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Productivity propelled

Accelerating technology adoption and innovation in New Zealand

A report commissioned by 2degrees and prepared by Deloitte Access Economics

Productivity propelled

A series exploring uplifting New Zealand's productivity

Accelerating technology adoption and innovation in New Zealand

Foreword

This report is the first of the **“Productivity Propelled" series.** This series is dedicated to addressing New Zealand's pressing need to uplift productivity to drive sustainable future economic growth.

New Zealand's economy currently faces significant challenges, including demographic shifts with an ageing workforce, reduced global participation, and stagnating productivity growth. As the first two drivers of prosperity are largely out of our control this leaves productivity as the key focus.

In today's rapidly evolving global landscape, the capacity to absorb and integrate technological innovations transforms an economy from a low-wage, low-productivity framework to a high-wage, high-productivity economy. Currently, New Zealand is lagging behind and must embrace an innovative mindset and enhance digital capabilities in order to catch up to the global frontier and remain competitive.

This first report, "Accelerating Technology Adoption & Innovation in New Zealand," highlights that through increases in technology adoption and innovation, New Zealand businesses can catalyse their productivity and move onto a higher growth path.

By doing so, the potential for future economy prosperity is immense. The analysis finds that even if R&D investment was to fall behind, there are still significant dividends to be had by staying at the forefront of newly developed technology and successfully adopting innovative processes and goods and services developed elsewhere.

However, these benefits are not guaranteed. In order to meaningfully lift technology adoption and/or innovation across the economy we must address the barriers to technology adoption and low appetite for R&D investment. This report outlines the pathway forward for New Zealand to turn these potential benefits into reality.

As we embark on this series, we aim to provide actionable insights and strategies to help New Zealand businesses and policymakers drive sustained productivity growth. Each subsequent report will delve deeper into specific areas, building a comprehensive roadmap to uplift New Zealand’s productivity landscape.

Liza Van Der Merwe
Deloitte Access Economics
Lead Partner
Deloitte New Zealand

A word from our supporting partner, 2degrees

2degrees is incredibly proud to sponsor this report. Lifting New Zealand’s productivity is fundamental, and something we live and breathe every day at 2degrees.

We live in challenging times. Taking a moment to look at the economic landscape and ask ourselves how we make New Zealand the best economy we can is time well spent.

This report is designed as a thought starter. It’s designed to arm you, the business leader, with a clear and honest view of where we are at. My challenge to you and NZ Inc as a whole is to take this and ask yourself what you can do to lift productivity in your organisation and sector.

Some of this will need to be government-led, but all of us can do things today that contribute significantly to the health of our nation, and help our communities prosper.

When the team at 2degrees received this report, we posed some tough questions, both to ourselves, and now in turn to you. I think they are valuable thought starters for any business leader, and also to those that govern this amazing country.

1. Can we improve productivity in the way we need to if the same proportion of domestic investment continues to flow into property rather than business? What needs to change?
2. Are our current institutions capable of moving at the likely speed of future technological progress?
3. How do we balance the necessity of investing in large-scale infrastructure right now against the risk that the infrastructural needs of tomorrow will be unrecognisable to today?
4. How do we train more people for the most critical sectors, and keep the people we train?
5. Will AI’s disruption of labour markets require an entirely new economic model? Is the focus on growth as relevant, when that growth doesn’t necessarily feed back to the broader population?

No small task, and not small questions. Please enjoy the provocations this report creates, and let’s all make NZ Inc the powerhouse we know it can be.

Andrew Fairgray
Chief Business Officer
2degrees

1

Where is the New Zealand economy at?

