TOI MOANA BAY OF PLENTY GROWTH STUDY

OPPORTUNITIES REPORT
MAY 2015

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

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MINISTERS' FOREWORD

As Ministers for Economic Development, Primary Industries and Māori Development, we believe strongly that building successful and more resilient regions is key to building a prosperous nation.

Recognising and capitalising on the opportunities and strengths of different regions is vital to enable each region to provide employment and a good standard of living for its people and to maximise each region's contribution to the economic and social wellbeing of New Zealand.

The Regional Economic Activity Reports (REAR) have allowed us to understand and compare regional performance at a high level. Through the REAR's, we know that the current economic and social performance of regions varies significantly.

The Regional Growth Studies programme provides an independent view of specific regions chosen because their potential is not yet fully realised. Within each of these regions there are excellent success stories and some pockets of high deprivation. This deprivation can only be fully addressed through wealth creation and higher levels of employment.

The Regional Growth Studies explore opportunities to achieve growth in investment, incomes and employment by sector. The reports pose the questions "what are the investable opportunities in this region and what is stopping investment in them?"

The Regional Growth Studies programme complements the Government's Business Growth Agenda, which works to grow New Zealand businesses, create jobs and improve the standard of living for all New Zealanders.

The Regional Growth Studies programme will also provide a deeper level of information to enable New Zealand Trade and Enterprise and regional economic development agencies to bring investment and ultimately employment into the regions.

The *Bay of Plenty Regional Growth Study* is the second study in this programme and follows the Northland Regional Growth Study which was released in February 2015. It provides a view that has been developed through evidence and with input from key businesses and economic players in the region. It provides the region and central government with a shared view of the potential of the region and its local communities.

The Bay of Plenty region (that includes the Taupo district for the purposes of this study) is blessed with enviable natural endowments, including a favourable climate, abundant renewable energy and water resources from coastal and lake environments. A wide range of sectors contribute to the current success of the Bay of Plenty region, including Horticulture, Forestry, Agriculture, and Tourism. However, there is significant scope to increase incomes and employment in the region through sensible investment, increased productivity and increasing the prices we receive for our exports.

The Government is also committed to raising Māori economic performance. Achieving the goals of He kai kei aku ringa: the Crown-Māori Economic Growth Partnership will be realised if action is taken in those regions where there are larger Māori populations. The Bay of Plenty also has the benefit of a significant youthful Māori population.

He kai kei aku ringa literally means providing the food you need with your own hands. This concept of economic independence or self-sufficiency is a fundamental principle for Māori, who look to the best interests of and outcomes for whānau.

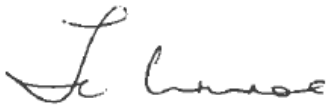
The full potential growth in this region will only be achieved if iwi/Māori actively work to raise the utilisation and productivity of their land and increase skills, employment and incomes of the region's poorest whānau. Working hand in hand with local and central government, we believe the potential benefits for the country from such a collaborative approach to be enormous, though still largely untapped.

This report, and He Kai Kei Aku Ringa, complements the common goals for Māori economic development in this region, as set out in He Mauri Ohooho.

We are committed to maintaining and building on the strong partnerships established in this region and, through the development of a Regional Economic Action Plan, to further explore and realise opportunities identified in the report. Realising opportunities will only be successful, if all stakeholders pull together to do what is right for the region – not just individual sub-regions or sectors.

To be successful, the Regional Growth Study will also need to inform and inspire industry, iwi and Māori, and central and local government to act individually and collectively to turn opportunities into realities.

We welcome this report and its findings.



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PREFACE

This report has been prepared for the Ministry of Business, Innovation and Employment and the Ministry for Primary Industries by Ulf Schoefisch, Stephen Knuckey, Jason Leung-Wai, Melissa Hall and Sally Baguley from MartinJenkins (Martin, Jenkins & Associates Limited), Richard Paling from Richard Paling Consulting, and Heta Hudson from Crowe Horwarth.

MartinJenkins advises clients in the public, private and not-for-profit sectors, providing services in these areas:

- Public policy
- Evaluation and research
- Strategy and investment
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- Employment relations
- Economic development
- Financial and economic analysis.

Our aim is to provide an integrated and comprehensive response to client needs – connecting our skill sets and applying fresh thinking to lift performance.

MartinJenkins is a privately owned New Zealand limited liability company. We have offices in Wellington and Auckland. The company was established in 1993 and is governed by a Board made up of executive directors Doug Martin, Kevin Jenkins, Michael Mills, Nick Davis and Nick Hill, plus independent directors Peter Taylor (Chair) and Sir John Wells.

Data from Infometrics was provided to MartinJenkins for use in this report. Infometrics specialises in providing economic and employment data from both an industry and regional perspective via a web-based system. Infometrics is a privately owned and operated company based in Wellington and was founded in 1983.

MARTIN JENKINS

Infometrics

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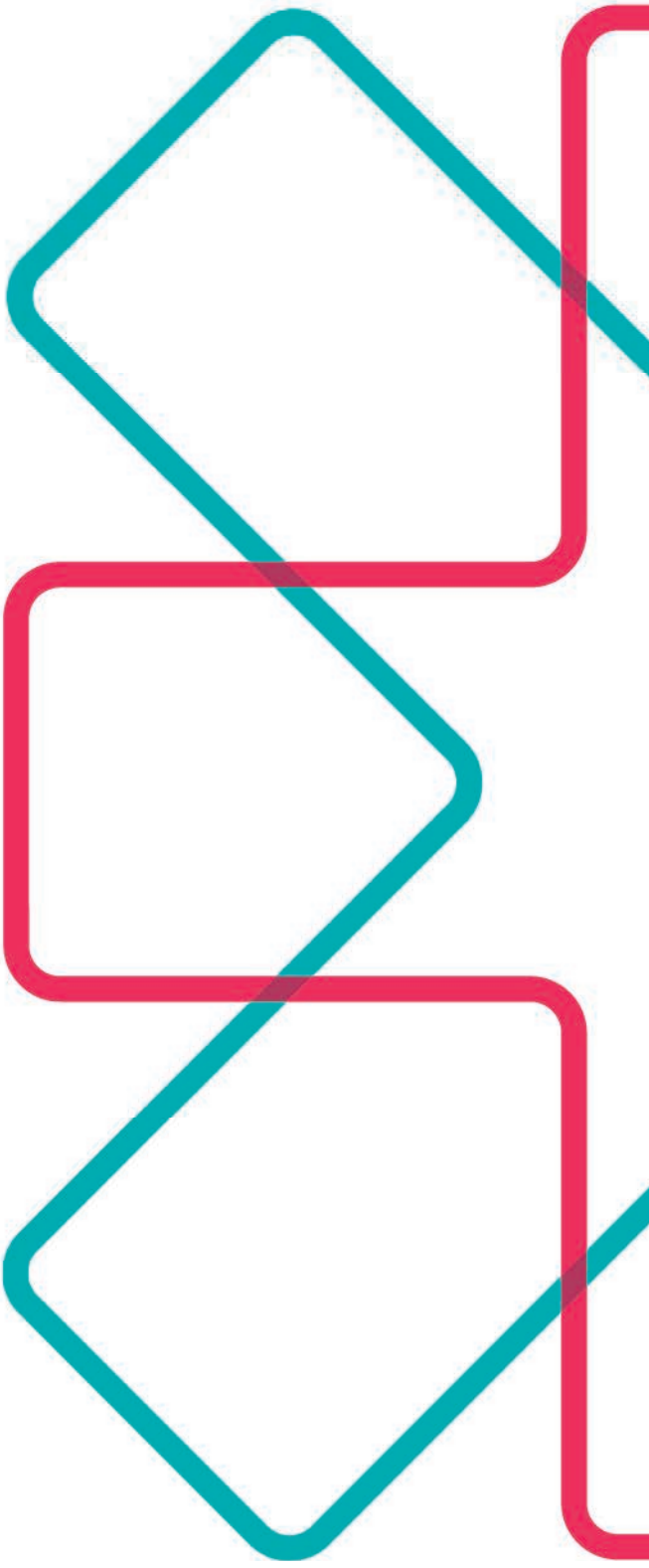
Acronyms used in this report

BGA	Business Growth Agenda
BOPRC	Bay of Plenty Regional Council
BOPTEP	Bay of Plenty Tertiary Education Partnership
CAGR	Compound Annual Growth Rate
CNI	Central North Island
CoBOP	Collaboration Bay of Plenty
CRI	Crown Research Institute
ECMT	East Coast Main Trunk
ECNI	Explore Central North Island
EDA	Economic Development Agency
EFTS	Equivalent full-time student
ERO	Education Review Office
ESFL	Eastern Seafarms Limited
FDI	Foreign direct investment
FITs	Free independent travellers
FOMA	Federation of Māori Authorities
FTE	Full-time equivalent
FWAG	Forestry and Wood Action Group (Bay of Connections)
GDP	Gross Domestic Product
GFC	Global financial crisis
HPMV	High productivity motor vehicle
ICT	Information and communications technology
IP	Intellectual property
LUC	Land use capability
LVL	Laminated veneer lumber
MBIE	Ministry of Business, Innovation and Employment
Mbps	Megabits per second
MfE	Ministry for the Environment
MoE	Ministry of Education
MPI	Ministry for Primary Industries
MSD	Ministry of Social Development
NCEA	National Certificate of Educational Achievement
NEET	Not in education, employment or training
NIML	North Island Mussels Limited
NIWA	National Institute of Water and Atmospheric Research

NPS-FM	National Policy Statement for Freshwater Management
NZTA	New Zealand Transport Agency
NZTE	New Zealand Trade and Enterprise
OPC	Orchard Productivity Centre
PGP	Primary Growth Partnership
Psa	*Pseudomonas syringae* pv. *actinidiae* (Psa)
RAM	Rapid Advanced Manufacturing
RAO	Regional Aquaculture Organisation
RBI	Rural Broadband Initiative
RMA	Resource Management Act
RSE	Recognised Seasonal Employer
RTO	Regional Tourism Organisation
SFF	Sustainable Farming Fund
SHAMP	State Highway Asset Management Plan
SMEs	Small and medium sized enterprises
SPATnz	Shellfish Production and Technology New Zealand
SWI	Solid Wood Innovation
TEC	Tertiary Education Commission
TECT	Tauranga Energy Consumer Trust
TEU	Twenty-foot equivalent unit
TIMOs	Timber investment management organisations
TiDA	Titanium Industry Development Association
TiTeNZ	New Zealand Titanium Technologies Platform
TPK	Te Puni Kokiri
TTEP	Tauranga Tertiary Education Precinct
UFB	Ultra-Fast Broadband
UMF®	Unique Mānuka Factor®
WMO	Whakatōhea Mussels Ōpōtiki Ltd
Woodco	Wood Council of New Zealand

EXECUTIVE SUMMARY



Executive Summary

The Bay of Plenty economy is well positioned for sustainable growth. It is centrally located in the North Island and is close to the major economy of Auckland. It has a strong resource base with a growing population and access to productive land and marine areas. There is good access to water, fertile soils and potential to further utilise geothermal resources. Well-developed infrastructure, including New Zealand's largest export port, supports the efficient transport of goods and people. The region's climate, accessibility, activities and amenities make the Bay of Plenty an attractive place to live.

Despite these favourable factors, the Bay of Plenty economy has lagged behind other regions over recent years in terms of Gross Domestic Product (GDP) and employment growth. There are significant economic disparities across the sub-regions, with high rates of economic and social deprivation in the Eastern sub-region in particular.[1]

This study identifies opportunities that can leverage the underlying strengths of the Bay of Plenty region and enable it to perform to its potential.

Key messages

1 Economic development in the region is being built off a strong platform of collaboration between industry, research and tertiary organisations, Māori/iwi/hapū, and local and central government. The region has developed an enviable range of economic and industry strategies and project proposals through private and public partnerships. Those involved need to take the next steps and jointly commit resources to implement those strategies and proposals.

2 Access to and the sustainability of natural resources, particularly water, are a significant determinant of how fast the Bay of Plenty economy can grow. Managing the availability, allocation and quality of water is a challenge for the region, which is an agrarian based economy within a unique lakes environment that supports a growing population and is a draw card for visitors. Demands for and impacts on the quality of water will increase as land use continues to change to more intensive production; and additional land, particularly Māori-owned, is developed. Councils and industry in the Bay of Plenty region are at the forefront of implementing frameworks and regimes for effective management of water.

3 Māori engagement is critical to the region's economic performance. Māori have a relatively young population. They make up a significant proportion of youth and account for a large and increasing share of the region's workforce. They have a substantial asset base and wide-ranging business interests. Improving participation and educational outcomes of Māori across the region will support the region's need for skilled labour and help unlock value from the Māori asset base. Land aggregation and productivity improvements will enable Māori/iwi to lift economic returns to industry standards and expand their footprint as successful primary sector operators. Investments in major projects in a range of industry sectors (forestry, agriculture, aquaculture, apiculture) will assist in further establishing Māori/iwi/hapū as key commercial partners and operators. The ability

[1] The Eastern sub-region includes Whakatāne, Ōpōtiki and Kawerau.

of Māori to pursue investment opportunities has benefited from the considerable financial redress agreed under various Treaty of Waitangi settlements in the region ($450 million since 2002, with a number of significant settlements still to be completed).

4 The availability of skilled labour is a constraint on realising industry opportunities because of the changing skills needs of the region's key industries and its ageing population. The Bay of Plenty will face increasing competition for its young people/rangātahi and skilled people, and it will take effort to both retain and attract the workforce it needs. Building scale in key industries can build and expand career pathways and labour market depth.

5 The Bay of Plenty requires a stronger tertiary education sector presence to provide a broader range of programmes that support fast-growing sectors and to strengthen research linkages with industry. The region is well positioned to develop its tertiary education strengths – including Māori provision – through a new collaborative Bay of Plenty Tertiary Intentions Strategy. The region has areas of tertiary research excellence (for example in forestry and horticulture) but there are opportunities to build and extend industry–research connections (including in Crown Research Institutes).

Economic development in the region is built off a strong platform of collaboration that needs to be maintained. There is a high degree of complementarity across the key industries in the region. Because of this, opportunities for growth and industry development are inter-related and will need to be pursued jointly to unlock the full economic potential of the region. Similarly, as industry value chains extend across the region, all sub-regions need to participate in the implementation of actions to lift economic performance.

Introduction

This report has been prepared by the consultancy company MartinJenkins for the Ministry of Business, Innovation and Employment (MBIE), Ministry for Primary Industries (MPI) and the Bay of Plenty Regional Council (BOPRC). It is an independent report that is focused on identifying significant economic development and investment opportunities targeted at growing regional incomes and employment. It is not a strategy containing specific action plans for the realisation of such opportunities.

Geographic scope of the study

The study was commissioned to cover the 'economic region of the Bay of Plenty' as set out in the Bay of Connections Regional Economic Development Strategy. The Bay of Connections strategy includes

the local authorities in the BOPRC area (Tauranga, Western Bay of Plenty, Whakatāne, Kawerau, Ōpōtiki, Rotorua) and Taupō.

The findings of this study are based on an extensive review of data and prior research, more than 50 interviews and workshops with regional representatives from the private sector, education sector, Māori/iwi, research organisations and others, followed by assessment and validation of identified opportunities.

This study does not treat the Māori economy as a separate sector. Economic activity and initiatives pursued by Māori/iwi are an integral part of most sectors of the regional economy and are highlighted as such in this report.

Economic context

The Bay of Plenty is one of the largest provincial regions of New Zealand. Based on the 2014 subnational population estimates, the region had a population of 321,000 (about 7 percent of New Zealand's total), making it the fifth most populated region in New Zealand. Tauranga city, with a population of about 122,000 (38 percent of the region's population), was the sixth largest city in New Zealand just behind Dunedin city.

The region's location is a major strategic advantage.

The Bay of Plenty region accounts for 5.7 percent of national GDP and 6.6 percent of employment. GDP growth over the five years to 2014 averaged 1.5 percent per annum, slightly less than the national average of 1.6 percent per annum. The region's employment declined by 0.1 percent annually over the same period compared to growth of 0.3 percent per annum nationally.[2] In the year to September 2014, the Bay of Plenty had an unemployment rate of 6.6 percent, compared to 5.4 percent nationally.[3]

The Bay of Plenty's central North Island location, in close proximity to the large and growing Auckland population base and the fast-expanding Hamilton–Waikato city-region, is a major strategic advantage. The region is endowed with large areas of land suitable for high-yield primary sector production, significant forestry resources, and a long coastline with nutrient-rich waters. The region also has the seventh largest geothermal field, by capacity, in the world. Road and rail infrastructure is generally well developed, and Tauranga is home to a large and efficient international port.

The region has a less expensive operating environment than major population and business centres, while still being relatively close to suppliers and output markets. This makes the Bay of Plenty an attractive industry location for those companies that are not tied to a specific region.

2 Infometrics Regional Database.

3 Household Labour Force Survey (HLFS), September 2014. Note that the HLFS only captures data at a regional council level and so does not include Taupō.

The Bay of Plenty has a well-diversified range of export-focused industries, including forestry and wood processing, dairy farming and processing, horticulture, tourism, logistics, and specialised manufacturing.

Population size and business density is a drawback for the Bay of Plenty economy at its current stage of development. It makes the region a less attractive location for large service sector firms, for attracting and retaining skilled labour, and affects the quality and frequency of air connectivity.

With a relatively small regional market, most industries in the Bay of Plenty are necessarily focused on selling their product outside the region, in New Zealand and internationally, reinforcing a strong focus on innovation that is evident in many companies.

The region has a large and growing Māori population. Iwi are increasingly successful in enhancing their asset base and investing in primary sector industries. Relatively small business units and comparatively low levels of land productivity are a continued challenge for Māori economic development, alongside strategic leadership, and education and skill development.

Categorising opportunities

The various opportunities for enhancing the Bay of Plenty's growth performance identified by this study have different characteristics.

Direct opportunities

The pursuit of direct opportunities is targeted either at a particular industry sector or at a specific investment project.

- **Industry development opportunities** – These will benefit a large number of firms in a particular industry and will require the involvement of multiple businesses and other organisations in that industry to succeed (for example, the development of industry-specific productivity programmes).
- **Investment opportunities** – These are largely commercial in nature, require private sector investment, and involve one or a small number of firms. In some cases, these may require the involvement of other organisations, eg local government, to help overcome a barrier to their establishment.

Enabling opportunities

Opportunities in this category do not directly create stronger growth performance, but lift growth potential by enhancing the operating environment for businesses and enabling investment opportunities to be realised. Such opportunities are often cross-cutting and may benefit a large number of operators across several industries (for example, improvements to infrastructure affect all sectors). With a wide range of industries and organisations potentially benefitting from these opportunities, public sector involvement is often required.

Industry opportunities

The following major opportunities have been identified through this study as those with the greatest potential to contribute to economic growth. Most of these opportunities are industry-wide initiatives already being pursued to some degree, or specific investment proposals that are currently at various stages of consideration.

Forestry and related processing

The Central North Island (CNI) forest area, which includes the Bay of Plenty, is New Zealand's centre for forestry and related processing. The region has New Zealand's largest forest resource and has comparative advantages in the growing and supply of wood as a result of its combination of climate, soils, access to geothermal energy in key locations and good transport infrastructure. Several operators in the region have been investing in processing capability and, with strong projected demand growth from Asia in particular, the region has significant potential to compete internationally in processed wood product markets.

Source: Bay of Plenty Regional Council

The ability of the region to build on its potential in the forestry and related processing sector will depend on:

a) Aggregating the large number of small parcels of Māori-owned land suitable for forestry, and improving stability of timber supply, through the Toitū Te Waonui Afforestation Initiative. There are around 23,000 hectares of such land in the Bay of Plenty and about $35 million of initial investment is required to create a $1 billion forestry asset. The project is currently in the process of developing a validated and scalable prototype. To achieve this, landowners will need to be assured of the commercial benefits of participation and investors need to be assured of the viability of the investment model. Given the long timeframes involved, risk profile and complexity of the initiative, public sector support is likely to be required to assist with working capital requirements, commercial validation and the development of an investment prospectus.

Aggregate the large number of small parcels of Māori-owned land suitable for forestry through the Toitū Te Waonui Afforestation Initiative.

b) Developing export markets for processed wood products. It is estimated that processing an additional 4 million cubic metres of logs annually could potentially add $2.2 billion to regional

GDP. There are processing opportunities in the region at most segments of the value chain, from customised timber cuts to engineered wood products. Achieving scale will require that the industry in the region collaborates, with New Zealand Trade and Enterprise (NZTE) support, to identify export market opportunities and to develop suitable products that are in demand and meet overseas expectations and standards. Demonstrating the environmental advantages of timber construction for multi-storey buildings, for example through the Wood First initiative that has been adopted by Rotorua Lakes Council, could also open up export market opportunities.

Develop export markets for processed wood products.

There is also significant potential for the sector in the region to make a greater use of geothermal resources for energy and timber drying. This would be supported by additional mapping of geothermal fields. The sector would also benefit from a closer alignment of wood processors with the forestry sector's Crown Research Institute (CRI), Scion, in order to ensure relevant and effective technology development and transfer.

Agriculture and related processing

The dairy and livestock sectors and associated processing operations have a strong presence in the region.

This is based on the region's natural resource strengths and good logistics infrastructure. Given projections of a growing number and affluence of the middle classes in Asia and changes in their consumption preferences, demand for New Zealand's dairy and meat products over the long term is expected to remain strong.

The major opportunity for the industry in the region is to improve farm productivity. In part, this will be required to respond to the introduction of nitrogen discharge limits and water usage, which will constrain herd growth.

Source: Fiber Fresh Feeds

Improve farm productivity.

There are several initiatives that the region can take advantage of to increase productivity, including Primary Growth Partnerships (PGPs), DairyNZ's Focus Farm programme, support for improved management of Māori-owned farming units, research on smarter breeding, animal health, and improved pasture and silage management. Such initiatives should be applied to and/or expanded in the region to unlock the full potential of the sector over time. An average increase of on-farm productivity of 10 percent across Bay of Plenty dairy, beef and sheep farms could deliver an estimated additional $60 million of GDP annually to the region.

Adopting dairy activities with a smaller environmental foot print, such as sheep and goat dairy farming, provides an additional option for the farming sector in the region. Work is being undertaken in the region to assess the viability and establishment of such large-scale operations, but additional public sector support could be considered for 'proof of concept' phases (business case development, market validation etc).

Horticulture and related processing

The Bay of Plenty has a well-established horticultural sector, again underpinned by the region's climate and natural resource base.

The availability of harvesting labour remains a key issue for the entire horticulture sector. There has been intra-industry collaboration for the joint employment of crop pickers, but the introduction of additional initiatives to strengthen the availability of labour to the industry deserves investigation. In this respect **a key opportunity is the potential establishment of a horticulture academy** in the region. A feasibility study is initially required to test the merits of the proposal.

Kiwifruit industry

Kiwifruit is the most significant horticulture industry in the region. The Bay of Plenty accounts for 80 percent of national kiwifruit production and employs about 6,000 people.

The kiwifruit industry is experiencing a strong recovery on the back of the development of a new fruit variety after the Psa biosecurity crisis.

The Bay of Plenty has large areas of suitable horticulture land available for expansion and there is increasing Māori involvement in the industry.

Source: Bay of Plenty Regional Council

The major kiwifruit opportunity for the region is further expansion through land conversion, particularly in the Eastern sub-region and on suitable Māori-owned land.

Further kiwifruit expansion through land conversion, particularly in the Eastern sub-region and on suitable Māori-owned land.

In the Te Kaha area of Ōpōtiki district alone, it is estimated there are 200 hectares suitable for kiwifruit production. Allowing for productivity gains, an average one percent increase in orchard land per year (around 100 hectares) would lift regional GDP by about $2.6 million annually.

Other opportunities for the industry are to increase the use of machinery and robotics for harvesting and processing, further investment in research and development to create more resilient varieties, and exploring the potential for the development of nutraceutical-type by-products.

Avocado industry

The Bay of Plenty is a major producer of avocados, accounting for about 60 percent of New Zealand's output.

The New Zealand avocado industry has set itself an ambitious growth target of $280 million in exports by 2023. Export sales in 2014 were $136 million with the Bay of Plenty region accounting for 81 percent of avocados exported.

Based on the assumption that the Bay of Plenty region retains its share of producing hectares (60 percent), the industry could have a turnover of $168 million annually.

Source: Bay of Plenty Regional Council

The recent development of a more collaborative approach amongst exporters – focused on market growth rather than price competition – has instilled confidence, stabilised product prices, and shifted the focus to developing new export destinations in Asia and the United States.

The opportunity is to support the wider avocado sector strategy to achieve its growth targets. This includes opening new export markets and enhancing productivity. The key market development focus should be on the United States where demand growth has been persistently strong over the past decade and the weekly avocado consumption is equivalent to New Zealand's total annual supply.

Support the wider avocado sector's strategy - opening new export markets and enhancing productivity.

The ‘Go Global’ PGP is focusing on improvements along the avocado supply chain to lift sector productivity. However, feedback from industry suggests that some projects would benefit from greater research and development than is currently possible through the PGP. For example, overcoming problems with long shipping duration by using life-prolonging technology, development of harvesting robotics, genetic modifications to grow smaller trees, and increasing the efficiency of water use.

Oil is the main manufactured avocado by-product at this stage. The PGP will explore the potential value that could be extracted from the avocado pit to develop nutritional supplements. Further research should be undertaken to assess the potential uses of avocado, such as an ingredient in baby formula.

Apiculture

Mānuka-based products attract a high price premium over other types of honey.

The Bay of Plenty is at the forefront of growing mānuka honey exports. The region is home to key companies such as Comvita. It has a number of mānuka stands, and collaborations such as the Miere coalition are exploring how to grow the supply of mānuka and expand markets.

The region accounts for about a quarter (24 percent) of all beekeeping jobs in New Zealand (Infometrics Regional Database).

Source: Comvita

Based on the global trend of increased consumption of health and wellness products, there is great potential to expand mānuka honey produced in the Bay of Plenty, with significant opportunities for Māori industry involvement.

The key opportunity is to take a significant position within the growing global health and wellness market through producing high quality mānuka products. This will require increased collaboration between industry, researchers and MPI to resolve product labelling and industry standards to provide quality assurance. Whether additional scientific research is required to update MPI’s Interim Labelling Guide for Mānuka Honey should also be explored. To reinforce this effort, the possibility of introducing a honey supplier accreditation system could be assessed. A marketing and branding strategy also needs to be developed by the main participants in the region, with NZTE support. The establishment of an industry-wide marketing board could also be considered.

Take a significant position within the growing global health and wellness market through producing high quality mānuka products.

Aquaculture

There is potential to significantly enhance both sea-based and freshwater aquaculture in the Bay of Plenty.

The region's aquaculture sector is relatively small and focused on sea trials and processing. However, it has a number of advantages on which to build a much more significant industry, including abundant water space, a high number of sunshine hours per year, nutrient-rich waters, geothermal resources for water heating, and a centre of marine research (the University of Waikato's Coastal Marine Field Station).

Source: Bay of Plenty Regional Council

The development of the Ōpōtiki sea-based mussel farm, initiated by Whakatōhea Māori Trust Board, provides the most immediate major commercial opportunity and is a key element in the region's aquaculture strategy. The project is projected to grow between 16,000 and 25,000 tonnes of green-lipped mussels annually that will be processed in Ōpōtiki. This will generate 250–400 jobs and around $34 million of additional GDP for the region annually once fully operational (from year 12). The proposed venture includes modifications to the Ōpōtiki harbour entrance to enable local on-shore mussel processing. In total, the harbour redevelopment is expected to require investment of about $52 million, and the marine farm, hatchery and processing plant is estimated to require investment of about $80 million.

The Ōpōtiki sea-based mussel farm is a major commercial opportunity and a key element in the region's aquaculture strategy.

The next step, in order to secure funding support for the harbour redevelopment, is to develop a comprehensive business plan that not only demonstrates the technical feasibility of a scaled-up sea farm and credible funding strategy for the establishment of the processing facility, but also shows the commercial viability of the integrated farming and processing venture, based on detailed market research and a product branding strategy.

The combined availability of freshwater and geothermal resources also provides potential for land-based freshwater aquaculture in the Taupō region, primarily trout farming. Trout farming is currently prohibited in New Zealand. Interested parties, including iwi, need to demonstrate the commercial potential of trout farming and how concerns that led to the ban will be addressed.

The combined availability of freshwater and geothermal resources provides potential for land-based freshwater aquaculture in the Taupō region, primarily trout farming.

Visitor economy

The Bay of Plenty includes some of New Zealand's most well-established tourism destinations with a very diverse offering for visitors, including Rotorua's geothermal and spa attractions, Taupō's outdoor events and recreation areas, Tauranga's services for cruise ship visitors, and a strong Māori cultural offering throughout the region.

Over the last decade, growth in visitor expenditure has been low. Poor air travel connectivity limits growth and as the region covers a wide geographical area, there is considerable difficulty in attracting visitors to the Eastern sub-region.

Source: Bay of Plenty Regional Council

Moreover, the different sub-regions within the Bay of Plenty compete against each other for visitors.

Establish Rotorua as a globally recognised destination for health and wellness.

There are several opportunities that can take advantage of the region's natural and cultural amenities and the forecast growth in Asian visitors to New Zealand and turn poor visitor performance around. Two key opportunities are:

a) Establishing Rotorua as a globally recognised destination for health and wellness. This will require industry investment in new facilities and higher standards of accommodation and services (including food, transport and translation services). Support is also required for the existing strategy that positions Rotorua as a key wellness destination, growing visitor numbers from the

fast growing China market but also the wider Asian and Australian markets. Destination Rotorua, a business unit within Rotorua Lakes Council, has a target of more than doubling visitor expenditure, to $1 billion, by 2030.

b) Developing a coordinated regional tourism strategy to attract high numbers of Free Independent Travellers. The aim will be to secure visitors beyond those interested in a 'one day stopover', who have more time and are interested in a wide range of activities throughout the region (golfing, biking, tramping, eco-tourism, spas etc). This will require increased collaboration by Regional Tourism Organisations (RTOs) to develop the joint proposition and offerings. In order to incentivise this collaboration, part of the funding received from local authorities could be made contingent on the achievement of performance indicators relating to joint regional work. The establishment of direct flights between Rotorua and Queenstown should be pursued in order to achieve better integration of the region into main travel routes of overseas tourists.

Develop a coordinated regional tourism strategy to attract high numbers of Free Independents Travellers.

Other key visitor attraction opportunities for the region are international education and sporting events. Regional education providers, in conjunction with Education New Zealand, are investing in initiatives to boost international student numbers in Tauranga and Rotorua. The tertiary segment in Tauranga is expected to get a significant boost from the opening of the new tertiary precinct, which will considerably expand the range of attractive qualification opportunities.

The region is positioning itself as a venue for major sporting events, in particular, mountain-biking, multi-sport and rugby sevens. The Bay of Plenty RTOs have collaborated on a regional cycle network for the central north island. Rotorua recently hosted the world's largest mountain biking event, Crankworx, and hosts other major events including the World Enduro Mountain biking event, and the Tarawera Ultra Marathon. Taupō hosts premier events including Ironman New Zealand and the Lake Taupō Cycle challenges. The Bay of Plenty Rugby Sevens strategy was launched in 2013 and aims to bring more visitors to the region through the hosting of sports events, the maintenance of the training base for the national Rugby Sevens team in Tauranga, and through establishing a rugby high performance facility and offering training courses for national and international sports teams. Local government should consider sponsoring a cost–benefit (including economic impact) analysis of the Seven's venture, which would provide the basis for potential acceleration and expansion of the initiative.

Specialised manufacturing

The Bay of Plenty has comparative advantages in a small number of niche manufacturing sectors servicing the primary, marine and construction sectors. The region has a supportive environment for research and development for these sectors, with an array of private sector, local and central government, and research and tertiary organisation initiatives in place. These include university and CRI research activities, the Newnham Park Innovation Centre and the WNT Ventures technology-focused incubator. The main constraint to significant growth is a lack of scale and critical mass. Addressing this constraint will require expanding existing firms, developing collaborative models for R&D and market investment, and/or attracting firms and investors to the region in niches where the region has genuine advantages and capability.

Encourage a niche manufacturing industry of scale developing titanium powders and alloy products.

The major opportunity to create a niche manufacturing industry of scale is based on the considerable investment that has already been made in R&D for the metals powder and application sector, specifically the development of titanium powders and alloy products. The business case for the development of the industry forecast that it could grow to $1 billion turnover annually by 2030, with export value reaching $100 million by 2023. However, only limited progress towards these ambitious goals has so far been achieved.

A more realistic path for the further development of the industry is required, taking account the lessons learned over the last five years. This will require the industry players and supporting agencies involved (including the Titanium Industry Development Association, BOP Polytechnic, Waikato University, Callaghan Innovation, Priority One and NZTE, amongst others) to review the existing roadmap and determine how the commercialisation and development of the industry in the Bay of Plenty can be realistically achieved over the next 10 years. This will require commitment of resources for research and development, skills development, market development and investment attraction. The review should include a full assessment of the costs and benefits (and the attribution of these to different partners) of different options.

Other manufacturing-based opportunities in the region include the Tauranga Marine Precinct which, when fully developed, is estimated to contribute an additional 130–195 jobs and $24–$27 million in revenue by 2022–2023, and tertiary education and research developments for the education sector as part of the Bay of Plenty Tertiary Intentions Strategy.

Enabling opportunities

Improved water management, increased access to and use of geothermal resources, a broader education and skills offering, and the continued upgrade of the region's infrastructure are identified as key enabling opportunities.

Improving water management

Access to water underpins growth opportunities across most of the key industries in the region. The quantity and quality of available water is a key issue for the region's economic development.

Demand for freshwater is projected to increase strongly in the Bay of Plenty due to an increase in irrigated primary sector land, population growth, conversions from forestry to dairy, and efforts to improve the productivity of Māori-owned land. The expected increase in demand for water will require a robust allocation regime as quantity and quality will constrain industry development.

Source: Bay of Plenty Regional Council

Currently, there is a lack of information about how much water is actually being used. Large numbers of water takes are not monitored or are seasonal takes only.

On the other hand, water quality is well monitored in the region. As in other areas of New Zealand, there are concerns about increasing amounts of nitrogen in some areas, particularly the Rotorua lakes and Lake Taupo. Water management frameworks, such as the National Policy Statement for Freshwater Management and Rotorua Te Arawa Lakes Programme, set limits on the impact of primary sector operations on water quality.

Decision-making on the reduction of nitrogen levels involves complex trade-offs, often based on contested scientific evidence. The complexity of water management issues raised can slow down council decision-making. This can create considerable uncertainty for primary sector operators, as has occurred in the Lake Rotorua catchment.

Improved information and certainty is required. The opportunity is for Bay of Plenty councils, alongside councils in neighbouring regions with shared water management interests (notably the Waikato region), to work collaboratively with stakeholders in each catchment to achieve this. This work would need to identify who obtains value from the water in the catchment, to set catchment objectives, and to establish suitable limits and put in place measures to monitor and manage water takes and sources of contamination. Improving the monitoring and reporting of water use will be an important first step towards encouraging efficient water use. This will build on the land, catchment and nutrient management plans that are being implemented in priority areas across the Bay of Plenty region.

Bay of Plenty councils, alongside councils in neighbouring regions with shared water management interests (notably the Waikato region), must work collaboratively with stakeholders in each catchment.

The region will also benefit from extensive research underway that is identifying ways in which the environmental impact of farming on waterways can be reduced. Building on this research, the establishment of a Freshwater Centre of Excellence has been proposed for Rotorua. The proposed centre would be co-located with the Scion Innovation precinct and its purpose would be to identify methods that improve freshwater quality, and market this expertise internationally. Discussions with potential project partners are underway.

Improved use of geothermal energy

The Bay of Plenty has large sustainable geothermal energy resources that can be applied to a wide range of industry uses, for example, electricity generation, timber and milk powder drying, and the heating of horticulture glasshouses and pool and spa complexes.

Geothermal resources in the region are considerably underutilised, with significant potential to increase the use of steam/heat for industrial uses beyond electricity generation across the entire temperature spectrum. The use of geothermal resources can generate large cost savings for energy-intensive industries in particular.

Source: Bay of Plenty Regional Council

There are areas within the Taupō and Kawerau districts that provide excellent potential to expand activity in the energy-intensive wood and wood waste processing industries, including the pulp and paper sector. Similar to Tuaropaki's use of geothermal to heat glasshouses to grow capsicum and tomatoes in Taupō, there are areas within the Kawerau district that have the potential to support hothouse horticulture.

The key opportunity is to identify and promote the benefits of using geothermal energy through a joint marketing initiative developed by land owners, regional economic development agencies (EDAs), and central government agencies (including NZTE). This should include specific commercial proposals and target businesses that are not sensitive to potential location or investment barriers.

Identify and promote the benefits of using geothermal energy through a joint marketing initiative.

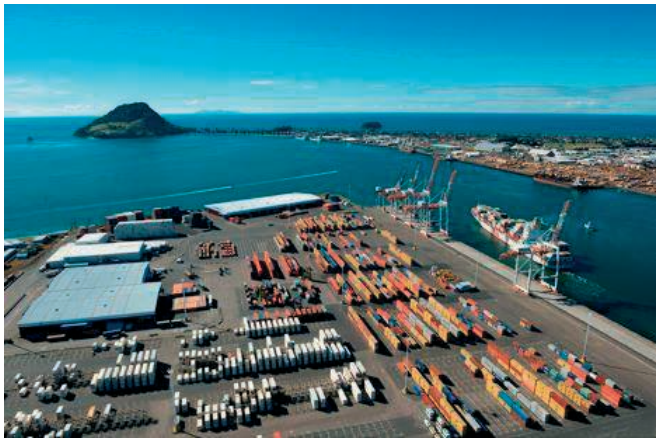
Exploring and mapping additional geothermal fields in the region would also enable the identification of the potential for new locations for industry.

Improving transport infrastructure and digital technology uptake

The region has good quality transport infrastructure, which supports the efficient movement of goods and people for key industries.

There are a range of improvements being considered across the transport and communications network that will improve connectivity within and to the region.

The key opportunity is to support coordinated investment in planned improvements across the network that enables industry and export expansion, including the following areas.



Source: Bay of Plenty Regional Council

- The Port of Tauranga – the introduction of 40 percent larger vessels in 2016 will require deeper harbour access and changes to logistics operations. The port will introduce additional off-site marshalling arrangements to enable the efficient handling of the new freighters.
- Rail – the move to larger ships will also necessitate changes for KiwiRail. Investment in additional tracking (both in the Bay of Plenty and potentially around Auckland's Metroport) and rolling stock will be required to enable handling of more concentrated freight volumes. In order to accommodate fast industry growth, the Tauranga local authority should identify and zone suitable sites with rail access for new logistics facilities.
- Road – NZTA is considering a potential further increase in vehicle weight limits that may necessitate upgrades of roads on key routes.
- Air – air connectivity in the region is relatively poor, constraining business and tourism development. Industry and population growth will require improved air connections at some stage. An earlier study on the potential development of a new centrally located regional airport should be updated with criteria that sets out when investment in such a project would be commercially justifiable.

Support coordinated investment in planned improvements across the transport and digital networks.

The region is developing a spatial plan that will help to prioritise areas for further infrastructure improvements.

Broadband coverage is growing in the region with the roll out of the Ultra-Fast Broadband and Rural Broadband Initiatives. However, there are still low uptake rates of digital technology in some key industries and by small firms.

Improving education and skills

Forecast growth across the key industries will, in most cases, create increased demand for labour, particularly for skilled staff.

The number of skilled vacancies has been increasing and there are reported skill shortages in a range of areas, including for technicians, middle management, ICT specialists, farm managers, forestry workers, and heavy vehicle drivers. Local employers also report difficulty identifying future workforce development and training needs and competing with other regions in retaining and attracting staff.

Source: Bay of Plenty Regional Council

The region has mixed performance on measures of educational attainment. Positively, 18-year-olds in the region are slightly more likely to have an NCEA Level 2 qualification than 18-year-olds nationally. There is significant variability in educational attainment at the sub-regional level, with the Eastern sub-region particularly underperforming. For example, the proportion of youth not in employment, education or training in this sub-region is almost double the national rate. As with other areas of New Zealand, Māori in the region also underperform on key education measures. This is exacerbated in the Bay of Plenty because of the large Māori population.

The region's collaborative tertiary environment and strengthening relationships between industry, schools, tertiary organisations and communities provides a solid platform for education and skills development. For example, the Bay of Plenty Tertiary Intentions Strategy, which was released in 2014 and developed through a highly consultative process, establishes clear priorities for improving the quality and relevance of tertiary education. There are also several examples of best practice initiatives to improve youth education in the region.

Support the Tauranga Tertiary Education Precinct and develop a youth/rangātahi education and skills strategy.

The most significant education opportunities in the region are:

- The establishment of the Tauranga Tertiary Education Precinct (TTEP). The planned TTEP will be a significant development for the city's centre, with a cost–benefit analysis suggesting that the precinct will contribute to a regional GDP increase of $188 million and will train 4,000 graduates over the next 20 years. Tauranga City Council has committed land and the regional council and Tauranga Energy Consumer Trust have committed $30 million in regional funds towards this precinct construction. The Tertiary Education Commission (TEC) is considering funding for programmes and activities.

  The campus is intended to initially deliver marine, ICT and logistics education programmes and research. The longer-term course offering needs to reflect the long-term economic development aspirations of the region. Much of the benefit will flow to the Tauranga centre and the wider city and Western sub-region from the attraction of students, higher skills levels and closer industry–tertiary engagement. The precinct presents an important opportunity to collaborate with industry and for developing education and training pathways that retain and attract more young people to the region, and support upskilling of the existing workforce. Its course offering needs to reflect the long-term economic development aspirations of the region.

  Tauranga City Council needs to ensure that infrastructure requirements relating to the new university campus will be met (such as accommodation and transport), and seek opportunities to build engagement with local firms and attract new firms that would benefit from co-location with the campus in the city centre.

- Development of a youth/rangātahi education and skills strategy. The Bay of Plenty Tertiary Intentions Strategy recommends that a youth strategy be developed for the region. Although various youth/rangātahi skills and workforce training initiatives are being implemented, these need to be better monitored and reviewed to identify the most successful programmes in the region and whether and how they can be expanded. The development of common monitoring and reporting indicators will help build a platform for collective action by whānau, business and industry, communities, philanthropic organisations, Māori/iwi/hapū and government agencies. This strategy could also address common priorities for youth development articulated in the regional economic strategy, the Māori economic development strategy and by industry.

Improvement of public agency support for the business sector

A significant number of central government initiatives and funding sources are available to firms and industries in the Bay of Plenty. Feedback from businesses we spoke to suggested that small- and medium-sized firms (in particular) continue to experience barriers to access funding and services, and that public sector initiatives can appear uncoordinated. Firms highlighted that better coordination could reduce transaction costs and avoid the risk of duplication.

Regarding local government coordination, a number of stakeholders interviewed suggested that better alignment of consenting and planning rules across the region's territorial authorities would provide greater certainty and consistency for business investment.

A one-stop-shop regional office could improve agency coordination, linking local and central government, EDAs, and supporting investment attraction from outside the region. The costs and benefits of options for improving coordination should be assessed.

A one-stop-shop regional office could improve agency coordination, linking local and central government, EDAs, and supporting investment attraction from outside the region.

Increasing the productivity of Māori land

Increasing the productivity of Māori land is a common opportunity highlighted across several of the industries.

The average productivity of Māori-owned land is far below industry standards. A report published in 2013 – 'Growing the Productive Base of Māori Freehold Land' – estimates that lifting productivity to average industry benchmarks could result in an additional $8 billion in gross output nationwide (PriceWaterhouseCoopers, 2014).

At the same time, the development of Māori land will impact on the demand for and allocation of water.

Source: Bay of Plenty Regional Council

Increase the productivity of Māori land.

Various initiatives are in place to assist Māori/iwi/hapū to determine the best use of land and to improve its productive potential, including support for land aggregation to enable the more efficient operation of larger business units. The schemes currently being pursued should be reviewed and support be concentrated on those that prove to be most effective.

Priorities for action

This study's brief has been to identify the opportunities within sectors with the greatest potential to contribute to economic growth. Ranking these and sequentially implementing them would potentially undermine their relevance and effectiveness. Our approach to this project has been to identify a *package* of opportunities that, if applied effectively, will maximise the benefits to the region and, ultimately, to New Zealand.

