. (2019, December 9). Unemployment rate among young men in Alberta nears 20%, a level not seen since the early 1980s. *Canadian Broadcasting Corporation*. <https://www.cbc.ca/news/canada/calgary/men-male-youth-unemployment-jobs-alberta-1.5389303>
- Future Skills Centre. (n.d.). *FAST: Facilitating Access to Skilled Talent*. Retrieved April 5, 2020, from <https://fsc-ccf.ca/projects/facilitating-access-to-skilled-talent-fast/>
- Glavine, P. L., & Wernerheim, C. M. (2002). Industrial restructuring and the gender implications of public policy: The case of the Newfoundland groundfishery collapse. *Newfoundland Studies*, 18(1). <https://journals.lib.unb.ca/index.php/NFLDS/article/view/866>
- Government of Alberta. (2012). *Alberta Works Policy Manual*. Retrieved from Government of Alberta website: <http://www.humanservices.alberta.ca/AWOnline/ETS/4340.html>
- Government of Alberta. (2015). *Alberta's occupational demand and supply outlook: 2015—2025*. Retrieved from Government of Alberta website: <https://open.alberta.ca/publications/2292-2644#summary>
- Government of Alberta. (2019a). *Alberta's occupational outlook: 2019—2028*. Retrieved from Government of Alberta website. <https://open.alberta.ca/publications/albertas-occupational-outlook>
- Government of Alberta. (2019b). *Canada-Alberta Workforce Development Agreement—2018/2019 annual Report to Albertans*. Retrieved from Government of Alberta website: <https://open.alberta.ca/publications/canada-alberta-workforce-development-agreement-annual-report-to-albertans>.
- Government of Alberta. (2020a). *Economic Dashboard: Natural Gas Price*. Retrieved on April 19, 2020, from <https://economicdashboard.alberta.ca/NaturalGasPrice>

- Government of Alberta. (2020b). *Economic Dashboard: Oil Price*. Retrieved on April 19, 2020, from <https://economicdashboard.alberta.ca/OilPrice>
- Government of Australia. (2019). *Future-proof your career with Skills Match*. <https://ministers.dese.gov.au/cash/future-proof-your-career-skills-match>
- Government of Newfoundland and Labrador. (1997). *The Atlantic Groundfish Strategy: An analysis of the program on a regional basis*. <https://www.gov.nl.ca/publicat/tags/default.htm>
- Government of the United Kingdom. (2016) *Oil and Gas Workforce Plan*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/535039/bis-16-266-oil-and-gas-workforce-plan.pdf
- Graney, E. (2019, August 28). UCP government warns of “spending restraint” in fiscal update. *Edmonton Journal*. <https://edmontonjournal.com/news/politics/government-to-release-first-quarter-financials/>
- Greenspon, E. (1995, April 27). Federal fishery plan fails on most aims, report says. *The Globe and Mail*, A16. ProQuest Historical Newspapers. <https://www.theglobeandmail.com/>
- Hall Aitken. (2019). *Skills Development Scotland: Oil & gas Transition Training Fund review*. Retrieved from https://transitiontrainingfund.co.uk/images/TTF_Review_Summary_Final.pdf
- Higgins, J. (n.d.). Economic impacts of the cod moratorium. *The Newfoundland and Labrador Heritage Website*. Retrieved December 8, 2019, from <https://www.heritage.nf.ca/articles/economy/moratorium-impacts.php>
- Human Resources Development Canada. (1996). *Evaluation of the Atlantic Groundfish Strategy: Formative Evaluation Report*.
- International Energy Agency. (2018). *World Energy Outlook 2018*. Retrieved from <https://www.iea.org/reports/world-energy-outlook-2018>
- Intergovernmental Panel on Climate Change. (2018). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press. Retrieved from https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf

