MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

AIDE MEMOIRE

PM's Business Advisory Council – Meeting 13 March 2019

Date:	8 March 2019	**Priority:**	Medium
Security classification:	In Confidence	**Tracking number:**	2743 18-19

Action sought		
	Action sought	**Deadline**
Rt Hon Jacinda Ardern **Prime Minister**	**Note** this material and talking points for the meeting of the PM's Business Advisory Council on 13 March 2019	13 March 2019
Hon Grant Robertson **Minister of Finance**		
Hon Dr Megan Woods **Minister of Research, Science and Innovation**		
Hon Chris Hipkins **Minister of Education**		
Hon David Parker **Minister of Economic Development**		

Contact for telephone discussion (if required)			
Name	**Position**	**Telephone**	**1st contact**
Paul Stocks	Deputy Chief Executive, Labour, Science, Enterprise, MBIE	Privacy of natural persons	✓
Kate Challis	Principal Policy Advisor, Strategic Policy, MBIE		

The following departments/agencies have been consulted
MBIE, Ministry of Education, Treasury (on papers their Minister has portfolio responsibility for)

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Purpose

To provide you support material for your attendance at the Prime Minister's Business Advisory Council (BAC), 13 March 2019, 3-5pm, Premier House, Wellington

Paul Stocks
Deputy Chief Executive
Labour, Science, Enterprise, MBIE, MBIE

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Background

1. The PM's BAC first met on 8 November, where it agreed a work programme structured initially around skills, investment and regions, with options on unleashing the potential of New Zealand's small to medium enterprises to be considered further as a future priority. The announcement on the day, including the work programme, is at Annex One. The Chair has since re-crafted this into a workstream statement, which is also attached.

2. There were a number of actions agreed to at that meeting. These are outlined below, with a brief summary of what has happened since.

Actions arising from previous meeting

Action 1. Skills	Status
BAC committed to working with business leaders on a Pledge commitment to reskilling employees	The Chair will update the BAC on progress on the Pledges at 13 March meeting as an agenda item. Draft wording is attached as part of the papers for the meeting. The Pledge is ambitious and to be welcomed. Five businesses have committed to date, with more likely to follow. The BAC will likely ask for Govt response. This is canvassed below.
BAC will undertake an assessment of key shifts they see for industry in the future, and the workforce training implications of this (a fact-base)	The BAC will present a report prepared by McKinsey on the future of work, including recommendations for Govt and business at the upcoming meeting. This report includes a number of recommended actions for Government and business. The base information in this report was previously discussed at the Future of Work Tripartite Forum, but no recommendations were included. We suggest Ministers note this report and that further consideration is required to respond to the recommendations – also noting that these are recommendations from McKinsey, commissioned by BAC, and not formally commissioned by the Government.
Government to explore establishing a Future of Work Unit (possibly in Treasury).	Govt is actively considering the future of work and impact of economic adjustment on workers (tripartite forum etc). Whether administrative/or machinery of govt changes are necessary is a possible consideration. In the meantime, officials in Treasury and MBIE (in collaboration with others) are working closely to progress work. We have provided the BAC (via AirNZ) with key contacts in Treasury & MBIE. Agencies working more collaboratively is a key part of the State Sector Reform that the State Services Commissioner, Peter Hughes, is leading, and an expectation from Ministers. There are speaking points below.
Ministers invited BAC members, Fraser, Jocelyn and Andrew to meet and discuss vocational education and provide advice on link between business needs and skills	We understand that number of members of the BAC have met with Minister Hipkins and attended various forums on the Reform of Vocational Education (RoVE). Minister Hipkins will present on the RoVE at this meeting, with a discussion to follow.

2. Regions	
Government and BAC committed to look to support regional development through their respective procurement approaches	A paper on the Govt's changes to procurement, and how it will support regional growth, is included as part of the papers for this meeting.
The BAC will be asked to provide advice on how to make the current PM's Business Scholarships more effective with broader reach	Anna Curzon was provided information on the PM's Business Scholarships, which included specific areas to consider in crafting advice on changes to the scholarships. Anna Curzon will present her recommendations at this meeting.
Government will lead a discussion on the Just Transitions Programme at the next BAC meeting	Minister Woods will present the Just Transitions work programme at this meeting.
Government will report back on its policy development and immigration system that recognises and supports specific regional and sectoral needs	Fraser Whineray and Rachel Tulelei met with MBIE officials for a separate briefing on the Govt's immigration reforms, and a paper has been distributed providing an update on this work (for noting). Paul Stocks, MBIE, will be attending and can speak to this paper if required. Fraser Whineray and Rachel Tulelei will provide a brief update on their reflections on the immigration reforms.
3. Investment	
BAC is committed to supporting a Global Investor Roadshow, showcasing NZ as a place to do business and invest	The BAC has been engaging with NZTE on this. NZTE will present at this meeting. We understand that the BAC is also interested in the PMs forward international engagement agenda as part of this. This will be discussed off-line.
Government has asked BAC for advice on ensuring that the implementation of the R&D tax credits maximises potential benefits to NZ	Work on "refundability" of the tax incentive for pre-profit and loss-making firms just about to commence. Business are interested in how R&D tax credit will help start-ups. MBIE will be in touch with BAC, and Peter Beck to engage on this work. A background paper has been provided.
Government will undertake further work on opportunities to deepen NZ's domestic capital markets	Minister Parker will provide some introductory remarks on capital markets in New Zealand and the overseas investment office. David McLean has provide a short paper on attracting capital, which he will speak to, and Peter Beck is likely to also discuss the importance of venture capital for New Zealand.

4. SMEs	
BAC will survey firms and report back on top three opportunities for Government to make it easier to do business	This is work in progress. BAC may provide a short noting paper on this work.

Agenda for Wednesday 13 March 2019

3. The Agenda for the meeting is attached (Annex Two). The following outlines the key areas of discussion.

NZ 2030: Gearing our Workforce for the Future

Item 1: Future of Work – McKinsey Report and Recommendations

4. Andrew Grant, McKinsey, will present the McKinsey report on the potential impact of technological change on employment, which includes a number of recommendations for business and government (Annex Three). The key section of the report is the executive summary which includes the recommendations.

5. The findings of the report (without recommendations) were previously discussed at the Future of Work Tripartite Forum – 26 February 2019. This is the first time officials and Ministers have seen the recommendations and the report in full, and we have not had time to consider. We note that this was not a report commissioned by Ministers.

6. The report outlines three scenarios based on how quickly New Zealand adopts automation technologies. Under the mid-point scenario, around 21 per cent of work tasks will be automated by 2030. Early adoption would see 41 per cent of work tasks automated, while late adoption would lower that figure to around 2 per cent.

7. The three scenarios have different implications for the workforce, with early adoption leading to a net decline in jobs by 2030 and an unemployment rate peaking at around 6.1 per cent. McKinsey's mid-point scenario will see unemployment rates rise to around 5.3 per cent, even with a net rise in jobs.

8. McKinsey's analysis is a useful contribution to the debate over the impact of automation. Research conducted by the OECD suggests more subdued impacts from technological development, with only around 10 per cent of jobs being at high risk from automation, and New Zealand being particularly well placed to adapt to technological changes. Internationally, the debate has shifted from a focus on disemployment effects to the impact of Future of Work trends on job quality and inclusiveness.

9. There remains a level of uncertainty about the specific impacts of technology on job quantity, and MBIE will be reporting to Ministers on how to ensure labour market resilience for a range of possible outcomes. If resources allow, we plan to conduct further analysis of the scenarios presented in the report, and the implications for industry policy.

Establishing a Future of Work Unit – if raised

10. The BAC has previously suggested Government establish a Future of Work Unit, potentially within Treasury. If raised, you might like to mention that there is a large amount of work underway in Government on this issue, including through the Tripartite Forum.

11. Agencies, particularly Treasury and MBIE do have dedicated staff to support this work, and we would be happy to provide the contact details of the Managers of the primary policy

teams within both agencies. The nature of the issue means that it is necessarily cross-agency. It is not clear at this time whether additional administrative change is required to establish a dedicated team within a single agency, but it is something the Government will consider, as requested by the BAC.

Item 2: Skills Pledge

12. Draft wording of the skills pledge is at Annex Four. It commits business to:

    a. Double the number of on-the-job training and reskilling hours they provide by 2025.

    b. Publicly disclose their investment in on-the-job training and reskilling hours annually.

13. Christopher Luxon will give a brief update on the businesses which have so far committed to such a pledge (we understand there are five so far). We understand it is too early to formally announce such a Pledge, given the small number of firms signed up, and that discussions on the proposal still need to be discussed with key stakeholders, such as Business NZ.

14. The BAC has asked how Government might respond to a Pledge (i.e. commit similar). We have advised that government is a different entity to business – and such a commitment is unlikely to be possible, or even administratively feasible. However we would welcome such a Pledge, and would consider how to respond once the proposal was further developed, ie micro-credentialling.

Item 3: Reform of Vocational Education – Presentation by Hon Hipkins

15. Hon Hipkins will present on the Reform of Vocational Education (RoVE), and a background paper has been provided to support this discussion (Annex Five). We understand that the BAC will respond, and raise questions on two areas:

    a. Reform of the sector more generally – which the BAC is broadly supportive of

    b. Regional issues and impact – in particular, Jocelyn O'Donnell (from Southland) is likely to raise this point.

16. The focus of the discussion, however, is likely to be on the role business and employers can play in the reforms. A number of BAC members have engaged either with the Minister, or in other fora, on the proposed reforms, so many will be reasonably well acquainted with the proposals. Item 4: Just Transitions Pilot – Presentation by Hon Dr Woods

17. A draft presentation on the Just Transitions pilot is attached (Annex Six). We understand that Minister Woods will focus on:

    - BAC reflections on the Taranaki Roadmap process
    - How BAC would like to engage in the National Summit (9-10 May, in Taranaki)
    - How BAC views the role of industry/business in supporting/planning for workforce transitions

Securing our Economic Independence: Attracting More High Quality Investment

Item 1: New Zealand's Capital Markets and the Overseas Investment Act - introductory remarks by Minister Parker

18. Minister Parker will introduce the session on capital investment with some introductory remarks.

19. The BAC are particularly interested in the function of the Overseas Investment Office. A background paper on phase 2 of the Overseas Investment Act review has been distributed (Annex Seven). Treasury will contact the BAC to engage as soon as this review commences.

Overseas Investment Office – if raised

20. A number of members of the BAC have raised issues with the processes of the Overseas Investment Office (OIO). If raised, you might like to note that the OIO has recently changed some of its practices to reduce the length and overall cost of the application process to the applicant, to address problems identified in a 2016 internal review. Changes include improved guidance and application templates, pre-application meetings to give early feedback to applicants, triaging of applications, streamlining elements of investor screening for repeat applicants, taking steps to improve engagement with the investment community, and establishing the OIO as a standalone business group within Land Information New Zealand.

21. Two external reviews commented on OIO processes in 2018. One noted the OIO's changes had improved the quality of applications being considered and reduced the time taken to process applications, and the other noted that the OIO provides the right information to the decision makers. However, the current problems associated with the Act's complexity, uncertainty, and breadth are principally caused by legislative requirements, which the OIO and applicants must follow, and which the Phase II review is looking at.

Item 2: Discussion on Capital Attraction – Reflections from David McLean and Peter Beck

22. David McLean has provided a background paper on attracting high quality investment (Annex Eight)), which he will talk to.

23. Peter Beck will provide an oral update on his thinking on capital investment. We understand he is likely to focus on the need for venture capital to invest in developing innovative firms, such as Rocket Lab.

24. Peter Beck has also been tasked with leading work on developing advice on implementation of the R&D tax incentive to ensure implementation of the R&D tax credit maximises potential benefit to New Zealand. A background paper on the next phase of implementation of the R&D tax credits has been distributed (Annex Nine). This phase of work focuses on refundability of the tax credit, primarily for pre-profit or loss making firms are able to benefit from the credit. We understand that this is one of the areas the BAC is most interested in.

Item 3: Capital Attraction Roadshow Proposal – Presentation by Peter Chrisp, NZTE

25. This presentation is attached (Annex Ten). NZTE has worked closely with BAC on this proposal.

Accelerating Business in Regional New Zealand

Item 1: Update on Regional Hubs

26. Christopher Luxon will give a short update on progress on establishing regional business hubs.

Item 2: Immigration Reform

27. Fraser Whineray and Rachel Tulelei met with MBIE officials for a separate briefing on the government's immigration reforms, and a paper has been distributed providing an update on this work (for noting, Annex Eleven). Paul Stocks, MBIE, will be attending and can speak to this paper if required.

28. Fraser Whineray and Rachel Tulelei will provide a brief update on their reflections on the immigration reforms, and have prepared a background paper on demand signals (which we have only just received – Annex Twelve)

Additional background papers

29. A number of additional background papers have also been circulated, just for noting.

Procurement

30. While procurement is not on the agenda, at the previous meeting Government and BAC committed to look to support regional development through their respective procurement approaches. Attached for your information (Annex Thirteen) is a background paper for BAC on work government is doing on procurement policy in order to achiever broader social, regional and environmental outcomes.

31. The BAC are also distributing background papers on e-invoicing, and 'family business and SME ombudsman', which are also attached (Annex Fourteen and Fifteen).

32. Anna Curzon has also provided her advice on proposed changes to the PM's Business Scholarships (Annex Sixteen)

Annexes

Annex One: BAC Work Programme from November meeting

Annex Two: Agenda

Annex Three: Draft McKinsey Report – A Future that Works: harnessing automation for a more productive and skilled New Zealand

Annex Four: Draft Skills Pledge

Annex Five: Reform of Vocational Education – background on the proposed reforms

Annex Six: Presentation on Just Transitions

Annex Seven: Background on Phase 2 Review of the Overseas Investment Act – and the Australian Model (Federal Investment Review Bureau)

Annex Eight: David McLean Paper – Capital Attraction

Annex Nine: Implementation of the R&D Tax Incentive

Annex Ten: NZTE Presentation – Attracting more high quality investment – for the good of New Zealand

Annex Eleven: Update on a new approach to employer assisted work visas and regional workforce planning

Annex Twelve: Immigration Demand Signals – paper from Fraser Whineray

Annex Thirteen: Enhancing the effectiveness of government procurement policy

Annex Fourteen: Background paper – E-invoicing

Annex Fifteen: Background paper – Family Business and SME Ombudsman (Australia)

Annex Sixteen: Advice on the PM's Business Scholarships

8 November 2018

Business Council to focus on skills, investment and regions to drive more growth

Prime Minister Jacinda Ardern and Business Advisory Council Chair Christopher Luxon have announced the four priority areas the Council will provide the Coalition Government with advice and support as it works on building a productive, sustainable and inclusive economy that improves the wellbeing of New Zealanders.

The four priority areas are:

- Building tomorrow's skills
- Accelerating our regions
- Attracting high quality investment
- Unleashing our SMEs

"I'm excited we've so quickly identified with the Business Advisory Council the four areas of focus that are important to both the Coalition Government and businesses of all sizes in New Zealand," Jacinda Ardern said.

Christopher Luxon says common ground has been quickly found between the Council and Government.

"We both share the same ambition to see New Zealand succeed and are confident that we have aligned on four areas where business and Government working closely together can make a hugely positive impact not just economically but also socially and environmentally," Mr Luxon says.

"I am confident that we can start to deliver the first outputs from the priority areas prior to Christmas," Christopher Luxon said.

Jacinda Ardern said the work of Council will help to unleash the full potential of the New Zealand economy.

"The Government is running a strong surplus, we've had the best quarter of growth in two years and unemployment is at a decade low. But we have persistent problems that hold our economy back. The Business Advisory Council will play a key role in helping to shift the economy up a gear and to unleash New Zealand's economic potential.

"Everywhere I go business raise with me skills shortages and the difficulty of hiring skilled staff. We're committed to ensuring no New Zealander is left behind in the skills transition going on in our economy. The Council has plans to better match skills to work.

"New Zealand has a long term productivity problem. It is a handbrake on the economy and we need to fix it. I'm looking forward to advice from the Business Advisory Council on how we can attract high quality investment into the productive economy.

"I have been greatly impressed by the early thinking that has been developed by the Business Advisory Council under the leadership of Christopher Luxon. The diversity of skills, industry experience and perspectives will deliver some exciting outcomes," Jacinda Ardern said.

The terms of reference for the Council sets out that it will:

- provide high-level free and frank advice on policies that directly affect business
- harness the expertise of the private sector to inform government policy
- build closer relationships between government and business.

Prime Minister's Business Advisory Council members:

- Christopher Luxon (Chair), Air New Zealand
- Peter Beck, Rocket Lab
- Barbara Chapman, Professional director (started as Genesis Chair on 10 Oct)
- Jacqui Coombes, Bunnings
- Anna Curzon, Xero
- Andrew Grant, McKinsey & Company
- Miles Hurrell, Fonterra
- Bailey Mackey, Pango Productions
- David McLean, Westpac
- Joc O'Donnell, HW Richardson
- Gretta Stephens, Bluescope/NZ Steel
- Rachel Taulelei, Kono
- Fraser Whineray, Mercury

Prime Minister's Business Advisory Council Workplan

The Prime Minister's Business Advisory Council (BAC) is an initiative that was launched to help support the Coalition Government's goal to grow and share New Zealand's prosperity. It recognises that the business community are important partners in this challenge.

The role of the BAC is to provide advice on policies affecting business, and to be a forum that can co-ordinate actions from the business community and the Government. The work programme of the BAC will consist of actions and commitments that may be delivered by business, by Government, or by both working together. The BAC will focus on four priority areas, each representing significant challenges and opportunities to the future prosperity of New Zealand, and where business can add a credible voice:

1. Building Tomorrow's Skills
2. Attracting high quality investment
3. Accelerating our Regions
4. Unleashing our SMEs

Initially, the BAC will focus on priorities 1), 2), and 3). The questions below will form the basis of the agenda at the first BAC meeting on November 8.

1. Building Tomorrow's Skills

- How can business practically demonstrate their commitment to ensuring workers in New Zealand are supported to gain new skills and transition into new jobs as the nature of work changes?
- How can business support the operationalising of micro-crediting and the fees-free policy?
- How can our tertiary institutions support this in the practical way, learning from best practice models overseas?

2. Attracting High Quality Investment

- How can business support SMEs and others within the business community realise the opportunities provided by R&D tax credits?

- How can New Zealand grow its base of investment capital and ensure Kiwi firms realise their potential?
- How can NZ attract quality foreign investment in a seamless way?
- Could the Government's investment funds play a more prominent role in investing in NZ infrastructure projects and businesses?

3. Accelerating the Regions

- What can business do to enhance services in rural and provincial towns?
- How can Government and Business work together to unleash the potential of New Zealand's Agritech industry?
- How can Govt and business work together to solve regional skills shortages?

PRIME MINISTER'S BUSINESS ADVISORY COUNCIL

Nā tōu rourou, nā tōku rourou ka ora te iwi
Through collaboration we can all thrive

Premier House
13 March 2019

NZ 2030:
GEARING-UP OUR WORKFORCE FOR THE FUTURE

GOAL:

Government and business working together to ensure Kiwis are well prepared for the future of work.

OPPORTUNITY:

Aotearoa New Zealand faces significant challenges and unprecedented opportunities as automation and innovation change our working lives. Existing information, many government systems and agencies and many business models are not currently geared-up for this future of work.

The country requires a deliberate strategy with bold initiatives between government and business to harness the opportunity and to ensure that large parts of our society are not left behind in the global wave of transformation.

SECURING OUR ECONOMIC INDEPENCE:
ATTRACTING MORE HIGH QUALITY INVESTMENT

GOAL:

Government and business collaborating to create compelling reasons for high quality investment to come to New Zealand.

OPPORTUNITY:

As a growing, stable democracy rich in resources and entrepreneurial energy, Aotearoa New Zealand should be awash with international investment; it is not. We need this investment to super-charge our growth and to secure our economic sovereignty, and we need to accelerate and enable ways to make New Zealand a much more attractive proposition to high quality investors. Our size and isolation make investment challenging, but we do not help ourselves.

We are unclear about what investment we want and our narrative lacks clarity. This means we struggle to create a programme of highly curated opportunities of scale - we consistently hear "There is too much bureaucratic red-tape" when it comes to investing in New Zealand.

ACCELERATING BUSINESS
IN REGIONAL NEW ZELAND

GOAL:

Government, regions, Māori and business working together to more evenly share the economic prosperity generated by businesses in New Zealand.

OPPORTUNITY:

Businesses have a key role in creating prosperity across New Zealand. This prosperity and economic distribution across Aotearoa can be uneven, which creates different levels of opportunity and different social outcomes for kiwis.

We believe better outcomes are possible if businesses, strongly supported by and partnering with government, Māori and the regions, more actively commit to enhancing regional business activity. In this context, the unique and significant role that existing and future Māori-led businesses play (and will play) in the regions needs to be supported and embraced.

Annex Two: Agenda

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

Date: Wednesday 13 March 2019 (2nd Session)
Time: 2-5pm (Ministers joining from 3pm)
Location: Premier House, Wellington

Attendees

Ministers: Rt Hon Jacinda Ardern, Prime Minister
Hon Grant Robertson, Minister of Finance,
Hon Chris Hipkins, Minister of Education
Hon Dr Megan Woods, Minister of Energy
Hon David Parker, Minister of Economic Development

BAC: Christopher Luxon (Chair – CEO, Air New Zealand),
Andrew Grant (Senior Partner, McKinsey & Company),
Anna Curzon (Chief Product and Partner Officer, Xero),
Bailey Mackey (CEO, Pango Productions),
David McLean (CEO, Westpac New Zealand Ltd),
Fraser Whineray (CEO, Mercury NZ Ltd),
Gretta Stephens (CEO New Zealand & Pacific Islands, BlueScope),
Jocelyn O'Donnell (Director, HW Richardson Group),
Miles Hurrell (CEO, Fonterra),
Peter Beck (CEO, Rocket Lab),
Rachel Taulelei (CEO, Kono).
Nick McDonnell (Programme Manager to BAC)

Officials: Brook Barrington (CE), Department of Prime Minister and Cabinet),
Carolyn Tremain (CE), Ministry of Business, Innovation and Employment,
Paul Stocks, (DCE), Ministry of Business, Innovation and Employment,
Peter Chrisp, (CE), New Zealand Trade and Enterprise

Apologies: Barbara Chapman (Chair and Independent Director),
Jacqui Coombes (Director, New Zealand and Human Resources, Bunnings Group).

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

AGENDA

Time	Item	Lead	Mins	Pre-read
2pm	• BAC Members Arrive – General Discussion	Christopher Luxon	60	N/A
3pm	• Prime Minister and Ministers Arrive • Welcome and Opening Session	Prime Minister, Christopher Luxon	20	N/A
3.20	NZ 2030: Gearing Our Workforce for the Future			
	• Future of Work: Explanation of Report and Recommendations	Andrew Grant	15	Yes
	• Skills Pledge	Andrew Grant	5	Yes
	• Reform of Vocational Education	Minister Hipkins	20	Yes
	• Just Transitions Pilot - Taranaki	Minister Woods	10	Yes
4.10	Securing Our Economic Independence: Attracting More High-Quality Investment			
	• Capital Markets – International Investment – OIO Review – Venture Capital and R&D Tax Credits	Minister Parker Minister Woods David McClean Peter Beck	20	No Yes Yes Yes
	• Roadshow: Concept and Challenges	Christopher Luxon Peter Chrisp Dylan Lawrence	20	Yes
4.50	Accelerating Business in Regional New Zealand			
	• Regional Hubs	Christopher Luxon		No
	• Immigration	Fraser Whineray Rachel Taulelei Paul Stocks	5	Yes
	• PM Business Scholarships	Anna Curzon		Yes
	Items to Take Forward to July Session			
	• Maori Economic Development • SME Ombudsman • E-invoicing • SME Survey • Regional Procurement • Infrastructure	For noting only		No Yes Yes No Yes No
	• Next Steps			
	• Actions Items • Future Work Streams • Media and Announcements		5	N/A
	Attachments and Background Information			
	• DRAFT: A Future That Works: Report & Recommendations. • Skills Pledge • Summary: Reform of Vocational Education • Presentation: Just Transitions • Summary: Attracting High Quality Investment			

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

	• Summary: OIO Review and FIRB Model • Presentation: NZTE Roadshow Concept • Summary: New Approach to Employer Assisted Work Visas and Regional Workforce Planning • Summary: Immigration and Demand Signals • Summary: PM's Business Scholarships & Advice • Summary: Family Business and SME Ombudsman (Australia) • Summary: e-invoicing • Summary: Regional Procurement (MBIE)			

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

Action Items: BAC Meeting November 2018

	Action	Responsible	Status
1.	Skills		
i)	BAC committed to working with business leaders on a pledge commitment to reskilling employees		Delivery for 13 March meeting
ii)	BAC will undertake an assessment of key shifts they see for industry in the future, and the workforce training implications of this (a fact-base)		Delivery for 13 March meeting
iii)	Government to explore establishing a Future of Work Unit (possibly in Treasury).		
iv)	Ministers invited BAC members, Fraser, Jocelyn and Andrew to meet and discuss VET and provide advice on link between business needs and skills development.		
2.	Regions		
i)	Government and BAC committed to look to support regional development through their respective procurement approaches.		Work in progress
ii)	The BAC will be asked to provide advice on how to make the current PM's Business Scholarships more effective with broader reach		Delivery for 13 March meeting
iii)	Government will lead a discussion on the Just Transitions Programme at the next BAC meeting		Delivery for 13 March meeting
iv)	Government will report back on its policy development and immigration system that recognises and supports specific regional and sectoral needs		
3.	Investment		
i)	BAC is committed to supporting a Global Investor Roadshow, showcasing NZ as a place to do business and invest.		To discuss 13 March meeting
ii)	Government has asked BAC for advice on ensuring that the implementation of the R&D tax credits maximises potential benefits to NZ		Work in progress
iii)	Government will undertake further work on opportunities to deepen NZ's domestic capital markets.		
4.	SMEs		
i)	BAC will survey firms and report back on top 3 opportunities for Government to make it easier to do business		Work in progress

Annex Three: Draft McKinsey Report – A Future that Works: harnessing automation for a more productive and skilled New Zealand

MCKINSEY & COMPANY

A FUTURE THAT WORKS: HARNESSING AUTOMATION FOR A MORE PRODUCTIVE AND SKILLED NEW ZEALAND

March 2019

DRAFT VERSION

PREFACE

New Zealand has already put considerable thought into the future of work. Back in 2014, the New Zealand Labour Party established a Future of Work Commission to develop the vision, direction, and policies to enable New Zealanders to confidently face the changing nature of work and have sustainable, fulfilling and well-paid employment in the coming decades.[1] The programme published a report in 2016 containing 63 recommendations across six workstreams for policies and actions that would support New Zealand during anticipated changes to the way we work.[2] The report incorporated some estimates of job displacement from research published by Chartered Accountants Australia and New Zealand, with the assistance of the New Zealand Institute of Economic Research, in October 2015.[3] More recently in 2017, the Artificial Intelligence Forum of New Zealand (AI Forum) was founded as a not-for-profit, non-government organisation aiming to promote the economic opportunities raised by AI, while also working to ensure that society can adapt to the rapid and far-reaching changes that AI technology will bring.[4] The Forum has several publications, including a recent research report investigating AI's potential impacts on New Zealand's economy and society.[5] Additionally, various other businesses and organisations have been exploring and forming views on the topic.

This report aims to build on this body of research and work by:

- Estimating the potential impact of automation on economic outcomes in New Zealand, such as net job impacts, improvement in productivity and economic growth
- Looking at not only the potential impact of automation, but the likely impact based on modelled adoption under several scenarios (early, mid-point or late)
- Estimating—down to a regional level, and by sector and occupation—which jobs are vulnerable to disruption because of automation, as well as the potential upside in terms of jobs created
- Considering the skill and qualification shifts required in the workforce to meet future labour market demands
- Estimating the potential impact of automation on unemployment and income inequality
- Sharing our views on what it will take for both the private and public sectors to capture the opportunities from automation, while ensuring that the resulting benefits are broadly shared

Ultimately, we are seeking to answer two questions we face as a nation:

- How can New Zealand rapidly leverage automation technologies to boost productivity?
- How can New Zealand prepare and support displaced, continuing and future workers through the transition?

[1] http://www.futureofwork.nz/
[2] Future of Work Commission, "The future of work", 2016.
[3] Chartered Accounts of Australia and New Zealand, "Disruptive technologies: risks, opportunities – can New Zealand make the most of them?", October 2015.
[4] https://aiforum.org.nz/about/
[5] Artificial Intelligence Forum of New Zealand, "Artificial intelligence: shaping a future New Zealand", May 2018.

In seeking to answer these questions, the opportunities and challenges of automation for New Zealand are set out in detail in the following pages. It is, however, worth noting some key messages here.

Automation offers the small to medium enterprises that make up 73 percent of New Zealand businesses the chance to shed the limitations of their size and resources and turbo-charge their productivity, reach and impact. By 2030, thousands of working kiwis, perhaps one in every three adult workers, will need to reskill to change occupation in order to adapt and keep pace with the coming wave of transformation. That is some 60,000 New Zealanders retraining every year in order to remain employed.

The risk of doing nothing or acting with insufficient urgency is real; if that risk eventuates kiwi families will be negatively impacted. In such a scenario, inequality, already at the forefront of our national conscience and conversation, could rise to exceed the level seen in the United States.

It is in this context that the overarching theme of the report becomes clear. Any solution requires the collaboration of stakeholders from across sectors. This includes business, iwi, not-for-profits and not only the government of the day, but a broad range of supporters from across the political spectrum. This coalition of support, somewhat depoliticised, is required in order to implement a long-term national strategy that exists beyond electoral or business cycles.

□ □ □

John Lydon, managing partner of McKinsey Australia and New Zealand, and the partners of McKinsey New Zealand sponsored this research. Andrew Grant, senior partner, oversaw the work, along with associate partner Jasper van Halder. The leadership team was supported by engagement manager Sev Thomassian, and associate Diana Ivanov. Gurneet Singh Dandona, an automation specialist with the McKinsey Global Institute, led the research and analytics work related to automation in New Zealand together with Alok Singh.

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We would like to thank the Prime Minister's Business Advisory committee—who challenged our thinking and provided valuable feedback and guidance throughout.

The report was edited by Clare Kitada, with support from Liza Cornelius.

We hope that this report inspires conversation and a tangible call to action for every New Zealander, as well as our businesses, not-for-profits, unions, educational institutions and the public sector, on how we can work together and ensure we all share in the growth and opportunity automation can bring to the place we call home.

John Lydon
Managing Partner of McKinsey Australia and New Zealand

Andrew Grant
Senior Partner

March 2019

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EXECUTIVE SUMMARY

Automation technologies—which span advanced robotics, machine learning and AI—have already started to transform the New Zealand workplace, and soon they will reach scale. These technologies present our nation with enormous opportunity to restore momentum in productivity. However, at the same time, there will be new challenges to overcome. This report examines how automation may affect New Zealand and what can be done to secure the benefits and navigate the challenges. It does this in three parts:

1. Productivity imperative and automation: where we explore our nation's productivity imperative and the coming age of automation

2. Automation opportunities and challenges: where we describe both the three main benefits automation could offer and the three main difficulties that may arise

3. Recommendations: where we offer 10 recommendations on what businesses and government can do, and the importance of reskilling, to secure the benefits and overcome the challenges

The prospect of automation can be daunting for both workers and employers, and both groups may find themselves wanting to delay its impact. Yet, both groups stand to lose significantly if New Zealand becomes a laggard in this transition. Conversely, both groups will benefit significantly from accelerating the transition, if it is supported by the right social framework, especially through education, training and retraining. In this regard, the future of work will align the interests of all groups, and collaboration is key to capturing the benefits and mitigating the risks of a speedy transition while ensuring no New Zealander is left behind.

The summary of the key findings is set out below.

1. PRODUCTIVITY IMPERATIVE AND AUTOMATION

- **New Zealand has a productivity problem.** Our labour productivity growth[6] is roughly one-third lower than the OECD average, and has been steadily declining over the years. Between 2006 and 2016, the average annual productivity growth rate was just 0.9 percent, which was 0.4 percentage points lower than the previous decade, and 0.6 percentage points lower than two decades earlier (Exhibit 1).

- **The automation wave is well on the way.** Automation technologies have the potential to change workplaces. Overall, this technological disruption is predicted to be 10 times the pace and 300 times the scale of the industrial revolution.[7] Automation will increase the amount we can produce, the way we work and the jobs we work in.

- **Automation may solve the productivity puzzle.** For New Zealand, the critical upside of automation is productivity growth. As consumers demand change and new markets are created, innovators can increase exports of automation-era products and services. In previous decades, New Zealand has lost production and routine jobs to low-cost countries, replacing them with higher-value jobs. Since automation lends itself to the

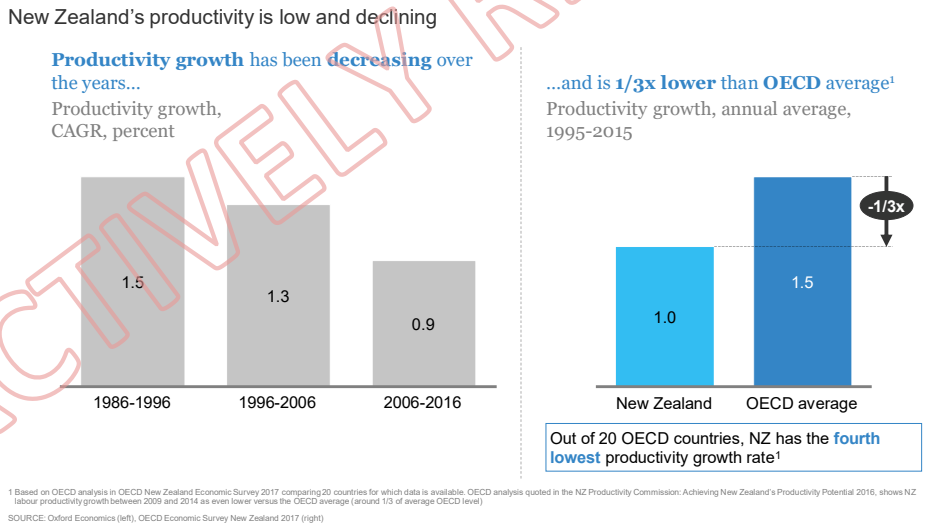
[6] Labour productivity is the economy's output per unit of labour input.

[7] Richard Dobbs, James Manyika, and Jonathan Woetzel, No ordinary disruption: the four global forces breaking the all the trends, McKinsey & Company 2015.

displacement of tasks rather than the elimination of whole jobs, the automation era will create more collaborative and cognitive jobs that involve more complex interactions and judgement[8]—if New Zealand can help its workforce transition to those skills then it can expect to see the productivity growth rewards.

- **The impact of automation on jobs in NZ will depend on the pace and extent of automation adoption.** The research examined multiple factors that would affect the pace and extent of automation, resulting in three scenarios for automation potential (i.e. what can technically be automated based on currently available technologies) and automation adoption (i.e. what we believe will be automated, taking into consideration financial, regulatory, and political and social constraints). These three scenarios are: an early scenario, a mid-point scenario, and a late scenario. Currently, 40 percent of all work activities can be automated based on available technologies. This will rise to 60 percent by 2030 in the mid-point scenario. However, not the entire 60 percent potential will be automated. We estimate that 21 percent of workplace activities will be automated by 2030 under the mid-point estimate, which could rise to 41 percent in an early adoption scenario.