It will be up to local EDAs, in partnership with local, regional and central government, industry organisations and private sector operators, to take the lead on developing an implementation strategy and action plan. Information on the opportunities is summarised in Table 1:

Table 1 Bay of Plenty: Key economic development opportunities

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Forestry and related processing						
Toitū Te Waonui Afforestation Initiative.	It is estimated that the combined forestry assets will be worth $1 billion once the project reaches maturity. The initiatives will enhance Māori land productivity through aggregation. The initiative will create a New Zealand-owned forestry asset and has wider benefits for Māori in terms of jobs, offering opportunities for education and training, and enabling the acquisition of equity by Māori/iwi/hapū and small individual local shareholders.	• Toitū Te Waonui • Forestry and Wood Action Group (FWAG) • Scion • MPI • TPK	Project proposal currently going through validation phase. To be followed by drafting of investment prospectus, capital raising, large-scale land aggregation, and land preparation and planting. A proposal for a government afforestation grant to assist with working capital and cash flow requirements may be presented. In addition, funding support may be sought for the development of the investment prospectus and other commercial preparation activity.	Estimated to be around $35 million.	Complete validation by Q2/2015. Investment prospectus by Q3/2015. Further timeline uncertain.	**Medium** – considerable economic benefits possible to the region and Māori but the scale of land aggregation required to achieve impact is also considerable.
Developing export markets for processed wood products.	Transitioning from log exports to additional processing of 4 million m^3 of logs annually is estimated to have the potential to add $2.2 billion to regional GDP.	• Forestry industry • FWAG • Wood Processors & Manufacturers Association • Scion • MPI • NZTE	The Forestry and Wood Processing Strategy 2014 (Bay of Connections) was completed in November 2014. Industry to pursue a more collaborative approach – in conjunction with NZTE – to identify export market opportunities and to develop suitable products that meet overseas demands and standards. Should also look for opportunities to make greater use of geothermal resources for energy and timber drying.	Unknown at this stage.	2015–25	**Medium-high** – builds off regional strengths with a strong international orientation.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Agriculture						
Improving on-farm productivity through better farm management and increased animal yields.	An average increase of on-farm productivity of 10 percent across Bay of Plenty dairy, beef and sheep farms could deliver an estimated additional $60 million of value add per annum to the region.	• Farmers • Sharemilkers • Iwi • DairyNZ • Beef + Lamb NZ • MPI • AgResearch	Various current PGPs are partly focused on supporting agriculture productivity gains. Assess the benefits of expanding existing industry initiatives (eg DairyNZ's Focus Farms) to more locations. Assess the benefits of increasing funding for research and development focused on animal and plant genetics. Undertake proof of concept on large-scale sheep and goat dairy farming.	Planned PGP investment: $246 million (partly focused on productivity). Approx. $750,000 p.a. for 10 extra locations (private and public). Depends on scale (private and public).	2015–2016	**Medium-high** – valid opportunity that is regionally significant (including for Māori land owners) with large potential impact over the long term and is consistent with national priorities.
Horticulture						
Horticulture land expansion for kiwifruit.	Underlying demand in export markets estimated to grow at 4 percent per annum. Allowing for productivity gains, an assumed average 1 percent increase in orchard land per year (around 100 ha) would lift regional GDP by around $2 million annually.	• Kiwifruit industry • BOPRC • District Councils • MPI • MBIE • MfE	Identify potential areas for expansion of horticulture land. Advance investigations and decision-making regarding new irrigation schemes that have been considered.	Unknown at this stage.	2015–2016	**Medium-high** – the global kiwifruit industry is centred in the region and growing demand suggests good expansion potential, including on Māori land.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Avocado industry international market development.	The avocado industry has a target of quadrupling industry turnover to $280 million by 2023 by achieving higher selling prices and tripling volumes. Maintaining 60 percent of export crop suggests the Bay of Plenty avocado sector could contribute $168 million to regional exports by 2023.	• Industry • Horticulture NZ • Avocado Industry Council • MPI • NZTE • Callaghan Innovation • FoodBowl, NZ Food Innovation Auckland	Avocado exporters to increase their efforts to enter new markets, particularly the United States, in conjunction with NZTE. Industry needs to progress research on refrigeration techniques that will enable fruit to be shipped over longer distances.	Planned PGP investment: $8.6 million (partly focused on international market development). Other investment unknown at this stage.	PGP to be completed by 2019. Further timeline uncertain.	**Medium** – the industry is focused on growth to meet growing export demand, supported by productivity and supply chain improvements, and greater industry collaboration.
Take a significant position within the growing global health and wellness market through high quality mānuka products.	Natural healthcare market to grow to about $700 billion by 2018 according to international projections. New Zealand producers are able to attract a price premium of approximately 40 percent for mānuka-based honey products. There is potential for the turnover of the mānuka honey industry to grow from an estimated $75 million in 2010 towards $1.2 billion p.a. by 2028.	• Industry • Iwi • Mānuka Research Partnership (NZ) Limited • Miere Coalition • MPI • MBIE	High Performance Mānuka Plantations PGP since 2011. 'Interim Labelling Guide for Mānuka Honey' released in 2014. Permanent labelling guide requires additional research. Industry needs to: resolve issues surrounding labelling/product standards; enhance collaboration regarding growth strategy, market development, and research and development; consider the establishment of an industry-wide marketing body; and develop a strategy to enhance reliability of Mānuka honey supply.	Planned PGP investment: $2.9 million. Further investment unknown at this stage.	Permanent labelling guide to be completed by 2016. PGP to be completed by 2018. Further timeline uncertain.	**Medium** – global demand for quality mānuka honey and related products is high. Anchor businesses are supporting industry development (including Māori investment) and research and development.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Aquaculture						
Ōpōtiki sea farm and harbour development.	Low benefits for the first six years. Full ongoing benefit not realised until year 12. Once in full operation, the combined activity from sea farm and mussel processing facility is projected to generate additional GDP for the region of around $34 million annually, with the benefit for New Zealand as a whole being around $40 million annually. Estimates of the creation of new jobs at the combined harvesting and processing operations, once full capacity has been reached, range from 250 to 400 FTEs. In addition, the harbour development and establishment of the processing facility will generate temporary jobs in the region during the construction period.	• Whakatōhea Eastern Seafarms Ltd • Treasury • MBIE • MPI • BOPRC • Ōpōtiki District Council • North Island Mussels Limited	First set of sea farm production lines established in 2014. Commercial harvesting commencing in 2015. A study assessing output markets is in progress. Business case needs to be reviewed, including export potential, technical risk analysis, and project validation for local processing facility. Central government to decide on financial contribution to the Ōpōtiki harbour development. A better business case is being prepared.	Marine farm, hatchery and processing plant is estimated to cost around $80 million. Harbour development to cost around $52 million.	Completion of business case and central government funding decision: 2015. Harbour development and processing facility: by 2021. Full operation: by 2026.	**Medium-high** – there has been significant work undertaken to develop the project. The project could have a large economic impact and create employment in the Eastern sub-region. A successful project would have a transformational impact on the Ōpōtiki district.

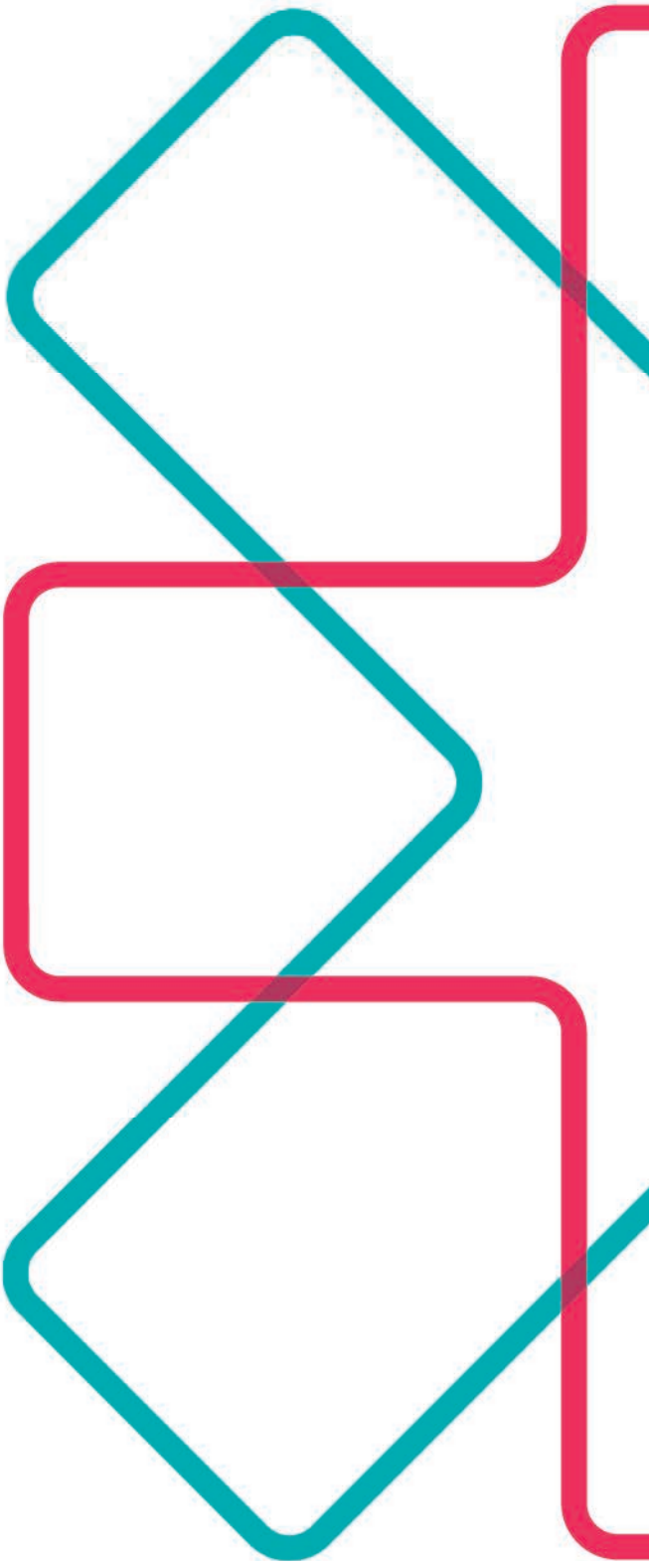
Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Establishment of commercial trout farming.	Trout cultivation was valued at more than US$1.3 billion in 2006 (World Wildlife Fund, 2010), with large international markets in Japan, Europe and America. The potential benefit to the region depends on the scale of production.	• Commercial fishing industry • Recreational fishing organisations • Iwi • Regional Aquaculture Organisation • Enterprise Great Lake Taupo • MPI • DOC	Commercial trout farming is currently prohibited in New Zealand. In support of a call for a law change, interested commercial parties and iwi need to: demonstrate the viability and economic potential of commercial trout farming; develop detailed designs of farming facilities and compliance with best practice management; and provide an assessment of the risks to wild trout and the associated industry. Central government to consider legislative change to enable commercial trout farming.	Depends on scale (private sector).	Report to government: 2015. Legislative change: by end 2016.	**Medium** – strong global demand (and potential use of geothermal heating) but the regional scale (and therefore impact) is unclear. Ability to manage risks and compliance with best practice is uncertain.
Visitor economy						
Rotorua wellness-based strategy.	If the strategy enables Rotorua to achieve the 3–5 percent per annum increases in visitor expenditure that are being forecast nationwide, the region's annual GDP would lift by about $55 million and about 990 extra jobs would be created after five years.	• Destination Rotorua • Tourism NZ • Rotorua Lakes Council • Air New Zealand • Jetstar	Destination Rotorua to decide on marketing strategy replacing 'Famously Rotorua' campaign. Destination Rotorua to progress strategy to position the region as a key wellness destination, with a focus on securing Chinese and Asian visitor growth. Negotiations with airlines to be advanced regarding the introduction of direct flights between Rotorua and Queenstown.	Unknown at this stage; related to various initiatives.	'Famously Rotorua' campaign to end in 2015. Required work to be undertaken over 2015–2016.	**High** – is a real possibility, internationally orientated and can leverage existing investment.
Regional tourism strategy.	Benefit dependent on design and success of strategy. Every 1 percent lift in visitor expenditure over and above 'business as usual' would account for around $5 million in GDP and 100 FTEs.	• RTOs: Taupō, Rotorua, BOP, Eastland • Destination Rotorua • BOPRC • District councils	RTOs to develop a joint region-wide tourism strategy. RTO funding model to be reviewed related to the development and implementation of the strategy.	Unknown at this stage.	2015–2016	**Medium** – there is a valid case for a regional tourism strategy that will result in employment and GDP growth, but RTO structure does not incentivise collaboration.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Specialised manufacturing						
Develop critical mass in niche manufacturing with an initial focus on metal powders and applications.	According to the initial business case underlying a 10-year industry development roadmap launched in 2008, the industry could grow to $1 billion turnover annually by 2030, with exports reaching $100 million by 2023. The benefit specifically to the Bay of Plenty depends on the proportion of industry that base themselves in the region.	• Titanox • TiDA • Rapid Advanced Manufacturing • MBIE • Callaghan Innovation • BOP Polytechnic • Waikato University • Priority One	10-year industry development roadmap launched in 2008. Titanium Technologies Platform (2014) is targeting opportunities and technical and commercial barriers. Need to review and update the existing roadmap and determine how the growth goals can be realistically achieved.	$5.75 million being invested in the Titanium Technologies Platform. Previous investments total around $15 million of research and economic development funding support. It is estimated that industry has invested over $20 million. Further funding requirements unknown.	2015–2018	**Medium-high** – this opportunity rates high on most criteria given sustained private and public investment to leverage intellectual property and ambitious goals, but practicality is unclear.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Improve water availability and quality						
Bay of Plenty councils to work collaboratively with stakeholders to set water catchment objectives, limits, and monitoring and management mechanisms.	Improved availability and quality of water will benefit a range of the region's primary industries, including reduced costs of droughts and improved land productivity.	• BOPRC • District councils • Industry bodies • Communities • MfE	Establish systems for comprehensive monitoring and reporting of water usage. Identify environmentally sustainable levels of water allocations. Engage in collaborative processes with stakeholders in each catchment to identify who obtains value from the water in the catchment, set objectives, set limits and put in place measures to address water takes and sources of contamination.	Unknown at this stage.	2015–2018	**High** – this opportunity rated high on most criteria because of the economy's reliance on water for most key industries; the potential impact; increasing evidence of issues; and consistency with national priorities.
Enhance the use of geothermal energy						
Marketing of geothermal opportunities to industry.	Benefits include the establishment of new industry in the region and the cost-effective production of goods, which will increase the international competitiveness of businesses using geothermal energy.	• Geothermal field owners • Regional EDAs • BOPRC • MBIE • NZTE • TPK	Coordinated marketing initiative to be established to promote potential business opportunities provided by the use of geothermal resources. Identification and design of specific investment opportunities with foreign direct investment potential. Mapping of additional geothermal fields.	Unknown at this stage.	2015–2018	**Medium** – although the potential for energy cost savings is substantial, the proposition will only appeal to a limited range of businesses due to high up-front investment costs and location disadvantages at the geothermal fields.

Opportunity	Potential benefits	Who	Current status and further work required	Investment required	Timing	Assessment
Improve education and skills						
Tauranga Tertiary Education Precinct.	Tertiary sector collaboration with industry (possibility of co-location of businesses). Development of education pathways to retain and attract more young people to the region, and support up-skilling of the existing workforce. Analysis shows Precinct benefits of $188 million over the next 20 years and 600 additional jobs. Training of 4,000 students over that period and annual revenue of $133 million. Up to 20 percent overseas students, with potential employment in the region after graduation. Will increase the quality and relevance of education offers.	• Waikato University • Bay of Plenty Tertiary Education Partnership (BOPTEP) • Tauranga City Council • BOPRC • Industry • TEC	TEC will need to review the business case for the campus (including projected domestic and international student demand) to inform future decisions on EFTS investment (student achievement component funding) and international student enrolments. Tauranga City Council to work with regional, local and central government partners and private sector developers to ensure that the city's infrastructure supports a growing student body and encourages co-location of firms within the city's new tertiary education precinct.	The BOPTEP estimates that campus construction will cost $89 million. Unknown at this stage.	Opening of new campus: 2018.	**Medium** – is practical and achievable, the potential impact is large and the initiative is consistent with national priorities, but the impact will largely fall within Tauranga and the Western sub-region.
Development of a youth/rangātahi education and skills strategy.	Initiatives will raise the education and skill levels of the Bay of Plenty's future Māori workforce (and hence productivity) by supporting youth to remain in education and training; and transition successfully to employment.	• Māori education providers • Regional secondary schools • BOPTEP • MoE • ERO • MBIE • MSD	Development of a joint youth strategy (as per Bay of Plenty Tertiary Intentions Strategy). Will need to include a review of a full range of current initiatives to identify the most successful programmes that could be expanded and the development of common monitoring and reporting indicators.	Unknown at this stage.	2015–16	**Medium** – is based on a clear issue, is regionally significant and could have a reasonable impact. But the impact will depend on effective coordination and implementation.

INTRODUCTION



Scope

The Ministry of Business, Innovation and Employment (MBIE), in partnership with the Ministry for Primary Industries (MPI) and the Bay of Plenty Regional Council (BOPRC), commissioned MartinJenkins to undertake a Regional Growth Study of the Toi Moana or Bay of Plenty region.

The study covers the '**economic region of the Bay of Plenty**' as set out in the Bay of Connections Regional Economic Development Strategy which is supported by the region's councils and EDAs, and central government agencies including New Zealand Trade and Enterprise (NZTE).

In common with the Bay of Connections strategy, this study includes detailed analysis of data grouped into three sub-regions:

- Western – Tauranga City and Western Bay of Plenty District.
- Eastern – Kawerau, Ōpōtiki and Whakatāne districts.
- Central – Rotorua and Taupō districts.

Throughout this study, references to the Bay of Plenty include Taupō unless otherwise stated.

Altogether, the Bay of Plenty covers 34,000 square kilometres of land and sea. It is bordered to the north-east by a 259 kilometre stretch of Pacific Ocean coastline and covers 9,509 square kilometres of coastal marine area.

Much of the central part of the region is within the active Taupō Volcanic Zone, which includes geothermal fields, New Zealand's largest freshwater lake, the Rotorua lakes and volcanic cones.

This volcanic activity has created highly fertile soils which, along with a temperate climate, are strengths for primary production.

A large proportion of land in the Bay of Plenty (872,400 hectares) is in productive use. Of that, 48 percent is in plantation forest and 38 percent is in pasture. About 15,000 hectares (less than 2 percent) is in horticulture.[4]

Figure 1 Toi Moana Bay of Plenty region map

Source: Bay of Connections, 2014

[4] (Statistics New Zealand, 2013).

The Toi Moana Bay of Plenty Regional Growth Study was commissioned to identify significant economic and investment opportunities by sector to sustainably grow employment and incomes and contribute to Business Growth Agenda (BGA) goals.[5]

The study builds on and extends existing regional analysis to better understand the industries, sectors and opportunities that have the most growth potential in the medium term, and to identify actions to achieve this potential. The study report is not a strategy or an action plan. Its purpose is to identify growth and investment opportunities and assess how they might be progressed by the private sector, local government, central government and non-government organisations.

A steering group comprised of central government agencies, BOPRC and Bay of Connections provided oversight for the project. The views of a technical advisory group and interviews with regional business and industry stakeholders (including the Bay of Connections Governance Group and working groups, and the He Mauri Ohooho Advisory Group), informed the development of the study.

Similar studies have been commissioned for the Northland and Manawatū-Whanganui regions, recognising that spatial factors influence the ability of New Zealand's region's to grow, retain and attract competitive firms and industries. Every region has distinct advantages and specialisations that can be leveraged to improve performance, income and jobs.

[5] The BGA goals include lifting the ratio of exports to GDP to 40 percent by 2025; increasing business expenditure on research and development to more than one percent of GDP; related better public service result areas for education and skills; and broader goals including reducing the real interest rate premium on New Zealand debt compared to US and Australian equivalents.

Approach

The study included five phases to identify and assess potential growth opportunities.

- Data and research collation and review.
- Key informant interviews.
- Assessment and investment opportunity/action identification.
- Validation of short-listed opportunities.
- Reporting.

The key elements of each phase are outlined in Table 2.

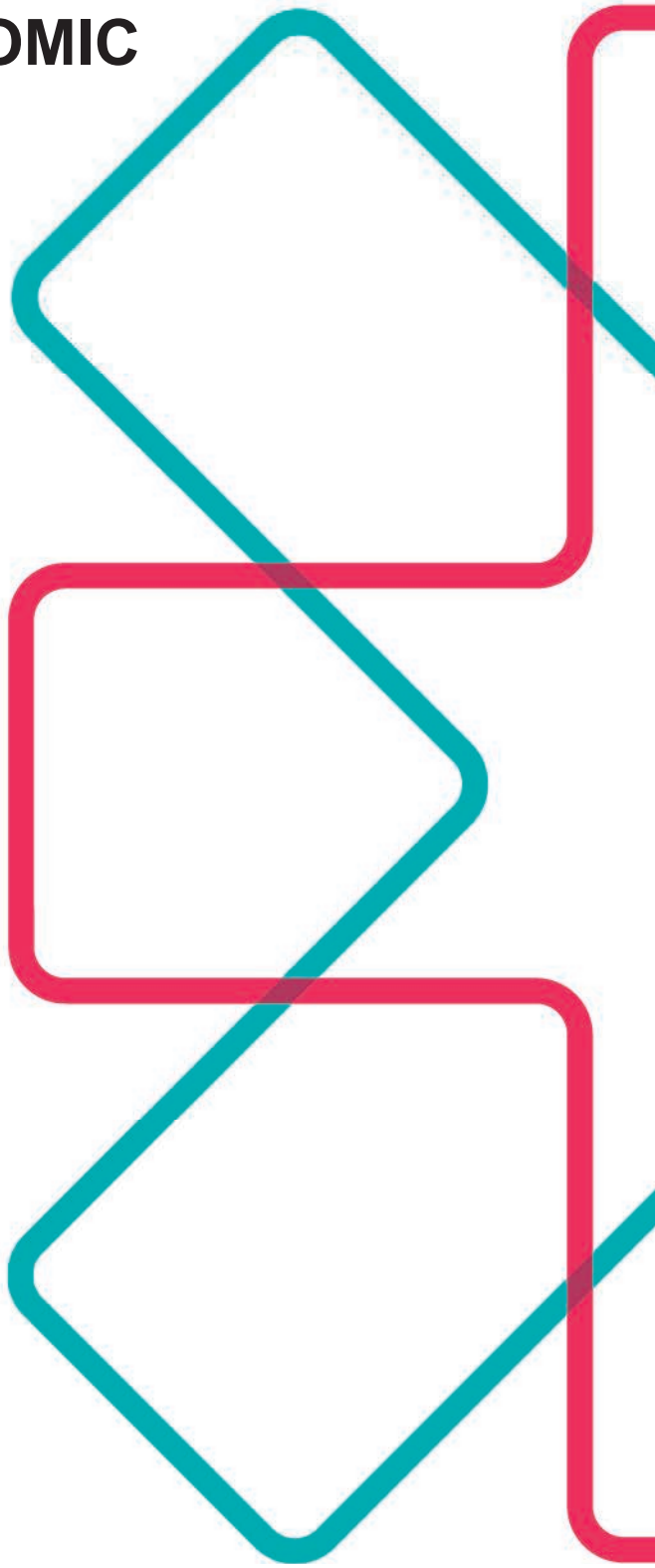
Table 2 Bay of Plenty study phases

Phase	Description	Comment
1. Data and research review	• Analysis of the regional economy and key indicators of prosperity to provide a long-term picture of its performance relative to other regions and to identify any major issues that exist. This included an analysis of trends in Gross Domestic Product (GDP), GDP per capita, earnings and household incomes, employment, labour participation, unemployment and beneficiaries, productivity estimates, population and population growth (including by ethnicity). • Analysis of industry value chains to robustly identify new or emerging industries with potential to grow, where strengths could be built, and industries with existing significant market opportunities. Analysis includes industry employment, business numbers, GDP, export estimates, location quotients and multipliers; regional and national research that was available on the capability of, and issues and opportunities facing, the key industries; research on New Zealand's international comparative advantage in these industries; and the national export performance of these industries in world markets and world market growth (where available). An important element of this phase was to define and identify relevant industry value chains upon which to undertake further analysis. • Analysis of cross-cutting issues as they apply to the Bay of Plenty, and issues and opportunities that impact on a range of industries. This Included a review and analysis of research and documentation that is available on the BGA themes as they relate to the region, the relationship of the Bay of Plenty region with other regions (notably the Waikato and Auckland), and to specific regional industries.	Over 200 studies and research reports on the region and key industries were reviewed, including economic research reports, economic strategy documents, local authority planning documents, infrastructure reports and industry studies. The analysis drew on official figures from Statistics New Zealand and estimates from Infometrics' Regional Database (for example, for district-level GDP). Data from the Regional Economic Activity Report was not used as the defined regions were different and data was only available at an aggregated level. The defined industry value chains were agreed with the technical advisory group. These value chains are discussed later in the report.

Phase	Description	Comment
2. Key Informant interviews	• Interviews and workshops focused on eliciting information about potential industry growth, constraints to that growth and specific opportunities for the region. Some questions related to the region as a whole, while some were specific to industries. • We wanted to understand why businesses are investing in the region, their intentions, and the underlying advantages they see in the region. Interviews were also used to test the initial industry analysis and research review findings with stakeholders, as well as early study conclusions.	Over 50 interviews were undertaken with representatives from business, education, research, local government and commercial iwi entities. Workshops and meetings were also held with representatives from the Bay of Connections governance group and the He Mauri Ohooho Advisory Group, and supporting forestry, freight logistics and aquaculture groups.
3. Investment opportunity/ action identification	• Thematic analysis of the data, research and collected interview notes to identify the most significant opportunities and constraints that should be assessed further. • Advice from the steering group and the technical advisory group to test the emerging findings and explore potential actions/ initiatives/ investments. Opportunities were categorised into three areas: • Commercial – involving one or a small number of businesses and focused on commercialising or growing a specific opportunity, and requiring private sector investment. • Industry development – involving several firms in an industry and focused on building up capacity or capability in that industry. • Enabling – mainly cross-cutting and relating to a BGA theme, with benefit to a large number of operators across several industries.	Assessing a long list of potential actions/ initiatives/ investments against initial criteria to identify their suitability: **Validity –** have clear commercial or industry development potential, based on evidence and/or reasonably well researched proposals. **Potential impact –** likely to have sizable impact on the economy, including flow-on effects. **Practicality –** are realistic and able to be implemented. **Regional significance –** likely impact on a broad cross-section of the region. **International orientation** – have the potential to increase export earnings, overseas investment and/or attract international skills. **Ability to leverage previous activity –** builds on previous or current work and investments. **Consistency with national priorities –** such as those delivered under the BGA (and hence leverage national/ local resources). Opportunities need to be strongly aligned to all or a number of these criteria. Because of the inter-relationship between opportunities and on the advice of the technical advisory group, the opportunities are not being ranked but are instead being prioritised and presented as a package.

Phase	Description	Comment
4. Validation	Potential cross-cutting and industry development opportunities were assessed and validated through discussions with and feedback from relevant industry representatives and stakeholders. Questions related to the likely benefits of taking up the opportunity or addressing the constraint, likely costs, rationales for any intervention, and who would need to be involved in taking up the opportunity. Potential investment opportunities were assessed and validated through detailed examination of available specific material and relevant industry background. Additional information was sought from industry experts. Questions related mainly to output market conditions and risks surrounding the investments. Feedback was sought and received from members of the technical advisory group.	12 additional in-depth interviews and meetings were held with representatives from business, local government and central government. For forestry sector investment opportunities, a consistency check was carried out regarding information received and industry assessment completed for the Te Tai Tokerau Northland Regional Growth Study.
5. Reporting	An opportunities report focussing on the identified, validated opportunities and initiatives.	Early drafts were provided to the technical advisory group, steering group and wider local government and central government. Feedback was considered and, where appropriate, has been incorporated into the opportunities report.

BAY OF PLENTY ECONOMIC CONTEXT



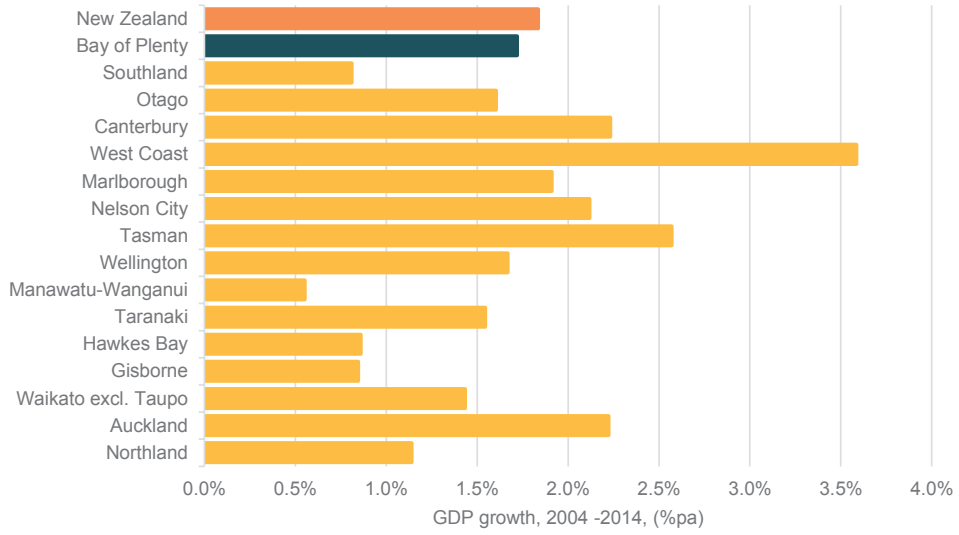
Overview

7.1 percent of New Zealand's population lives in the Bay of Plenty region. The region generates $11.8 billion in GDP (5.7 percent of national GDP) and provides 148,000 filled jobs (6.6 percent of jobs in New Zealand).

Key indicators suggest that the Bay of Plenty economy is growing more slowly than nationally. Over the last ten years, the region has achieved real GDP growth of 1.7 percent per annum and employment growth of 1.1 percent per annum. This represents 94 percent and 92 percent of national growth respectively.

Average GDP growth rates for all regions for the last ten years are shown in Figure 2.

Figure 2 GDP growth by region, 2004–2014, percent per annum



Source: Infometrics Regional Database

This below national average performance is reflected in incomes and earnings, which are about 85 percent of national levels. Similarly, labour force engagement statistics are below the national average with lower participation and employment rates, and higher unemployment rates.

There are sub-regional differences.

- The Eastern sub-region has significantly lower levels of performance across most economic measures compared to the Western and Central sub-regions.
- The Western sub-region is actually growing faster than the national average in terms of population, employment and GDP.

The Bay of Plenty has a large Māori population, particularly in the Eastern and Central sub-regions. Generally, at a national level, the Māori population is not performing as well as the non-Māori population across a range of measures such as unemployment, incomes and health. This is exacerbated in the Bay of Plenty, where there is not only a large Māori population, but Māori in the region are not performing as well as Māori nationally (He Mauri Ohooho Māori Advisory Group, 2014).

Economic performance varies across the region – the fast growing Western sub-region, the stable Central region, and the declining Eastern sub-region.

Population

The region's population is growing at a faster rate than nationally. However, this growth is occurring only in the Western sub-region. Population is static in the Central sub-region and declining in the Eastern sub-region.

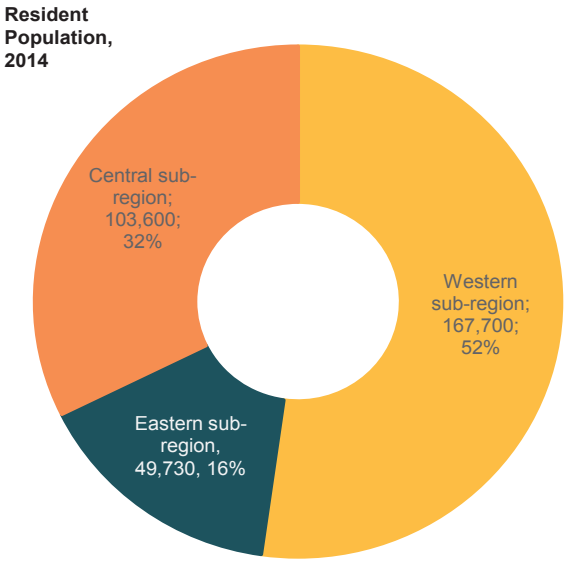
There were an estimated 321,030 people living in the Bay of Plenty in June 2014, making it the fifth largest region in New Zealand by population. Between 2009 and 2014, the region's population increased by 0.7 percent per annum, which is less than the 0.9 percent recorded for the population nationally (Statistics New Zealand, 2015).

Just over half of the population live in the Western sub-region. Just under a third live in the Central sub-region. Sixteen percent live in the Eastern sub-region.

Between 2009 and 2014, the Western sub-region population grew by 1.3 percent per annum. The Central sub-region's population increased slightly over the same period (0.35 percent per annum).

The population of the Eastern sub-region declined by 0.2 percent per annum over the same five-year period.

Figure 3 Population by Bay of Plenty sub-region, 2014



Source: Statistics NZ, Subnational Population Estimates

Statistics New Zealand's Subnational Population Projections to 2043 (medium scenario) suggest that this sub-regional pattern is likely to continue. Population growth is projected to only occur in the Western sub-region, at an average annual rate of 1.0 percent. The population in the Central sub-region is projected to decline slightly by 0.1 percent per annum, while population in the Eastern sub-region is projected to decline by 0.6 percent per annum.

Although the Bay of Plenty has one of the country's fastest growing populations, growth is concentrated in the Western sub-region. A large proportion of the region's population is Māori, especially in the Eastern and Central sub-regions.

Ethnicity

Māori account for 25 percent of the Bay of Plenty population. This compares to 13 percent nationally.

The region largely consists of European and Māori. The proportion of people from the Pacific Islands and Asia are well below the national average.

The Bay of Plenty's large Māori population is concentrated in certain sub-regions. While all sub-regions have a higher proportion of Māori than nationally, the proportion is higher in the Eastern and Central sub-regions as shown in Figure 4.

The Eastern and Central sub-regions have significantly higher proportions of Māori residents (42 percent and 30 percent respectively) and lower proportions of European residents.

The Western sub-region has a higher proportion of European residents (77 percent vs 68 percent) and slightly more Māori than nationally.

Figure 4 Ethnicity by Bay of Plenty sub-region, 2013

Source: Statistics NZ, Census 2013

The reason the Western sub-region can have more European and more Māori than nationally is because there is a very low proportion of people who identify with ethnicities other than Māori or European.

Economy

The Bay of Plenty region's economy has not been performing as well as the national economy. This is reflected in GDP and employment growth, personal and household incomes and other labour market measures such as participation rates and unemployment.

GDP and employment

The Bay of Plenty contributed $11.8 billion to the New Zealand economy and provided 148,100 jobs in 2014.

Real GDP growth over the five years to 2014 averaged 1.5 percent per annum, compared to 1.6 percent per annum nationally.

The Western sub-region accounted for close to half of the region's GDP in 2014. The Central sub-region accounted for 36 percent of GDP and the Eastern sub-region accounted for the remaining 15 percent.

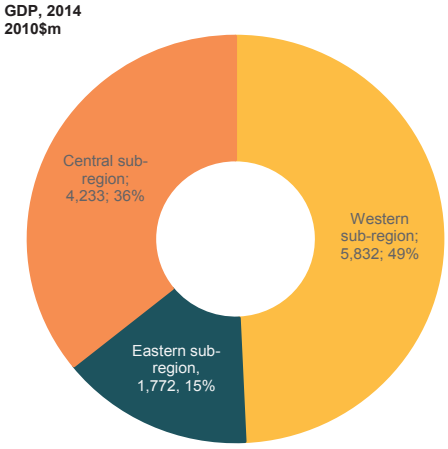
Over the last five years, real GDP growth has been fastest in the Western sub-region (1.7 percent per annum) followed by the Central sub-region (1.6 percent per annum) then the Eastern sub-region (0.6 percent per annum).

Employment declined by 0.1 percent per annum over the same period, compared to growth of 0.3 percent nationally.

The Western sub-region accounted for 52 percent of filled jobs in the Bay of Plenty region. The Central sub-region accounted for just over a third (34 percent), while the Eastern sub-region accounted for 14 percent.

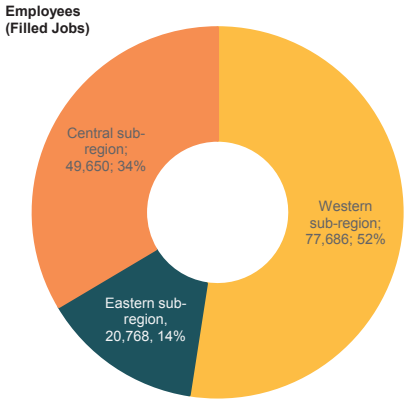
Over the last five years, employment growth was positive in the Western sub-region (0.2 percent per annum) but negative in the Central and Eastern sub-regions (-0.3 and -1.0 percent per annum respectively)

Figure 5 GDP by Bay of Plenty sub-region, 2014



Source: Infometrics Regional Database

Figure 6 Filled jobs by Bay of Plenty sub-region, 2014



Source: Infometrics Regional Database

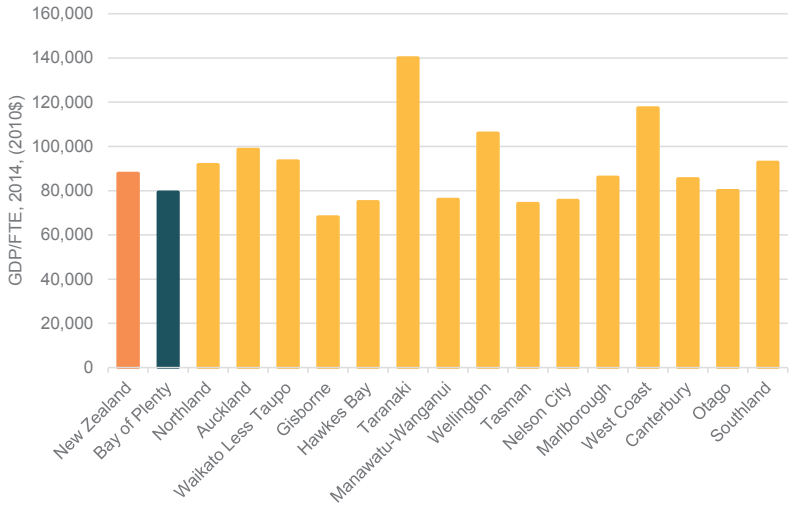
Productivity[6] and per capita GDP

GDP per FTE in the Bay of Plenty region in 2014 was $79,400. This was 85 percent of national GDP per FTE ($93,100).

The Bay of Plenty region ranks tenth out of the 16 regions in terms of estimated labour productivity (Figure 7).

Estimated labour productivity growth over the last five years was 1.7 percent per annum in the Bay of Plenty region. This is above the national average of 1.3 percent per annum.

Figure 7 Labour productivity by region, 2014



Source: Infometrics Regional Database

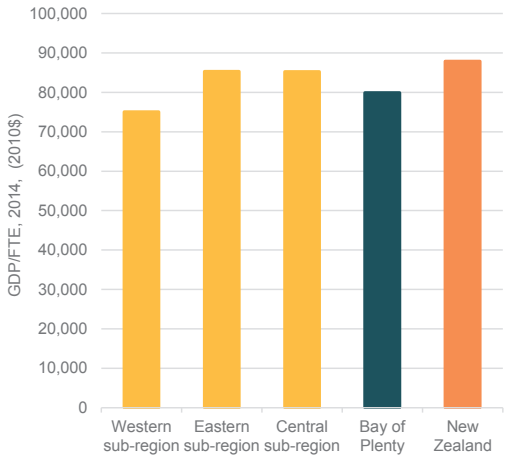
Figure 8 shows that, at $85,300, the Central and Eastern sub-regions have higher labour productivity than the Western sub-region ($75,000).

The reason for this is that the industry mix in both these sub-regions contains a higher proportion of industries that provide a higher return to labour than in the Western sub-region.

This is the case for capital intensive primary industries such as energy, agriculture and forestry, which are more significant in the Central and Eastern sub-regions.

In particular, both Kawerau and Taupō districts have labour productivity rates higher than the national average ($106,900 and $99,100 respectively).

Figure 8 labour productivity by Bay of Plenty sub-region, 2014



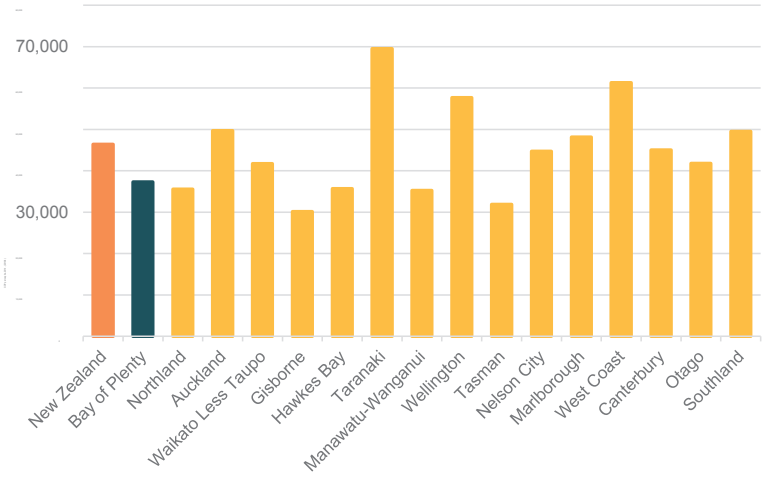
Source: Infometrics Regional Database

[6] GDP per FTE is only a rough approximation of productivity, which is typically measured as the value output per hour of labour.

Average GDP per capita in the Bay of Plenty in 2014 was $37,300, which is only 80 percent of the national figure of $46,400 (Figure 9).

According to the 2013 Census, the median personal income in the Bay of Plenty region was $24,300, which is 85 percent of the national median. Similarly, the median household income was $54,800, which is 86 percent of the national figure.

Figure 9 GDP per capita by region, 2014



Source: Infometrics Regional Database

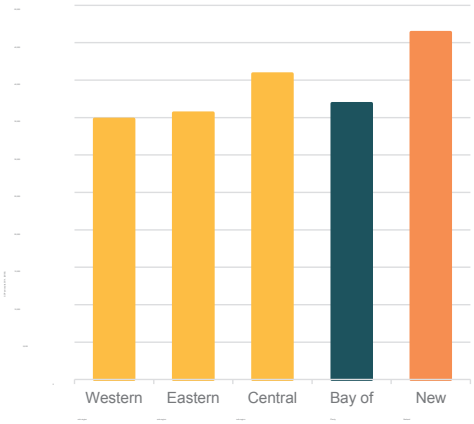
All sub-regions have GDP per capita lower than the national average (Figure 10).

GDP per capita is highest in the Central sub-region at $40,900. Next highest is the Eastern sub-region at $35,600.

GDP per capita is lowest in the Western sub-region at $34,800.

In the Western sub-region the low per capita GDP is driven by the lower labour participation rate, which is the result of relatively larger cohorts of retired people and younger people not in the workforce.

Figure 10 GDP per capita by Bay of Plenty sub-region, 2014



Source: Infometrics Regional Database

Labour force

According to the 2013 Census, the Bay of Plenty region has a working age population of 238,500. Of these, 146,400 are identified as being in the workforce.

The Bay of Plenty has a lower labour force participation rate and higher unemployment rates than nationally.

The Bay of Plenty labour force statistics are generally below national averages. According to the 2013 Census, the participation rate, at 65.0 percent, was lower than nationally (67.1 percent). Similarly, employment and unemployment rates were lower and higher than nationally (59.4 percent vs 62.3 percent, and 8.6 percent vs 7.1 percent respectively).

At a sub-regional level, there are marked differences. The 2013 unemployment rate in the Eastern sub-region was 12.6 percent compared to 7.5 percent in the Western sub-region and 8.6 percent for the Central sub-region.

Participation rates are lower than nationally across each of the three sub-regions. In the Eastern sub-region (63.4 percent) this is a result of people who opt out of the workforce, whereas in the Western sub-region (63.7 percent) this is a result of the high number of people retiring to the region.

In order to unlock the full development potential of the region, economic development priorities and initiatives need to ensure that all sub-regions can participate.

Māori in the Toi Moana economy

Māori are key to the region achieving its economic potential. Māori participation cuts across all economic opportunities in the Bay of Plenty. Māori are already significant participants in land-based industries (such as forestry, dairy, sheep and cattle farming, horticulture and aquaculture), as well as the visitor industry. This range of Māori business activity is based largely on traditional land assets. Māori freehold land in the region totals more than 400,000 hectares, 29 percent of the total Māori land resource nationwide. These large land holdings have increased significantly in the last decade through historical Treaty settlements.

The Bay of Plenty region accounts for about 29 percent, or $8.6 billion, of the total collective Māori asset base in New Zealand (He Mauri Ohooho Māori Advisory Group, 2014). A large proportion of the asset base is land, much of which is underutilised. This, combined with interests in geothermal

resources, means that Māori will be a key partner in developing a number of the opportunities identified throughout this report.

Historical Treaty settlements are yet to have a major impact on Māori economic development in the region, but will become more influential over time as the resources are employed to their full potential. Early settling groups include Ngati Tūwharetoa, Ngati Awa, and Ngati Whakaue.

The Central North Island (CNI) forestry settlement in 2008 saw 176,000 hectares of forestry land and accumulated rentals from forest owners transferred to seven Bay of Plenty iwi and a group of iwi and hapū known as Te Pūmautanga o Te Arawa.[7] That settlement was the catalyst for the completion of comprehensive settlements between the Crown and the CNI iwi, the largest of which was the Ngai Tuhoe settlement.