- Jones, S. R. G. (2011). *The effectiveness of training for displaced workers with long prior job tenure*. Mowat Centre for Policy Innovation. Retrieved from https://munkschool.utoronto.ca/mowatcentre/wp-content/uploads/publications/27_the_effectiveness_of_training.pdf
- Kluve, J. (2010). The effectiveness of European active labor market programs. *Labour Economics*, 17(2010), 904–918. <https://doi.org/10.1016/j.labeco.2010.02.004>
- Laporte, C., Lu, Y., & Schellenberg, G. (2013). *Inter-provincial employees in Alberta*. Statistics Canada. <http://ra.ocls.ca/ra/login.aspx?inst=centennial&url=https://www.deslibris.ca/ID/239582>
- MacDonald, M. (2004). The crisis in rural labour markets: Failures and challenges for regulation. In J. Stanford & L. F. Vosko (Eds.), *Challenging the market: The struggle to regulate work and income*. McGill-Queen's University Press.
- Martin, M., & Blas, J. (2019, November 10). Aramco IPO Prospectus Flags Peak Oil Demand Risk in 20 Years. *Bloomberg.com*. <https://www.bloomberg.com/news/articles/2019-11-10/aramco-ipo-prospectus-flags-peak-oil-demand-risk-in-20-years>
- Marvin Shaffer & Associates Ltd. (2016). *Just transition in the phase-out of coal*. [Draft]. Used with permission of author.
- McKinsey Solutions Sprl. (2019). *Global oil supply and demand outlook—Summary | 2019 H1* (Energy Insights). Retrieved from https://www.mckinsey.com/solutions/energy-insights/global-oil-supply-demand-outlook-to-2035/~/_media/231FB01E4937431B8BA070CC55AA572E.ashx
- Morgan, G. (2019, May 3). After 50 years of trying to diversify its economy, Alberta is still stuck on oil. *Financial Post*. <https://business.financialpost.com/commodities/energy/after-50-years-of-trying-to-diversify-its-economy-alberta-is-still-stuck-on-oil>
- Morton, T., & McDonald, M. (2015). The siren song of economic diversification: Alberta's legacy of loss. *SPP Research Papers*, 8(13). Retrieved from <https://www.policyschool.ca/wp-content/uploads/2016/03/siren-song-economic-diversification-morton-mcdonald.pdf>
- Oil & Gas UK. (2018) *Workforce Report 2018*. Retrieved from <https://oilandgasuk.co.uk/wp-content/uploads/2019/03/OGUK-Workforce-Report-2018.pdf>
- Oil & Gas UK. (2019) *Workforce Report 2019*. Retrieved from <https://oilandgasuk.co.uk/wp-content/uploads/2019/08/Workforce-Report-2019.pdf>

- Oil Sands Magazine. (2018). Differentials explained: Why Alberta crude sells at a deep discount. <https://www.oilsandsmagazine.com/market-insights/crude-oil-pricing-differentials-why-alberta-crude-sells-at-deep-discount-to-wti>
- Organization for Economic Co-operation and Development. (2005). *OECD Employment Outlook 2005*. Retrieved from https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2005_empl_outlook-2005-en
- Organization for Economic Co-operation and Development. (2015). *Back to work: Canada: Improving the re-employment prospects of displaced workers*. Retrieved from <https://www.oecd.org/publications/back-to-work-canada-9789264233454-en.htm>
- PetroLMI. (2015) *Rotating, not relocating: Alberta's oil and gas rotational workforce* (HR Trends and Insights). Retrieved from <http://www.oscaalberta.ca/wp-content/uploads/2017/06/PetroLMI-2015-Rotational-Workforce-Report.pdf>
- PetroLMI. (2018a). *A workforce in transition: Oil and gas skills of the future*. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/31/en/A_Workforce_in_Transition_Oil_and_Gas_Skills_of_the_Future.pdf
- PetroLMI. (2018b). *Canada's oil and gas workforce: Distribution, work patterns and income*. Retrieved from https://careersinoilandgas.com/wp-content/uploads/2019/06/FINAL_PetroLMI_Distribution_Report.pdf
- PetroLMI. (2018c). *Diversifying Canada's oil and gas workforce: A decade in review*. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/30/en/FINAL_Diversifying_Report.pdf
- PetroLMI. (2019). *2019 Oil and gas labour market update*. Retrieved from https://careers-oil-gas.s3.amazonaws.com/publications/34/en/2019_Labour_Market_Update_FINAL.pdf
- Roman, K. (2017, July 13). Federal government to downsize failing Canada.ca project. *Canadian Broadcasting Corporation*. <https://www.cbc.ca/news/politics/federal-government-to-downsize-failing-canada-ca-project-1.4202563>
- Ruseski, G. (2006, October 19). *Canada's fisheries labour market programming and other measures: The learning experience (1992-2003)*. Retrieved from <http://www.oecd.org/greengrowth/fisheries/37606749.pdf>
- Schochet, P. Z., D'Amico, R., Berk, J., Dolfin, S., & Wozny, N. (2012). *Estimated Impacts for Participants in the Trade Adjustment Assistance (TAA) Program Under the 2002 Amendments*. Mathematica. Retrieved from https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2013_10_Participant_Impact_Report.pdf
- Schrank, W. E. (2005). The Newfoundland fishery: Ten years after the moratorium. *Marine Policy*, 29(5), 407–420. <https://doi.org/10.1016/j.marpol.2004.06.005>

