

MEMO

To Ben Dalton, Chief Operating Officer, Provincial Development Unit, MBIE
From Eilya Torshizian, Principal Economist, NZ Institute of Economic Research (NZIER)¹
Date 7 April 2020
Subject Economic impact of PGF investments in Māori economic development

Our summary

\$495 million investment in Māori economic development (MED) projects:

- Increases overall GDP by \$249.5 million per annum² than would be the case if the investments had not been redirected to the MED projects.
- Generates 1,257 jobs in New Zealand.
- This is equal to an additional \$87 million in the pockets of New Zealand households (an average of \$47 per household)
- The regions that benefit the most are the Bay of Plenty, Northland and Auckland.

The request

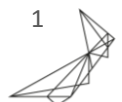
On 27 March 2020, NZIER delivered advice to you on the economic impacts of PGF investment in Māori economic development. The investment total that was originally modelled was \$424 million - based on a PDU supplied data set of approved investments to end January 2020. At your request, we have completed an additional analysis adding in the full allocation of PGF direct Māori economic development investments. The new dataset included \$67 million of projected investment into Whenua Māori projects and \$4 million of projected investment into Historic Sites. This brings the total investment to \$495 million and now includes the full \$100 million Whenua Māori and the full \$20 million Historic Sites allocations.

The updated summary of economic impacts is shown below, with the attached Technical Appendices showing outcomes by region and by industry sector.

The PGF investments in MED projects will increase interactions between economic agents (both households and businesses) in the areas of investment and with the rest of the region(s). With increases in employment, more outputs will be produced in the economy, which will increase the revenue for the businesses and the disposable income of households. The interactions across a wide range of industries and the impacts on

¹ This memo was quality approved by Todd Kriebel. The assistance of the CGE modeller, Dr Milad Maralani, Data specialist, Eugene Isack, and Information specialist, Sarah Spring, are gratefully acknowledged.

² That means the MED PGF investments will increase the size of the economy by \$249.5 million and will keep maintaining that size of the economy for each year.



households are captured using NZIER's comprehensive model of New Zealand's regions' economies – The Enormous Region Model (TERM).³

In our assessment of the impact of MED PGF investments, we account for the reallocation of investments away from industries that would have received them based on their experienced rate of return on capital. The reason for the added value from the MED PGF projects is that the investments will increase the return on the combination of factors of production, including labour, capital and land, when more resources become available to them by the PGF funds. This suggests **potential higher returns on investments in the regions and industries at a lower stage of development, such as those benefiting from the MED projects**. We present the results of our assessment in this memo.

\$495 million investment in direct Māori economic development projects

The total approved and allocated investment in direct MED projects to 31 January 2020 was \$495 million. This is the figure that has been used for our modelling. It is a snapshot of approved and allocated PGF investment at one point in time. Figure 1 illustrates the distribution of the approved funds across different regions and industries. The focus of our assessment is on the impact of direct MED projects, which contribute to Māori economic development through investment in projects delivered by, or in partnership with, Māori groups or entities; and through projects where Māori people, communities, or assets are a primary focus for the service or infrastructure development.

In addition, there will be a significant amount of PGF investment that may indirectly contribute to Māori economic development. Assessing the indirect impacts of PGF investments on Māori economic development, and the impact of PGF investments generally is out of scope of this assessment.