Iwi who received recent settlements are still in the early stages of developing and implementing their post settlement investment strategies and their full regional impact will not be realised for some time.

Source: Bay of Plenty Regional Council

This impact has the potential to be significant as, excluding the transfer of land and accumulated forest rentals, the financial redress agreed or transferred in the region since 2002 totals more than $450 million, with most of it having been transferred in the last five years.

This amount will increase in the next few years as a number of significant iwi in the region are still to complete their settlement negotiations, including Ngati Tūwharetoa and Eastern Bay of Plenty iwi Whakatōhea and Te Whanau a Apanui.

As well as accounting for a relatively large proportion of the Bay of Plenty population (28 percent compared to 15 percent nationally), Māori also have a relatively young population. The median age for the Māori population in the Bay of Plenty region is 25, compared to 41 for non-Māori. This can support the region in meeting its skilled labour shortage and is recognised as an opportunity for the Bay of Plenty region.

[7] This is often referred to as the Treelord 2008 Settlement. The CNI region is the largest forest area in New Zealand and includes the Bay of Plenty and Waikato regions and Ruapehu district. The CNI area makes up 34 percent of the New Zealand forest area and 38 percent of the standing volume of wood. The Bay of Plenty region makes up two thirds of the total CNI forest area and standing volume of wood.

Sector selection and opportunity identification

This study has taken a sector-based approach to identifying opportunities, which predominantly emerge in sectors that are competitive in a growing global market, and where the region has comparative advantages. Our analysis looked at regional industry data to define sector value chains. These definitions generally reflected definitions used previously in the region, nationally or in other regions. Key measures of economic activity and performance include GDP, employment, location quotients and export estimates.

Table 3 Summary table of key sectors in the Bay of Plenty

SECTOR	GDP, 2014, (2010$m)	GDP Growth, 2004 - 2014, %pa	GDP Growth, 2009 - 2014, %pa	GDP, Location Quotient, 2014	Filled Jobs 2014	Employment Growth, 2004 - 2014, %pa	Employment Growth, 2009 - 2014, %pa	Employment, Location Quotient, 2014	Estimated Productivity, (GDP/FTE), 2014	Estimated Exports, 2014, $m	Export Growth, 2009 - 2014, %pa
Forestry	771.4	-0.08%	2.96%	3.76	5,895	-3.32%	-1.24%	2.94	130,854	1,634	7.58%
Dairy	462.1	0.62%	-0.15%	1.27	5,397	0.82%	0.06%	1.46	85,610	800	6.16%
Meat	157.7	-2.71%	-5.46%	0.58	2,295	-2.43%	-4.92%	0.59	68,726	224	-3.81%
Kiwifruit	250.9	2.63%	-0.86%	13.04	6,001	2.24%	-2.43%	11.67	41,803	719	-0.13%
Horticulture	123.4	2.88%	-0.54%	1.34	2,854	2.33%	-2.27%	1.21	43,228	271	-2.65%
Other food	182.2	-0.74%	-0.77%	0.66	2,206	0.46%	-0.60%	0.76	82,601	80	6.44%
Aquaculture	24.6	0.57%	-1.98%	3.47	279	0.80%	-2.85%	2.39	88,038	89	1.14%
Metals Manufacturing	110.6	-1.27%	-0.69%	1.08	1,663	1.17%	-0.79%	1.04	66,514	32	-4.51%
Machinery/Electrical	177.1	0.56%	1.38%	0.94	1,915	-0.27%	-0.58%	0.88	92,500	129	-0.82%
Minerals	150.9	1.16%	-2.92%	0.63	902	2.04%	1.10%	0.93	167,239	58	0.07%
International Education	39.8	-1.14%	-0.77%	0.70	892	0.15%	-0.14%	0.71	44,609	29	-6.61%
Marine	15.5	-4.51%	-3.99%	0.94	224	-4.92%	-5.56%	0.96	69,289	9	20.02%
ICT	70.6	5.53%	5.24%	0.17	1,098	4.93%	3.20%	0.27	64,310	18	0.46%
Energy	409.4	9.51%	12.61%	1.40	594	12.18%	15.89%	1.25	688,762		
Property Services	721.9	0.45%	0.86%	1.17	2,892	-0.85%	-1.69%	1.13	249,594		
Financial Services	267.2	1.18%	-3.13%	0.39	2,300	0.75%	-2.92%	0.56	116,174	17	4.66%
Health Services	736.2	3.09%	1.71%	1.18	13,891	2.39%	1.85%	1.12	52,998		
Business services	491.5	1.64%	1.94%	0.79	7,637	1.89%	0.76%	0.77	64,357	90	1.04%
Construction Services	881.8	3.10%	3.12%	1.19	12,869	1.84%	-1.58%	1.06	68,523	3	-0.09%
Tourism	667.1	1.49%	2.25%	1.47	12,000	0.75%	0.38%	1.45	55,589	188	-0.26%
Freight logistics	571.7	1.50%	3.05%	1.40	6,212	0.40%	1.22%	1.19	92,027	197	1.42%
Other	4553.1	1.97%	1.24%	0.88	58,088	1.32%	0.18%	0.87	78,383	394	-3.13%
Total	**11,837**	**1.72%**	**1.48%**	**1.00**	**148,104**	**1.06%**	**-0.14%**	**1.00**	**79,920**	**4,981**	2.48%

Source: Infometrics Regional Database

The Bay of Plenty, through the Bay of Connections Regional Economic Development Strategy, has identified 13 sectors that were consistent with the above criteria (Bay of Connections, 2011a). Regional strategies for Energy, Freight Logistics, Forestry, Aquaculture, and Sport and Recreation are being implemented. The Bay of Connections also supports He Mauri Ohooho, the regional Māori Economic Development Strategy.

Existing Bay of Connection's sector groups, technical advisory group advice and interviews with industry stakeholders identified a broad range of industries of interest that were then exposed to the selection criteria.

From there the analysis filtered the information to arrive at key sectors, where there were strong opportunities for sustainable employment, GDP and export growth. The sectors where commercial or sector-wide development opportunities were identified are:

- Forestry and related processing
- Agriculture and related processing
- Horticulture and related processing (including kiwifruit, avocado, apiculture)
- Aquaculture
- Visitor economy
- Specialised manufacturing.

Enabling opportunities

In addition to the sector opportunities, a number of enabling opportunities also emerged from this study. The sustainable management of natural resources, investment in high quality infrastructure, access to a skilled workforce and efficient public services also emerged as important drivers of the region's growth potential. The impact of these factors is cross-cutting and has the potential to affect business operations and investment decisions across a broad range of sectors.

Although improvements in these areas do not generally constitute growth opportunities in themselves, they will lift the region's growth potential by enhancing the operating environment for businesses across sectors and enable additional investment opportunities to be realised.[8] With a wide range of industries and businesses potentially benefitting from these measures, public sector involvement is often required.

The following enabling opportunities were identified and align with the Government's BGA (in brackets):

- Water management (Building Natural Resources)
- Geothermal energy (Building Natural Resources)
- Transport infrastructure and digital technology uptake (Building Infrastructure)
- Education and skills (Building Skilled Workplaces)
- Public sector support for the business sector (Better Public Services).

Cross-cutting industry development opportunity

Improving the productivity of Māori-owned land is an industry development opportunity that is unusual in that it cuts across a range of sectors, all land-based.

The average productivity of Māori-owned land is far below industry standards. A report published in 2013 – 'Growing the Productive Base of Māori Freehold Land' – estimates that lifting productivity to average industry benchmarks could result in an additional $8 billion in gross output nationwide (PriceWaterhouseCoopers, 2014).

Māori landowners throughout the region will benefit from the recent review of Te Ture Whenua Māori 1993, the legislative framework governing Māori freehold land. The aim of the review is to facilitate greater control by owners and more effective and productive development of the land.

Initiatives are in place to assist with a lift in performance, including further land aggregation that will enable more efficient operation of larger business units. A pilot project mapping Māori land and its economic potential in the Ōpōtiki district has recently been completed, with engagement with land owners to follow in order to develop specific land use options.

The productivity potential of Māori-owned land is discussed in more detail in each sector section.

[8] Although infrastructure investment directly creates jobs and indirectly supports employment growth in other sectors.

Opportunity identification and assessment

A long list of investment, industry development and cross-cutting opportunities – and barriers – were identified on the basis of the research review and interviews with industry and regional stakeholders. These commercial and industry development opportunities were assessed by MartinJenkins using the following criteria.

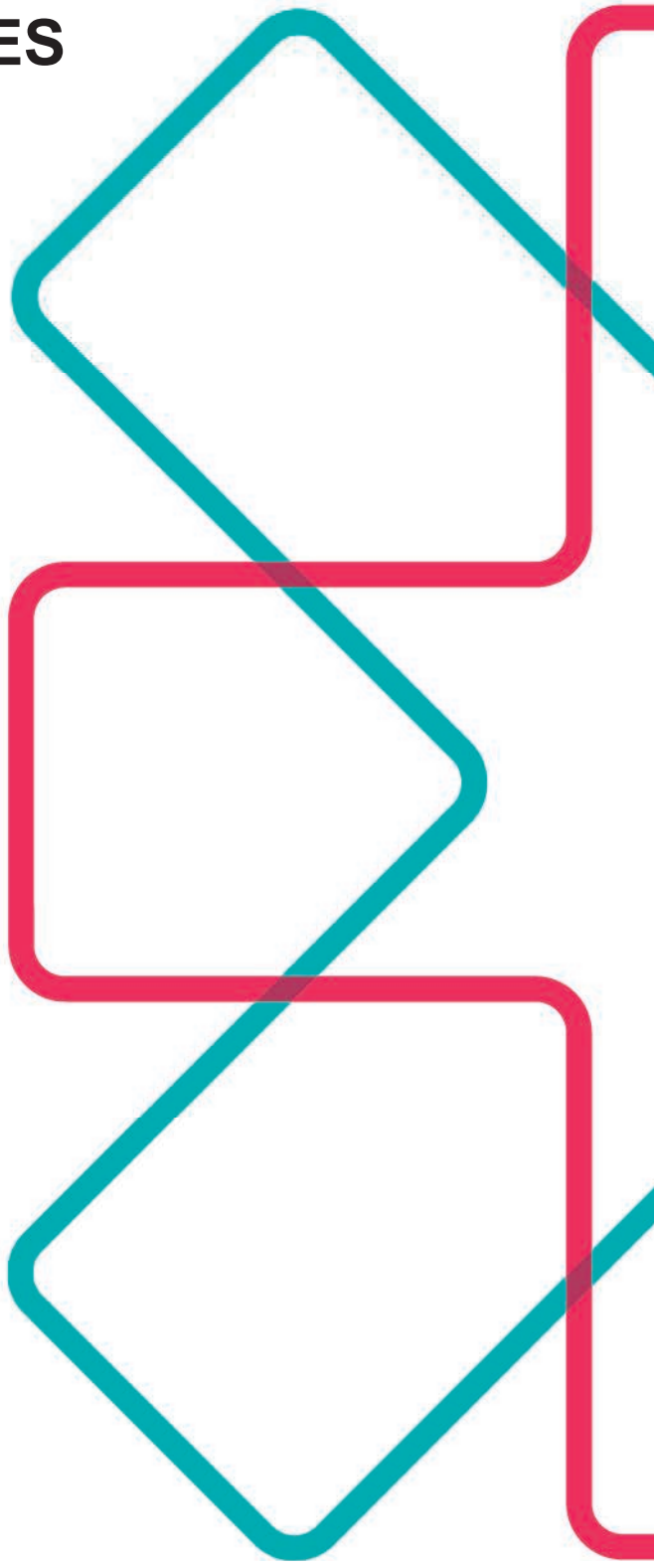
Table 4 Criteria for assessing opportunities

Criteria	Explanation	Assessment rating
Validity	The potential actions/investments are based on clear problems impacting on industry performance or major opportunities for industry growth that are not being taken up (or not being taken up fast enough) based on evidence and/or are based on reasonably well researched/worked up proposals.	**Low**: based on conjecture and limited evidence. **Medium:** based on what appears to be a clear issue or opportunity, but more evidence is needed (not yet definitive). **High:** based on systemic problems or opportunities and clear evidence.
Potential impact	The actions/investments are likely to have sizable impact on the economy, ie will improve productivity, incomes and jobs (given the focus of the study) and have flow-on impacts to the wider economy (eg skills, market connections, reputation etc).	**Low**: expected <$50 million in direct benefit; limited wider economic benefits; or impacts not really known. **Medium**: expected $50 million – $100 million direct benefit; some wider economic benefits. **High**: expected $100 million plus direct benefit; significant broader economic benefits.
Practical and manageable	Are realistic and able to be implemented.	**Low**: likely to be difficult to implement. **Medium**: somewhat complex but achievable. **High**: relatively easily implemented.
Regionally significant	Are likely to impact on a broad cross-section of the region (ie multiple districts and communities of interest).	**Low**: specific to one district or location; limited if any impact on other parts of the region. **Medium**: impacts on a few locations. **High**: will impact on the larger region; or impact across several locations.
International orientation	Have the potential to increase export earnings, overseas investment and/or attract international skills.	**Low**: limited and/or indirect impact on foreign investment, skills attraction or exports. **Medium**: some impact on FDI, exports or skills attraction. **High**: directly involves FDI, attraction of overseas skills and/or exports.
Leverage existing local and regional investment	Builds on previous or current work and investments.	**Low**: is a new project to the region; has not been scoped. **Medium**: some existing work, eg scoping or research undertaken. **High**: there has been a range of research, scoping, market assessment etc work undertaken.
Consistency with national priorities and central government investments	Such as those delivered under the BGA (and hence leverage national as well as local resources).	**Low**: only indirectly related to a priority. **Medium**: related to a priority. **High**: directly relevant to a priority or several priorities.

The opportunities were then rated. Where specific information about the benefits, costs and the reach of an opportunity was not available, judgements were made about the likely potential scale and benefits for the Bay of Plenty region.

The MartinJenkins assessment of each opportunity is highlighted in the subsequent sections of this report.

SECTOR OPPORTUNITIES



Forestry and related processing

Summary

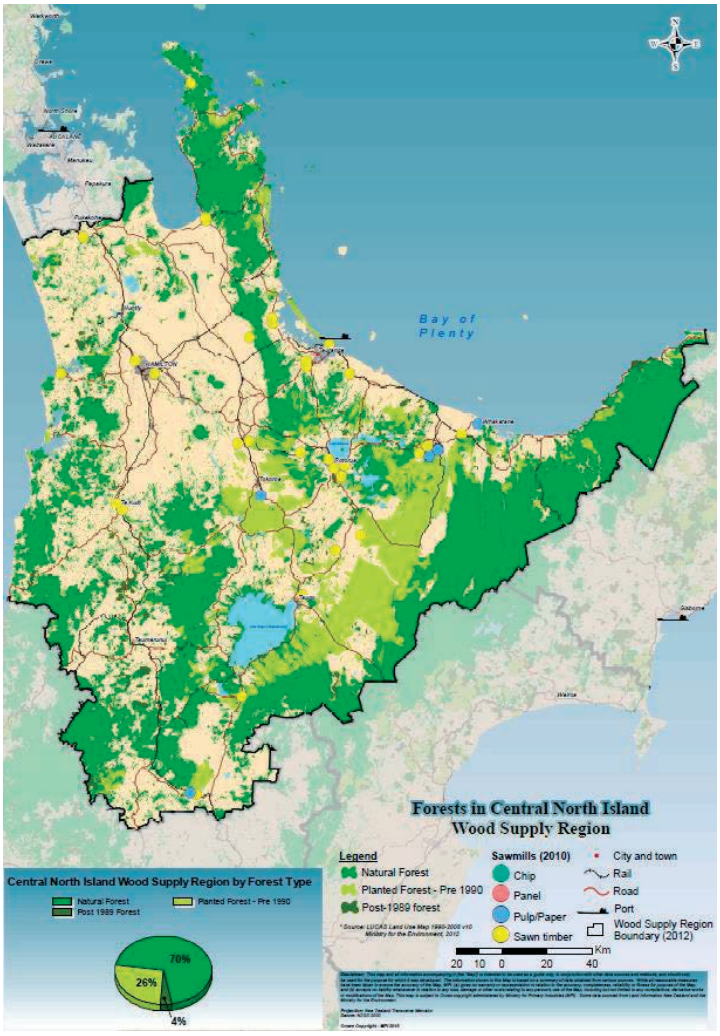
The CNI forest area, which includes the Bay of Plenty, is New Zealand's centre for forestry and related processing. The region has the largest forest resource nationally and has competitive advantages in the growing of wood, including climate, soils, access to geothermal energy in key locations, and economies of scale.

Following a temporary lift in wood availability over the next 5–10 years, volumes are projected to reduce gradually beyond 2025. There are opportunities in afforestation, although commercial decisions are affected by high land prices and a long investment period.

The region has a large wood processing sector, adding value to about 70 percent of the harvest. This compares to about 50 percent nationally.

There has been a lack of investment into the processing sector over the last 20 years, but successful new operations have been established in the region recently, with a range of additional ventures at planning stage. Integral to most of the new developments is the efficient use of wood waste.

Figure 11 Forests in the Central North Island



Source: Ministry for Primary Industries

Wood and wood fibres will continue to be a key renewable resource for future global production processes.

The Bay of Plenty has a large sustainable wood source and, with its proximity to Asian markets that will drive long-term global demand, is in a good position to compete internationally in processed product markets.

The Bay of Plenty is well positioned to meet growing global demand for wood products, with a large sustainable wood source and access to clean geothermal energy in key locations.

Background

The forestry and wood processing sector in the Bay of Plenty generates 21 percent of the sector's nationwide GDP. In 2014 the sector accounted for about 6.5 percent of the Bay of Plenty's GDP ($771 million). Employment in the sector was close to 5,900 people in 2014, which is about 4.0 percent of total employment in the region. The sector is underpinned by a large forest resource in the CNI (33 percent of land area in forest and 38 percent of standing volume nationally) and a number of internationally competitive processors.[9] The majority of activity is in the Central sub-region (53 percent of employment) and exports largely go through the Port of Tauranga.

Table 5 provides a summary of GDP, growth, employment, and location quotients for each of the industries that make up the forestry and wood processing sector.

Table 5 Forestry and related processing sector summary, Bay of Plenty

Foresty	GDP (2014, 2010$m)	Real GDP growth (CAGR 2004-2014)	GDP Location Quotient	Employment (2014)	Employment growth (CAGR 2004-2014)	Employment Location Quotient
Log Saw milling	90.3	-0.4%	4.33	1,388	-2.6%	4.09
Logging	357.0	2.8%	5.72	1,247	-1.3%	4.23
Forestry Support Services	44.4	-3.0%	5.12	854	-2.4%	4.34
Pulp, Paper and Paperboard Manufacturing	123.6	-5.0%	8.63	712	-7.3%	7.57
Timber Resaw ing and Dressing	39.9	0.6%	5.55	595	-1.7%	5.09
Wooden Structural Fittings and Components Manu	38.3	0.3%	1.61	593	-2.2%	1.53
Forestry	50.5	6.3%	2.51	180	1.4%	1.90
Other Wood Product Manufacturing n.e.c.	11.0	-0.9%	1.32	168	-3.2%	1.24
Corrugated Paperboard and Paperboard Containe	11.6	11.8%	0.65	76	9.2%	0.65
Prefabricated Wooden Building Manufacturing	2.3	-11.6%	2.39	41	-13.1%	2.61
Reconstituted Wood Product Manufacturing	1.6	-16.0%	0.48	23	-17.8%	0.42
Wood Chipping	0.7	-1.3%	5.89	13	-2.3%	6.47
Forestry	**771.4**	**-0.1%**	**3.76**	**5,895**	**-3.3%**	**2.94**

Source: Infometrics Regional Database

Forestry sector location quotients are well above one, suggesting a concentration of activity in the region.

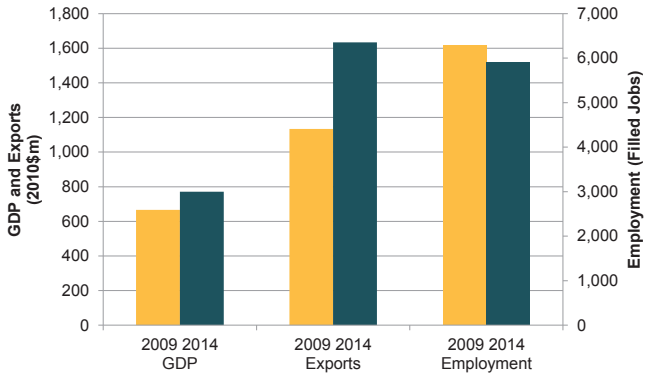
[9] (Ministry for Primary Industries, 2014b)

Figure 12 shows the size and change in the Bay of Plenty forestry sector over the last five years in terms of GDP, exports and employment.

The forestry and related processing sector has seen real GDP grow to $771 million from $667 million (averaging 3.0 percent per annum), while employment has dropped to 5,900 from 6,280 over the same period (–1.2 percent per annum), reflecting significant productivity gains in the sector.

Between 2009 and 2014, estimated exports have increased by 7.6 percent per annum to $1.63 billion.

Figure 12 Forestry and related processing, GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

Growth outlook

Global demand for wood has been rising over the long term, particularly in the fast growing economies of China and India (reflecting economic growth, rising standards of living and significant growth in building and construction). While China has been the driving force behind New Zealand's log export growth (accounting for about 70 percent of log and wood chip exports), the industry is developing other markets (for example, India where housing growth is strong) to reduce excess exposure to one market. However, there are various barriers to entry that may impact on New Zealand's ability to capture emerging markets.

South Korea, the United Kingdom and the European Union are growing markets for wood chips for renewable energy and climate change mitigation purposes. Extensive use of wood chips in packaging and expansion of wood-fibre composite materials is further adding to demand pressure. With the reduction in tropical forests, there is an emerging shortage of softwood, fuelled also by growing demand for processed wood products in key markets including South East Asia, Australia and North America.

Demand from China slowed somewhat over the past year, due to weaker residential construction activity. This, in combination with increasing international supply, has led to softer prices for raw logs. New Zealand's sawn timber and wood product export volumes have generally fallen over the last few years (other than a rebound in 2013), due to reduced demand from Australia and the United States. These recent market developments are likely to be fluctuations around an underlying upward trend for global demand driven by the Asian market.

Nevertheless, medium- to long-term forecasts are positive. Market commentators suggest that demand from China for construction timber will be high over the long term as the housing market recovers due to government housing projects, including the China Urbanisation Plan. Delivering this

plan is forecast to require 500–1,000 million cubic metres of new housing per annum over the next five years. Another growing market in China for is for pruned logs for the furniture industry.

Strong growth for low-grade logs is also expected in coming years from South East Asian countries as their economies are expected to expand strongly, with follow on effects for construction and furniture-making industries.

In the short to medium term, demand for sawn timber from New Zealand is also expected to increase as the Australian and US economies recover. Domestic demand for sawn timber is expected to increase over the medium term with Auckland and Christchurch housing construction growth.

The Wood Council of New Zealand (Woodco) has set an export earnings target of $12 billion by 2022 (New Zealand Forest and Wood Products Industry, 2012). While the long-term global demand outlook is favourable, the sector will require substantial new capital investment, increased onshore processing of logs, and product innovation to achieve the target.

One study has stated that, if the Woodco strategy is successful, New Zealand's forestry and wood product export value could increase by over 8 percent per annum in real terms by 2025 (Ministry for Primary Industries, 2014c). This would be driven by wood product volumes increasing by 14 percent per annum and a decline in log exports, ie a major structural shift in the industry from log exports to market-led manufactures.

Industry trends and regional advantages

Forestry

The Bay of Plenty has favourable forestry growing conditions in terms of climate and soils and businesses of scale. Large forest owners (over 1,000 hectares) account for 84 percent of the forest area (Ministry for Primary Industries, 2014b).

Ownership structures have changed over the past 30 years, with a sale of state assets to Timber Investment Management Organisations (TIMOs) and other investors, Treaty Settlements, and a move from vertical integration to separate ownership of forests and processing plants. A larger proportion of small owners (less than 1,000 hectares) established forests in the 1990s.

There has also been a separation of tree crop and land ownership, with overseas pension and endowment funds replacing New Zealand domiciled corporate forest owners. Four large groups, Hancock Timber Resource Group, Kaingaroa Timberlands (with a 2.5 percent iwi shareholding), Ernslaw One, and Crown Forestry, control 77 percent of the CNI region forest estate (Ministry of Agriculture and Forestry, 2009).

Wood supply has historically been relatively stable, with minor fluctuations reflecting uneven historical planting pattern. However, there has been a considerable increase in wood removals over recent years in response to global demand and high international prices, with the CNI region showing an increase from 9.0 million cubic metres in 2007 to 12.6 million cubic metres in the 2014 March year.

Wood supply in the CNI is projected to continue its upward trend to a peak of around 15 million cubic metres over the medium term, mainly reflecting the planting of small-scale forests during the 1990s (Ministry of Agriculture and Forestry, 2009). Beyond 2025 projections show a gradual reduction in

wood supply to around 10 million cubic metres per annum, with industry participants commenting that recent deforestation due to land use conversions to dairy farming may impact adversely on supply beyond 2035. Updated long-term projections for wood availability in the CNI region will be published in 2015.

The 178,000 hectare Kaingaroa Forest is New Zealand's largest plantation forest and one of the largest contiguous plantation forests in the Southern Hemisphere.

With the Treelord 2008 settlement transferring 176,000 hectares and accumulated rentals to Māori ownership, Māori now own about 40 percent of the 533,000 hectares of plantation land in the region. These Māori commercial interests will be key drivers of regional wood supply beyond 2030 based on their decisions in relation to site productivity, tree improvement, and new planting.

The Bay of Plenty has large land areas that could be suitable for further afforestation. BOPRC land managers have identified that there are approximately 156,000 hectares of grassland that would be suitable for forestry (comprising Land use capability (LUC) classes 6 and 7). However, commercial considerations, such as harvesting of steepland areas, and issues surrounding land ownership mean that the land area that has afforestation potential is considerably smaller.

Wood and wood fibre processing

Around 70 percent of the CNI harvest is processed, which is a greater proportion than nationally (Hall, Jack, Barry, & Goodison, 2013). The CNI region is home to six pulp mills, four paper mills, several large sawmills and a number small to medium mills, and nurseries (six large exotic and one native species nurseries).

There has been a lack of investment and innovation in the processing sector over the last 20 years. However, more recently, successful new operations have been established in the region and several new ventures are being considered. These range from manufacturing at the low-cost / low-risk spectrum of the value chain to the fabrication of high-end engineered wood products and the high technology transformation of wood waste, both for domestic and export markets:

- Red Stag Timber Ltd in Rotorua, has invested in substantial capacity expansion for mainly structural timber production. Although the scaled-up operation will be internationally competitive, the focus will mainly be on supplying the domestic market.
- Sequal Lumber has increased its ability to supply utility grade product to export markets, installing geothermal drying kilns at its Kawerau site and further capacity expansion is planned.
- Tenon has recently expanded its production capacity at its Taupō mill and mouldings plant, with additional product being exported to the United States.

- There is a planned trial ‘super mill’ in Rotorua which, if successful, will be extended and process approximately 1 million cubic metres of logs. The processing will involve squaring up raw logs for export, which makes them more economical for transport.
- A wood pellet plant near Taupō has potential to substantially increase capacity for exports to Asian markets.
- Taupō Carbon Producers Ltd has started to process waste wood into activated carbon products.

These investments and propositions provide encouraging signs for the sector in the Bay of Plenty. Integral to most new developments is the efficient use of wood waste (sawdust, bark, wood chips), with successful investments increasingly dependent on the sale of waste product to pulp mills and others.

More recently successful new operations have been established in the region and several new ventures are being considered.

Existing sites of ‘mothballed’ older saw mills have been purchased over recent years, suggesting that there is underlying investor interest in potentially entering the wood processing industry. Shanghai Pengxin Group is looking at a wide range of investments in the Taupō region, including potentially wood processing, while Rotoehu Tarawera Collective/Māori Investments Ltd – five Māori organisations with 45,000 hectares of collective forested land – have also indicated an interest in establishing wood processing assets.

The Japanese conglomerate Oji Holdings, with the Innovation Network Corporation of Japan, has acquired pulp and paper mills previously owned by Carter Holt Harvey in the region. The industry expects that significant upgrade investment will be required over the medium term to increase scale and international competitiveness of their plants.

Infrastructure

The Bay of Plenty has good and generally improving forestry and wood product transport infrastructure, including road, rail, and the Port of Tauranga. Wood processors usually draw logs from an economical radius of 100 kilometres or less, with the distance to the Port of Tauranga less than 150 kilometres.

The Bay of Plenty has good and generally improving forestry and wood product transport infrastructure.

The Tauranga Eastern Link, which is currently under construction, will reduce congestion and improve travel times for freight companies (New Zealand Transport Agency, 2009). Most of the state highway network in the Bay of Plenty and CNI is approved for limited High Productivity Motor Vehicle (HPMV) use which enables efficient movement of product.

Research, education and application of new technologies

The Bay of Plenty region is home to Scion, which is a CRI specialising in research, science and technology development for the forestry, wood product and wood-derived materials and other biomaterial sectors. Scion has significant pilot scale facilities for product development and market assessment, fermentation, mechanical pulp mill, packaging, wood treatment and drying. It is developing an innovation precinct at its North Drive Innovation Park in Rotorua to attract new firms, capability and investment into the forest industry and biomaterials sector.

Also in the region is the Waiariki Institute of Technology, which is the largest vocational forestry training institute in New Zealand.

The sector also has access to the findings and application of considerable research and development that is being undertaken nationally. For example:

- Development of tree robots to increase harvesting productivity and to make steepland harvesting safer. The Steepland Harvesting PGP (2010–2016, total programme cost of $6 million) is a partnership between MPI and Future Forest Research Ltd (Ministry for Primary Industries, 2014e). It has been developing a steep-slope, feller buncher machine that can operate safely and efficiently on steep slopes without endangering forestry workers. In general, increased mechanisation will reduce labour demand and can improve worker safety in the industry.
- Scion and forest owners are involved in research into new species with faster growth, shorter rotations, and different fibre performance and tolerance to climate disease. There has been research into high biomass 10–18 year rotation forests suitable for wood fibre production for new biomass heating technology. Genetics research is also targeted at guarding against biosecurity risks.
- Alternatives to the primary log fumigant methyl bromide are being developed to ensure continued compliance with changing regulations in 2020 and to reduce health risks.
- On the processing side, research has been conducted into developing products from wood waste (eg composites, biofuels, heating products from sawdust and bark). The Stump to Pump PGP, with a total programme cost of $3.6 million, was a short-term feasibility study to determine the technical and economic viability of converting radiata residues into bio-fuel (Norske Skog Tasman and Z Energy, 2014). The initial phase has been completed and the players involved are committed to further investment to ensure the fuel meets New Zealand standards.
- The application of precision technologies, such as unmanned aerial vehicles, offer multiple opportunities such as remote sensing, surveillance and broad-scale spatial measurement. The capacity to double harvestable yields has been shown on sample sites.

Issues and challenges

There are a number of key issues that have an influence on the performance of the forestry and processing sector.

Investment horizon and returns

The long period until afforestation investments produce a commercial return limits the range of potential investors.

Expected investment returns in New Zealand have been adversely affected by the rise in primary sector land prices resulting from high demand for dairy farm land. The price changes are being factored every 10 years into rentals paid by forestry management companies, thereby affecting their returns with a lag. Large scale forest managers reported that they are not considering expanding investments in New Zealand due to the high cost of land, with other global locations more attractive. However, purchases by new offshore investors are continuing at a modest scale. As far as global interest in the forestry industry is concerned, New Zealand competes as a location with other established or emerging regions, primarily Canada and South America.

The unfavourable location of some forests and potential forestry land also impacts adversely on (potential) rates of return due to comparatively high harvesting and transport costs. In fact, some of these forests, particularly in the Eastern sub-region, may not be replanted for that reason, thereby reducing the existing forest area and the associated future wood supply.

On the other hand, as the BOPRC establishes new rules for water management in the region, additional costs will be imposed on other/alternative land uses. The favourable environmental impact of forestry as a land use may make it a more attractive investment opportunity.

A lower-than-market return on forestry investment could possibly be justified in the case of a vertically integrated wood supply and processing operation where supply certainty and better coordination may yield higher returns for the wood processing part of the investment. There are examples for such arrangements in South America. However, lower input prices may weaken incentives to innovate, and there is limited evidence that the lack of vertical industry integration in New Zealand is adversely affecting the processing sector, with long-term supply contracts providing an effective substitute.

The long period until afforestation investments produce a commercial return causes such investments to be associated with high risk and limits the range of potential investors.

Global competition

New Zealand and Bay of Plenty wood processors are facing tough competition in global markets. Chinese processors currently have the advantage of lower labour costs and high prices received in the domestic market for residual wood chips, which favours the import of raw logs. This is exacerbated by current tariffs on some processed timber products.[10]

Other foreign suppliers selling into Asian markets – based in Europe, the United States, Canada and South America – usually have larger scale operations, larger investment capacity, and are often using superior technology compared to New Zealand processors.

Foreign competitors also benefit from a wider range of government support measures than are in place in New Zealand. For example, in Canada there is close integration between research providers and industry, which assists firms in obtaining and retaining a competitive edge through ongoing product and process innovation.

Source: Scion

Finally, industries in some competitor countries – Chile, Brazil and Canada in particular – are using a more collaborative approach for scoping new foreign markets and developing 'fit for purpose' product standards. In contrast, companies in New Zealand and the Bay of Plenty usually operate independently, even though they are of small scale by comparison.

Freight logistics

The lack of an efficient transport corridor east of Rotorua may constrain industry development in that area. Moreover, industry participants have expressed some concern about extra costs imposed by log marshalling requirements, the rise in port fees, and the differential in rail charges for logs and processed product that reinforces the bias towards raw log exports. The latter is mainly a function of the relative scale of the volumes of logs and processed product being transported.

Emerging labour shortages and health and safety record

Industry stakeholders commented that it is increasingly difficult to attract suitable workers into the forestry industry, which constrains expansion potential. While the industry's requirements of a high degree of skills and fitness may explain some of the lack of labour market supply, part of the problem is attributable to the sector's high incidence of accidents compared to other sectors and the resulting reputation of not providing a safe work environment. However, the industry is committed to improving its health and safety record and, in conjunction with government agencies, is implementing the

[10] Under the Free Trade Agreement with China, most of New Zealand's current forestry exports (logs, sawn timber and wood pulp) enter China duty free. However, tariffs remain and are not subject to elimination on processed wood and paper products. These currently account for 0.6 percent of total China imports from New Zealand. Possible areas of interest for New Zealand in the removal of tariffs in the future include particle board, laminated wood panels and medium density fibreboard.

recommendations from the Independent Forestry Safety Review (2014) (New Zealand Forest Owners Association, 2014).

Resource consenting

The development of forestry and particularly wood processing initiatives requires a degree of certainty that the necessary Resource Management Act (RMA) approvals can be obtained at the end of the process if a well-defined set of criteria is being met. Industry stakeholders commented that applicants are not being provided with that certainty by authorities and that the consenting process of new mill sites has caused problems in some instances.

Building standards

Product innovation in the construction of residential and commercial buildings with engineered wood products has been constrained by New Zealand building standards. Developers of pre-fabricated panels for housing construction have been encountering considerable problems complying with the current building code.

Product innovation in the construction of residential and commercial buildings with engineered wood products has been constrained by New Zealand building standards.

Timber Structures Standard NZS 3603 specifies design stresses and methods for engineering design of timber structures to meet the performance requirements of the New Zealand Building Code. For timber species or grades not listed, evidence for characteristic design stresses must be provided. Smaller producers of specialty timbers and engineered products in particular consider that this has effectively excluded them from the structural timber market, due to a lack of funds for product development and testing.

MBIE have recently agreed to fund the redevelopment of NZS 3603. However, the work will be carried out over several years and the ability of innovative wood processors to compete will be constrained in the interim. It is not clear whether meaningful standardised grades can be developed for engineered products, with manufacturers wanting to protect proprietary grades.

Research focus

Scion is working well for the industry, but according to feedback from wood processing companies, can, at times, be too focused on long-term developments and the top end of the processing value add spectrum rather the development of near- to medium-term commercial opportunities. This may in part be due to wood and fibre processors not engaging more with Scion and showing more initiative. Applied solid wood processing research is coordinated through Solid Wood Innovation, an MBIE partnership that will end in June 2016. The partnership is planned to be wound up, which could risk a lack of coordinated leadership for solid wood research nationally.

Due to weak profitability in large parts of the sector, private research and development spending has been low when compared to some other primary sectors.

Opportunities

There are clear opportunities for growth in the forestry sector and potential to extract increasing returns from the region's forest resource.

Toitu Te Waonui Afforestation Initiative

The Toitu Te Waonui Afforestation initiative is targeted at lifting long-term timber supply to take advantage of rising global demand for softwood. The proposal is to aggregate a large number of small blocks of Māori-owned land where forestry is the most appropriate land use – estimated by the sponsors of the project to be around 23,000 hectares in the Bay of Plenty. Māori are expected to have a controlling interest in a $1 billion forestry asset once the project reaches maturity.

Once the Toitū Te Waonui Afforestation Initiative reaches maturity, Māori would be expected to have a controlling interest in a $1 billion forestry asset.

Although cornerstone external investors would be required, fundamental to the investment model will be the opportunity for Māori/iwi/hapū landowners to gain equity in the forest on their land. This is in contrast to the current model whereby international investors own the trees and landowner revenue is from land rental. Afforestation also has broader benefits for Māori through the creation of jobs, initially in forest management and silviculture, and offering opportunities for education and training. Once the forests are at the harvesting stage, there may be potential to partner with domestic processors and potentially for local landowners to expand into downstream processing activity.

The cost of preparing and planting the particular land areas for this project is estimated by developers to average about $1,500 per hectare, which implies a required initial investment of about $35 million. Applying usual forest rotation periods, proper investment returns would not be received for around 25 years, which raises the risk profile of the project and makes it challenging from a cash flow perspective. However, Toitū Te Waonui is looking to reduce this risk by developing parcels of land for investment that comprise both greenfield and mid-rotation blocks. Some risk also surrounds the value of the carbon units generated by new plantings, as fluctuations in the price of carbon may affect the economic viability of the more marginal blocks of land, for example those with higher cost to harvest and transport. Toitū Te Waonui has used a relatively conservative carbon price of $5.10/tonne in their analysis of the economic feasibility of forestry on the identified land blocks)[11].

[11] On the 23 March 2015 the carbon price was $6.50/tonne.

Toitū Te Waonui's current challenge is to achieve aggregation of greenfield and mid-rotation blocks on a large scale and to seek international investors. The process will potentially be of long duration; landowners would need to be assured of the commercial benefits of the investment model and of forestry as the best land use opportunity. The multiple landowners associated with many blocks can also present challenges in making land use decisions.

To make the proposal financially attractive, the scheme will require public sector support to assist with working capital and cash flow requirements. In addition, support may also be required for commercial validation and the development of an investment prospectus.

MPI is currently the lead agency supporting the project as it combines a major forestry sector venture with a long-term Māori economic development initiative. To support Toitū Te Waonui to reach standalone viability, MPI with other relevant agencies including MBIE, TPK and Callaghan Innovation are working to ensure a coordinated central government approach that involves financial and in-kind support.

Assessment

Progressing the Toitū Te Waonui Afforestation Initiative receives an overall 'medium' rating on our criteria. The economic benefits (creation of a $1 billion asset, jobs, upskilling, and equity ownership by small shareholders) to the region and Māori would be considerable if the project could be implemented as planned. However, the required large-scale land aggregation may constitute a considerable problem and lead to a smaller scheme with a lesser impact.

Table 6 Assessment: Toitū Te Waonui Afforestation Initiative

Criteria	Rating
Validity	Medium
Potential impact	Medium
Practicality	Medium
Regional significance	High
International orientation	High
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium**

Development of export markets for processed wood products

Transitioning from log exports to additional processing of 4 million cubic metres of logs annually is estimated to have the potential to add $2.2 billion to regional GDP (Hall, Jack, Barry, & Goodison, 2013).

Even with a potential expansion of timber construction in the commercial building sector, the growth potential in the domestic market will remain relatively limited. Further export market development, in particular for processed products, is the only way to achieve a significant lift in industry performance. While a strong domestic sales base would provide some fall-back position to the inherent risks associated with exporting, the small size of the domestic markets constrain the ability of exporters to establish a sizeable local presence.

Exporting processed product requires greater sophistication than supplying the domestic market, particularly with respect to scoping foreign markets and assessing distribution channels and the demand potential for certain product types.

Bay of Plenty processors are unlikely to compete successfully in export markets for inexpensive commoditised products as foreign processors have scale advantage. However, even at the lower end, lack of scale can be overcome through product differentiation, for example, customised timber cuts. But at this end of the market, it is essential that a strategy is pursued of securing long-term large-volume export contracts ahead of establishing or re-developing production facilities.

At the higher end of the value-add spectrum, differentiated products, service levels, and distribution channels are of key importance.

Engineered wood products manufacturing is complex to establish and requires significant investment into product development and marketing. Moreover, those niche market opportunities are often based on compliance standards that vary across export markets.

As noted, the Bay of Plenty also has capability in engineered wood products. Competing successfully at this end of the market will require ongoing innovation capability by processors and the availability of investment capital.

Source: Scion

Considering that many wood processors in the region are relatively small, the industry would benefit from pursuing a more collaborative approach – in conjunction with NZTE – to identify export market opportunities (and large volume export contracts where relevant), attract investors and develop suitable products that meet market demands and overseas standards. The Wood Processors and Manufacturers Association and the Bay of Connections Forestry and Wood Advisory Group could play a stronger role in this area.

There are processing opportunities in the region for export markets at most stages of the value chain.

Assessment

The development of export markets for processed wood products receives consistently high rankings across all criteria, due to the regional strength of the sector, the export focus and the global demand.

Estimates referred to earlier suggest that an additional $550 million of regional GDP could be gained annually for every additional 1 million cubic metres of wood that is processed instead of shipped overseas as raw logs. The high degree of automation of production processes means there is relatively low employment growth associated with processing.

Table 7 Assessment: Development of export markets for processed wood products

Criteria	Rating
Validity	Medium-high
Potential impact	Medium
Practicality	Medium-high
Regional significance	Medium-high
International orientation	High
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium-high**

Other opportunities

Geothermal energy potential

The Bay of Plenty has large untapped geothermal resources that are suitable for greenfield investments or connections to existing operations in suitable locations. There is large potential for the forestry sector to make more use of geothermal energy, due to its high energy requirements. Access to geothermal energy may influence the choice of location for new processing facilities if operating costs are dominated by energy costs.

The main application is access to heat for timber drying. Currently the lack of drying capacity is leading to some timber being shipped at high cost to specialist drying facilities outside the region. Access to geothermal heat could replace investment in boiler capacity and enable the sale of wood waste that would have otherwise been used for heat generation, thereby enhancing profitability.

The development of the wood processing industry in regions other than Taupō and Kawerau, where the key mapped geothermal resources are located, could be supported over the longer term by additional mapping of other geothermal fields.

Wood First initiative

A forest sector driven Wood First proposal is targeted at enhancing domestic demand through receiving government commitment to commissioning timber construction of low rise public sector buildings. The initiative is a subset of the wider ‘urban equilibrium approach’ to environmentally sustainable construction practices, which is being promoted as a response to climate change.

If the Wood First initiative were successful, the direct impact would likely be small as construction activity for public buildings is fairly low. However, there may be positive spin-off effects if timber construction of non-residential buildings gains acceptance within the building industry and amongst architects in particular. This could enable the showcasing of New Zealand construction of multi-storey buildings to potential export markets and the generation of additional opportunities for the processing sector.

Central government has maintained a position of neutrality with regards to the materials used by the building industry. However, there may be some support at a local level (for example, Rotorua Lakes Council is endorsing a Wood First initiative through its own projects). Even without wider government endorsement, the industry should make a concerted effort to demonstrate the advantages of timber construction to architects, specifiers and the non-residential building sector.

Relevant central government initiatives

- The MBIE-supported Growing Confidence in Forestry's Future programme to make pine forests more productive, sustainable and profitable through precision technology, improved environmental practices and better use of genetic resources (involving Scion and other CRIs).
- MPI Primary Growth Partnership and Sustainable Farming Fund projects with the forestry industry including:
  - Healthy Trees, Healthy Future – investigating how to protect kauri and radiate pine from current and future diseases.
  - Research on radiata pine breeding to produce new technologies that will reduce the time it takes to breed and commercially plant improved pine trees.
  - Research into biopolymers, including bioresins and biofoams.
  - The Stakeholders in the Methyl Bromide reduction programme, which identified alternative fumigants to reduce methyl bromide use and the effects of methyl bromide until suitable replacements were found.
  - The recently completed Stump to Pump programme, which investigated how to generate more value from forestry waste by converting it to liquid biofuels (further commercial investment in the research and development is continuing).
  - The Steepland Harvesting programme, focused on reducing steepland harvesting costs by 25 percent using innovative log harvesting technologies.
- The Emissions Trading Scheme.
- Te Pūnaha Hiringa: Māori Innovation Fund.
- Investment in roads and bridges to support HPMV/50 MAX vehicles.
- The Permanent Forest Sink Initiative.
- Review of building standards (NZS 3603).