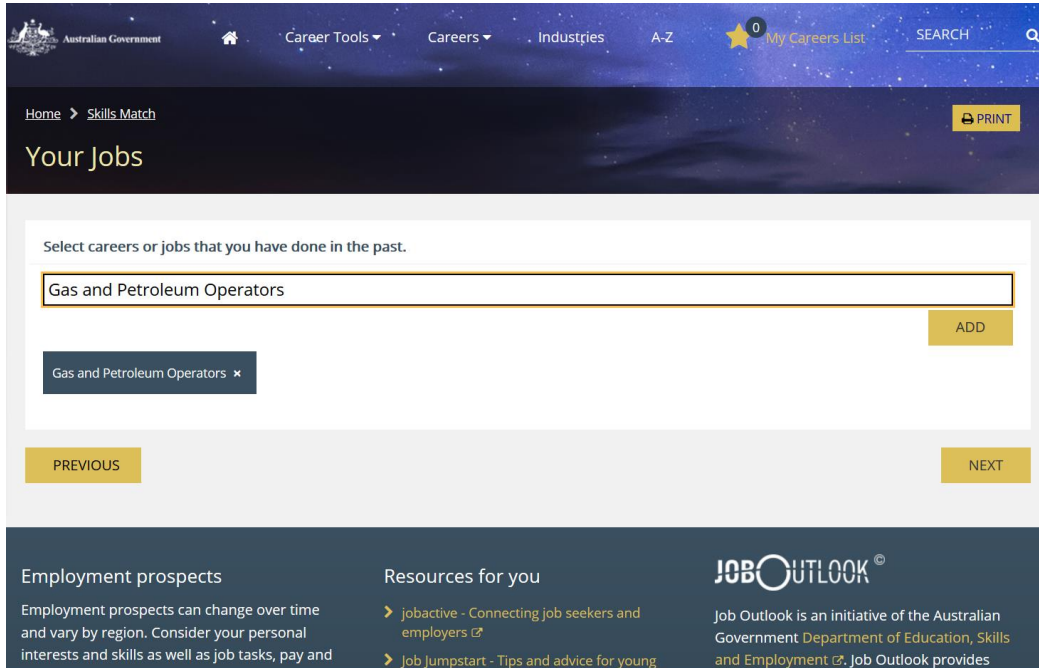
- Skills Development Scotland. (2019a) *Transition Training Fund: Supporting those affected by the oil and gas downturn*. Retrieved from <https://transitiontrainingfund.co.uk/>
- Skills Development Scotland. (2019b). *4000 people get help from energy jobs fund*. (2019). Retrieved from <https://www.skillsdevelopmentscotland.co.uk/news-events/2019/january/4000-people-get-help-from-energy-jobs-fund/>
- Statistics Canada. (2019a). *A Portrait of Canadian Youth: Today's Youth Are Unlike Any Generation Before!* Retrieved from. <http://www.deslibris.ca/ID/10103314>
- Statistics Canada. (2019b). *Table 14-10-0090-01: Labour force characteristics by province, territory and economic region, annual*. DOI: <https://doi.org/10.25318/1410009001-eng>
- Statistics Canada. (2019c). *Table 17-10-0005-01: Population estimates on July 1st, by age and sex*. DOI: <https://doi.org/10.25318/1710000501-eng>
- Statistics Canada. (2020a). *Table 14-10-0011-01: Employment insurance beneficiaries (regular benefits) by province and territory, monthly, seasonally adjusted*. DOI: <https://doi.org/10.25318/1410001101-eng>
- Statistics Canada. (2020b). *Table 14-10-0287-01: Labour force characteristics, monthly, seasonally adjusted and trend-cycle, last 5 months*. DOI: <https://doi.org/10.25318/1410028701-eng>
- Tran, K. C., Davidson, J., & Casurella, P. (2019). *A cost-benefit analysis of Alberta rural broadband deployment*. Southgrow Regional Economic Development. Retrieved from https://gallery.mailchimp.com/ac73260bbea766eb1c1328e6f/files/e415bea3-c866-4e95-98e1-07fcbba3d243/Media_Release_Cost_Benefit_Study_on_Broadband.pdf?utm_source=Contact+Newsletter&utm_campaign=16fb09a084-EMAIL_CAMPAIGN_2018_01_11_COPY_01&utm_medium=email&utm_term=0_ad7c2a0493-16fb09a084-390821669
- United States General Accounting Office. (2001). *Trade Adjustment Assistance: Experience of six trade-impacted communities*. [Report to the Chairman and Ranking Member, Committee on Finance, US Senate]. Retrieved from <https://www.gao.gov/new.items/d01838.pdf>
- United States Energy Information Administration. (2019) *Tight oil development will continue to drive future U.S. crude oil production*. Retrieved from <https://www.eia.gov/todayinenergy/detail.php?id=38852#>
- Valleau, N. (2020, February 24). Alberta spring budget should boost innovation with tax credits, say entrepreneurs. *Canadian Broadcasting Corporation*. Retrieved from <https://www.cbc.ca/news/canada/calgary/tax-rates-alberta-investor-tax-credit-economy-investors-1.5473572>