EXHIBIT 1



2. AUTOMATION OPPORTUNITIES AND CHALLENGES

Automation is an inevitability that holds enormous potential for New Zealand, but that does not mean that its full benefits are guaranteed. The extent to which increased productivity and other benefits will be achieved depends on the speed of automation adoption relative to international competition. Automation also comes with its challenges, but New Zealand has faced and overcome many challenges before. This change will also be manageable if correctly navigated. Accordingly, we cover the three main opportunities and challenges of automation for New Zealand.

Opportunity 1 – Automation could solve the productivity problem

- **Early automation adoption could turbocharge productivity.** McKinsey analysis suggests early adoption boosts productivity significantly more than mid-point adoption—2.5 percent between 2016 and 2030 for early adoption (GDP growth of 4.3 percent),

[8] McKinsey, 'Compete to prosper: Improving Australia's global competitiveness', July 2014.

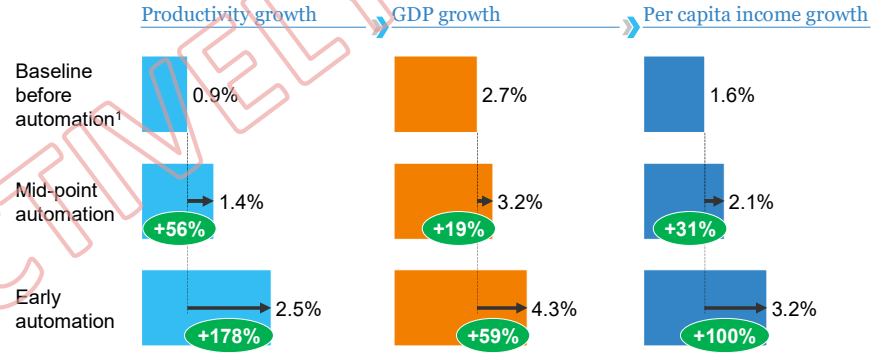
compared to 1.4 percent in a mid-point adoption scenario (GDP growth of 3.2 percent) (Exhibit 2).

- **In turn, this will boost economic and social outcomes.** To put these productivity growth numbers into context, automation could lift the value of New Zealand's GDP over the decade to 2030 by $133 billion to $436 billion in aggregate (equivalent to $13 billion to $44 billion per annum) and give each person additional income of $25,000 to $83,000 in aggregate over that period (equivalent to $2,500 to $8,300 per annum), based on mid-point and early adoption scenarios.[9] Strong job outcomes, however, are necessary to maximise the opportunity to grow GDP, incomes and living standards through automation, and ensure the benefits are widely shared such that no New Zealander is left behind. The various actions that each group of stakeholders can take to maximise whole-of-country prosperity are explored in the recommendations section.

- **SMEs have a chance to shine.** Previously, SMEs have been handicapped as technology-driven productivity improvements have been out of reach due to the large investment costs and complex integration efforts required, but this is changing with automation technologies, which can be applied at small scale.

EXHIBIT 2

Automation can provide a major boost to New Zealand's future economic prosperity
Projected real growth rate (compound annual growth rate) by automation scenario, 2016-2030



NOTE: Model assumes labour displaced joins back into the economy and are at least as productive as 2016
1 At historical 2008-2016 productivity growth rates
SOURCE: McKinsey Global Institute analysis

Opportunity 2 – Automation can improve our international competitiveness

- **Automation can increase our international competitiveness.** For example, New Zealand is less productive than the US overall, being at 68 percent of the US's labour productivity when taking all industries into account, but can close the gap to 73 percent through earlier automation adoption or widen it in the case of later adoption to 40 percent of the US's productivity. Automation potential and adoption is higher in the US, where 43 percent of existing workforce activities could already be automated with today's technologies, compared to 40 percent in New Zealand. This is because a higher proportion of work activity in the US involves repetitive, highly automatable activities, compared to New Zealand.

- **The outcome is even more stark in certain sectors.** For example, New Zealand's labour productivity in manufacturing is only 54 percent of the US equivalent. Faster adoption could close that gap to 83 percent, whilst slower adoption risks plunging that to just 29 percent of the US's level. Other sectors where early or late adoption will make the

[9] Based on expected increase to real GDP per capita.

biggest difference to New Zealand's international competitiveness are agriculture, transportation and warehousing.

Opportunity 3 – New jobs will be created and existing jobs will be more interesting

- **An additional 200,000 net jobs will be created by 2030.** Although adoption of automation will reduce the workforce by 700,000 jobs in aggregate by 2030, these reductions will be offset by the creation of 900,000 new jobs in aggregate over the same period.[10] Of these new jobs, almost 700,000 (~80 percent) could come from new sources of demand and the faster economic growth that goes along with higher productivity, while 200,000 (~20 percent) could come from entirely new specialist roles that do not currently exist. Automation also has important implications for the quality of jobs, eliminating many dangerous, routine and manual activities, and allowing people more time to use their specialised skills in more engaging ways. Similarly, there may be a need to embrace various forms of work (full-time, part-time, contracting, and independent workers in the gig economy) as job types change.

- **Employment growth will be widespread across regions.** Nearly all regions are expected to experience net job creation by 2030, with Auckland and Wellington best off, while West Coast and Southland are expected to see a decrease in employment (Exhibit 3). What differentiates regions, and the extent to which they are expected to adopt automation, is their occupation and industry mix.

- **Sectors will experience varying levels of net job creation** (Exhibit 4). The sector mix of the job market is expected to shift in favour of specialised, service-based sectors, with three sectors expected to create the most jobs by 2030: healthcare (82,000 net jobs), accommodation and food services (34,000 net jobs), and professional, scientific and technical services (31,000 net jobs). Total net job creation numbers are a function of both a sector's automation adoption by 2030, and its current share of New Zealand's workforce.

- **Most operations-based sectors are not expected to fare well.** Ten sectors are expected to see net job displacement by 2030, with four main sectors being the most heavily affected and accounting for over 70 percent of the net job displacement by those ten sectors: i) manufacturing (38,000 jobs displaced), ii) administrative, support and government (38,000 jobs displaced), iii) transportation and warehousing (32,000 jobs displaced), and iv) agriculture, forestry, fishing and hunting (25,000 jobs displaced).

[10] Employment growth forecasts are based on the impact of automation in addition to the 1.8% long-term employment growth forecast 'Medium to long-term employment projections: looking ahead to 2026', Ministry of Business, Innovation and Employment, March 2018.

EXHIBIT 3

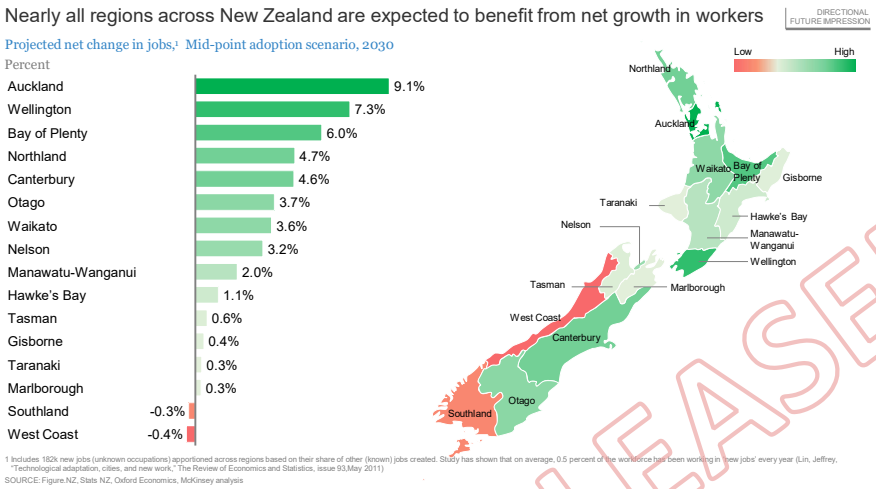
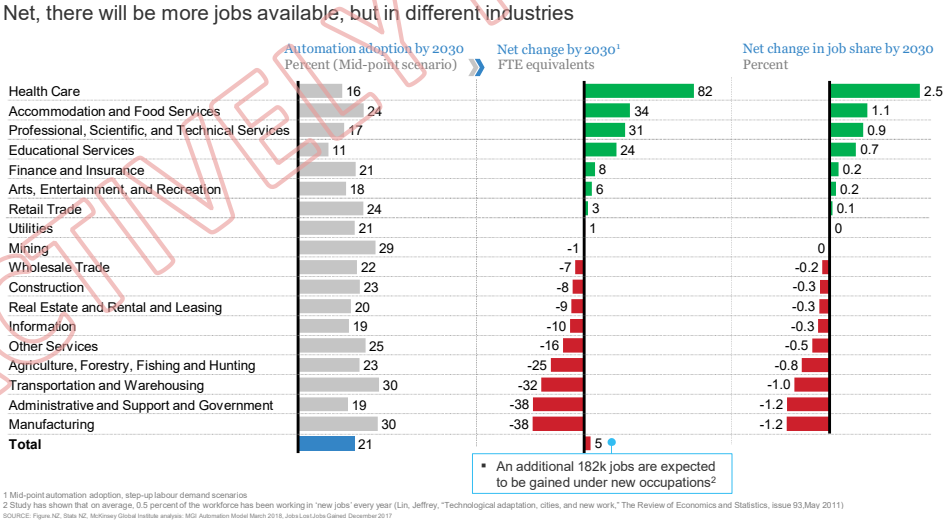


EXHIBIT 4



Challenge 1 – Automation will change the skills required in the workplace

- **The nature of work itself is changing.** As automation fundamentally alters the activities we perform at work, it also changes the skills we need. The research points to four types of work activities that will see an increase in demand: working with machines (technology skills), applying expertise (cognitive skills), interacting with stakeholders (collaboration skills), and managing and developing people (emotional skills) (Exhibit 5). By contrast, the need for people to perform physical, predictable and routine tasks will shrink.

- **The perception that automation driven changes will affect largely manual work is incorrect.** The precise changes in skillsets required will vary substantially by occupation and sector: see Exhibit 6. It would be wrong, however, to assume that only lower-level occupations will be affected. Many high-prestige jobs will change as diagnostic and data functions will be performed faster and more efficiently by machines.

- **Automation is lifting required skill levels faster than we produce graduates.** If current graduation and work patterns continue, the nation could face an overall

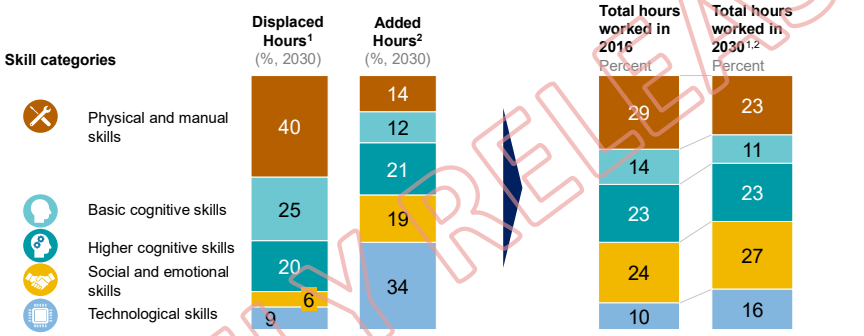
shortage of 130,000 university graduates to fill available jobs by 2030, split roughly into 40 percent postgraduates and 60 percent undergraduates.

- **In response to this, changes will be needed in both the design and delivery of education, including vocational training.** The core challenge in education, however, is not just with formal education; there are also challenges associated with how the broader education system, including vocational training, has been designed, and with its responsiveness to the skills being demanded by employers.

EXHIBIT 5

Demand for technological, social and emotional, and higher cognitive skills are expected to increase significantly in New Zealand

Evolution in skill categories
Share of hours worked, percent

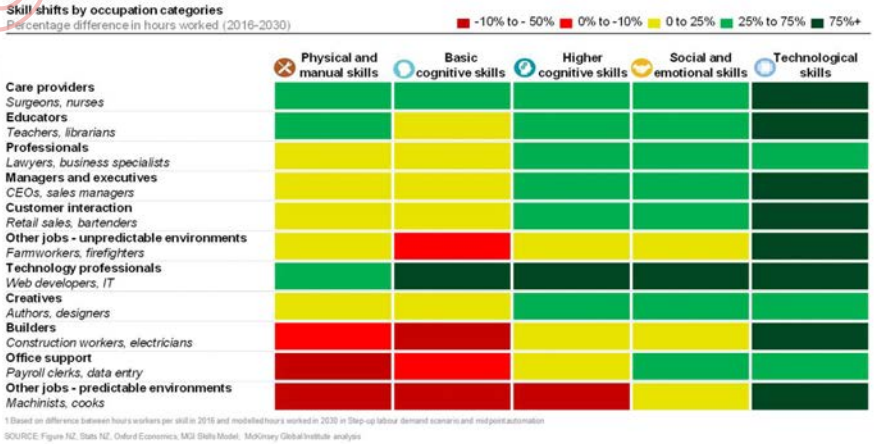


NOTE: Based on difference between hours worked per skill in 2016 and modelled hours worked in 2030 in Step-up scenario and midpoint automation. For practical purpose, the numbers for Australia is based on the 2030 Step-up demand , after automation from Jobs Lost,Jobs Gained Model only , while other countries are based on Skills Model, where additional levers were also applied. Hence, cross comparison should be considered directional .
1 Midpoint automation adoption 2 Step-up demand scenario
3 The change in hours worked refers to the difference in total hours worked in a certain skill category in 2016 compared to 2030 projections. The percentage difference is not referring to the change from 2016 to 2030 of the percentage that a skill category makes up of total hours worked
SOURCE: Figure.NZ, Stats NZ, Oxford Economics; MGI Skills Model; McKinsey Global Institute analysis

EXHIBIT 6

All jobs categories will require a greater amount of technological skills, followed by social and emotional skills

Skill shifts by occupation categories
Percentage difference in hours worked (2016-2030)



1 Based on difference between hours workers per skill in 2016 and modelled hours worked in 2030 in Step-up labour demand scenario and midpoint automation
SOURCE: Figure.NZ, Stats NZ, Oxford Economics, MGI Skills Model, McKinsey Global Institute analysis

Challenge 2 – Unemployment may rise during the transition period to full automation adoption

- **New Zealand may well see a bump in unemployment during the transition period.** This is likely to occur when automation adoption displaces jobs, but individuals have not been retrained for new jobs. If the rate of re-employment within one year is around 61 percent, a low of the last 30 years experienced in the early 1990s, it would bump the overall peak unemployment rate as high as 5.3 percent in the mid-point automation adoption scenario, and up to 6.1 percent in the early automation adoption scenario (Exhibit 7). If the re-employment rate is around New Zealand's long-term re-

employment rate of 74 percent, the unemployment rate would rise as high as 4.6 percent in the mid-point automation adoption scenario, and up to 4.8 percent in the early automation adoption scenario. These peak unemployment scenarios are based on the current relatively low unemployment rate environment, with the unemployment rate at 4.0 and 4.3 percent during September and December 2018 quarters, respectively. Future demand and supply shifts could change the outcome of the unemployment scenarios.

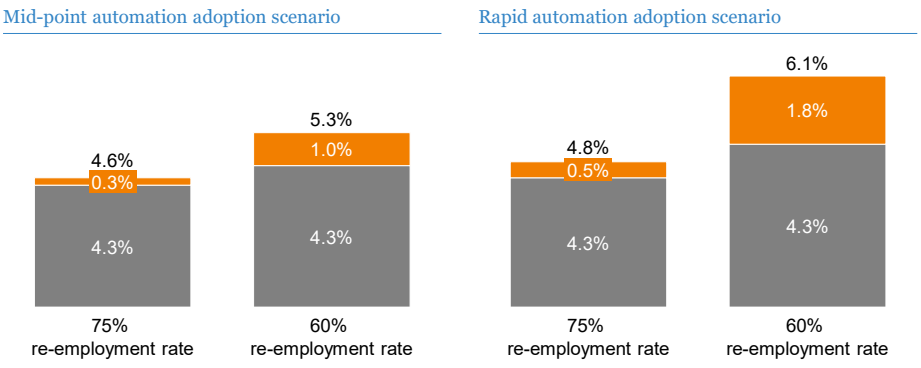
- **Some occupations will be impacted much more than others.** Overall, job displacement will be highest in administrative or generalist occupations that involve predictable physical tasks or repetitive data collection and processing. Secretaries, receptionists, research and legal assistants, and payroll and data entry workers, for example, are highly vulnerable (Exhibit 8).

- **As a result, a significant part of the labour force will need to retrain to gain re-employment.** While the impacts of automation over the next 50 to 100 years are hard to fathom, the economy is likely to return to full employment in the medium term (i.e. by 2030), as it has always done following structural shocks. However, there is no doubt that workers who are displaced will find this period challenging. The World Economic Forum estimates that by 2022, no less than 54 percent of workers will require significant reskilling and upskilling, with 19 percent requiring training of 6 months or longer.[11] Some may be able to find similar jobs in other companies or sectors, but many will need to retrain and transition to completely new occupations in order to find work. McKinsey analysis suggests that, in a rapid adoption scenario, an average of over 60,000 workers per year will need to upgrade their qualifications to change occupations altogether, totalling to over 900,000 workers by 2030 (or almost 1 in 3 workers in the workforce). In a mid-point adoption scenario, this is expected to be closer to 1 in 10 workers.

EXHIBIT 7

Peak unemployment

Scenarios for peak impact on unemployment by automation adoption and re-employment rate[1] within one year; percent in 2025



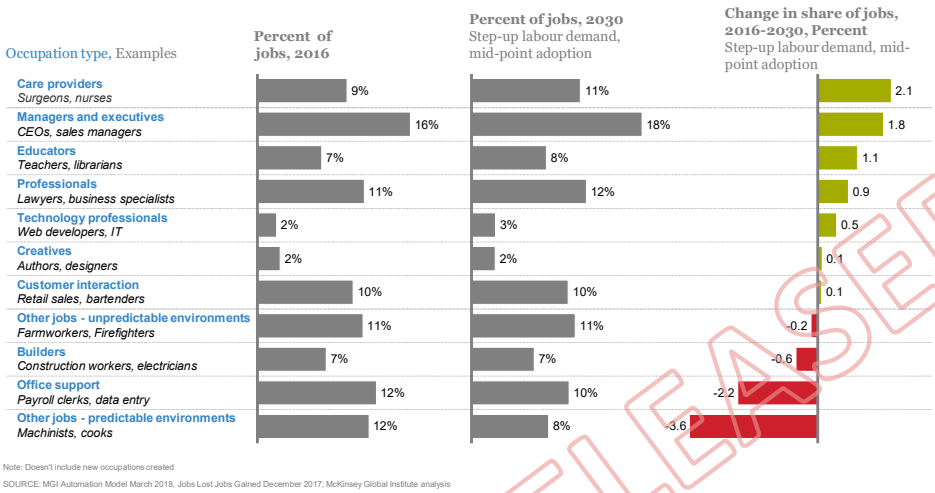
1 Over long term, 74% of unemployed persons in New Zealand have been re-employed within one year (proxied using % of people unemployed for > 1 year). The lowest rates recorded are around 61% during the recession in the early 1990s

SOURCE: Stats NZ as at February 2019; McKinsey Global Institute Global Growth Model

[11] World Economic Forum, "The future of jobs report", 2018.

EXHIBIT 8

Overall occupation mix is expected to shift in favour of specialised occupations



Note: Doesn't include new occupations created

SOURCE: MGI Automation Model March 2018, Jobs Lost Jobs Gained December 2017; McKinsey Global Institute analysis

Challenge 3 – Automation could widen income inequality

- **Wages will favour those with future relevant skills.** Workers who can perform cognitive, collaborative and digital work—the skillset relevant in the automation age and being in short supply—will likely enjoy strong wage growth. However, an oversupply of those who can perform routine or physical work will drive wages down.

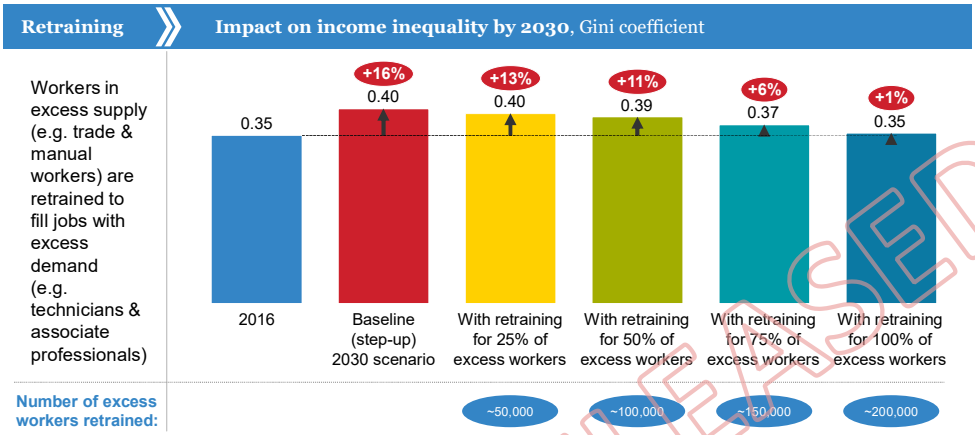
- **This is expected to affect overall income inequality.** If workers are not effectively retrained, creating large imbalances between supply and demand, the resulting changes in wages would drive up New Zealand's Gini coefficient from 0.35 to 0.40—an increase of 16 percent by 2030. This would put New Zealand's level of income inequality higher than what prevails in the United States today (a Gini coefficient of 0.39).[12]

- **Retraining could temper automation's impact on income inequality.** McKinsey examined various scenarios that would allow surplus lower-skilled workers to qualify for higher-skilled and higher-paid roles such as technicians or associate professionals (Exhibit 9). They estimate that if three quarters of these workers upgrade their skills (around 150,000 people), the impact on income inequality could be reduced by more than half.

[12] The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality.

EXHIBIT 9

Effective policies to retain and upskill excess workers and redeploy them to unfilled high-skill jobs could reduce the impact on income inequality



SOURCE: McKinsey Analysis, McKinsey GTAP model

Solutions will be needed for New Zealand to navigate these challenges and to achieve the full potential benefits of automation: turbocharged productivity growth, increased international competitiveness and more jobs created than displaced. These solutions require a combined stakeholder approach—no one stakeholder has the ability to deliver all benefits and overcome all challenges on their own. We propose a list of 10 potential recommendations across business and government specifically. Additionally, we also list thought starters for the education sector and individuals, because we all have a role to play in harnessing automation for a more productive and skilled New Zealand.

3. RECOMMENDATIONS

To capture the benefits of automation, and successfully navigate its challenges, both business and government will need to act, and above all, collaborate. In this report we make 10 recommendations—two combined (business and government), four for business and four for government.

#	Theme	Initiative
Combined—business and government		
C1	**Invest in reskilling and retraining**	**Business to:** ■ **Prioritise training and retraining** before recruitment: releasing and recruiting costs approximately 2.5 times more over a three-year period than retraining an existing employee ■ **Where reskilling is not appropriate, consider recruitment**, including high-skilled overseas recruitment, to initially import talent and subsequently build talent and capability internally ■ **Pledge** a significant investment in annual worker training, retraining and upskilling to close the anticipated skills gap, and **report** on the investment in annual worker training, retraining and upskilling in annual reports ■ **Create** cross-company or even cross-industry collaboration mechanisms for rotations, secondments and placement opportunities **Government to:** ■ **Encourage disclosure** by companies in their annual reports of investment in annual worker training, retraining and upskilling ■ **Incentivise investment in training and retraining** through tax breaks for corporations and individuals. For example, potentially adopting Australia's model of tax-deductible education expenses for workers who fund their own relevant education
C2	**Arrange a cohesive, collaborative multi-partnership effort** to deliver the national action plan, including regional areas that will be impacted most	■ **Formulate an industry strategy and provide grants for business cluster collaboration** and innovation in regions ■ **Provide financial incentives for companies to create/maintain jobs in regional areas** where otherwise most jobs would be displaced without sufficient local alternative job opportunities, for example, in Southland and the West Coast which are the two regions expected to experience net job loss ■ **Undertake a similar report focusing on Maori and the impact of automation on their working future** to inform and develop more Maori targeted recommendations and initiatives

#	Theme	Initiative
Businesses		
B1	**Invest early in automation technology** to maximise productivity benefits and open-up new business opportunities	■ **Invest early in automation,** as those who do so stand to gain the most from productivity improvement, customer satisfaction, and new business opportunities
B2	**Build the organisation of the future** with the right size, shape, skills and culture to deliver the strategy	■ **Design the organisation and workforce required for the future using the '5Rs'** (Redeploy, Retrain, Recruit, Rent, and Release) to assess and proactively obtain the scarce skills needed to deliver on the strategy ■ **Set up a 'future workforce centre of excellence'**—a dedicated, cross-functional strategic workforce planning centre to drive implementation of gap-closing skills initiatives across the organisation
B3	**Adopt an agile way of working**	■ **Create an agile organisational culture** to respond faster to changing market demand and dynamics by replacing siloed business models with cross-functional teams. While certain businesses have done this at scale, others could choose to adapt the principles in a tailored manner or at a smaller scale
B4	**Support displaced workers** towards a career beyond the organisation	■ **Subsidise own employees' education** efforts, even if in unrelated fields ■ **Provide funding options for workers to be released in the future** looking to reskill or start a different career

#	Theme	Initiative
Government		
G1	**Government to lead by example**	■ **Set clear and tangible world-class improvement targets for the public sector,** on outcomes and service-delivery metrics that matter most to citizens, to be achieved through adoption of automation technology
G2	**Use policy to enable nation-wide automation adoption**, including incentivising automation growth for SMEs and select sectors	■ **Create a Mobility Centre** to facilitate mobility in the labour market by matching displaced workers with jobs: – Create an information marketplace to give transparency on supply and demand for skills/jobs, expected income levels, and the effectiveness of retraining and reskilling efforts – Suggest skills certification and credentialing required for future job matching, and cater to specific needs – Share risk with displaced workers (e.g. through safety nets or investment clawbacks) – Create tracking mechanisms to measure and monitor impact of retraining and use unified statistics, for transparency and accountability, and to better shape future policy based on empirical evidence ■ **Enact regulation and policy** conducive to encouraging automation adoption across industries ■ **Select globally leading industries,** such as agriculture and tourism, where NZ could gain a significant competitive advantage through automation adoption, for targeted automation growth through incentives and policy (e.g. R&D tax credits) ■ **Introduce a SME Automation and Future Skills Securitisation Fund** to make it easier for SMEs to borrow for the specific purpose of automation adoption and retraining the workforce
G3	**Strengthen education** for lifelong learning, with dedicated upskilling pathways for older workers	■ **Establish citizen-directed 'Lifetime Learning Accounts'** for individuals to tap into throughout their careers to acquire new skills or pursue higher education ■ **Conduct reform of design and delivery of education** to better align lifelong foundations, study and work prospects through tools such as micro-credentialing and Massive Open Online Courses (MOOCs)
G4	**Launch pilots of new social welfare** concepts	■ **Pilot new forms of social welfare**—from modernising existing job placement programs, to wage insurance or other innovative social systems (e.g. Denmark's flexicurity model)

1. PRODUCTIVITY IMPERATIVE AND AUTOMATION

NEW ZEALAND'S PRODUCTIVITY PROBLEM

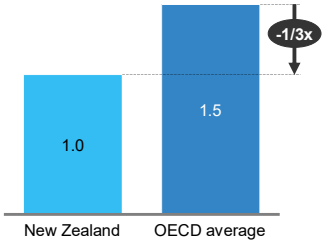
New Zealand has a long-standing productivity problem. Our labour productivity growth is roughly one-third lower than the OECD average, and has been steadily declining over the years. Between 2006 and 2016, the average annual productivity growth rate was just 0.9 percent, which was 0.4 percentage points lower than the previous decade, and 0.6 percentage points lower than two decades earlier (Exhibit 10).

EXHIBIT 10

New Zealand's productivity is low and declining

Productivity growth has been **decreasing** over the years...
Productivity growth, CAGR, percent

...and is **1/3x lower** than **OECD** average[1]
Productivity growth, annual average, 1995-2015



Out of 20 OECD countries, NZ has the **fourth lowest** productivity growth rate[1]

1 Based on OECD analysis in OECD New Zealand Economic Survey 2017 comparing 20 countries for which data is available. OECD analysis quoted in the NZ Productivity Commission: Achieving New Zealand's Productivity Potential 2016, shows NZ labour productivity growth between 2009 and 2014 as even lower versus the OECD average (around 1/3 of average OECD level)

SOURCE: Oxford Economics (left), OECD Economic Survey New Zealand 2017 (right)

Since the global financial crisis in 2008, half of all sectors have had less productivity growth than in the equivalent preceding time period (Exhibit 11). This is largely due to a widespread fall in multi-factor productivity (MFP) growth across all sectors in the wake of the global financial crisis, with the exception of the agriculture, forestry, fishing and hunting sector.

EXHIBIT 11

The recent slowdown in productivity growth has been broad-based across sectors

	Share of total employment Percent, 2016	Labour productivity growth Percent (CAGR) 2008-16	Change vs.2000-2008 period Percentage points
Health Care	10	-0.6	-1.4
Construction	10	1.3	1.0
Retail Trade	10	3.2	0.6
Manufacturing	10	0.3	-0.9
Educational Services	9	-1.3	0.6
Administrative and Support and Government	9	-2.3	-2.5
Professional, Scientific, and Technical Services	9	0.1	-0.2
Agriculture, Forestry, Fishing and Hunting	6	3.7	2.7
Accommodation and Food Services	6	0.7	0.3
Wholesale Trade	5	0.8	-1.1
Transportation and Warehousing	4	2.0	0.6
Other Services	4	0.1	-1.6
Finance and Insurance	3	1.4	-1.2
Arts, Entertainment, and Recreation	2	-0.1	1.2
Real Estate and Rental and Leasing	2	1.1	-2.6
Information	2	6.2	2.2
Utilities	1	-1.4	1.7
Mining	0	-3.6	-1.9
All industries	100	1.2	-0.1

SOURCE: Stats NZ Productivity Statistics

If New Zealand does not lift its productivity growth, our economic growth will decline unless further offset by employment growth. The result could be stagnation of per capita GDP growth and strain on the nation's social fabric. The OECD looked into this lacklustre performance and attributed it to our lack of international connections, agglomeration economies of scale, weak competitive pressures, low rates of capital investment, and meagre research and development activity.[13] Various governments have been working to address labour productivity through measures such as the Business Growth Agenda in 2012–2017, increased investment in infrastructure (including high speed broadband) and a strong ICT strategy with clear targets to enable better public services. However, and this may be surprising, it is automation that promises to be the real unlock for New Zealand to accelerate its productivity growth.

THE AUTOMATION WAVE IS WELL ON ITS WAY

Automation technologies—which span advanced robotics, machine learning and AI—are going to change workplaces. Globally, the McKinsey Global Institute has found that AI alone may deliver the equivalent of US$13 trillion in additional economic activity by 2030, or about 16 percent more than would otherwise be achieved.[14] This additional wealth is added because machines can outperform humans in many areas, which has implications for jobs and for the future of work.

Digital technologies have appeared in accelerating waves, from the first computers through to the latest smartphones and cloud computing. Automation, artificial intelligence and machine learning are not new, but the unprecedented scale and pace of disruption is changing our world faster than ever before. Overall, this technological disruption is predicted to be 10 times the pace and 300 times the scale of the industrial revolution.[15] Computing power is increasing exponentially, with ubiquitous connectivity and torrents of data being created—over 90 percent of the world's data today has been created in the last 2 years.[16] Through the use of this data, automation will increase the amount we can produce, the way we work and the jobs we work in.

In the past, computers completed rigidly defined tasks for which they were specifically programmed. Today, machines can guide themselves: setting a strategy for learning and utilising past data to understand future patterns without being reprogrammed. This artificial intelligence (AI) is already applied across an impressively broad range of scenarios. While they are not yet able to 'think' in the way we do, machines are starting to do things that once only humans could, and they are doing it better. Until recently, games such as chess and Go were considered the ultimate challenges: even the fastest computers could not spin through possibilities fast enough to beat an intuitive Grand Master. Now, programs simply learn from their past and present 'opponents'—and can take on thousands in a second—to tilt the playing board in their favour.[17] At the same time, the game of chess has never been more popular.[18] What has played out on the gameboard is now about to play out at every New Zealand workplace. This creates unique, contemporary opportunities and challenges for New Zealand. We will need to adapt faster to change than we ever have before, and in the process not leave anyone behind.

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[13] OECD Economic Surveys: New Zealand, July 2017.
[14] *Notes from the AI frontier: Modelling the impact of AI on the world economy*, McKinsey Global Institute, 2018.
[15] Richard Dobbs, James Manyika, and Jonathan Woetzel, No ordinary disruption: the four global forces breaking the all the trends, McKinsey & Company, 2015.
[16] 10 Key Marketing Trends For 2017, IBM Marketing Cloud.
[17] For a useful overview of AI technologies and use cases, see the following publications: *The age of analytics: Competing in a data-driven world,* December 2016; and 'What's now and next in analytics, AI, and automation,' McKinsey Global Institute, May 2017.
[18] https://www.bloomberg.com/opinion/articles/2018-11-13/world-chess-championship-2018-is-made-for-the-internet.

A fourth revolution may solve the productivity puzzle

To explore the implications of this disruption on the global future workforce, McKinsey & Company mapped the capabilities of this 'deep learning' against more than 400 specific work activities and identified a wealth of practical applications, across myriad scenarios. AI-driven algorithms can look ahead to optimise logistics, or schedule maintenance to reduce downtime and operating costs while extending the life of capital assets. For example, in aviation AI has been used to extend the life of planes beyond what was previously possible using traditional analytic techniques by combining plane model data, maintenance history, IoT sensor data such as anomaly detection on engine vibration data, and images and video of engine condition.[19] Consumer industries will tend to see more marketing AI applications as increasingly frequent digital interactions with customers generate larger data sets for AI techniques to tap into.[20]

Further, AI or machine learning can then be combined with cyber-connected objects (the Internet of Things) and robotics to create an integrated cyber-physical world. For example, Autogrow, an Auckland based AgTech company, is at the cutting edge with its integrated, automated crop management solutions. It has recently partnered with Amazon's Alexa, with the aim of being the first provider in the world to allow commercial growers to 'speak' to their systems and use an avatar to remotely check on and manage their crops. The next step would then be to use AI to proactively self-correct any identified issues.[21]

For organisations investing in automation technologies, the benefits are many—and often that is more a bi-product than an objective. They can optimise how industrial plants use energy and raw materials, or help managers coordinate large, complex construction projects more seamlessly. AI can also lead to entirely new offerings. Amazon's recommendation engine and the Alexa virtual assistant for the home give consumers an expanded range of choices, often with higher quality and at lower prices, whilst giving those companies access to new revenue streams.

For New Zealand, the upside of automation is in productivity growth. As consumer demands change and new markets are created, innovators can increase exports of automation-era products and services. In previous decades, New Zealand has lost production and routine jobs to low-cost countries, replacing them with higher-value jobs. The automation era will create more collaborative and cognitive jobs that involve more complex interactions and judgement[22]—if New Zealand can help its workforce transition to those skills then it can expect to see the productivity growth rewards.