Implications for stakeholders

For industry	• Existing and prospective wood processing companies should, in conjunction with NZTE and other central government, agencies, adopt a more collaborative approach to identifying export market opportunities and to developing suitable products that meet overseas standards. • Progress the recommendations from the Independent Forestry Safety Review to provide a safer work environment for forestry workers. • Agree on an approach to incorporating engineered wood product grades in the update of NZS 3603. • Investigate options for closer alignment of wood processors with Scion. Wood and fibre processors need to engage more openly, show initiative and collaborate to ensure decisions regarding the allocation of research and development resources are based on tangible potential output markets. • Investigate options for the continued coordination of research and the effective technology transfer from Scion to wood processors once the MBIE-sponsored Solid Wood Partnership ends in 2016. • Consider the increase in industry spending on research and development, including the possibility of a processing industry levy to fund research, the modernisation of standards, and strategic action plans.
For Māori/iwi/hapū	• Progress Toitū Te Waonui Afforestation initiative – Complete validation phase – Develop an investment prospectus – Consider proposals for alternative land use – Engage in large scale land aggregation process.
For local government	• Consider adopting Wood First initiative recommendations. • Take a more active role, directly or through the respective EDAs, in promoting the use of geothermal energy (in collaboration with the land owners).
For central government	• Support the Toitū Te Waonui Afforestation Initiative by: – Assisting Māori entities in investigation of alternative land use. – Facilitating processes for large scale land aggregation. – Considering afforestation grants to assist with working capital/cashflow requirements of the project in its early years. – Considering funding support for commercial preparation work (eg investment prospectus development). • Consider support for other afforestation initiatives. • Assist industry in progressing the recommendations of the Independent Forest Safety Review to provide a safer work environment for forestry workers. • NZTE and other central government agencies to enhance their support for the collaborative development of new value add strategies for exporters of processed wood products. • Continue to update building standard NZS 3603. • MBIE to assist industry and Scion in investigating options for closer alignment and for the continued coordination of research and the effective technology transfer from Scion to wood processors once the MBIE-sponsored Solid Wood Partnership ends in 2016.

Agriculture and related processing

Summary

Agriculture plays a major role in the Bay of Plenty economy. The region has a large dairy presence, with about 9 percent of total New Zealand dairy farming and milk solid production.

There are two Fonterra plants operating in the region, Edgecumbe and Reporoa. Miraka, a Māori-owned (Tuaropaki Trust and Wairarapa Moana Incorporation) processing operation, has established itself in the Taupō area. Proximity to the port and large geothermal energy resources around Kawerau and Taupō could encourage the establishment of further milk processing plants.

There is strong global demand for New Zealand food products. Based on projections for increasing size and affluence of the middle classes in Asia and their consumption preferences, demand conditions for New Zealand's dairy and meat products will remain favourable.

However, the introduction of nitrogen discharge limits will constrain growth in the farming sector. The growth potential from further intensification of land use will be limited and force the industry to focus primarily on improving on-farm productivity through better management practices, lifting the performance of Māori-owned land, through raising animal yields and alternatives such as dairy goats and sheep. A secondary focus should be on improving the value of the product through developing new high value ingredients and consumer products as well as through branding.

Background

Dairy

The dairy industry is a significant sector in the Bay of Plenty, benefiting from a convergence of regional strengths – notably the availability of land and good soil, a good climate, geothermal power for processing activity, as well as location (proximity to the Waikato) and good logistics infrastructure (port and rail). In 2014 the Bay of Plenty accounted for 8.9 percent of the national dairy herd and 9.1 percent of total milk solids produced (Livestock Improvement Corporation, 2014).

Table 8 shows the GDP and employment activity for the dairy sector and the main industries that make up the sector.

Table 8 Dairy sector summary, Bay of Plenty

Dairy	GDP (2014, 2010$m)	Real GDP growth (CAGR 2004-2014)	GDP Location Quotient	Employment (2014)	Employment growth (CAGR 2004-2014)	Employment Location Quotient
Dairy Cattle Farming	352.0	-0.1%	1.26	3,602	-0.4%	1.41
Other Agriculture and Fishing Support Services	58.8	3.3%	3.16	1,261	4.4%	3.05
Cheese and Other Dairy Product Manufacturing	49.5	2.8%	0.92	518	2.5%	0.90
Dairy	**462.1**	**0.6%**	**1.27**	**5,397**	**0.8%**	**1.46**

Source: Infometrics Regional Database

Dairy and related processing in the Bay of Plenty contributed $462 million to regional GDP in 2014, growing at a rate of 0.6 percent per annum over the last ten years. The sector employed close to 5,400, growing at a rate of 0.8 percent per annum over the last ten years. A GDP location quotient of

1.27 and an employment location quotient of 1.46 shows that dairy sector activity in the region is higher than average.

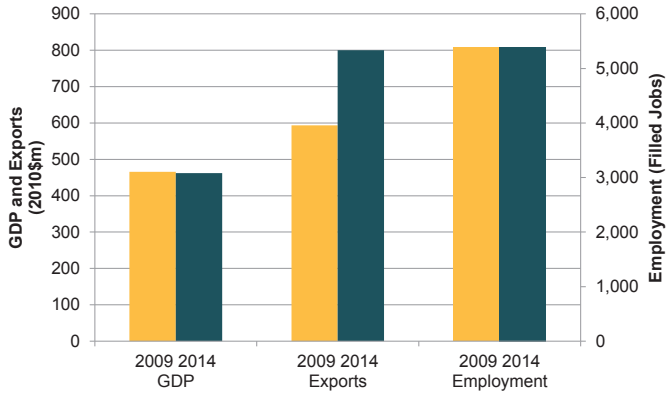
Figure 13 shows the size and change in GDP, employment and exports in the Bay of Plenty dairy sector.

The region's dairy sector GDP declined slightly to 2014, falling by 0.2 percent per annum, to $462 million.

Between 2009 and 2014, estimated exports from the region have increased to $800 million from $593 million (on average 6.2 percent per annum).

At 5,400, employment increased slightly over the five years to 2013, averaging growth of 0.1 percent per annum.

Figure 13 Dairy GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

Meat

While the Bay of Plenty meat industry is an important regional employer and contributor to GDP for the region, it represents a relatively small proportion of the meat industry nationally. Most of the activity is in beef cattle farming and sheep farming. AFFCO Rangiuru is the only major meat processor in the region.

Table 9 Meat sector summary, Bay of Plenty

Meat	GDP (2014, 2010$m)	Real GDP growth (CAGR 2004-2014)	GDP Location Quotient	Employment (2014)	Employment growth (CAGR 2004-2014)	Employment Location Quotient
Beef Cattle Farming (Specialised)	40.6	-2.2%	1.07	587	-2.0%	1.07
Meat Processing	46.0	-3.1%	0.47	517	-3.0%	0.42
Other Agriculture and Fishing Support Services	22.1	3.1%	3.16	473	4.1%	3.05
Sheep-Beef Cattle Farming	29.7	-2.7%	0.60	360	-3.7%	0.50
Sheep Farming (Specialised)	11.1	-7.8%	0.25	143	-8.2%	0.22
Deer Farming	5.5	0.6%	1.86	149	-0.5%	1.79
Other Livestock Farming n.e.c.	1.3	-10.2%	0.82	38	-10.2%	0.87
Pig Farming	0.4	0.0%	0.29	14	-1.1%	0.37
Meat	**157.7**	**-2.7%**	**0.58**	**2,295**	**-2.4%**	**0.59**

Source: Infometrics Regional Database

Location quotients of 0.58 for GDP and 0.59 for employment mean that the meat sector is not concentrated in the region relative to New Zealand. Looking more closely at the industries that make up the sector, beef cattle farming (specialised) and deer farming have location quotients greater than 1.0 meaning that these two industries have a higher concentration in the region than nationally.

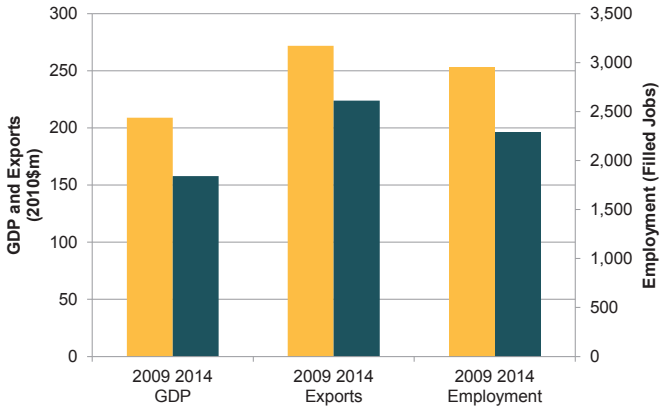
Figure 14 shows the size and change in GDP, employment and exports in the Bay of Plenty meat sector.

Meat sector GDP declined by, on average, 2.7 percent per annum over the five years to 2014, falling to $158 million.

Over the same period estimated exports from the region have dropped to $224 million from $272 million (averaging –3.8 percent per annum).

Employment decreased by 4.9 percent per annum to 2,295 in 2014.

Figure 14 Meat GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

Growth outlook

Dairy

With exports of $18.1 billion in the year to June 2014, dairy products accounted for 35 percent of New Zealand's merchandise exports ($51.2 billion).

Over the long term, milk production from New Zealand is expected to grow by around 2 to 3 percent per annum (Fonterra, 2014). With domestic demand relatively small, the industry is almost completely dependent on offshore demand. Export volumes have been growing strongly and projections are for the pace of volume growth to continue, due to rising demand from the growing middle classes in China and South East Asia. Export revenue has been falling due to the correction in commodity prices over the past year, but is projected to recover as prices strengthen again and the NZ dollar weakens. Industry forecasts suggest that the value of exports could increase by 5.5 percent per annum up to 2025 (Ministry for Primary Industries, 2014c).

Dairy production in the Bay of Plenty is forecast to grow modestly over the next 10 years, with the potential to reach 123 million kilograms of milk solids (from 107 million kilograms) and up to 350 additional jobs (Fonterra, 2014).

Fonterra is the dominant dairy exporter, but niche market suppliers, like Miraka, are increasing market share.

Based on projections for increasing size and affluence of the middle classes in Asia and their consumption preferences, demand conditions for New Zealand's dairy and meat products will remain favourable.

Meat

With exports of $5.8 billion in the year to June 2014, red meat is New Zealand's second largest merchandise export category behind dairy, accounting for 11 percent of merchandise exports by value. The major trend impacting on the industry in New Zealand has been the conversion of sheep and beef grazing land to dairy farming and forestry.

Lamb meat production is forecast to remain fairly stable over the short to medium term, while beef meat production is forecast to rise slowly (Ministry for Primary Industries, 2014d). China has become an important market for both sheep and beef exports and a strong underlying growth trend in demand from Asia will offer continued ongoing opportunities for the New Zealand meat industry over the longer term. New Zealand's meat and wool exports are expected to increase by about 22 percent over the five years to 2018, reflecting an increase in prices mainly for beef and lamb products on the back of strong Asian demand (Ministry for Primary Industries, 2014).

Wider access to international markets gained over recent years has largely removed the problem of New Zealand exporters competing against each other on price in foreign markets.

Industry trends and regional advantages

Dairy sector corporatisation

Corporatisation has been a key trend for the dairy industry. Farms are increasing in size and using more technology, which has resulted in productivity gains. For example, in Taupō, Wairakei Pastoral is looking at running about 20 contiguous dairy units of 1,000 cows. Land for these units has been converted from forestry.

Māori involvement in the industry

The Māori farming community has some large dairy operators including Te Manawa o Tūhoe, Whakatōhea, Ngāti Awa and private farm and landowners. Māori entities are growing their dairy holdings, for example Ngāti Awa with its Tumurau and Ngakauroa farms near Whakatāne. The transfer of large amounts of Crown licensed forest lands through historical settlements has also given many iwi the opportunity to convert forestry land to dairy or other uses at the end of tree crop rotations.

Iwi with settlement funds are also investing directly in dairying through purchase of properties or conversion of existing farms from other uses. Based on the potential of land ownership reform, improving governance and management, increasing population, and skills development, Māori have the potential to become increasingly influential in the dairy sector in the Bay of Plenty.

Dairy processing

Fonterra's factories are operating close to capacity, with both expected to require expansion investment over the medium term. With milk production forecast to grow and Fonterra's commitment to Tauranga as its main shipping port, the Bay of Plenty is a contender for Fonterra investment in new milk processing facilities. The region has large geothermal energy resources in Kawerau and Taupō that are suitable for the establishment of further milk processing plants.

Miraka has established a strong operation as processor for its associated farms. The partnership between Miraka and leading Chinese dairy company Mengniu will result in the accelerated development of Miraka's ultra-high temperature (UHT) milk processing plant in Taupō, with the doubling of the plant size expected within the next few years.

The region has large geothermal energy resources in Kawerau and Taupō that are suitable for the establishment of further milk processing plants.

Shanghai Pengxin Group has been investing in farms and is using Miraka for product processing. A further boost to the sector may occur if the sale of Lochinver Station to Pengxin proceeds and enables supply chain efficiencies to be realised.

Poutama Trust is facilitating the development of a multi-purpose (cow, sheep and goat) geothermal milk processing plant in Kawerau by several interested parties. The group includes Māori Investments Limited, Putauaki Trust, Tūwharetoa ki Kawerau, Ngāti Awa and Te Manawa o Tūhoe. Again, increasing Māori industry involvement, a focus on value added, and niche production will drive the future sector growth.

Export logistics

The region has efficient export logistics provided by the Port of Tauranga. The port has accounted for an increasing proportion of New Zealand's dairy and meat exports.

Issues and challenges

There are a number of issues that will influence the performance of the agriculture and related processing sector.

Environmental and resource constraints

The National Policy Statement for Freshwater Management requires councils to define standards for regional waterways and paths for the achievement of water quality targets. Dairy and livestock farming is contributing to the pollution of waterways and the implementation of these policies will impose growth constraints on the agriculture sector.

In 2014, the government pledged to spend $100 million over ten years to buy and retire farmland that caused significant degradation of waterways to provide a buffer and improve water quality (Scoop, 2014).

The Lake Taupō catchment is an example where limitations imposed on farms on the maximum permitted quantity of nitrogen leaching have led to a change in farming practices and the land use of some farms. The Lake Rotorua catchment is facing a similar situation and, over time, such constraints are likely to impact to some degree on most areas in the Bay of Plenty. Due to lengthy processes for the determination of appropriate standards, farmers in the affected regions are experiencing considerable uncertainty regarding the required environmental compliance.

In some cases the required measures will be costly and it will depend on individual circumstances whether compliance requirements change the commercial viability of the farming operation.

So far about 90 percent of all waterways on dairy farms in New Zealand have been fenced, with all milk companies signed up to an accord requiring supplying farmers to comply with fencing rules. Gradual improvements are being made with effluent disposal practices.

In some cases pollution remediation measures will be costly and it will depend on individual circumstances whether compliance requirements change the commercial viability of the farming operation.

The availability of water to support agriculture sector growth will also become a constraint in some areas. The BOPRC has set official limits for regular farm stock water usage (for irrigation a separate consent is required), but this does not get monitored and better systems are required to measure where and how much water is being used.

Fonterra has begun to assist farmers with introducing systems to monitor water usage and with the application of water saving processes. Water conservation will create more headroom for the industry to grow.

Market access

Trade barriers – quotas and non-tariff technical barriers – remain a significant impediment to fully capturing market opportunities. There are also nontariff barriers that can impede trade and access. Recent difficulties in access to the growing Chinese market, such as when meat products were held up at Chinese ports, illustrate how on-going work is required even after a free trade agreement has been signed.

Māori land productivity

Average Māori land productivity (for those lands in productive use) is considerably below industry standards. Factors for lower productivity involve a mix of: governance deficiencies; lack of planning and strategic approaches; limited access to development capital; limited skill level on-farm; under-

developed on-farm infrastructure (subdivision fencing, reticulated water supply etc); run down soil fertility and/or pasture quality (Ministry of Agriculture and Forestry, 2011).

Resource consenting

Dairy processing companies need to be able to respond swiftly to emerging export opportunities. This may involve new processing plants or extending existing facilities. In terms of supporting an internationally competitive position and providing a degree of certainty for commercial decision-making, the industry relies on efficient and consistent consent processes across jurisdictions. However, according to industry participants, the degree of consistency varies considerably across local authorities.

Opportunities

Improved farm productivity

While there are areas where land is still available for conversion to dairy or livestock farming, or where further intensification may be possible, environmental constraints mean that future growth of the sector will have to come mostly through productivity gains that can be achieved within the limits for freshwater quality and availability.

The meat industry's Red Meat Sector Strategy states that "If farmers in the 50, 60 and 70 percent deciles of return per stock unit were to achieve the same levels as farmers in the 80 percent decile, those farmers would benefit overall by an additional $180 million of profit per annum" (Deloitte, 2011).

Environmental constraints mean that most of the future growth of the dairy sector will have to come through productivity gains.

Improving farm management

There are a number of different initiatives available that support more efficient farm management, which could be expanded and/or applied in the region. DairyNZ's Focus Farm initiative has generally been successful, but it is being operated at a relatively small scale due to available resourcing.

Various nationwide PGPs have been established to assist the industry. The Transforming the Dairy Value Chain PGP is focused on supporting farmers with increasing farm productivity, a reduction in environmental impacts, and the improvement of agricultural education. The Pioneering to Precision – Application of Fertiliser to Hill Country PGP is aimed at improving productivity of hill country sheep and beef farms through the precision fertiliser application. The Red Meat Profit Partnership is a PGP focused on supporting farmers in the adoption of best practice behind the farm gate and between the farm and processor. In addition, Silver Fern Farms is working with its farmer suppliers to increase the proportion of livestock produced to premium market specifications as part of the Farm IQ PGP.

With regards to Māori-owned farming units, DairyNZ is working with the Federation of Māori Authorities (FOMA) to provide support for the improvement of management practices. The key will be to create more successfully aggregated commercial farming units, with landowners holding shares in a farm management company. That will increase the scope for the implementation of productivity measures as the larger units can be managed more efficiently and provide more scale opportunities. There are ongoing discussions between Māori farming interests and Āwhina Group regarding the collectivisation of Māori dairy, sheep and beef operations.

Amalgamation of Māori-owned land, with land owners holding shares in a farm management company, provides the opportunity to create larger commercial units that can be managed more efficiently.

Improving animal yields

In addition to improving farm management practices, productivity gains can be achieved through using higher quality animals to increase output per head. Smarter breeding supports productivity gains for dairy cows, with cross breeding generating superior milk fat and protein to output ratios. Research is currently being carried out by commercial providers, AgResearch, and through industry initiatives with government backing. Transparency is being achieved through an animal scoring system that allows farmers nationwide to identify the best animals for commercial purposes.

Improving animal health is another avenue for productivity gains, through improved diets, ground surface conditions for walking and sleeping, distances to milking sheds and so forth. Improvements in the maintenance of pastures can also improve the quantity and quality of production. Further productivity gains can be achieved through improved silage management.

Ongoing farm productivity improvements will require ongoing science investment in animal and plant genetics. Industry representatives have expressed the view that AgResearch, the CRI that is focused on supporting the pastoral sector, is providing high quality work, but that scientific research for primary sector activity and its intersection with the environment has been underfunded over the past three decades.

Ongoing farm productivity improvements will require ongoing science investment in animal and plant genetics.

Regarding non-genetic research to support the improvement in farm productivity, a variety of technology platforms can be advanced, for example, sensors, robots and precision handling.

Assessment

Improving on-farm productivity through better management practices, lifting the performance of Māori-owned land, and raising animal yields rates highly on our assessment criteria.

It is an opportunity that will benefit the entire region, although the gains can be expected to accrue gradually over time rather than within the short-term. An average increase of on-farm productivity of 10 percent across Bay of Plenty dairy, beef and sheep farms could deliver an estimated additional $60 million of value add per annum to the region.

Table 10 Assessment: Enhancement of farm productivity

Criteria	Rating
Validity	High
Potential impact	Medium-high
Practicality	Medium
Regional significance	High
International orientation	Medium
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium-high**

Other opportunities

Increasing the share of high value-added products

Complementary to increasing dairy and meat productivity is a focus on increasing the value added component.

Fonterra is in the process of developing new high value ingredients and consumer products, but the composition of raw milk implies that the quantities of value-add products will remain comparatively small relative to the volumes of the milk powder commodity.

In addition, unfavourable price relativities between milk powder and processed products, due to high global demand for the commodity product, often undermine the commercial incentive for further processing.

Part of the focus of the Transforming the Dairy Value Chain PGP is on creating new value-add dairy products. Moreover, the Whai Hua PGP is developing new immune enhancing products (Ministry for Primary Industries, 2015a).

Livestock farming has the potential to enhance value added by marketing quality meat brands in export markets as being produced in an environmentally sustainable manner. As an example, Lake Taupō Beef has been established by a consortium of local farmers as a brand that effectively internalises environmental costs.

Development of export markets for such initiatives, which are already being pursued in various ways by the main meat export companies, will require thorough market research and brand development, the scaling up of production and the ability to supply all year at the volume levels required by foreign distributors, the ability to sell the remainder of the carcasses at commercially attractive terms, and efficient logistics chains. Products will have to comply with a regulatory regime that guarantees quality and compliance with the claimed sustainability standards.

Farming activity with smaller environmental footprint

With changes in farming practices, sheep and goat dairy farming may be pursued as an alternative to cow dairy farming due to the relatively smaller environmental impact and the production of higher value-add products. However, a proof of concept for large scale operations is still lacking.

The Waituhi Kuratau Farm Trust has developed a sheep dairying operation within their large sheep and cattle farm. The Poutama Trust is facilitating iwi entities under the Poutama Iwi Partnership to work with Landcorp to assess the viability and potential establishment of a scaled-up sheep dairy farming operation in the Bay of Plenty.

Te Tumu Paeroa[12] are at the concept stage in considering dairy goat farming, with high-value applications in the specialist infant formula market, focusing on lactose intolerance. Such an operation would require a high level of investment in a large number of special breed goats to enable production at scale. Moreover, the global market for infant formula niche products is highly competitive.

Relevant central government initiatives

- MPI PGP and Sustainable Farming Fund (SFF) projects with the dairy industry including:
  - Clearview Innovations – increasing efficiency in the use of nitrogen and phosphorous and reducing environmental impacts.
  - Transforming the dairy value chain – development of new premium products with health benefits; initiatives to improve on-farm productivity and reduce environmental impacts, and improve agricultural education.
  - Pioneering to Precision – Application of Fertiliser to Hill Country – improvement of hill country sheep and beef farm productivity through the precision application of fertiliser.
  - Red Meat Profit Partnership – adoption of best practice behind the farm gate and between the farm and processor.
  - Farm IQ – increase of the proportion of livestock produced to premium market specifications.
  - Whai Hua – developing immune enhancing dairy milk products for Asian and New Zealand markets.
  - Pasture development programmes focussed on improved pasture renewal, pasture improvement using plantain and tutsan weed control.
- Rural Broadband Initiative and further roll out of Ultra-Fast Broadband – creating a platform for adoption of technology in the dairy industry.
- Te Pūnaha Hiringa: Māori Innovation Fund.

[12] The new name for the Māori Trustee.

Implications for stakeholders

For industry	• Intensify industry programmes for assisting farmers with achieving productivity gains through improving farm and animal management. • Develop transition strategies for compliance with higher environmental standards. • Collaborate with AgResearch on the programmes focused on animal and plant genetics and the enhancement of new technology platforms. • Adopt new practices and technologies in light of research findings. • Advance business case development and market validation for both the sheep and goat dairy opportunities. • Niche market premium meat producers to explore export potential in collaboration with NZTE.
For Māori/iwi/hapū	• Progress the amalgamation of Māori-owned land and the collectivisation of farming operations. • Maintain FOMA support (in collaboration with DairyNZ) for improving management practices on Māori-owned farms.
For local government	• Provide clear guidelines and processes for the industry on compliance with higher environmental standards. • Work proactively with the sector to assess the long-term availability of water resources for the industry. • Streamline consent processes for new processing facilities in order to enable the industry to respond swiftly to new emerging export opportunities.
For central government	• Consider providing support to expand industry programmes assisting farmers in adopting better farm management practices (following a review of existing initiatives). • Review the funding and focus of research activity on animal and pasture genetics, and the development of new technology platforms for the pastoral sector. • Continue to support and facilitate the process of Māori land aggregation. • Support 'proof of concept' phases (through Landcorp or other channels) for establishing large scale dairy goat and dairy sheep farming operations (business case development; market validation; etc). • NZTE to engage with niche market operators to investigate the export potential for high value added 'environmentally friendly' meat products. Consider a compliance regime to effectively deal with certification/traceability issues.

Horticulture and related processing

Summary

The Bay of Plenty has a well-established horticulture sector. The kiwifruit industry is the largest of the horticulture industries in the region. It accounts for nearly two thirds of the Bay of Plenty horticulture sector's GDP and for close to 80 percent of national kiwifruit exports.

The kiwifruit industry is experiencing a strong recovery on the back of the development of a new fruit variety after the Psa biosecurity crisis.

The kiwifruit industry has a strong export presence in global markets and a research programme focused on producing new varieties that enable New Zealand producers to capture a 'taste premium' paid by foreign consumers.

As well as kiwifruit, the avocado and apiculture sectors have considerable development potential in the Bay of Plenty region over the medium term.

Source: Wikipedia

The Bay of Plenty is the main growing region for the avocado industry. The avocado industry has an ambitious target of quadrupling exports to 280 million. If the strategy succeeds and the Bay of Plenty maintains its share, avocado exports from the region could be in the vicinity of $168 million. A more collaborative approach amongst exporters will provide a stable environment to enable the industry to expand into new export markets. With different picking seasons, the avocado industry can complement kiwifruit, attracting seasonal workers by providing a longer picking season.

Global consumption of health and wellness products is growing. Products made from natural ingredients, such as mānuka honey, are in demand and attract a high price premium. Mānuka honey based products have the potential to be a $1.2 billion export earner for New Zealand. The Bay of Plenty region is well positioned to drive much of the export growth, with significant opportunities for Māori industry involvement. Sustainably growing the export market for premium mānuka honey products will require the industry to improve certainty of supply, resolve quality and labelling issues, adopt a more coordinated approach, and pursue a more sophisticated marketing strategy.

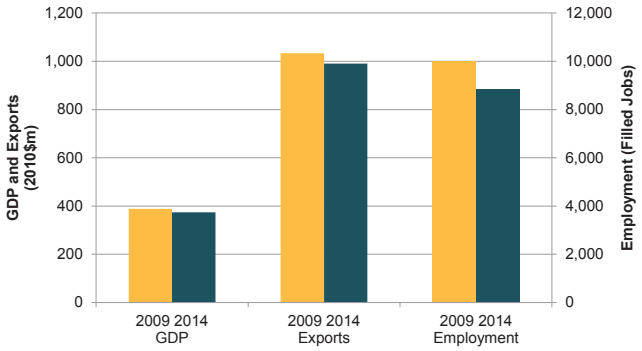
Background

The horticulture sector contributed 3.2 percent of the Bay of Plenty region's GDP in 2014 ($374 million) and accounted for 6.0 percent of the region's employment.

GDP and employment have declined over the last five years by, on average, 0.8 percent and 2.4 percent respectively.

In 2014 the sector had estimated exports of $990 million, down from the $1.0 billion achieved in 2009.

Figure 15 Horticulture GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

This study focuses on the kiwifruit, avocado and apiculture sectors as the horticulture crops that have the greatest potential over the medium term.

The remainder of the horticulture industry in the Bay of Plenty region consists of a wide range of smaller sub-sectors, including, among others, vegetable growing, apples and pears, and citrus fruit.

Kiwifruit

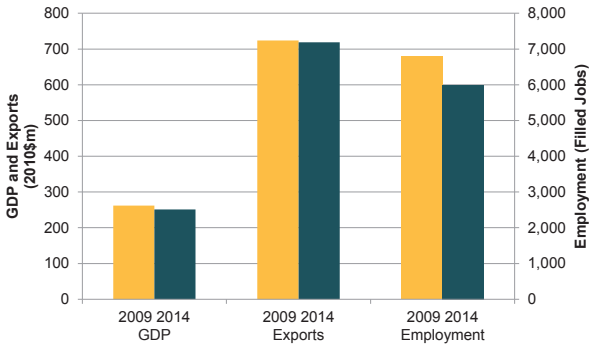
Background

Kiwifruit is New Zealand's largest horticulture export sector. The industry is concentrated in the Bay of Plenty which has nearly 80 percent of kiwifruit planted nationwide (Statistics New Zealand, 2013). It is also the location of Zespri's headquarters.

In the Bay of Plenty region, the kiwifruit sector is estimated to have contributed $719 million to exports, $251 million to GDP and employed 6,000 people, in 2014.

However, exports (0.1 percent per annum), GDP (0.9 percent per annum) and employment (2.4 percent per annum) have all declined since 2009.

Figure 16 Kiwifruit GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

Growth outlook

In 2010, the goal for Zespri's strategy was to increase export revenue to $3 billion by 2025. This goal is still the aspirational target for the sector. While the current (2013/14) export revenue is at $930.5 million, down from a peak of $1.1 billion in the 2008/09 season, production is forecast to increase over the next few years.

The performance of the kiwifruit sector has been affected by the Psa bacterial disease which was confirmed in the region in late 2010 and affected over a thousand orchards, particularly those planted with the Hort16A Gold cultivar variety. The 2013–14 season saw a 55 percent fall in Gold volume production. However, recovery from the disease has been faster than anticipated as a result of an organised sector response and because existing research had developed Psa-tolerant cultivars (Gold3). Although a significant effort is still required to manage the fallout from this crisis, the sector is expecting a return to a large scale harvest in 2015 (Zespri, 2014).

Led by the new Gold cultivars, volume growth over the next few years is expected to be over 10 percent per annum, supported by an underlying rate of demand growth of 4 percent per annum in export markets. By 2017-18 growers expect to be producing 40 percent more fruit than they are now.

A key focus for Zespri will be in developing demand for their products ahead of the oncoming supply and avoiding overexposure in particular markets (Zespri, 2014).

The Bay of Plenty will capture a large proportion of this volume growth as Zespri, packers, and the new Gold fruit variety are predominantly located there, and most fruit is shipped offshore through the Port of Tauranga.

Led by the new Gold cultivars, volume growth over the next few years is expected to be over 10 percent per annum.

Industry trends and regional advantages

Productivity improvements

Large orchard productivity gains have been achieved over recent years, based on enhanced harvesting efficiency and better crop predictability. Zespri runs the Orchard Productivity Centre (OPC), which supports growers to make productivity and quality improvements to increase orchard profitability. The OPC focuses specifically on management techniques, disseminating new science and productivity enhancements for the industry. The OPC has contributed to the 5 percent per annum increase in orchard productivity over the last five years.

More recently there has also been a step change in production with the new Psa tolerant Gold3 variety being about 30 percent more productive than the Hort16A cultivar it has replaced generating significantly higher yields per hectare.

Global marketing and distribution

Zespri is the legislated single marketer of kiwifruit for export to all overseas markets except for Australia. Through its marketing, Zespri positions New Zealand kiwifruit as a premium product in world markets. Zespri's scale is important in developing efficient supply and distribution chains and growing existing and new markets. Access to overseas markets is generally good, although some locations impose considerable import tariffs. For example, South Korea has a 45 percent tariff on kiwifruit.[13]

Large orchard productivity gains have been achieved in recent years based on enhanced harvesting approaches and better crop predictability.

Increasing Māori involvement in the industry

Orchards owned by Māori trusts are estimated by industry participants to represent 10 percent of the sector (Kiwifruit Industry Strategy Project, 2014, p. 7), with the potential to lift the share through the expansion of Ahu Whenua trust collectives.

The Whakatōhea Māori Trust Board has three kiwifruit orchards on Apanui Road, Te Tōtara and Tarata, and has recently included Te Maara orchard into a joint venture arrangement with Ōpōtiki Packing & Coolstorage (Whakatōhea Māori Trust Board, 2015). These orchards are seen as a strategic investment for the Trust Board.

Source: DMS Progrowers

There is potentially 200 hectares of land that can be converted to kiwifruit in the Te Kaha area alone[14].

In the 2013/14 season orchard gate returns per hectare averaged between $25,000 and $43,000 for Green varieties and $91,800 for Gold (Zespri, 2014). Our understanding is that orchards are currently selling at between $300,000 to $360,000 per hectare for Hayward and $400,000 to $550,000 for Gold.[15]

Investment beyond the farm or orchard gate is also expanding. A group of Māori collectives – Te Awanui Huka Pak – are the largest single shareholders in NZX listed company Seeka. Seeka is New

[13] Although this tariff will be eliminated five years after the New Zealand / Republic of Korea Free Trade Agreement takes effect.

[14] Personal communication with Ōpōtiki Packing and Coolstorage.

[15] Personal communication with Zespri.

Zealand's largest kiwifruit grower and the second largest kiwifruit and avocado post-harvest operator of cool stores and pack houses in New Zealand.

Māori sectoral initiatives include the FOMA-led Tūhono Whenua Horticulture Programme which supports Māori orchard productivity increases, and the Te Awanui Huka Pak-led collaboration with Zespri to position the 'Māori brand' in international markets.

Processed kiwifruit by-products

The international market for manufactured kiwifruit by-products is relatively underdeveloped. The main processed products manufactured in the Bay of Plenty are a range of purees that are suitable as ingredients for the food and beverage sector, and as high enzyme active applications suitable for nutraceuticals. A unique technology is used to process second and third grade fruit, with the frozen product suitable for all year supply to global destinations. Key export markets are in Asia. Zespri's favourable reputation assists with product marketing and distribution.

Issues and challenges

Industry productivity

Although the industry has achieved large productivity gains through more efficient orchard management over recent years, the rate of improvement is being held back by the large number of small orchards. There has been a gradual trend towards consolidation and smaller owner-operated units are starting to employ more sophisticated techniques. This momentum has to be enhanced to allow the industry to reach its full potential. To assist this process, FOMA, with involvement from consultants Hort Plus, has set up initiatives to lift productivity on Māori-owned orchards.

Capability and skills

The availability of capability and skills is an issue right across various horticulture crops. It is a major focus for the industry, MPI and other government agencies. The issue extends beyond the seasonal labour requirements to the attraction of skilled people into orchard management and operation. The industry is concerned that not enough is known by the wider public about career opportunities in the horticulture sector and therefore people are not considering jobs in the horticulture sector.

Labour shortages for crop picking are an ongoing problem. About 8,000 – 9,000 people are employed in the Bay of Plenty as seasonal workers. Shortages are being exacerbated by the new kiwifruit varieties, which have shorter seasons. Kiwifruit orchards rely on attracting a high number of pickers from outside the region and, predominantly, from overseas. The Recognised Seasonal Employer (RSE) scheme works well with migrant workers – mainly from the Pacific Islands – coming to New Zealand but just for the duration of the harvesting season.

There has been limited success with sharing labour resources across industries (eg kiwifruit and avocado growers), with the intention to create a more stable workforce. Such cooperation takes advantage of different season timing, but it still remains difficult to create full-year employment.

In response to a lack of demand, the education sector (Massey and Lincoln Universities) has reduced the offering of relevant courses.

Industry succession

High capital costs associated with the purchase of land and planting are a barrier to entry to the industry especially for younger operators. This has an adverse effect not only on the sector's expansion potential, but also on the succession profile of the owner-operated part of the industry and its propensity to innovate and adopt new management practices.

High capital costs associated with the purchase of land and trees are a barrier to entry to the industry, especially for younger operators.

However, there are options for new entrants, such as an initial period of orchard management, followed by the acquisition of shares in an existing operation or through buying small plots and consolidation over time. Only about 30 percent of orchards are owned by hands-on growers.

Opportunities

Converting appropriate horticulture land to kiwifruit

According to industry sources, the Bay of Plenty has large areas of prime horticulture land available for expansion, particularly in the Eastern sub-region. However, more information is required to assess the long-term availability of water resources.

While the cost of converting land to kiwifruit is high, the industry is once again achieving attractive financial returns, which should make it easier for experienced operators to obtain funding. There has also been an emerging trend towards syndication, opening the opportunity for part shareholdings that can be expanded over time.

Programmes to encourage the conversion of Māori-owned land into kiwifruit orchards where appropriate should be considered and encouraged. There are examples of encouraging the conversion of Māori-owned land to kiwifruit around the Te Kaha area, with the involvement of packing houses and Māori trusts. There are likely to be valid opportunities through the Western and Eastern sub-regions.

Considering the current and future returns on land in kiwifruit the benefits can be significant. Further, by encouraging participation and ownership in the growing of the crop, local Māori can be encouraged to be actively engaged and employed in the sector.

Our assessment

Our assessment of the potential for converting appropriate horticulture land to kiwifruit is medium-high.

The Bay of Plenty region is the centre of the kiwifruit industry in New Zealand and the world. There are clear advantages for orchards located within the region.

Assuming the Bay of Plenty continues to account for 80 percent of production in future would mean regional exports of close to $2.4 billion by 2025.

Table 11 Assessment: Converting appropriate horticulture land to kiwifruit

Criteria	Rating
Validity	High
Potential impact	Medium
Practicality	High
Regional significance	High
International orientation	High
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium
Overall rating	**Medium-high**

The current average return per hectare of $49,000 ($42,000 for green and $91,000 for gold) suggests that encouraging the development of suitable Māori-owned land to kiwifruit will provide significant returns to the region.

Other opportunities

Enhancing industry productivity

Increasing kiwifruit industry productivity has the potential to be a significant source of growth in value added and profitability. In order to lift productivity of smaller operators through adoption of better management techniques, the industry should consider introducing support initiatives modelled on those in the dairy and livestock sectors and the ones operated by FOMA for Māori-owned orchards.

In addition to improved management techniques, and driven by the need to increase productivity and the difficulty of attracting labour, the kiwifruit sector is increasingly using machinery and technology for harvesting. The industry has received government research and development funding for the application of harvesting robotics, including technology that detects the state of development of the crops.

There is also potential for extending the use of robotics into kiwifruit pack houses, which are part of the efficient post-harvest logistics operation.

Plant and product research

The kiwifruit industry makes significant investment in research and development, but also has access to considerable government research funding. Zespri leads the research and development effort for the kiwifruit industry and has been partnering with Plant & Food Research on a genetic improvement programme. A key focus is the reduction of the biosecurity threat to the industry by creating more resilient varieties. If an actual biosecurity event occurs, this ‘off the shelf’ process allows the relatively quick introduction of new varieties. Moreover, the programme enables the introduction of new fruit varieties to the market based on research of consumer tastes. It allows the New Zealand kiwifruit industry to maintain the ‘taste premium’ paid by overseas consumers and strengthens the fruit’s well-being positioning in export markets.

The genetic improvement programme allows the New Zealand kiwifruit industry to maintain the 'taste premium' paid by overseas consumers.

While Zespri does not focus on research and development of manufactured product options, there may be potential for the refinement and expansion of the range of manufactured kiwifruit by-products like food and beverage ingredients and nutraceuticals. Work streams are currently underway at Waikato University and the FoodBowl facility operated by the Food Innovation Network Auckland.

Encouraging a skilled workforce

The Bay of Plenty Tertiary Intentions Strategy recommends developing a business case for creating a global centre for primary sector research and education, initially focussed on horticulture. This would build on Plant and Food Research in Te Puke and the Newnham Innovation Park in Te Puna, and support the development of Māori management and governance capability (Bay of Plenty Tertiary Intentions Strategy Reference Group, 2014).

In order to address the shortages of skilled labour and as part of their strategy for growing people capability in the sector, the New Zealand Kiwifruit Growers Inc. is also considering the establishment of a horticulture and agriculture academy in the Bay of Plenty.

Implications for stakeholders

For industry	• Support programmes that encourage the development of new kiwifruit orchards. • Investigate the introduction of additional initiatives to strengthen the availability of labour to the industry, including the enhancement of collaboration with the avocado sector and other industries regarding the joint employment of crop pickers. • Support New Zealand Kiwifruit Growers Inc. in developing a business case for establishing a horticulture and agriculture academy in the Bay of Plenty.
For Māori/iwi/hapū	• Ensure that FOMA has sufficient resources to assist the growing number of Māori-owned orchards in improving their productivity performance. • Support New Zealand Kiwifruit Growers Inc. in developing a business case for establishing a horticulture and agriculture academy in the Bay of Plenty region.
For local government	• Work proactively with the sector to assess the long-term availability of water resources for the industry.
For central government	• Participate in joint research programmes with the industry, including: – genetic improvement programme (joint initiative by industry and Plant & Food Research) – enhancement of orchard productivity through use of harvesting robotics – refinement and expansion of the range of high value added manufactured kiwifruit by-products (eg nutraceuticals) • Continue to invest in biosecurity and pest risk management. • Evaluate the industry's business case for the establishment of a regional horticulture academy and consider support if the venture is worth pursuing. • Evaluate the business case for creating a global centre for primary sector research and education, initially focussed around horticulture, in the region, as proposed by the Bay of Plenty Tertiary Intentions Strategy.

Avocado

Summary

The Bay of Plenty region is the main activity centre for the avocado industry. The region accounts for about 60 percent of producing hectares (2,197 hectares) and 81 percent of avocado exports (2.54 million trays).

The industry is developing a strategy to quadruple exports to $280 million per annum by 2023, with buy in from the industry and central government. If the strategy succeeds and the Bay of Plenty maintains its share, avocado exports from the region could be in the vicinity of $168 million per annum.

Background[16]

In the 2013/14 season the New Zealand avocado industry was made up of 769 growers working 3,661 hectares that produced a total of 26,933 tonnes of avocados (4.897 million trays).

Of the 4.897 million trays produced, 3.137 million trays were exported (64 percent), 1.281 million trays (26 percent) were sold domestically, and 0.479 million trays (10 percent) were processed.

Avocados are the third largest horticulture export sector after kiwifruit and apples.

Exports in the 2013/14 season were worth $103 million, up from $32 million the previous season.

Source: Bay of Plenty Regional Council

In 2012/13, Australia took about 90 per cent of New Zealand's avocado exports and is the highest paying market in the world. Japan is New Zealand's biggest Asian export market, with other markets being Singapore Korea, Thailand and Malaysia.

Growth outlook

The avocado industry has a target of increasing industry turnover to $280 million by 2023 by achieving higher selling prices and by tripling volumes. Significant progress towards that goal was made during the past season, with a doubling of harvest volumes and record turnover of $136 million. A more collaborative approach amongst exporters – focusing on market growth rather than price competition – has meant that prices have remained relatively stable despite the volume increase. AVANZA Ltd represents three companies who collectively market 85 percent of the avocado exports from

[16] (NZ Avocado Growers' Association Inc & Avocado Industry Council Ltd, 2014).

New Zealand. Industry representatives have expressed confidence that higher prices can be maintained, which has sharpened the industry's focus on growing other export markets.

The avocado industry has a target of quadrupling industry turnover to $280 million by 2023.

Industry stakeholders also suggested that there is significant further growth potential in the domestic market, which recorded a 15 percent increase in value in the 2013/14 year and an 84 percent increase over the last 5 years. Better storage and closer marketing ties to retailers have contributed to better full year selling. Importantly, the average per head consumption of avocados per year in New Zealand of 2.2 kilograms is significantly below quantities consumed offshore (for example 3.5 kilograms in Australia). That indicates considerable opportunity for volume growth.

Industry trends and regional advantages

Productivity improvement

In terms of productivity improvement initiatives, the avocado industry has gradually been increasing the use of harvesting robotics. It has also started to share warehousing and labour for packing with the kiwifruit industry, with different seasonal timing allowing a more efficient use of resources.

Research and development

MBIE has provided a $4.5 million grant over 5 years for industry research focused on better orchard and supply chain management. The industry has also entered the Go Global avocado industry PGP (2014–19) which includes seven co-investors. The PGP ($8.6 million over 5 years) covers all parts of the supply chain (efficiency of orchard management, harvesting technology, development of new products, new overseas markets). Through the development of the PGP programme the industry has become more united and focused on domestic and international market opportunities.

Processed avocado by-products

About 10 percent of the 2013/14 crop went into processed avocado by-products. The sector is currently largely focused on avocado oil. New Zealand has an advantage over Australia in this area as Australian avocados are not as suitable for oil production. There are three avocado oil companies in New Zealand that perform well internationally, although yields are comparatively low and these companies rely on being able to buy fruit cheaply. There are other processors that are focused on processed avocado products such as dips. However, they make up only a very small part of the processed avocado products industry.

Issues and challenges

Industry productivity

There are 769 registered growers in New Zealand. There is also large industry variations of per hectare yields. In 2013/14 the average property (7.4 tonnes/hectare) returned $20,700 per hectare, whereas the top growers (25 tonnes/hectare) were returning $70,400 per hectare. While different soil quality and climate are a contributing influence, a key factor is the considerable number of 'lifestyle operators' in parts of the industry whose orchards are generally at the lower end of the productivity scale.