Uplifting productivity is key to improving our economy

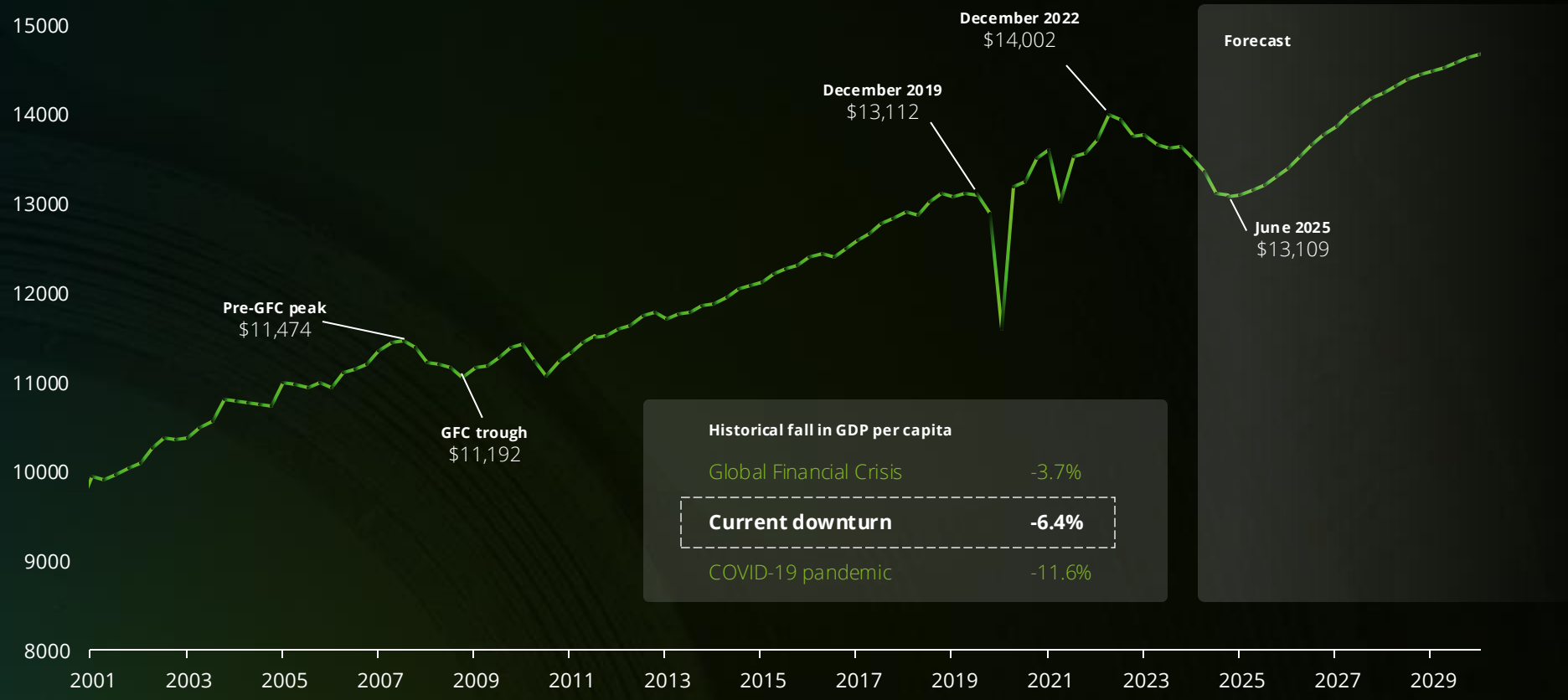
Uncertainty surrounds our current economic trajectory. Challenging economic conditions, as a result of high interest rates and inflation have contributed to the steady decline in New Zealand's GDP per capita from the peak in December 2022.

Deloitte Access Economics forecasts the current downturn to start to ease in June 2025 but results in an overall decline in GDP per capita of 6.4%. The current downturn is worse than that experienced during the Global Financial Crisis.

GDP per capita

(Quarterly expenditure, constant 2009 NZD)

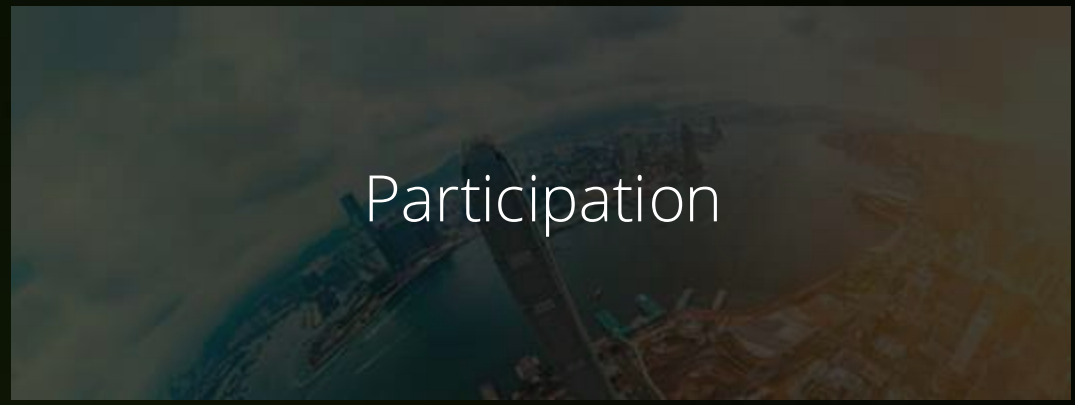
Source: Stats NZ, Deloitte Access Economics



Now is the time to reverse this downward trend in GDP per capita growth and overall prosperity for New Zealand.

There are three factors that contribute to prosperity; population, participation and productivity.

- A bigger share of the working **population** drives prosperity; however, we are seeing a shift in the population demographics. Baby Boomers and Generation X are beginning to retire, or retired already, implying the share of working age population has likely peaked.
- Increased global **participation** over the past few decades has fuelled economic growth and improved living standards. China has grown at a considerable rate, increasing demand for our exports and raising commodity prices. In the current decade, China's growth has slowed, and we see more downward pressure on commodity prices.
- With these two factors moving in the wrong direction, **productivity** remains the key driver to focus on. Looking forward to the 2030s, GDP per capita growth will need to be entirely driven by productivity growth. We must address the productivity challenge now to drive economic growth in the coming decades.