Today AI is where mobile technologies were 15 years ago: much more growth and competitive reshuffling is still to come. However, New Zealand companies that remain wedded to their traditional business models and operations may pay a heavy price. Public-sector organisations will also need to release their highly cognitive workforce from the more routine tasks and allow them to meet the rising service expectations of their citizen customers. Citizens, workers, and society as a whole stand to benefit from access to higher quality private and public services, improved quality of life (for example, health incomes), and the potential for higher wages for more skilled work. A fourth and most powerful economic revolution awaits—[23] we further explore automation's ability to boost productivity and other benefits in the following chapter.

[19] Notes from the AI frontier: Applications and value of deep learning, McKinsey Global Institute, April 2018.
[20] Notes from the AI frontier: Applications and value of deep learning, McKinsey Global Institute, April 2018.
[21] https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12149496.
[22] McKinsey, 'Compete to prosper: Improving Australia's global competitiveness', July 2014.
[23] The first industrial revolution was the 18th century shift from rural to urban societies. The second, in the lead up to World War I, saw the twin breakthroughs of electricity and the internal combustion engine. The third is the first digital revolution of the 1980s onwards, with the personal computer, the internet and related technologies. See 'The Fourth Industrial Revolution: what it means and how to respond', World Economic Forum, 2018.

Tasks not jobs

Despite growing fears, automation lends itself to the displacement of tasks rather than the elimination of whole jobs. Only a few occupations are fully automatable by adopting current technologies, however many other occupations are partially automatable. McKinsey Global Institute (MGI) research examined more than 2,000 work activities in more than 800 occupations globally, estimating both the time spent on them and feasibility of automating them—using just existing technologies.

For New Zealand, MGI analysis shows that only 1.6 percent of occupations can be fully automated, and thus replaced outright. However, the analysis also found that in 60 percent of jobs, about a third of their component activities could be automated based on currently available technologies.[24] That means that companies would need fewer workers across that portion of the job, and the balance of tasks could be combined, redefined and enhanced.[25]

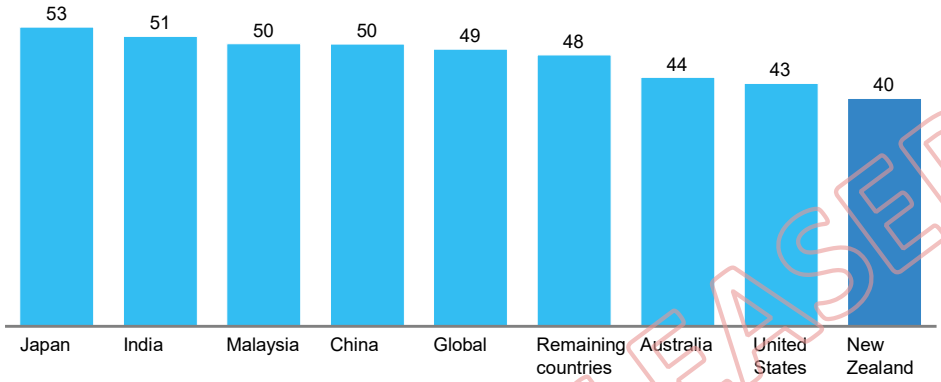
Further, McKinsey found that 40 percent of existing workforce activities could already be automated with today's technologies, which is relatively lower than Australia (44 percent), the US (43 percent) and the global average (49 percent) (Exhibit 12).[26] While New Zealand's automation potential is significant, it is relatively lower han other countries as its workforce spends less time on repetitive Western countries Activities (45 percent), which are highly automatable (Exhibit 13). Highly automatable activities include predictable physical tasks, data processing and data collection, which are prevalent in occupations such as production workers, payroll officers and mortgage originators.

[24] See A future that works: Automation, employment, and productivity, McKinsey Global Institute, January 2017, and Jobs lost, jobs gained: Workforce transitions in a time of automation, McKinsey Global Institute, December 2017.
[25] As a baseline for discussion, we directly map percentages of activities within an occupation that can potentially be automated to the percentage of jobs within that occupation that could be lost.
[26] Specialised work refers to work that requires personal interactions or the application of specialist skills that are highly sensitive to changing stimuli (i.e. not routinised), are cross-functional, or require significant creativity. For example, teaching, nursing, and sales are considered specialised work occupations.

EXHIBIT 12

New Zealand has a significant automation potential of 40%, although it is relatively lower than other countries

Automation potential based on demonstrated technology, 2016, Percent[1]

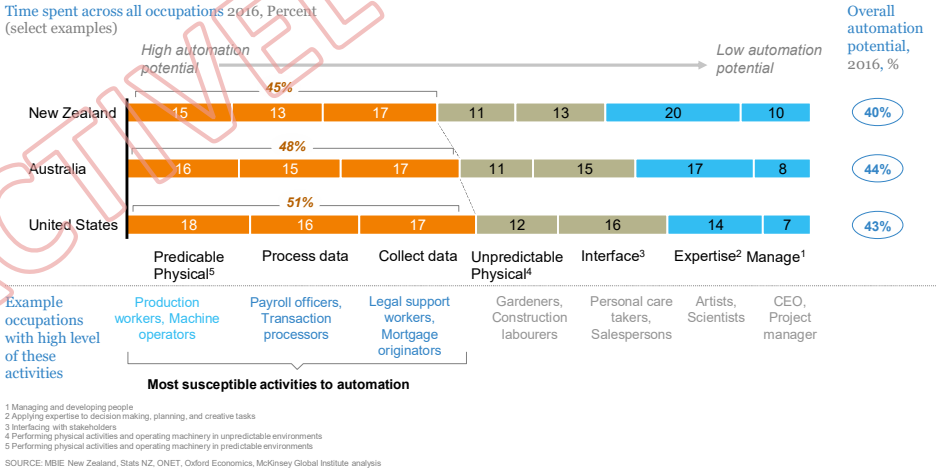


1 We define automation potential according to the work activities that can be automated by adapting currently demonstrated technology
SOURCE: Stats NZ, Figures.NZ, MBIE New Zealand, ONET, Oxford Economics, McKinsey Global Institute analysis

EXHIBIT 13

This share of repetitive activity is relatively low compared to other countries, resulting in New Zealand's lower automation potential

Time spent across all occupations 2016, Percent (select examples)



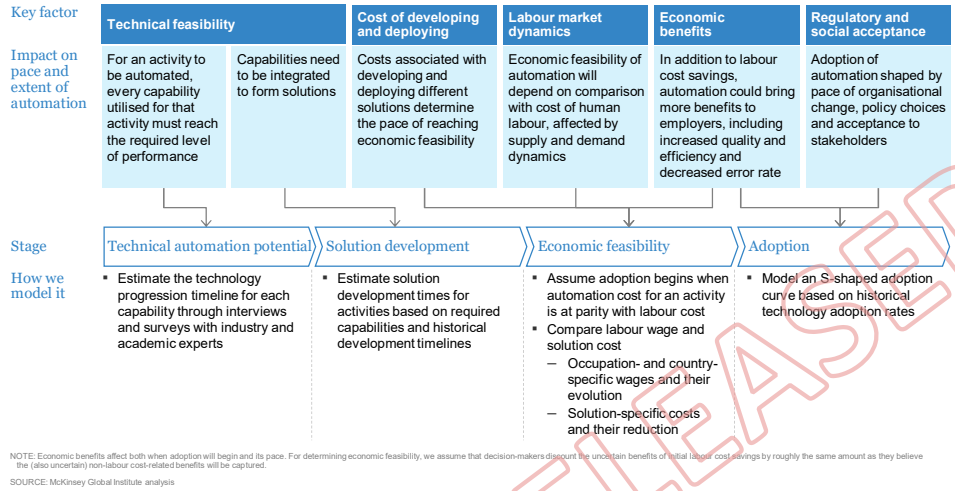
1 Managing and developing people
2 Applying expertise to decision making, planning, and creative tasks
3 Interfacing with stakeholders
4 Performing physical activities and operating machinery in unpredictable environments
5 Performing physical activities and operating machinery in predictable environments
SOURCE: MBIE New Zealand, Stats NZ, ONET, Oxford Economics, McKinsey Global Institute analysis

The impact of automation on jobs in NZ

The McKinsey Global Institute research examined multiple factors that would affect the pace and extent of automation (Exhibit 14), resulting in three scenarios for automation potential (i.e. what can technically be automated, because the technology currently exists) and adoption (i.e. what we believe will actually get automated, taking into account financial, regulatory and political and social constraints). These are: a late (or slow) scenario; an early (or fast) scenario; and a mid-point scenario, which is the average of the late and early scenarios. For early adoption to happen, technologies and solutions would need to be developed at an accelerated speed, requiring both the public and private sectors to invest significantly in research and development (R&D), technology development and technology deployment. That would require investment in developing the technologies themselves, as well as investment in digitally enabled infrastructure. Likely barriers to adoption, such as outdated or complex regulation, would also need to be overcome quickly, requiring a high degree of support and consensus across society.

EXHIBIT 14

Five factors required for automation adoption



NOTE: Economic benefits affect both when adoption will begin and its pace. For determining economic feasibility, we assume that decision-makers discount the uncertain benefits of initial labour cost savings by roughly the same amount as they believe the (also uncertain) non-labour cost-related benefits will be captured.

SOURCE: McKinsey Global Institute analysis

McKinsey New Zealand has applied these same methodologies to examine the impact for New Zealand and found that this 40 percent automation potential would rise to 60 percent by 2030 in the mid-point scenario, and to as high as 79 percent in the faster scenario. Despite this, only 21 percent of workplace activities are expected to be automated by 2030 under the mid-point estimate. Although it may be technically feasible for organisations to automate a wide range of tasks, they will not do so overnight. Doing so is a complex equation that incorporates the costs of the systems and the transition, the relative cost of labour, the strength of the business case, customer acceptance, and industry regulations.

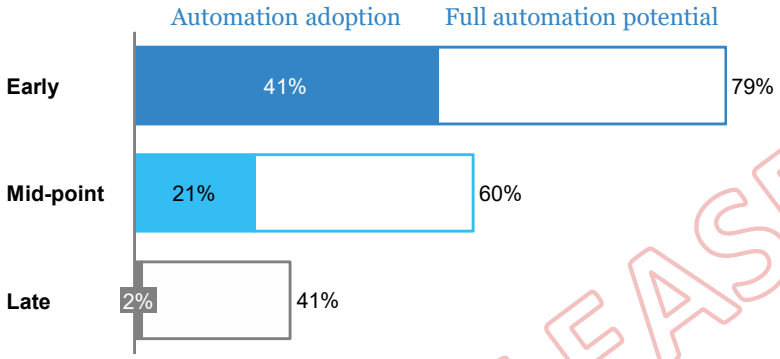
For instance, if retail stores automate the checkout process, they may choose to eliminate some checkout staff—but they could also opt to redeploy their checkout staff to help customers with questions about products, delivering a better customer experience. Likewise, as call centres introduce more automation technologies, employees may only be needed to handle difficult customer service questions, allowing workers to be redeployed to serve customers more comprehensively than they have scope to do now—ultimately resulting in more satisfied customers. The important point here is these shifts will not necessarily lead to workforce reductions, but rather could lead to better use of staff.

McKinsey ran multiple scenarios on how rapidly and widely automation technologies could be adopted across the New Zealand economy. This was a bottom-up analysis, based on tasks in each occupation and industry. The mid-point scenario estimates that approximately one-third of the total automation potential will be realised by 2030. Activities that together account for 21 percent of the hours put in by New Zealand's workforce today would be handled by machines. This share could be as low as 2 percent in a late, or slow, adoption scenario, or as high as 41 percent if automation adoption happens quickly (Exhibit 15).

EXHIBIT 15

Our mid-point scenario estimates that 21 percent of work will be automated by 2030

Scenarios for automation potential and adoption for New Zealand by 2030;
Percent of time spent on work activities



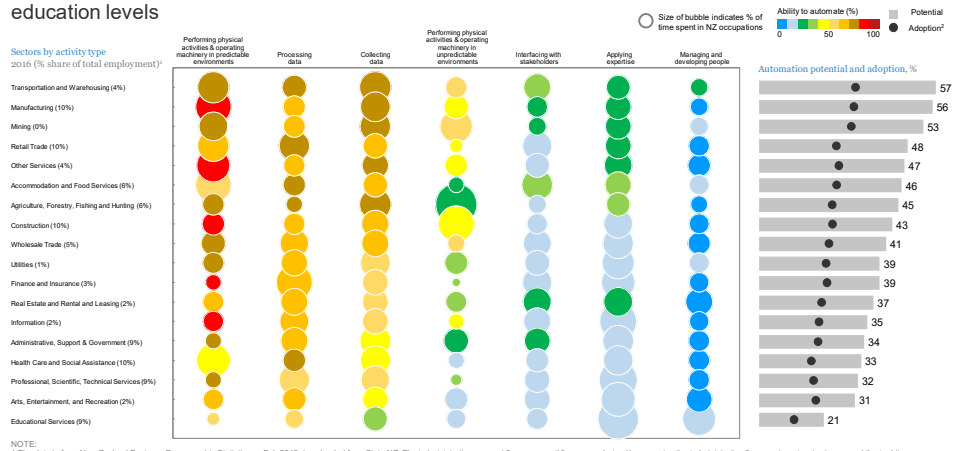
SOURCE: McKinsey Global Institute (MGI)

When considering the speed of automation at the mid-point scenario, measured as the percentage of FTE hours expected to be automated by 2030, McKinsey analysis suggests that New Zealand could adopt automation relatively quickly (to achieve a 21 percent automated workforce) compared with the global average (of 19 percent in the same scenario). That is because New Zealand workplaces pay relatively high wages and salaries for routine work, making it attractive for organisations to automate part or all of those jobs. It is for this reason, coupled with having an industry-heavy economy, that Japan and Germany are expected to automate faster in the timeframe (28 percent and 26 percent, respectively), with Japan also driven by its rapidly ageing workforce. Both Australia and the United States are also expected to automate faster than New Zealand (each at 25 percent).

Not surprisingly, the automation opportunity varies significantly by sector (Exhibit 16). Three sectors—transportation and warehousing, manufacturing, and mining—will experience significant automation as their work time is dominated by performing predictable physical activities and collecting data—both highly automatable activities. At the other end of the automation scale, educational services, healthcare and professional services will experience the least automation as more time is spent on managing and developing people, and applying expertise, where the ability to automate is low.

EXHIBIT 16

Automation potential varies across industries depending on mix of work activity types and education levels



NOTE:
1 The data is from New Zealand Business Demographic Statistics on Feb 2016 downloaded from Stats NZ. The 'administrative, support & government' figure was derived by summing the 'administrative & support services' category and the 'public administration & security' category in the data
2 Midpoint adoption scenario by 2030

SOURCE: New Zealand Business Demographic Statistics Feb 2016, ONET, World Bank, Oxford Economics, McKinsey Global Institute analysis, Stats NZ

□ □ □

The next chapter looks further at the opportunities and challenges automation will deliver for New Zealand, and the effects on New Zealand's various sectors, occupations and regions. Chapter 3 considers what government and business could do to seize the automation opportunities, mitigate the challenges, and transition the workforce into the future.

2. AUTOMATION OPPORTUNITIES AND CHALLENGES

As set out in Chapter 1, New Zealand's productivity growth has been declining. While overall GDP growth has been offset, to some extent, by employment growth, New Zealand needs to re-boot productivity—the main driver of quality growth—in order to deliver greater prosperity for the country. However, while automation is an inevitability that holds enormous potential for New Zealand, that does not mean that its full benefits are guaranteed. The extent to which it can boost productivity will depend on how fast New Zealand chooses to adopt automation.

Automation also brings challenges. Automation will change the workplace in New Zealand as we know it—with required skills shifts and changing educational requirements, as well as significant job churn as jobs are both displaced and created. At a societal level automation could widen income inequality, unless mitigated through sufficient, well managed, and timely re-training of displaced workers.

Accordingly, before looking at what public and private sector can do to mitigate the risks, in this chapter we explore the three main opportunities and challenges of automation for New Zealand:

- Opportunity 1 – Automation could solve the productivity problem
- Opportunity 2 – Automation can increase international competitiveness
- Opportunity 3 – Automation will change jobs
- Challenge 1 – Automation will change the skills required in the workplace
- Challenge 2 – Unemployment may rise during the automation transition period
- Challenge 3 – Automation could widen income inequality

THE OPPORTUNITIES

OPPORTUNITY 1 – AUTOMATION COULD SOLVE THE PRODUCTIVITY PROBLEM

Automation could go very far in solving New Zealand's productivity imperative. New automation technologies are related to all four levers that an economy can pull to boost its productivity: investing in capital assets, investing in human capital, boosting competition and entrepreneurship, and investing in innovation and technology. New Zealand should have strategies for all four of these levers, and they should each incorporate the promise of automation. The innovative technologies automation and machine learning offer are specifically designed to increase quality and output, with greater efficiency. They create incentives for greater cognitive and collaborative human skills, and opportunities for entrepreneurs to take on incumbents and for incumbents to take on international competition. With all this on the table, it's imperative to move early.

McKinsey analysis suggests early adoption boosts productivity significantly more than mid-point adoption. Automation may support productivity growth of 1.4 percent between 2016 and 2030 in a mid-point adoption scenario, however the early adoption scenario tips that to as much as 2.5 percent (Exhibit 17). Under the mid-point adoption scenario, this would take New Zealand's productivity growth to 27 percent above the baseline before automation of 1.1

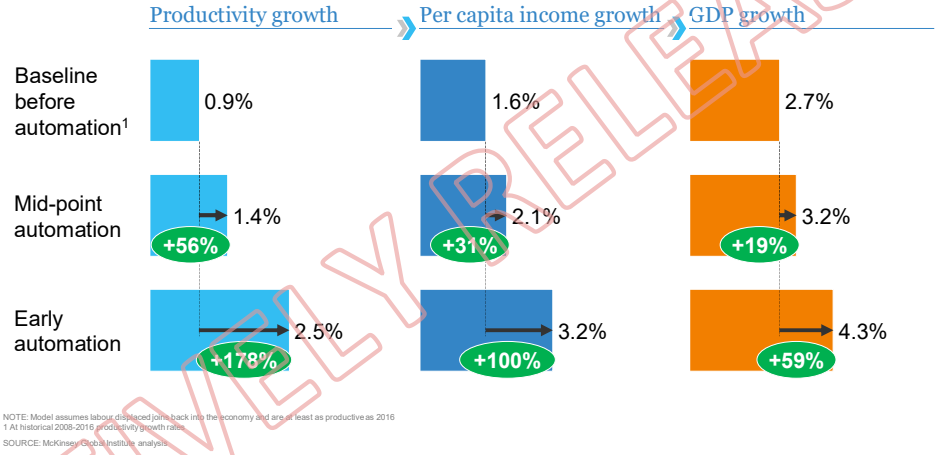
percent, and 93 percent of the 1.5 percent achieved during the high productivity growth years of 1986 to 1996. The early adoption scenario is even more promising; early adoption would increase New Zealand's baseline productivity by approximately 2.5 times, and 1.8 times higher than the productivity achieved from 1986 to 1996.

An increase in productivity growth from automation would significantly increase GDP growth. The baseline GDP growth of 2.7 percent could increase to 3.2 percent in the mid-point scenario (a fifth higher than the baseline scenario) or 4.3 percent if automation is rapidly adopted (about 60 percent higher than the baseline).

EXHIBIT 17

Automation can provide a major boost to New Zealand's future economic prosperity

Projected real growth rate (compound annual growth rate) by automation scenario, 2016-2030



NOTE: Model assumes labour displaced jobs back into the economy and are at least as productive as 2016
1 At historical 2008-2016 productivity growth rates

SOURCE: McKinsey Global Institute analysis

To put these productivity growth numbers into context, these estimates suggest that automation could lift the value of New Zealand's annual economic activity or GDP by around $23 billion by 2030 in the mid-point adoption scenario, and by around $75 billion in the early adoption scenario—about 7 to 22 percent more than would be achieved otherwise. It could increase average New Zealand incomes by $4,000 to $14,000 per year, about 7 to 22 percent more than would otherwise be achieved.

Over a decade these numbers add up: automation could cumulatively add $133 billion to $436 billion to the New Zealand economy between 2021 and 2030, and give each person additional income of $25,000 to $83,000 over that period. Comparing the two scenarios, early automation adoption offers approximately three times the benefits compared to the mid-point scenario. That is, the additional value of pursuing early adoption over mid-point adoption could be worth $303 billion to the economy over a decade, and about $58,000 for each New Zealander. If New Zealand shuns automation, it needs to be aware that it is forgoing these potential upsides as well.

Strong job outcomes, however, are necessary to maximise the opportunity to grow GDP, incomes and living standards through automation, and ensure the continuation of businesses' social licence to operate. Periods of high unemployment have second-order effects, such as slowing demand for consumption-based services, that impact many businesses. The expected impact on jobs, skill requirements and unemployment are explored later in this chapter, while the next chapter (Chapter 3) recommends actions that can be taken by all stakeholders to ensure the benefits of automation are broadly shared.

Box 1. SMEs have a chance to shine

As New Zealand is a nation of small-to-medium enterprises—with 73 percent of businesses employing less than 20 people and only 4 percent employing over 100 people[27]—automation solutions could bridge the historic productivity gap they have faced compared to bigger or global competitors. Previously, SMEs have been handicapped as technology-driven productivity improvements, such as those delivered by Enterprise Resource Planning (ERP) systems, have been out of reach due to the large investment costs and complex integration efforts required. This is changing with automation technologies, which can be applied at small scale. Cloud based analytics solutions, for example, work as well for a 10-person company as for a 10,000-person company. For example, the previous barriers preventing SMEs from adopting ERP systems has been removed—companies such as Kradle, an Australian-based start-up, which has developed cost effective software as a service ERP solution that is web-based and specifically targeted towards SMEs.[28]

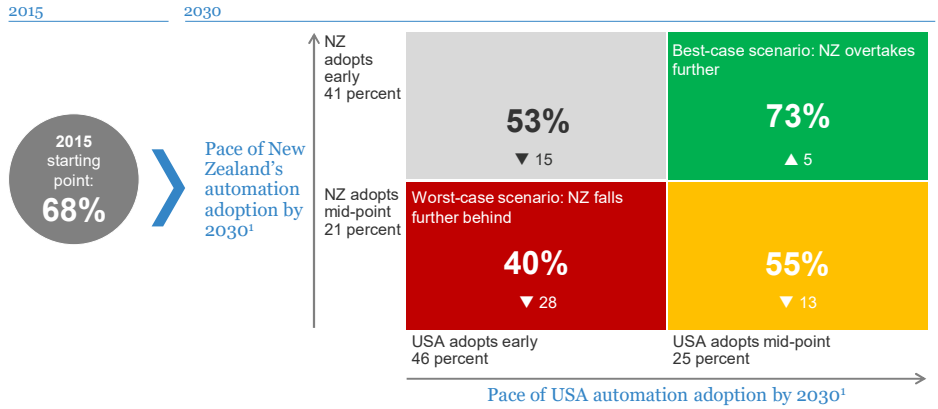
OPPORTUNITY 2 – AUTOMATION CAN INCREASE INTERNATIONAL COMPETITIVENESS

An additional benefit of automation is the potential it offers for New Zealand sectors to also catch up to international competitors. For example, New Zealand is less productive than the US overall, being at 68 percent of the US's labour productivity when taking all industries into account (Exhibit 18). New Zealand has the opportunity to narrow the overall gap to 73 percent through early automation adoption. However, the gap will further widen if New Zealand adopts automation at the same pace as the US (55 percent of the US's productivity) due to the different sector concentrations between the countries, and it will widen even further (40 percent of the US's productivity) if the US outpaces New Zealand in automation adoption. This international comparison is another example of the benefit of adopting automation early.

EXHIBIT 18

The extent to which automation improves the relative competitive position of New Zealand's sectors will depend on the relative speed of automation adoption

New Zealand labour productivity as a percent of USA level



1 Based on displacement only (does not incorporate jobs gained)

SOURCE: McKinsey Global Institute analysis IHS, ILOSTAT

While some New Zealand sectors, such as agriculture, are ahead of their international peers in terms of labour productivity, others are lagging. For example, New Zealand's labour productivity in manufacturing is only 54 percent of the US equivalent (Exhibit 19), making it hard for New Zealand to compete. Faster adoption of automation could allow New Zealand

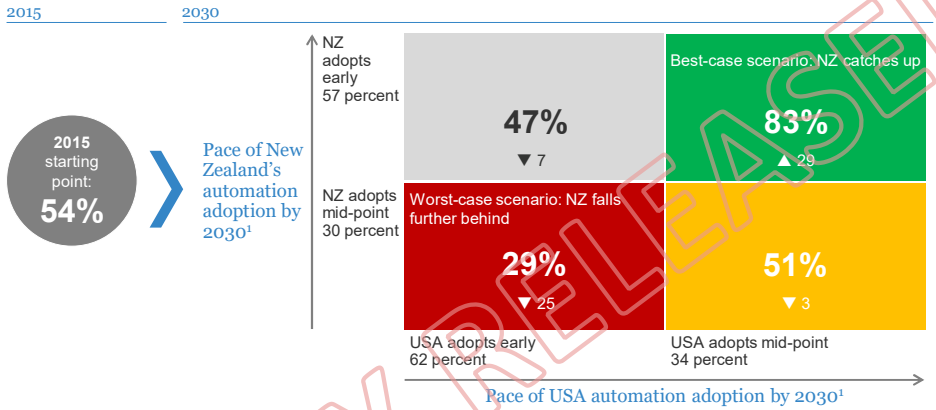
[27] Business Operations Survey 2017, Statistics New Zealand.
[28] https://istart.co.nz/nz-news-items/kradle-new-erp-available-smes/

manufacturers to close that gap to just 83 percent. Slower adoption risks seeing our relative manufacturing productivity plunge to just 29 percent of the US's level. Other sectors where early or late adoption will make the biggest difference to New Zealand's international competitiveness are agriculture, transportation and warehousing.

EXHIBIT 19

The extent to which automation improves the relative competitive position of New Zealand's Manufacturing sector will depend on the relative speed of automation adoption

New Zealand Manufacturing labour productivity as a percent of USA level



1 Based on displacement only (does not incorporate jobs gained)

SOURCE: McKinsey Global Institute analysis IHS, ILOSTAT

OPPORTUNITY 3 – AUTOMATION WILL CHANGE JOBS

Historically, major economic change has both destroyed and created jobs. The Industrial Revolution made agriculture more efficient and reduced the agricultural workforce but generated countless new jobs in manufacturing. The decline of manufacturing in advanced economies led to a boom in service industry jobs. There is every reason to think a similar process will unfold with the automation revolution.

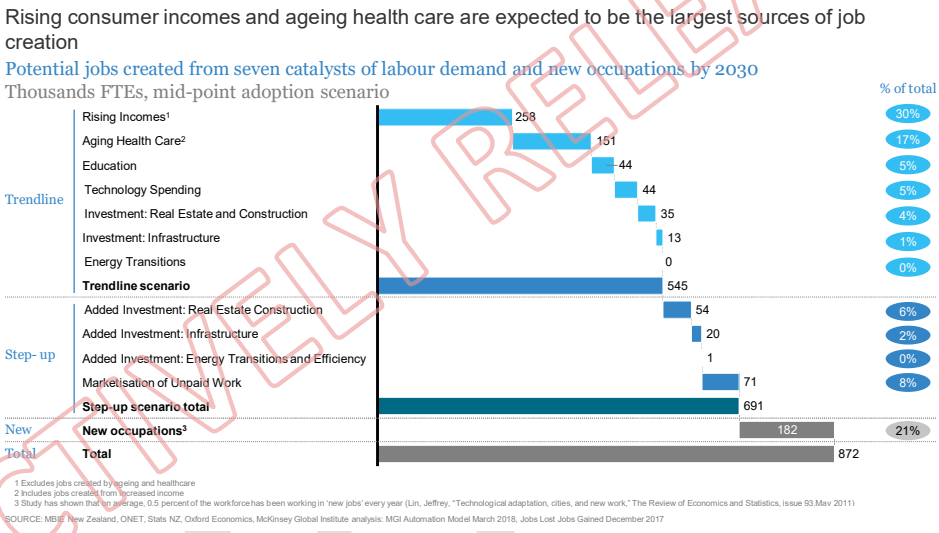
Even with automation, the demand for work and workers could increase as economies grow, partly fuelled by productivity growth enabled by technological progress. Rising incomes and consumption, increasing healthcare for aging societies, investment in infrastructure and energy, and other trends will create demand for work that could help offset the displacement of workers. Additional investments such as in infrastructure and construction, beneficial in their own right, could be needed to reduce the risk of job shortages in some advanced economies.[29]

While some workers will be at risk of job displacement, McKinsey analysis suggests that by 2030, the net result of jobs lost and gained results in net job creation of approximately 200,000. Automation also has important implications for the quality of jobs, eliminating many dangerous, routine and manual activities, and allowing people more time to use their specialised skills. On top of this, the nature of jobs may change, as more and more workers consider contracting or independent work. In 2016, 20 to 30 percent of the working age population in the US and EU-15 engaged in independent work, with 70 percent choosing it as a preferred option rather than out of necessity and reporting high satisfaction with their work lives.[30] NZ should embrace these new labour models, so long as workers are not materially disadvantaged. While NZ could opt for implementing automation slowly to keep lower value add jobs, or hindering the adoption of new types of work, this may hurt the nation's productivity and prosperity in the long run, especially when other countries charge ahead.

[29] McKinsey Global Institute, 'Jobs lost, jobs gained: workforce transitions in a time of automation', December 2017.
[30] McKinsey Global Institute, 'Independent work: choice, necessity and the gig economy', October 2016.

Of the almost 900,000 new jobs created by 2030, almost 700,000 (79 percent) of these jobs could come from new sources of demand and the faster economic growth that goes along with higher productivity, while 200,000 (21 percent) could come from entirely new specialist roles that do not currently exist (Exhibit 20). This is not surprising: a third of new jobs created in the US in the past 25 years did not exist at the start of that period, and 70 percent of these were linked to technology.[31] Just as it would have been impossible to imagine web developers and social media marketers 50 years ago, it may be hard for us to envision today new types of digital specialists working to keep autonomous systems running with optimal efficiency. The market for edge computing experts and 3D printing engineers will grow. Other new jobs will focus more on helping people live in an automated world, such as fitness commitment counsellors to combat the effects of increasingly sedentary work lives, or virtual data brokers to help individuals keep their personal information safe and accessible.[32]

EXHIBIT 20



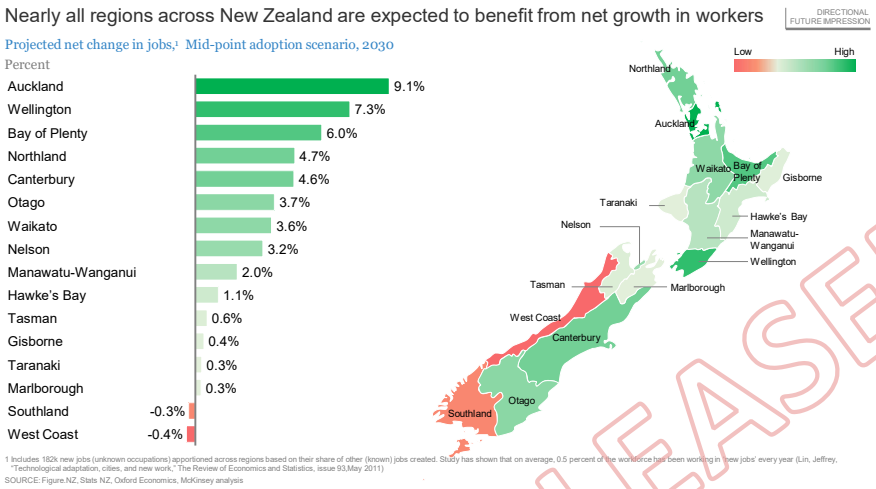
While automation will lead to job creation, there will also be job displacement. The 21 and 41 percent automation adoption rates under the mid-point and early scenarios translate to around 700,000 or 1.3 million full-time equivalent positions displaced over the next decade, respectively. While automation won't lead to mass unemployment, the real challenge is addressing the potential spike in the unemployment rate during the transition and to minimise long-term unemployment for individuals, which has devastating consequences for affected households, communities and for society as a whole. The unemployment challenges during the transition period are addressed in Chapter 2 and the potential solutions to minimising long-term unemployment in Chapter 3.

Employment growth will be widespread

Nearly all regions across New Zealand are expected to experience net job creation by 2030 (Exhibit 21). Auckland and Wellington are expected to be best off, with a 9.1 and 7.3 percent in net change in jobs, respectively, while only West Coast and Southland are expected to see a decrease in employment (-0.4 and -0.3 percent, respectively).

[31] Jeffrey Lin, "Technological adaptation, cities, and new work," Review of Economics and Statistics, 93: 2, May 2011.
[32] For more, see https://www.cognizant.com/whitepapers/21-jobs-of-the-future-a-guide-to-getting-and-staying-employed-over-the-next-10-years-codex3049.pdf.

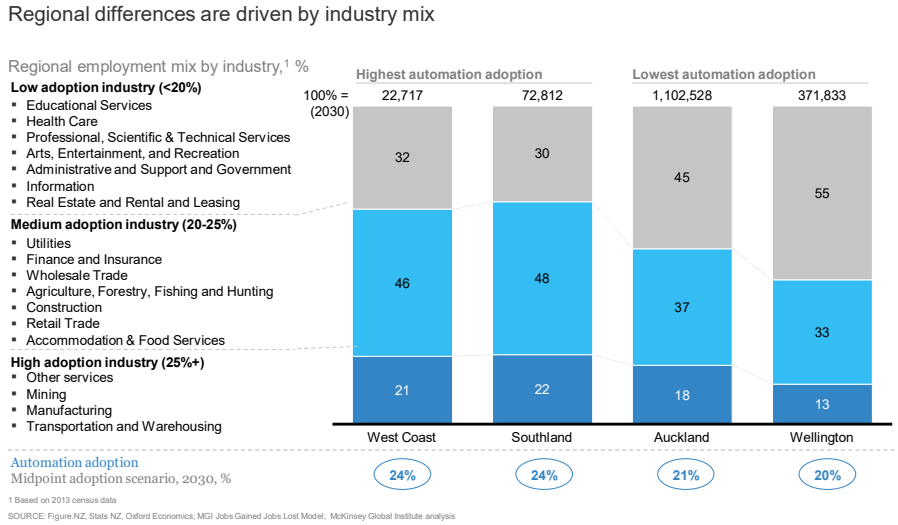
EXHIBIT 21



What differentiates regions, and the extent to which they are expected to adopt automation, is their occupation and industry mix**.** The West Coast and Southland have a higher proportion of their workforce employed in medium-to-high automation adoption industries, while Wellington and Auckland employ a relatively higher proportion of workers in low automation adoption industries (Exhibit 22).

Agriculture, for example—a medium automation adoption industry—employs a much higher proportion of West Coast and Southland workers than in Auckland or Wellington. Dairy farming is the top income generator in these regions, accounting for 14.8 percent of Southland's economy and 13.4 percent of the West Coast economy. Out of Southland's 57,000 total workers, nearly 3,000 work in the dairy industry (Fonterra's Edendale site, for example, employs over 600 people) and ~1,600 work in forestry. Auckland and Wellington, on the other hand, over index on work in professional services and administrative, support and government sectors—both low automation adoption industries.