Barriers to entry

It is relatively costly to enter the avocado industry because of the required large capital outlays for land and trees.

It is relatively costly to enter the avocado industry because of the required large capital outlays for land and trees. Unlike in the larger kiwifruit sector, where there are alternatives, there is no clear path for young people to enter the avocado industry.

International markets

Mexico is the largest global avocado grower, selling into the United States, Japan and China. More recently South American competition has grown strongly, particularly out of Peru, which operates on a counter-seasonal cycle to New Zealand.

Increasing compliance requirements based on food regulations in overseas markets provide a constraint for faster export growth. Even though New Zealand meets all compliance standards, there is still no access to the Chinese market, with progress depending on the successful outcome of further trade negotiations.

Shipment duration

In developing new export markets, the supply chain is constrained by the maximum allowable 40 day period between when the crop gets picked and when the fruit reaches its use-by date. This affects opportunities to export to more distant markets, such as the United States.

Exporter competition

The absence of a single marketing arrangement such as in the kiwifruit industry means a greater degree of price uncertainty for avocado growers, which affects investment decisions. Periods of strong volume growth in the past frequently led to a corresponding decline in prices as exporters chose to compete against each other – particularly in the Australian market. Growers had little incentive to expand volumes. A more collaborative export strategy has been successfully adopted recently, which if maintained, would ensure growers can retain margins in the face of increasing volumes.

Labour shortages

As noted earlier, the availability of labour is an issue right across the various horticulture sub-sectors. There has been limited success in sharing crop picking resources with other industries and temporary foreign labour has to be accessed for crop picking.

Opportunity

International market development

The key market development focus should be on the United States where demand growth has been persistently strong over the past decade and the weekly avocado consumption is equivalent to New Zealand's total annual supply. In Asia the strengthening of positions in existing markets should be used as a springboard for the gradual expansion into new countries. In particular, the industry should continue to seek access to the Chinese market.

Market access for New Zealand avocado to China has been made the top priority for New Zealand horticultural products. Requirements for access are currently under negotiation and good progress has been made.

Key research and development work in support of the development of more distant markets needs to be focused on overcoming of problems associated with long shipping duration by using life-prolonging technology.

The key market development focus should be on the United States where weekly avocado consumption is equivalent to New Zealand's total annual supply.

Assessment

Our assessment of the avocado opportunity is that it has medium potential. While there is strong global demand for avocados, this is tempered by logistics issues in transporting them to international markets.

Nationally, the avocado industry has a strategy to quadruple exports to $280 million by 2023, with buy in from the industry and central government.

The Bay of Plenty accounts for 60 percent of the avocado industry in New Zealand by producing hectares and, in the 2013-14 season accounted for 81 percent of export trays.

Table 12 Assessment: International market development

Criteria	Rating
Validity	Medium
Potential impact	Low
Practicality	Medium
Regional significance	Medium
International orientation	High
Ability to leverage previous activity	High
Consistency with national priorities	High
Overall rating	**Medium**

If the national avocado industry strategy succeeds and the Bay of Plenty maintains its share, avocado exports from the region could be in the vicinity of $168 million per annum.

Other opportunities

Enhancing industry productivity

The Go Global PGP is focusing on efficiencies at every level of the supply chain, including orchard management, harvesting techniques, packing, logistics etc. The implementation of the findings will enable the industry to achieve considerable productivity gains and more consistency of productivity levels across orchards.

Industry is interested in additional research into improvements in:

- Harvesting robotics.
- Development of new refrigeration techniques that will enable the industry to keep fruit longer and maximise the benefits from selling product during the off season.
- Increasing the efficiency of water use, the development of smaller trees that are easier to manage and can be grown on slopes.
- Breeding programmes to improve consistency of tree harvesting yields between years.

Development of avocado by-products

There is potential for the industry to extract value from product processing other than the manufacture of oil. Research is being conducted into the value that can be extracted from avocado pits in producing nutritional supplements.

In addition, given the nutrient richness of avocado, research could be conducted into the suitability of avocado as an ingredient for infant formula. This could open the possibility of collaboration with Fonterra or other infant formula producers.

Implications for stakeholders

For industry	• Implement the Go Global PGP and ensure efficient technology transfer between industry and researchers. • Enhance general information sharing within the industry to enable the wider sector to participate in opportunities. • Participation in and funding of additional research projects not already covered by the PGP. • Continue to work closely with NZTE to develop an industry-wide collaborative approach to scoping new markets. • Investigate the introduction of additional initiatives to strengthen the availability of labour to the industry, including improved collaboration with the kiwifruit sector and other industries for the joint employment of crop pickers. • Develop an initiative to develop pathways for young people to enter the industry. • Support New Zealand Kiwifruit Growers Inc. in developing a business case for establishing a horticulture and agriculture academy in the Bay of Plenty.
For Māori/iwi/hapū	• Assess the potential to gain a larger share in the Avocado industry, building on the lessons learned and success in the Kiwifruit sector.
For local government	• Work proactively with the sector to assess the long-term availability of water resources for the industry.
For central government	• Implement the Go Global PGP and ensure efficient technology transfer between all parties. • Consider funding support for research and development projects undertaken by the industry into opportunities not covered by the PGP, including the use of life-prolonging technology for long duration shipments, the development of new refrigeration techniques, genetic tree modification, and new product development. • NZTE to provide support for the sector during the phase of scoping and developing new international markets.

Apiculture and natural healthcare

Summary

The apiculture opportunity for the Bay of Plenty centres on mānuka honey and related products. Mānuka honey is the only known naturally generated product to have high levels of the anti-bacterial compound methyl glyoxylate. It is this naturally occurring compound that gives mānuka honey proven medicinal applications.

New Zealand's reputation for 'clean and green' natural products, coupled with the growing awareness of the unique properties of mānuka honey has resulted in rapidly increasing demand for New Zealand sourced natural products and, in particular, mānuka-based products.

Source: Comvita

Honey exports from New Zealand have grown by around 30 percent per annum over the last decade, with strong volume and value growth (Coriolis, 2012). Typically around half of all honey produced is exported, with export earnings of $187 million (8,706 tonnes) in the 2013/14 year (Ministry for Primary Industries, 2015b).

Background

The apiculture sector has been growing rapidly over the last five years, with production increasing from 12,500 tonnes in 2009 to 17,600 tonnes in 2014[17] (Ministry for Primary Industries, 2015b).

Employment in beekeeping in the Bay of Plenty region has increased to 304 in 2014, from 136 in 2004. This employment growth of 8.3 percent per annum is the fastest of all significant horticulture sub-sectors. The region's share of employment in beekeeping has also been increasing, from 18.6 percent of beekeepers in 2004 to 23.6 percent in 2014.[18]

The Bay of Plenty region is home to several leading companies producing mānuka-based products including Comvita, who are global leaders in medicinal grade mānuka honey and associated products.

17 June years.

18 Infometrics Regional Database.

Growth outlook

There is potential for the turnover of the New Zealand mānuka honey industry to grow from $75 million in 2010 towards $1.2 billion per annum by 2028.

There is significant potential for mānuka honey and related products given the global trend towards the consumption of health and wellness products. Strong demand growth for the antibacterial properties of active honey is forecast to continue, underpinned particularly by European and Asian market growth. Industry participants noted that, according to international projections, the global natural healthcare market will grow to about $700 billion by 2018.

Background information gathered for the High Performance Mānuka Plantations PGP states that, based on the strong value-add focus of the programme, there is potential for the turnover of the New Zealand mānuka honey industry to grow from an estimated $75 million in 2010 towards $1.2 billion per annum by 2028.

Industry trends and regional advantages

Widening mānuka-based product range

Mānuka honey provides a defendable platform for New Zealand to position itself as a trusted supplier of quality natural health products. Companies such as Comvita have developed higher value products in the medical, cosmetics and health and wellness categories with mānuka honey.

New Zealand's position as a trusted supplier of quality natural health products provides a defendable platform for growth in mānuka honey based exports.

Increasing market demand has allowed New Zealand producers to attract a price premium of approximately 40 percent for mānuka-based products over other honeys.

Industry capability

Based in the Bay of Plenty, Comvita is one of the key drivers of the industry's growth, focusing on nutraceutical grade honey and honey based products. It has made extensive investment into processing, research and development and export marketing initiatives.

Comvita has completed a three year strategic initiative to increase direct ownership of mānuka honey supply, including the acquisition of New Zealand Honey Limited. This additional security of supply has enabled the company to pursue expansion strategies in key Asian markets and in Australasia.

Comvita is also identifying opportunities for the sustainable use of marginal land through mānuka plantation development and partnerships. The Kaimanawa Honey GP joint venture with East Taupō Lands Trust, a registered Māori authority of Ngāti Tūwharetoa, was announced in late 2014. It provides for hives to be placed on more than 30,000 hectares of land. The hives will produce regular mānuka honey, as well as the more valuable medical variant (Unique Mānuka Factor (UMF®) 12 plus).

A key contributor for maintaining bee health and high quality standards for honey is the training of beekeepers. Telford, a division of Lincoln University, is operating a national training institute for beekeeping in Kaitaia.

Māori involvement in the industry

The Miere Coalition, a national coalition of Māori landowners, Māori honey producers and Māori investors, was established by Poutama Trust in 2012. The Coalition is exploring opportunities for Māori to expand their participation in the honey industry. This could be by way of investment into an existing operation or by developing new brands. A working group has been appointed to determine the strategy, explore possible options and present back to stakeholders. The Miere Coalition is receiving support for its efforts from Te Puni Kōkiri (TPK), Callaghan Innovation, Plant & Food Research, NZTE and Te Tumu Paeroa.

Research and development

The Mānuka Research Partnership (NZ) Limited, including Landcorp, Comvita, Te Tumu Paeroa and others, is investigating new opportunities for mānuka that include increasing the quality of the honey, lengthening the season and producing more honey per mānuka plant. This investment aligns with Te Tumu Paeroa's mission of unlocking the potential of Māori land.

The $2.9 million High Performance Mānuka Plantations PGP is an innovation programme led by the Mānuka Research Partnership (NZ) Limited and Comvita. It aims to build a scientific basis for plantation mānuka to increase the yield and reliability of supply of medical-grade mānuka honey (Ministry for Primary Industries, 2015c).

Issues and challenges

Brand protection

Mānuka honey and related products attract a significant price premium and are highly regarded in international markets. The premium is dependent on ensuring the quality of the product and positioning it in the natural health / wellness market. It is important to protect this distinctive brand opportunity.

The industry is currently unregulated and large quality differences risk undermining the brand value. A regulatory framework needs to be established to achieve consistent standards for UMF® accreditation and to maintain quality and provenance assurance.

Confusion over the quality and potency of mānuka honey products creates a significant risk to premium brand positioning.

Labelling on the basis of uniform standards is critical to providing market certainty both from a producer's perspective and, more importantly, from a market perspective. Confusion over the quality and potency of mānuka honey products available on the market creates a significant brand risk.

In July 2014 MPI released an 'Interim Labelling Guide for Mānuka Honey' (Ministry for Primary Industries, 2014a) for the industry to provide guidance for the definition of mānuka honey and it's labelling. Additional research is being undertaken to inform a final labelling guide which is expected to be released in 2016.

Industry fragmentation

The honey industry is fragmented, which has led to an uncoordinated approach to international market development. The lack of a unified strategy is costly for the industry in terms of the inefficient use of market development resources and sub-optimal expansion of export opportunities.

For example, there are a number of independent research and development programmes that could be aligned better. At this stage of its development the industry would benefit from a coordinated research effort that is linked into a joint market development strategy.

Security of supply

Stronger export market development will demand the wider industry improve certainty of supply. New participants have entered the industry, but honey supply is struggling to keep up with the pace of demand. There is also a high degree of volatility in the supply of mānuka honey, which poses a considerable risk to producers and distributors. The problem originates from uncertainty surrounding seasonal production and relatively ad hoc supply agreements between landowners, beekeepers and honey companies. Growth in export markets will require improved reliability of supply. Industry consolidation may be one way of achieving this.

Biosecurity risk

Biosecurity risks have to be managed carefully with respect to the mānuka trees (for example, development of myrtle rust) and the bee populations (for example, invasion of varroa mites). While industry participants expressed confidence that biosecurity risks are being properly managed, a lack of industry standards suggests that a residual risk arises from tree owners and beekeepers who do not apply best practice monitoring and mitigation methods.

Opportunities

Growing a significant position in the global health and wellness market through high quality mānuka products

A considerable opportunity exists for New Zealand to take a significant market position within the global health and wellness industry. This will require the industry to pursue a concerted product and market development programme that cements mānuka honey as a uniquely New Zealand value proposition.

Prior to engaging in further export market development, increased collaboration of industry, researchers and MPI will be required to resolve issues surrounding labelling and industry standards to provide quality assurance. Additional scientific research required for the update of MPI's Labelling Guide for Mānuka Honey may need to be accelerated. To reinforce this effort, the possibility of introducing a honey supplier accreditation system should be assessed.

The market for honey based products has been increasing across healthcare, functional foods, personal care, and medical categories. Additional research and development into further applications and expansion of other bee products will help to build New Zealand's reputation as a leading producer of natural healthcare products. That research effort should be based on a collaborative industry wide approach.

The main participants in the industry need to lead the development of a wider market and branding strategy to manage key promotional messages and reinforce certainty in existing and emerging markets. The establishment of an industry-wide marketing board should be considered. That body could work with NZTE on scoping export markets and developing specific strategies.

Identifying key market partners will be essential in informing further product and market development, distribution and investment opportunities.

Establishing a trademark to represent 'New Zealand mānuka' would also help differentiate and add value to the New Zealand products.

A concerted product and market development programme will help cement mānuka honey as a uniquely New Zealand value proposition.

Assessment

Our overall assessment of the mānuka honey opportunity is medium.

There is very strong global demand for mānuka honey, particularly for medicinal grade. It has been identified as one of the top three growth opportunities in the food and beverage sector with projected exports of $1.2 billion supported by the High Performance Mānuka Plantations PGP.

The industry is relatively strong in the Bay of Plenty. There are a number of established businesses (including Comvita) and there are strong opportunities for Māori participation. Developing the industry aligns with the afforestation opportunity.

Table 13 Assessment: Development of export market for high quality mānuka products

Criteria	Rating
Validity	Medium
Potential impact	High
Practicality	Medium
Regional significance	Medium
International orientation	High
Ability to leverage previous activity	Medium
Consistency with national priorities	High
Overall rating	**Medium**

However, the industry is still in its formative stage and there are a number of issues to be resolved if the industry is to realise its full potential.

Other opportunity

Establishment of an industry cluster

To assist industry development and facilitate collaboration between companies in the sector, the potential for establishing an industry cluster of businesses operating in the honey and nutraceutical field should be assessed. This could be modelled on Newnham Park, which is a horticulture innovation hub located in Te Puna that accommodates a number of companies engaged in agritech and horticulture research. One option that could be considered is the expansion of the ‘‘Experience Comvita’’ site into a health and wellness hub for like-minded businesses.

Relevant central government initiatives

- Research and development programme involving New Zealand and international researchers to develop strategies to combat Psa.
- SFF support for a project to lift productivity and profitability of collectively owned Māori kiwifruit orchards.
- Go Global PGP – a five year programme to increase the productivity and capability within the avocado industry.
- Research programme to develop new avocado root stock, which will allow avocados to be grown in areas of lesser soil quality, which could significantly increase production and output.
- MBIE research funding for preservation of avocados during transport which, if successful, will expand the number of export market options.
- High Performance Mānuka Plantations PGP– a seven year programme to increase mānuka honey exports to $1.2 billion annually by 2028.

Implications for stakeholders

For industry	• Increase collaboration with researchers and MPI to resolve industry standards issues. • Investigate the potential for registering a trademark for mānuka honey. • Develop a strategy to enhance the reliability of honey supply. • Work with NZTE on development of industry-wide international market strategy. • Consider the establishment of an industry-wide marketing body. • Assess the potential for formally establishing an industry cluster of businesses operating in the honey and nutraceutical field. • Assess the possible introduction of a honey supplier accreditation system, with criteria including application of best practice, biosecurity compliance and educational certifications. • Implement the High Performance Mānuka Plantations PGP and ensure efficient technology transfer between industry and researchers.
For Māori/Iwi/hapū	• Continue to investigate options for Māori to participate in the development of the mānuka honey industry in the Bay of Plenty – through the activities of the Miere Coalition or other channels. • Te Tumu Paeroa to maintain its engagement with the Mānuka Research Partnership.
For local government	• Provide support for the establishment of a honey/nutraceutical industry cluster if favoured by the industry and if there is a good business case.
For central government	• Increase collaboration between researchers and MPI to resolve industry standards issues. • Ensure the MPI Labelling Guide for Mānuka Honey will be updated based on additional scientific research. • Continue to provide support for the Miere Coalition in their efforts to identify options for Māori to participate in the mānuka honey industry. • Implement the High Performance Mānuka Plantations PGP and ensure efficient technology transfer between all parties. • Continue to provide support through NZTE for branding and marketing efforts where appropriate, and through MPI and Callaghan Innovation for research and development programmes for the industry. • Continue to invest in biosecurity and pest risk management. • Consider the introduction of a framework for increased compliance of beekeepers with high biosecurity standards.

Aquaculture

Summary

The Bay of Plenty's contribution to New Zealand's aquaculture industry has been limited to processing mussels grown outside the region. With a backdrop of strong international demand and suitable growing spaces and species in the region, there is significant potential for saltwater aquaculture in the Bay of Plenty.

The Ōpōtiki sea farm and harbour development venture is a cornerstone of the Bay of Connections Regional Aquaculture Strategy. The staged establishment of the operation will take 12 years.

Source: Eastern Sea Farms

Once in full operation, the combined activity from the sea farm and mussel processing facility is projected to generate an increase in GDP of around $40 million annually.

The Taupō region also provides an attractive setting for freshwater aquaculture through the combined availability of freshwater and geothermal resources. Cost effective water heating to facilitate faster growth rates of farmed species has the potential to provide a competitive advantage. A high value opportunity could be pursued in particular with land-based trout farming, although a law change is required first.

Background

New Zealand aquaculture export earnings reached $289 million in the year to June 2014, driven by strong prices and volume growth. Three species account for 99 percent of total exports: mussels, salmon and oysters.

New Zealand is the only country farming green lipped mussels, which accounted for 69 percent ($180 million) of aquaculture exports in 2013.

The Bay of Plenty's contribution to the aquaculture industry's output and exports is relatively small. Seafood processing is the major aquaculture industry in the region, with the activity generated by a single Tauranga based company, North Island Mussels Limited (NIML). This is a joint venture between

Sanford Ltd and Sealord that processes mussels grown in the Coromandel.[19] NIML has invested in state of the art machinery that has significantly increased productivity and capacity.

A sea farm operation in Ōpōtiki is at the early stages of development, with the first set of production lines established in 2014 and commercial harvesting commencing in 2015.

The only commercial freshwater aquaculture venture in the region is the Huka Prawn Park near Taupō. The facility utilises geothermal energy for the cost effective heating of water in order to enhance the growth process of the farmed species. This venture is seen mainly as a tourism business, with most product sold on-site and into the domestic market.

Table 14 presents the activity generated by the aquaculture sector in the Bay of Plenty region.

Table 14 Aquaculture sector summary, Bay of Plenty

Aquaculture	GDP (2014, 2010$m)	Real GDP growth (CAGR 2004-2014)	GDP Location Quotient	Employment (2014)	Employment growth (CAGR 2004-2014)	Employment Location Quotient
Seafood Processing	24.1	2.3%	1.50	271	2.8%	1.32
Onshore Aquaculture	0.2	-21.7%	0.49	4	-18.9%	0.38
Other Agriculture and Fishing Support Services	0.1	3.1%	3.16	3	4.2%	3.05
Longline and Rack (Offshore) Aquaculture	0.1	-21.3%	0.08	2	-19.0%	0.05
Aquaculture	**24.6**	**0.6%**	**3.47**	**279**	**0.8%**	**2.39**

Source: Infometrics Regional Database

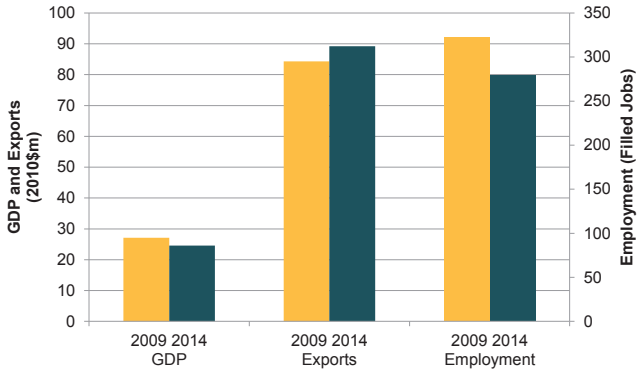
The aquaculture sector contributed $24.6 million to regional GDP and employed 279 people in 2014. The sector has a GDP location quotient of 3.47 and an employment location quotient of 2.39, which suggests the Bay of Plenty region has a relatively high concentration of activity in the sector.

Figure 17 shows the size and change in the aquaculture sector GDP, employment and exports over the five years to 2014.

Over the last five years, exports increased by 1.1 percent per annum to $89 million. The high level of exports and employment relative to GDP is because most of the activity is processing with raw mussels coming in from outside the Bay of Plenty region.

GDP and employment both declined over the same period, by 2.0 and 2.9 percent per annum respectively.

Figure 17 Aquaculture GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

[19] It charges a fee for processing mussels from its owners' farms.

Growth outlook

During the past three decades world aquaculture production increased from 5 million to 63 million tonnes (The World Bank, 2013). The Food and Agriculture Organisation of the United Nations estimates that global aquaculture production will continue to increase strongly. Over the long term, rising incomes in emerging markets and strong demand in Asia, Europe and North America for premium fish products will underpin industry development. A review of projected industry growth rates suggests that, overall, demand for aquaculture products worldwide will increase by around 2–3 percent per annum to 2030 (Wyatt, van der Scheer, & Moore, 2010).

Within an international market characterised by strong demand for safe and sustainable seafood products, the aquaculture sector in New Zealand has significant growth opportunities.

The value generated by aquaculture in New Zealand is expected to grow rapidly, with nationwide export earnings forecast to increase from $290 million in the year ending June 2014 to $402 million in 2018 (Ministry for Primary Industries, 2014d). Growth is due to the recovery of oyster production (following the oyster virus crisis) and mussel production (recovering from a fall in mussel farming productivity related to climatic conditions), and planned increases in salmon production.

The New Zealand Aquaculture Strategy has a target of growing sales of aquaculture products to $1 billion by 2025 (Burrell & Meehan, 2006). The Bay of Connections Aquaculture Strategy establishes a goal ‘‘to grow an integrated and sustainable aquaculture industry in the Bay of Plenty with export sales of $250 million by 2025’’. The Bay of Connections Regional Aquaculture Organisation (RAO) was established in 2010 to oversee and implement the actions of the Bay of Connections Aquaculture Strategy (Bay of Connections Regional Aquaculture Organisation, 2013).

The Bay of Connections Aquaculture Strategy’s goal is ‘‘to grow an integrated and sustainable aquaculture industry in the Bay of Plenty with export sales of $250 million by 2025’’.

Regional advantages

Location

Given the abundant water space, high number of sunshine hours per year, and nutrient-rich waters in the region, aquaculture is a sector with significant potential in the Bay of Plenty. The possibility exists to go beyond traditional aquaculture farming such as mussels, and diversify into wider food groups and applications in the areas of nutraceuticals, food additives, feeds, biofuels and chemicals.

Research activity

The University of Waikato’s Coastal Marine Field Station was established in December 2011 in Tauranga as part of the university’s Environmental Research Institute. The Coastal Marine Field Station cooperates with international research facilities (such as the University of Bremen, in

Germany, one of the world's leading marine research institutes) and is involved with a wide range of doctoral and masters research within Tauranga Harbour and throughout the Bay of Plenty. There are currently over 40 postgraduate students involved with the Coastal Marine Field Station. The station positions the region as a major centre for marine-based research to support economic development, not only for aquaculture, but also for pharmaceutical and agrichemical innovations owing to the high level of marine biodiversity.

Geothermal resources

With the availability of freshwater and geothermal resources, the Bay of Plenty is an attractive setting for land-based freshwater aquaculture. Cost effective water heating to facilitate faster growth rates of farmed species has the potential to provide a competitive advantage.

Opportunities

Ōpōtiki sea farm and harbour development

The Ōpōtiki sea farm and harbour development venture is a cornerstone of the Bay of Connections Aquaculture Strategy.

The consented Ōpōtiki farm area and potential expansion of new water space accounts for approximately 80 percent of the strategy's overall growth target.

The planned integrated venture also includes a hatchery for mussel spat and the establishment of a mussel processing facility in Ōpōtiki. Local processing would provide an advantage over other processors as it would minimise time between harvest and cool storage, which limits weight loss of the mussels.

Once fully operational, the sea farm is projected to grow between 16,000 and 25,000 tonnes of green-lipped mussels annually that will be processed in Ōpōtiki. Estimates suggest that, at full capacity, the farm could generate represent a potential 17 to 22 percent increase in national mussel harvesting. Consent for the 3,800 hectare near-shore marine farm off Ōpōtiki has been granted to Eastern Seafarms Ltd (ESFL) for farming multiple species. ESFL is owned by the Whakatōhea Māori Trust Board (54 percent) and Whakatōhea Aquaculture Ōpōtiki Ltd (46 percent), the latter being comprised of local investors. The shareholders have established an operating company Whakatōhea Mussels Ōpōtiki Ltd (WMO).

ESFL have completed four years of commercial trials at the sea farm, including the testing of equipment to withstand open sea conditions, with consistently good natural spat catch. The mussels have a unique bright green coloured shell and are very clean, which provides a processing advantage.

To allow the efficient servicing of the marine farm and transport of harvested product into Ōpōtiki for processing, a harbour transformation is required. This would create a year-round navigable harbour entrance and additional docking facilities. The improved harbour entrance may also enable other

marine industry developments and enhance marine-based tourism in the area. The project involves the construction of twin groynes and wharves.

There is strong local community and investment support for the new offshore venture. The sea farm is a long-held ambition of Whakatōhea and a key plank of their future economic development ambitions.

Project timeline and economic benefits

The development is projected to provide comparatively low benefits to the region over the first 6 years and not achieve full ongoing economic benefit until year 12, expected to be from 2026 onwards. This lead time is a result of the time taken to increase the sea farm to full capacity, complete the harbour infrastructure, and establish the processing facility.

The sea farm will have to produce sufficient output before processing in Ōpōtiki becomes commercially viable. This is projected to be in year five, which coincides with the projected timing for the opening of the harbour development. Until then the harvested mussels will be transported to Tauranga and be toll processed by NIML.

Once in full operation, the combined activity from sea farm and mussel processing facility is projected to generate additional GDP for the region of around $34 million per annum, with a benefit to New Zealand as a whole of around $40 million. Estimates for new jobs at the combined harvesting and processing operations, once full capacity has been reached, range from 250 to 400 FTEs.

In addition, the harbour development and establishment of the processing facility will generate jobs in the region during the construction period (years 3 to 5). An action in the project's workforce development strategy is to assist those locals employed in temporary construction jobs to move into full time jobs in the aquaculture sector.

Once in full operation, the combined activity from the sea farm and mussel processing facility is projected to generate an increase in GDP of around $40 million annually.

Business case considerations

The following issues are key considerations for the establishment of a successful business case.

Sea farm location

One of the risks surrounding the Ōpōtiki sea farm relates to its location. There remains some uncertainty regarding the viability of a deep water sea farm, although initial evidence has been positive regarding the performance of the structures in adverse sea conditions. It is important that the infrastructure and equipment used to scale up the sea farm are fully compatible with even low probability extreme weather events. The operators can continue to draw on international expertise. For example, China has extensive experience with successful deep water sea farming and is a leader in the application of technology in this area.

Commercial expertise

Sealord divested its 26 percent shareholding in ESFL in October 2014, following a review of its overall business strategy within Australasia. Sealord's ambitions were no longer aligned with those of ESFL. New Zealand Sea Farms Ltd (a group of Nelson based aquaculture investors) divested their 20 percent shareholding at the same time. The sea farm is now fully locally owned.

Sealord's divestment has removed a major seafood industry participant with commercial expertise and access to distribution networks as a cornerstone shareholder. Even though Sealord was only a shareholder in ESFL and not the mussel farming operation itself, its financial interest in the venture ensured that the local operators had access to expertise regarding commercial matters and markets.

Production, distribution and market expertise is critical for the successful establishment of a full-scale sea farm, for evaluating processing options and changing technology, and for taking the product to high value-add markets. To secure the necessary expertise, WMO have appointed an experienced senior mussel industry executive as executive director, and have developed a relationship with a large industry participant for servicing the farm and other commercial arrangements. The companies involved continue to retain the services of the marine farm contractor with whom considerable site specific farming knowhow has been developed.

Product markets

The considerable increase in mussel supply associated with the Ōpōtiki operation could, in case of insufficiently developed distribution channels, risk downward price pressure on market prices and an insufficient commercial return. ESFL and WMO are developing strategies to deal with this risk. In the short term, the companies are taking advantage of the current industry-wide shortage of mussel spat by focussing efforts on catching spat for on-sale to other growers. For the medium term, WMO is exploring alternative product forms (with different distribution channels) to reduce dependence on current markets.

A study assessing output markets is in progress and it is vital that research and testing of the market potential be completed as soon as possible, as the result could impact decision making regarding the pace of the development of the sea farm, the harbour development and the processing facility.

To mitigate the commodity nature of the product, a specific market and branding strategy should focus on the "open ocean" nature of the produce. Product differentiation will be of key importance, with packaging and presentation to be focused on consumer tastes.

Funding

In total, development of the marine farm, hatchery and processing plant is estimated to require investment of around $80 million. Construction of the harbour development is anticipated to cost around $52 million.

Regional, local and central government are considering the funding of the harbour development. The BOPRC is committed to contributing $18 million to the harbour development from its Regional Investment Fund. In addition, Ōpōtiki District Council will contribute $5.4 million, with the remainder (around $25–$30 million) being sought from central government.

Public funding of a harbour development of this magnitude will only be justifiable if it constitutes enabling investment for the mussel processing facility in Ōpōtiki. It is therefore critical to present a

comprehensive business plan that demonstrates the technical feasibility of a scaled-up sea farm and credible funding strategy for the establishment of the processing facility, and also shows the commercial viability of the integrated farming and processing venture based on detailed market research and a product branding strategy.

Assessment

The integrated Ōpōtiki sea farm and harbour development, including local product processing facilities, rates medium to high on most criteria. There has been significant work undertaken to date on the development of the concept.

If successful, the venture will make a significant contribution to the wider economic development of the Eastern sub-region, with considerable benefits for an area that has high levels of long-term unemployment and low incomes.

The overall rating assumes that strong export market potential will be confirmed by the study that is currently underway.

Table 15 Assessment: Ōpōtiki sea farm and harbour development

Criteria	Rating
Validity	Medium
Potential impact	Medium-high
Practicality	Medium
Regional significance	Low-medium
International orientation	High
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium-high**

Commercial trout farming

Land-based trout aquaculture provides a potential high value opportunity for the region, as trout commands a high price in international markets and operating and capital costs are comparatively modest.

Due to strong international demand, trout cultivation occurs in 60 countries worldwide and has developed into a highly successful industry, valued at over US $1.3 billion in 2006 (World Wildlife Fund, 2010). Large international markets are mostly found in Japan, Europe and America.

Optimal water temperature for commercial growth is 12^{o}C to 16^{o}C. Water temperatures in the main trout fishing areas are well below this, thereby limiting the potential for commercial farming. However, waste heat from geothermal energy use by other industries could be used to elevate the water temperature in recirculation systems.

The Bay of Connections Regional Aquaculture Organisation is encouraging the development of trout farming as a part of their strategy to achieve exports of $250 million.

There is also likely to be strong domestic demand, while trout farm visits could be added to the Bay of Plenty's tourism offering.

There is investor interest from the commercial sector and iwi in advancing this opportunity, but progress cannot be made under the current legislation.[20]

Source: Bay of Plenty Regional Council

Trout farming and the sale of trout has been prohibited in New Zealand since 1983, making trout a recreational sports-fish only. Opponents of commercial trout farming have concerns that it could have adverse effects on the wild trout fishery, an important visitor industry in Rotorua and Taupō – through poaching and the introduction of disease and pests.

The Taupō region provides an attractive setting for land-based freshwater aquaculture through the combined availability of freshwater and geothermal resources.

The Taupō wild trout fishery is estimated to contribute $29 million to the local economy annually and support 300 jobs. It is important that this activity is preserved, which would require an increased compliance effort.

Proponents of a lift of the prohibition argue that, based on scientific assessment and overseas evidence, options exist for mitigation of disease risks within suitably designed and carefully managed operations. Their view is that many of the concerns raised about trout farming are largely historic and have been addressed over the last 30 years through the development of salmon farming in New Zealand. Examples of how concerns could be addressed include: sourcing the initial broodstock locally to avoid the potential introduction of new diseases and pests; extensive water quality monitoring; using reticulation systems for water quality control and significant discharge reduction; applying strict quantity controls in line with farm capacity. It has also been argued that trout farming could support the wild trout fishery through the donation of healthy juveniles.

A range of steps need to be taken before consideration of any legislative change. There would need to be an assessment of the commercial potential for, and costs and benefits of, New Zealand based trout

[20] Importation of live trout or trout meat for sale and restricting to small quantities [10kg] for own use is made under section 54 of the Customs and Excise Act 1996. The current order expires on 7 November 2015. Letting it expire or renewing it is a Cabinet decision.

Trout Farming is banned under the Conservation Act 1987 and the Fisheries Act 1996.

farming, including a robust business case and market validation. The industry would need to determine how effective compliance would be implemented and funded; and demonstrate how a land based aquaculture facility could operate without putting the wild trout population at risk.

Assessment

The commercial trout farming opportunity receives an overall medium rating.

While there is a strong global market and a Bay of Plenty based industry would benefit from access to geothermal energy, it is not clear what scale of operation would be feasible, particularly considering concerns about biosecurity risks and potentially high compliance requirements.

Although global trout cultivation was valued at more than US$1.3 billion in 2006, the potential market share that could be achieved by Bay of Plenty operators would depend on the scale of the operation.

Table 16 Assessment: Commercial trout farming

Criteria	Rating
Validity	Medium-high
Potential impact	Medium-low
Practicality	Medium
Regional significance	Low
International orientation	Medium-high
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium**

Other opportunities

Commercialisation of research findings

There is potential for the development of other, possibly high value-added, aquaculture ventures in the region, based on the outcomes of a comprehensive research programme conducted by Waikato University's Coastal Marine Field Station.

One area of focus is research into seaweed and algae, with could provide input into new drug / nutraceutical development and assist in the development of sustainable biofuels.

There is potential for the development of other, high value-added, aquaculture ventures in the region.

There is also collaboration between the aquaculture industry and the Cawthron Institute to undertake genetic research for mussel development and exploration of the potential to grow different species together (for example, mussels and sea-cucumbers). This is known as polyculture, with each species becoming more productive than they would have been on their own. Butterfish development could have great potential in that environment as it feeds on seaweed. Butterfish is a highly sought after food in Japan and China due to its appearance.

Another area of research focuses on bioactive compounds, with work underway with Zespri to create marine based inhibitors for Psa, the disease that has affected kiwifruit vines over recent years.

Although the programme is based in Nelson the Shellfish Production and Technology New Zealand (SPATnz) PGP is relevant to the region. The programme is focused on domesticating the Greenshell mussel and developing selectively bred, high-value product (Ministry for Primary Industries, 2015d).

Eel/tuna farming

Another potential high-value opportunity could be pursued with land-based eel/tuna aquaculture. There is strong demand for eel in the Northern Hemisphere, but scientific progress has to be achieved first before a commercial venture could be considered. Large scale eel/tuna farming would require the successful manipulation of the breeding cycle in captivity. While the Mahurangi Technical Institute has made some progress, it remains uncertain whether the research will ultimately be successful.

If the breeding cycle can be manipulated in captivity, eels can be farmed cost effectively and be grown to be sold at optimum size, with geothermal heat used to achieve an optimal growth process.

The alternative commercial opportunity would be the sale of glass eels (post larval stage), which would allow the breeding eel to be released into the wild. Catching of eels/tuna and management of wild stocks is currently governed through the Quota Management System.

With eel/tuna having great cultural significance for Māori, iwi should be involved in any consultation processes should eel/tuna aquaculture become a realistic opportunity.

Relevant central government initiatives

- Investment in research and development to support the industry, including the Precision Seafood Harvesting PGP, the SPATnz high value shellfish PGP, investment in Integrated Aquaculture Solutions to develop freshwater aquaculture activity to exploit dairy farm effluent, and investment in business research and development to explore new aquaculture products and species.
- Support the New Zealand Aquaculture Strategy and Five-year Action plan to grow aquaculture exports to $1 billion by 2025.
- Forthcoming RMA reforms to provide more certainty, timeliness, and cost-effectiveness in resource allocation decisions.
- Māori Commercial Aquaculture Settlement Regional Agreements.

Implications for stakeholders

For industry	• Complete market analysis, including export potential, and project validation for the sea-based mussel farm off Opotiki and local processing facility. • Assess technical risk management relating to the sea farm operation. • In light of findings, review estimates of economic benefits arising from combined farming/processing operation. • Assess the commercial potential for New Zealand based trout farming. • Commission a report setting out the detailed design of land-based trout farming facilities, compliance with best practice management, and providing a detailed assessment of the risks to wild trout. • If the above can be demonstrated successfully, establish what extra steps would be required to enable trout to be farmed for sale and export. • With the eel having great cultural significance for Māori, iwi should be involved in any consultation processes regarding the development of eel aquaculture.
For Māori/iwi/hapū	• Following the dominant involvement in the development of sea-based aquaculture in the region, iwi to consider options for engagement in freshwater aquaculture, including both trout and eel farming.
For local government	• Based on the establishment of a comprehensive business case for the mussel venture, provide funding support for the Ōpōtiki harbour development as intended in conjunction with central government. • Consider options for supporting industry in advancing their case for commercial trout farming.
For central government	• Consider funding support for the business case development and market validations if suitable opportunities emerge from Waikato University Coastal Marine Field Station research programme. • Consider legislative change to enable commercial trout farming if the case is proven. • Review the level of funding allocated to research into the manipulation of the eel breeding cycle.

Visitor economy

Summary

The Bay of Plenty and Taupō regions include some of New Zealand's most well-established destinations for leisure tourism.

However, the sector has experienced limited domestic and international expenditure growth over the last decade, with the lack of cooperation between Regional Tourism Organisations (RTOs) and poor air travel connectivity being viewed as key constraints by industry participants.

The global backdrop for tourism is that it is now in expansion mode after dropping off due to the global financial crisis (GFC). Recent strong growth in visitors, particularly from Asia, is expected to continue.

Source: Bay of Plenty Regional Council

The Bay of Plenty's proximity to Auckland is a strong advantage with Rotorua considered one of the three points on the North Island's international tourist triangle (along with Auckland and Waitomo). The cultural offering, geothermal attractions, and the wellness proposition led by Destination Rotorua will continue to make Rotorua city the logical primary destination for international visitors to the Bay of Plenty region.

The Rotorua tourism industry should persist with its efforts of establishing a direct flight connection to Queenstown, thereby improving Rotorua's integration into the route preferred by many international travellers.

The wider tourism industry in the Bay of Plenty should develop a regional strategy focused on the market for Free Independent Travellers (FITs) – both international and domestic – who have more time and are interested in a wider range of activities (eg golfing, biking, tramping, eco-tourism, spas etc).

International students make a considerable contribution to the economy through the payment of fees and rent, and general spending. They also benefit the economy through building international networks and can stay on in the region as skilled migrants. Pan-regional Education New Zealand partnership initiatives with local education providers and the new Tauranga Tertiary Education Precinct (TTEP) will offer opportunities to considerably increase the number of foreign students in the Bay of Plenty.

The Bay of Plenty Rugby Union, in conjunction with the education sector and the tourism industry, is pursuing a strategy of using rugby as a vehicle to lift economic activity through bringing sport teams and international students to the region.

Background

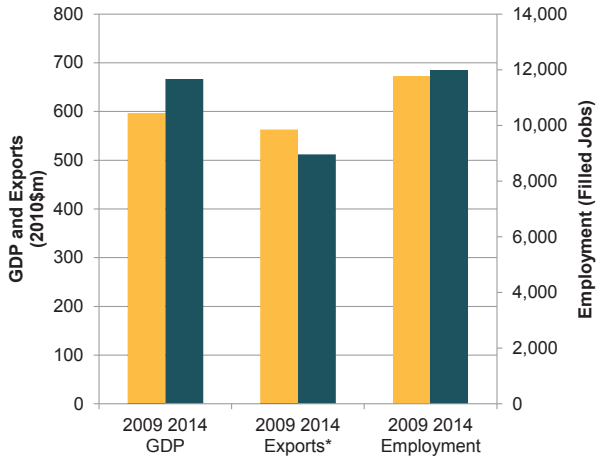
The Bay of Plenty includes some of New Zealand's most well-established destinations for leisure tourism, which includes the cultural and geothermal attractions in Rotorua, Lake Taupō, and the Bay of Plenty coast and beaches. International visitors account for a third of expenditure in the region, which is lower than the 40 percent they contribute nationally. However in Rotorua, international visitors account for over 50 percent of expenditure. Taupō and the Western sub-region are strong domestic visitor destinations, particularly in the summer months.

Figure 18 shows the size and change in the visitor industry GDP and employment over the last five years. Visitor related industries contributed $667 million to the region's GDP in 2014 and employed 12,000 people.

Over the five years to 2014, real GDP has increased by 2.3 percent per annum. Employment has increased by 0.4 percent per annum over the same period.

International visitor expenditure is used as a proxy for exports. In 2014, international visitor expenditure in the Bay of Plenty was estimated at $512 million, down from $563 million in 2009 (Ministry of Business Innovation and Employment, 2015).

Figure 18 Visitor industry GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

GDP and employment include activity generated by domestic visitors as well. Total visitor expenditure in the Bay of Plenty region was estimated at $1.48 billion in 2014, up from $1.4 billion in 2009.

Growth outlook

Tourism has grown internationally by an average of 4 percent per annum over the last decade, reflecting increasing wealth, the relative reduction in travel costs, and the enhanced offering of tourism operators and destinations.

The global backdrop for tourism is very favourable, with strong growth in Asian visitors to New Zealand – from China in particular – expected to continue. According to MBIE forecasts, international visitor expenditure in New Zealand is projected to increase to $8.3 billion by 2020, which is an increase of 25 percent on 2013 (averaging 3.2 percent per annum) (Ministry of Business, Innovation and Employment, 2014d).

The Tourism Industry Association of New Zealand's goal of the industry making a $41 billion contribution to the national economy by 2025 is even higher and requires a 6 percent per annum increase in international expenditure and a 4 percent per annum rise in spending by domestic tourists.

Destination Rotorua is charged with contributing to the Rotorua 2030 vision of doubling the visitor economy from $476 million to $1 billion by 2030, an annual increase of 4.8 percent per annum. With a strong tourism offering, the Bay of Plenty can participate in the solid upward trend in visitor growth. International visitors from Asia are also becoming more independent and less inclined to travel in tour groups, which opens up opportunities for areas other than Rotorua and Taupō and for a wider group of tourism providers.

Industry trends and regional advantages

Visitor expenditure

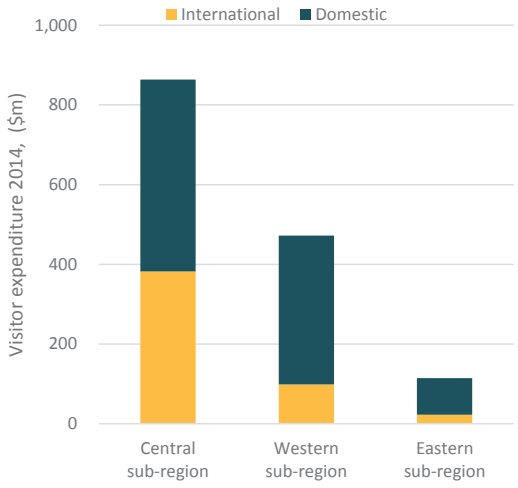
The Bay of Plenty region accounted for 8.5 percent of total visitor expenditure in New Zealand in 2014.

Visitor expenditure has increased slightly from 1.44 billion in 2009 to 1.48 billion in 2014. This is an annual average growth rate of 0.5 percent, which is well below the annual average growth rate of 1.4 percent experienced nationally.

About 60 percent of visitor expenditure occurs in the Central sub-region. About a third of visitor expenditure is in the Western sub-region and only eight percent of visitor expenditure is in the Eastern sub-region.

Looking at international visitor expenditure, the Central sub-region accounts for three quarters of total international visitor expenditure, with the Western sub-region accounting for a further 21 percent.