2

The need for a productivity uplift is greater now than ever

As we enter 2025, economic growth trajectory is not a given or constant and productivity is not an accident.

What is productivity and why does it matter?

What is productivity?

As the saying goes, "productivity isn't everything, but in the long-run it is almost everything."

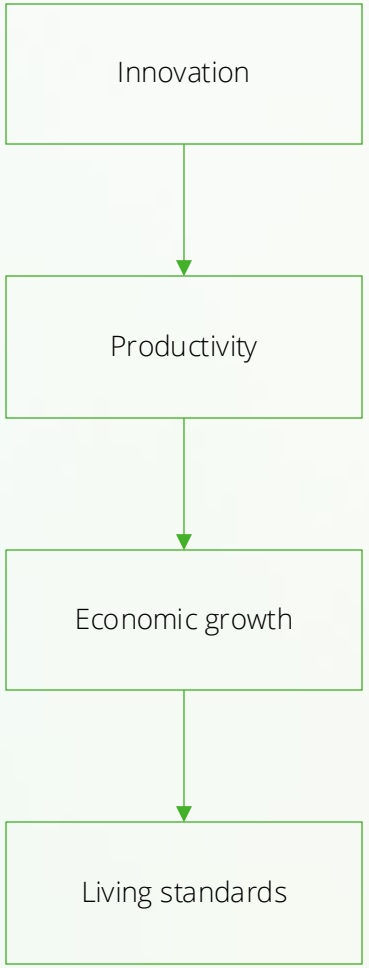
Productivity is a measure of the value of the outputs relative to the cost of the inputs – i.e. how effectively firms convert inputs to outputs.

Why does productivity matter?

Today, almost every second headline seems to refer to productivity. But why?

Productivity growth is crucial for raising economic welfare and growing national income. Productivity improvements drive higher wages for workers and larger profits for firms. As a result, long run productivity growth is closely associated with real wage growth and higher living standards.

In a previous report, Deloitte Access Economics considered how innovation plays a key role to kick-start the process outlined in the figure – where growth in living standards is a dividend of innovation.[1]



The links between investments in innovation and economic outcomes are more complex.

How an economy produces goods and services is typically known as the “production function” by economists. It indicates that output depends on several key factors - the amount of inputs employed, the mix of capital, labour and natural resources, the efficiency in which they are used, and the total factor productivity, which includes effects of factors other than people, capital and natural resources on total output.

Broadly, the factors influencing productivity changes can be classified as either direct improvements to the capital, labour and natural resources inputs of production or intangible changes that generally enhance productivity.

History of technological change highlights the complexity of the process of innovation. It balances experimentation and serendipity with systematic R&D investment. In the short run, innovation diffusion requires significant investment. Over the longer term it drives progress, new knowledge and benefits that far outweigh the initial cost. Ultimately, innovation drives productivity improvements, supporting economic growth.

The need for a productivity uplift is greater now than ever

New Zealand's productivity challenge

New Zealand productivity is low by international standards.

New Zealand ranks 63rd out of 67 countries in terms of productivity and efficiency.[2]
New Zealand labour productivity growth has essentially been flat over the last decade.

From 1993 to 2013, labour productivity grew on average 1.4% per annum but growth slowed to around zero from 2014 until 2019. Despite an uptick in productivity growth through the COVID-19 pandemic, current estimates of labour productivity have fallen back almost to the pre-pandemic levels, with average growth over the past decade now 0.2% per annum.[3]