EXHIBIT 22



Sectors will experience varying levels of net job creation

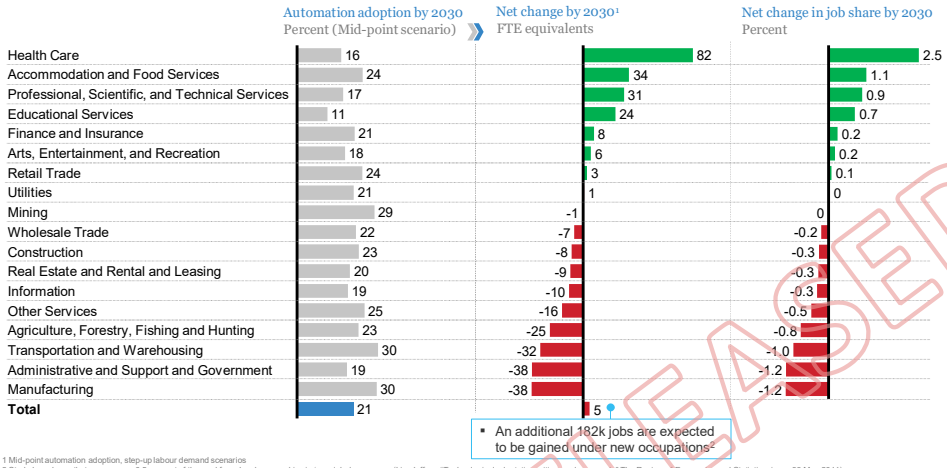
The sector mix of the job market is expected to shift in favour of specialised, service-based sectors. Eight sectors are expected to create more jobs than they displace by 2030. Of these,

three sectors will account for almost 80 percent of the net job creation by the eight sectors: healthcare (82,000 net jobs), accommodation and food services (34,000 net jobs), and professional, scientific and technical services (31,000 net jobs) (Exhibit 23), accounting for 2.5 percent, 1.1 percent and 0.9 percent increase in share of total jobs within each of those sectors, respectively. Total net job creation numbers are a function of both a sector's automation adoption by 2030 and current proportion of New Zealand's workforce. When considering the net impact of automation within sectors, two of the three sectors remain the same for the lowest levels of expected automation adoption, being educational services (11 percent), healthcare (16 percent) and professional, scientific and technical services.

Most operations-based sectors are not expected to fare as well as their service-based counterparts. Ten sectors are expected to see net job displacement by 2030, with four of New Zealand's main sectors being the most heavily affected and accounting for over 70 percent of the net job displacement by those ten sectors: i) manufacturing (38,000 jobs displaced), ii) administrative, support and government (38,000 jobs displaced), iii) transportation and warehousing (32,000 jobs displaced), and iv) agriculture, forestry, fishing and hunting (25,000 jobs displaced). This accounts for -1.2 percent, -1.2 percent and -1.0 percent decrease in share of total jobs within each of those sectors, respectively. Two of these sectors are also expected to be the highest adopters of automation across the economy, being manufacturing (30 percent) and transportation and warehousing (30 percent), with mining (29 percent) following closely behind. The potential impacts of automation on skill required in the workplace, and resulting unemployment during the transition period, are covered in more detail under Challenges 1 and 2.

EXHIBIT 23

Net, there will be more jobs available, but in different industries



1 Mid-point automation adoption, step-up labour demand scenarios
2 Study has shown that on average, 0.5 percent of the workforce has been working in 'new jobs' every year (Lin, Jeffrey, "Technological adaptation, cities, and new work," The Review of Economics and Statistics, Issue 93,May 2011)
SOURCE: Figure.NZ, Stats NZ, McKinsey Global Institute analysis: MGI Automation Model March 2018, Jobs Lost Jobs Gained December 2017

THE CHALLENGES:

CHALLENGE 1 – AUTOMATION WILL CHANGE THE SKILLS REQUIRED IN THE WORKPLACE

The nature of work itself is also changing, as automation fundamentally alters the activities we perform at work, and so the skills we need. This will affect both the type of generalist skills and the level of specialist skills needed. Both may affect how our education system works to prepare the workers of the future.

The skills shift

As mentioned, some occupations will be impacted much more than others. However, the research points to four types of work activities that will see an increase in demand: working with machines (technology skills), applying expertise (cognitive skills), interacting with stakeholders (collaboration skills), and managing and developing people (emotional skills) (Exhibit 24). The rapid shift in skills required is already happening. The World Economic Forum estimates that even within the next 3 years, no less than 54 percent of workers will require significant reskilling and upskilling, with 19 percent requiring training of 6 months or longer.[33]

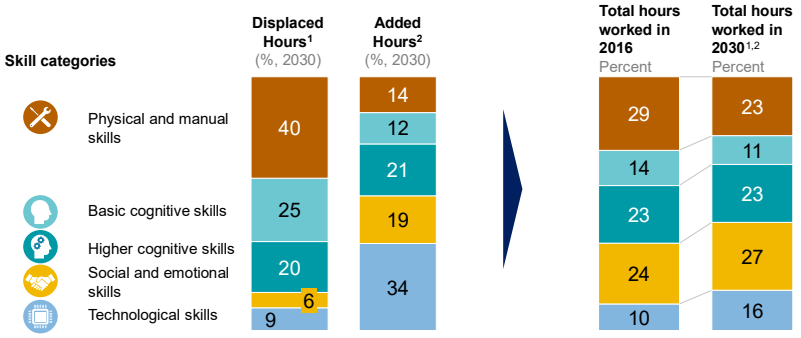
First there is the need to work with technology: farmers, firefighters, sales managers, builders, and others, will all rely heavily on machines that will collect data and take specific physical actions. These workers will need the cognitive skills to identify patterns, detect problems and prescribe courses of action. They will need collaborative and emotional skills to work in and create more effective teams, maintain productive and social workplaces, and engage with an ever-wider pool of customers. In the mid-point scenario, workers will spend more time using technology (16 percent of hours worked in 2030, compared to 10 percent in 2016), and more time in personal interactions that require collaboration and emotional skills (such as leadership, management or teaching) (Exhibit 24). By contrast, the need for people to perform physical and routine tasks will shrink.

EXHIBIT 24

Demand for technological, social and emotional, and higher cognitive skills are expected to increase significantly in New Zealand

Evolution in skill categories

Share of hours worked, percent



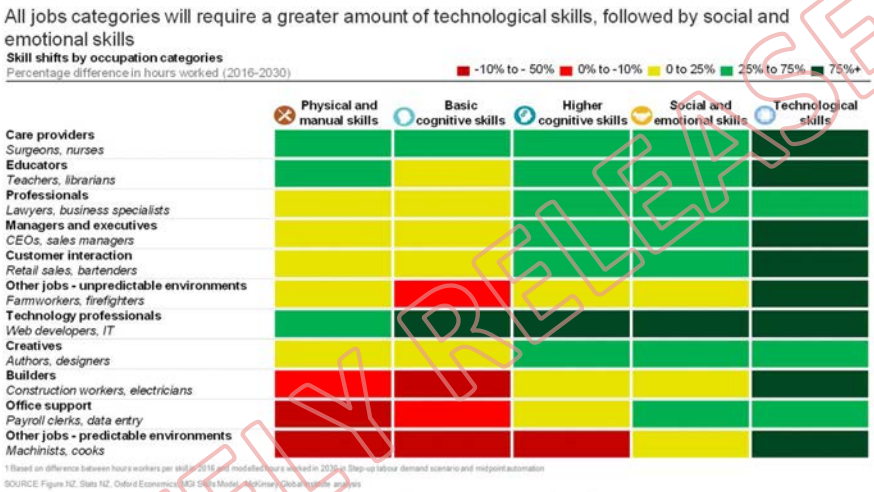
NOTE: Based on difference between hours worked per skill in 2016 and modeled hours worked in 2030 in Step-up scenario and midpoint automation. For practical purpose, the numbers for Australia is based on the 2030 Step-up demand , after automation from Jobs Lost Jobs Gained Model only. while other countries are based on Skills Model, where additional levers were also applied. Hence, cross comparison should be considered directional .
1 Midpoint automation adoption 2 Step-up demand scenario
3 The change in hours worked refers to the difference in total hours worked in a certain skill category in 2016 compared to 2030 projections. The percentage difference is not referring to the change from 2016 to 2030 of the percentage that a skill category makes up of total hours worked
SOURCE: Figure.NZ, Stats NZ, Oxford Economics; MGI Skills Model; McKinsey Global Institute analysis

The perception that automation driven changes will affect largely manual work is incorrect; the precise changes in skillsets required will vary substantially by occupation and sector: see

[33] World Economic Forum, "The future of jobs report", 2018.

Exhibit 25. To illustrate this variation, workers across New Zealand's large and growing service sector may have access to automated information gathering, but will need to upskill in technology and emotional skills. For example, automation and AI in education can enable more digital content, interactive and personalised learning, and virtual learning and support. The result will be increased demand for teachers and instructors with basic digital skills and the ability to work with people with advanced IT and programming knowledge, as well as for new types of teaching methods.

EXHIBIT 25



It would be wrong, too, to assume that only lower-level occupations will be affected. Many high-prestige jobs will change as diagnostic and data functions will be performed faster and more efficiently by machines. Already today, 13 percent of a surgeon's job (by time) is automatable, including activities such as instrument sterilisation and analysing patient data. This is also the case for 23 percent of a lawyer's time; tasks like legal research and document preparation rely heavily on mechanical and replicable data research. Automation will therefore alter the very nature of these professions. A surgeon in the automation era will spend much more time using 'soft' skills, including cognitive skills and emotional skills, while the requirement for physical and technology skills will decline sharply. This will have significant repercussions for how universities train doctors, what aptitudes they seek out in applicants, how patients value their doctors, and how employers assess job applicants.[34]

[34] McKinsey Global Institute internal analysis, 2018.

Box 2. Skills shift in agriculture, manufacturing and the public sector

Manufacturing

The manufacturing industry is a significant contributor to New Zealand, accounting for 11 percent of its GDP and employing 10 percent of its total workforce. It has a pivotal opportunity to embrace automation, particularly given that doing so could go a long way towards offsetting its recent low labour productivity growth (0.3 percent per annum from 2008 to 2016) and low international competitiveness (currently 54 percent of US manufacturing productivity (see Exhibit 19).

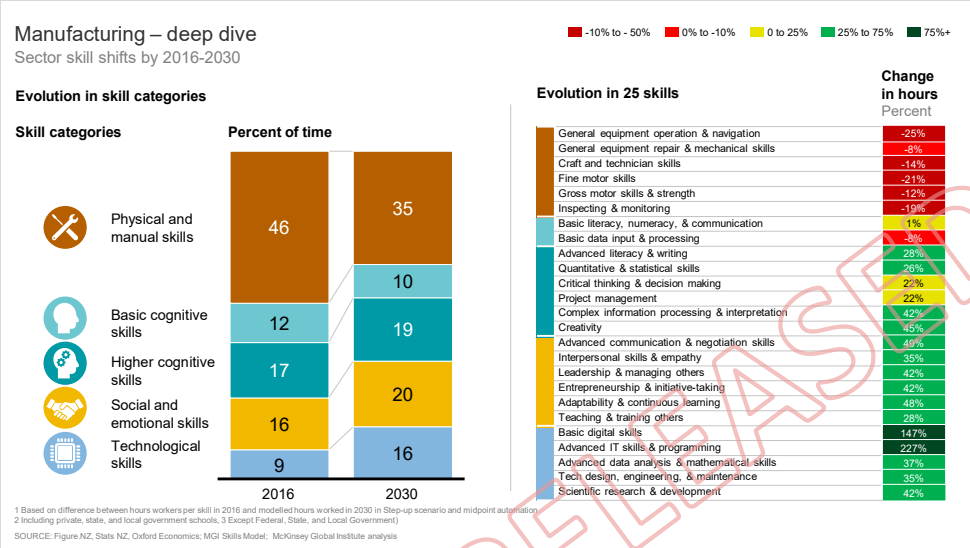
The positive impact of automation in manufacturing could be profound. In a joint research collaboration, the World Economic Forum and McKinsey & Company identified 16 leading factories that achieved significant financial and operational benefits from deploying the latest technology at scale. One example is Rold, an Italian company of 250 FTE that produces door locks for washing machines. Rold has increased productivity by 11 percent by adopting automation technologies, such as advanced data infrastructure and digital dashboards displaying real-time machine data on the shop-floor, machine stoppages and performance deviations that are automatically escalated to production managers, and digital labs testing and applying new production technologies for rapid prototyping.[35]

In New Zealand, several companies are already well progressed. TCI, one of the largest plastic injection moulding companies in New Zealand, have used Universal Robots industrial robotic arms, which only took a few minutes to program, to perform labelling and assembly tasks. This resulted in higher levels of quality assurance, reduced costs and allowed TCI to use freed up staff on more complex tasks.[36] Another example is Energia Potior's EnPot technology, a result of research from the Light Metals Research Centre at the University of Auckland. EnPot consists of a series of heat exchanges for aluminium smelters that enable energy use to be adjusted in response to electricity price fluctuations, and better leverage renewable sources.[37] Smelter operators are able to turn energy consumption up or down by up to 30 percent (as compared to 5 percent previously) to take advantage of off-peak power prices while accommodating the intermittency associated with renewable power supply.[38]

In the future, manufacturing workers will spend less time using physical and manual skills (decreasing from almost half of total time, to just over one-third), with the largest decrease coming from equipment operation as robots replace manual repetitive tasks (Exhibit B1). At the same time, work time will shift in favour of a higher focus on technological skills: the expected time spent using technological skills will almost double (from 9 percent of hours worked, to 16 percent) with the biggest increase coming from advanced IT skills and programming and other digital skills.

[35] World Economic Forum and McKinsey & Company, "Fourth industrial revolution: beacons of technology and innovation in manufacturing", January 2019.
[36] https://www.universal-robots.com/case-stories/tci-new-zealand/
[37] Ministry of Business, Innovation & Employment, *New Zealand Sectors Report Series: Beyond Commodities: Manufacturing into the future*, New Zealand Government, 2018.
[38] https://www.energiapotior.com/

EXHIBIT B1



Agriculture

Agriculture, forestry, fishing and hunting is one of New Zealand's key sectors. Despite comprising only 5 percent of GDP and 6 percent of employment,[39] the sector plays a critical role in New Zealand's export activity and is responsible for generating input for value chains in other key sectors, such as manufacturing (food and beverage), wholesale trade, and transport, postal and warehousing. Primary industries account for over 70 percent of New Zealand's merchandise exports, [40] with an estimated 85–90 percent of our dairy, meat, fruit and vegetable produce being exported every year.[41] Labour productivity in agriculture is one of the highest of New Zealand's sectors (see Exhibit 11), yet it has been experiencing a shortage of skilled staff over the last few years as a result of tougher immigration regulations and competition for labour with other well-paid industries, such as construction and road-building.[42]

One of the benefits of technology and automation could be mitigating the impact of such shortages in future, where automation could perform some of the more menial work, such as operating machinery in predictable environments, collecting data, and processing data.

Numerous automation technologies are already in use within the agriculture sector to improve the efficiency, quality and reliability of output. These include autonomous drones for real-time land mapping, surveying and monitoring, autonomous tractors, automated grain/food processing, semi-autonomous crop care and pollination, and automated dairy milking, manufacturing, and herd management systems. The Agrobot, for example, is a strawberry harvester with 3D sensors that analyses fruit health before harvesting, moving and packaging.

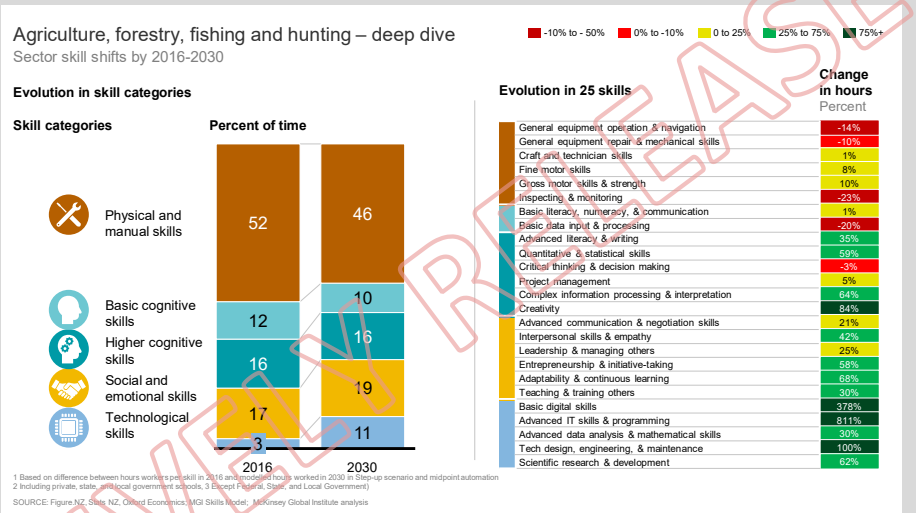
New Zealand start-ups are already making a prominent mark on the AgTech industry. Robotics Plus, for example, is a Tauranga-based company building robotics solutions for the industry. Two of their recent projects include the QuadDuster, an assistive kiwifruit

[39] Based on ANZSIC categorisation, Statistics New Zealand, as at 2016.
[40] Ministry for Primary Industries: https://www.mpi.govt.nz/exporting/overview/growing-exports/
[41] https://www.export.gov/article?id=New-Zealand-Agriculture-Sector
[42] https://www.stuff.co.nz/business/farming/102231279/primary-sector-industries-in-hunt-for-workers-as-shortfall-looms

pollination system, and a robotic apple packaging solution that aims to speed up the packaging process while ensuring optimal handling and orientation.

Such fast-paced change is anticipated to change the nature of work, and skills used, in agriculture. Agriculture workers are anticipated to spend slightly less time using physical and manual skills in future compared to today (from 52 percent of work hours to 46 percent), and significantly more time on technological skills (Exhibit B2). Within technical skills, advanced IT skills and programming are expected to undertake the largest relative increase in hours.

EXHIBIT B2



Public sector

The administrative and support sector (including public administration and safety) accounts for 6 percent of GDP, and 9 percent of total employment. The public service, local government and other government entities employ ~150,000 people across New Zealand. There is significant potential for automation in the public sector: as has been seen in the private sector, technology adoption and digital transformation can improve efficiency, productivity and citizen satisfaction.

Automation can enable governments to do more with less. They can enhance their services, automate and improve the accuracy of back office processes, better store and use data, and scale efficiently as demand grows, without comprising the quality of their service. The University of Adelaide in Australia, for example, used a Chatbot last year to deal with student enquiries relating to certain components of admission. Over 2,000 students managed to skip what would have otherwise been an hours-long phone queue and could have their query resolved in around three minutes.[43]

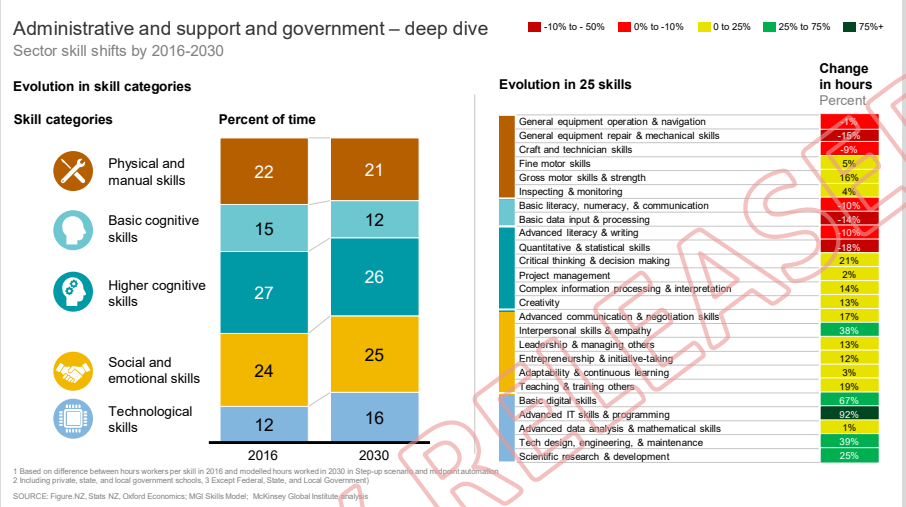
New Zealand's very own ICT Strategy aims to enable better public services and agency digital transformation through several levers, including the use of emerging technologies and data and analytics.

The anticipated skills shift for public sector employees is less apparent than in previously examined industries, as a relatively lower portion of time (22 percent) is spent on physical and manual skills today. Where automation is more likely to impact public sector workers

[43] https://www.forbes.com/sites/oracle/2018/10/01/university-of-adelaide-builds-a-chatbot-to-solve-one-very-hard-problem/#15c041674e17

by freeing up time spent today using basic cognitive skills, such as basic computation and data input or processing, in favour of more time spent on technological skills (expected to shift from 12 percent of hours worked to 16 percent of hours worked by 2030—Exhibit B3).

EXHIBIT B3



Graduates' skills versus labour market needs

By 2030, much of New Zealand's workforce will be people who are currently students in our education system. It is therefore critical to ensure that universities and vocational education and training (VET) institutes equip enough graduates with skills that employers can further develop for an increasingly technology-driven workplace. A supply-demand mismatch may occur both in the nature and the level of subject disciplines being pursued.

To shed light on any possible mismatch, McKinsey looked at education trends over the past 15 years, the current levels of graduates by field of study, the current employment rates among those graduates (a signal of current demand) and projected needs of the labour market (a signal of future demand). Some mismatch between what students choose to study and what employers need is bound to occur, of course, as young people pursue both a vocation and their interests. But the analysis highlights as many reasons for concern as for optimism.

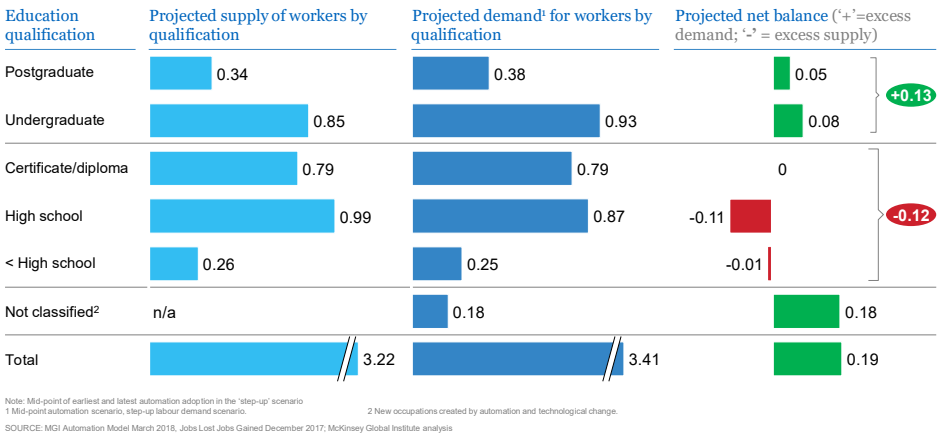
Looking at the total volume of graduates needed, we see that automation and digitisation are lifting the level of skills needed in the job market faster than New Zealand currently produces graduates. If the current graduation and work patterns continue—barring the wholesale irrelevance of the formal tertiary education sector as some think tanks and futurists have predicted[44]—New Zealand could face an overall shortage of 130,000 university graduates to fill available jobs by 2030, split roughly 40 percent postgraduates and 60 percent undergraduates (Exhibit 26).

In response to this, changes will be needed in both the design and delivery of education. It may be that new subject disciplines need to be included in the courses that are projected to be in demand. For example, in the fields of health, education or IT, the introduction of subjects in collaborative and/or emotional skills could be imbedded in those courses of study. Similarly, it may be that more humanities courses should incorporate the skills to understand digital processes and possibilities. As such, undergraduate degrees may look very different to today's, and all stakeholders will need to encourage more young people to continue their education after high school. These efforts to better align study and work prospects are taken up in Chapter 3.

EXHIBIT 26

More students will require university degrees

Projected change (mid-point adoption scenario[1]) in worker supply and demand, by education qualification; millions of jobs, 2030



Note: Mid-point of earliest and latest automation adoption in the 'step-up' scenario
1 Mid-point automation scenario, step-up labour demand scenario. 2 New occupations created by automation and technological change.

SOURCE: MGI Automation Model March 2018, Jobs Lost Jobs Gained December 2017; McKinsey Global Institute analysis

However, the core challenge in education isn't just with formal education; there are also challenges associated with how the broader education system has been designed, and with its

[44] See, for example, *Here's How Higher Education Dies* (2018), The Atlantic; or *How Google and Coursera may upend the traditional college degree* (2015), Brookings.

responsiveness to the skills being demanded by employers. For example, there are opportunities to improve career planning, advice and coaching; to increase flexibility by funding transferable, stackable modules and short courses rather than only entire degrees; to provide greater recognition and formal credits for educational achievements, including skills evaluations of non-formal activities; and to provide greater access to networks, so that people can be more easily matched with opportunities.

CHALLENGE 2 – UNEMPLOYMENT MAY SPIKE DURING THE TRANSITION PERIOD

While the impact of automation should be offset by broader job growth over the coming decade, New Zealand may well see a bump in unemployment during the transition period—that is, when automation adoption displaces jobs, but individuals have not been retrained for new jobs. The relatively high number of displaced workers, approximately 700,000 under the mid-point adoption scenario and 1.3 million under the early adoption scenario, does carry the risk of higher fluctuation in the unemployment rate. The challenge is to minimise long-term unemployment for individuals, which has negative consequences for the households and communities affected and for society as a whole.

> Slowing down the pace of automation might reduce short-term disruption to the labour market, but it may also lead to a decline in global competitiveness, productivity and income growth that could be hard to reverse as other countries get ahead.

Historically, almost three-quarters of unemployed New Zealanders found new jobs within a year, which is well above the OECD average and close to that of Australia and the US.[45] If this historical re-employment percentage holds, automation would have a relatively small impact on the unemployment rate in the mid-point adoption scenario, potentially causing it to rise to 4.6 percent, or up to 4.8 percent in the early automation adoption scenario. However, if automation structurally lowers the rate of re-employment or contributes to a recession by, for example, reducing consumer confidence or purchasing power, the result could cause significant pain. If the rate of re-employment within one year falls down to around the 61 percent mark, a low of the last 30 years experienced in the early 1990s, it would bump the overall unemployment rate as high as 5.3 percent in the mid-point automation adoption scenario, and up to 6.1 percent in the early automation adoption scenario (Exhibit 27). These peak unemployment scenarios are based on the current relatively low unemployment rate environment, with the unemployment rate at 4.0 and 4.3 percent during September and December 2018 quarters, respectively. Future demand and supply shifts could change the outcome of the unemployment scenarios.

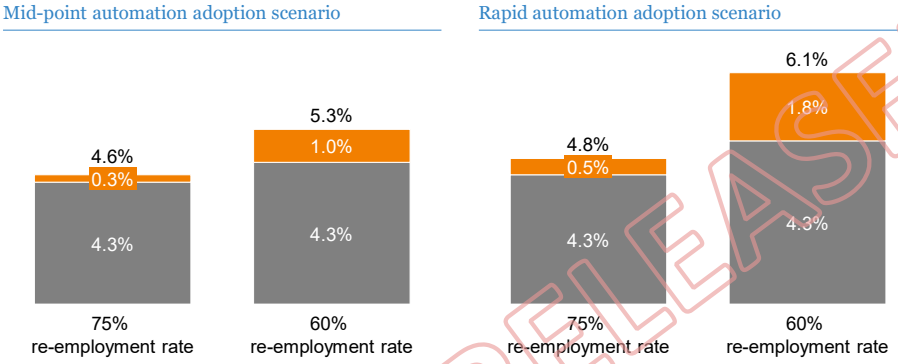
Higher unemployment has second-order effects, such as slowing demand for consumption-based services and increases in skills-based labour shortages, which impact all businesses. At the individual worker level, layoffs can have an ongoing impact on workers' mental health, self-esteem and financial circumstances,[46] all of which may render them less resilient in the face of future workforce changes. Furthermore, residents with low incomes have limited

[45] That rate peaked at 84 percent in 2009 and 2010, with a low of 61 percent in 1993 and 1994, and a long-term average of approximately 74 percent over the last three decades. If a recession hits, however, the re-employment rate could again trend towards the 61 percent low of the last three decades. *Household Labour Force Survey*, 1987-2018, OECD and Statistics New Zealand, and, *Back to Work: New Zealand*, OECD, 2016.
[46] See, for example Silvia Mendolia, The Impact of Job Loss on Mental Health, UNSW School of Economics, January 2009.

ability to invest in training, and cultural issues may create barriers for some to perform jobs that rely on interpersonal engagement. Relevant interventions are addressed in Chapter 3.

EXHIBIT 27

Peak unemployment
Scenarios for peak impact on unemployment by automation adoption and re-employment rate[1] within one year; percent in 2025



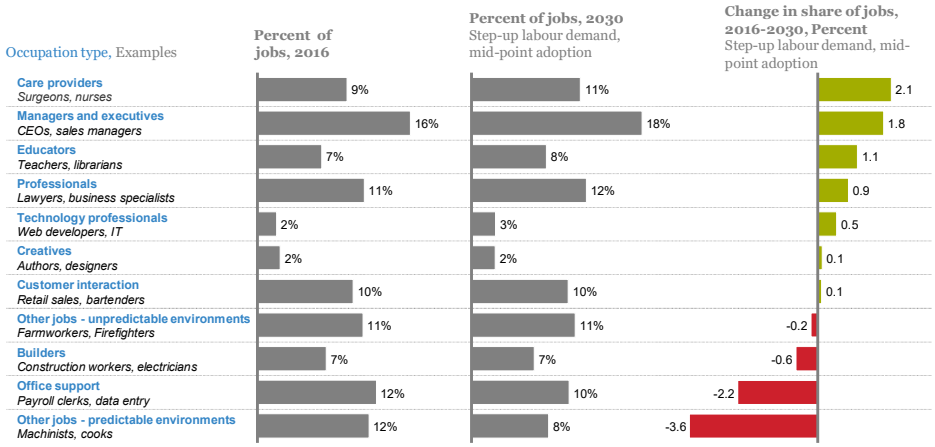
1 Over long term, 74% of unemployed persons in New Zealand have been re-employed within one year (proxied using % of people unemployed for > 1 year). The lowest rates recorded are around 61% during the recession in the early 1990s
SOURCE: Stats NZ as at February 2019; McKinsey Global Institute Global Growth Model

A significant part of the labour force will need to change their occupation, much of which will involve retraining

Some occupations will be impacted much more than others. Overall, job displacement will be highest in administrative or generalist occupations that involve predictable physical tasks or repetitive data collection and processing. Secretaries, receptionists, research and legal assistants, and payroll and data entry workers, for example, are highly vulnerable. Demand will hold steadier for occupations that require personal interactions or application of specialist or technology skills, such as teaching, nursing, sales, and computer programming (Exhibit 28).

EXHIBIT 28

Overall occupation mix is expected to shift in favour of specialised occupations



Note: Doesn't include new occupations created
SOURCE: MGI Automation Model March 2018, Jobs Lost Jobs Gained December 2017; McKinsey Global Institute analysis

As a result, a significant part of the labour force will need to retrain to gain re-employment. While the impacts of automation over the next 50 to 100 years are hard to fathom, the economy is likely to return to full employment in the medium term (i.e. by 2030), as it has always done following structural shocks. However, there is no doubt that workers who are

displaced, or at risk of displacement, will find this period challenging. Some may be able to find similar jobs in other companies or sectors, but many will need to retrain and transition to completely new occupations in order to find work. McKinsey analysis suggests that in a rapid adoption scenario, an average of over 60,000 workers per year will need to upgrade their qualifications to change occupations altogether, totalling to over 900,000 workers by 2030 (or almost 1 in 3 workers in the workforce). In a mid-point adoption scenario, this number is expected to be closer to 1 in 10.

CHALLENGE 3 – AUTOMATION COULD WIDEN INCOME INEQUALITY

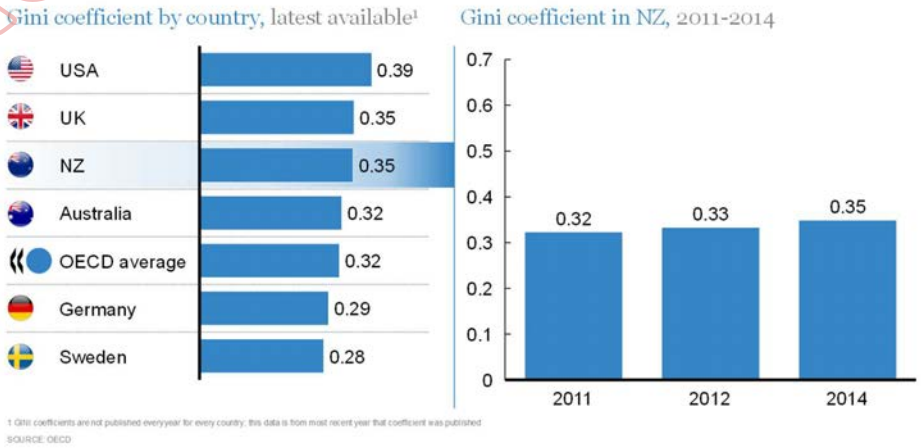
A certain degree of inequality is present in any market-oriented economy. People have different skills and abilities, they make different choices in life, and they do not all have equal access to the same opportunities. However, significant sustained inequality may become an issue to the stability of society.

Traditionally, New Zealand's gap between high- and low-income earners has been moderate, but it is increasing over time (Exhibit 29). Its Gini coefficient has trended up from 0.32 in 2011 to 0.35 in 2014, which places it above the OECD average, however it fares better in comparison with its Anglo-heritage family, being higher than Australia (0.32), in line with the UK, and below the US (0.39).[47]

A Roy Morgan poll in March 2018 found that the single issue of greatest concern facing New Zealand was poverty and the gap between rich and poor, which was mentioned by over 20 percent of New Zealanders, more than twice the second-placed response.[48] The income inequality may be driven by disparities in skills and qualifications, age and regional opportunities. And, of course, they are on top of the automation driven risks of unemployment considered above.

EXHIBIT 29

Income inequality in New Zealand is higher than the OECD average and has been increasing over time



Wages will favour those with future relevant skills

Rising demand for some specialised skills and falling demand for administrative and physical work could lead to a divergence in wage trends. By 2030, McKinsey project a shortage of

[47] The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality.
[48] http://www.roymorgan.com/findings/7534-roy-morgan-problems-facing%20new-zealand-february-2018-201803152343

around 163,000 professionals (12 percent below demand) and 33,000 service and retail workers (6 percent below demand). At the same time, there could be a surplus of around 134,000 trade and manual workers and 63,000 administrative workers.

These supply-and-demand forces would be reflected in pay cheques. Workers who can perform cognitive, collaborative and digital work—the skillset relevant in the automation age and being in short supply—will likely enjoy strong wage growth. However, an oversupply of those who can perform routine or physical work will drive wages down. The average wages associated with the latter types of work are already sharply lower than what the average manager or technicians earns today—and automation could widen this gap.

McKinsey created a high-level general equilibrium model to indicate the potential magnitude of wage divergence, based on the impact of automation on supply and demand dynamics for five major occupational groups over time: i) managers and professionals, ii) technicians and associate professionals, iii) service and retail workers, iv) administrative workers, and v) trade and manual workers (Exhibit 30).[49] This model is only a theoretical indication of the potential impact on income inequality.[50]

The simulation indicates that the wages of managers and professionals would rise by 11 percent and those of service and retail workers would rise by 5 percent. In contrast, the wages of administrative workers, and trade and manual workers, would fall by 15 percent.

> Automation could lead to a divergence in future wages growth: managers, professionals and specialists could see their wages rise, while administrative, retail and trade workers could see their wages fall.