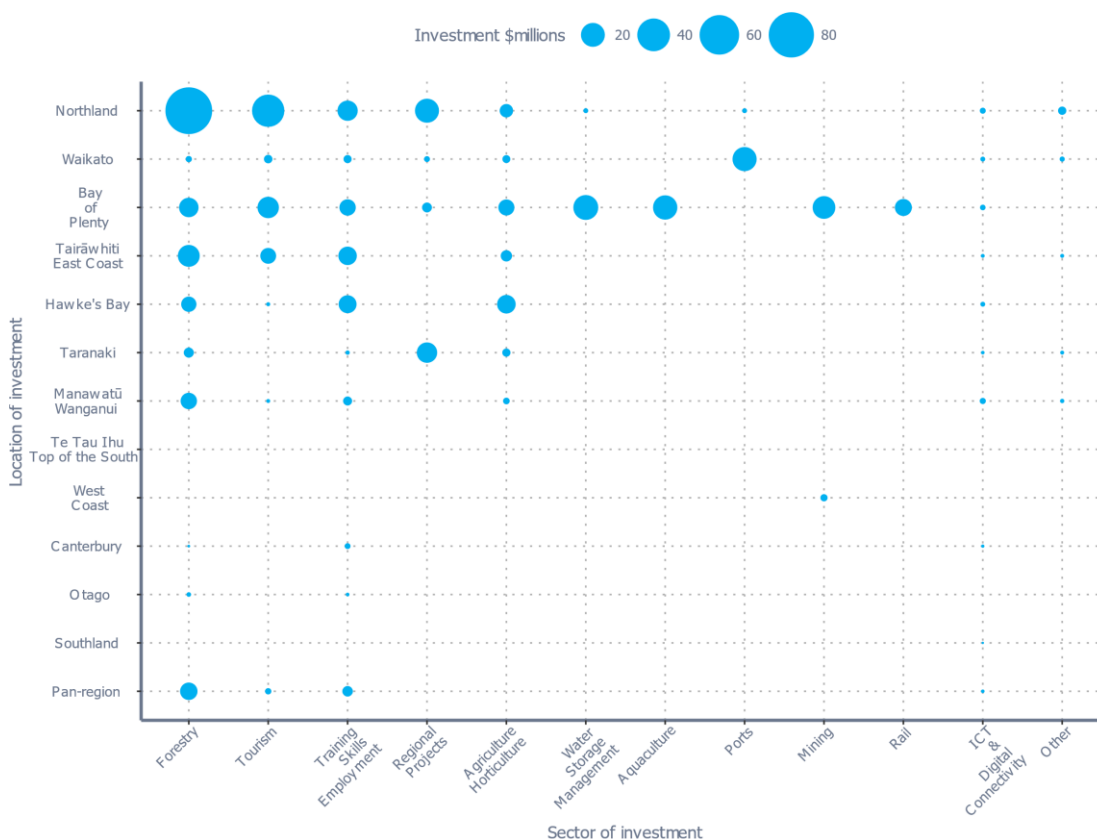
In our assessment of the impact on the horticulture sector, we have assumed 0.5% improvement in (total factor) productivity. Further investment in a research and development programme, for example, will likely provide the sector with the required improvements in productivity.

³ Our analysis was based on data to end Jan 2020 and model applied early March 2020. There will be potential changes in the combination of PGF investments in MED projects and the economic conditions from COVID-19 that could be assessed in a future analysis.



Figure 1 The planned PGF investments in Māori economic development projects

By region and by industry sector, \$ millions



Source: NZIER, 2020

National GDP will be \$249.5 million bigger

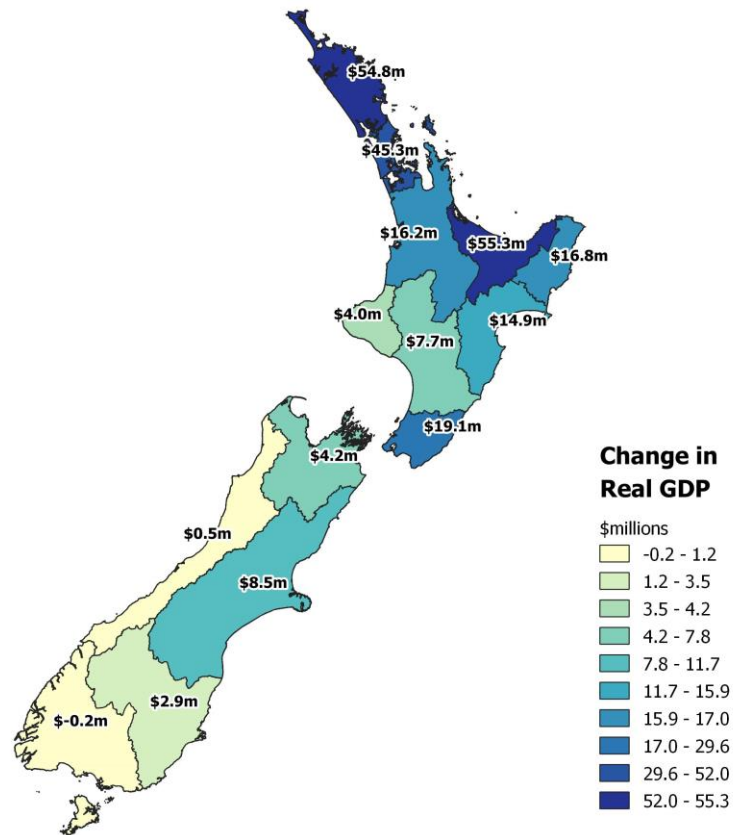
The MED projects' funds will lead to a \$249.5 million increase in the size of the economy (per year). That means the MED PGF investments will increase the size of the economy by \$249.5 million and will keep maintaining that size of the economy for each year.⁴ This effect will be felt by industries after the MED projects become fully operative and connected to other relevant economic activities over time.