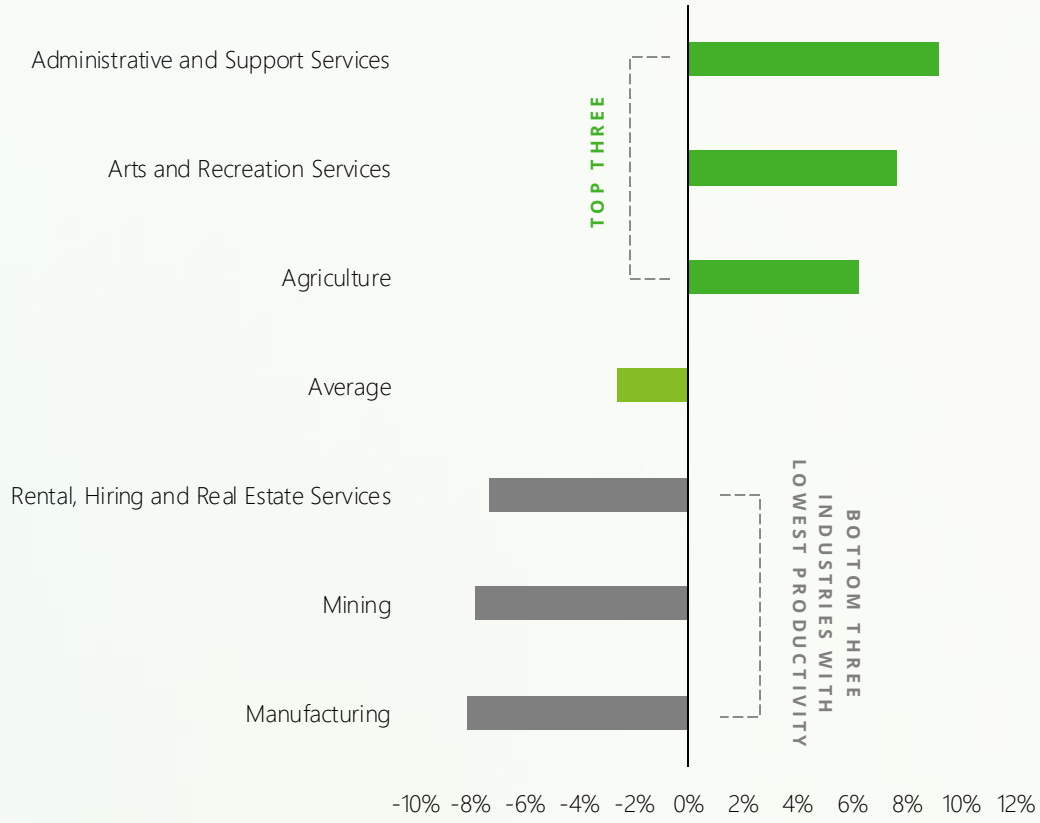
The weakness of national productivity growth can be seen on a sectorial level:

- Manufacturing, mining and real estate services saw the largest declines in multifactor productivity (-8.1%, -7.8% and -7.2% respectively) for the year ended March 2023.
- However, this decline has been slightly offset by increases in productivity growth for administrative services, tourism and agriculture (9.2%, 7.7% and 6.3% respectively).
- Despite some sectors seeing productivity growth overall, there is a larger proportion of sectors facing negative growth.[4]

Multifactor productivity, growth by industry

for the year ended March 2023

Source: StatsNZ



The need for a productivity uplift is greater now than ever

Our productivity outlook

The Treasury has been revising down its labour productivity forecasts in successive economic updates since Budget 2023 due to further evidence that the weak pre-pandemic trend has continued.[5]

Although Budget 2024 did not appear to have any specific allocation of investment towards productivity growth, the Government has since announced several initiatives aimed at boosting productivity:

- A review of New Zealand's overall competition settings, aimed at lifting economy wide productivity through promoting greater competition across the economy.[6]
- Invest New Zealand, which is aimed at attracting foreign direct investment (FDI) into high-potential sectors to boost productivity and innovation.[7]
- Changes to the Active Investor Plus resident visa programme which will help attract high value investment, simplify settings, and incentivise people to invest in 'active' investment classes.[8]
- The international investment summit, highlighting partnership opportunities for overseas investment across our economy.[9]
- Plans to reform the Overseas Investment Act to make it easier for New Zealand businesses to receive new investment and encouraging investment into technologies and boosting productivity and output.[10]

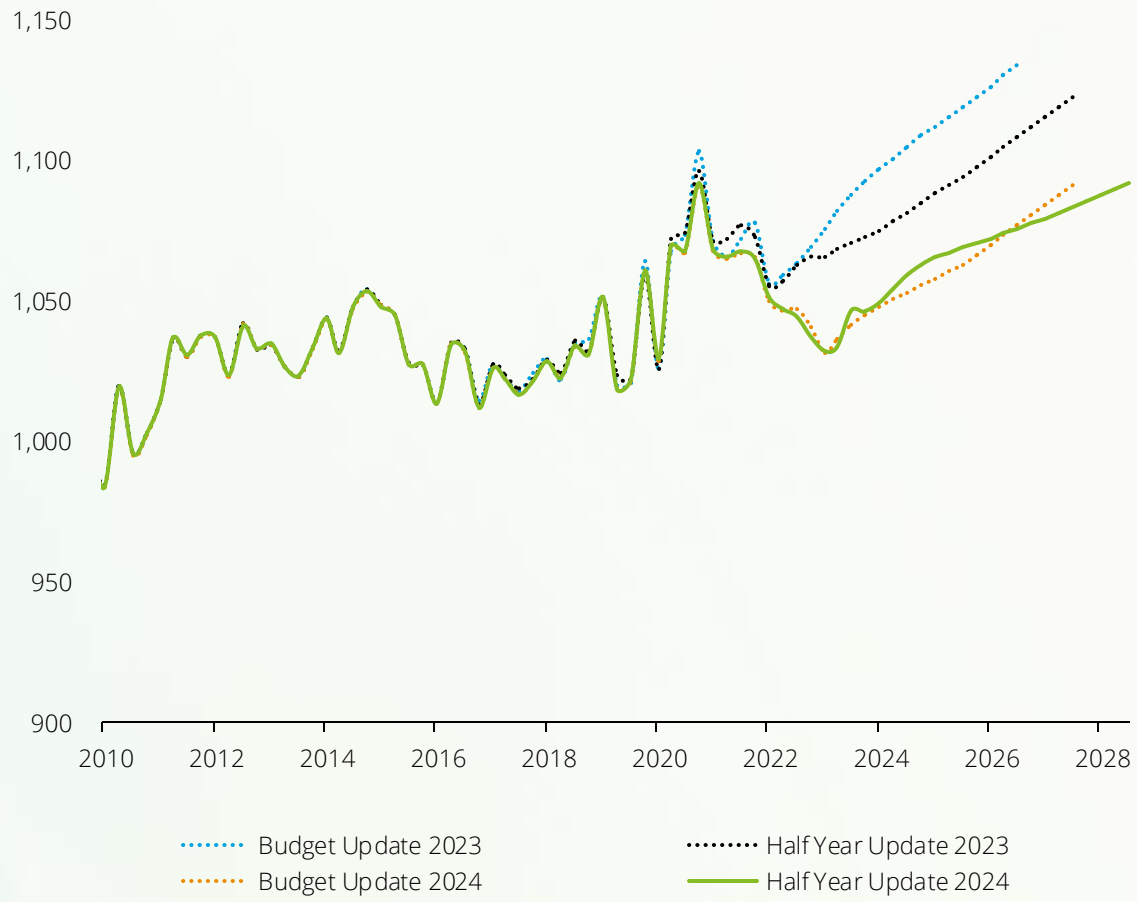
With the upcoming release of Budget 2025, we hope to see further action to resolve our productivity challenge.