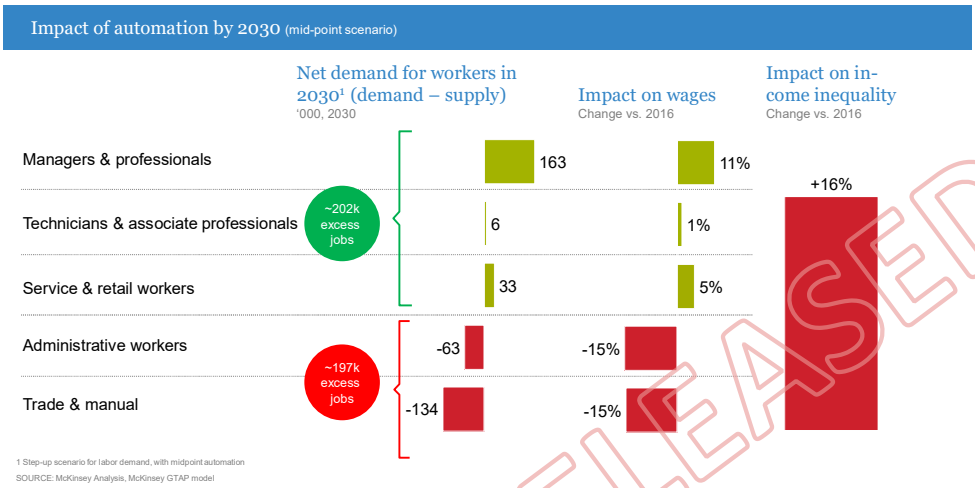
These estimates should be viewed as the high end of wage effects, since labour costs directly affect the attractiveness of automation. If administrative workers are not expensive to hire, companies have weaker incentives to invest in automating administrative tasks. This tamps down job losses and the oversupply of these workers, eventually stopping the cycle of falling wages.

[49] McKinsey Global Institute employed a static version of McKinsey's Global Trade Analysis Project (GTAP) computable general equilibrium model. Wage rates were indexed to equilibrium wage rates and wage deviations for each scenario were reported by labour category. First order deviations from the equilibrium wage rate occur in a general equilibrium model as a result of elasticities of the demand for labour, the supply of labour, and the substitution of labour. Second order effects are also accounted for as, for example, bundles of production and consumption fluctuate given new costs of production and consumption prices.

[50] The model does not take into account regulatory factors such as minimum wages and assumes that the entire impact of demand-supply mismatches will manifest in wage changes rather than job losses. This means that the wage effects on inequality are likely to be slightly overstated.

EXHIBIT 30

Automation could increase income inequality because of a divergence in labour demand and wages



Income inequality will depend on retraining

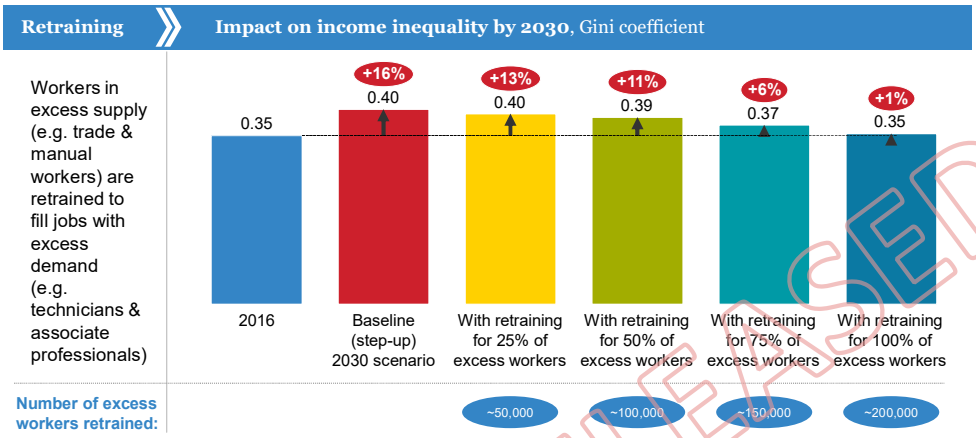
The wage trends expected for the five occupational groups would affect overall income inequality. If workers are not effectively retrained, creating large imbalances between supply and demand, the resulting changes in wages would drive up New Zealand's Gini coefficient from 0.35 to 0.40—an increase of 16 percent by 2030.[51] This would put New Zealand's level of income inequality higher than what prevails in the United States today (a Gini coefficient of 0.39).

Ensuring that the workforce has the right skills for the automation age requires retraining. To illustrate how retraining could temper automation's impact on income inequality, we examined various scenarios that would allow the roughly 200,000 surplus lower-skilled workers to qualify for higher-skilled and higher-paid roles such as technicians or associate professionals (Exhibit 31). If three quarters of these workers (approximately 100,000) upgrade their skills, the impact on income inequality could be reduced by more than half. With training, the downward pressure on pay for administrative workers, and trade and manual workers, would see their wages decline by 5 percent rather than 15 percent. As a result, the 2030 Gini coefficient would stand at 0.37 in 2030 rather than 0.40 if no retraining was offered. If all 200,000 of the displaced workers in these categories can be retrained, income inequality would not increase at all. For governments, the clear implication is that the short-term cost of retraining would be more than offset by the longer-term gains of fewer unemployed workers replying on welfare and a more equal society.

[51] This model estimates impact on Gini in two steps. First, it estimates the wage changes from supply-demand mismatches. Second, it applies the new wages to the current occupational split of the workforce. This means it does not take into account potential impacts on Gini from the number of workers in certain occupations, or indeed any changes in unemployment rate.

EXHIBIT 31

Effective policies to retain and upskill excess workers and redeploy them to unfilled high-skill jobs could reduce the impact on income inequality



SOURCE: McKinsey Analysis, McKinsey GTAP model

Outer suburbs and regional communities will be most challenged

Some sectors that will be more affected by automation than most are concentrated in outer suburban and regional communities. This shift carries perhaps the greatest risk of increased inequality for New Zealand. The issue is the ability of those communities to respond to the automation impact. If we believe that people need higher levels of education to develop the digital, cognitive and communication skills needed for the automation age—in any sector—then we should be concerned about areas which have low education levels, previous experiences of job losses, and socioeconomic and cultural conditions that have limited their opportunity to develop the needed skills.

The first hurdle is that regions heavily dependent on a few sectors present workers displaced by automation with few alternative local job options. Since sector concentration also implies similar experiences and skills among the workforce, job losses would potentially leave many people with similar skillsets competing for fewer jobs. For example, the agriculture, forestry fishing and hunting sector accounts for between 15 to 19 percent of jobs in the West Coast, Gisborne, Marlborough and Tasman regions. If a major employer in the area were to close due to automation, residents with similar skillsets would be left to compete for fewer jobs.

If displaced workers then seek to find work in other sectors or locations, they may find that their level of education does not meet the criteria for the new positions. There is a clear shortfall in the average levels of education in at-risk areas. On average, 62 percent of people who live in Auckland hold a NCEA Level 1 certificate or higher. However, this is heavily biased towards inner-city areas. Outer suburban or rural areas such as Otara or Wellsford, where only 38 and 43 percent of respective residents hold an NCEA Level 1 certificate or higher, will have a higher hurdle to find new jobs or further develop the needed skills.

With few local job options, residents would need to look further afield—and here they may face further challenges. Rural areas tend to be less connected both in terms of transportation infrastructure and digital links, making it harder for residents to either commute to work or take advantage of the remote-working opportunities that technology offers. For example, in Canterbury, residents of Geraldine would face a commute of approximately 2–3 hours if they wanted to work in Christchurch. And while larger townships within the Southland and Otago region have 4G internet connection, some of the region lacks high-speed internet coverage. Small towns within remote areas of the Bay of Plenty and Gisborne are similarly disadvantaged.

Contrast these areas with central Auckland, which boasts a diversified economy and a highly educated population. Here, 57 percent of workers are professionals or managers, and work in sectors such as professional services, financial services, healthcare, and education that are likewise relatively immune. No single sector contributes more than 11 percent of employment, so that if there is a tight job market in one sector, there will be options in others.

□ □ □

Automation technologies will create new possibilities for productivity growth, but they will also usher in some labour market disruption. Ensuring people are at work (albeit not necessarily in the same occupation they have always been in), is necessary to maximise the opportunity to grow economic and social outcomes, and ensure no New Zealander is left behind. The challenge for policy makers and their partners in business, education and the social sector is to keep an acceptable opportunity gap between places like central Auckland and regional New Zealand. Governments around the world are looking at these challenges knowing they may need a new era of collaboration and effective policy. While New Zealand is at the frontier of national thought leadership in this space, it could advance that frontier much further. This is our focus in the next chapter.

3. RECOMMENDATIONS

The prospect of automation can be daunting for both workers and employers, and both groups may find themselves wanting to delay its impact. Yet, both groups stand to lose significantly if New Zealand becomes a laggard in this transition. Conversely, both groups will benefit significantly from accelerating the transition, if it is supported by the right social framework, especially through education, training and retraining. In this regard, the future of work will align the interests of all groups, and collaboration is key to capturing the benefits and mitigating the risks of a speedy transition while ensuring no New Zealander is left behind.

All stakeholders in the New Zealand economy need to collaborate on a joint national action plan if automation is to overcome two challenges:

- How can New Zealand rapidly leverage automation technologies to boost productivity?
- How can New Zealand prepare and support displaced, continuing and future workers through the transition?

This chapter offers ten themes for navigating these twin challenges—two combined (business and government), four for business, and four for government—with the intent of advancing discussion across New Zealand about its automation future (Table 1).

TABLE 1: IDEAS FOR NEW ZEALAND'S AGE OF AUTOMATION

#	Theme	Initiative(s)
Combined (business and government)		
C1	Invest in reskilling and retraining	
C2	Arrange a cohesive, collaborative multi-partnership effort to deliver the national action plan, including regional areas that will be impacted most	
Business		
B1	Invest early in automation technology to maximise productivity benefits and open-up new business opportunities	
B2	Build the organisation of the future with the right size, shape, skills and culture to deliver the strategy	
B3	Adopt an agile way of working	
B4	Support displaced workers towards a career beyond the organisation	
Government		
G1	Government to lead by example	
G2	Use policy to enable nation-wide automation adoption, including incentivising automation growth for SMEs and select sectors	
G3	Strengthen education for lifelong learning, with dedicated upskilling pathways for older workers	
G4	Launch pilots of new social welfare concepts	

Combined 1. Invest in training, retraining and reskilling

Businesses and government can help mitigate the impacts of automation by investing in, and supporting, the training, retraining, and reskilling of workers:

- Businesses can prioritise retraining before recruitment, and pledge significant investment in annual worker training, retraining and upskilling to close the anticipated skills gap
- Government can encourage disclosure in their annual reports of investment in annual worker training, retraining and upskilling, and incentivise investment in retraining

What business can do

Prioritise retraining before recruitment

In the process of adopting automation, it is discrete activities and roles that become redundant, rather than people. Organisations often fall into the trap of letting employees go when their roles disappear and hiring new workers for emerging positions. A smarter and more cost-effective approach is to equip existing staff—who may have many years of experience with systems, products, customers and culture—with the necessary skills for the new roles. For example, organisations could set targets to move a proportion of staff from back-office roles into positions in customer service that rely on interpersonal skills. In doing so, organisations could avoid losing 'corporate memory' and a large slice of morale among retained workers, as well as the risks, costs and pressures of recruiting new employees or hiring temporary contractors. One company famously asked its workers 'whether their job could be better done by a robot' and promised retraining 'for another role at the firm' for those who said 'yes'.[52]

The mandate for increased investment in retraining is already here, with no less than 54 percent of workers anticipated to need significant reskilling and upskilling within the next three years, and 19 percent requiring training of 6 months or longer.[53] A business's employment brand, and broader brand, benefits from looking after its people and the broader community, and society is looking at businesses to take the lead. In addition, if a significant number of workers are not proactively retrained, the resulting risk of displacement and increase in unemployment will negatively impact businesses through slowing demand for consumption-based services, social upheaval, and an increase in skills-based labour shortages.

Where reskilling is an option, retraining as opposed to releasing and recruiting has a strong business case. While reskilling comes at a cost, the release and recruit alternative comes with redundancy cost, recruitment cost, risk of cultural mismatch, a potentially higher salary expectation, and longer time for onboarding (at lower productivity). Initial McKinsey analysis suggests that releasing and recruiting costs approximately 2.5 times more over a three-year period than retraining an existing employee, taking into account redundancy cost, recruitment cost, and salary expectations alone. Where reskilling is not appropriate, however, companies should consider recruitment, including high-skilled overseas recruitment, to initially import talent and subsequently build talent and capability internally.

In a recent study, 75 percent of executives reported that retraining would provide at least half the solution to their companies' current skills mismatches, and 64 percent stated that the

[52] *Insurer asks its 16,000 staff: could a robot do your job?*, The Sunday Times, 2019.
[53] The future of jobs report, World Economic Forum, 2018.

main reason for investing in retraining was to increase employee productivity.[54] Most employees can carry their line expertise into an adjacent field through a 'domino reskilling model'. For example, when AT&T reduced its physical store footprint, it found that the skills of store managers largely mirrored those of 'scrum masters' who lead agile teams, so it retrained many displaced store managers into those roles. In another example, a regional Italian bank reskilled and redeployed nearly ~10,000 employees who were being displaced by a combination of technology changes and strategic shifts. The bank, subject to regulation which barred layoffs, successfully reskilled and redeployed ~9,500 employees over a five-year period and saw employee satisfaction rise from 70 percent to 80 percent over the course of the program.

Retraining programs provide an opportunity to partner with innovative educational institutions and can be extended to new recruits. Such bespoke training programs may also result in a certification that advances careers and serve as a drawcard for recruits. The programs may draw on the same remote and digital technologies that will be used increasingly in the workplace, and cost less to deliver due to those technologies. They may also form part of lifelong learning platforms (such as Degreed, an education technology solution) to build skills and certify expertise. One conglomerate in the Middle East, for example, has created a technology academy that every employee must attend, with the aim of making all 40,000 of its workers proficient in digital analytics. Such initiatives develop in-house expertise, foster a common understanding of market opportunities and promote loyalty among employees.

Another form of partnership could be between companies in similar industries or regions who team up to solve their reskilling and redeployment requirements. Businesses with complementary skills gaps could arrange for rotations, secondments and placement opportunities to enable on-the-job retraining, or co-ordinate cost-effective retraining at scale. Similarly, businesses within the same region requiring a similar skill-set could work together to redeploy freed up labour across their respective needs, to ensure workers are utilised effectively and continue to be excited with variety in their roles. None of these initiatives can be completed overnight. A European technology company took 3 years to reskill one-third of its existing workforce (placing 1,000 employees a year into new roles), and its experience can be considered typical. Its programs had to cover both hard competencies to work with machine learning, IoT and cloud computing, and soft skills such as coaching and working in an agile environment.

Pledge investment in retraining

New Zealand employers may consider making meaningful investments in worker retraining and upskilling. For example, in a 'Pledge to America's Workers' campaign, 200 organisations have committed to creating over 6.5 million working opportunities in the United States through mechanisms such as apprenticeships, work-based learning and continuing education. In separate initiatives, Google has pledged US$1 billion towards retraining the global workforce (not just its own); the Walmart Foundation has pledged US$100 million in workforce development and reskilling; and Lockheed Martin has pledged US$50 million in support of science, technology, engineering and maths (STEM) scholarships, and a further $US100 million to expand employee training and educational opportunities.

[54] *Retraining and reskilling workers in the age of automation,* McKinsey Quarterly, January 2018. Another report showed that only 16 percent of digital strategies succeed, and that the top reason for failure (cited by respondents) was a lack of the right employee capabilities and mindsets. See: *Unlocking success in digital transformations*, McKinsey & Company, October 2018.

A New Zealand variant could propose that companies acknowledge their employees, customers and New Zealand's well-being as a whole, and pledge significant investment in annual worker training, retraining and upskilling to close the anticipated skills gap.

What government can do

Encourage disclosure by companies

To keep businesses honest, as well as to increase the public's trust in companies' undertakings, the government could encourage disclosure by companies in their annual reports of investment in annual worker training, retraining and upskilling. The report could also include disclosure on the quantifiable impact of their efforts. This investment and outcome reporting would also provide a rich source of data on investment effectiveness and allow government and organisations to better shape policy and programs.

Incentivise investment in retraining

Taking as inspiration the government's new research and development tax incentive scheme,[55] a similar structure could be introduced as an additional lever to encourage business investment in workforce training. In the US, for example, several states including Connecticut, Georgia, and Virginia, are providing tax credits ranging from 5 to 50 percent for businesses investing in worker training.[56] The scheme could take a variety of shapes and forms. For example, it could be an increase in the business deduction allowed for training (similar to Austria from 2000 to 2016, where 120 percent of training expenditure could be deducted for tax purposes), a percentage tax credit on overall spend, or a tax credit for any increases in spend relative to the prior year or a base year.

The government could also consider providing tax breaks for people who decide to study while they work. In Australia, for example, workers who study and incur self-education expenses may be eligible for tax deductions if their employment and the chosen course have a sufficient connection. If a similar model were to be adopted, it should be sufficiently broad to ensure it captures the fast-changing nature of work and wide-reaching need for reskilling and change of occupations.

Box 3. What individuals can do

The onus to develop future workplace skills does not lie solely with businesses and/or the government: individuals should be proactively taking responsibility for their journeys to ensure they are ready for the transition technology will bring to the workplace. For example:

- Individuals should proactively assess their current skill base, inform themselves about the anticipated skills required in future, and perform their own skill gap assessment
- Individuals should then aim to understand how they could go about closing any skill gap through relevant education and training programs on offer
- While government and businesses may financially contribute to an individual's education and training, individuals should be prepared to self-fund (either partially, or fully) their own training and education as an investment in their future. To do this, they could consider saving into their own education and retraining accounts to be used in the near- to long-term, as needed, much the same way they would think about saving for future holidays or retirement

[55] https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/r-d-tax-incentive/
[56] Workforce training tax credit: promoting employer investments in the workforce, Aspen Institute, August 2018.

Combined 2. Arrange a cohesive, collaborative multi-partnership effort to deliver a national action plan, including in regional areas that will be impacted by automation

Businesses, the public sector, and the not-for-profit sector will all have a unique role to play in ensuring all New Zealanders flourish in the new age of automation. To ensure efforts and resources are coordinated effectively and driven towards a coherent national action plan, these stakeholders should work together.

A core component of a national action plan should involve leveraging New Zealand's industry strengths to ensure no industry or region, is left behind. This can be through the incentivisation of cross-company collaboration and innovation that creates jobs in regions at risk of high unemployment or disruption from automation. The government is already focusing on regions through initiatives such as the Sector Workforce Engagement Programme (SWEP) and the new Provincial Growth Fund (PGF). SWEP is a cross-government initiative that aims to improve businesses' access to labour in industries such as horticulture, dairy, construction, and more, by growing the skills and capability of working people in specific regions. Since its pilot in 2016, 950 New Zealanders have been employed through SWEP initiatives, 3,000 have been supported into recognised training whilst employed, and 50 into apprenticeships.[57]

[57] https://www.growregions.govt.nz/about-us/sector-workforce-engagement-programme/, Ministry of Business, Innovation and Employment.

Business 1. Invest early in automation technology to maximise productivity benefits and open-up new business opportunities

Businesses could accelerate their investments in automation technology—those that invest early and introduce it explicitly into their strategy stand to gain the most benefits in productivity improvement, customer satisfaction, and in some cases new business opportunities. To do so, they should take a long-term view on the returns on this investment and the upfront costs of the transition.

Automation presents endless strategic opportunities. These opportunities could promote business expansions, improve customer outcomes or tackle internal efficiencies. For example, a 2017 report by MIT Technology Review and Genesys found that 91 percent of top companies (such as Alibaba and Lexus) use AI to boost customer service and improve branding. Similarly, over 90 percent of companies with world-leading brand recognition and high levels of customer satisfaction use AI solutions to increase customer satisfaction, compared to 42 percent of companies in their fields overall.[58]

91 percent of top companies such as Alibaba, and Lexus use AI to boost customer service and improve branding. Similarly, over 90 percent of companies with world-leading brand recognition and high levels of customer satisfaction use AI solutions to increase customer satisfaction, compared to 42 percent of companies in their fields overall.

New Zealand businesses and sectors that invest early in automation technology stand to gain the most. As detailed in Chapter 2, New Zealand could move from 68 percent to 73 percent of the level of the United States' labour productivity through a more rapid uptake of automation. Similarly, New Zealand's manufacturing sector could significantly catch up to its American competitors by adopting automation earlier, potentially moving from 54 percent of the United States' productivity to 83 percent. These businesses do not need to be large—automation benefits can be captured by all companies, regardless of the size of their balance sheet. In the past technology-driven productivity improvements were only affordable for large companies. However, automation technologies can be applied cost-effectively to smaller scale businesses—for example, cloud-based solutions are as cost-effective and work as well for a 10-employee company as for a 10,000-employee company.

Automation can also spur new business opportunities. For example, drones and unmanned aerial vehicles are able to quickly map, inspect or transport in places that are difficult to reach and are already used to spray crops, perform land surveying and inspect oil rigs.[59] New Zealand businesses should continue to lead the experimentation. For example, Flirty, a New Zealand drone delivery company, completed the world's first commercial pizza delivery by drone to a customer, and aims to extend its service to medical and other retail deliveries.[60] Innovations in one company can also lead to opportunities for others. Medallia has developed an automated customer feedback platform which a client has used to enable contact centre

[58] *91% of top companies use AI to boost customer service, improve branding*, TechRepublic, October 11, 2017.
[59] *Drones predicted to give British economy a £42bn lift by 2030,* The Guardian, May 29, 2018.
[60] https://www.flirtey.com/

employees to tag the root cause of issues, reduce customer pain points by 50 percent and increase transaction volume by more than $2 billion.[61] Automation can also deliver one company an irresistible advantage: Amazon is expected to open 3,000 Amazon Go stores by 2021, featuring a smartphone-led shopping experience with AI-enabled 'Just Walk Out' checkouts.[62]

Finally, in setting automation strategies, companies are investing in the future, which means that ultimate returns on initial costs may be delivered in the longer term. Adopting this longer-term focus may be challenging[63] but it will pay off, with 'long-term' companies outperforming their 'short-term' peers, on average, in terms of revenue, earnings, economic profit and job creation.[64] A longer-term focus also allows a company or agency to pay due attention to the organisational challenges in their transition to the automation age.

Business 2. Build the organisation of the future with the right size, shape, skills and culture to deliver the strategy

Chapter 2 discussed how the automation wave will affect employment numbers, working roles and job skills throughout New Zealand. This national picture is mirrored in individual organisations. Private companies will need to build a future organisation of the right size, shape, skills and culture to deliver their automation strategies.

In doing so, it will not be sustainable for companies or agencies to simply retrench one set of people and hire another. Certainly, workers with the most in-demand skills will tend to gravitate towards the earlier technology adopters. However, that 'talent' also wants to work in a culture that respects and develops people—the most valuable asset—with retrenchment a last resort. Forward-thinking organisations are concluding that their resilience is strengthened by developing the skills of their existing employees and so are supporting them to transition to new roles within the organisation, removing fear of retrenchment from the equation.

Forward-thinking organisations are concluding that their resilience is strengthened by developing the skills of their existing employees and so are supporting them to transition to new roles within the organisation.

Building a future-ready workforce requires a focus on both the 'what' and the 'how' elements of what an organisation needs to do to get the right talent and skills in place, and how the organisation can build a culture that brings out the best in that talent (Exhibit 32).

Building the 'what': the right skills in the right place

The possibilities of automation will force public agencies and private firms to rethink the roles and skills they need. This involves three basic steps:

[61] www.medallia.com
[62] www.amazon.com
[63] Taking a longer-term view requires determination, as shown by a survey of 1,000 board members and C-suite executives around the world, which found that almost two-thirds of respondents said the pressure to demonstrate short-term financial performance had increased over the previous five years. See *Focusing capital on the long term*, McKinsey & Co., December 2013.
[64] *Where companies with a long-term view outperform their peers*, McKinsey Global Institute, February 2017.

- **Diagnose any gaps between today's workforce and future roles and skills.** Most organisations spend significant time and resources developing their strategic plan and significantly less time identifying the future roles and skills required to deliver that plan. Analysing the people implications of a strategic agenda often reveals that the intended results will not materialise unless the right people decisions are made early on. A granular diagnostic, down to the individual role level, is needed to give real-time insights into current and future skills of the workforce and to identify skills gaps that will need to be closed.

- **Design robust plans to close future skills gaps.** A portfolio of initiatives is needed that goes beyond traditional 'hiring and firing'. The '**5R**' levers to close skills gaps start with **reskilling** and **redeploying** existing employees, then **recruiting** externals either permanently or in the short term, and **renting** workers through contracting or activating freelancers in the gig economy. If it has too many people, a company or agency will need to plan for the **release** of employees, including providing retraining, education and transition support to prepare their workers for an external career (see proposal B4). Some organisations may have to recruit entire teams, partner with other complementary organisations, and/or pursue acquisitions and joint ventures that help them close their talent gaps. The best companies build their workforce strategies into their annual strategy processes to arrive at a joint financial and people plan.

- **Implement plans through rapid and disciplined execution—a future workforce centre of excellence.** The most effective talent transitions are governed by a dedicated, cross-functional 'future workforce centre of excellence' that includes both senior human resources and line managers. Its roles are to drive (re)skilling programs, create learning pathways, access the latest external thinking, resolve roadblocks and help management make quick and clear decisions when trade-offs are needed. Each subject area should have a business lead who is accountable for achieving results and ensuring targets are met.

EXHIBIT 32

Designing the Future of Work: The **what** and the **how**

Business 3. Adopt an agile way of working

As discussed in Chapter 1, automation will displace work activities but not necessarily entire jobs. Recent McKinsey analysis shows that the key to capturing the productivity benefits of

automation is effectively redeploying the resulting freed-up time.[65] Accordingly, organisations must ensure they establish the work environment and mechanisms to do so.

This is perhaps best done through new ways of spurring 'agility' in the workplace, such as Agile itself, 'no-collar' jobs and internal task-sharing economy models. As the term suggests, agility enables a company or agency to react quickly to changing market demand and dynamics. It typically depends on cross-functional teams that can innovate new solutions and diagnose and remove roadblocks, and a shift from traditional line reporting with an internal focus to one of digitally enabled collaboration, both internally and with external partners.

Agile shows significant promise, having been successfully deployed in several Australasian companies to create a more productive, flexible and engaged workforce. For example, Spark New Zealand has become the first fully agile telecommunications operator in the world. In just under six months, Spark established over 100 cross-functional teams or 'squads', organised into 18 'tribes'. Over 2,000 employees were transitioned through over 100 distinct agile trainings. Teams are self-managed, removing the need for multiple middle management layers. Roles are no longer rigid; team members can switch roles or even teams every few weeks to meet changing needs. Early signs indicate that impact has been quick and impressive: the company is on track to achieve substantial gains in customer satisfaction, employee engagement, productivity and—most importantly—time to market.

Agile shows significant promise, having been successfully deployed in several Australasian companies to create a more productive, flexible and engaged workforce.

While certain businesses have chosen to deploy agile at scale, others could choose to adapt agile principles in a tailored manner or at a smaller scale. For example, they could apply an agile way-of-working to certain business units only or other select parts of the business.

Business 4. Support displaced workers towards a career beyond the organisation

While employers should begin by seeking to retrain and redeploy people whose roles have been made redundant, some workers will have to leave the organisation. Rather than leave these workers to be supported by the open market and the government, employers could take steps to prepare them for a new career.

For organisations that support their workers to embark on the next stage of their professional journey, the benefits are immediate and reputational. The immediate benefit is that the organisation has signalled how much it values its people, and that it understands the impact of displacement (or the fear of being displaced) by automation. Without the hearts and minds of its workforce, a business or public agency has very little chance of a successful transition to the automation age. This approach is highly likely to reflect a healthy organisational culture, which helps to attract staff with in-demand skills; and is equally likely to contribute to a strong organisational reputation, which may attract funding and partnerships. Further, apart from these advantages, the support of displaced workers could become a new limb of corporate social responsibility in future, much like green initiatives, fair trade and charitable giving have become commonplace.

[65] *Jobs lost, jobs gained: Workforce transitions in a time of automation*, McKinsey Global Institute, 2017.

> Without the hearts and minds of its workforce, a business or public agency has very little chance of a successful transition to the automation age.

Workplace retraining programs could offer modules in applicable marketplace skills, certification of skills and, where applicable, training on how to set up a business or transition to the gig economy. Organisations could fund specialists to provide these services. For example, in Australia, the Transition Hub is a partnership between the UTS business school and WeWork that supports companies as they transition people out of their organisation by offering performance coaches, personal brand specialists, psychologists, financial advisors, mentors and recruiters. Businesses could also subsidise their own employees' education efforts, even if in an unrelated field. For example, the Starbucks Foundation offers full tuition coverage for eligible Starbucks baristas to earn their bachelor's degree through Arizona State University online,[66] and Amazon pre-pays college up to 95 percent of tuition and fees towards a certificate or diploma in qualified fields of study, leading to in-demand jobs, whether or not the individual plans to stay on with Amazon.[67] Additionally, online resources are already available to all workers, for example, Grow with Google provides free training and tools to support growing skills, careers and businesses.[68]

Sweden has a different approach, through a system for retraining mid-career workers using private sector 'job-security councils'. Employers pay into these councils, which provide financial support and job counselling to laid-off workers, with the aim of helping them get back to work as soon as possible, with over 85 percent of displaced workers finding a new job within a year. Personal counsellors help workers with their resumes and steer them into classes in their fields or other fields. The job-security councils are more effective than similar government-administered initiatives as they have more ample financial resources and can intervene more quickly after layoff.[69]

Government 1. Government to lead by example

The New Zealand Government has the opportunity to lead by example, and set clear, tangible, world-class improvement targets for the public sector, on outcomes and service-delivery metrics that matter most to citizens, to be achieved through adoption of automation technology. If there are relevant performance benchmarks that show what can be achieved for customers with automation, those benchmarks should become the target, even if they seem more ambitious than is possible. If a target can only be reached by engaging with available technologies, it is the right target and should be pursued over a reasonable timeframe.

[66] https://edplus.asu.edu/what-we-do/starbucks-college-achievement-plan
[67] https://www.amazoncareerchoice.com/home
[68] https://grow.google/
[69] Alana Semuels, "What if getting laid off wasn't something to be afraid of?" The Atlantic, October 25, 2017; Back to work: Sweden, OECD, 2015.

> If there are relevant performance benchmarks that show what can be achieved for customers with automation, those benchmarks should become the target, even if they seem more ambitious than is possible.

In the public sector, aggressive customer-centric targets could help to drive highly appreciated outcomes. For example, facial recognition or thumbprint identification could significantly reduce service times at hospital admission desks and in government agencies by eliminating the need to fill out lengthy identity forms. Tele-health services could increase doctors' outreach, particularly in rural areas. Targets may need to be set or approved by government to guide the operational plans of agencies, but publicly sharing progress towards targets on an annual basis could promote transparency and accountability.

Automation can also do things more efficiently behind the scenes, freeing up time for more customer engagement. At the Ministry of Social Development, automation technology could help to ensure that customer details are automatically updated, increasing payment accuracy and improving the citizen and worker experience. At the IRD, automated technology could provide a fuller view of taxpayers' financial activities and ensure they pay their taxes in full.

In parallel, to support the clear priority of digitisation and automation, the government could establish an independent information mechanism that can collect data, drive research and establish and maintain a credible fact base on automation in New Zealand. A robust evidence base is an essential component of good policy-making around technology adoption. A useful example is the European Union's (EU) Digital Economy and Society Index (DESI), which measures 30 indicators of digital adoption and performance for member states, as well as the EU overall. The World Bank has also launched the Digital Adoption Index to monitor technology use by various nations' citizens, businesses and governments. Oxford Economics introduced a similar tracker last year, known as the Digital Society Index. New Zealand currently has no such measure.

Box 4. Singapore's digital and automation mechanism

Singapore serves as a good example of integrating the government's digital goals into a single office that spans business, government and society. In 2017, the country established the Smart Nation and Digital Government Office (SNDGO) to lead 'smart nation' project planning. The SNDGO is built on three pillars: digital economy, which encourages technology adoption and innovation (for example, by offering support for local digital businesses and small- and medium-sized enterprises (SMEs) undergoing technological transformation); digital government, which raises digital capabilities in the public sector, runs public-sector digital transformations and co-creates digital public services with citizens and businesses; and digital society, which fosters digital literacy, expands and enhances access to digital infrastructure, and promotes digital inclusion and adoption. The office has been driving programs within each of these pillars across the government and is partnering with educational institutions and industry to foster technological advancement in each area.

Government 2. Use policy to enable nation-wide automation adoption, including incentivising automation growth for SMEs and select sectors

Policy is the backbone that could be used to transition our nation into a more prosperous future in the wake of automation. This could include creating a Mobility Centre, enacting regulation and policy conducive to encouraging automation adoption and ease of doing business, selecting globally leading industries for targeted automation growth through incentives and policy, and introducing a SME Automation and Future Skills Securitisation Fund.

Create a Mobility Centre

New Zealand will need to innovate to make sure it has the right institutions that are fit-for-purpose to support the needs of the workforce in the future. One critical need of the workforce will be matching their skills to open jobs, or understanding what reskilling is required, if displacement occurs. To tackle this challenge and facilitate mobility in the labour market, the government could create a Mobility Centre that matches displaced workers with jobs.

A Mobility Centre could perform four functions:

- Create a central information marketplace: to give transparency on supply and demand for skills and jobs, expected income levels, and the effectiveness of retraining and reskilling efforts
- Determine the skills certification and credentialing required for future jobs, and cater to specific individual needs: the former would allow skill credentials to be more portable across sectors, and the latter would allow the prioritisation of workers' specific needs where possible, for example, a priority of not physically relocating could suggest retraining in a field of work that can be performed remotely
- Share risk with displaced workers: for example, through safety nets or investment clawbacks for workers that invested in their own retraining for jobs suggested by the Mobility Centre if work does not eventuate within a certain period of time
- Create tracking mechanisms to measure and monitor the impact of retraining: the use of unified statistics could create the requisite transparency to better shape future policy based on empirical evidence

The importance of giving individuals transparency on relevant reskilling cannot be overemphasised, as exemplified by the closure of the General Motors plant in Janesville, Wisconsin in 2008, where such transparency did not exist.[70] As a result, some of those who retrained ended up worse off than those who did not. In fact, by 2011, a higher proportion of the workers who did not retrain after layoffs had a job (72 percent), compared to those who went back to school in an effort to reskill (61 percent). A Mobility Centre could give displaced workers transparency on what retraining they should pursue, so that workers retrain for jobs in demand in the future, not jobs of the past.

Germany has successfully deployed a network of labour market services consisting of over 700 agencies and branch offices nationwide to deliver lifelong learning and occupational counselling. An online self-exploratory tool allows for the identification of peoples' strengths and hidden talents. It then offers users recommendations based on professional development options that are suitable to personal strengths and interests, as well as future opportunities.

[70] Amy Goldstein, 'Janesville: an American story', Simon & Schuster, 2017.

This continuously supports the life-long counseling efforts (online and offline) of the labour agencies that broadly reach over 40 million people.

A way to set up the Mobility Centre, is to convene a dedicated working group from academia, technology, unions, business, policy makers and education for three months to collaboratively develop and refine solutions and counsel government on automation opportunities and challenges through developing a national roadmap.