Figure 19 Visitor expenditure by sub-region, international and domestic, 2014



Source: (Ministry of Business Innovation and Employment, 2015)

Most of the growth in regional visitor expenditure from 2009 to 2014 has come from the Western sub-region, where expenditure has increased by $33 million. However, the Eastern sub-region has been growing the fastest at 2.7 percent per annum, contributing an additional $14 million in visitor expenditure. There has been a decline in visitor expenditure in the Central sub-region over the same five-year period, where expenditure has contracted by 0.3 percent per annum. Within the Central sub-region, visitor expenditure in Rotorua has declined by 1.2 percent per annum, driven by a strong decline in international visitor expenditure. Taupō has experienced visitor expenditure growth of 0.8 percent per annum.

International visitor expenditure is concentrated in a few districts, namely Rotorua (48 percent) and Taupō (26 percent). Tauranga's international visitors account for 19 percent of international visitor expenditure, largely through international cruise ship visits.

With the GFC there was a drop in international visitor expenditure nationally between 2009 and 2014 (–0.7 percent per annum). In the Bay of Plenty, international visitor expenditure fell by 1.9 percent per

annum over the same period. Because international visitors make up a large proportion of total visitors in Rotorua and Taupō, the Central sub-region performance was affected to a larger degree than other sub-regions. International visitor expenditure in New Zealand rebounded by 9.0 percent in the year to March 2014 (7.0 percent in the Bay of Plenty region). Discussions with the industry suggest that there has been a further increase in international visitor expenditure over the remainder of the 2014 calendar year.

Rotorua

Rotorua is the hub of international visitor activity in the Bay of Plenty and the Central North Island. Rotorua's leisure tourism sector has been underperforming over recent years, but has experienced an upturn in visitor numbers during the past year. This may be attributable to the effort put into running the Famously Rotorua campaign and to the major emphasis on promotional activities to attract visitors from Auckland. Rotorua's heritage spa industry has three established operators and the wider tourism offering includes Rainbow Springs, Skyline and Te Puia Māori Cultural Centre.

Rotorua has world class mountain bike tracks and will host Crankworx in 2015 and 2016. Crankworx is the largest mountain biking event in the world. Funding support was provided by the Major Events Development Fund.

Taupō

Although business is very seasonal, Taupō's tourism industry has been performing well. The visitor industry is based to a large extent on the region's good reputation for outdoor events. For example, the cycle track around the lake is a very popular feature with the annual Lake Taupō Cycle Challenge and Iron Man New Zealand being major events in the region. Several top end accommodation providers have entered the Taupō market over recent years and the region has a number of upmarket lodges.

Tauranga

The majority of Tauranga's foreign visitors arrive via cruise liners. In the 2013–14 season, 25 vessels made 83 voyage calls to the Port of Tauranga. It is estimated there were 149,100 unique passengers and 63,300 crew generating about $37.7 million in GDP and supporting 778 jobs (Worley & Akehurst, 2014).

Cycling and Mountain Biking Tourism Marketing Network

A Cycling and Mountain Biking Tourism Marketing Network was established in 2013 to promote cycling and mountain biking in the central North Island to domestic and international visitors. This initiative was supported by the Bay of Connections and is bringing together tourism bodies from within and outside the Bay of Plenty region to raise a wide awareness of the trails and to build on the central North Island's quality biking reputation. The Central North Island has the highest concentration and variety of trails in New Zealand.

Cultural offering and Māori business interests

Māori entities own and operate a number of key tourist attractions in the region. The region has a strong cultural offering which includes the Te Puia Māori Cultural Centre, the Whakarewarewa Thermal Village and the whanau-owned Tamaki Māori Village. South Island iwi Ngai Tahu, as part of

its tourism subsidiary, has also made significant investments in the region including the Agrodome, the Huka Falls Jetboat operation and the Rainbow Springs Kiwi Wildlife Park.

Issues and challenges

A number of issues have constrained the growth performance of the visitor industry in the Bay of Plenty.

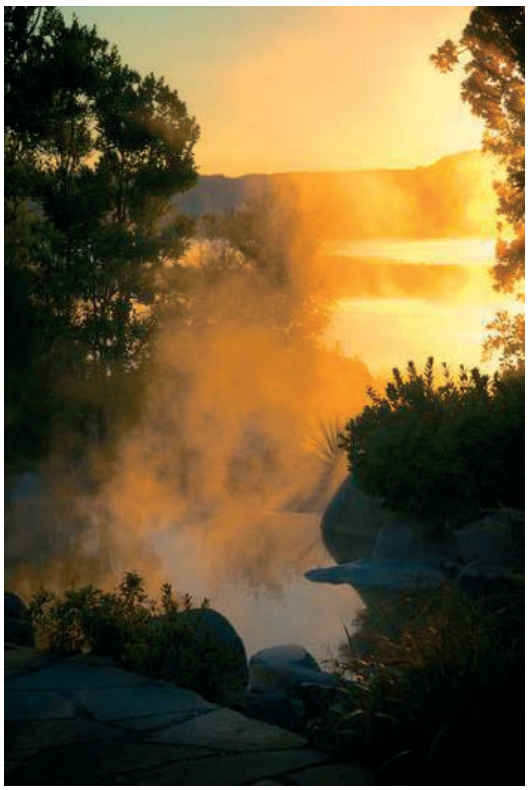
Lack of coordination

Although there are a number of collaborations on specific initiatives, there is no overarching joint tourism strategy for the Bay of Plenty region.

The region is being promoted to visitors by four RTOs. Rotorua, Bay of Plenty and Taupō have their own RTOs. Ōpōtiki is represented by the Eastland RTO.

A lack of a consistent strategy between the RTOs is perceived by industry stakeholders as a constraint on achieving stronger performance of the sector.

The different regions within the Bay of Plenty have very different offerings and interests and each RTO is competitively focused on its own area. The current RTO funding model adds to the difficulty of developing a collective approach, with a number of local authorities with different interests involved.



Source: Alick Saunders

Low level of air travel connectivity

The industry partly attributes Rotorua's weak tourism performance over recent years to international visitors bypassing the town and travelling directly from Auckland to the South Island. This has resulted in low returns for accommodation providers and subdued investment in new facilities.

The industry view is that an increase in international tourism requires effective transport options in and out of the region. The lack of jet service air connectivity is perceived as limiting the appeal of the Bay of Plenty to international travellers. Currently, only small planes travel to airports in the region, with limited routes and flight frequency. Air New Zealand has recently announced the termination of the Auckland – Whakatāne and the Wellington – Taupō routes, while Rotorua Airport has lost its direct flights to Sydney.

Long travel distances

The Bay of Plenty covers a wide geographical area. Attracting visitors to the Eastern sub-region is difficult due to the long driving distances involved. This issue will be exacerbated by the reduction in flight connections.

Low yields from cruise ship visitors

While the Bay of Plenty has experienced greater cruise visitor numbers, tourism service providers have commented that this has not translated into a proportionate increase in visitor spending as food and accommodation are provided on board the vessels and pre-organised tours yield relatively low commercial returns.

Opportunities

Rotorua wellness-based strategy

Rotorua aims to build on its location, geothermal assets and history by promoting its spa and wellness offerings.

The opportunity is to encourage the development of specialist facilities, particularly with strong cultural influences, to target wider market segments and establish Rotorua as a globally-recognised destination for health and wellness.

The health and wellness industry is large, with the wellness tourism sector estimated at US$440 billion worldwide. Within that sector, the spa tourism market is estimated at US$180 billion (SRI International, 2013).

Table 17 Assessment: Rotorua wellness-based strategy

Criteria	Rating
Validity	High
Potential impact	Medium
Practicality	High
Regional significance	Medium
International orientation	High
Ability to leverage previous activity	High
Consistency with national priorities	High
Overall rating	**High**

With global mega-trends such as ageing populations, and a focus on proactive health, the health and wellness industry is expected to grow.

International tourists are often time constrained and have a strong preference regarding the places they want to visit and the activities they want to undertake while in New Zealand. The key is to ensure that international visitors do not bypass the Bay of Plenty. The proximity to Auckland is a strong advantage and the cultural offering, geothermal attractions, and the wellness proposition of Rotorua will continue to make the city the logical first destination in the region. Positioning Rotorua as the nature hotsprings of the South Pacific would be a key element in drawing visitors to the region.

It is important for Rotorua to have a strategy to market the region to Asian travellers and the higher value Chinese visitor market in particular. This will also require a focus on providing the right environment in terms of accommodation, the types of food available, a high standard of local tourism transport, signage in foreign languages, and the availability of translators.

Rotorua should also persist with its efforts of establishing a direct flight connection to Queenstown. Such a connection should not be seen as a negative by tourism operators in other parts of the region as it would improve Rotorua's integration into the route preferred by many international travellers. Having that connection would not necessarily result in foreign tourists travelling to other parts of the Bay of Plenty, but not having it means the region would most likely continue to be bypassed altogether

by many potential visitors. There is also a national benefit in that reducing visitor travel times between the north and south islands allows visitors more time to undertake activities, potentially increasing the in-market spend.

Regional tourism strategy

The Bay of Plenty region would benefit from a consistent and coherent strategy and/or improved coordination and collaboration to package and market visitor activity that attracts more Free Independent Travellers and encourages them to stay longer in the region. This should also build on opportunities arising from sport related tourism and international students.

The wider tourism industry in the Bay of Plenty should focus on the market for Free Independent Travellers (FITs) – both international and domestic – who have more time and are interested in a wider range of activities (eg golfing, biking, tramping, eco-tourism, spas etc).

These activities can be pursued in many parts of the country. It is important that the Bay of Plenty offers a clear and differentiated value proposition. The strategy should build on and complement existing tourism strategies in the region as well as the national tourism strategy.

The expansion of cycling and mountain biking trails and the collaboration of the RTOs through the Cycling and Mountain Biking Tourism Marketing Network is an example of how an integrated visitor strategy can be developed. The RTOs had a consistent objective of retaining visitors in the wider region for longer periods who might have otherwise pursued similar activities elsewhere in the country. Developing a strategy for golf playing visitors is another potential area for collaboration between RTOs.

The Explore Central North Island (ECNI) initiative is a collective marketing effort from eight RTOs across the Waikato, Coromandel, Bay of Plenty and the Hawke's Bay areas. The ECNI has a number of joint initiatives underway including successfully bidding to host TRENZ (the biggest international tourism trade show in New Zealand) in 2015; and international marketing and trade activity in partnership with Tourism NZ and other strategic partners such as Auckland International Airport and Air New Zealand.

The management of the Te Urewera National Park with a strong focus on biodiversity and indigenous plants also has the potential to become another cornerstone of a coordinated regional strategy.

Such initiatives, by their nature, have a strong potential to benefit not only the main centres, but also the more remote areas like the Eastern sub-region, with local cultural attractions adding to the visitor experience. Offering tourists the option of local accommodation, activity and transport packages should be part of the strategy.

In order to achieve constructive RTO collaboration across the Bay of Plenty region, part of the funding received from local authorities may have to be made contingent on the achievement of performance indicators relating to joint regional work, including input into and implementation of a region-wide tourism strategy.

Assessment

Our assessment of the region's RTOs developing a consistent regional tourism strategy focused on securing a higher number of Free Independent Travellers is medium.

There appears to be a clear need for a more coordinated approach and there is likely to be a reasonable impact if greater visitor numbers result. Although there are examples of collaboration across the RTOs, these are in specific areas or activities.

We consider that the ability to maximise this opportunity is currently constrained by the separate objectives and funding priorities of the RTOs.

Table 18 Assessment: Regional tourism strategy

Criteria	Rating
Validity	High
Potential impact	Medium
Practicality	Low
Regional significance	Medium
International orientation	Medium
Ability to leverage previous activity	Low-medium
Consistency with national priorities	Medium
Overall rating	**Medium**

Other opportunities

International education

International students can make a considerable contribution to the economy through the payment of fees and rent, as well as general spending. The latter includes expenditure on tourism activities during their time in New Zealand, and additional spending generated by friends and relatives of international students who visit, attend graduation ceremonies, help new students settle etc.

Following annual average growth of about 9.0 percent per annum, the Bay of Plenty had 3,565 international students in 2013 (including primary, secondary, tertiary, and language students), which represented only 4.0 percent of the national total (Ministry of Business, Innovation and Employment, 2014c). This 9.0 percent annual average increase was significantly higher than for most other regions.[21]

The region received tuition fee income of $15.9 million in the 2013 calendar year. The majority – $10.6 million – was received for tertiary provision in the Central sub-region (Ministry of Education, 2014a). Education New Zealand, through its Regional Partnership Programme, has invested in two programmes in Tauranga and Rotorua. These programmes involve joint business development with the full range of regional education providers and are the foundation for co-ordinated pan regional action. Collective overseas marketing is a key element of this collaborative effort.

Rotorua currently hosts about 2,500 international students, with the majority studying at Waiariki Institute of Technology. These students spend $50 million on fees, accommodation and other direct costs and are estimated to contribute about $75 million to the Rotorua economy.

[21] The data does not include enrolments in Auckland private providers with Bay of Plenty campuses.

Due to the lack of tertiary education providers with an attractive offering of courses, foreign students in Tauranga are mainly concentrated in the secondary education sector. However, the Bay of Plenty Clinical School has made a considerable contribution to the growth in foreign student numbers over recent years, although students mainly participate in short courses. The main provider in the tertiary sector has so far been Rotorua's Waiariki Institute of Technology, with significant foreign student numbers across business, tourism and health degrees. International students accounted for around 16 percent of Waiariki's students in 2013, the largest international student enrolments of any institute of technology outside Auckland (Waiariki Institute of Technology, 2014).

The tertiary segment in Tauranga is expected to get a significant boost from the opening of the new tertiary precinct, TTEP, which will considerably expand the range of attractive degrees. The new ACG secondary school will also strengthen Tauranga's presence in the market. Compared to other regions, Chinese students are under-represented in the city, which provides a specific growth opportunity.

The Tauranga International Education Strategy has a 35 percent growth target to be achieved by 2017. This target was recently revised up from 15 percent due to strong growth in the Tauranga region in 2014 which led to the original target being achieved ahead of time. The Rotorua partnership with Education New Zealand has been established fairly recently, with a targeted lift in student numbers from around 850 in 2013 to 1,840 by 2019.

Sports-related visitors

The region has a strong offering in major sports events related to rugby sevens, mountain-biking, cycling and multi-sport that is built on strong competitive advantages.

The Bay of Plenty Rugby Sevens strategy was launched in 2013. The venture is a partnership of the Bay of Plenty Rugby Union, the BOPRC, Bay of Connections, the tourism industry and the tertiary education sector. The New Zealand Rugby Union is also providing support.

The objective of the strategy is to bring visitors and international students to the region through sporting events, facilities and education and training programmes.

Source: Bay of Plenty Regional Council

Key elements of the strategy are the hosting of major sports events, the maintenance of the base for the national Rugby Sevens team in Tauranga, establishing a rugby high performance facility and offering training courses for national and international sports teams, attracting international sports people into education in New Zealand, and offering a tailored and complete tourism experience to the visitors.

The Bay of Plenty has a niche area of advantage over other regions with the national Rugby Sevens programme being located in Tauranga and the national coaches for the men and women teams being

from the region. The training facility services national squads, and also focuses on attracting foreign school teams. Offerings include short-term study programmes and English language provision. The initial market development effort, supported by Education New Zealand has been in the United States tertiary market, but it will be extended to Japan through Education New Zealand's 'Game On' programme, an initiative between the New Zealand and Japanese governments to attract Japanese students to New Zealand to play rugby and for English language tuition.

Feedback from stakeholders suggested that acceleration and expansion of the strategy is warranted although there is limited evidence currently available about the benefits relative to costs. Local government should consider sponsoring a cost–benefit (including economic impact) analysis of the venture.

The Bay of Plenty region also has a strong offering in mountain-biking and multi-sport. The region has a large number of world class cycle tracks. The offering has been expanded with Skyline Mountain Bike Gravity Park, which was developed with support from the Tourism Growth Partnership. This has led to the attraction of Crankworx, the world's largest mountain bike event, which has been confirmed for 2015 and 2016. The Tarawera Ultra Marathon is part of the Ultra-Trail World Tour series. Both events received support from the New Zealand Major Events Fund. Taupō hosts Ironman New Zealand and the Lake Taupō Cycle Challenge, the largest events of their kind in New Zealand.[22] All of these events attract a large number of out-of-region and international visitors.

Relevant central government initiatives

- New Zealand cycle trail – including Te Ari Ahi, Motu, and Great Lakes.
- Māori and Pasifika Trades Training – includes hospitality courses.
- New Zealand Major Events Fund.
- Tourism New Zealand promotion and marketing, including the New Zealand Story initiative.
- Education New Zealand Regional Partnership Programme.
- Tourism Growth Partnership.

[22] Cycling events were estimated to contribute about $3.8 million in GDP and generated 74 FTE jobs in 2012. Much of the benefit was from the Lake Taupō Cycle Challenge and Ironman New Zealand (APR Consultants Ltd, 2013).

Implications for stakeholders

For industry	• Industry to collaborate with Destination Rotorua to develop a wellness-based strategy, positioning Rotorua as a globally-recognised destination for health and wellness. • Industry persist with efforts to convince the airline industry to establish direct flights between Rotorua and Queenstown to enable better integration of the Bay of Plenty into main travel routes of international tourists. • Industry to collaborate with RTOs in developing a joint tourism strategy focused on international and domestic independent tourists who are interested in a wider range of activities (eg golfing, biking, tramping, eco-tourism, spas etc). • Education sector to work with Education New Zealand in maximising the benefits from the regional partnerships directed at increasing the number of foreign students. • Implement the Bay of Plenty Rugby Sevens Strategy, including collaboration with the education sector and the tourism industry.
For Māori/iwi/hapū	• Participate in re-shaping the Rotorua tourism offering, with particular focus on Asian visitors. • Participate in developing the regional tourism strategy.
For local government	• Destination Rotorua to collaborate with industry to develop a wellness-based strategy, positioning Rotorua as a globally-recognised destination for health and wellness. • Grow Rotorua, through the Bay of Plenty Tourism Intentions Action Plan, identify future tourism skills and capability needs, to inform a review of the mix, location, and quantum of provision, particularly for Māori students. • Support the industry in their advocacy efforts for direct flights between Rotorua and Queenstown. • Work with RTOs on the development of a regional tourism strategy, with consideration to be given to make funding contingent on implementation of a joint tourism effort. • Consider sponsorship of a cost–benefit analysis of the Bay of Plenty Rugby Union's Sevens venture, which would provide the basis for consideration of a funding contribution and acceleration of the initiative.
For central government	• Provide resource support (eg information, expertise) for the development of the regional tourism strategy. • Education New Zealand to continue to work with education institutions to attract international students to the Bay of Plenty, particularly in light of the planned TTEP.

Specialised manufacturing

Summary

The Bay of Plenty region has revealed comparative advantages across a small number of specialised manufacturing sectors that have developed around the primary, marine and construction sectors, and the international connectivity provided by the Port of Tauranga. The region also has a very supportive environment for research and development and innovation for these sectors, with an array of private sector, local and central government, and research and tertiary organisation initiatives underway.

While these sectors have strong growth potential, a lack of scale and increasing skill shortages will influence the growth trajectory. Generating greater critical mass, based on the expansion of existing firms and attracting new firms to the region in niches where Bay of Connections has genuine advantages and capability will be important for the industry's development.

A current opportunity to create a niche manufacturing sector of scale is based on the considerable investment that has already been made in research and development for the metals powder and application sector, specifically the development of titanium powders and alloy products.

A more realistic path for the further development of the sector over the next ten years is required, taking account the lessons learned over the last five years and incorporating an assessment of skills, investment and market requirements.

Background

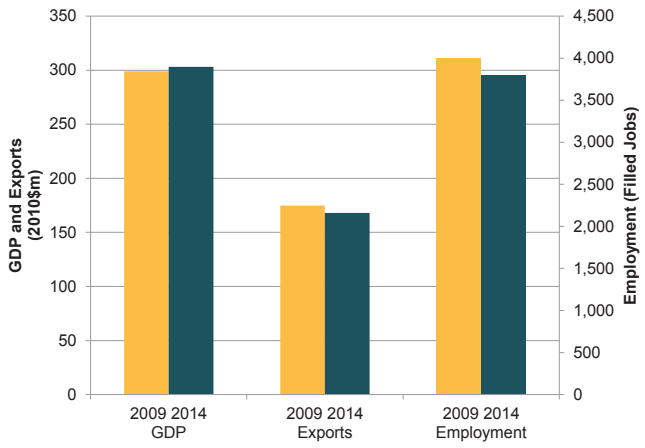
For the purpose of this report, the Bay of Plenty specialised manufacturing and related services sector includes metal manufacturing, machinery and electrical manufacturing, and marine manufacturing and repair services.

Specialised manufacturing contributed $303 million (2.6 percent of GDP) to the Bay of Plenty economy in 2014 (Figure 20). Estimated real GDP increased slightly over the five years to 2014 by 0.3 percent per annum but has been declining on average over the last ten years by 0.5 percent per annum.

Specialised manufacturing employed 3,800 people in 2014, down from 4,000 in 2009 (–2.4 percent per annum).

Specialised manufacturing exports declined by 2.1 percent per annum in real terms from 2009 to 2014 to $168 million.

Figure 20 Specialised manufacturing GDP, exports and employment, Bay of Plenty, 2009–2014



Source: Infometrics Regional Database

The region accounts for about 2.7 percent of national exports in this category. Table 19 illustrates the relative performance of the industry sub-sectors.

Table 19 Specialised manufacturing sector summary, Bay of Plenty

Specialised Manufacturing	GDP (2014, 2010$m)	Real GDP growth (CAGR 2004-2014)	GDP Location Quotient	Employment (2014)	Employment growth (CAGR 2004-2014)	Employment Location Quotient
Metals Manufacturing	110.6	-1.3%	1.08	1,663	1.2%	1.04
Machinery/Electrical	177.1	0.6%	0.94	1,915	-0.3%	0.88
Marine	15.5	-4.5%	0.94	224	-4.9%	0.96
Manufacturing	**303.2**	**-0.5%**	**0.99**	**3,801**	**0.0%**	**0.95**

Source: Infometrics Regional Database

Employment in specialised manufacturing and broad subsectors is generally slightly less concentrated in the Bay of Plenty than in New Zealand as a whole. However, some niche industries within subsectors are concentrated in the region, reflecting resource and capability advantages, including metal coating and finishing, other machinery and equipment manufacturing, other professional and scientific equipment manufacturing, and architectural aluminium product manufacturing. Several of these subsectors are typically export oriented – other machinery and equipment manufacturing and other professional and scientific equipment manufacturing – and their sales were less affected by the GFC than sales of other manufactured products (Castilla Strategic Advisors , 2014).

The Bay of Plenty region has revealed comparative advantages in a small number of specialised manufacturing niches.

The majority of specialised manufacturing firms are located in the Western sub-region, mainly because Tauranga, as the main population centre, has the greatest depth in the labour market and logistics.

Global outlook

The application of new technologies, processes, materials and digital connectivity is having major effects on industry structure, competitiveness, and economics of the manufacturing sector worldwide. This technological change is reducing barriers to market entry and has been accompanied by the rise of low cost manufacturing in emerging economies. As a result, sources of competitive advantage are changing, especially for countries producing medium-high and high-technology manufactured products. Competitive advantage is now less likely to be based on scale and cost and more likely to be derived from research and development and design, niche manufacturing and product and service bundling (Deloitte and the US Council on Competitiveness, 2013).

Around 60 percent of New Zealand's manufacturing sector output is sold domestically, much of it to the construction industry (Reserve Bank of New Zealand, 2012). While New Zealand is a relatively small exporter of manufactured products, it has proven its competitive advantages, for example, in the manufacture of higher technology primary industry products that are sold both into domestic and international markets. Those include productivity enhancing equipment, and also technology that is focused on environmental sustainability. New Zealand is regarded as an efficient location for research and development and product development, and for short manufacturing runs, and also as having some cost and cultural advantages in research and development.

Australia is the single largest market for New Zealand's manufacturing exports and is especially important for the high and medium-high technology manufacturing sectors (Reserve Bank of New Zealand, 2013). Around a quarter of all high technology exports and nearly half of medium-high technology exports are destined for the Australian market which has grown strongly over the past decade (Ministry of Business, Innovation and Employment, 2013b).

Beyond Australia, European and North American markets are further key export destinations for the sector, with annual growth in higher technology exports to the US of 10 percent over the last decade (Ministry of Business, Innovation and Employment, 2013b).

There is also a trend towards diversification into the Asian region, particularly for higher technology manufacturers in response to growing demand from China and South Korea. The medium-high technology manufacturing sector also experienced growth in diverse export markets over the last decade, highlighting the niche nature of many specialised manufactures.[23]

[23] Other export destinations for medium-high technology manufactured exports include Canada, Fiji, Papua New Guinea, South Africa and Chile (Ministry of Business, Innovation and Employment, 2013b).

Regional advantages

Primary industry manufacturing capability

The proximity to domestic primary industry customers has allowed for the development of close supplier-customer relationships between manufacturers and primary producers. These relationships have supported new product development and design innovations. This includes, for example, tree pruning, debarking and log handling equipment, as well as specialist heavy vehicles and componentry, for the forestry sector; effluent containment and treatment technology in the dairy sector; and fruit harvesting robotics and fruit sorting technology in the horticulture industry.

Source: Priority One

Unmanned aerial vehicle technology is also being explored as it offers multiple opportunities for application in the primary sector, such as remote sensing and surveillance.

High technology manufacturing capability

The Bay of Plenty has a comparative advantage in medium-high technology manufacturing within New Zealand, with a high concentration of firms and sector employment in the region (Ministry of Business, Innovation and Employment, 2014f). This concentration is in the Western sub-region.

The Western sub-region's specialised manufacturing firms have been generating innovative products. Examples include:

Bluelab: Electronic meters, monitors and controllers for use in water-based media. Exports to North American, European, and Middle East.

Powersmart: Grid connected and off grid solar power systems. Projects include the Sylvia Park mall solar conversion and Ministry of Foreign Affairs and Trade contracts for Tokelau and Northern Cook Islands solar photovoltaic systems.

Source: Bluelab

The industry also has strengths in producing specialised manufactured inputs for the building and infrastructure sector, with firms benefitting from strong residential and non-residential construction activity in the region, as well as the larger neighbouring Auckland and Waikato regions.

Marine manufacturing capability

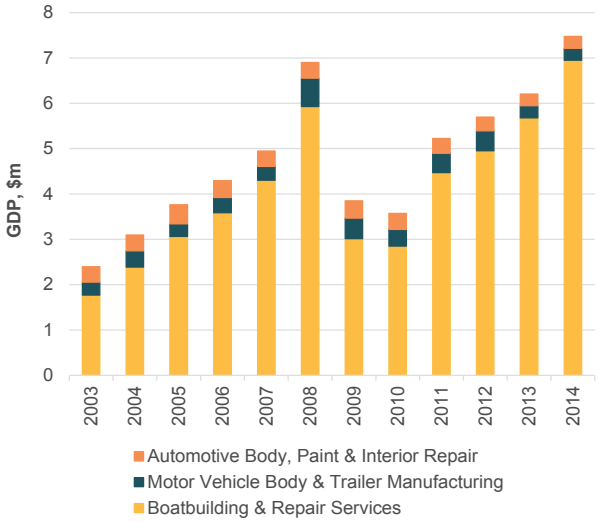
Although the Bay of Plenty's marine sector contracted by around 10 percent during the 2008–2013 period and a number of the region's marine firms closed, marine manufacturing activity in the Eastern sub-region has continued to grow.

Two established recreational fishing boat manufacturers in Whakatāne – Surtees and Extreme Boats – are leading the uptrend in the marine sector, and are supporting growth in related areas and businesses such as boat trailer manufacturing and spray painting.

Design and aesthetic improvements have seen consumer demand shift from fiberglass-hulled boats to painted aluminium-hulled boats. Aluminium-hulled boats now account for about 80 percent of sales in the recreational fishing boat market, up from less than 50 percent in the mid-2000s.

Boatbuilding in Whakatāne district alone contributed about $7.5 million to regional GDP in 2014.

Figure 21 Marine sector GDP, Whakatāne district, 2003–2014



Source: (Leung-Wai, 2014)

Whakatāne marine sector's GDP has continued its stellar growth path from before the GFC (Figure 21). Between 2010 and 2014, GDP has increased by 20 percent per annum.

While Tauranga's established marine sector contracted following the GFC, it contributed over $8 million to the region's economy in 2014, and remains a second tier location for marine manufacturing nationally.

Supportive environment for research and development and innovation

Initiatives by central and local government agencies, tertiary sector institutions, and research institutes are actively supporting private sector-led innovation initiatives for the sector. For example, the BOPTEP and its members, NZTE and Callaghan Innovation provide support for titanium industry development.

Waikato University has been involved in considerable project work with industry (eg dealing with matters related to the Rena disaster, titanium applications, use of robotics, ICT engineering, the Tauranga harbour dredging project).

The region also benefits from CRI research activities. Scion is involved with plastic, chemical and other high value manufacturers in developing low carbon renewable lightweight materials (eg as bio-

plastic packaging options for fruit exporters). Scion also has significant pilot scale facilities for product development and market assessment (eg fermentation; mechanical pulp mill; packaging; wood treatment and drying) and is expanding its Innovation Park.

Local and central government agencies are supporting these initiatives through their programmes, and many local specialised manufacturing entrepreneurs engage and support economic development activities – for example in governance roles or through event sponsorship. The Western Bay of Plenty Young Innovator Awards were launched in 2009 to recognise and encourage future innovators. The awards include secondary school and under 40s categories.

The privately-owned Newnham Park Innovation Centre in Te Puna (Tauranga) opened in late 2010 to support horticultural innovation. The facility expanded in 2014 and is now home to five firms with a combined turnover in excess of $100 million.

New central government initiatives also have the potential to contribute to innovation and growth in the region's specialised manufacturing industry. Largely building on and augmenting private sector initiatives, these include:

- **WNT Ventures**: This is one of three national technology-focused incubators approved by Callaghan Innovation in 2014. WNT's role is to support ICT, primary sector (new technology) and high-value manufacturing start-ups by providing repayable grants and through linking high-growth firms to angel or venture capital. WNT builds on the success of the Newnham Park Innovation Centre and the Titanium Industry Development Association (TiDA), and the region's primary industry manufacturing strengths.
- **MBIE science investment grants**: These grants support collaboration between the industry and the tertiary sector regarding research and development. Two grants were awarded to Bay of Plenty region organisations in the 2014 funding round – Titanium Technologies New Zealand and Robotics Plus.

Central and local government agencies, tertiary sector institutions, and research institutes are actively supporting manufacturing innovation in the region.

Port of Tauranga

The Port of Tauranga provides ease of access to international markets and imports of raw materials. The Port itself and firms clustered at or around the port facility also represent an important customer base for the sector for the supply of specialised storage facilities and cargo handling equipment.

Industry challenges

The outlook for value and employment growth in specialised manufacturing in the Bay of Plenty is positive. The relatively high-productivity industry has the potential to significantly enhance the region's value-add. However, there are a number of issues that may have an influence on the pace of the industry's development.

Lack of scale

Despite positive anecdotal evidence about the performance of firms in the industry, the sector has remained relatively small. Moreover, the average size of specialised manufacturing companies in the region is just over five full-time equivalents (FTEs), compared with a national average of close to eight FTEs.

A lack of scale hinders production efficiencies and the ability to enter export markets. It makes it more difficult to attract a sufficient pool of skilled labour from competing regions, such as Auckland and the Waikato. Feedback from regional stakeholders also suggests that building tertiary-industry manufacturing links is also a challenge due to scale.

Skill shortages

Firms are experiencing shortages of engineers and technicians and are encountering problems in attracting skilled staff to, and retaining them in, the region. Firms in the region find it difficult to compete with larger manufacturing centres for skilled workers, often because of the small size of the sector and more limited employment and career opportunities in the region. These challenges are likely to be exacerbated by construction and infrastructure development in Auckland which will increase demand for engineering skills in that region.

Firms in the region find it difficult to compete with larger manufacturing centres for skilled workers.

Where immigration is required to complement the pool of technicians and engineers available in the domestic market, some firms in the technology sector commented on difficulties in matching their specialist skill requirements to the broad categories defined by Immigration New Zealand, which they report leads to visa processes requiring more time and delays in recruitment.

Complexity of support

Although there is a range of support available for innovation, many companies consider the application mechanisms and processes for getting access to funding to be a barrier. Firms commented on difficulties in navigating the range of support available, including understanding the respective roles of different government agencies. Moreover, transaction costs associated with applying for government support were perceived as too high.

Digital technology

The increasing influence of digital technology on the global manufacturing sector also presents challenges and opportunities for Bay of Plenty firms. The UFB and RBI support increased use of digital technology. 3D printing and other digital technologies are already reducing costs and increasing research and development and innovation by some firms. Ensuring that the industry is well-positioned to learn about and adopt new technologies will be important for retaining and growing competitive advantage.

Opportunities

The Bay of Plenty is well positioned to develop and grow its specialised manufacturing industry and niche manufactured exports. One of the challenges will be to ensure firms' successfully transition from a primarily product development driven focus to a business model geared towards larger scale manufacturing and a successful sales and marketing effort in overseas markets.

Developing critical mass in niche manufacturing with an initial focus on metal powders and applications

Generating greater scale and critical mass in niche manufacturing segments will be important for future industry development and export growth, particularly considering strong competition from the neighbouring Auckland and Waikato regions that already have larger manufacturing industries. These areas need to be based on genuine advantages that the region offers.

Scale can be facilitated through:

- Attracting more international firms and investment into the region into niche manufacturing fields. The region has achieved recent investment successes with FSP Holdings Australia and Brother choosing to locate in the region.
- Developing collaborative models or clusters between businesses to support research and development investment and the development of export markets.
- Improving research-tertiary-industry linkages in the selected areas to grow the base of capability and research (consistent with the Bay of Plenty Tertiary Intentions Strategy 2014–2019).

A niche area that is ripe for focus is the further development and expansion of the metals powder, coating and application industry in the region, building off the significant investment that has been made in titanium research and development and applications.

The NZ Titanium Technologies Platform (2014) is targeting opportunities and technical and commercial barriers identified in a 10-year industry development roadmap launched in 2008 (Callaghan Innovation, 2014). This aims to develop a national titanium industry around Titanox Developments Ltd. Tauranga-based Titanox uses an innovative method to produce very high purity alloy powders by removing oxygen from titanium and other metal oxides. These powders can be used to make very strong alloy products for the aerospace, automotive, medical and other sectors.

Substantial private and public investment has been made into the development of the concept over the last five years.

The Titanium Industry Development Association (TiDA) was formed in 2010 to focus on developing commercial applications for the metallurgy powders. Rapid Advanced Manufacturing Ltd (RAM) was set up by TiDA as a manufacturing and commercialisation company in Tauranga. The Bay of Plenty Polytechnic also built an Applied Powder Metallurgy Centre in partnership with TIDA. This facility provides industry access to specialist analytical and test equipment, technical know-how and facilitates access to commercial scale prototype capability.

Source: TiDA

Actual or potential products include knives, helmets, robotics, aerospace components, and biomedical implants, although no large scale commercialisation is yet underway. 3D print capability using selective laser melting has opened up the possibility of generating prototypes and the efficient alloy coating of products. The initial business case for the development of the industry forecast that it could grow to $1 billion turnover annually by 2030, with export value reaching $100 million by 2023.

The metals powder and application industry has significant potential for the region but it is time to take stock and map out a realistic path for its development.

However, despite considerable potential, market demand for titanium products has grown relatively slowly so far. The original case for the concept was very optimistic given that it effectively involved the development of a new industry for the region and New Zealand, in an area where there was limited expertise at the time. The development of the industry will require a real commitment of resources into research and development, skills development, market development and investment attraction. In our view it is time for the industry players and supporting agencies involved (including TiDA, BOP Polytechnic, Waikato University, Callaghan Innovation, Priority One and NZTE, amongst others) to review the existing roadmap and determine how the commercialisation and development of the industry in the Bay of Plenty can be realistically achieved over the next ten years, based on developments and lessons since the original business case. This should include a full assessment of the costs and benefits (and the attribution of these to different partners) of different options.

Assessment

This opportunity rates relatively high on our criteria because of the considerable investment that has already been made, the potential impact and significance of the project to the region.

However, it is still unclear how the ambitious goals will be practically achieved and how much additional resource is required to create critical mass.

Other niche areas where there is existing capability and where concerted efforts at investment attraction and industry development in the region could be beneficial are robotics and machinery manufacturing.

Table 20 Assessment: Development of the metal powder and application industry

Criteria	Rating
Validity	Medium
Potential impact	High
Practicality	Low-medium
Regional significance	High
International orientation	High
Ability to leverage previous activity	High
Consistency with national priorities	High
Overall rating	**Medium-high**

The benefits of creating scale in selected niches include a larger labour pool, which will make it easier to attract highly skilled people to a broader range of employment opportunities in the region; greater financial ability to fund research and investment opportunities; and more potential for knowledge sharing that supports technological, process and market innovation. The demonstration effect of successful local firms is likely to attract more firms to the region, particularly considering the proximity to the port and lower operating costs compared to Auckland or cities in Australia as the main alternative locations.

Other opportunities

Tauranga Marine Precinct

The global boat building sector is recovering from the impact of the GFC, with the New Zealand marine industry expected to participate in this upturn.

In order to ensure the Tauranga-based marine sector can reap the benefits from this upturn, the BOPRC and the Tauranga City Council have committed to a joint investment in the development of a $10 million Tauranga Harbour Marine Precinct project.

The precinct is expected to grow the region's marine manufacturing sector and retain and support the development of a Tauranga marine cluster.

Source: http://www.vesselworks.co.nz/wp-content/uploads/2014/11/Wardale-TCC-SK04-Masterplan-DI-v-23-aerial2.pdf

Stage One of the precinct is expected to be operational in 2016-2017 and is anticipated to contribute an additional 130–195 full-time jobs and $24–$47 million in revenue by 2022–2023.

Increased engagement between the tertiary sector and industry

There is potential for the improvement of tertiary-industry engagement more generally in the design and delivery of engineering and related qualifications – ranging from apprenticeships to doctoral qualifications – and to identify and progress joint research and development projects.

The Bay of Plenty Tertiary Intentions Strategy recommends the development of specific tertiary education and research plans for the advanced manufacturing sector and that these should be based on a shared understanding of future industry capability and workforce needs, including upskilling the existing workforce to take advantage of emerging technologies. It suggests that these could be developed and implemented through the Western Bay of Plenty SmartGrowth[24] programme.

The new TTEP provides a concrete opportunity for the region to consider tertiary-industry engagement that builds on international best practice by, for example, facilitating co-location of firms for joint research and development projects.

[24] SmartGrowth is the spatial plan for the Western sub-region.

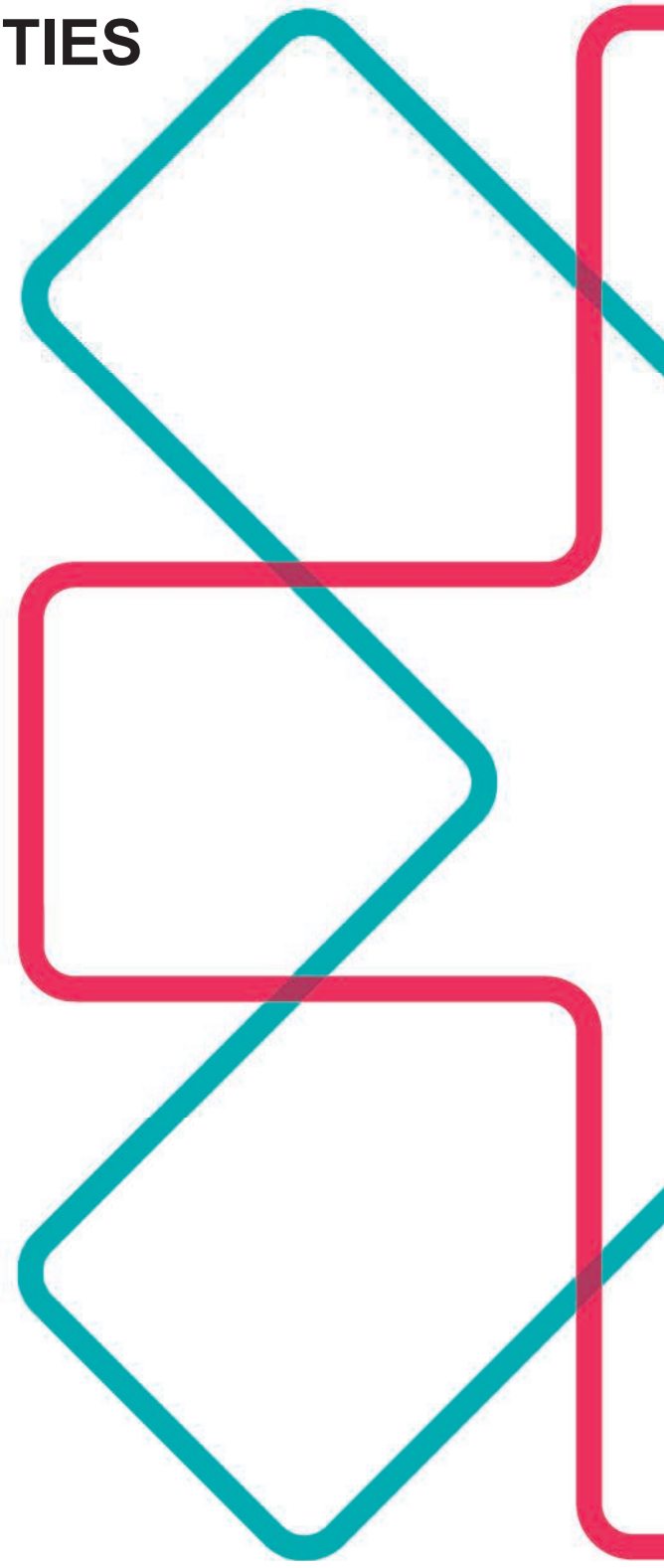
Relevant central government initiatives

- MBIE research funding including, for example:
  - Science investment grants.
  - National science challenges.
  - High Value Manufacturing and Services Research Fund.
- Callaghan Innovation support, including:
  - Business research and development funds (growth, project and student).
  - Incubators (founder and technology focused) such as WNT Ventures.
  - Accelerator services including programs such as Better by Lean, Global Expert, research and technical services, and the Entrepreneurship Development programme.
- Regional business partners network services with NZTE and Callaghan Innovation.
- Centres of research excellence, ie The MacDiarmid Institute.
- Commercialisation Partner Network and Pre-seed accelerator fund.
- NZTE internationalisation support.

Implications for stakeholders

For industry	• Continue investment in research and development and innovation. • Participate in the development of education and research plans in line with the Bay of Plenty Tertiary Intentions Strategy. • Assess the benefits of collective industry activity (eg joint research and development, export market identification and validation). • Invest in international market analysis and development. • Undertake a review of the titanium industry development roadmap for the next decade, including an assessment of the costs and benefits of industry development options.
For Māori/iwi/hapū	• Consider opportunities for investment in the development of enabling technologies in industries with high levels of Māori ownership (eg horticulture, agriculture, forestry).
For communities	• Encourage young people to consider engineering careers and apprenticeships.
For local government	• Progress the Tauranga marine precinct project. • Support the development of specific tertiary education and research plans for the advanced manufacturing sector and added-value primary industries through SmartGrowth in the Western sub-region. • Ensure adequate supply of industrial-zoned land, particularly with good access to the Port of Tauranga.
For central government	• Support a review of the titanium industry development roadmap for the next decade, including an assessment of the costs and benefits of different industry development options. • Support stronger relationships between tertiary institutions and industry to develop tailored education programmes, support workforce planning, and increase joint research and development. • Continue to provide support for high value manufacturing firms to investigate and access international markets. • Look for opportunities to reduce the compliance costs associated with innovation and market development support.

ENABLING OPPORTUNITIES



Water management

Summary

The Bay of Plenty's fresh water resource is central to its future industry growth and economic development. As shown in this report, key industries in the Bay of Plenty are land-based. Production requires water. Achieving growth opportunities, such as the development of Māori-owned land, and expected conversions to higher value land use (for example, forestry to dairy) will place increasing pressure on water availability.

Further, more intensive agriculture production can decrease water quality, which has the potential to affect downstream industries, use and amenity. The issue is exacerbated by the large number of lakes and waterways in the region.

Finally, the unique lakes environment and waterways within the Bay of Plenty region means that ensuring water quality is crucial as it is highly valued by locals and visitors.

The region has already gone a fair way to addressing the range of issues associated with water, through the Lake Taupō Protection Trust programme for Lake Taupō and, more recently, the Rotorua Te Arawa Lakes programme for Lakes Rotorua and Rotoiti. The experiences and frameworks developed have put the region at the forefront of water management in New Zealand.

However, there is still a way to go to ensure that water is managed effectively to support economic growth opportunities. Current monitoring suggests that the Bay of Plenty's fresh water quality is deteriorating and there is a lack of information about how much water is being used and about what level of water allocation will prevent a significant impact on other parts of the ecosystem.

Building on and extending the region's water management framework, in line with national guidance and community priorities, is therefore a highly-rated opportunity for the region. Areas of focus should include monitoring and reporting, assessments of current allocation, supply and future demand, and establishing regional/local priorities for water management with supporting indicators.

Compliance with future water management frameworks may require land use change or impose other constraints on farming activity.