Treasury's Half Year Economic and Fiscal Update (HYEFU) forecasts a gradual improvement through 2025 with expected growth of 1.6% growth in labour productivity. When compared to the expected growth of 0.4% for 2024, this is a significant uplift and will be subject to how geopolitical risks and economic uncertainty unfold over the next 12 months.

Quarterly labour productivity

(GDP per hour worked, Index)

Source: Deloitte Access Economics; Statistics New Zealand, The Treasury



3

Solving the productivity equation through uplifting innovation and technology adoption

As a nation, one of our key long-term challenges is productivity growth. One way we can uplift productivity is through innovation and accelerating the adoption of existing technology.

Currently, New Zealand lags considerably behind peer countries when it comes to technology adoption and investment in research and development. If we continue on this path, there is the potential for New Zealand to be left behind and miss out on significant productivity benefits over the next decade.

How innovation and technology adoption drive progress together

Meaningfully lifting productivity growth could be driven by higher technology investment, which comes from two different directions:

Innovation: research and development investment

This direction involves funding dedicated to creative work undertaken on a systematic basis to increase the stock of human knowledge and to devise new applications based upon it.[11]

It serves as a critical link in the value chain, connecting fundamental research to commercialisation and bringing new products and knowledge generation to the market.

Technology adoption

This direction involves spending on activities that enable innovation, defined as a new or improved product or process (or a combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process).[12]

It represents the adoption of technology processes (e.g. the integration of generative AI into standard processes) or goods and services which is new to the business, but not the globe. It is benefit derived from the adoption of technology, rather than the benefits derived from businesses developing new technology.

Research & development (R&D) investment and technology adoption are distinct but have a mutually beneficial relationship.

While R&D is an important input to technology adoption, it is not the only driver, so it's important to consider these concepts separately. R&D investment has been shown to have a persistent, positive impact on multifactor productivity that peaks around five years post-investment. R&D investment brings products to markets that uplift quality of life – not just material living standards. While there is scope for more R&D activity, not all businesses need to engage in cutting-edge research. This motivates the second component of this report – technology adoption, which is essential to drive businesses' efficiency to shape macroeconomic productivity.

By increasing investment in R&D and technology adoption, we can boost productivity across New Zealand's economy, ensuring a sustained rise in real GDP per capita over the next decade. This will lead to higher real incomes, improved living standards, and greater collective resources to tackle systemic challenges such as climate change and the impacts of an ageing population.

4

Uplifting productivity through innovation and technology adoption

What are the barriers?

We have the potential to uplift productivity through innovation, but lag by international comparisons

New Zealand's research and development lag

R&D is critical for innovation and economic growth. The World Economic Forum (WEF) find that: "An economy's success depends on promoting R&D&I [research, development and innovation] so that technology can be adopted and diffused at a lower cost for large, medium and small enterprises."[13]

Technology is increasingly important for business competitiveness, effective government services, and public safety.

As a share of GDP, R&D investment in New Zealand has been underperforming against the OECD median, as shown in the figure above. New Zealand is currently spending 1.4% of GDP on R&D, well below the OECD median of 2.7%.