Enact regulation and policy conducive to encouraging automation adoption and ease of doing business

In parallel, it will be the role of government to rethink needlessly obstructive regulation while protecting societal concerns. Legal frameworks will need to adapt to reflect a new reality of digitisation and automation. The right regulatory frameworks and conditions need to exist to encourage and enable investment in, and the development of, new technology. For example, outdated personal data legislation may be preventing innovative solutions and business models for the healthcare or social sectors. As technology continues to evolve, increasingly complex and ambiguous legal issues will arise, which will require quick regulatory iteration. Similarly, as new labour models become increasingly popular (such as the gig economy), there may be a need to be a rethink of the bounds of the traditional employer-worker relationship.

Select globally leading industries for targeted automation growth through incentives and policy

In the development of incentives and policy levers, the government could consider attributing an enhanced focus to industries where New Zealand stands to gain significant competitive advantage from the rapid adoption of automation. Agriculture and tourism, for example, are two important industries where New Zealand already stands out at a global scale. Investing in automation solutions to improve efficiency, productivity, and quality of output could catapult New Zealand even further up the global ranks.

In Chapter 2, we briefly explored agriculture's importance to New Zealand's economy, specifically exports, and the various applications of AgTech (for example, automated harvesting, fruit picking and grading) that could address current labour shortages. New Zealand companies are already emerging as leaders in this space, and this is something to continue to build on through targeted policy and incentives (for example, an AgTech investment fund or enhanced R&D credits).

Tourism is another key sector of New Zealand's economy, directly contributing 5.6 percent of GDP, with indirect contribution amounting to an additional 4.3 percent. Workers in the tourism industry account for 7.5 percent of New Zealand's workforce, and international tourism expenditure contributes 20.7 percent to New Zealand's total exports of goods and services.[71] The use cases of technology and automation in travel and tourism are also rapidly evolving. They include digitised and automated travel bookings, automated check-in, automated security and baggage handling at airports, and even automated customer service through chatbots or robots. Hotels in Japan and California, for example, already have robots welcoming and assisting guests during their stay. Fingerprint or face recognition is an existing technology that, when integrated at scale, could get rid of the need for hotel keys altogether. New Zealand cannot afford to get complacent: creating a unique, differentiated experience for tourists, as well as using the latest technologies to promote tourism, is a way to future-proof New Zealand's strong foothold in the tourism sector. Again, targeted policy incentives could be used for the tourism industry.

[71] Tourism Satellite Account 2016, Statistics New Zealand.

Introduce a SME Automation and Future Skills Securitisation Fund

New Zealand is a nation of small-to-medium sized enterprises. As discussed in Box 1, SMEs have a chance to shine in the age of automation as automation technologies can be applied at small scale. However, SMEs will usually require bank loans to make investments in automation and they often have greater difficulty in attaining business loans than larger enterprises. The Australian Government has recently announced an Australian Business Securitisation Fund—to give SMEs bank issued, government backed loans—to make it easier for SMEs to borrow for investment purposes. We could adopt a similar, more targeted, fund—a SME Automation and Future Skills Securitisation Fund—to give our SMEs better access to loans for the specific purpose of automation adoption and retraining the workforce.

Government 3. Strengthen education for lifelong learning, with dedicated upskilling pathways for older workers

The skills New Zealand workers need at work will change significantly as a result of automation. To prepare for this, these new and different skills can be embedded in education courses now, rather than added when New Zealand is in the midst of job disruption. Accordingly, the New Zealand Government could establish citizen-directed 'lifetime learning accounts' and conduct educational reform.

> The skills people need at work will change significantly as a result of automation. These skills should be embedded in education now.

Establish citizen-directed 'lifetime learning accounts'

Education and training are lifelong pursuits and are essential for people to enter the workforce, find and retain jobs, and continue to grow throughout their careers. Yet many New Zealanders complete their education in their 20s and work for 35 to 40 years without much additional formal education. As workplace technologies and employer needs evolve, New Zealanders may need a different approach: lifelong training focused on skills development. While valuable at any time, this could better prepare people for the automation disruption, particularly older workers.

> As workplace technologies and employer needs evolve, New Zealand may need a different approach: lifelong training for adults focused on skills development.

To financially support this approach, 'lifetime learning accounts' could be stablished. Singapore's SkillsFuture program, for example, establishes an account for each adult citizen over the age of 25, which they can tap into throughout their careers to acquire new skills or pursue higher education. The account can be used to cover the cost of around 25,000 pre-approved courses offered by a range of providers (including overseas Massive Open Online Courses, or MOOCs), including assessment and certification fees.[72] France offers a similar

[72] www.MySkillsFuture.sg

program, financed through employer contributions of 1 percent of total payroll costs (or 0.55 percent for firms with fewer than ten employees).[73] The US Congress is considering introducing a similar program, to be co-financed by matching employer and employee contributions (with an option for governments to also match contributions), up to an established cap.[74] In each of these cases, the fund follows the account holder throughout their life, so that when they shift workplaces their new employer contributes to the same fund. The New Zealand government could consider introducing such programs, similar to existing superannuation accounts, to help fund education towards upskilling throughout a person's life, as technology advances.

Encouraging displaced workers to keep participating in the labour market will be critical, especially workers whose jobs are displaced within a decade or so of their retirement. Many older workers lack the resources or the appetite to retrain, especially where it comes at a large out-of-pocket cost, but nevertheless, will have to reskill to avoid the prospect of unemployment or a significant reduction in pay, responsibilities and job quality. Here, government support and incentives become critical, not only to repay these workers for their years of service and taxes, but also to maintain their health and community engagement, so as to avoid higher future costs to the taxpayer. The government could also combine assistance for older workers with support for SMEs. In Germany, for example, the Federal Labour Office funds job-related training programs for workers aged 50 and over who are employed by SMEs. These programs have been correlated with an increased share of older workers in training and higher employment rates for those aged 45 to 54.[75]

Conduct educational reform to better align lifelong learning foundations, study and work prospects

The changing nature of work has led businesses, students and government globally to demand up-to-date, skills-based curricula, with student-centred teaching integrated with work experience and technology, and course structures that include both short courses and modular certifications. Generally, the rate of progress has been slow and job-related outcomes need to be improved. The rapid and pervasive change inflicted by digital progress is affecting nearly all forms of established human activity, and therefore compels the reconsideration of incumbent education systems for lifelong learning, starting from early childhood education to upskilling as a worker approaches retirement.

To date, there has been little focus on what the changing future of work could mean for early childhood education and the subsequent compulsory school years. International research has highlighted the importance of the first five years of a child's life as the core period for the development of critical thinking and non-cognitive executive function (such as empathy, attention) as well as psychological resilience. These attributes will be critical to ensuring sound mental well-being in an environment that will rapidly change over a lifetime due to technological advancement, and it calls for a systematic review and monitoring of existing early childhood education to promote the desired outcomes.[76]

It is also important to continue to adapt years one to 13 to better align with future needs and the anticipated shift in skills that will be required in the workplace: that is, a stronger focus on

[73] *France: Employers obligation to provide skill development plans or training,* European Monitoring Centre on Change.
[74] Skills Investment Act of 2019, United States Congress.
[75] Hila Zboralski-Avidan, *Further training for older workers: A solution for an ageing labour force?* (PhD dissertation).
[76] Understanding wellbeing in the context of rapid digital and associated transformations, International Network for Government Science Advice (INGSA), August 2018.

technological skills, advanced IT skills and programming, and advanced cognitive and social skills. New Zealand schools have already begun to innovate in this space: for example, since 2005, Onehunga High School pioneered Construction School, merging traditional and vocational education with great success.[77] This has expanded to include support for additional specific pathways, such as a Services Academy run in conjunction with the New Zealand Defence Force, a Health Science Academy through partnership with various District Health Boards, and a Business School.[78] Meanwhile, Albany Senior High School has been incorporating impact projects—highly structured, project-based learning experiences—into their curriculum.[79] The current review of the NCEA curriculum is a good opportunity to align high school learning outcomes to be relevant to the workplace of the future.

In the tertiary landscape, there is an opportunity to introduce more modular, skills-oriented learning pathways to facilitate lifelong learning journeys that are portable between sectors. The University of Melbourne in Australia, for example, is exploring the introduction of 'micro-credentials' that certify students' partial completion of work towards a degree. In 2017, they partnered with Learning Machine, a US company associated with the Massachusetts Institute of Technology, to pilot a micro-credentialing system based on a blockchain platform.

Despite these efforts, there is a considerable way to go. Universities and vocational educators need leaders who can communicate the need to modernise course design and delivery as well as drive its implementation. Teachers need new skills to make the best use of technology through enhanced coursework, personalised materials and learning experiences, and interactive simulations. These are not easy transitions for established institutions. New Zealand has, however, recently announced a critical step in the right direction, through the intended reform of vocational education. The purpose of the proposed Reform of Vocational Education is to enable a strong, unified, healthy and sustainable vocational education system that delivers the skills that learners, employers and communities need to be successful. Importantly, employers are being consulted to inform curricula and offered representation through new Industry Skills Bodies. Governance will be centralised through a single New Zealand Institute of Skills & Technology to expedite improvements, yet stay close to regions to understand their local skills and development strategies by establishing Regional Leadership Groups.[80]

Government 4. Launch pilots of new social welfare concepts

Despite the best efforts of governments, employers and the education system, there will inevitably be workers who through little fault of their own find themselves displaced by automation and who struggle to upskill or find a new, better job. This has always been the case, and it will remain so in the age of automation. If worker displacement through automation significantly pushes up unemployment rates, there could be additional pressure on New Zealand's existing social welfare structures.

While accelerating reforms in training and education is a key part of the equation, a more immediate reform option could be to extend the safety net to encompass all types of work, not just traditional, full-time employment. At present, for example, workers compensation is not available (at least not efficiently) for independent contractors, and there is no capacity to continue accruing long service leave between different types of jobs or across different jobs.

[77] http://www.onehungahigh.school.nz/curriculum/pathways/building-and-construction/
[78] http://www.onehungahigh.school.nz/curriculum/pathways/
[79] http://www.ashs.school.nz/curriculum/impact-projects/equine-education
[80] Employers factsheet: reform of vocational education, February 2018: https://conversation.education.govt.nz/assets/RoVE/Employers-factsheet-Reform-of-Vocational-Education.pdf

> New Zealand should explore new ideas that could be incorporated into future reforms. Governments and researchers, for example, are already exploring new concepts to tackle income inequality.

Another option is to consider new ideas that could be incorporated into future reforms, in case the speed of automation adoption is faster than anticipated. Governments and researchers are already exploring new concepts to tackle income inequality, such as wage insurance, the universal basic income (UBI) to guarantee a minimum living wage for all citizens; salary supplements, to encourage labour force participation (some modelled on the earned income tax credits in the United States); minimum wage increases; and even a mandated distribution of capital when its returns exceed those to labour by an agreed margin.

Evidence on many of these policy ideas is as yet limited or mixed. Wage insurance, for example, is intended to encourage displaced workers to take potentially lower paying positions by topping up their incomes. People who cannot find a new job with equal or better pay receive government funded top-ups for specified periods (such as one year), capped at a particular amount (for example, $10,000). The Brookings Institution has advocated for wage insurance in the US on multiple occasions.[81] To date, however, there has been too little analysis to assess its track record. Wage insurance does have an advantage over other suggestions such as UBI, because it is a more targeted initiative and therefore less costly to taxpayers. There is also insufficient data on overseas pilots of UBI to assess its efficacy. Finland ran a 2-year UBI pilot from 2017 to 2018, with an aim to promote more active participation and provide a stronger incentive to work. Initial findings from the program, where participants were given €560 per month, showed positive effects on health and stress but no improvement in work status or likelihood to find work. A broader investigation will be published in 2020, looking into the drivers of the results and the dynamics at play.[82] Y-Combinator, a US seed accelerator, will start a basic income study this year. It will randomly select individuals across two US states to participate in the study, half will receive $1,000 a month for up to five years; the rest will serve as a control group for comparison.[83]

In Denmark, employers and governments work with unions to maintain the country's 'flexicurity system', a golden triangle which combines active labour market policies with flexible rules for hiring and firing (~25 percent of Danes switch jobs every year), and high levels of benefits for unemployed individuals (up to 90 percent for the lowest paid workers). The active labour market support includes job counselling, including career guidance, training or education to all unemployed individuals, and offers all workers access to numerous vocational training programs.[84]

Accordingly, the New Zealand Government may need to pilot its own interventions to develop a deeper understanding of their potential, and to convince the public of the value of expanding worker transition support. This could provide public agencies with the necessary evidence base to implement an innovative idea if existing welfare models come under strain.

[81] *Earnings insurance for Germany,* Brookings, July 25, 2002; *Wage insurance: A potentially bipartisan way to help the middle class,* Brookings, February 24, 2015; *Four cures for automation anxiety,* Brookings, June 21, 2018; *What is this 'wage insurance' Obama's talking about,* The Atlantic, January 14, 2016.
[82] https://www.weforum.org/agenda/2019/02/the-results-finlands-universal-basic-income-experiment-are-in-is-it-working/
[83] https://basicincome.ycr.org/
[84] McKinsey Global Institute, 'Jobs lost, jobs gained: workforce transitions in a time of automation', December 2017.

To enable a fair comparison between different interventions, the government could leverage advanced analytics and automation technologies.

□ □ □

We are experiencing history in the making. Over the coming years, due to the rapid evolution and deployment of new technologies, the very nature of how we work, interact and live as a nation will fundamentally change. This prompts everyone—individuals, businesses, government, not-for-profits—to take initiative and stay nimble when it comes to seizing the many opportunities, and circumventing the challenges, that automation is expected to present. Managing this type of transition is what New Zealand does well. New Zealand has resiliently overcome, and flourished, during periods of stress in the past, such as the 'turbulent transition' and deregulation of the 1970s and 80s,[85] more recently the global financial crisis, and now it has the opportunity to show its adaptability once more.

Realising the opportunities of automation and navigating its challenges is not something that the government, a single firm or a single individual can do alone. New Zealand needs a clear strategy, the right skills and effective collaboration at all levels, and the determination to take action when needed. Through a coherent, collaborative national approach that ensures we are future-ready and leave no one behind, automation could indeed be the solution to a long-standing productivity problem that propels New Zealand into a new era of prosperity.

[85] Reserve Bank of New Zealand, *The Reserve Bank and New Zealand's Economic History*, 2007.

APPENDIX 1: MCKINSEY GLOBAL INSTITUTE METHODOLOGY

This report draws on the methodology and findings from the January 2017 McKinsey Global Institute (MGI) report, *A Future that Works: Automation, Employment and Productivity*; and the December 2017 report, *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation*. A full methodology of that work is detailed in the reports' technical appendices. This is a brief summary of this methodology and how it was applied to produce the findings in this report.

What the model does:

- This research develops a set of scenarios (necessarily incomplete) to serve as a guide as we anticipate and prepare for the future of work. This research is by no means the final word on this topic, and ongoing research is required.
- These scenarios seek to address some of the questions most frequently raised in public debate. Will there be enough work in the future to maintain full employment, and if so what will that work be? Which occupations will thrive, and which ones will wither? What are the potential implications for skills and wages as machines perform some or all of the activities that humans do now?
- To answer these questions, MGI analysed scenarios for the net impact of automation and future labour demand, which further depict changes in employment, sectors and skills. MGI examined both the potential labour market disruptions from automation and some potential sources of new labour demand that will create jobs.
- MGI findings look into trends that may serve as catalysts of future labour demand and could create demand jobs by 2030. These trends include caring for others in ageing societies; raising energy efficiency and meeting climate challenges; producing goods and services for the expanding consuming class, especially in developing countries; and investing in the technology, infrastructure and buildings needed in all countries.
- MGI analysis offers a static view of the potential labour demand that could be created from the seven trends. It does not factor in supply-demand dynamics and feedback from factors such as changes in wage levels.
- Sizing methodology varies by trend. However, MGI capture direct and indirect jobs that could be created from each of the seven catalysts, take into consideration the decline in hours worked per person, and factor in globalisation of work.
- For three of the seven trends—investment in infrastructure, investment in buildings and investment in renewable energy and energy efficiency—MGI examined two scenarios: a 'trendline' scenario, in which spending follows the observed trends across countries; and a 'step-up' scenario, in which labour demand increases as a result of societal and policy choices. For a fourth trend—the increasing shift to market of services that were long done without remuneration—MGI only examined a step-up scenario that assumes rising female participation in the workforce.
- MGI found that a growing and dynamic economy—in part fuelled by technology itself and its contributions to productivity—would create jobs. These jobs would result from growth in current occupations due to demand, and the creation of new types of occupation that may not have existed before, as has happened historically.

- None of this will happen by itself—it will require businesses and governments to seize opportunities to boost job creation, and labour markets to function well.

What the model does not do:

- The model is not intended to produce forecasts.
- MGI has not made assumptions in its modelling about sector trends, such as the growth of e-commerce in retailing, or the impact of fiscal constraints on public-sector employment.
- MGI does not model changes in work structure, such as the growth of the gig economy, or activities within an occupation that could change as a result of technological innovation.
- MGI analysis of wage trends is based on current average wages for each occupation in each country. Wages are not modelled over time by occupation based on the dynamics of labour supply and demand.
- MGI does not model changing skill requirements for occupations or analyse the 'skill bias' of automation technologies—that is, whether they will enable high-skill workers at the expense of low-skill workers, or vice versa. They are not the cause for the approach, but they can be an effect.

WORK HOURS THAT COULD BE AUTOMATED

The technical potential for automation of the global economy and projected adoption rates are determined by an analysis of the underlying work activities for each occupation, covering 46 countries. This analysis uses databases published by institutions including the World Bank and the US Bureau of Labour Statistics 2014 O*Net database to break down around 800 occupations into more than 2,000 activities, and it determines the performance capabilities needed for each activity based on the way humans currently perform it. The report further breaks down activity into 18 capabilities and assesses their technical automation potential. This framework is informed by academic research, internal expertise and industry experts. The report focuses on 2016–30 and therefore takes the automation adoption percentage through to 2030.

MGI use these findings to size the number of jobs that could be automated by 2030. MGI assume that each hour of work that could be automated will result in proportional job loss. For example, if 10 percent of current work activity hours in an occupation will be automated, then 10 percent of jobs in that occupation will be displaced. It is unclear if this assumption is conservative or aggressive. Based on what has been observed historically, it is expected in many cases that the result of activity automation will be a redistribution of efforts to other existing or new activities. However, it is also possible that with automation, existing work processes could be radically overhauled and reduced in complexity, reducing labour demand even further beyond the automation potential of current activities. MGI have not modelled these countervailing effects.

Jobs lost = (1 – weighted automation potential) × 2030 labour force

To calculate the work hours automated in 2030, MGI multiply the automation adoption percentage by the size of the labour force in 2030. In doing this, MGI assume that the occupation mix of the economy and the underlying work activities in each occupation in 2030 are the same as today. This is a conservative assumption, because in reality MGI would expect that jobs will not be added back with the same occupation mix, and that new jobs will be added in less automatable sectors.

To estimate the size of the 2030 labour force, MGI use population projections from the United Nations, labour force participation projections from the International Labour Organisation and the natural unemployment rate for OECD countries. For countries outside the OECD, MGI use the maximum unemployment rate from either 2007 or 2012 to adjust for the effects of the 2008 Global Financial Crisis on unemployment.

LABOUR DEMAND DRIVERS

The work examines the labour demand created by seven catalysts. MGI selected these seven catalysts from a shortlist of 20, after conducting high-level sizing calculations to estimate their potential to create labour demand by 2030. The seven catalysts are: rising incomes, healthcare and ageing, development and deployment of new technology, infrastructure investment, residential and commercial buildings, energy transitions and efficiency, and marketisation of currently unpaid work. Detailed descriptions of these catalysts and the calculation approach can be found in the technical appendix of the 2017 report, *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation*.

MGI capture direct and indirect jobs that could be created from each catalyst, take into account the decline in hours worked per person, and factor in globalisation of work. The model offers a static view of the potential labour demand that could be created from the seven drivers and does not factor in supply-demand dynamics and feedback from factors such as changes in wage levels. It estimates potential labour demand; whether this potential is captured will depend on the choices and investments made by businesses, policymakers and workers. Beyond the seven drivers, the scenarios do not take into account any sources of labour demand that could play an important role in determining the future of work. MGI do not model entirely new industries and occupations that could exist in the future, in part enabled by technology. (Studies have shown that, on average, 0.5 percent of the workforce have been working in 'new jobs' per year in the past couple of decades.) MGI do not take into account sectoral shifts in industries that are not directly related to automation, such as the rise of e-commerce in retail. MGI also do not model changes in work structure, such as the growth of the 'gig' economy, or activities within an occupation that could change as a result of technological innovation.

APPENDIX 2: INEQUALITY METHODOLOGY

In this report, McKinsey Global Institute (MGI) analysed several scenarios regarding the potential impact of automation trends and reskilling responses on inequality levels in New Zealand.

MGI used a static version of McKinsey's Global Trade Analysis Project (GTAP) computable general equilibrium model with GTAP_v9 dataset. The model was structured using New Zealand and 'Rest of World' as regions, with five labour categories (in descending order by wage):

- Managers and professionals
- Technicians and associate professionals
- Service and retail workers
- Administrative workers and clerks
- Agriculture, trade and manual workers

MGI began with a labour market in equilibrium, with labour supply equal to labour demand, and deviated from this equilibrium by adjusting the labour demand according to six scenarios that vary based on degree of reskilling (ranging from 25 percent to 100 percent). Labour supply was held constant for comparison between scenarios.

Wage rates were indexed to equilibrium wage rates, and wage deviations for each scenario were reported by labour category. First-order deviations from the equilibrium wage rate occur in a general equilibrium model as a result of elasticities in the demand for labour, the supply of labour and the substitution of labour. Second-order effects are also accounted for—for example, as bundles of production and consumption fluctuate given new costs of production and consumption prices.

MGI also calculated a 'Synthetic Gini coefficient'. MGI began by ordering labour categories based on 2016 wages. MGI then calculated the area under the Lorenz Curve using labour category employment instead of percent of population and the wage bill for income. MGI assumed equitable distribution of income within labour categories, so changes to this synthetic Gini are a result of changes to labour categories, rather than changes within.

APPENDIX 3: SKILLS GAP METHODOLOGY

In this report, MGI estimated the potential size of the 'skills gap' in the New Zealand workforce in 2030. For the purpose of this report, the skills gap is the gap between the types and levels of qualification that employers are looking for, and the types and levels of qualification that New Zealanders are graduating with.

To conduct this analysis, MGI built a model drawing upon data from the National Centre for Vocational Education Research (government-funded students' database, 2010 and 2016) and the Department of Education and Training (higher education statistics, 2010 and 2016 student data). Future employer demand was calculated using the McKinsey Global Institute model.

Future worker supply analysis focused on graduate completions only (assuming companies will only hire students who have graduated). The total number of completions included 100 percent of government-funded completions, 100 percent of domestic completions for higher education and 29 percent of international completions for higher education (considering only the share of international students who have been granted work visas in recent times). In 2016, 32,414 graduate work and post-study work visas were granted, out of a total of 110,383 overseas higher education students who completed their degree.

The total number of completions in 2030 was forecast based on expected population growth (using the same 2016–2030 compound annual growth rate).

Based on 2016 completion share by field of education and qualification level, and based on 2003–16 trends, MGI then computed the 2030 completion share by field of education and qualification level. By applying these shares to the total number of completions forecast in 2030, MGI determined the number of completions in 2030 by field of education and qualification level.

Finally, to compute the projected gap in employment by 2030 in terms of supply versus demand, MGI compared the projected share of 2016–30 cumulative graduate supply from education with the projected share of 2016–30 jobs gained (i.e. demand).

APPENDIX 4: NET JOBS BY REGION METHODOLOGY

In this report, jobs gained by region were estimated based on McKinsey Global Institute's (MGI) jobs lost, jobs gained methodology (see Appendix 1). This methodology was applied both at the national level and at the regional level for New Zealand, as detailed below. The analysis is indicative only.

In MGI's models, 2016 employment (2.5 million FTE) is broken down into ~800 granular occupations and scaled consistently to 2030 employment (3.2 million FTE), using the Ministry of Business, Innovation and Employment's 1.8 percent CAGR long-term employment growth forecast.

Displaced jobs at a regional level were modelled by MGI using the methodology described in Appendix 1, based on the 2016 baseline employment by region.

For jobs gained, MGI projected a national number at this detailed occupation level in 2030, but not at a regional level. This equated to 0.7 million jobs gained in known occupations, and an additional 0.2 million jobs gained in new occupations that do not exist yet.

To estimate regional jobs gained, McKinsey first apportioned national jobs gained at a granular occupation level, and then scaled to account for anticipated varied regional growth from migration and new investment.

Initial apportionment of national jobs gained to regions involved taking forecast 2030 baseline employment by region at the 800 granular occupation level, removing jobs displaced due to automation, and arriving at retained jobs by region. Against each of the 800 occupations, the national jobs gained in that occupation were apportioned across the regions, based on their individual share of retained jobs in that occupation in 2030. Each region's initial job gained was the sum of its jobs gained apportionment across its 800 occupations. The estimated new occupations (0.2 million) were then apportioned and added to regions in the same way, resulting in total jobs gained of 0.9 million across New Zealand.

McKinsey then scaled this number to account for regional supply and demand drivers (i.e. migration and new investment). Historical regional employment growth was used as a proxy indicator for future regional employment growth, as estimated regional employment forecasts were not available. To arrive at an adjusted regional cut, the regional totals were scaled by indexing regions' historical growth as against New Zealand's overall historical growth rate for that same period.

Finally, net jobs were calculated by adding these scaled job gains to MGI estimated jobs displaced by region.

Annex Four: Draft Skills Pledge

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

Skills Pledge

We are a company committed to making Aotearoa New Zealand thrive at home and on the world stage. We care deeply about our country, our customers and our colleagues. We will continue to create opportunities for hardworking and innovative people across our country and beyond.

We believe that new technologies offer exciting growth opportunities for New Zealand. We recognise these opportunities can only be realised when we have the talent with the right skills, in the right roles, at the right time. We want as many of our colleagues as possible to have the opportunity to access the tools and skills needed to make their contribution to the future of work and not to feel left behind as technology and innovation march forward.

We commit to offering our colleagues the opportunity to be trained and to learn new skills because we believe it is the single most impactful action we, as business, can take to create new opportunities for all generations of kiwis.

We pledge to:

- Double the number of on-the-job training and reskilling hours we provide by 2025
- Publicly disclose our investment in on-the-job training and reskilling hours annually.

We are proud to play our part in Aotearoa New Zealand flourishing and we remain committed to doing so for a long time to come.

Annex Five: Reform of Vocational Education – background on the proposed reforms

Annex Six: Presentation on Just Transitions

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

MAR 2019

A JUST TRANSITION

TO A LOW EMISSIONS ECONOMY

Purpose of Slidepack

- This slide pack provides background information on the Just Transitions work programme, with a particular focus on the Taranaki Pilot

- We propose the discussion at the BAC meeting on 13 March 2019 focusses on three key issues:

➢ BAC reflections on the Taranaki Roadmap process
➢ BAC's views on the National Summit
➢ How BAC sees the role of industry/business in supporting/planning for workforce transitions

What we mean by a Just Transition

A **Just Transition** is about:

- **Partnering** between government, Māori, business, the workforce, and communities to:
  - Build an understanding of the potential pathways to transform our economy (to one that is low emissions);
  - Identify, create and support new opportunities, new jobs, new skills and new investments that will emerge from the transition; and
  - Better understand how the transition might impact on different communities, regions or sectors and make choices about how we manage these impacts in a just and inclusive way.

Current Focus of Work Programme

Our initial focus will be on three key **themes** which will help build a Just Transition approach into the Government's climate change work:

1. **Partnership**
   - **Effective partnering with Taranaki to assist with the region's transition**
   - New sources of renewable energy (e.g., hydrogen)
2. **Shared vision**
   - **Delivery of a National Just Transition Summit (hosted in Taranaki, 9-10 May 2019)**
3. **Policy coherence and alignment**
   - Ensuring a just transitions lens is applied to key climate change processes, and related policy and operational work
   - Developing an evidence base to better understand the distributional impacts of major climate change policy decisions on – the regions, sectors and communities most likely to be affected by transition-related decisions

1 Partnership

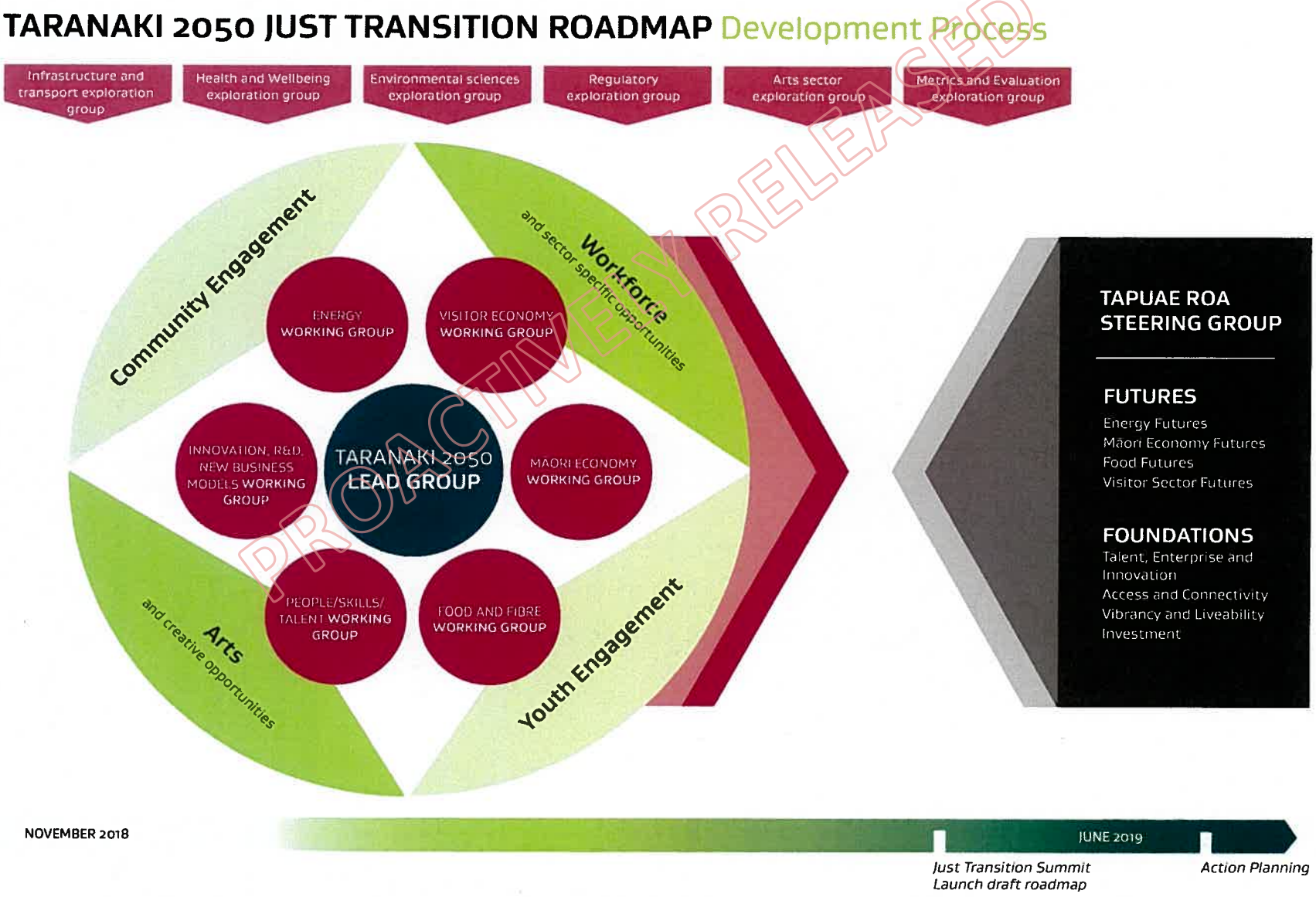
TARANAKI 2050

https://www.youtube.com/watch?v=9cCe9ULJ-KE

Overview of Taranaki Pilot

- Government oil and gas exploration decision, April 2018
- Funded a 'transition manager'; started in August/Sept 2018
- Concept of a Roadmap – co-creating that is first phase of Taranaki's transition to a low emissions economy
- The Roadmap will be a picture, and a report. Substantive draft to be released at the Just Transitions National Summit, May 2019.
- Roadmap will set out current state, desired future state and 'expectations; desires; and promises'
- Will be finalised following the Summit. Then action planning/implementation.

Co-creating the Roadmap



New Sources of Renewable Energy

- The government is actively supporting Taranaki's energy transition, including through PGF funding for:

  - A feasibility study for hydrogen supply infrastructure in the region
  - A business case for a National New Energy Development Centre, to be located in Taranaki
  - A H2 Roadmap, which will be launched on 15 March

- The H2 Taranaki Roadmap report will be an important contribution to developing a Green Hydrogen Vision for the country, which we are currently consulting on.

- We also have an active programme around reducing emissions from process heat.