- White, M. (2003). Retraining Programs for Displaced Workers in the Post-Industrial Era: An exploration of government policies and programs in Canada and England. *Compare: A Journal of Comparative and International Education*, 33(4), 497–506. <https://doi.org/10.1080/0305792032000127784>
- Yeyati, E. L., Montané, M., & Sartorio, L. (2019). *What works for active labor market policies* (CID Faculty Working Paper No. 358). Center for International Development at Harvard University. Retrieved from <https://www.hks.harvard.edu/centers/cid/publications/faculty-working-papers/labor-market-policies>

Appendix.

Skills Match Australia

Below are screenshots of the Skills Match tool in Australia, which can be found at <https://joboutlook.gov.au/skills-match.aspx>.



https://joboutlook.gov.au/skills-match/your-skills?occupationNames=Gas+and+Petroleum+Operators

Compiling, coding, categorising, calculating, tabulating, auditing, or verifying information or data.
Deciding whether events or processes comply with laws, regulations, or standards.

Making sense of information and ideas
Looking at, working with, and understanding data or information.

Thinking creatively
Using your own ideas for developing, designing, or creating something new.

Tools and technology

Controlling equipment or machines
Operating machines or processes either directly or using controls (not including computers or vehicles).

Documenting or recording information
Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.

Knowledge and know-how

Mechanical
Machines and tools, including their designs, uses, repair, and maintenance.

Mathematics
Arithmetic, algebra, geometry, calculus, or statistics.

Public safety and security
Use of equipment, rules and ideas to protect people, data, property, and institutions.

Keeping up-to-date with technology and new ideas.
Assessing and evaluating things
Working out the value, importance, or quality of things, services or people.

Planning and prioritising work
Deciding on goals and putting together a detailed plan to get the work done.

Working with computers
Using computers to program, write software, set up functions, enter data, or process information.

Handling and moving objects
Using hands and arms in handling, installing, positioning, moving and manipulating objects.

Education and training
Curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.

Engineering and technology
Use engineering, science and technology to design and produce goods and services.

Job Outlook Career Tools Careers Industries A-Z My Careers List SEARCH

New Job Ideas

The skills and experience you have from past jobs is valuable and can be used in many other jobs or careers.

Here are some ideas for jobs that use similar skills to: **Gas and Petroleum Operators**

We found these matches by looking at the knowledge, skills, abilities and education level usually needed. We also looked at daily work activities and the skills that employers ask for in job ads.

Explore your skills match and possible career moves in more detail.

[HELP ME REFINE THE LIST](#)

Power Generation Plant Operators - see skills match

Power Generation Plant Operators operate boilers, turbogenerators and associated plant to generate electrical power.

\$3,082 Weekly Pay

Stable Future Growth

Strong match

All Chemical, Gas, Petroleum & Power Plant Operators ⓘ
A Vocational Education and Training qualification is needed

Chemical Plant Workers - see skills match

Chemical Plant Workers perform routine tasks in chemical processing plants, such as delivering materials to processing areas, dumping ingredients into hoppers, operating machines to heat, cool and agitate chemical solutions, filling and fastening covers on containers, and attaching labels and information on products.