This gap between New Zealand R&D expenditure and the rest of the OECD is driven by international businesses and markets often having stronger incentives to carry out R&D than our domestic market.[14] We must reverse this trend otherwise New Zealand will continue to lag behind the OECD over the coming decade.

New Zealand has the potential to drive higher productivity growth by increasing research and development investment.

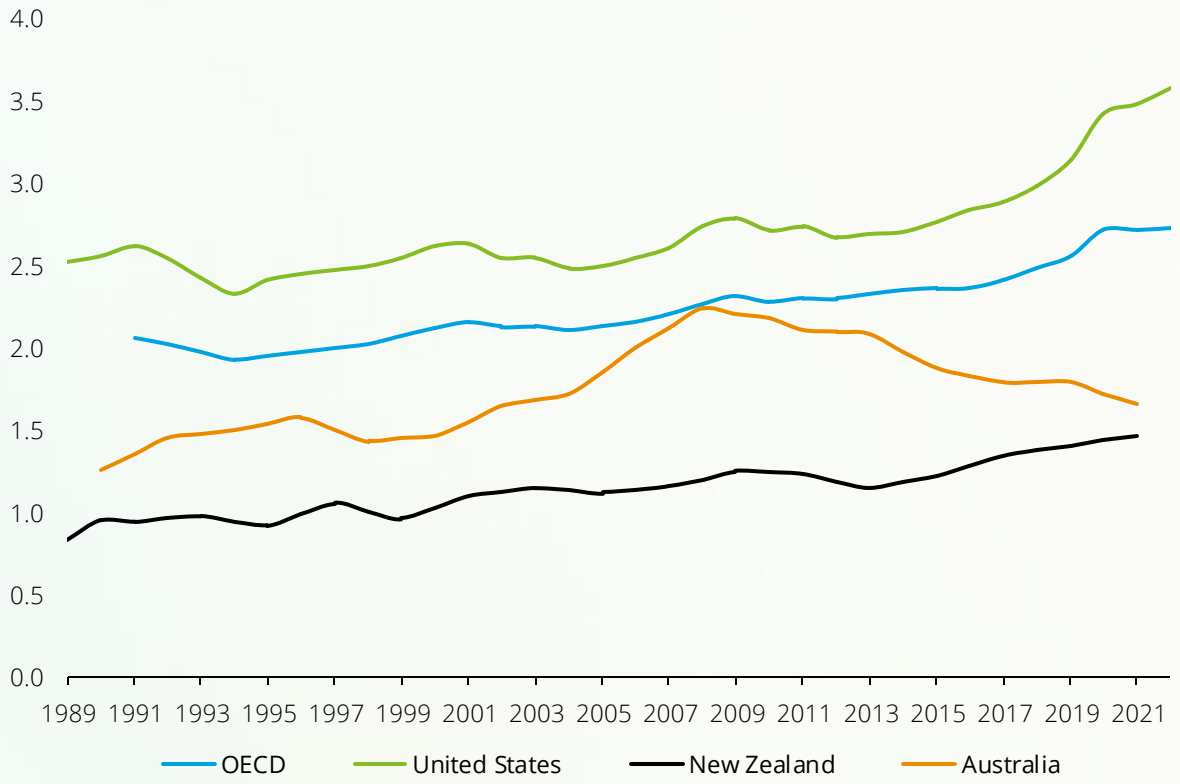
Achieving this will require reversing the lag behind the rest of the OECD in R&D investment across various sectors of the economy.

We have the potential to uplift productivity through innovation, but lag by international comparisons

Annual gross domestic R&D expenditure

Percentage of GDP

Source: OECD, Deloitte Access Economics analysis



We have the potential to improve technology adoption

An uplift in New Zealand's productivity performance could be driven by increased adoption of both well-established and innovative solutions. We currently face relatively low rates of technology adoption due to several barriers. Addressing these barriers could be the key to unlocking substantial productivity benefits.

BARRIERS TO TECHNOLOGY ADOPTION

Skills and workforce shortages

- Many New Zealand companies face a lack of employees with the necessary technological skills, driven by a widening gap between the rising demand for skilled tech workers and the shrinking pool of domestic talent.
- Between 2010 and 2023, domestic training in digital technology declined by 33%.[15]
- From 2012–2022, Government investment and tertiary provision in digital technologies training declined by $22 million.[16]

Lack of business dynamism

- In an economy with high levels of technological change, we would expect business dynamism to be increasing as technology adoption is both a source of, and a response to, business dynamism.
- In New Zealand, indicators of business dynamism, such as start-up rates and self-employment, are stable or declining. Together static and/or slowing productivity growth, business dynamism and reallocation of labour and capital indicate low technological change.[17]

Innovation mindset

- Weak management capability, such as uncertainty, lack of awareness and closed mindsets, mean New Zealand businesses are being left behind.
- Behaviours in small businesses, such as resistance to change, short-term risk aversion over long-term benefits, and difficulty in selecting from the vast range of options due to information uncertainty, limits technology adoption.[18]

Breakdowns in the innovation ecosystem

- Limited collaboration and integration support are the most prominent barriers to technology adoption.
- New Zealand businesses have identified they need additional support in choosing the right digital tools, promoting themselves online, or reducing the cost of digital tools.[19]

Regulatory environment

- Although regulation in New Zealand tends not to restrict specific technologies, it does have the ability to limit the adoption of new technologies.[20]
- Regulation needs to be fit-for-purpose and regularly updated, particularly in relation to megatrends (such as AI) that are shaping the technological landscape.