2 Shared Vision

2019 Just transition summit

Core purpose

- To kick-start a national conversation about what a Just Transition to a low carbon economy is and what it will look like for New Zealand
- Position Taranaki as a leader in the transition
- Inform, inspire and influence New Zealand business, workers and iwi on how they can take practical steps to either start or implement effective and inclusive transition planning

Outcomes

- Participants understand the importance of inclusive transition planning and the opportunity to start the work now
- Participants will be able to take practical steps to either start or implement transition planning (by learning from how others are doing it – success and failure)
- Agreeing to a commitment for action – principles we will use to guide our work

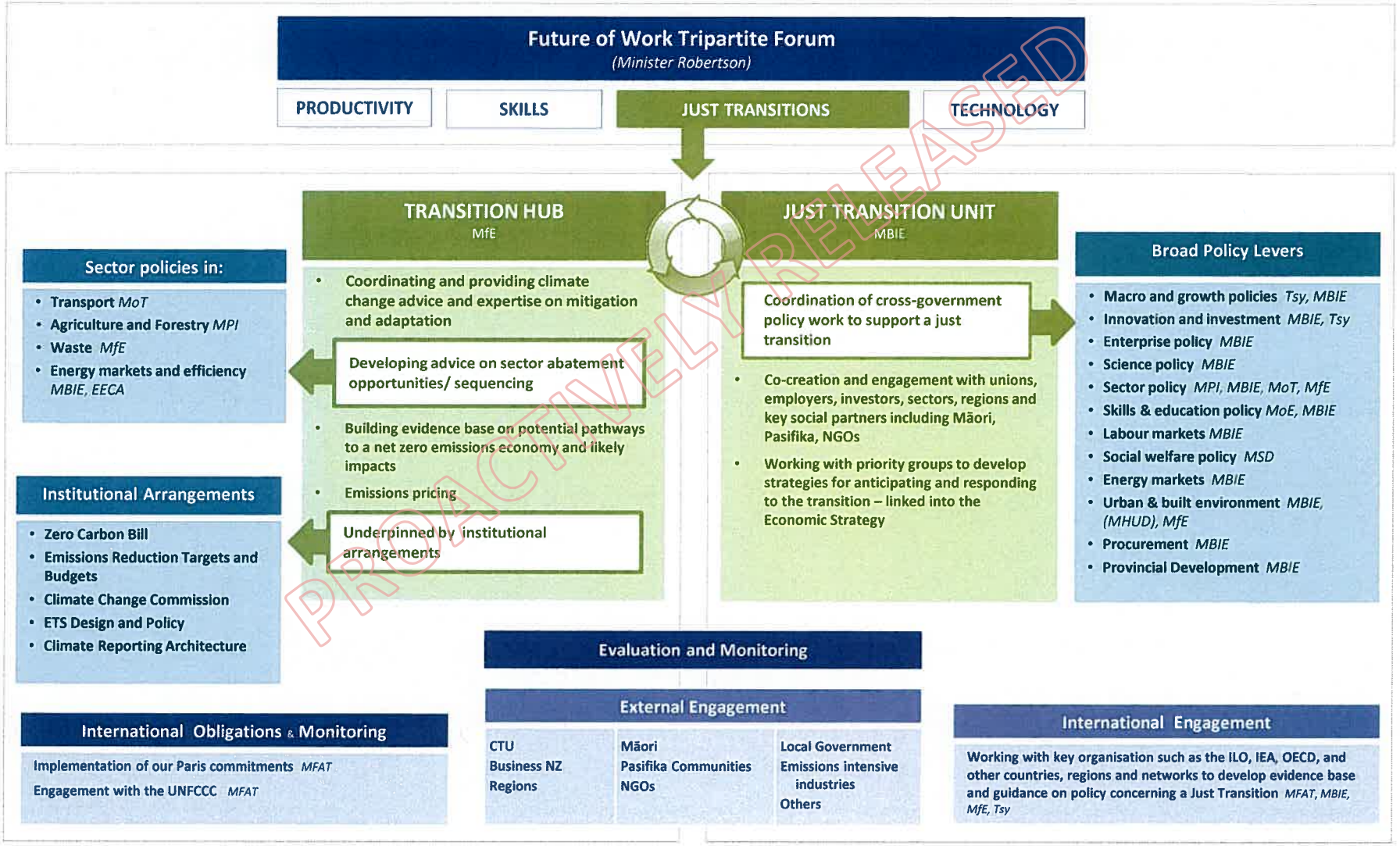
2019 Just transition summit

Day one	
Opening Address	Why we're here, call to action, Government's vision
Youth Panel	Youth vision for Taranaki and New Zealand in 2050
Keynote speech - TBC	A global perspective on the importance of taking action on climate change and how New Zealand can showcase leadership that captures the opportunities.
Taranaki Roadmap	Taranaki presenting their roadmap and the process that they've undertaken
Learnings from international leaders	The whole world is facing these issues. Here are some examples of what international leaders are doing.
Pacific session	The Pacific are the first nations to feel the effects of climate change, we don't have years, action needs to happen now.
How is New Zealand transitioning?	What is New Zealand already doing? What changes are needed? What are the opportunities? Discussion with New Zealand business, iwi and community leaders on what a Just Transition could mean for New Zealand.
Changing the model	How businesses are changing their business models to meet sustainability challenges – and what this means for their stakeholders
Navigating the future of work	What are the future challenges and opportunities for workers? How companies can support their employees and communities in the transition – what does good practice look like?
Wrap up	Bringing it all together – what does this all mean for New Zealand?

Day two	
Welcome back and opening	
Economics of climate change	Economics fit for the 21st century
Navigating the New Environment	Understanding New Zealand's emerging landscape – what does this mean for the transition?
Agriculture	Understanding New Zealand's agricultural landscape in the new environment.
How technology can help us solve the emissions challenge	What is the role of technology and innovation in making a transition to a low emissions economy?
Investing in change	How to navigate the new investment requirements, including raising and repurposing capital.
Emerging opportunities – Hydrogen	Focus on new technology and how it is being developed in New Zealand.
Embracing change – energy session	How the energy sector has embraced community and iwi engagement for new developments and projects. This has meant participating in joint ownership projects, often with minority ownership.
Embracing change – future of food	Navigating a new environment which is challenging how to farm and produce food.
Wrap up	What is happening from here?

3 Policy Coherence and Alignment

Just Transitions is a Core Element of the Future of Work



Just Transitions is embedded in the all-of-government framework for climate change policy and decision-making

Source: MfE
As agreed by Cabinet (March/April 2018)

Workforce transitions will be a key focus

- FoW Narrative is the overarching framework (Minister of Finance)

- Policy work is underway on
  - The government's role in supporting workers in jobs impacted by transitions; and
  - Regional alignment of immigration, education and welfare settings (Minister of Workplace Relations and Safety)

Annex Seven: Background on Phase 2 Review of the Overseas Investment Act – and the Australian Model – Federal Investment Review Bureau

Annex Eight: Background Paper – David McLean – Capital Attraction

Annex Nine: Implementation of the R&D Tax Incentive

Annex Ten: NZTE Presentation – Attracting more high quality investment – for the good of New Zealand

ATTRACTING MORE HIGH QUALITY INVESTMENT – FOR THE GOOD OF NEW ZEALAND

MARCH 2019

NEW ZEALAND

CONTENTS

BAC PROBLEM STATEMENT

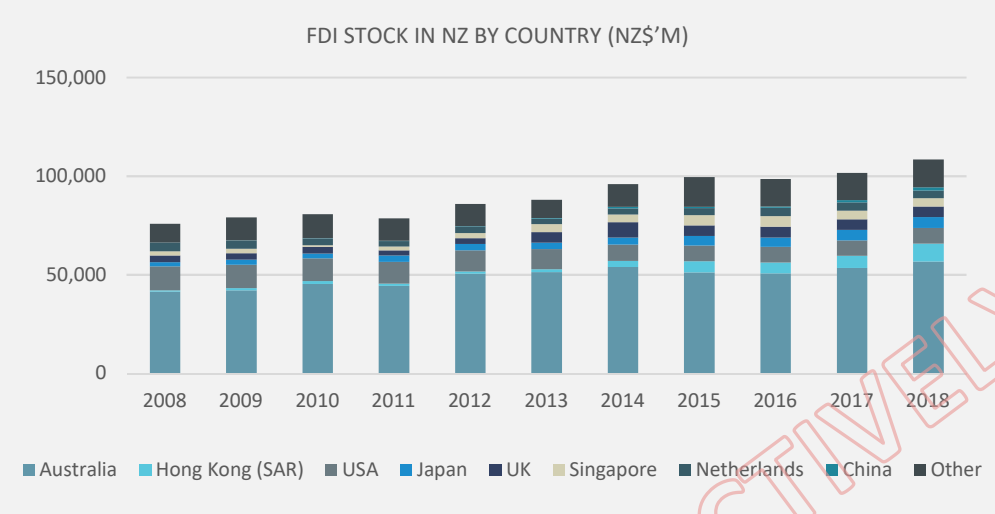
New Zealand needs overseas investment to super-charge our growth and to protect our economic sovereignty, and we need to accelerate and enable ways to make New Zealand much more attractive to high-quality investors.

Our size and isolation make investment challenging, but we do not help ourselves:

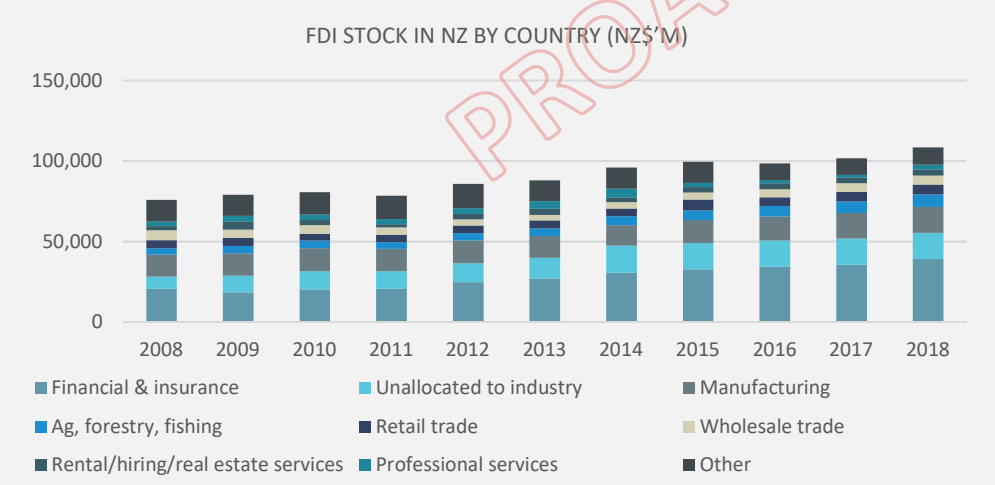
- We lack enough high quality and well curated opportunities of scale
- Our narrative about our position on investment continues to be confused and not transparent
- We continue to hear there is too much bureaucratic red-tape when it comes to investing in New Zealand

…. We also believe that the Venture Capital market is too thin in New Zealand.

STATE OF FDI IN NEW ZEALAND…..SLOWLY RISING



Source: Statistics New Zealand



Source: Statistics New Zealand

1. After 20 years of rapid growth, global capital flows are down sharply and look to have plateaued since 2007

2. In New Zealand FDI stock has been slowly rising year on year. Outside of the financial and insurance industry, the primary sectors receiving FDI flows are manufacturing, agriculture, forestry and fishing and the retail and wholesale trade.

3. Investment Promotion Agencies are being more aggressive and sophisticated in pursuit of FDI in key international markets. EDB Singapore is operating with 600+ employees and IDA Ireland 250+ employees.

PIPELINE OF OPPORTUNITIES

There is an active pipeline of opportunities across New Zealand, however, this work could be scaled and accelerated with additional resources and funding

PIPELINE BY INVESTMENT CATEGORY

Investment category	No. of opportunities	Potential value of investment ($'M)
Growth Stage Companies	109	699
Greenfield	127	6,895
Total	**236**	**7,594**

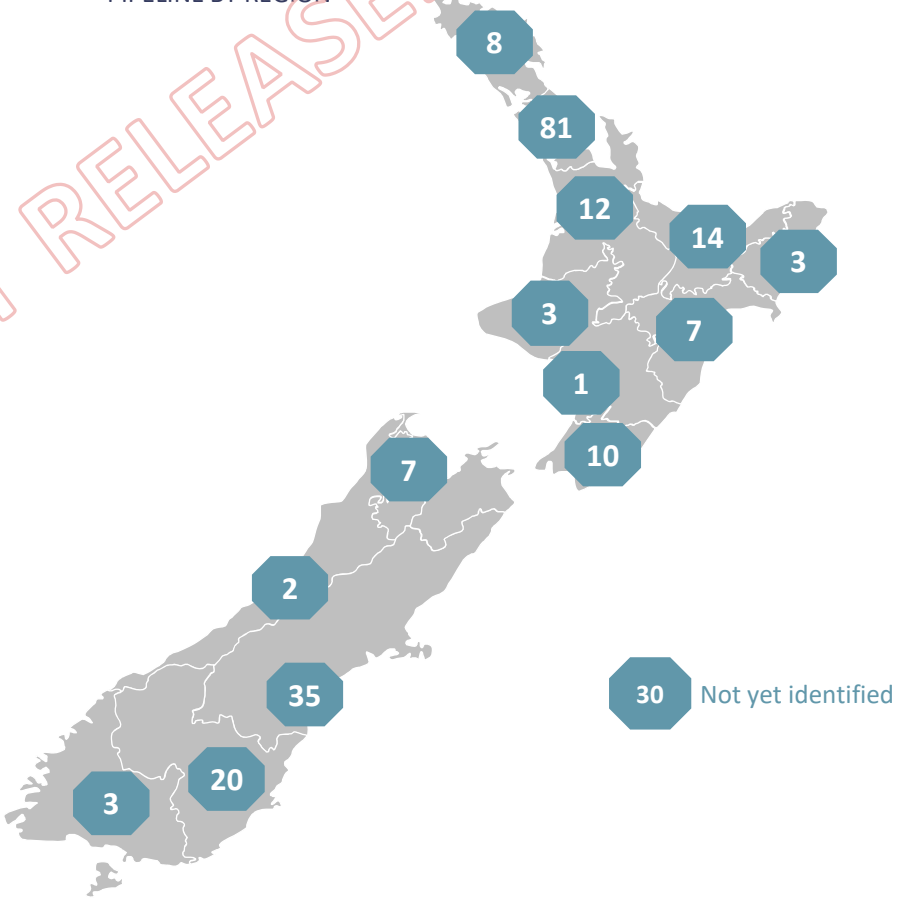
Source: NZTE pipeline

PIPELINE BY SECTORS OF FOCUS

Sectors	No. of opportunities	Potential value of investment ($'M)
Advanced Transportation	6	33
Fibre	8	1,365
Food & Beverage	46	1,057
High Value Manufacturing	38	936
Renewable Energy	7	544
Tech	80	430
Tourism	51	3,229
Total	**236**	**7,594**

Greenfield opportunities have a successful conversion rate of 8% and companies opportunities 25%, which could be improved with scale and acceleration.

PIPELINE BY REGION



NZTE FY17/18 RESULTS (YE Jun 18)

Investment category	No. of opportunties	Investment ($'m)	pDEI ($'m)
Growth Stage Companies	50	155	707
Greenfield	7	645	1,500
Total	**57**	**800**	**2,207**

pDEI (Potential Direct Economic Impact) is the measure employed by NZTE to estimate the impact of an investment on the New Zealand economy. The calculation captures the initial investment/capital expenditure, job creation, additional expenditure on good and services in New Zealand and EBIT retained in New Zealand.

INTERVENTION MECHANISMS THAT WORK

INTERVENTION MECHANISM	EXAMPLE
Deep sector focus (with NZ Inc)	• Project place (Hotel infrastructure) • Project TAP (Tourism attraction project) • Forest processing
Geographic target	• Project Stripes (Joint NZ Inc strategy across North America with a sector focus on fibre, advanced transportation and food & beverage)
Reverse enquiries	• Proliant blood processing • Cobb Vantress Ltd
Maori Collaboration	• Kawerau Dairy and Imanaka • Te Aukaha (capability build)
Showcasing	• Venture from the Cloud • Agritech

Across all these interventions there is a requirement for well defined opportunities, deep research, data procurement and analysis, prospectus and collateral, NZ Inc. approach, political support, road shows/showcasing

OPPORTUNITY TO ACCELERATE

BROADLY

1. CURATION OF NARRATIVE

- Transparency of "Open for Investment"
- Broader promotion of NZ Investment Story collateral

2. BREAKING DOWN OF BARRIERS

- Continued focus on breaking down hurdles for FDI attraction e.g. OIO, NZ Venture Capital gap, available tools

TARGETED

3. TARGETED MARKET AND SECTOR FOCUS

(Sectors: Tech, Food & Beverage, Tourism, Advanced Transportation, Fibre, High Value Manufacturing, Renewable Energy)

1. Research and data
2. Creation of product/opportunities
3. Preparation of collateral and prospectus
4. Marketing and **ROADSHOW**
5. Deal execution
6. Aftercare

… the scale and acceleration required comes at an estimated cost of $3m p.a. for 4 years.

Annex Eleven: Update on a new approach to employer assisted work visas and regional workforce planning

Annex Twelve: Immigration Demand Signals (BAC paper)

Annex Thirteen: Enhancing the effectiveness of government procurement policy

Annex Fourteen: Background Paper – E-invoicing

Annex Fifteen: Background Paper – Family Business and SME Ombudsman (Australia) (BAC paper)

Annex Sixteen: Advice on the PM's Business Scholarships

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

Background Notes

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

UPDATE ON NEW APPROACH TO EMPLOYER-ASSISTED WORK VISAS AND REGIONAL WORKFORCE PLANNING

Date: **March 2019**

Purpose: **For INFORMATION**

Summary

This note provides background and an update on the work that MBIE is undertaking on a new approach to employer-assisted work visas and regional workforce planning. Paul Stocks, MBIE's DCE Labour, Science and Enterprise, will be attending, and is available to speak to this item.

Objectives of the new approach

The Government is focused on achieving the following outcomes:

- employers place more New Zealanders into jobs, which help their businesses to grow and thrive, and result in better jobs for New Zealanders; and
- temporary migrant workers, when they are employed, are not exploited and have wages and conditions that are consistent with New Zealand values.

These outcomes are proposed to be met with a set of proposals to reform the immigration system to:

- strengthen employer standards and improve employer incentives and compliance;
- tailor labour market test to types of skill shortages, sectors and regions;
- trigger integrated responses to demand for temporary migrant workers from the skills/education and welfare/employment systems to improve domestic labour supply; and
- simplify immigration processes.

MBIE's current consultation

It is proposed that the current six employer-assisted temporary work visa categories are unified under one category called the 'employer-assisted temporary work visa.' The new category will be compromised of three 'gates' where checks are completed by INZ with an emphasis on the process being employer-led.

The three gates are:

- The **employer gate** where employers are accredited to employ temporary migrant workers;

- The **job gate** where checks are made to make sure no New Zealander is able to fill the job the employer is recruiting for. The job gate will introduce four job pathways available to employers to recruit temporary migrant workers:
    - Highly paid threshold (*new pathway)*: no labour market test will be needed for workers paid a high remuneration. The threshold will be 150% of the national

median income for premium accredited employers; or 200% for all other employers (the current median income is $25 per hour or $52,000 annually).

- Regionalised skill shortage lists (*better targeted variation of existing features)*: the current skills shortage lists will be recast by region in April 2019 to better reflect skills shortages. Further changes are being considered, including what occupations are on the lists and how these lists will signal a domestic labour market supply response.

- Sector agreements (*new pathway)*: negotiated with sectors that rely heavily on low-mid skilled migrant workers to reduce their reliance on lower skilled migrant workers over time, ensure that employers place more New Zealanders into jobs, improve wages and conditions, and improve productivity. In order to achieve these outcomes, sector agreements will involve a more coordinated approach between the education/skills, welfare and immigration system to address labour shortages and fill these with domestic workers in the first instance. Sector Agreements are proposed to be initially negotiated with the residential aged care and tourism/hospitality sectors commencing in mid-2019.

- Regional labour market test (*better targeted variation of existing features)*: review of the labour market test based on labour market indicators which reflect the relative labour demand/supply challenges facing each region.

- The **migrant gate** where checks are made on a migrant worker's identity, health, character and capability.

Summary of high-level costs and benefits by key stakeholder

	Benefits	**Costs**
Regions	• More New Zealanders trained to meet skill shortages and employed in better jobs in the regions	• Cost of establishing and servicing new regional governance frameworks
Employers (around 16,000)*	• More flexibility and options to make choices to suit preference • More incentives to attract workers through better visa conditions for some employers • More certainty on both skilled and low-skilled labour through pre-approval • Easier processes to navigate • Faster processes to navigate for bulk recruitment (for some employers)	• New fees would be introduced – this would include a transfer of some costs from migrants to employers as well as a more general increase in fees to reflect the uplift in standards and accreditation requirements • Higher standards and new responsibilities would increase upfront administrative costs particularly for employers who are currently just meeting minimum standards
Migrants (53,505)*	• Risk of exploitation is reduced • Easier process to navigate • Can target better employers • Better work conditions and remuneration • More certainty about future visa pathways & options	• Fewer opportunities to work in New Zealand if employers can't meet standards or if employers start replacing migrant workers with local workers

	• Cost of visa is reduced	
Immigration New Zealand	• Easier to incentivise and reward good employers • Easier to target non-compliant employers • Potential reduced role over the long-term	• Transitional costs would be incurred (e.g. operational reviews and disruption to business as usual during the implementation period)
Government agencies – labour market system (MoE, TEC, MSD & MBIE)	• Improved feedback loops to and from INZ regarding immigration drivers, impacts and controls • More opportunities to develop improved local solutions to manage labour and skilled shortages	• More complex coordination particularly in the short-term • May result in cost pressures and changes to the existing work programme

** Based on 2017/18 data*

Update on consultation

- MBIE's consultation continues and submissions are being analysed as they are received – submissions will help inform Cabinet on final decisions and implementation. To date 350 submissions have been received.
- During February MBIE have been engaging with key stakeholders in both regions and sectors across New Zealand. Themes are emerging from consultation are around employer accreditation. Most employers indicate that they support an employer-led application process for temporary migrant workers; regionalisation and labour market planning. Employers indicate that they see a strong need for RSSLs and Sector Agreements, feedback has been largely supportive of the idea, but they want a more detailed understanding of what would be in an agreement.

Regional skills shortage lists

- Existing skills shortage lists will be published on a regional basis in April. MBIE is still working through how regions will be defined to ensure that regions are consistent with how regional activity is organized. MBIE's definition of regions is based on geographic regions, or subsets of them. Skill shortage lists are focused on mid-to-high skilled occupations, rather than the lower-skilled occupations where MBIE's current work is focused.
- MBIE officials are working closely with MSD and MoE, and a group of government DCEs is overseeing the key labour market planning work that is currently being undertaken across government.

Next steps

Date	Activity / milestone
18 March 2019	Public consultation closes
April 2019	Regional skills shortage lists published
June 2019	Final decisions are due to go to Cabinet
August 2019	1. Some changes related to the highly-paid threshold and all changes in other arrangements impacting lower-skilled workers implemented
Negotiated in the second half of 2019 and operational in early 2020	First two sector agreements (Aged care sector and the Tourism and Hospitality sector)
Between April and June 2020	Gateway framework will be fully implemented. Labour market test improvements and regional differentiation could be implemented earlier, depending on consultation and final decisions
Negotiated in the first half of 2020 and operational by the end of 2020	Next two sector agreements (Dairy sector, Road freight and Transport sector)
January 2020	An integrated work programme between the education/skills, welfare/employment and immigration system will be operational

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

SUMMARY OF REFORM PROPOSALS OF VOCATIONAL EDUCATION TRAINING

Date: **March 2019**

Purpose: **For DISCUSSION**

Summary

The Government recently proposed reforms to the Vocational Education and Training (**VET**) sector. There are three overarching proposals; (1) Redefined roles for industry bodies and education providers; (2) Creation of a New Zealand Institute of Skills & Technology through merging the existing 16 Industry Training Providers (**ITPs**); and (3) A unified funding system. Consultation on these proposals is open and will run until 27 March.

Government are seeking general feedback from the Business Advisory Council (**BAC**) on the proposals. Specific advice is also sought on:

- The utility of proposed Industry Standards Bodies (**ISBs**) as a mechanism for industry to have a voice in the provision of skills, or are their better more effective vehicles?
- The role of regional leadership groups in influencing the proposed nationwide Institute of Skills and Technology to respond to local needs. Could existing groups within current institutions form the bases of these regional leadership groups?
- How should these groups be designed and established to provide the greatest regional impact and voice for local business?
- How else might we elevate the status of the VET sector and attract learners into the system?

Background and Challenges

The VET sector focuses on delivering courses with an NZQA level of between three (school leavers) to seven (diploma level but not including degrees). A key feature of the provision of VET is that the learner is developing skills for a defined industry, job or set of occupations. Provision of training in this sector is made up of both long and short courses, in classroom and apprenticeship environments.

The present system of VET was established in 1992 and in many ways is not fit-for-purpose in both its supply of qualified learners or its underlying funding and organisational structure.

Many sectors in the economy face persistent skills shortages in the areas where the VET sector is intended to be crucial part of the talent pipeline.

Structural features of the system drive competition between institutions for students both domestic and international.

There is limited opportunity for employers to influence what skills are being taught resulting in a disconnect between what is taught and what employers expect workers to know. This

disconnect applies to skills both expected in the modern labour market and in the future. In fact, only approximately 10% of employers use the system.

There are several exceptions however, the majority of the 16 ITPs are in financial distress. This is due to declining enrolments, high fixed costs, and funding that does not reflect cost structures. In periods of economic growth, enrolments in ITPs decline as people select employment over education. This financial stress is rapidly reaching a crisis point.

Finally, at a cultural level and to the nation's detriment, there is a perception that vocational education is somehow less valuable than other forms of tertiary study, especially university study.

Three Main Reform Proposals

Redefined roles for industry bodies and education providers

In the proposed reform, employers would be represented by new 'Industry Skills Bodies (ISBs)'. Through these bodies, employers would have a stronger role to contribute to a wider industry voice at a national level focused on long-term goals. Employers would likely maintain connections with one or more ISBs who represent national interests in the skills system.

Education providers would be required to adhere to the relevant skills standards set by the ISBs. This could potentially take the form of an approved nationwide core vocational programme.

ISBs would have new powers to set standards and co-approve programmes with the NZQA for all vocational education and training. They could also administer "capstone" assessments (exit assessments for graduates at the end of programmes), if they chose.

ISBs would take the place of Industry Training Organisations (**ITOs**), but would not purchase provider-based components of work-based training programmes for employers, as ITOs currently do. Instead, education providers would be responsible for delivering and supporting all vocational education and training, whether it took place at a provider's facilities on campus or in a workplace.

Providers would take responsibility for approximately 140,000 trainees and apprentices in addition to the approximately 110,000 vocational education learners they already serve.

ISBs would be industry-led organisations, similar to ITOs. Industry groups would apply to the Minister of Education for recognition. ISBs would collectively set standards for all vocational skill areas and would progressively include areas that presently have no ITO coverage (for example, Information and Communications Technology).

Creation of nationwide New Zealand Institute of Skills & Technology

The Government proposes to create a New Zealand Institute of Skills & Technology (feedback on this name is being sought), functioning through a distributed regional network and bringing together all 16 existing ITPs. One overarching institution will allow for greater and faster improvements to be made across campuses, compared to the current ad-hoc mergers of competing ITPs across New Zealand due to financial strain.

The Government would like the institute to be in operation from 1 January 2020, but a full transition is likely to take longer.

- *Regional Leadership Groups*

Each region would have a Regional Leadership Group to provide leadership on local skill requirements, links with local and regional development strategies, and an industry voice to better connect with education provision in their region.

Courses offered in each region would not be limited by what the local campuses could provide. Instead, each campus will be able to draw on the resources of the whole of the nationwide institute to offer what the region needs. This is designed to enhance and expand regional delivery and responsiveness.

- *Centres of Vocational Excellence*

Centres of Vocational Excellence could be partnerships between regional campuses and relevant Industry Skills Bodies, incentivising high-quality provision and taking a leadership role in applied research. Back office functions could be distributed across current ITP locations where there is already a recognised strength.

A unified funding system

A new funding system would support more work-integrated learning resembling apprenticeships: combining provider and workplace-based learning to best meet the needs of learners and employers, and provide the agility needed for the Future of Work.

This system would be more capable of delivering, for example, incentives for high-quality on-the-job learning and more effectively insulate the sector from its current boom/bust cycle.

Benefits to employers

Employers would have a choice of education providers to work with, rather than having to arrange on-job training via their ITO.

Workplace learning would become part of the core business of vocational education providers, putting them in day-to-day contact with employers. More vocational education could resemble apprenticeships, with education providers and employers working together to help a learner

meet industry skill standards via a mix of work-based learning occurring in the course of doing a job, and structured learning supported by a provider off-job where needed – regardless of whether the learner is employed.

Overall, the reform would mean employers would no longer face the problems associated with a split system between provider-led and ITO-led training.

You could provide input to sector and industry-wide information and advice to help the system make medium and long-term decisions about what's needed, when and where.

You would have new and direct relationships with providers and a seamless and complementary provision of on-the-job and off-the-job training so that employees don't just know the skills to do the job, but also what's expected of them as employees.

A strengthened vocational education system would also be supported through ongoing tertiary Fees Free settings, the Tertiary Education Strategy, the International Education Strategy and the review of NZQA.

Questions for further consideration

A sub-group of BAC members met with Ministry of Education officials in March. The following are outstanding questions the Ministry may wish to consider for further discussion:

1. What is the Vision (i.e. end state) for these changes, and how do they relate to Immigration and Future of Work strategies?
2. How have you assessed business and employer needs from the ITO/ITP sectors? In what ways is the new structure meeting these needs? When there is a clear path to employability there are clear streams of learners (ITOs are a good example of this).
3. How have you assessed student and community views from the loss generating ITP regions? What are the main causes for the issues and how does the new structure seek to solve these issues?
4. How does the new structure seek to solve employers' and learners' current problems of learning while you earn, remote learning agility, internationally benchmarked qualifications and recognised micro credentials as well as learning modern digital and transferable skills needed in today's workforce.
5. How does the new structure seek to solve the problems of employability, skills and employer support of NZ level 3-7 qualifications? How will the new system support employer's needs for skilling, reskilling and upskilling of learners both in and out of current employment? What models are included to incentivise industry use of the vocational providers in this journey to a re-skilled workforce?
6. How does the new structure seek to give employers assurance, structure and quality education that will deliver needed employees that are creative, curious and communicative with digital skills as well as offer employers and employees the options to skill, reskill and upskill dynamically while working?
7. Where do changes to the qualifications framework sit in this vocational review?
8. With so many high performing ITO's and regional ITPs (eg SIT, OIT, MIT, WIT) what lessons for success can be used to share or pilot with the other regions? Do failing ITPs need a distinct structure to support them alone, rather than reforms to the whole sector?

9. How does centralising 16 large vocational organisations propose it can be agile, adaptable and connected to industry, learners and its local community needs to provide the necessary workforce for NZ?
10. ITPs are anchor institutions in some smaller regional centres providing economic activity and also a mission for communities to coalesce around. How will you mitigate the impact of removing decision making from such centres and is there a clear view on the economic implications of this move?

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

PRIME MINISTER'S BUSINESS SCHOLARSHIPS – ADVICE

Date: **March 2019**

Purpose: **For DISCUSSION**

Summary

Government asked BAC to consider the current structure and purpose of the Prime Minister's Business Scholarships. A Workstream of BAC members met in March to discuss following information provided by MBIE.

The members are in agreement with the Problem Definition and Objective of the Prime Minister's Business Scholarships, as outlined by MBIE:

Problem Definition

New Zealand's distance from markets magnifies two effects:

- the small size of New Zealand's domestic market, meaning that firms have to internationalise at an earlier stage in their growth than similar firms in larger countries; and
- New Zealand's lack of large internationally engaged firms that provide a training ground for internationally-minded managers.

Objective

The Scholarships aim to help company owners/managers develop a greater knowledge of best management practices, investigate foreign markets, build international networks, and to implement this knowledge in New Zealand.

Recommendations

The BAC Workstream members have the following recommendations to alter the programme's parameters with a view to improving the effectiveness and reach of the programme:

	Current Situation	**BAC Recommendations**
Who is it for?	Senior managers of New Zealand-based firms to develop a greater knowledge of best management practices, to investigate the characteristics of foreign	Extend to include: • Smaller businesses (e.g. tech start-ups, Icehouse members, etc) • More sector diversity (e.g. arts, science, technology, manufacturing)

	markets, to develop international networks, and to implement this knowledge in New Zealand.	• Criteria for gender and ethnicity (in particular Maori) requirements, along with minimum representation from the regions.
What do they get?	A 50:50 (Government: Nominating Firm) co-funded scholarship, capped at $110,000 to study at a world-class business school of their choice	• Noted that this favours larger companies that can already afford training. • In some instances, a greater contribution (up to 100%) should be funded by government (e.g. for high potential individuals, smaller businesses, start-ups) • Knowledge and networking could also be gained by partnering with organisations such as Kea, who can connect successful applicants to other New Zealanders/Friends of New Zealand in relevant markets, and in relevant positions, companies and sectors. • Government is not making the most of its investment. As part of the 'dividend' successful applicants should be allocated into clusters, who meet before, during and after their education and training. Upon completion, clusters should be given a "wellbeing" problem to solve as reciprocity for the scholarship and present this back to relevant stakeholders.
Criteria	Applicants must: • Apply for a course that runs for at least four weeks, is not available for study in New Zealand, and is relevant to their work • Be nominated by a leader of a New Zealand-based company (eg Chief Executive) • Be a New Zealand citizens or permanent residents • Be employed full-time in a senior role at a	• Nominations should not be limited to leaders of NZ-based companies. • As per previous comments, applicants should be extended to high potential individuals, smaller businesses, start-ups. • As per previous comments, greater diversity across gender and ethnicity (in particular Maori), along with minimum representation from the regions. • Applicants must clearly articulate how this scholarship will excel their contribution to NZ, and it is this point that should be heavily weighted to success for the applicant, rather than citizenship or residency status (necessarily).

	New Zealand-based company registered with the New Zealand Companies Office • Return to this same company after completing the course	
	• The New Zealand-based company must be looking to grow through internationalisation (eg wanting to explore exporting/increase its share of international revenue)	• Extend to include other parties as mentioned above, with global ambitions.
	Alumni	• Develop an Alumni programme which can provide a network of support, reciprocity and incubation for other members and their ideas, and use their stories to drive awareness of the Business Scholarships.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

IMPLEMENTATION OF THE R&D TAX INCENTIVE – PHASE 2 POLICY PROPOSALS

Date: **March 2019**

Purpose: **For DISCUSSION**

The Government's 15% R&D tax incentive will be available from the beginning of businesses 2019/20 income year. Key features of the incentive are at Annex A.

The eventual aim is to make the tax incentive more broadly refundable, to ensure loss making and pre-profit firms are able to benefit from the incentive on an equivalent basis to tax-paying firms.

Agencies will soon be undertaking targeted consultation around the impact of refundability on tax-exempt organisation, loss-making and pre-profit businesses, and businesses that receive a tax-loss cash out, in order to design the most appropriate mechanism, and to ensure a wide range of firms, including pre-profit and those in tax loss, benefit from the incentive. This work comprises phase 2 of the policy development for the tax incentive.

Refundability

Refundability refers to paying out a tax credit if the business has insufficient tax liability. The alternative to refunding the credit is for firms to carry it forward and use it when they become profitable.

Providing a refund ensures that all firms doing R&D receive equal support. For example, an established business can support R&D through profits from its existing products, and therefore immediately benefit from a tax credit. Similarly, a large conglomerate can support a loss-making R&D division through profits from other parts of a business. By contrast, a start-up firm will not have offsetting profits from other activities and – unless its credits are refunded – may not be able to benefit from the tax credit until a much later date, if at all.

The aim is to develop a more comprehensive policy on refundability for the R&D tax scheme. In the interim, support will be provided to loss-making firms through a limited tax credit refundability scheme, starting in the 2019/20 tax year.

Interim measure

The interim measure in 2019/20 uses the same eligibility requirements as the existing "tax loss cash out"[1] scheme. The scheme recognises that R&D intensive start-ups are likely to need successive financing rounds which might dilute shareholding and lead to tax losses being foregone.

The main requirements are:

- At least 20% of a firm's wages are spent on R&D wages

[1] The R&D "tax loss cash out" scheme allows business losses from eligible expenditure associated with R&D to be cashed out instead of being carried forward.

- A cap on the level of eligible R&D expenditure, which in 2019/20 will be $1.8 million. The $1.8m cap will mean a maximum payout of $270,000 per claimant.

Longer term refundability policy

In the longer term, government wants refundability of the tax credit for firms in tax-loss, or with insufficient profit, to be widely available. This supports Government's aim to expand access to R&D support to a wider and more diverse range of firms.

However refundability, by paying out to businesses, rather than reducing the amount of tax they pay, increases the risk of fraud. Therefore in designing a more permanent scheme, the questions is not whether to have refundability, but how to manage the risks associated with it.

The refundability approaches being considered by the Government balances an unrestrained scheme, which has fiscal risks, against a more restrained scheme which does not fundamentally alter the incentives of the scheme.

A proposal under consideration is that:

- The amount of tax credit refunded in any one year not exceeds the amount of PAYE the firm has paid in the same year.
- The maximum tax credit paid out in any year is $5 million.
- Excess credits that are not refunded in a particular year can be carried forward subject to the continuity rules and can be refunded in future years, subject to the same conditions.