Source: Bay of Plenty Regional Council

Knowledge and expertise developed through the implication and review of existing initiatives – such as the Rotorua Lakes and Lake Taupō Trust programmes – can inform the development of the water management framework and are the basis for a proposed Freshwater Centre of Excellence in Rotorua.

Water and economic growth

Water availability and quality is central to the Bay of Plenty's growth potential and is determined by complex interactions between different land uses, water management techniques and environmental features such as topography, groundwater, soil type and climate. Decreased water quality or quantity can limit the potential of a range of downstream industries and activities.

Decreased water quality or quantity can erode the sustainability of the existing productive base, and can limit the potential range of future industries and activities.

Water availability and demand

The Bay of Plenty area generally has a temperate, maritime climate, with warm, humid summers and mild winters. Central parts of the region can receive up to 2,000 millimetres of rainfall annually, while the eastern and western areas can receive up to 4,000 millimetres. The region is endowed with a range of fresh water resources including rivers, streams and a number of freshwater lakes.

Demand for fresh water is projected to increase strongly in the region. Estimates in 2007 predicted that demand in the Western sub-region would increase from 40 million cubic metres per year in 2005 to 75 million cubic metres per year by 2055. There will be a significant rise in irrigated primary sector land, as well as a major increase in household demand in response to population growth (Bay of Plenty Regional Council, 2013).

Horticulture industry demand for water has increased over the past decade, particularly with new cultivars that are more frost sensitive and require more irrigation. Replanting with Psa tolerant cultivars is also likely to lead to greater pressure on water resources as these cultivars require more water (Bay of Plenty Regional Council, 2013).

Conversions from forestry to dairy, particularly in the Central sub-region, are also increasing water demand and with further conversions are signalled, will place upward pressure on demand for water.

As noted earlier, a large proportion of Māori land is currently not in productive use. Efforts to improve the productivity of Māori-owned land are also likely to increase demand for water in the region.

The increase in demand for fresh water reinforces the need for a robust water allocation regime that includes monitoring and reporting. The total number of water take consents in the Bay of Plenty region was 1,294 as at February 2013, with 72 percent issued for groundwater and 28 percent for surface water. Horticulture is the predominant activity (61 percent of consents), followed by other commercial use (28 percent) and agriculture (11 percent) (Bay of Plenty Regional Council, 2013).[25]

[25] Note that these figures do not include the Taupō District for which the Waikato Regional Council is responsible for water take consenting.

Despite information on consents issued, there is a lack of information about how much water is actually being used. Large numbers of these water takes are unmonitored or are seasonal takes only.

Water scarcity, whether brought about by climatic variation, changing land use or increased understanding of the impacts of existing allocation levels, has the potential to constrain some types of land uses and economic activity. It is therefore critical that the region's available water resource is utilised efficiently. Monitoring and reporting requirements are an important first step towards encouraging efficient use of water.

The increase in demand for water reinforces the need for a robust water allocation regime that includes monitoring and reporting.

The region also lacks quality information about what level of water allocation will prevent a significant adverse impact on other parts of the ecosystem. The percentage of the total flow that can be allocated depends on the nature of the surface water body.

Currently, there are not yet any methods or rules in the Bay of Plenty Land and Water Plan that determine the maximum allocation and it is possible that over-allocation of water resources may have occurred in some areas. Understanding the relationship between actual and sustainable water allocation levels will be fundamental to the management of the region's water resources, particularly in light of anticipated increasing demand for water. The Bay of Plenty requires a comprehensive water allocation plan that is fit for purpose.

In terms of assisting efficient allocation, enabling greater flexibility in trading and transferring water rights should be considered as part of the water management strategy.

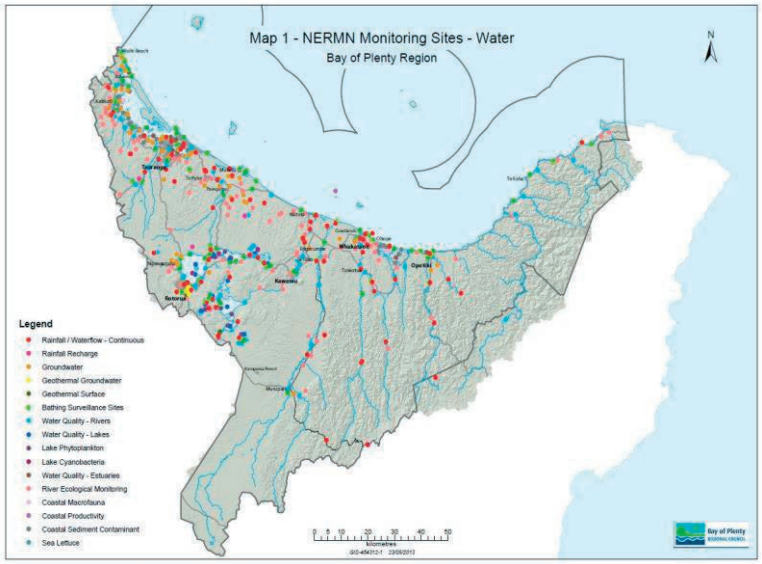
Water quality

River water quality data in the Bay of Plenty region has been routinely monitored by the BOPRC and NIWA for over two decades.[26]

Water quality in some of the Rotorua lakes has been improving in recent years while others, such as Rotokakahi and Tarawera, continue to be in declining states. Water quality in Lake Taupō continues to be high and generally low in nutrients. However, there are concerns about the increasing amounts of nitrogen in bottom waters in the Rotorua lakes and Lake Taupō (Rotorua Te Arawa Lakes Programme, 2014).

In Taupō, nitrate levels have increased since the 1970s and are expected to increase in the future (Waikato Regional Council, 2014).

Figure 22 Water sites monitored by BOPRC



Source: Bay of Plenty Regional Council

The same pattern is expected for the Rotorua region. Increasing nitrate levels in the bottom waters of a lake can lead to increases in algae and other nuisance plants.

The causes of poor water quality vary and are interrelated with natural processes. Nitrogen is highly soluble and 'leaches' through soil. Animal urine is the main source of nitrogen in New Zealand's waterways and is considered to be the primary cause of elevated nitrate levels. Phosphorus usually enters waterways through soil erosion and sediment, with the use of superphosphate fertilisers on hill country farms having caused increased loss of phosphorous to surface water (The Parliamentary Commissioner for the Environment, 2013).

Increased monitoring of rivers and streams is likely to result in a better understanding of the current trends and differences in water quality across the region. As limits are set that establish water quality parameters, constraints on land uses are likely to become increasingly common. This will apply particularly to catchments surrounding lakes, but over time such constraints are likely to impact on most areas of free draining soil. Where compliance with the new rules implies considerable activity reduction, some farming operations may become commercially unviable (as has already occurred in Taupō).

[26] A 2014 review recommended that the Regional Council increase water monitoring in response to legislated requirements, developing pressure on water resources, the need for better information, and an ongoing review by NIWA of its monitoring sites (Bay of Plenty Regional Council, 2014).

Water management frameworks

There is increasing awareness of the need to manage environmental limits associated with water quality and quantity. A number of statutory and non-statutory documents set out the planning framework for the current water programme:

The National Policy Statement for Freshwater Management

The NPS-FM, released in 2011 and updated in 2014, directs regional councils to establish objectives and set limits for fresh water in their regional plans (Ministry for the Environment, 2014).

The Lake Taupō Protection Trust

The Lake Taupō Protection Trust was constituted by the Government, Taupō district council, Ngāti Tūwharetoa and Environment Waikato in February 2007 to protect Lake Taupō's water quality. The Trust was charged with developing a work programme to reduce the amount of manageable nitrogen leaching into the lake by 20 per cent, working with local land owners.

The Trust uses a model that attributes discharges to various land uses, which sets the cap on the amount of nitrogen consented to be leached from the land and then assists landowners to reduce the nitrogen impact of their activities on the lake. An $81.5 million fund is used to support landowners to lower nitrogen leaching through changing land use or farming practices.

The Rotorua Te Arawa Lakes Programme

The Rotorua Te Arawa Lakes Programme is a partnership between the Rotorua Lakes Council, BOPRC and Te Arawa Lakes Trust. Its goal is to achieve water quality targets that are set with the community for each of the twelve lakes in the Rotorua area. It does this by developing and coordinating policy and action. Action plans have been developed for several lakes that include a range of different measures required to understand the science, the different perspectives and the required management techniques to achieve better water quality outcomes. The programme includes an incentive scheme to encourage land use changes that will reduce nitrogen leaching into the Rotorua lakes. The scheme is backed by a $40 million fund.

Decision-making on the allocation of water and the required reduction of pollution levels involves the identification of priorities and the consideration of complex trade-offs, often based on differing scientific evidence. Sophisticated approaches to assessing costs and benefits are increasingly being used to reflect the more indirect (and possibly cumulative) impacts on wider parts of the ecosystem.

The complexity of water management issues can slow down council decision-making. This has created considerable uncertainty for primary sector operators in the Lake Rotorua catchment, including some who report that forced land use changes have the potential to make their businesses unviable.

Opportunities

The opportunity is to build the Bay of Plenty regional water framework to ensure access to and effective allocation of water to users while maintaining acceptable water quality.

Bay of Plenty regional water framework

It will be crucial for the region to understand current water availability and use, as well as potential demand and availability to determine the most efficient and sustainable allocation of water resources across the entire region.

Bay of Plenty councils, alongside councils in neighbouring regions with shared water management interests (notably the Waikato region), should work collaboratively with stakeholders in each catchment to identify who obtains value from the water in the catchment, set catchment objectives, and to establish limits and put in place measures to manage water takes and sources of contamination.

The NPS-FM establishes a base standard of no further degradation. Local standards, as determined in the BOPRC (and Waikato Regional Council as relevant) freshwater management framework, can be more ambitious and target considerable improvements in water quality. Land, catchment and nutrient management plans are already being implemented in priority areas across the Bay of Plenty region through the 2012–2022 Ten Year Plan.

A review of water allocation is currently underway, and groundwater investigations are occurring in the Western Bay of Plenty and Rangitāiki catchment (Bay of Plenty Regional Council, 2012).

Assessment

Decreased water quality or quantity has the potential to significantly limit the potential of many Bay of Plenty industries and activities.

Based on the available evidence, the regional significance of the opportunity and the ability to leverage a range of existing work at regional and local level, our assessment is that building on and extending the regional water framework is a high-rating opportunity.

Table 21 Assessment: Progressing the Bay of Plenty regional water framework

Criteria	Rating
Validity	High
Potential impact	High
Practicality	Medium
Regional significance	High
International orientation	Low
Ability to leverage previous activity	High
Consistency with national priorities	High
Overall rating	**High**

Councils and stakeholders in each catchment need to collaborate to identify water management objectives, limits and measures and then monitor these.

Other opportunities

Research effort and Freshwater Centre of Excellence

Research is underway in the region and nationally to identify ways to reduce the environmental impact of farming caused by nitrogen leaching into waterways. This includes, for example, research into the creation of new grass types that will reduce livestock nitrogen output and an MPI project looking at reducing nutrient emissions from dairy farms into Lake Rotorua.

Scion has also partnered with Rotorua Lakes Council to develop a hydrothermal deconstruction technology (Terax™) that converts sewage or wastewater into energy and other useful products, in addition to reducing waste. Rotorua Council approved the business case for a full scale plant using the Terax™ technology in 2014, with construction expected to be complete in 2016.

The already extensive regional water research and monitoring programme has led to a proposed Freshwater Centre of Excellence in Rotorua. The proposed centre would be co-located with the Scion Innovation precinct and its purpose would be to identify methods that improve freshwater quality, and market this expertise internationally.

Grow Rotorua are championing the proposed centre and are exploring the potential of developing a 'sustainability precinct' that incorporates water quality and availability. A discussion paper has been circulated amongst stakeholders. The envisaged next step is for the University of Waikato's interest in the proposal to be established, including requirements they may have as potential project partners.

Irrigation schemes

New irrigation schemes have the potential to ensure water is available for businesses and the land uses that require it, for example the kiwifruit industry in the Eastern sub-region. Possible opportunities to improve irrigation have been identified in several locations for commercial purposes. These include the Rangitaiki Plains, Te Teko, and Galatea-Murupara. Additional irrigation options in the Eastern sub-region could be explored for the Te Kaha and Raukokore areas. Even if projects are technically feasible, consultation and community support will ultimately determine whether projects are implemented.

Relevant central government initiatives

Relevant central government initiatives
• National Policy Statement for Freshwater Management. • Irrigation Acceleration Fund. • Te Mana o Te Wai Fund. • Clearview Innovations PGP.

Implications for stakeholders

For industry	• Industry bodies to work with local authorities to establish monitoring schemes for water usage. • Implement land use practices that reduce the level of water pollution.
For Māori/iwi	• Continue to engage in the development of regional water frameworks as hapū/iwi. • Continue to engage through the Freshwater Iwi Leaders Group and consider opportunities to align regional frameworks and activity including through accessing Te Mana o Te Wai Fund).
For communities	• Consider options for new irrigation schemes and progress decision-making.
For local government	• Build and extend the regional water management framework by: – implementing schemes to monitor and report on water usage in the region – establishing rules for maximum sustainable allocations from the regions freshwater bodies – developing a comprehensive water allocation plan for the Bay of Plenty based on the additional information (data on usage and sustainable allocations). • Collaborate with central government to facilitate community decision-making processes on new irrigation schemes. • Consider options to accelerate decision-making on new land, catchment and nutrient management plans in order to reduce uncertainty for commercial operators. • Establish a consistent framework applicable to the wider region for the allocation of funds under the incentive scheme to encourage land use change. • Consider supporting the establishment of a Freshwater Centre of Excellence in Rotorua to concentrate the research effort and as a business proposition to export the related IP, if there is a clear business case.
For central government	• MPI, together with local authorities, to facilitate decision-making processes at the local community level regarding potential new irrigation schemes. • Progress policy research into the potential introduction of a trading mechanism for water rights. • Review research programmes focused on assisting the primary sector with the reduction of water pollution in order to ensure coordination and maximum efficiency of funds employed. • Consider supporting the establishment of a Freshwater Centre of Excellence in Rotorua to concentrate the research effort and as a business proposition to export the related IP, if there is a clear business case.

Geothermal energy utilisation

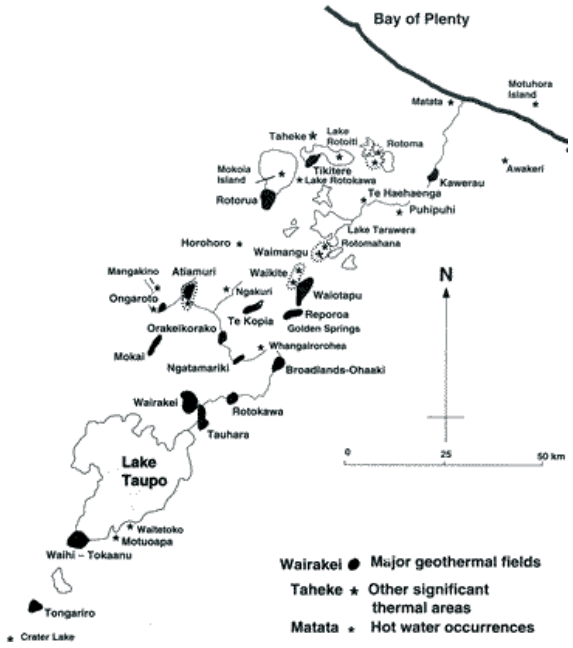
Summary

The Bay of Plenty has considerable geothermal resources, including the world's seventh largest geothermal field by capacity at Wairakei. There is good potential for geothermal energy to be used more widely by businesses that can benefit from the energy and heat generated.

The different heat and pressure combinations of the fields in the region have led to a range of different industrial applications including, for example, electricity generation, timber and milk powder drying, cooling of a data centre, and the heating of horticulture glasshouses and pool and spa complexes.

The large geothermal resources provide the region with a source of advantage. However, geothermal resources are considerably underutilised, with potential to increase the use of steam and heat for industrial use other than electricity generation across the entire temperature spectrum. The use of geothermal resources can generate large cost savings for energy-intensive industries. Further cost efficiencies can be achieved for co-located businesses that use steam and heat in a shared 'cascading' process.

Figure 23 Geothermal fields in the Bay of Plenty



Source: NZ Geothermal

One of the limiting factors for the growth potential of geothermal energy is that the business location is tied to the location of the field, which may be a disadvantage for companies that rely on close proximity to markets and on ample labour supply. Furthermore, the use of geothermal resources requires high up-front investment.

The region would benefit from a concerted effort to market the opportunities provided by geothermal energy use to relevant industries.

The large geothermal resources in the Bay of Plenty provide the region with a competitive advantage in attracting industries with energy-intensive production.

Regional advantages

Geothermal energy applications

Geothermal energy can be used for a multitude of domestic and industrial processes. The Bay of Plenty has sites of extremely high geothermal temperature (in excess of 200°C), but also a range of low temperature sites (less than 150°C). The degree of pressure associated with the heat flow varies between the different fields.

There are geothermal fields of 240°C high pressure heat in the Taupō region, while fields elsewhere have lower pressure. High heat resources are located around Kawerau, while the Rotorua region has lower grade heat. The Tauranga area has low heat and low pressure resources.

The different heat and pressure combinations make the region's various geothermal fields suitable for different industrial applications. Geothermal energy in the Bay of Plenty is used in heavy industry applications, such as electricity generation, timber drying, and milk powder drying. Wider applications include, for example, datacentre cooling, glasshouse heating (horticultural production), as well as heating water for aquaculture, swimming pools and housing.

Potential for 'cascading' energy use by co-located businesses

Co-located businesses can take advantage of a cascading process of repetitive use of steam and heat. For example, the initial output at 250°C can be used for electricity generation. That process leaves residual heat of around 120°C, which is still high enough for a secondary electricity generation process. The resulting output heat from that process is suitable for milk drying, with the remaining heat still sufficient, for example, to heat glasshouses for vegetable production. At the end of the process the heat and water can be re-injected into the field.

The Huka Falls Prawn Park near Taupō is an example for the multiple use of energy flows. It uses the discharge fluid of the Contact Energy geothermal power station, which is of sufficient temperature for the hatchery and ponds of the farm. Similarly, commercial trout farms – if established in the Taupō region – would utilise secondary heat for elevating the temperature in their ponds.

Geothermal fields in the region

The Wairakei geothermal resource near Taupō is the seventh largest geothermal field by capacity in the world. The land is owned and managed by electricity generator Contact Energy, while other fields in the region are on land owned by Māori trusts. Contact's oldest power station using geothermal energy has been in operation since 1958 and is due for de-commissioning within the next 15 years. The Te Mihi power station, which was opened in 2014, has been the latest addition to generation capacity. No new power stations are planned, reflecting current electricity oversupply and low consumption growth.

The Wairakei geothermal resource near Taupō is the seventh largest geothermal field by capacity in the world.

Limited growth in energy generation has led Contact Energy to focus on greater development of the Wairakei field and the promotion of its use by other industries (eg wood and wood waste processing). Projects can be developed in partnership, with Contact offering scientist input and development expertise. The company has a large team of geological experts managing the field and undertaking exploration.

Contact Energy also uses the Tauhara geothermal field near Taupō where it runs a small power station and supplies geothermal fluid to a wood processing facility.

Dairy processor Miraka uses renewable electricity and steam from the Mōkai geothermal field north of Taupō, which is owned by the Tuaropaki Trust.

Kawerau is the biggest geothermal industrial complex in the world, involving several pulp and paper and solid wood processing mills. The geothermal resource is owned by the Ngati Tūwharetoa Settlement Trust. Kawerau is building on its geothermal and forestry base through the Industrial Symbiosis Kawerau programme, which promotes Kawerau as a destination for businesses looking to adopt clean technologies and progressive practices (Kawerau District Council, 2012).

The Rotorua geothermal field is centred mainly on the town area and has lower grade heat. An exclusion zone around Te Puia protects the Pohutu geyser, but in other areas, such as the lakefront, geothermal energy is used for heating and recreational facilities. New tourism developments are under investigation that would use the heat. There is also development potential for other fields in the Rotorua district. Exploratory drilling has been carried out at the north end of Lake Rotorua and there has been interest in assessing the potential for geothermal energy commercial use in the Tikitere and Rotoma areas.

Local scientific expertise

Using geothermal heat and fluids as a sustainable energy source for wider industry applications has only recently gained momentum in New Zealand. This is reflected in the relatively narrow field of local expertise on the topic, with only limited knowledge, for example, regarding the potential for low temperature applications.

GNS Science is the industry leader on knowledge regarding the development and management of geothermal resources. Field management involves complex processes, with GNS Science owning the intellectual property for drilling techniques, and for methods to extract heat and re-inject it into the field. The GNS Wairakei Research Centre in Taupō provides assistance and consultation services to assist industry with the assessment of potential opportunities. Contact Energy and Mighty River Power also have considerable expertise located in Taupō and Rotorua respectively.

Issues

Potential location disadvantage

Although the use of geothermal energy has considerable advantages, it will be a suitable application only for a limited range of businesses. Location is the main drawback as geothermal resource users have to be located on top of a field (heat supply through pipes is only possible for short distances) and requires large investment. The use of geothermal heat involves high up-front investment in infrastructure. If there is a location disadvantage by establishing in the region (for example, long distance to markets and a shallow labour pool), developments will only be attractive if that disadvantage is outweighed by the energy cost saving benefit.

The use of geothermal heat involves high up-front investment in infrastructure.

High up-front investment cost

The high up-front investment in infrastructure required to utilise geothermal heat, which will be gradually recovered through the ongoing benefit of lower energy costs, is also a consideration. If the relocation of an existing operation to a geothermal field is involved, this would add to the up-front investment. The decision to use geothermal energy therefore requires a strong business case and it will only suit companies with high energy requirements.

Opportunities

Marketing of geothermal opportunities to industry

The large geothermal resources in the Bay of Plenty provide the region with a source of competitive advantage. The only other geothermal field is in Northland, albeit of a significantly smaller scale.

Geothermal resources are considerably underutilised, with large potential to increase the use of geothermal steam/heat for industrial use other than electricity generation across the entire temperature spectrum. Geothermal energy use can save a business up to 50 percent of energy costs and is therefore particularly suitable for companies with high energy input requirements. It also enables significant emissions reductions compared to other traditional thermal fuels.

Geothermal energy use can halve energy costs for businesses.

Both the Taupō and Kawerau regions provide excellent potential for the expansion of energy-intensive wood and wood waste processing industries, including the pulp and paper sector. The Kawerau region also has the potential for hothouse horticulture.

The benefits of using geothermal energy could be promoted through a joint marketing initiative developed by land owners, regional EDAs, and central government agencies (including NZTE). This initiative would benefit from the inclusion of specific commercial proposals, which could include joint industry developments that would allow the 'cascading' multiple use of energy flow by several operators, and target businesses that are not sensitive to potential location or investment barriers.

Assessment

The promotion of wider use of geothermal resources for commercial purposes receives moderate ratings on most criteria and therefore an overall rating of medium.

While the potential for energy cost savings are substantial, the proposition will only appeal to a limited range of businesses due to high up-front investment costs and possible location disadvantages at the geothermal fields.

A major benefit of such an initiative, if successful, would be the attraction of new industry in the region offering employment and productivity growth.

Table 22 Assessment: Marketing of geothermal opportunities to industry

Criteria	Rating
Validity	Medium
Potential impact	Medium
Practicality	Medium
Regional significance	Medium-high
International orientation	Medium
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium-high
Overall rating	**Medium**

Cost effective production would increase the international competitiveness of those businesses that use geothermal energy, with a potentially positive flow-on effect on export growth.

Other opportunities

Mapping of additional fields

While there are a number of additional geothermal fields in the region, some have not been mapped in detail. The process of exploration and mapping is time consuming and costly. Operators in the wood processing industry suggested that detailed mapping of additional geothermal fields could lead to the development of other industry locations for timber drying facilities. Given the large number of potential beneficiaries of such information and difficulties in coordinating investment across them, additional mapping is likely to require some public funding support.

Relevant central government initiatives

- GNS Science-led geothermal research programme.
- MBIE Energy and Minerals Research Fund – Geothermal supermodels, From Waste to Wealth (2013).
- Marsden Fund – Fingerprinting geothermal fluids: Tracking the magmatic signature.

Implications for stakeholders

For industry	• Lead a coordinated marketing initiative to promote potential business opportunities provided by the use of geothermal resources, involving land owners, regional EDAs, and central government agencies (including NZTE). • Collaborate with owners and regional EDAs to identify opportunities for joint industry developments that would allow the 'cascading' multiple use of energy flows by co-located operators. • Develop a business case for undertaking additional geothermal field mapping in the Bay of Plenty.
Māori/iwi	• Participate in a coordinated marketing initiative to promote potential business opportunities provided by the use of geothermal resources as owners • Sharing examples of existing models, working with regional EDAs, and central government agencies (including NZTE).
For local government	• Participate in a coordinated marketing initiative to promote potential business opportunities provided by the use of geothermal resources, involving owners, regional EDAs, and central government agencies (including NZTE). • Collaborate with land owners and regional EDAs to identify opportunities for joint industry developments that would allow the 'cascading' multiple use of energy flows by co-located operators. • Collaborate with regional EDAs and NZTE on the identification and design of specific investment opportunities with foreign direct investment potential.
For central government	• Participate in a coordinated marketing initiative to promote potential business opportunities provided by the use of geothermal resources, involving owners, regional EDAs, and central government agencies (including NZTE). • NZTE to collaborate with regional EDAs – and facilitate wider central government engagement as required – to identify and design specific investment opportunities with domestic and foreign direct investment potential. • Consider the business case for additional geothermal field mapping in the Bay of Plenty.

Transport infrastructure and digital technology

Summary

Logistics and the movement of freight play an important role in the Bay of Plenty and provide support for key industries.

Effective planning and collaboration has supported the development of good transport infrastructure. A regional spatial plan project (Invest BOP) is underway that will formalise this collaboration, and identify priorities based on a shared evidence base and monitoring. NZTA is a key partner in the regionally-led spatial plan project, which also makes connections to the Upper North Island Strategic Alliance pan-regional initiative (UNISA).

Source: Bay of Plenty Regional Council

The main components of the transport network are:

- Port: The Port of Tauranga provides a high capacity and efficient service for exporters, notably primary industries, from within the region and beyond. It is also an increasingly popular cruise ship destination. Increased offsite marshalling arrangements will be required to efficiently handle the introduction of larger international cargo ships from 2016 onwards.
- Rail network: Rail transport capacity in the region is good, with ongoing improvements having been carried out to increase capacity. The move to larger ships servicing the Port of Tauranga will most likely necessitate further upgrades of tracks and rolling stock in order to meet higher peak demand on the network.
- Road network: The region's road network is of sufficient standard to support the heavy traffic flows in the region. The rate of HPMV use in the region has increased and has allowed significant productivity gains for operators. NZTA is considering a potential further increase in vehicle weight limits that may necessitate upgrades of infrastructure on key routes.
- Airports: Air connectivity in the region is relatively poor, and currently a constraint to business and tourism development. There are no international flight connections and services to Whakatāne and Taupō have been reduced. With the region's economy expanding, the construction of a centrally located single regional airport may be required at some stage in the future.

Invest BOP (which includes the Bay of Plenty region and Taupō) will provide a framework for the region to articulate its priorities, including for the transport network, and will support pan-regional engagement, for example with neighbouring regions and through the UNISA.

In addition to transport infrastructure, broadband connectivity and services will have a critical influence on economic development. Broadband coverage is growing in the region with the roll out of the UFB and RBI programmes. However, there are still low rates of uptake of digital technology in some key

industry sectors. The ICT sector's development in the region is being constrained by difficulties in attracting and retaining specialist staff.

Port of Tauranga

The Port of Tauranga is the largest export port in New Zealand. It handled 12.1 million tonnes of exports in 2014, while the import volume was $3.8 million tonnes (Ministry of Transport, 2014). The Port handles a significant share of total New Zealand merchandise trade, with export and import volumes accounting for 32 percent and 18 percent of national merchandise trade respectively.

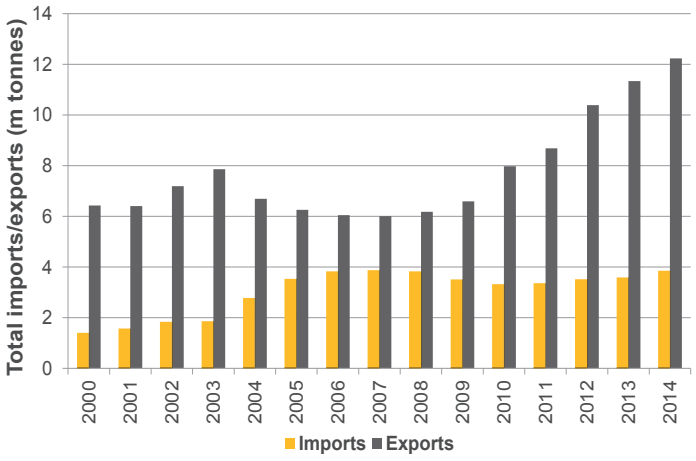
Logistics firms and other companies that deal directly with the port value the high level of service and operational flexibility that is provided.

Export volume growth has grown steadily following the GFC and is dominated by logs, dairy and other agricultural products, much of which originates from or is processed within the Bay of Plenty.

Imports include products used to support the agricultural sector in the region and beyond. Much of the container traffic passing through the Port of Tauranga goes to or comes from MetroPort in South Auckland.

The Port of Tauranga also handles an increasing volume of cruise traffic, with 79 cruise liners expected to berth in 2015.

Figure 24 Volume growth through the Port of Tauranga, 2000–2014, June years



Source: (Port of Tauranga, 2014)

Over 80 cruise ships visited Tauranga in the 2013–14 season, carrying around 240,000 passengers and crew and contributing around $38 million to the regional economy (Worley & Akehurst, 2014).

The growth outlook for the Port of Tauranga is favourable, particularly for container traffic, based on rising international trade and changes in the types of ships available. There has been a gradual increase in the sizes of vessels serving the New Zealand market and the largest vessels are currently about 4,500 twenty-foot equivalent units (TEUs) (Ministry of Transport, 2014).

Following a commitment by logistics firm Kōtahi to provide an increased level of traffic through Tauranga and global shipping company Maersk agreeing to introduce 6,500 TEU vessels, the Port is currently in the process of dredging the harbour to prepare for the introduction of larger ships in 2016. The University of Waikato has provided scientific support for the dredging programme.

The Port plans to accommodate traffic increases with the construction of a third berth, the purchase of two additional container cranes, and by extending the rail layout to allow the loading of three longer trains. It has also earmarked 190 hectares of land for handling increased cargo volumes. The less

frequent services of larger ships will put additional pressure on port and landside transport infrastructure faced with greater peaks and storage requirements. These issues are generally well understood, with suitable responses being developed.

Options for off-site cargo marshalling to enable delivery to the port on a just-in-time basis have been considered and advanced. This is particularly an issue in the movement of logs, with marshalling points being established at Murupara, Kinleith and Kawerau. Kiwifruit marshalling is based in Te Puke. The new Tauranga Eastern Link will improve road connectivity to the port.

Despite its significant land holdings, the Port has limited room for further expansion, which may pose a challenge for the handling of increasing container volumes over time. The development of new distribution facilities near the port will have to be considered.

Rail network

The Bay of Plenty's rail network is almost entirely used for the movement of freight. The volume of rail freight to, from and within the Bay of Plenty was about 6.4 million tonnes in 2012, representing around 40 percent of rail cargo volumes nationally.

The main link is the East Coast Main Trunk (ECMT) which connects Tauranga to the North Island Main Trunk at Hamilton via the Kaimai Tunnel.

The key freight movements via this link are container shipments from the Port of Tauranga to Hamilton and South Auckland's MetroPort.

The route is also used for other types of freight including the movement of containerised dairy and meat products from Tauranga, export steel from Glenbrook, and wood and timber products from Kinleith.

Rail is the preferred means of transport for Fonterra as it transports products from its production and storage facilities in Hamilton to the Port of Tauranga.

Figure 25 Rail network in the upper North Island

Source: KiwiRail Annual Report 2013

The movement of logs and other timber products accounts for much of the remainder of rail freight within the region, notably the connection beyond Tauranga to Kawerau and Murupara.

With existing and planned upgrades, the ECMT is expected to be able to accommodate the substantial increases in freight traffic that may result from larger vessels servicing the Port of Tauranga. However, over time the region's rail network is likely to need additional upgrades in some areas, mainly more and longer passing loops to cope with increased freight volumes from the larger ships berthing at the port. Electrification of the Tauranga-Hamilton route could also be considered to allow better flow through the Kaimai Tunnel.

The most pressing constraint on the region's rail connections appears to be the availability of sufficient track capacity in Auckland. Increased container traffic from the Port of Tauranga to the MetroPort inland port facility in Auckland will need to be managed in conjunction with increases in the numbers of commuter trains. A proposal to alleviate this problem with the provision of a third rail line between Westfield and Wiri – and possibly subsequently Papakura – has been developed, although issues around funding are yet to be resolved.

At a local level it is important that expanding logistics companies have access to new development sites adjacent to rail lines. This may require the construction of additional spur lines in the Tauranga region in particular.

Similar spur lines may be considered to better connect, for example, wood processing companies to the rail network. These projects should be decided based on commercial arrangements between the business and the rail operator.

Road network

The main link into the region is via SH29, which provides a connection to SH1 at Pairere and forms part of the strategic route connecting Tauranga to Auckland and the Waikato.

The importance of this network is likely to grow over time with the construction of the additional stages of the Waikato Expressway improving the linkages to Auckland.

The section of SH29 road across the Kaimai ranges, which provides the key link to Hamilton for heavy vehicles, is winding, although current capacity is sufficient.

As traffic volumes are forecast to grow, further improvement works will be considered as part of the national land transport programme.

Figure 26 State highways in the Bay of Plenty

Source: (NZ Transport Agency, 2015, p. 5) with SH29 included

Other routes connecting the Bay of Plenty to the surrounding regions include SH2 to the north. The future importance of SH2 north is likely to be limited both by the improvements to the alternative route to Auckland via SH1 and SH29 and the limitations posed by the Karangahake Gorge.

SH5 from SH1 at Tirau provides the connection from Auckland and Waikato to Rotorua and then continues south from Rotorua to Taupō. SH2 to the east of Tauranga is currently being upgraded with the construction of the Tauranga Eastern Link. It also provides a connection via SH33 to Rotorua and then to the south via SH5.

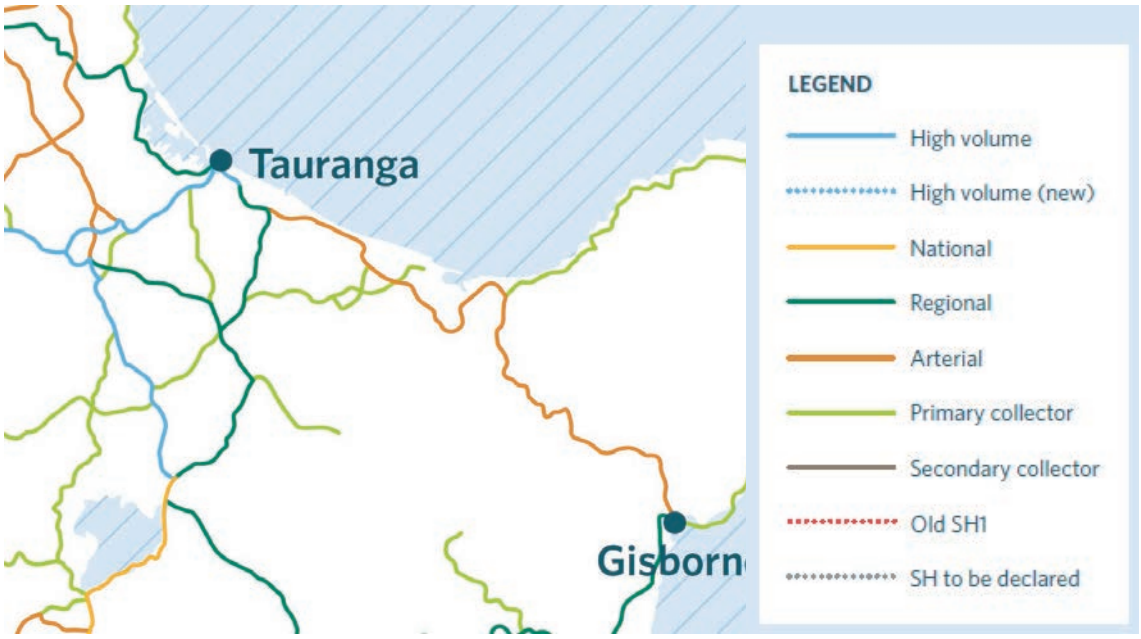
Within the region, SH2 to the south of Tauranga provides a linkage to Whakatāne and Ōpōtiki and then to Gisborne, although the flows across the regional boundary are small, and to Kawerau via SH33. SH2 therefore forms the spinal highway route through the region.

At a more local level, the port in Tauranga benefits from high quality road access through the urban area both to the west and to the east. In the longer term continued investment will be required to ensure efficient access for commercial vehicles to processing facilities and the port, in particular, through Tauranga's Tauriko and Bethlehem residential suburbs.

The NZTA State Highway Asset Management Plan establishes a hierarchy for the State Highway network and in their One Network approach have defined State Highways into a number of classes. The application of these in the Bay of Plenty Region is set out in Figure 27.

Within the Bay of Plenty region, major investment in the State Highway network is taking place with the construction of the Tauranga Eastern Link (a Road of National Significance project), which will be completed by late 2015. Major peri-urban road corridors that are being assessed are the Rotorua Eastern Corridor and the Tauranga Western Corridor. The Tauranga Northern Corridor has been investigated with further work dependent on growth pressure triggers.

Figure 27 State highway road classifications in the Bay of Plenty



Source: (NZ Transport Agency, 2015, p. 12)

High productivity motor vehicle routes

Many of the State Highways and other roads in the Bay of Plenty carry high volumes of freight traffic. The region has a good network of HPMV approved routes, with local authorities committed to providing the required infrastructure. The higher vehicle weight limits allow operators to make more productive use of their assets employed. The routes provide a focus on the Port at Tauranga, connecting it with the major sources of exports and the destinations for imports. As a result of HPMV investment, 22 percent of all heavy vehicle kilometres in the region were driven by HPMVs in the third quarter of 2014.

A further set of routes are being investigated for a second tranche of HPMV investment and these include: Edgecumbe–Ōpōtiki; Te Kuiti–Atiamuri–Rotorua–Whakatāne; and Waihi-Tauranga. These routes focus on logging, kiwifruit and other agricultural traffic, thereby enhancing those sectors' transport cost efficiencies.

The Bay of Plenty has a good network of HPMV approved routes, with local authorities committed to providing the required infrastructure.

The roll out of the 50 Max programme, which involved increasing the weight limit from 44 tonnes to 50 tonnes for certain types of trucks, has proceeded well. However, the granting of permits for higher weight classes – NZTA has been considering vehicles up to a 64 tonne maximum – has stalled at the 58 tonne level. Vehicles beyond that weight require a length of up to 25 metres, which generates additional risks from manoeuvring the trucks around winding roads and roundabouts. NZTA is working with the Road Transport Forum and Road Controlling Authorities to reach a decision on the issue. This will provide a basis for decisions on future investment in road infrastructure in the region. It may also establish the basis for potential applications for permits for exemption from the rules.

Regional airports

The Bay of Plenty region has three relatively small publicly owned airports in Tauranga, Rotorua, and Whakatāne, with infrequent links to the main New Zealand centres. Air New Zealand recently stopped flying the Taupō–Wellington and Whakatāne–Auckland routes. However, Air Chathams is now servicing the Whakatāne–Auckland route, while Sounds Air has recently signed an agreement with Taupō District Council to service the Taupō-Wellington route.

Following Rotorua Airport's decision to cancel its loss-making direct service to Sydney in 2014, the region has no international flight connections. The closure of the Sydney service has created significant excess capacity and Rotorua airport is now focused on establishing a direct service to Queenstown, which is seen as providing more attractive opportunities for regional tourism.

The region's relatively poor flight connectivity and the comparatively high fare structure is not only a disadvantage for the tourism sector. It is also a drawback for wider business development in the region. Service industries (for example, in the ICT sector) and sales and marketing staff in other

industries depend on the ability to efficiently connect with customers in other parts of New Zealand and in Australia.

The region's relatively poor flight connectivity and the comparatively high fare structure is not only a disadvantage for the tourism sector, but for wider business development.

A 2006 study investigated the viability of building a new centrally-located airport to service the entire Bay of Plenty at Paengaroa, with a view to replacing the three small existing airports (URS, 2006). The study considered the benefits of higher passenger flows through a single airport, which would allow larger planes to be operated and increase in the number of flights and connections to the region. The potential introduction of international flights was seen as an additional benefit.

The BOPRC's Regional Infrastructure Fund could be a source of funding for future airport development, but there is currently limited political support for the central airport proposal. However, at some stage in the future the region will require upgraded airport facilities and there may be merit in updating the 2006 study to develop criteria that set out when investment in such a project would be commercially and economically justifiable. The growing need over the medium term for additional land for the expanding operations around the Port of Tauranga may also raise the issue of possible relocation of Tauranga's airport, which may influence the decision-making on regional airport integration.

Relevant central government initiatives

- Government Policy Statement on Land Transport Funding (2015).
- Funding support through the National Land Transport Programme.
- Funding Assistance Rate review.
- Tauranga Eastern Link Road of National Significance.
- Safer Journey 2020 Strategy.

Broadband and digital technology

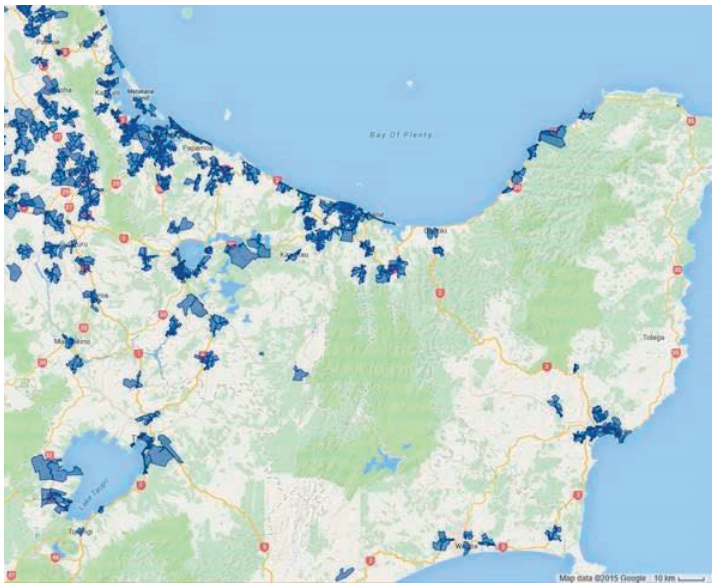
According to the 2013 Census, 72.5 percent of Bay of Plenty households had internet access, compared to 76.8 percent nationally. Broadband coverage is growing in the region, with the roll out of UFB and RBI continuing on schedule. The region may also benefit from funding for additional broadband capacity, which will be delivered over the next five years.

By September 2014, UFB connections were available across 62 percent of the Bay of Plenty. The rollout of UFB and RBI will be completed nationally in 2019, and earlier in some the region's urban centres. For example, the Taupō, Rotorua and Tauranga networks will be completed in 2016, and the Whakatāne network in 2017 (Ministry of Business, Innovation and Employment, 2014b).

According to the same report, nine percent of Bay of Plenty users with access to fibre had taken up a UFB service in June 2014, compared to only seven percent nationally.

The RBI will see 86 percent of rural home and business with broadband of speeds of at least five Mbps by 2016.

Figure 28 5 Mbps coverage in the Bay of Plenty, 2014



Source: Koordinates.com

The current UFB and RBI deployment (and additional deployment signalled by the Government as it extends the UFB network to 80 percent of the country and through contestable funding for RBI) is an opportunity for the region's firms and industries to increase their use of digital technologies.

Broadband and ICT is an important enabler for a wide range of industries and for innovative initiatives, for example spatial analysis for forestry developments, land management systems, prototype developments for the manufacturing sector, logistics, and efficient online booking management systems for the tourism industry. Research suggests that UFB and ICT could lift the level of the regional economy's GDP by 4–9 percent over 15 years, depending on the timing of the broadband roll out, adoption and uptake (Slack, Sanderson, & Dustow, 2011).

One area where the uptake of new digital technology is still comparatively low is for small and medium-sized enterprises (SMEs). While 47 percent of New Zealand SMEs have no online presence, this is true for 76 percent of the sector in the Bay of Plenty (MYOB, 2014). A number of the region's key industries (forestry and logging, agriculture support services, and accommodation and food services) are also amongst those with the lowest proportions of businesses using the internet nationally, which suggests that uptake of digital technologies in these industries is a potential constraint to innovation and productivity gains (Statistics New Zealand, 2012).

Primary industries in the Bay of Plenty will be an important driver of broadband uptake. Analysis suggests the following annual value benefits in key regional primary industries (Slack, Sanderson, & Dustow, 2011):

- $71 million in the dairy industry, as a result of applications in areas such as livestock and production monitoring, consumer information, research, logistics and financial management.
- $39 million for the kiwifruit industry, based on climate and crop monitoring, supply chain innovation, research and development, and improved business practices.