5

Uplifting productivity through innovation and technology adoption

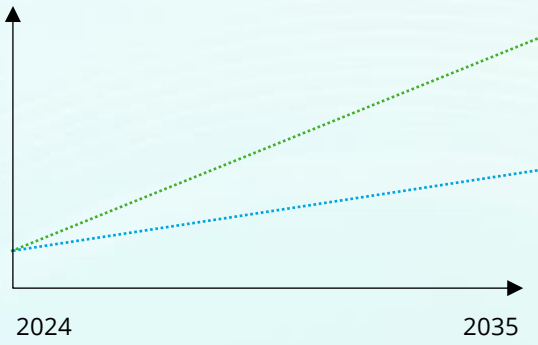
What if we got it right?

Assessing the potential economic benefit if we got it right

Innovation: research and development investment

Deloitte Access Economics has taken a means-first approach to understanding the economic impact of R&D investment and technology adoption. This modelling examines the impact of R&D investment if we lift R&D expenditure to a target of 2.5% of GDP, aiming to be more closely aligned to the current OECD level of 2.7%.

Deloitte Access Economics used its in-house Computable General Equilibrium model to assess the impact of the uplift in R&D investment. The difference in economic outcomes between the uplift and the current R&D expenditure represents the net impact on the New Zealand economy.



Scenario
R&D investment increases to 2.5% of GDP by 2035.

Baseline
No further progress is made to prioritise R&D investment, which stagnates at 1.4% of GDP.

The difference in economic outcomes between the scenario and the baseline represents the net impact of increased R&D investment.

Technology adoption

Technology adoption investment involves integrating technologies that are new to a business, but not necessarily to its industry, country, or the world. This distinguishes it from R&D, which focuses on developing new technology. Technology adoption complements R&D by supporting the commercialisation of research and development efforts.

This analysis defines technology adoption as:

- The adoption of technology processes (e.g. the integration of generative AI into standard processes) or
- Goods and services (e.g. robotics) which are new to the business, but not the globe.

This analysis focuses on the benefits derived from the adoption of existing technology, rather than the benefits derived from businesses developing new technology. Econometric modelling was used to understand the relationship between technological adaption in GDP for New Zealand based on a human-capital Solow-Swan growth model.

Deloitte Access Economics' modelling evaluates the impact of technology adoption on GDP by considering foundational conditions for technological diffusion, such as broadband speeds and internet penetration. This provides a view on how increases in New Zealand's capacity for technology adoption can uplift economic performance.

Unlocking potential with technology adoption and innovation

25 billion + **21** billion = **46** billion

Adding these two scenarios together provides a potential $46 billion incremental benefit to the NZ economy in 2035.

If New Zealand can uplift R&D investment to 2.5% of GDP by 2035 up from a historical average of around 1.4%, this could deliver an additional $25 billion economic dividend for GDP in 2035, compared to a scenario where R&D investment continues to make up 1.4% of GDP.

Across the entire decade to 2035, this would see New Zealand unlock an additional $71 billion to GDP* (in NPV terms).

In this scenario, as industries adopt new technologies, this facilitates the capacity to seize new opportunities for improved competitiveness and growth.

In fact, if technology adoption growth can be uplifted to achieve 3x adoption growth relative to today, this could deliver an additional $21 billion economic benefit for GDP in 2035.

Across the decade, this represents an additional $108 billion to GDP* as a result (in NPV terms).

Deloitte Access Economics has modelled two ambitious scenarios of the potential benefits to be derived from not only an uplift in the development of new technologies but also economy wide adoption of existing technologies. These benefits are not guaranteed; rather they are a representation of what we can achieve if we are able to correctly reprioritise R&D investment and fundamentally shift our economy's mindset around technology adoption. Therefore, these results can be thought of as a target for New Zealand to aim for.

*All dollar figures over the decade to 2035 on this slide represent the Net Present Value from 2024 to 2035, discounted at a 5% discount rate.

The pathway forward

Meaningfully lifting productivity will require an uplift in R&D and accelerating technology adoption. To realise this change, we need business and government to work together and address barriers. In this section, we outline our recommendations.