The economy of the Northland region will benefit by \$54.8 million. The Bay of Plenty economy will become \$55.3 million bigger. The Auckland region's economy will benefit from the increase in activities of larger relevant industries that will contribute to other regions' economic growth, particularly the construction sector.

Figures 2 and 3 show the GDP impacts from the PGF MED investments by region and by industry sector.

⁴ This does not mean that the economy will grow by \$202 million per year, but rather that once a new equilibrium is reached following the investments, the CGE model shows that the economy will have grown by \$202 million as a result of the MED PGF investments and will keep maintaining that size of the economy for the following years

Figure 2 Significant impact on regional economic activities (regional GDP)



Source: NZIER, 2020

Figure 3 Change in GDP, by region and by industry sector (\$ millions)

	Construction	Property services	Forestry	Business services	Education, heritage, and hospitals	IT Services	Horticulture	Air and sea transport
Northland	26.7	14.8	17.7	5.2	-0.6	0.0	0.7	0.0
Waikato	16.0	6.6	2.6	3.0	1.9	0.2	2.5	0.0
Bay of Plenty	41.9	17.6	3.5	10.2	0.7	0.0	1.8	0.0
Tairāwhiti	11.0	3.6	2.5	2.2	-0.6	0.0	0.8	0.0
East Coast	7.6	4.3	1.8	1.9	0.5	0.0	4.7	-0.1
Hawke's Bay	10.5	3.2	0.5	1.4	0.7	0.0	0.4	-0.1
Taranaki	6.1	2.7	1.6	1.0	0.6	0.0	1.3	-0.1
Manawatu	2.9	1.4	1.0	0.3	0.7	0.0	3.2	-0.5
Wanganui	1.8	0.3	0.3	0.0	0.2	0.0	0.0	0.0
Te Tau Ihu	1.8	0.3	0.3	0.0	0.2	0.0	0.0	0.0
Top of the South	27.9	5.6	2.4	0.0	1.4	0.3	2.8	-2.7
West Coast	5.0	1.9	0.6	0.0	0.2	0.0	2.6	-0.3
Canterbury	3.0	0.8	0.6	0.4	0.4	0.0	0.9	-0.1
Otago	43.2	29.0	6.0	10.4	8.4	2.5	2.6	-11.4
Southland								
Pan-region								

Source: NZIER, 2020



With changes in economic conditions resulting from opportunities generated by MED PGF investments, the labour force (and households) will migrate across the regions. **The total impact will be an additional 1,257 jobs for New Zealand economy.**⁵ This suggests the maximum employment increase for the forestry sector in Northland will be 5.5%. Figure 4 shows modelling of these new jobs by percentage change by region by industry sector.

Many projects do not start and establish in the regions because of a lack of experienced workers. The shallowness of the labour pool is a significant factor in the regions that means the marginal impact of a person in the regions can be greater for a regional local economy than in an urban economy.⁶

Figure 4 The impact on employment

By region and by industry (% change)

Northland	2.29	0.55	5.47	1.32	-0.28	-0.29	0.41	-0.09
Waikato	0.37	0.07	0.65	0.17	0.00	0.03	0.72	-0.03
Bay of Plenty	1.45	0.34	1.08	0.71	-0.12	-0.12	0.43	-0.09
Tairāwhiti East Coast	3.34	0.64	1.66	1.68	-0.42	-0.71	0.46	-0.25
Hawke's Bay	0.64	0.16	1.09	0.26	-0.04	-0.03	0.51	-0.15
Taranaki	0.51	0.09	2.09	0.20	0.00	0.00	0.92	-0.13
Manawatu Wanganui	0.32	0.06	1.47	0.13	-0.02	0.00	0.93	-0.13
Te Tau Ihu Top of the South	0.38	0.07	1.26	0.04	0.06	0.11	1.00	-0.32
West Coast	0.28	0.04	0.79	-0.03	0.01	0.03	1.33	-0.11
Canterbury	0.22	0.03	1.52	-0.03	-0.01	0.00	0.71	-0.19
Otago	0.17	0.03	0.76	-0.04	-0.02	0.02	0.61	-0.11
Southland	0.31	0.04	0.88	0.15	0.03	0.06	1.11	-0.08
Pan-region	0.36	0.10	3.25	0.00	-0.02	0.00	1.01	-0.31
	Construction	Property services	Forestry	Business services	Education, heritage, and hospitals	IT Services	Horticulture	Air and sea transport