Broadband uptake will also increase productivity, innovation and market growth across other primary industries, for example forestry and wood products (improved knowledge of consumer demand to support higher value-add, crop and supply chain management) and aquaculture (improved market connectivity, deep-water monitoring, and supply chain management) (Slack, Sanderson, & Dustow, 2011).

The Bay of Connections Freight Logistics Strategy includes a focus on promoting the use of enabling logistics technology across industries and sectors, recognising the opportunities this technology offers, notably through data and information sharing and intelligent transport systems (Bay of Connections, 2011b).

ICT sector

The Bay of Connections Regional Economic Development Strategy identifies ICT as a key sector, because of its enabling role in the region's areas of comparative advantage. The sector is comparatively small and consists of a large number of small operators, although there are larger firms such as Datacom (development of local government software), Cucumber (web design, digital strategy), and Radfords Software (horticulture inventory software).

While the sector is seeking to build scale through the development of co-working spaces and investment, successful ICT firms are very reliant on access to skilled workers. This is currently a major constraint as the region is not an attractive destination for ICT workers due to the industry's small scale. Local firms struggle to compete with the Auckland ICT sector for graduates and staff, particularly for overseas recruits with high career ambitions.

Local firms struggle to compete with the Auckland ICT sector for graduates and staff, particularly for overseas recruits.

Tauranga is the Bay of Plenty region's ICT centre. The main focus is on servicing the needs of the region's key industries (notably the primary sector). There is a strong ICT cluster (facilitated by Priority One with over 600 members), with private-sector led technology platforms and initiatives such as Tauranga Tech, Tauranga Web Meetup and Wharf 42 (which links start-ups to Silicon Valley).

There may be potential to link the ICT communities in Tauranga and Rotorua in order to develop a broader regional vision of digital priorities within a shared framework. As an example, RHUBARB

Group is an ICT resource hub with an aim to create a community of organisations who can benefit from shared knowledge and an alignment of ICT standards, frameworks and platforms. It is a Tauranga- based community initiative comprised of ICT providers, education institutions and others.

Tertiary education provision in the region extends to degree level and the planned TTEP will include an initial focus on ICT and on integrating ICT skills in industry qualifications such as freight and logistics and manufacturing. Initiatives such as Computers in Homes and Tech Pa support digital literacy and there may be potential to extend these models.

Relevant central government initiatives

- Ultra-Fast Broadband roll out and Rural Broadband Initiative.
- Government's Five Point Action Plan for faster broadband.
- Better Public Service result areas nine (one-stop online shop) and ten (digital transactions).
- $30 million Māori ICT Fund.
- ICT and digital technologies in New Zealand Vocational Pathways.
- Network for Learning (N4L) Ltd managed networks and Pond portal.
- Computers in Homes programme funding (Budget 2014 $250 million).
- Ngā Pu Waea National Māori RBI Working Group.
- NZTE Digital Enablement and Management Capability Programmes.

Implications for stakeholders

For industry	• Establish additional off-site marshalling arrangements to enable efficient handling of larger vessels at the Port of Tauranga from 2016 onwards. • Where commercially attractive, enter into arrangements with KiwiRail regarding the construction of additional rail spur lines to improve industry access to the network. • Invest in digital enablement and digital literacy training to identify gains from greater technology adoption and workforce use (access NZTE capability vouchers where appropriate).
For Māori/iwi/hapū	• Encourage children, young people and whānau to participate in programmes such as the Whakatāne Tech Pa after school and community programmes to enhance digital literacy. • Evaluate and consider extending the Whanau Ora collective partnership with Computers in Homes, with learning from the Ngā Mataapuna Oranga model.
For local government	• Continue to support Port of Tauranga to identify and build the economic benefits of the Port for the wider city, sub-region, and region. • Tauranga City to identify and zone suitable sites for new logistics facilities with rail access. • Consider funding for advancing additional road upgrades in the region to enhance HPMV capable network. • Depending on NZTA's findings regarding HPMVs above 58 tonnes, identify required modifications of roads on key routes to enable compliance with the rules or to provide a base for the application of exemption permits. • Update earlier studies to understand the commercial and economic viability of consolidating air services through a centrally located regional airport, and identify criteria to support future decision making. • Identify priorities for extending ultra-fast broadband and rural broadband coverage and apply for additional contestable funding from central government. • Consider e-government development that reduces costs for businesses and communities, including future procurement of shared ICT platforms.
For central government	• Lead work with partners to progress the proposal to build a third rail line between Westfield and Wiri (and possibly subsequently Papakura) in Auckland. • Consider SH29 improvement works when updating the national land transport programme (beyond 2015). • Support the development of regional education networks and hubs to build local digital capability and leverage education sector expertise (early childhood education, schools and kura), building on existing models (eg Tech Pa).

Education and skills

Summary

Growth in the Bay of Plenty economy will create increased employment demand, particularly for higher-skilled staff in key primary industries, and for service workers in the region's urban areas.

The Bay of Plenty's older population and the industry structure within the region contribute to lower formal qualifications and skills levels in the Bay of Plenty than New Zealand as a whole.

Source: Bay of Plenty Polytechnic

This picture appears to be changing. Demand for skilled workers in the region is increasing as the industry mix changes and primary industries require higher skill levels. Overall, more Bay of Plenty young people attain NCEA Level 2 than nationally. However, education and employment outcomes for Māori youth (particularly in the Eastern sub-region) suggest their potential is not being realised.

The Bay of Plenty Tertiary Intentions Strategy released in late 2014 was informed by extensive consultation, including with Māori/iwi and establishes clear priorities for future regional action. It emphasises industry leadership to ensure that tertiary education and research is better aligned to industry's needs across the region and at sub-regional levels.

The region's collaborative tertiary environment, and strengthening relationships between industry, schools, and tertiary organisations, provide a solid platform for future education and skills development, including for Māori.

A planned tertiary education campus in Tauranga city centre is an important addition to the region's tertiary education infrastructure and could contribute to a regional GDP increase of one percent. The Tauranga city centre, firms in the wider city, and the Western sub-region will benefit from higher qualifications levels and focused industry-tertiary research delivered through the campus.

Ensuring the potential of the region's youthful population is achieved – including its high proportion of Māori youth - remains a challenge and opportunity. Raising the education and skills levels of the Bay of Plenty's Māori workforce will be a key enabler of regional growth and development.

There are examples of best practice amongst the region's compulsory and tertiary providers, and a range of youth-focussed initiatives with community support. Now is the time to develop a youth strategy that identifies which of these initiatives are effective (through monitoring and evaluation), whether and how these can be expanded, and any new initiatives that should be implemented.

Background and regional advantages

Having an educated and skilled workforce is critical to improving productivity and incomes in the Bay of Plenty. Moreover, a broader distribution of skills across the workforce and higher levels of labour market participation will enable the benefits of economic growth to flow to a greater number of people.

The economic success of the Bay of Plenty will depend on the region's ability to train, retain and attract skilled labour.

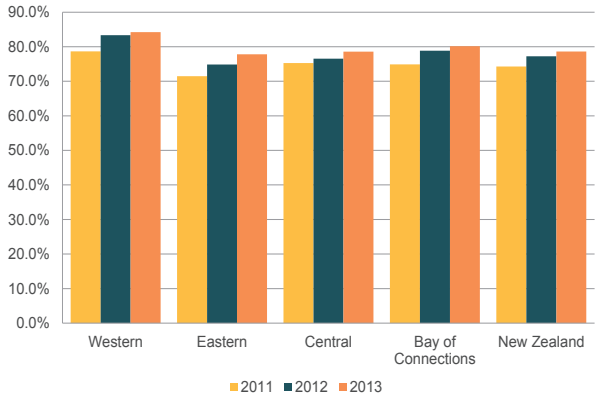
Overall, educational attainment and formal qualification levels in the Bay of Plenty population are lower than national levels. People in the Bay of Plenty are less likely to be degree-qualified than the wider New Zealand population (14 percent compared to 20 percent nationally) and the region's literacy and numeracy levels are slightly below national levels (Ministry of Education, 2010). This is largely a reflection of the region's older population profile and the higher proportion of labour employed in primary industries, which generally require lower skilled labour.

However, educational attainment in the region has been improving over the last few years.

The Government's 10 Better Public Service result areas include a goal to increase the proportion of 18-year-olds with an NCEA Level 2 or equivalent qualification to 85 percent by 2017. NCEA Level 2 is a foundation for further education and employment opportunities and is associated with better health outcomes and a higher quality of life.

18-year-olds in the Bay of Plenty are slightly more likely to have an NCEA Level 2 or equivalent qualification than 18-year-olds nationally (80.2 percent compared to 78.6 percent).

Figure 29 18-year-olds with a minimum of NCEA Level 2 or equivalent, 2011–2013



Source: Ministry of Education, 2014

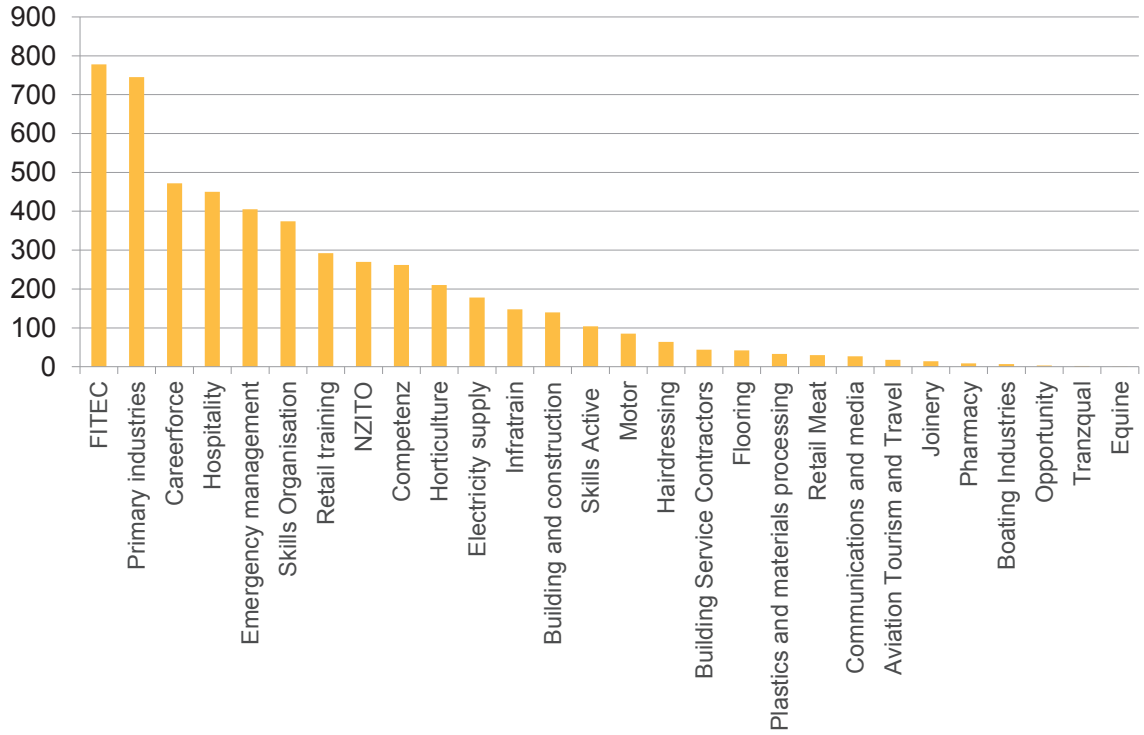
Labour demand and industry training

A smaller proportion of Bay of Plenty workers are employed in professional occupations than nationally, and the region has more labourers than New Zealand as a whole (Statistics New Zealand, 2014b). This profile is similar to the employment profile of other primary industry-based regions.

A fifth (20.5 percent) of regional employment is in the primary sector, compared to 16 percent nationally. Primary industry employment in the Bay of Plenty will remain above national levels, with some projected compositional changes biased towards more support service and management staff (Ministry for Primary Industries, 2014c).

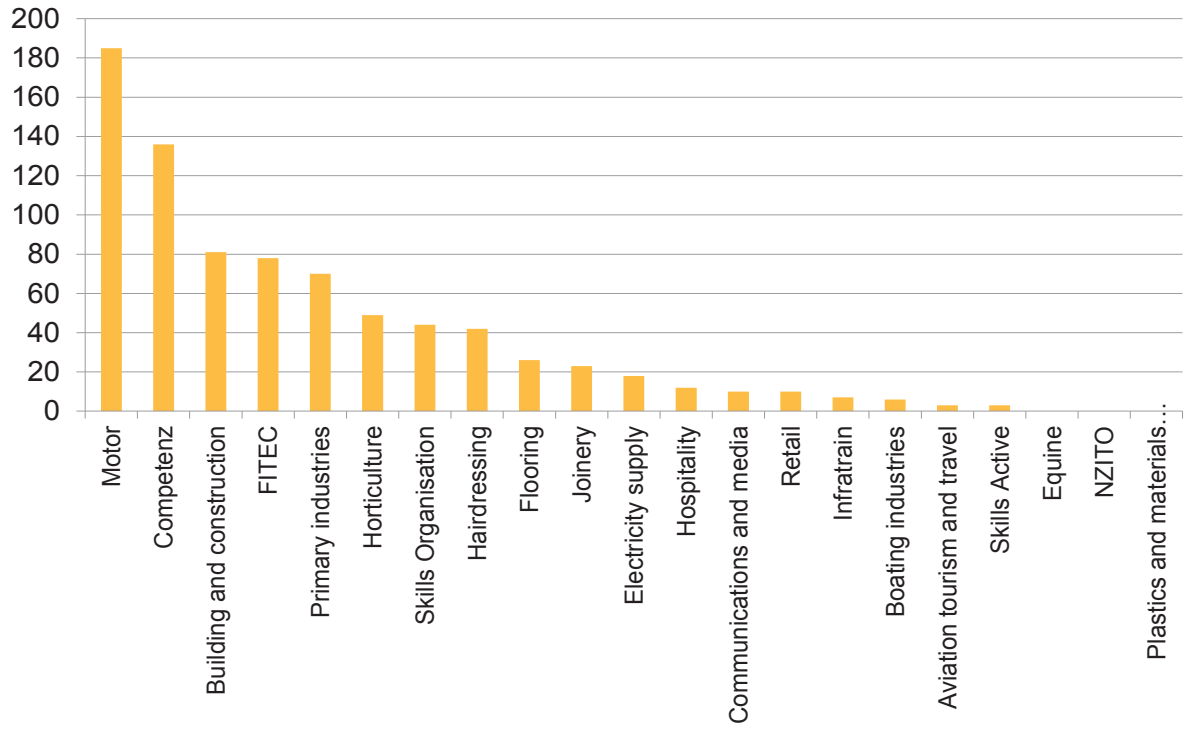
The industry training provision in the region is generally well aligned to current and future industry needs and ITOs are developing a pipeline of young people for key industries. The largest numbers of apprenticeships are in the primary sector, engineering and manufacturing (including food), as well as transport and logistics, forestry, and building and construction (Figure 30 and Figure 31).

Figure 30: Industry trainees by ITO in the Bay of Plenty TEC region, 2012



Source: Education Counts, November 2014 – latest available data

Figure 31: NZ Apprenticeships in the Bay of Plenty TEC region, 2012



Source: Education Counts, November 2014 – latest available data

International migration

International migrants contribute to the transfer of knowledge and ideas, as well as expanding a region's domestic and international networks. Migrant skills are increasingly important to the Bay of Plenty because of its ageing population and growing labour market needs, and its changing skills requirements.

The Bay of Plenty was home to around 46,500 international migrants in 2013. This represented 15.4 percent of the region's total population, compared with 23 percent for New Zealand overall. Nearly half of the region's international migrants live in Tauranga City, and only 10 percent of the region's migrants live in the Eastern sub-region (Statistics New Zealand, 2014b).

The region's international migrant population is less diverse than the migrant population of New Zealand as a whole. A higher proportion of the region's migrants are from the UK and Ireland, with fewer migrants from Asia and the Pacific Islands.

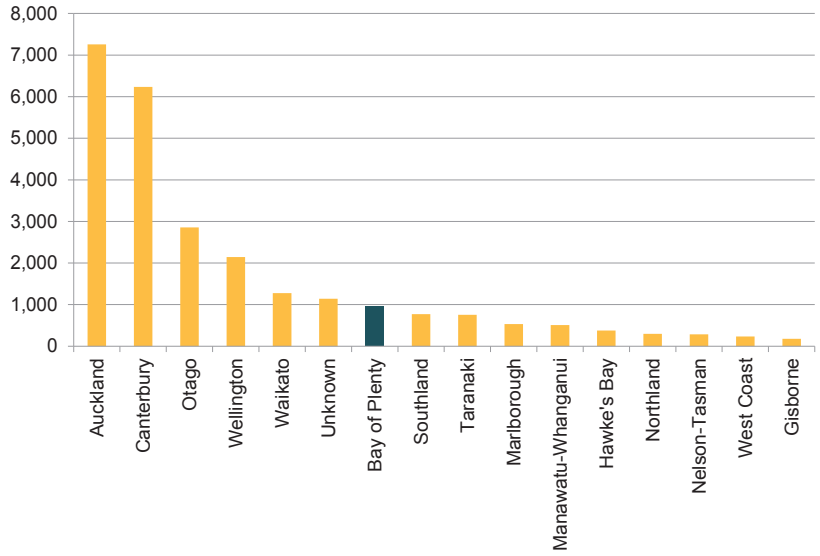
Migrant skills will be increasingly important to the Bay of Plenty.

According to the 2013 Census, 2.1 percent of the Bay of Plenty population were recent migrants (defined as those who arrived in New Zealand in the last two years) compared to 3.0 percent of New Zealand's population. This was on par with the proportion of recent migrants in the Waikato and the Canterbury regions. Recent migrants to the region are most likely to live in Tauranga City or the Western Bay of Plenty region (2.5 and 2.3 percent of the population respectively).

The 'essential skills worker' immigration category provides for industries that are experiencing skill shortages despite efforts to recruit and train staff from the domestic labour market.

During the last five years, roughly five percent of the essential skills workers approved annually were in the Bay of Plenty, mainly technicians and trade workers, professionals and managers (Immigration New Zealand, 2014).

Figure 32 Essential skills workers by region, 2014



Source: MBIE custom data request, data for the year ending March 2014

Most of these technicians and trades workers were approved to work in the foods trade and automotive and engineering trades.

Seasonal employment

Seasonal employment in the Bay of Plenty is concentrated in the horticulture sector and particularly in kiwifruit orchards and packing, and is likely to increase as more of the Gold cultivar comes into production. An estimated 8,000–9,000 seasonal workers were required for the 2014 harvest with most sourced from local communities (including more than 1,000 people on Jobseeker Support).

An additional 1,100 overseas workers came to the Bay of Plenty under the New Zealand RSE scheme during 2013–2014. Many of the overseas workers come from the Pacific region and the scheme is working well for most employers. Meeting the accommodation needs of overseas workers is an issue, particularly in the more remote areas of the Eastern sub-region.

Regional advantages

Māori education and skills initiatives

He Mauri Ohooho, the Bay of Plenty Māori economic development strategy, establishes Māori education and skills development as a strategic priority. This is based on the region's youthful Māori population and opportunities for Māori workforce development, particularly in higher skilled occupations and industries.[27] Increasing effective kaupapa Māori education provision, and the delivery of initiatives and pilots to support youth to remain in education and training and transition successfully to employment, remain important– especially in the Eastern and Central sub-regions.

The BOPTEP has four members – Bay of Plenty Polytechnic, Waiariki Institute of Technology, Te Whare Wānanga a Awanuiārangi and the University of Waikato. The Partnership members are achieving above sector-average outcomes on most measures of Māori tertiary education, highlighting this as a core strength of the region's education provision.

Whakatāne's Trident High School is another example of education best practice. It has been recognised for its pastoral care and above average levels of student engagement and achievement (Education Review Office, 2014). Trident leads the Eastern Bay of Plenty Trades Academy, which brings together the Waiariki Institute of Technology, 10 local schools (including in Rotorua) and businesses to deliver regionally relevant courses to a largely Māori student roll (over 80 percent).[28]

Three Ministry of Social Development (MSD) social sector trials focussed on youth education and employment are currently being delivered in the region (Kawerau, Rotorua and Whakatāne), as well as a number of community and Māori/iwi/hapū-led initiatives. The initiatives include, for example, the Kawerau Youth Action Plan (one of MSD's social sector trials), and the Te Whānau a Apanui kiwifruit growers training and workforce development.

Māori and Pasifika Trades Training is being expanded, with plans for three Bay of Plenty consortia to be operational in 2015. In 2014 Waiariki Institute of Technology announced that it is leading a consortia to deliver the SkillMe carpentry programme in Rotorua as well as considering another carpentry and related skills programme. The Ngā Pōtikī a Tamapahore Trust and the Bay of Plenty Polytechnic are partnering to offer pre-employment trades training that offers pathways into Level 4 New Zealand apprenticeships.

There are proposals for new Māori education and youth-focused projects to be developed by iwi/hapū and Māori commercial entities, modelled on successful initiatives in other regions. In line with He Mauri Ohooho, Māori/iwi/hapū, commercial organisations and entities can provide important leadership in the identification and delivery of effective youth skills and workforce development initiatives that are aligned to the needs of the growing Māori and wider economy, and to deliver related goals in the He kai ke aku ringa Action Plan.

[27] 34 percent of the region's Māori population is under 15 years old and 50 percent are under 25 years of age.

[28] Courses include agriculture, forestry, automotive/electrical engineering, business administration, construction, hairdressing and beauty, healthcare, and culinary/hospitality.

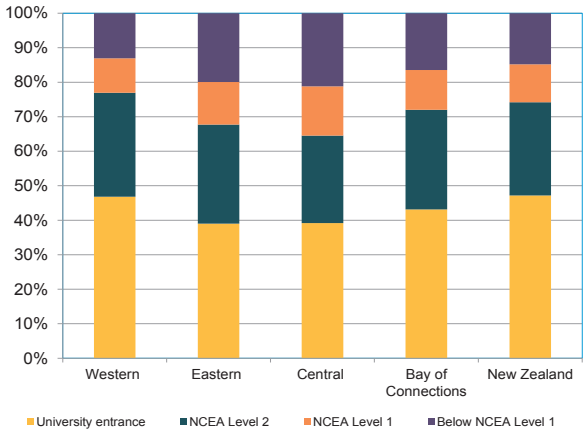
Issues

Variability in educational attainment across the region

While the region's comparatively high rate of attainment of NCEA Level 2 is positive, there is significant variability in school leaver attainment at the sub-regional level, with considerable underperformance in the Eastern sub-region. For example, in the Kawerau district 54.2 percent of school leavers did not achieve NCEA Level 2.

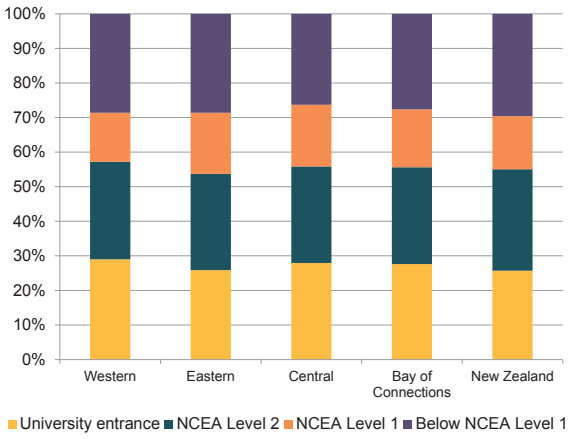
The Bay of Plenty's youthful Māori population is concentrated in the Eastern and Central sub-regions. Although Māori NCEA Level 2 school leaver achievement across the region is comparatively low, it is broadly in line with Māori school-leaver achievement nationally.

Figure 33 School leaver achievement, Bay of Plenty, 2013



Source: Ministry of Education, 2014

Figure 34 Māori school leaver achievement, Bay of Plenty, 2013



Source: Ministry of Education, 2014

The OECD recommended that New Zealand focus on improving school to employment transitions following the GFC to address a long tail of educational underachievement and reduce the rate of those not in education, employment or training (NEET) (Organistation for Economic Co-operation and Development, 2013).

Youth/rangātahi not in education, employment and training

Ensuring the potential of the region's youthful population is realised – including its high proportion of rangātahi – remains a key challenge. Raising the education and skills levels of the Bay of Plenty's current and future Māori workforce will be a key enabler of regional growth and development.

Youth exclusion, disengagement, and overall underutilisation in the labour market also has long-term costs to the individual, and to the wider economy or society. Young people from low socio-economic backgrounds, early school leavers, teenage parents, and Māori and Pacific youth are at risk of higher than average NEET rates (Ministry of Business, Innovation and Employment, 2013a).

About 43 percent of Māori school leavers in the Bay of Plenty region (compared to 58 percent of Māori learners nationally) do not transition to further training or education. This suggests that a larger proportion of rangātahi are transitioning directly into employment (Bay of Plenty Tertiary Intentions Strategy Reference Group, 2014). Again, the evidence shows greater variation at the sub-regional level with the NEET rate in the Eastern sub-region (22.3 percent) roughly double the national rate (Statistics New Zealand, 2014c).

Youth/rangātahi in the Bay of Plenty can experience high barriers to labour market entry. For example, a 2012 report on Rotorua youth identified that poor educational attainment, lack of family support, poor access to career advice and limited employment opportunities were barriers to education and employment (Careers NZ, 2012). As elsewhere, Bay of Plenty employers report that finding young people who are work ready and have good soft skills (communication, teamwork etc) is challenging.

Skill shortages

Skill shortages are an increasing challenge for the region because of changing technology and skills needs, the ageing population, and relatively small firm sizes.

The number of skilled vacancies in the region increased by 20.6 percent in the year ended December 2014 (Ministry of Business, Innovation and Employment, 2014g). There are general shortages in a wide range of areas, which include, among others, mechanics, technicians, middle management staff, project managers, ICT specialists, farm managers, forestry workers, and drivers.

While the Bay of Plenty's smaller proportion of working age people than the neighbouring Auckland and Waikato regions may contribute to the skill shortage, the relatively limited provision of local and regional tertiary training has been cited by businesses as one of the key issues.

Local employers can also have difficulty identifying future workforce development and training needs and difficultly competing with other regions in retaining and attracting staff (Ministry for Economic Development, 2011). This is attributed partly to the small scale of industries in the region and the low number of large employers, which can limit management capability and reduce career progression opportunities.

Limited tertiary education provision

Limited tertiary education provision in the region has been identified as a constraint on increasing formal qualification and skill levels in the Bay of Plenty. The region will need to focus on increasing the local tertiary education offering and its relevance to local industries, to provide a higher chance of increasing the number of local graduates for the local labour market. Increasing access and proximity to tertiary education, especially for lower socio-economic students and families positively influences aspirations and participation, and is supported through the BOPTEP and planned TTEP (Tertiary Education Commission, 2010).

The BOPTEP was expanded following a review of the region's tertiary education needs in 2010. Its aim is to enhance the region's tertiary education offering by providing pathways to higher education, increasing the range and level of qualifications, and linking on research with particular relevance to the region. The partnership's focus programmes are science-based and oriented to the region's key industries and needs including coastal/marine, primary industries, computer science and materials engineering.

Regional stakeholders are keen to reduce the number of young people who leave the region for popular tertiary education programmes offered elsewhere. They recognise that learners will still leave the region to access specialised or higher level education that cannot easily be provided in the region, but also that proximity to tertiary education influences tertiary participation (Tertiary Education Commission, 2010).

Surveys in 2007 and 2008 suggested that over half of the secondary students in the Western sub-region would study elsewhere primarily because the right programme was not available locally (APR Consultants Ltd, 2010).

Tertiary–industry engagement

The relationship between industry and tertiary organisations in the Bay of Plenty is similar to that for New Zealand as a whole. Feedback from employers in the region highlighted a lack of engagement and differing views on what is required to lift education and skills levels.

Industry increasingly requires graduates that have well developed core skills including, for example, basic knowledge of fabrication, electrical work, and project management. These core skills would represent a strong basis on which employers can build by providing company-specific training. The view expressed by some employers was that the polytechnics in the region do not teach the right skills for a commercial environment and that the education sector needs to align more closely with industry needs. Similar views have been expressed in other regions.

In contrast, the education providers see themselves as having wider responsibility for student's longer term career and development, beyond just responding to immediate industry needs. Sector representatives highlighted the challenge of engaging with smaller firms not represented by an industry body, and of firms that do not proactive consider how to address future skills needs.

These challenges are not specific to the Bay of Plenty. The Tertiary Education Strategy 2014–2019 prioritises improvements in the delivery of skills for industry, getting at-risk young people into a career, boosting the achievement of Māori and Pasifika students, improving adult literacy and numeracy, strengthening research-led institutions and growing international linkages (Ministry of Education, 2014c).

Opportunities

Tauranga Tertiary Education Precinct

The planned TTEP will be a significant development for Tauranga's city centre. A cost-benefit analysis suggests that the precinct will contribute to a regional GDP increase of one percent when completed. Much of this increase will be in Tauranga centre and the wider city and sub-region, which will benefit from higher skills levels, industry-tertiary research and ultimately productivity.

We consider that the precinct is a practical opportunity to strengthen industry-tertiary engagement through joint research, co-location and collaborative programme design.

Table 23 Assessment: Tauranga Tertiary Education Precinct

Criteria	Rating
Validity	Medium
Potential impact	High
Practicality	Medium
Regional significance	Medium
International orientation	Medium
Ability to leverage previous activity	Medium
Consistency with national priorities	High
Overall rating	**Medium**

The TTEP will be a campus of Waikato University. The precinct is a response to growing demand for tertiary education pathways and research in the region's key industries. The precinct presents an important opportunity to collaborate with industry and for developing education and training pathways that retain and attract more young people to the region, and support upskilling of the existing workforce.

The precinct will be developed in stages over the next twenty years. Stage One is planned to be open for the 2018 academic year and will have capacity for between 500–700 students.

Within two decades, the campus is expected to have the capacity for 1,500 students. Up to 20 percent of these could be from overseas, with the potential for some of the highly qualified international students to pursue employment in the region after graduation.

Cost benefit analysis suggests that the precinct will generate benefits of $188 million over the next 20 years. It is projected to deliver 600 additional jobs and train 4,000 graduates over this period (University of Waikato, 2014). Annual revenue generated in the region is estimated to be $133 million.

Tauranga City Council has committed land, and BOPRC and the Tauranga Energy Consumer Trust have committed $30 million in regional funds towards precinct construction. TEC is considering funding for programmes and activities.

Source: Bay of Plenty Polytechnic

The campus is intended to initially deliver marine, ICT and logistics education programmes and research. These are areas of identified regional need and where industry needs to partner with education and skills providers to identify and tailor provision to medium- and long-term needs.

Tauranga City Council can play a leadership role in working with regional and central government partners and private sector developers to develop infrastructure (including transport, streetscapes, and student accommodation) to support a growing student body and encourage co-location of firms around the education precinct.

Development of a youth/rangātahi education and skills strategy

Raising the education and skills levels of the Bay of Plenty's current and future Māori workforce will be a key enabler of regional growth and development. Various youth skills and workforce training initiatives are being implemented, targeted particularly at rangātahi/whanau in the Eastern sub-region, but also in other areas.

For example, the Youth Guarantee initiative, which includes six vocational pathways developed with industry, secondary tertiary programmes (trades academies and youth guarantee networks), a fees free scheme and STAR and Gateway funding, is being delivered in the region. National monitoring suggests that the initiative is raising NCEA Level 2 achievement and more learners are gaining Vocational Pathway Awards (Ministry of Education and Industry Training Federation, 2014).

The full range of initiatives being implemented should be monitored and reviewed to identify the most successful programmes in the region and build understanding of what works. Common indicators and measures can provide a shared platform for collective action by whānau, business and industry, communities, philanthropic organisations, Māori/iwi/hapū and government agencies.

The Bay of Plenty Tertiary Intentions Strategy recommends that a youth/rangātahi strategy is developed. This strategy could provide an overarching framework and focus for implementing

common priorities identified in the regional economic strategy and the Māori economic development strategy, and those identified by industry. The strategy also highlights the role of improved transitions (secondary, tertiary and employment) in increasing the flow of people with work ready skills into tertiary education and employment.

Our assessment is that focusing on lifting the education and skills outcomes of the region's young people is a key regional opportunity and that greater coordination, monitoring and evaluation through a youth strategy could have a reasonable impact. The key issue will be coordinating all the required players and delivering a strategy that actually results in the implementation of new or enhanced programmes.

Table 24 Assessment: Youth/rangātahi education and skills initiatives

Criteria	Rating
Validity	High
Potential impact	Medium
Practicality	Med-low
Regional significance	High
International orientation	Low
Ability to leverage previous activity	Medium
Consistency with national priorities	Medium
Overall rating	**Medium**

Other opportunities

Bay of Plenty Tertiary Intentions Strategy

The 2014 Bay of Plenty Tertiary Intentions Strategy, commissioned by the BOPRC and the region's EDAs, creates a framework for regional collaboration between education providers, industry, regional and central government to address tertiary education needs in support of the region's economic and social development.

The plan is well aligned to national tertiary priorities and is based on a review of international best practice (including for tertiary–industry engagement), a stocktake of existing regional activity, and extensive consultation, including with Māori/Iwi.

The Strategy recommends action in five key areas: collaborative leadership; improving Māori engagement and participation; improving secondary/tertiary/employment transitions; innovation for sustainable business and community development; and increasing international education. These recommendations are supported by sub-regional recommendations that are informed by local industry and workforce development priorities.

Opportunities for greater central government agency engagement and support for delivering the recommendations in the plan should be explored, particularly in facilitating greater tertiary-industry engagement (including through the TTEP) and Māori-led youth/rangātahi and workforce development initiatives (see above).

Relevant central government initiatives

- Tertiary Education Strategy 2014–2019.
- Youth Guarantee, Vocational Pathways, Trades Academies, STAR and Gateway funding.
- The Science and Society Project to lift science, technology, engineering and mathematics (STEM) literacy in society.
- Partnership Schools.
- Tertiary funding including student achievement component and other funds.
- MBIE's labour market information.
- Careers information, such as the Occupational Outlook report and online application.
- MSD Industry Partnerships, Youth Transition Service, social sector trials.
- He kai ke aku ringa.
- Māori and Pasifika Trades Training.
- New Zealand Apprenticeships and ITO-arranged industry training.
- Immigration New Zealand Skills Shortage Lists and Essential Skills programme.
- The Māori Education Strategy: Ka Hikitea 2013–2017.

Implications for stakeholders

For industry	• Work with TTEP developers to create a facility that is flexible and responsive to the needs of industry partners, and that encourages firms to co-locate with the precinct. • Increase the level of in-work training. • Develop the youth/rangātahi education and skills strategy in collaboration with other stakeholders. • Collaborate on the delivery of the Bay of Plenty Tertiary Intentions Strategy to ensure that regional tertiary education provision meets industry needs. • Consider jointly developing workforce development plans/roadmaps with tertiary education providers that support programme development and delivery models.
For Māori/iwi/hapū	• Identify and progress opportunities to build and strengthen Māori tertiary education and research through the BOPTEP and Bay of Plenty Tertiary Intentions Strategy. • Participate in the development of the rangātahi education and skills strategy. • Identify and work with wider stakeholders to deliver Māori-led initiatives to strengthen management capability, literacy, raise rangātahi educational success, improve education to work transitions, and align training to industry needs for workforce development.
For communities	• Encourage young people/rangātahi to realise their potential and remain in education, training, and employment, including through sharing careers information.
For local government	• Deliver the local government actions in the Bay of Plenty Tertiary Intentions Strategy, identifying responsibilities and providing leadership to ensure the best region-wide education and skills outcomes, and that recommendations to implement local priorities are delivered. • Tauranga City Council to work with regional and central government partners to develop supporting infrastructure for the tertiary precinct and encourage co-location of firms within the education precinct.
For central government	• Work with regional stakeholders to review youth/rangātahi programmes to build understanding of what works and agree common indicators and measures to inform collective action through a regional youth strategy. • Encourage tertiary sector engagement with industry at the TTEP. • Continue to support national education and skills initiatives delivered regionally.

Public agency support for the business sector

This study's brief has been to identify areas where the potential for economic growth is strongest. Numerous suggestions have been made regarding the types of initiatives and actions that would support commercial and industry opportunities. It will be up to local EDAs, in conjunction with local, regional and central government, industry organisations and private sector operators, to take the lead on developing an implementation strategy and action plan.

As far as the public sector contribution is concerned, it is important to not only look at what type of support is available, but also at how this support is provided in the region.

Coordination and facilitation

A significant number of central government initiatives and funding sources are available to firms and industries in the Bay of Plenty to support regional development. Through the BGA and Better Public Service Result 9, government has committed to ensuring that this support is accessible and supports industry priorities and needs.[29] However, the provision of those services in the region has been described by some of the businesses interviewed for this study as 'uncoordinated'. There were also views that although there is an array of funding support available, there is a lack of clarity about the differences between funding pools or how to access them. Firms in sectors with strong industry platforms or leadership typically find it easier to navigate multiple agencies and access support for business growth, while smaller firms and Māori entities were more likely to highlight un-coordinated programmes and barriers to accessing support.

Firms suggested that more leadership and better collaboration between government agencies could reduce transaction costs and avoid duplication of, for example, application processes between different agencies. Businesses suggested that if a project proposal or technology has been assessed as 'worthwhile' by one agency, it should not require the completion of another set of lengthy application documents to apply, for example, for funding provided through another agency. Firms also noted that representatives from one agency were not always aware of related initiatives provided by other agencies.

It may be possible to improve the coordination amongst central government support to firms in the Bay of Plenty region, for example through a 'one stop shop' regional office. Regional development staff could provide the link for businesses to all central government programme providers. The arrangement could be leveraged off the existing NZTE office and the local EDAs. Apart from assisting local businesses and industries, the joint focus should equally be on attracting investment to the Bay of Plenty from outside the region or from offshore. The costs and benefits of options for improving coordination should be assessed.

[29] Better Public Service Result 9 seeks to make business interactions with government easier. It establishes two targets: 1) to reduce business costs from dealing with government by 25 percent by 2017, through a year-on-year reduction, and 2) to establish a key performance ratings system similar to those used by leading private sector firms and which businesses can contribute to online from 2013, by 2017.

Consider coordinating the advice and support provided by relevant central government agencies in the Bay of Plenty through, for example, the opening of a 'one stop shop' regional office.

Research and development funding

Firms in the manufacturing sector in particular were of the view that central government needs to have stronger focus on research and development funding and how it is efficiently allocated. MBIE and Callaghan Innovation were viewed as having improved engagement and funding mechanisms, but there was concern that some groups – small companies and Māori entities in particular – are missing out because of the 1:1 matching funding requirements and minimum funding criteria. Smaller firms acknowledged the need for such criteria but suggested that applicants should be allowed to contribute more of their share of the funding in-kind.

Local government coordination

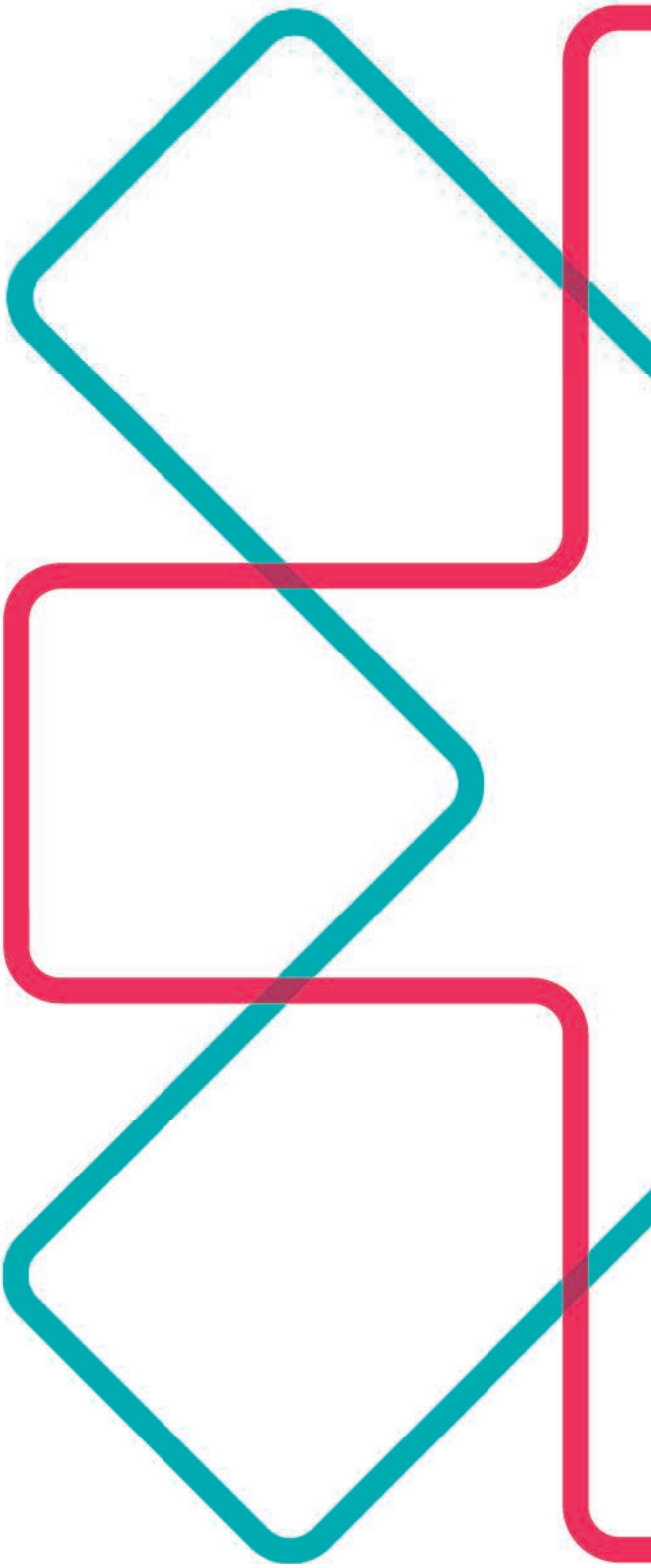
Local government in the Bay of Plenty is perceived by other regions and many stakeholders as having strong collaborative platforms that have delivered progress towards agreed regional goals and in support of inter-regional initiatives – for example on transport infrastructure and through the Bay of Connections Regional Economic Development Strategy. The Bay of Connections platform is also regarded as supporting strong private-public sector relationships that improve the region's business environment (Bay of Connections, 2014).

One area that firms highlighted as a priority for improved local government coordination is better alignment of consenting and planning rules to provide certainty and consistency across the region. While this challenge is not specific to the Bay of Plenty, it is a priority for local businesses because it can create unnecessary costs and uncertainty (Local Government New Zealand, 2014).

Implications for stakeholders

For local government	• Consider, in conjunction with central government, the establishment of regionally based 'one stop shops' where representatives of central government and local EDAs are co-located to provide coordinated regional development support. • Establish a region-wide project for local authorities to agree and implement consistent consenting and planning rules across the region.
For central government	• Consider, in conjunction with local government, the establishment of regionally based 'one stop shops' where representatives of central government and local EDAs are co-located to provide coordinated regional development support. • Consider a stronger central agency focus on attracting investment to the Bay of Plenty. • Review mechanisms for research and development and economic development funding for small companies.

APPENDICES



APPENDIX 1: ACKNOWLEDGEMENTS

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- Bay of Plenty Tertiary Education Partnership
- Beef + Lamb New Zealand
- Comvita
- Contact Energy
- Cucumber
- DairyNZ
- DANA Ltd
- Datacom Group Limited
- DMS Progrowers
- Eastpack
- Eastern Sea Farms
- Education New Zealand
- Enterprise Great Lake Taupō
- Extreme Boats
- Fonterra Co-operative Group
- FSP Holdings
- Grow Rotorua
- Hancock Forest Management New Zealand
- Heilala Vanilla
- Kiwifruit Processing Company

- KiwiRail
- Kōtahi Logistics
- Lake Taupō Forest Management Ltd
- Locus Research
- Mainfreight
- Māori Investments Ltd
- Ministry for Primary Industries
- Ngāti Awa Group Holdings Ltd
- Norske Skog Tasman Limited
- New Zealand Trade and Enterprise
- Page Macrae Engineering
- Plant and Food Research
- Plus Group Horticulture
- Port of Tauranga
- Pouakani Trust
- PowerSmart Solar
- Quayside Holdings Limited
- Red Stag Timber
- Sakalia Enterprises
- Scion
- Sequal Lumber
- Silver City Minerals
- Sport Bay of Plenty
- Surtees Boats
- Taupō Beef
- Taura Natural Ingredients
- Te Awanui Hukapak
- Tenon Limited
- Timberlands Limited
- Titanium Industry Development Association
- Titanox Developments Ltd

- Toi EDA
- Toitū Te Waonui Afforestation Initiative
- Toll Group
- Waikato Coastal Marine Field Station
- Whakatōhea Māori Trust Board
- Zespri International Limited

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