This proposal would not restrict refunds for the majority of R&D performers. It would mean that all firms would have some refund and a few less than full refundability. Overall, and compared with most other jurisdictions, this represents a comprehensive approach. However we would like to test with key stakeholders their views on such an approach.

MBIE officials will shortly be in contact with key members of the Business Advisory Council to engage directly on refundability design options. Consultation will be focused on the impact on Māori businesses, tax-exempt organisations, loss-making and pre-profit businesses, and tax loss cash out recipients.

ANNEX A: Main features of the R&D tax incentive

The Government has committed to raising New Zealand's research and development (R&D) expenditure to 2% of GDP over 10 years.

To reach this target more businesses will need to increase their expenditure on R&D. This will be supported through an R&D tax incentive.

The main features of the R&D tax incentive include:

- A credit rate of 15%
- A $120 million cap on eligible expenditure
- A minimum R&D expenditure threshold of $50,000 per year
- A limited form of refunds for the first year of the scheme that will mirror the R&D tax-loss cash-out scheme run by Inland Revenue. A more comprehensive policy will be in place for the second year of the scheme
- A definition of R&D that ensures the credit can be accessed more easily across all sectors, including the technology sector

- The inclusion of state-owned enterprises, industry research cooperatives, levy bodies, and minority-owned subsidiaries of select Crown entities.

The 15% tax credit will be available from the beginning of a business's 2019/20 income year.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

ENHANCING THE EFFECTIVENESS OF GOVERNMENT PROCUREMENT POLICY

Date: **March 2019**

Purpose: **For INFORMATION**

Government spends approximately $40 billion annually on buying goods and services. In October 2018, Government agreed to changes to ensure its procurement was more explicit in supporting New Zealand business and was used to achieve specific outcomes. It agreed to require agencies to target specific contracts for these four outcomes:

Priority outcome	**Contracts/areas to target**	
Increase New Zealand businesses' access to government procurement	Main focus	• ICT services/computer software contracts. • Guidance on using NZ businesses in government procurement. • Targeted initiatives for Māori and Pacific firms and firms in surge regions to better take part in government procurement processes
Increase the size and skill level of the domestic construction sector workforce	Main focus	Construction contracts in excess of $10 million
	Subsequent focus	Other contracts where supply market has skill shortages e.g. forestry
Improve working conditions: • Employment standards • Health & safety	Main focus	Cleaning and security services contracts, forestry contracts
	Subsequent focus	Construction contracts
	Main focus	All contracts (as required by law) but focussed support to lift performance in high risk areas, starting with forestry & construction (the later as part of the construction training priority above)
Support the transition to a net zero emissions economy and assist the government to meet its goal of significant reduction in waste by 2020.	Main focus	Government fleet (emissions) Stationary heat (emissions) Office consumables (waste)
	Subsequent focus	Think timber, office equipment efficiency, energy efficient buildings and sustainable building materials (emissions)

The framework within which government agencies conduct their procurement consists of a combination of principles, rules and good practice guidance. The Government Procurement Rules are being updated to include requirements relating to the priority outcomes. The new Rules will be supplemented with guidance and supporting materials to provide clarity on expectations and practical information on how the outcomes can be achieved.

Further work is also being done to support New Zealand businesses access to procurement by other governments (estimated between US $7.6 and US$11.4 trillion a year) by negotiating comprehensive government procurement provisions in free trade agreements.

Using Government procurement to drive regional growth

The Provincial Development Unit (PDU) is in a unique position to achieve broader outcomes, and to apply the government's broader outcomes framework from its procurement through the Provincial Growth Fund in the regions. These opportunities include:

- Ensuring due consideration of local/regional firms to deliver goods, services and capital works
- Considering procurement proposals that commit to delivering specific local training and employment opportunities (eg through work experience, job placements and apprenticeships) for communities, especially Māori and youth

Examples of where the PDU has used investment to achieve broader outcomes in the regions include the following:

Tairāwhiti Roading Package

The PGF has funded a package of $151.7 million for Tairāwhiti roading to improve the linkages between the region and major transport hubs and markets, and to generate employment. The package will also provide opportunities to incentivise better Māori land utilisation.

The biggest opportunities in this package come from the two and five year capital works work programme that will require significant input from local regional firms, and increased training and employment within the region to meet the labour capacity and capability shortfalls. In fact, part of the package includes a funding of $112m for a five-year pipeline for investigations and implementation in recognition of the labour and skills supply needs in the region.

Rotorua Lakefront Development and Whakarewarewa Forest Park Development Packages

These investment packages aim to achieve multiple outcomes in the regions.

The lakefront package will involve a large procurement contract for a variety of outputs (e.g. roading, carparks and paving; bridge building; boardwalk construction; landscaping etc). This creates an opportunity to use local regional firms and provide training and employment opportunities (e.g. through apprenticeships) for communities, especially Māori and youth. The follow-on private investment anticipated will likely provide jobs in the construction, accommodation, retail and services sectors, improving employment (and wider economic) prospects for the region.

The forestry package will involve a number of specific procurement contracts providing an opportunity to use local firms and potentially providing training and improved employment

opportunities for regional workers, including youth and Māori. The draft funding agreements for the lakefront and forest packages already include a specific outcome where 25% of sustainable jobs are allocated to Rotorua residents, particularly Māori. Work is also underway with the Council to test how broader social outcomes work could be further factored into the procurement process for these packages.

Considerations in using procurement to drive regional growth

There is a need to balance the goals of regional economic development with other procurement considerations, including consistency with New Zealand's World Trade Organisation Obligations, providing flexibility for contract bidders to show innovation in delivery, ensuring ease of monitoring and delivery, and minimising costs.

These considerations have implications for deciding on the suitability of using softer levers (e.g. weightings in assessing bids for particular projects or deliverables) vs harder, more contractual levers (e.g. deliverables that are conditions of contract).

- As an example of the latter, whether (or the extent to which) targets or minima should be included in procurement contracts (for example, in relation to training and apprenticeships/job placements) are some of the many issues to be considered further in how best to leverage broader outcomes for this package.

Government would be keen to discuss with business how it approaches these sorts of considerations in its procurement while thinking about how it can also contribute to regional growth.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

OVERSEAS INVESTMENT ACT REVIEW AND AUSTRALIAN MODEL

Purpose: **For INFORMATION**

Summary
The Overseas Investment Act is presently under review with a Phase 2 consultation beginning in April 2019. Government is seeking BAC input into the review post its March meeting. Information is also provided in this memo on the equivalent Australian system, the Federal Investment Review Board (FIRB).

Phase 1 of the review introduced a screening regime for foreigners seeking to acquire residential land, which took effect in October 2018. It also rationalised the screening regime for and encouraged foreign direct investment (FDI) in forestry.

Phase 2 focuses on attraction of FDI while ensuring investment aligns with national interest. To these ends, the focus is on predictability and transparency of the regime.

The Terms of Reference for the review are **attached.**

The changes are designed to improve the predictability and transparency of the regime. Any discretionary powers will need to balance the need for investor certainty and declining investments against the nation's broader interests.

The review will also consider the:

- Definition of an 'overseas person' in relation to body corporates
- 'Benefits to New Zealand' test, including whether water extraction, Māori cultural values, and tax residency should be considered and whether negative elements of an investment can be considered under that test
- Investor test requirements
- Level of ministerial discretion
- Treatment of land that is sensitive because it adjoins other types of sensitive land.

Treasury will circulate the discussion paper on the review to BAC members as soon as it is released, and on request will meet directly with interested members to discuss.

Australia – Federal Investment Review Board (FIRB)

Australia has a foreign investment approval regime that regulates certain types of acquisitions by 'foreign persons' of equity securities in Australian companies and trusts, and of Australian businesses and Australian real property assets.

The approval regime is administered by the FIRB which examines foreign investment proposals in context of the Foreign Acquisitions and Takeovers Act and associated regulations.

FIRB was setup in 1976 and is a non-statutory advisory body. It issues 'no objection notifications' rather than 'approvals', but notifications are commonly referred to as 'FIRB approvals'.

Responsibility for making decisions on whether to approve foreign investment proposals rests with the Australian Treasurer. The Treasurer has the power to determine on a case-by-case basis whether a proposed transaction will be contrary to the 'national interest'. Note that 'national interest' is not actually defined in the relevant legislation and the Treasurer typically considers the following factors when assessing foreign investment proposals:

- National security;
- Competition;
- Other Australian government policies (including tax);
- Impact on the economy and the community as well as employees; and
- Character of the investor.

The FIRB comprises six part-time members and a full-time executive member. Part-time members are paid and appointed by the Treasurer for five-year terms. The Executive Member position is held by the Division Head of Treasury's Foreign Investment Division - they provide the link between the Board and the Treasury Division, which provides secretariat support to the Board.

Thresholds

The trigger for a non-land application to the FIRB is based on a proposal to acquire an interest of 20 per cent or more (substantial interest) in any business and / or a series of thresholds. Triggers for a land application to the FIRB are based on thresholds. Thresholds in both non-land and land acquisitions depend on buyers being from an FTA partner country and the sector that the asset sits within.

Thresholds: Non-Land Proposals

Investor	Action	Threshold – more than:
From FTA partner countries that have the higher threshold	Acquisitions in non-sensitive businesses	$1,154 million
	Acquisitions in sensitive businesses	$266 million - Sensitive businesses telecommunications; transport; defence, military related industries; encryption / securities technologies / communications systems; extraction uranium or plutonium; or the operation of nuclear facilities.

	Media sector	$0 - For investment in the media sector, a holding of at least five per cent requires notification and prior approval regardless of the value of investment.
	Agribusinesses	For Chile, New Zealand and United States, $1,154 million.
		For Canada, China, Japan, Korea, Mexico and Singapore, $58 million (based on the value of the consideration for the acquisition and the total value of other interests held by the foreign person [with associates] in the entity)
Other investors	Business acquisitions (all sectors)	$266 million
	Media sector	$0 - For investment in the media sector, a holding of at least five per cent requires notification and prior approval regardless of the value of investment.
	Agribusinesses	$58 million (based on the value of the consideration for the acquisition and the total value of other interests held by the foreign person [with associates] in the entity)
Foreign government investors	All direct interests in an Australian entity or Australian business	$0
	Starting a new Australian business	$0

Thresholds: Land Proposals

Investor	Action	Threshold – more than:
All investors	Residential land	$0
Privately owned investors from FTA partner countries that have the higher threshold	Agricultural land	For Chile, New Zealand and United States, $1,154 million
		For Canada, China, Japan, Korea, Mexico and Singapore, $15 million (cumulative)
	Vacant commercial land	$0
	Developed commercial land	$1,154 million
	Mining and production tenements	For Chile, New Zealand and United States, $1,154 million Others, $0
Privately owned investors from non-FTA countries and FTA countries that do not have the higher threshold	Agricultural land	For Thailand, where land is used wholly and exclusively for a primary production business $50 million (otherwise the land is not agricultural land)
		Others $15 million (cumulative)
	Vacant commercial land	$0
	Developed commercial land	$266 million Low threshold land (sensitive land) $58 million - low threshold land includes mines and public infrastructure (for example, an airport or port).
	Mining and production tenements	$0
Foreign government investors	Any interest in land	$0

Process

Once a FIRB application has been lodged there is a statutory time period for the Treasurer to make a decision, and if no decision is made then no further orders can be made.

The general rule is that the Treasurer has 30 days to decide and a further 10 days to notify the applicant. However, there are several ways that this timeframe can be extended:

- If a further information request is made, the approval stops until the request has been satisfied
- The Treasurer may also make an interim order which has the effect of prohibiting a transaction on a temporary basis (up to 90 days), effectively extending the time for the Treasurer to make a final decision; or
- An applicant can request that the time frame be extended. An applicant will usually request an extension when FIRB indicates that it requires further time to assess an application and asks that the applicant consider requesting an extension.

Once approved, the transaction generally needs to be complete within 12 months. It is extremely rare for the Treasurer to make a decision that contravenes the advice from FIRB. Where this has happened, the decision has largely had a political overlay i.e. a public awareness campaign has been run by an advocacy groups to keep the asset in 'Australian hands.'

Generally, FIRB decisions aren't made public but 'high profile' approvals usually make it into the media. In 2015, largely driven by the National Party, new rules were introduced that any water entitlements or agricultural asset purchased by a 'foreign person' must be listed on a register that is made public once a year.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

SMALL BUSINESS AND FAMILY ENTERPRISE OMBUDSMAN (AUSTRALIA)

Date: **March 2019**
Purpose: **For INFORMATION**

Summary
In 2016 Australia created the new position of Small Business and Family Enterprise Ombudsman. As part of the BAC's focus is on unlocking the potential of New Zealand's SMEs, information on the Australian model is included below.

Background
The first Small Business and Family Enterprise Ombudsman was appointed in March 2016 by the Federal Minister for Small Business. Kate Carnell, the former head of Australian Chamber of Commerce and Industry, was appointed to the role for a five-year period.

The Ombudsman office has an allocated budget of $6 million and offers services to small and medium sized enterprises - organisations with less than 100 employees and where revenue is $5,000,000 or less.

The Minister for Small Business can refer matters to the Ombudsman for inquiry. During an inquiry the Ombudsman can summons a person to appear or produce documents.

The Ombudsman reports to the Minister for Small Business via a quarterly report that outlines the research conducted and inquiries made during the quarter; and if the Ombudsman reasonably believes that relevant legislation, policies and practices have had, are having or are likely to have an adverse effect on small businesses or family enterprises.

While the Ombudsman office is an independent government body, structurally it sits within the Department of Jobs and Small Business and can draw on this Department for administrative services.

The Ombudsman is governed by the Australian Small Business and Family Enterprise Ombudsman Act 2015, and broadly has three key roles.

1. Act as an advocate for SMEs / be a conduit to government and a single point of entry. They do this through:
   - Undertaking research and inquiries into legislation, policies and practices affecting small businesses and family enterprises;
   - Providing reports and advice to the Minister on those matters;
   - Contributing to inquiries by others on SME matters;
   - Contributing to developing national strategies on those matters;
   - Reviewing proposals relating to those matters and advising the Minister on them.

   Examples of topics they have investigated include:
   - SME loans and lending practices;

- Access to justice;
- Payment times and practices by big business and government;
- Workplace relations;
- Fintech lending;
- Barriers to investment;
- The Australian Tax Office impact on SME's.

2. Offer an alternate dispute mechanism so SME don't get caught up in lengthy and expensive court cases.

   This is largely 'front end' mediation to try and sort out disputes so they don't go to court. If the initial mediation isn't successful, the Ombudsman then refers the parties to an Alternative Dispute Resolution specialist - the office maintains a list of these. Disputes commonly surround payments, contracts, franchising, leases, product / services quality.

3. Assist SME's with Australian Tax Office (ATO) disputes.

   This is referred to as the "Small Business Concierge Service" and it helps SME's decide if they should make an application to the Administrative Appeals Tribunal (AAT) to review an ATO decision. The AAT is an independent body that reviews administrative decisions made by the Government.

e-Invoicing

One of the key issues that has been identified by SME's is payment times. The Ombudsman has responded to this by:

- Administering a 'National Payments Transparency Register' which highlights Australian businesses that pay small business suppliers in 30 days or less;
- Providing guidelines on how SME's can deal with unpaid invoices;
- Championing the use of e-invoicing.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

IMMIGRATION, VOCATIONAL TRAINING, SMES & THE FUTURE OF WORK: IS THERE A COMMON PIECE MISSING?

From: **Fraser Whineray, Rachel Taulelei**

Purpose: **For INFORMATION**

Background

Within the work programme of the PMBAC there are several work streams that we believe have a common thread: immigration, vocational training, unlocking SMEs and the Future of Work.

We have recently sought to understand immigration processes, data and governance. We believe this is a core piece of the country's human capital settings. However, it appears to be highly opaque and subjective when compared to, for example, the setting of the OCR (financial capital).

We have also looked at immigration in relation to the current policy consultation. This appears to suggest helpful changes to the current mechanisms, although it is not a ground up review and does not deeply relate to other parts of the human capital ecosystem. We will continue to review immigration and report back to the PMBAC on that specific work stream.

Stepping back from immigration specifically, and considering several other work streams listed above, we believe there is a key ingredient lacking. **This is a clear medium and long-term signal from the demand side for human capital** (skills and attributes) against which tertiary education, secondary education (both curriculum and parents/children), re-training; and immigration settings can have a (dynamic) North Star which has ownership from diverse employing organisations, as opposed to something fragmented in the education sector.

We expand on the demand signal in this brief note and believe that it is worth further discussion with the PMBAC either at the March meeting or in between sessions.

How do we know what we need?

The lead-time on a country's human capital has the following timeframes:

- For children, it is extremely long, involving primary, secondary and often tertiary settings. This takes 15+ years before any work experience is involved in the absence of a dual-education system.
- Taking Year 11 to 13 student subject choices and then a further three years of study (including vocational training), this represents a 6+ year lead time. Students with support from their parents backed with real data could be properly informed in these decisions.
- Re-training, including micro-credentialing, can take as little as perhaps 4 weeks to 3 years.
- Immigration is the fastest setting to adjust for near-term human capital. In some instances, it is a result of system shocks (e.g. Christchurch rebuild) or mismanaged

'grow our own' by the entire ecosystem, including employing organisations' failure to systemically participate in that.

The time-frames involved for our own citizens are huge. In a changing labour market, the inability to anticipate changes in needs for human capital can be disastrous; (i) through the lens of a citizen and their wellbeing, (ii) for a country not having the skills required for productive and taxable activity and (iii) the nation's overall competitiveness.

Such long lead times do not suit a three-year election cycle. It is too important for that, and therefore a system that sustains inter-Government, owned in a distributed way by the ecosystem, is substantially more desirable.

If we think about the future demand settings for several key parts of the human capital 'supply chain', we suggest the following as a slightly provocative generic current state.

- Tertiary – may have some in-house views of the future, typically poor (ineffective) engagement with employing organisations and no genuine long-term view. The long-term view is not communicated upstream to secondary schools or to citizens individually or in aggregate. Overwhelming driver is funding incentives, uninformed student demand and faculty bias/inertia.
- ITOs – stronger engagement with organisations than tertiary though not clear where medium-term demand settings are aggregated, or disruption is quantitatively considered resulting in meaningful change to production settings.
- Secondary – foundational knowledge is important – appears to be a drift into skills when this would be far better suited to dual education arrangements – organisations are better at imparting skills, schools should get clear on knowledge that sets children up for this activity. Subject choices by easily influenced teenagers (albeit not by their parents!) who are poorly informed. They have little information about what is sought by organisations at a point in the future when they will likely enter the workforce.
- Polytechnics producing lots of the wrong skills around funding models, uninformed students and not sufficiently engaged with the demand side for dynamic micro-credentialing. Having the funding come from employing organisations for this activity (and deducted from taxes) would force the polytechnics to become customer centric.

None of the institutions above have the capability to undertake substantial ground-up disruptive research linked comprehensively to what is happening in competing countries. Given the lack of deep and public quantitative analysis from MoE and the lack of quantitative engagement with the employing organisations, institutional efforts might be characterised as not much better than 'making this up'. Nothing will materially change unless the incentive structures and information provision to the systems users (citizens) fundamentally change. A majority of employing organisations don't have the ability (and possibly incentives) to do this analysis either and therefore will fail to make adjustments for a rapidly changing future.

The BIM for Labour and Skills (December 2017) highlights how New Zealand human capital is relatively highly skilled yet businesses are struggling to find the skills they want. "New Zealand workers have high levels of skills, but many are mismatched to their jobs". In other words, "a legal graduate flipping burgers". I think this BIM actually highlights, but does not get properly into, why this state of affairs exists.

The BIM also highlights how "a net 22% of businesses also report difficulty finding unskilled labour". This is likely driven by unemployment rates being low and the economic (and overall utility) difference between working and not working providing little incentive. People out of work need sufficient financial support – costs in the economy have become too high through property in particular – which means productivity lifts are desperately needed to lift wages – and the difference between working and not working expanded without harming those out of work. Property costs also need to fall (a different and much larger topic), though we note that higher immigration than necessary exacerbates this property situation. Failure to proactively align the country's human capital can lead to higher immigration than is desirable which puts pressure on domestic property and infrastructure.

In our view, there is no clear and transparent demand signal, owned by the demand side, to provide direction to the entire ecosystem.

What could the demand signal look like?

All companies with more than 25 people should provide, for aggregation, two, five and ten year outlook of what they think they will employ and contract for in terms of jobs/skills/attributes (irrespective of age, gender etc). The collection will need to be simple, annually rolling, digital and secure. Employing organisations can put their money where their mouths are (very little cost involved).

The demand signal could then be aggregated (national, regional and sub-regional) for views of how many employees and/or contractors of what skills/attributes will be required.

There is a lot of noise for satisfying immediate demands, though this is where retraining/immigration settings come in. Over time this should reduce through better 2/5/10 year demand signals and reduced skills mis-match.

Most organisations think that the ecosystem should deliver the majority of their needs and don't spend too much time working through scenarios on the 5-10 year horizons as there is little incentive to do so. But they have abrogated this essential task to an ecosystem (Government institution dominated) which, for the reasons noted, doesn't appear to be coordinated or customer (citizen or employing organisation) centric. They are also largely theoretical in operation.

Bottom-up professional analysis on the future demand state is also essential, though it lacks one key thing: ownership by the demand side. Without that, organisations won't reallocate human and financial capital, and they are allowed to continue to leave it to an oracle who can take care of things for them. We should not give employing organisations that excuse, but hold the research up at a sufficiently detailed level to shock them into thinking about the future differently. They can then participate in it, rather than maintain stasis and subsequent atrophy.

What can this demand signal do?

1. If tertiary, secondary and retraining institutions also forecast what they will produce over 2, 5 and 10 years, **the mismatch to the demand side will be clear**. This promotes debate and interaction;

2. If organisations have a very static view of the future employment needs in 2, 5 and 10 years because they haven't considered the implications of disruptions changing their skill base from comprehensive and informed global research, **the mismatch between the demand side and the professional bottom-up research will be clear.** In many instances, this should hopefully get the many SMEs (who don't have HR 'departments') and larger organisations (potentially in market structures that promote stasis) to become far more strategic in their medium-term business models and human capital requirements thereby enabling a more productive economy and better performing and dynamic entities; and

3. If organisations constantly lean on the short-term immigration lever when their needs (and the need to substitute capital for low cost labour to enable higher wages) were more than capable of being forecast, and resolved through more customer-focused training institutions for both skills and attributes (read attitudes), **then the mis-management of medium-term training requirements will be clear**.

Other Points:

- **Human Capital**
  - In contrast to human capital, employing organisations tend to focus very hard on where the financial capital is coming from (customer revenues/capital/Government funding) over the next 2 to 5 years. Equally we spend a disproportionate amount of time pouring ourselves into the acquisition, management and development of natural capital (sometimes withdrawing severely from the natural capital balance)
  - The term human capital is used here as a generic term to cover the people required for employing organisations, whether businesses, Government, not-for profit. The term human capital should not be misinterpreted as a heartless reference. People doing something that they enjoy, with skills in which they have a particular competence, in successful, sustainable and purposeful organisations and living with dignity in their communities, are very important parts of wellbeing and citizen-centric design for a country. The obligation of a Government is to assist its citizens in making good decisions by harnessing diverse inputs of the ecosystem (not by central dictate). The use of 'capital' helps Governments and employing organisations give it the priority it deserves, at least as much as financial capital appears to receive.

- **Immigration Settings**
  - the immigration settings lack transparency in their derivation which leaves them open to subjective application (read lobbying). Employing organisations can lobby for greater supply whereas unions, for example, can lobby for less. At the time of writing we still haven't got to the bottom of exactly who makes these decisions that are ultimately rubber-stamped by the Minister, or open to further lobbying at that level. It is not clear that these immigration demands flow strongly into the near to medium term educational requirements. We still don't know the names of these very powerful individuals and nor does the country. That is concerning.

  - Immigration considers six regions. Auckland, due to congestion, probably has six regions itself, and many more if you're the primary caregiver, which restricts travel times. The labour market doesn't clear efficiently. We have a less diverse workforce as a result. Citizens don't think of themselves in one of six regions, but a community. Matching supply and demand needs to be better than that.

- **What comes first – the chicken or the egg?** Aside from the employing organisations determining what they believe they need over the near, medium and long-term, there is always the consideration of whether or not employing organisations move to the human capital or vice versa. For the former, look at the number of global MNCs that have set up R&D teams around Bersheva in Israel, where the Israeli Military's 20,000 strong IT force is located. For the latter, it has to be a seriously good proposition to move one's family, particularly if a nasty property price gradient is involved, and particularly if the destination doesn't have good schools for the employee's children. Or as in companies like Straker, they move all of their human capital to allow for better lifestyle, and stickiness to their company.

Either way, it doesn't matter. Between (i) a strong ground up analysis of skills that are required both for and beyond the medium-term when considering larger disruptive drivers and (ii) a dynamic tertiary and micro credentialing educational system that is focused on the employing organisations' collective needs, then the quality of the workforce and therefore the opportunities for employing organisations to locate amongst that human capital will follow. Organisations will have line of sight and confidence in the human capital available. This is highly attractive to financial capital.

PRIME MINISTER'S
BUSINESS ADVISORY COUNCIL

E-INVOICING

Date: **March 2019**

Purpose: **For INFORMATION**

Summary
e-Invoicing is the ability for businesses to exchange business documents (primarily invoices) electronically over a network, no matter what accounting software each business chooses to use.

The documents are shared in a structured data format (XML) removing the need for:

- Sellers to produce a paper or visual representation of an invoice; or
- Buyers to scan, import, or key-in the invoice information into their own accounting system.

In order for this to happen:

- The seller needs to be registered with the e-invoicing network as a sender of e-invoices; and
- The buyer needs to be registered with the e-invoicing network as a receiver of e-invoices.

The software a business uses (e.g. Xero, MYOB, QBO, SAP) registers them with the network on the business's behalf. This means the scope of e-invoicing is business-to-business and business-to-government trading relationships.

Australia, New Zealand and Singapore have opted to use an existing network (the Pan-European Public Procurement On-Line (PEPPOL) network) as the means for e-Invoicing. This network has been around for over ten years and was originally put in place to streamline interactions between European government agencies. However, the network is designed to facilitate the delivery of documents between any two trading parties, and B2B use is growing.

For *suppliers*, e-Invoicing provides faster, more secure document delivery, with confirmation that an invoice has been received and ingested by the customer's accounting system.

For *customers*, it removes the need for a business to enter an accounts payable invoice into their accounting system and the possibility of errors being introduced into that step.

For *governments*, e-invoicing might be the economy-wide solution for faster payment times or better payment terms.

MBIE is well advanced in its e-invoicing strategy and there is potential for collaboration between business sectors to encourage adoption of e-invoicing across the private sector.

Australian context
The area of e-invoicing has become the key agenda item on the Trans-Tasman Single Economic Market (SEM) agenda. The aim is to save $30 billion over 10 years by driving the adoption of e-invoicing by governments and businesses to achieve streamlined payments.

At the last Trans-Tasman Prime Minster meeting (February 2019), the leaders announced the established of an electronic invoicing board (ANZEIB) that will oversee the rollout of e-invoicing technology in both countries. The board will be responsible for setting the direction of e-invoicing – board members will soon be announced with initial meetings planned for March.

Both Australia and New Zealand will also adopt the Pan-European Public Procurement Online Interoperability Framework (PEPPOL) for Trans-Tasman e-invoicing. The framework is currently used across 32 countries in Europe, Asia and North America and provides a common language for various e-invoicing software systems to communicate with one another. Business will be able to access the framework by the end 2019.

In parallel the Australian Taxation Office is establishing a centralised look-up facility for businesses in Australia and New Zealand so they can find the "digital address" of a supplier and send them an invoice directly. They have also conducted a series of pilots to test/ transmit and processing an e-invoice.

Federal government departments have also began progressively introducing e-invoices.

16 October 2018

Reform of the Overseas Investment Act 2005: Terms of Reference

The Associate Minister of Finance, the Honourable David Parker, has requested that the Treasury lead a review of the Overseas Investment Act 2005 (the Act) and the associated Overseas Investment Regulations 2005. This review is to build on the Government's recent amendments to the Act to rationalise the screening regime for forestry assets and certain other profits-à-prendre and generally require overseas persons to obtain consent to acquire residential land.

Purpose

The review's aim, having regard to the Act's purpose "that it is a privilege for overseas persons to own or control sensitive New Zealand assets", is to:

- enable the Government to effectively manage overseas investment; while
- ensuring that the Act operates efficiently and effectively; and
- supporting overseas investment in productive assets.

Context and rationale

Open capital markets and foreign direct investment can offer a number of economic advantages, including enhanced productivity, greater competition, and stronger and more diverse international relationships. However, they can also present risks and may conflict with both our cultural identity and the view held by some New Zealanders that sensitive New Zealand assets should generally be owned and controlled by New Zealanders.

New Zealand has a number of pieces of legislation in place to mitigate against such risks, including the Act. Consistent with the Act's purpose (Section 3) ("that it is a privilege for overseas persons to own or control sensitive New Zealand assets"), the Act provides Ministers with a mechanism to screen investments by overseas persons in sensitive New Zealand assets and, in respect of investments in sensitive land, to ensure that these investments are of benefit to New Zealand.

While the Act is effective in screening investments, there is a perception among some domestic and international stakeholders (particularly the Organisation for Economic Co-Operation and Development) that it is overly restrictive and operates too slowly (particularly in relation to non-controversial transactions). For example, critiques of the Act include that:

- the application process is too complex and that both the criteria for consent and the conditions imposed after receiving consent are more onerous than necessary;
- the level of discretion in the Act both creates unnecessary uncertainty for investors and for decision makers and can result in significant delays in decision making;

- the Act could do more to attract investment to productive sectors of the economy; and

- the Act is not sufficiently clear on the grounds for which a prospective investment in sensitive New Zealand assets would be declined.

Negative perceptions may reduce New Zealand's attractiveness as a foreign investment destination, with potential costs for economic strength and resilience. Given that there was nearly $5 billion in new foreign investment between July 2016 and June 2017 and that processing times for consent applications have considerably reduced over the last 18 months, these risks do not appear to have materialised. However, they are worth monitoring and addressing in light of both: the significant stock of foreign investment in New Zealand ($103.9 billion as at 30 June 2017, including investment in property and other real estate)[1] and the fact that New Zealand receives proportionately lower levels of foreign direct investment than many other small advanced economies.[2]

There is also a counter view that the Act does not sufficiently protect New Zealand's national interest. The Act is much less developed than those in many comparable jurisdictions – including Australia and Canada – in relation to screening investments on a holistic basis to ensure that they are consistent with New Zealand's national interest. For example, under the criteria available under existing consent pathways New Zealand has limited ability:

- to screen investments in significant business assets with monopoly characteristics (for example, some types of infrastructure);

- to consider the importance of New Zealand companies with international distribution systems to New Zealand's broader participation in global value chains; or

- for Ministers to examine factors identified in the Act and regulations, but deemed not relevant to the particular foreign investment by the applicant.

Reviewing the Act will aim to ensure that it strikes the appropriate balance between the need for high-quality investments to be efficiently approved, against:

- the need to restrict investments that may be unproductive, unbeneficial to New Zealand, or otherwise inconsistent with New Zealand's national interest; and

- the view held by some stakeholders that New Zealanders should retain ownership and control of sensitive domestic assets and the Act's purpose "that it is a privilege for overseas persons to own or control New Zealand assets".

Objectives for the review

The review will seek to ensure that New Zealand's screening regime for overseas investment:

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[1] Stats NZ: Global New Zealand International trade, investment, and travel profile Year ended 30 June 2017

[2] Landfall strategy group: Foreign direct investment in small economies (August 2018)

a) provides a clear pathway for consent for investment that supports a productive, inclusive and sustainable economy and creates opportunities for regions and businesses to grow and connect internationally;

b) provides appropriate protection against risks to New Zealand associated with the overseas ownership of sensitive assets, with particular consideration of whether New Zealand's national interest is sufficiently protected; and

c) imposes compliance and administrative costs (as distinct from fees and other direct costs of applying for consent) that are proportionate to the risks associated with overseas investments.

Further, any proposed changes to the regime should:

- improve predictability and transparency around the process and decision making (by Ministers, and where relevant, the Overseas Investment Office) wherever possible; and

- ensure that discretionary powers appropriately balance the need to both create certainty for investors while reserving the ability to decline investments that are not beneficial to New Zealand.

In working to achieve these objectives, the Act is to comply with the Crown's Treaty of Waitangi obligations as well as our international obligations, including Free Trade Agreements and commitments at the World Trade Organisation.

Finally, if national interest considerations were to be more explicitly accounted for when screening investments following the conclusion of this review, the intention is that consent would only be refused on national interest grounds rarely, with the goal of supporting confidence in New Zealand as a foreign investment destination.

Scope

Consistent with the objectives listed above, the review will consider whether the following are appropriate:

1. the definition of 'overseas persons' as it relates to body corporates;

2. the factors underpinning the existing generic "benefits to New Zealand" test (including whether water extraction, Māori cultural values as they relate to the physical and historical characteristics of the relevant sensitive land and tax residency should be among the positive and negative factors considered when assessing applications made under that test);

3. the extent that any 'negative benefits' of a prospective investment can be considered under the "benefits to New Zealand" test and, if necessary, whether there needs to be additional legislative guidance on how 'benefits' and 'negative benefits' should be balanced under that test;

4. the investor test, with particular regard to whether the requirements are appropriate and provide sufficient certainty to applicants;

5. existing levels of Ministerial discretion, with particular regard to whether the appropriate balance is struck between:

    5.1. creating certainty for applicants; and

    5.2. allowing for a more holistic and adequate consideration of the implications of foreign direct investment on New Zealand's national interest (that is, consideration of the need for a 'national interest' test similar to those in place in Australia and Canada, and under consideration in the United Kingdom);

6. the treatment of land adjoining other types of sensitive land (that is, land as described in Table 2 in Schedule 1 of the Act); and

7. any minor technical amendments required to resolve unintended consequences associated with the implementation of the Phase One reforms.

Out of scope

This is not a 'first principles' review of the Act – whether the Act is required is out of scope.

Further, this review will not reconsider whether the sale of sensitive New Zealand assets, irrespective of ownership, to overseas persons is covered by the Act.

The review will not revisit substantive issues associated with the recently passed Overseas Investment Amendment Act (for example, requiring purchases of residential land and forestry rights over sensitive land by overseas persons to be screened).

Constraints

The review is not intended to result in the screening of investments that are not currently screened (or those that will not be screened following the commencement of the Overseas Investment Amendment Act).

The review will only develop policies consistent with New Zealand's international obligations.

Process

Treasury will lead the review in two broad, concurrent, workstreams:

1. **a stronger OIA**, which will consider whether the Act adequately protects New Zealand's national interest;and

2. **a better and more efficient OIA**, under which all other issues within the scope of the review will be considered.

In conducting the review, Treasury will work collaboratively with other agencies and external stakeholders as appropriate. Key government agencies including the Overseas Investment Office, the Ministry of Foreign Affairs and Trade, the Ministry for Business, Innovation and Employment, New Zealand Trade and Enterprise, Te Puni Kōkiri, the Ministry for the Environment, the Office for Crown-Māori Partnership and the

Department of Prime Minister and Cabinet. In addition to consultation within Government, Treasury will consult with users of the regime, Māori and iwi groups, and the general public throughout the review.

It is expected that the Government will commence consultation on options to amend the Act in the first quarter of 2019, with a view to legislating reforms by the middle of 2020.