Ensure R&D tax incentives are fit-for-purpose

Currently there is a disconnect between innovating for productivity gains and R&D in terms of funding. To better align tax incentives to drive productivity growth, we need to ensure that the R&D Tax Incentive (RDTI) is fit-for-purpose in a New Zealand context. This could include measures to:

- Reform the RDTI to better reflect modern forms of R&D.
- Expand the definition of R&D to include innovative technology applications in New Zealand, rather than just scientific breakthroughs.
- Remove barriers to funding access and increasing knowledge-sharing of processes.
- Remove the ineligible technology expenditure exclusion that prevents claimants from including the cost of base technologies from their RDTI claim.

Address barriers to scaling start-ups

To foster productivity uplift and economic growth, it is important to support innovation and entrepreneurship in the start-up sector.

Policy settings must facilitate the scaling of start-ups by encouraging global market reach from early stages of development and leveraging local competitive advantages.

Addressing barriers such as limited access to financing can enable more start-ups to scale, while increasing skills across the economy to drive long-term success.

Policy measures and regulation to increase domestic demand generation for start-ups.

Address innovation funding gaps

The disestablishment of Callaghan Innovation has left a gap in the provision of innovation funding and support services for New Zealand SMEs, particularly in the technology sector.[21] To address this gap, new innovation support services could be established to provide dedicated resources for SMEs helping them to innovate and scale in the New Zealand market.

New Zealand currently faces challenges attracting FDI and skilled talent, which limits the growth potential of the technology sector and broader economic productivity.[22] To uplift innovation and technology adoption, we need to better attract FDI and skilled talent to New Zealand.

Encourage firms to self-monitor and improve productivity

Many firms in New Zealand lack the tools and incentives to effectively monitor and improve their productivity, particularly in terms of integrating new technologies and tools in their operations.[23]

To improve productivity, we need to encourage firms to adopt self-monitoring frameworks that help businesses to assess and improve their digital capabilities.

Endnotes

1. Deloitte Access Economics (2020) Productivity is not an accident. Available: Productivity is not an accident | Deloitte Australia | Economics, COVID-19
2. IMD (2024) Word competitiveness ranking. Available: NZ1page_WCY_2024.pdf
3. The Treasury (2024) Half year economic and fiscal update. Available: Half Year Economic and Fiscal Update 2024 - 17 December 2024
4. Stats NZ (2024) Productivity statistics 1978-2023. Available: Productivity statistics: 1978–2023 | Stats NZ
5. The Treasury (2024) Half year economic and fiscal update. Available: Half Year Economic and Fiscal Update 2024 - 17 December 2024
6. New Zealand Government (2024) Major review of competition to lift productivity. Available: Major review of competition to lift productivity | Beehive.govt.nz
7. New Zealand Government (2025) Invest New Zealand open doors to the world. Available: Invest New Zealand opens doors to the world | Beehive.govt.nz
8. New Zealand Government (2025) Going for growth: Unlocking investment in NZ. Available: Going for Growth: Unlocking investment in NZ | Beehive.govt.nz
9. New Zealand Government (2025) Going for growth: International investment summit to boost infrastructure and jobs. Available: Going for growth: International investment summit to boost infrastructure and jobs | Beehive.govt.nz
10. New Zealand Government (2025) Going for Growth: Overseas investment changes to drive higher wages. Available: Going for Growth: Overseas investment changes to drive higher wages | Beehive.govt.nz
11. OECD (2023) Gross domestic spending on R&D. Available: Gross domestic spending on R&D | OECD
12. OECD (2018) Oslo Manual 2018. Available: Oslo Manual 2018 | OECD
13. World Economic Forum (2018) The Next Economic Growth Engine Scaling Fourth Industrial Revolution Technologies in Production. Available: WEF_Technology_and_Innovation_The_Next_Economic_Growth_Engine.pdf
14. Business NZ (2024) Support for business R&D in New Zealand, and why it is crucial. Available: Memo
15. Workforce Development Council (2024) Te Wao Toi Whānui. Available: Te-Wao-Toi-Whanui-Pages.pdf
16. Workforce Development Council (2024) Te Wao Toi Whānui. Available: Te-Wao-Toi-Whanui-Pages.pdf
17. New Zealand Productivity Commission (2020) Technological change and the future of work. Available: Technological change and the future of work
18. Xero (2021) One step: Behavioural barriers to technology adoption amongst small businesses – and how to overcome them. Available: one-step-report-nov-2021.pdf
19. MBIE (2024) Business Digital Capability Monitor – Annual report. Available: Business digital capability monitor key findings and update — July 2024
20. New Zealand Productivity Commission (2020) Technological change and the future of work. Available: Technological change and the future of work
21. Callaghan Innovation (2025) The Government has announced that Callaghan Innovation is to be disestablished. Available: The Government has announced that Callaghan Innovation is to be disestablished | Callaghan Innovation
22. MBIE (2022) Sector overview - Defining the digital technologies sector. Available: Sector overview | Ministry of Business, Innovation & Employment
23. OECD (2022) Boosting productivity in New Zealand by unleashing digitalization. Available: Boosting productivity in New Zealand by unleashing digitalisation | OECD

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