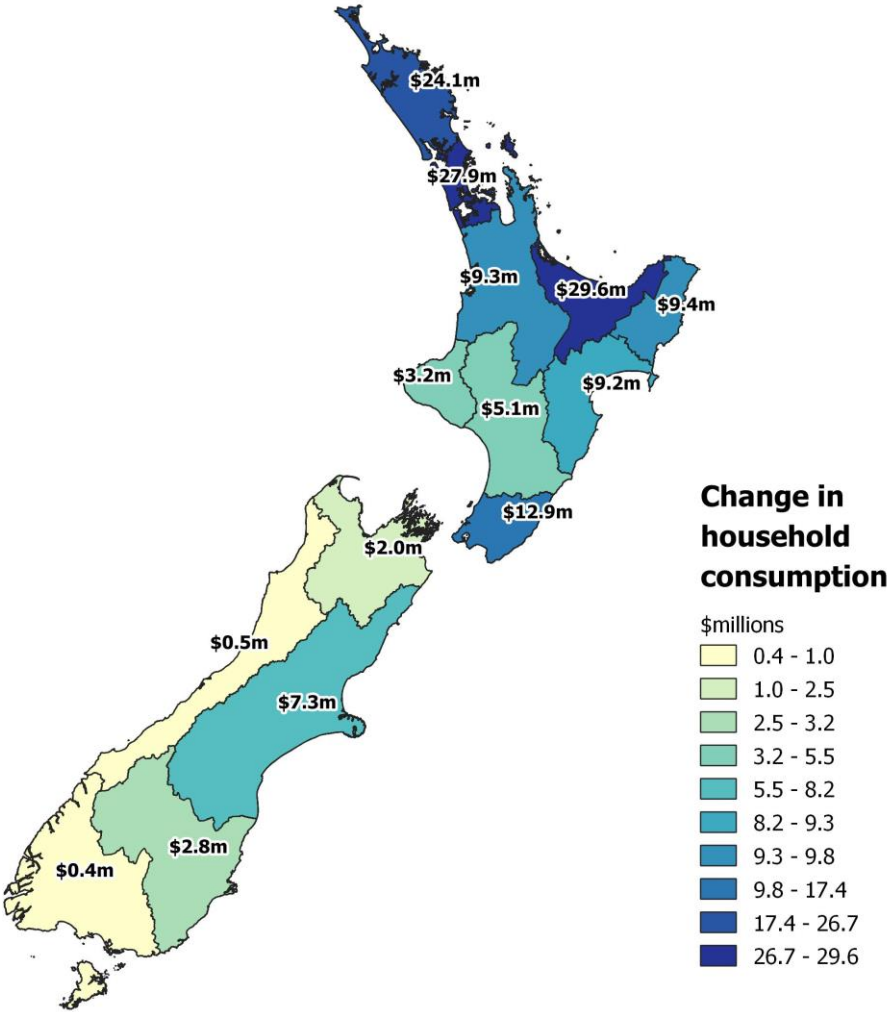
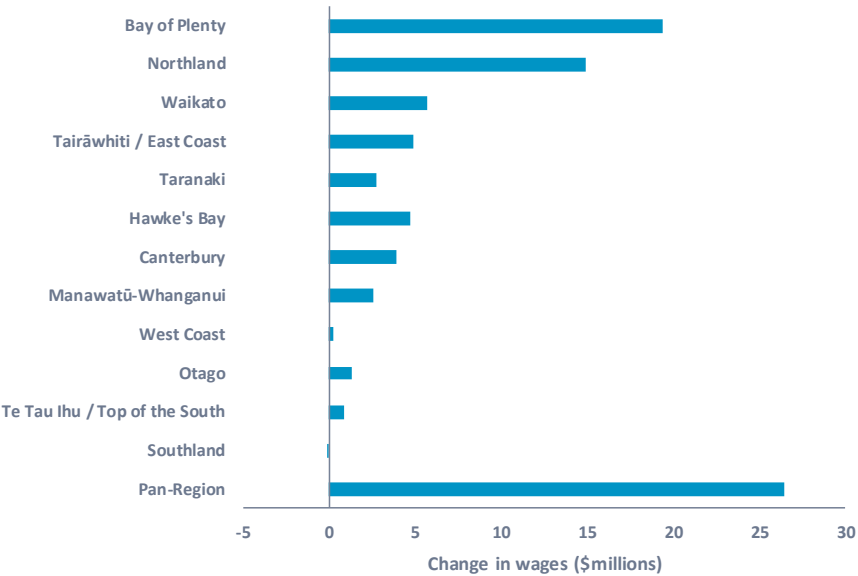
Source: NZIER, 2020

With the opportunities provided by the MED PGF investments, households' incomes will increase by \$87 million. This equates to an increase in average household income of \$47 per annum. This will lead to an increase in households' welfare, as their consumption increases by a total of \$116 million, equal to an increase in average household consumption of \$63 per annum. As shown in the figures 5, households in the Bay of Plenty, Northland, Auckland and Wellington will benefit the most. Auckland and Wellington gain from the services that they provide for the economic growth in other regions. The reason for negative impact on Southland, and Top of the South/Te Tau Ihu regions is that many workers move to the industries and regions with better opportunities provided by the MED projects.

⁵ This is based on our assumption that there will be no increase in (national real) wages and that all increases in economic activity will contribute to the creation of new jobs.

⁶ NZIER studied the impact of factors of attraction of labour to different regions using measures of quality of life and quality of business. Our study is available [here](#).

Figure 5 Changes in household income and consumption



Source: NZIER, 2020

Appendix A Description of our methodology

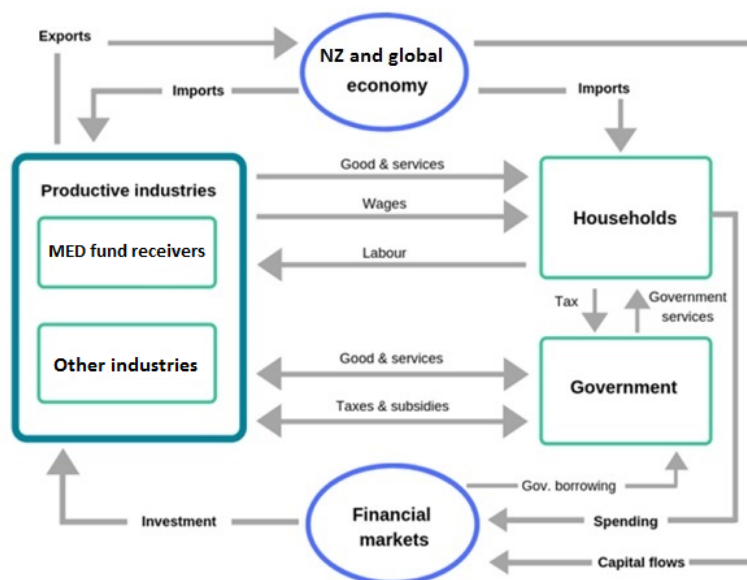
For this analysis we used our Computational General Equilibrium (CGE) model to determine the impacts you seek. Our CGE model is one of the reputable tools that NZIER has been using to inform policy. Figure 6 provides a high-level description of our TERM model. It highlights the multidirectional relationships between the various parts of each regional economy and how they interact with other New Zealand regions and rest of the world.

The strengths of this model are that it:

- Captures the inter-relationships across industries in different regions.
- Accounts for regional features of households and businesses.
- Provides a wide range of aggregated and disaggregated outputs that can inform policy makers by providing the right level of detail.
- Avoids miscalculations that the old-fashioned multiplier analyses used to have.⁷

Our detailed regional CGE model contains information on 106 industries and 201 commodities in 15 regions in its basic form. We aggregate these industries for the purpose of reducing the model's run time and simplifying reporting of industry results.

Figure 6 The Enormous Regional Model of New Zealand economy



Source: NZIER

⁷ Input-output analysis (often a multiplier analysis) assumes resources are infinitely available. This might not matter for a small localised project in an area whose firms and workers are under-utilised such that there will be no effects on prices (Wallis et al. 2012). But it can lead to substantially exaggerated impacts for most other projects.



The economic database on which the model draws is Statistics NZ's 2013 Inter-Industry or Input-Output table which details economic linkages within the New Zealand economy – i.e. how commodities produced by industries are either used for intermediate consumption by various industries or for final consumption by households, investors, government and for exports. TERM-NZ's database also uses Statistics NZ's regional accounts.

