

ENVIRONMENT  
ECONOMICS  
EXPERTISE +

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**KAWERAU**





Global organisations committed to clean industry are constantly seeking new opportunities to expand their business to maximise profits while minimising environmental impact.

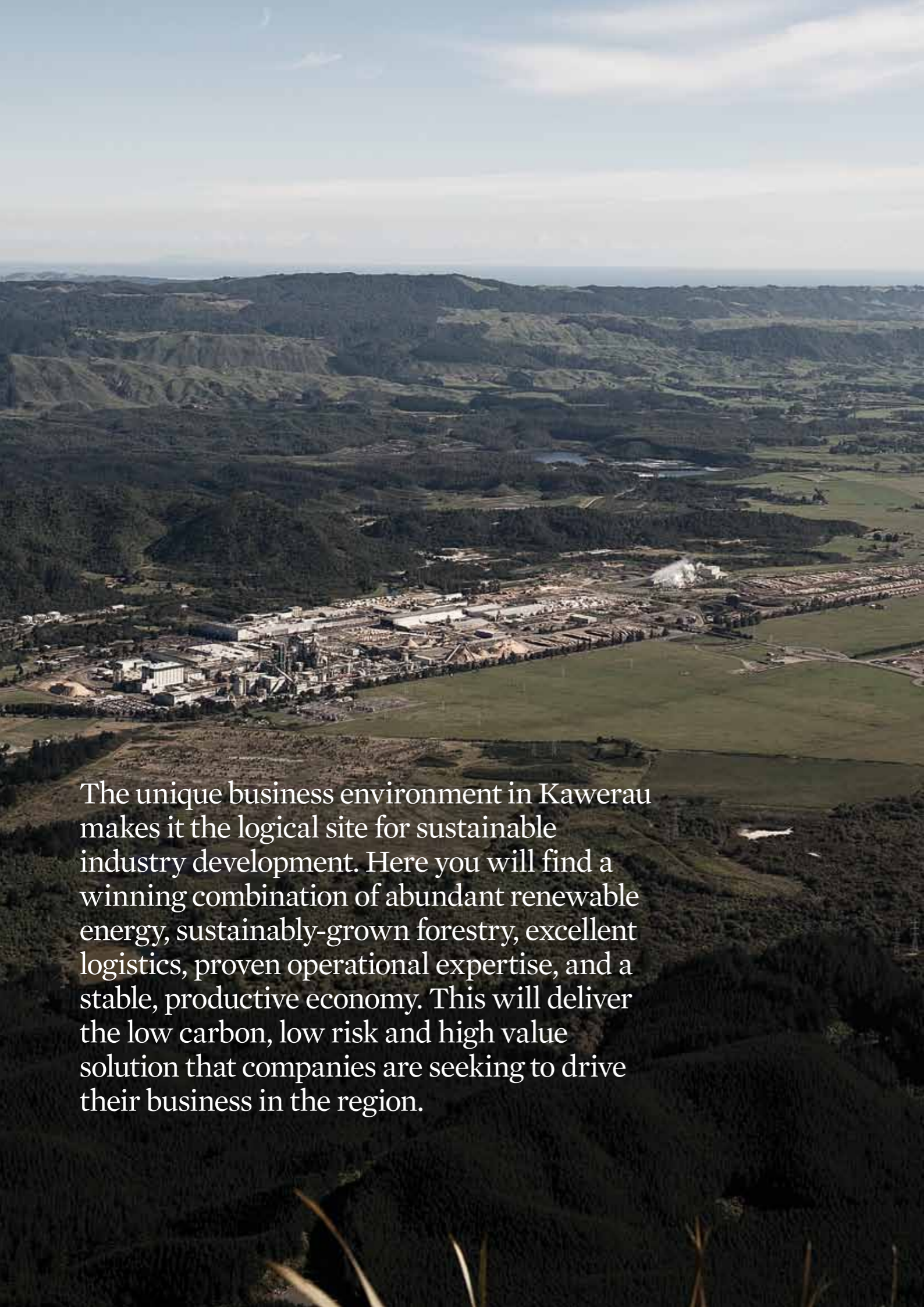
There's a place in New Zealand where a symbiosis for clean industry exists. A place with renewable resources, clean energy production, technical expertise, engineering and manufacturing knowhow and access to global markets.

It's a place offering a unique convergence of three dimensions vital to clean, profitable business: **Environment**; **Economics**; **Expertise**.  
Where is that place?

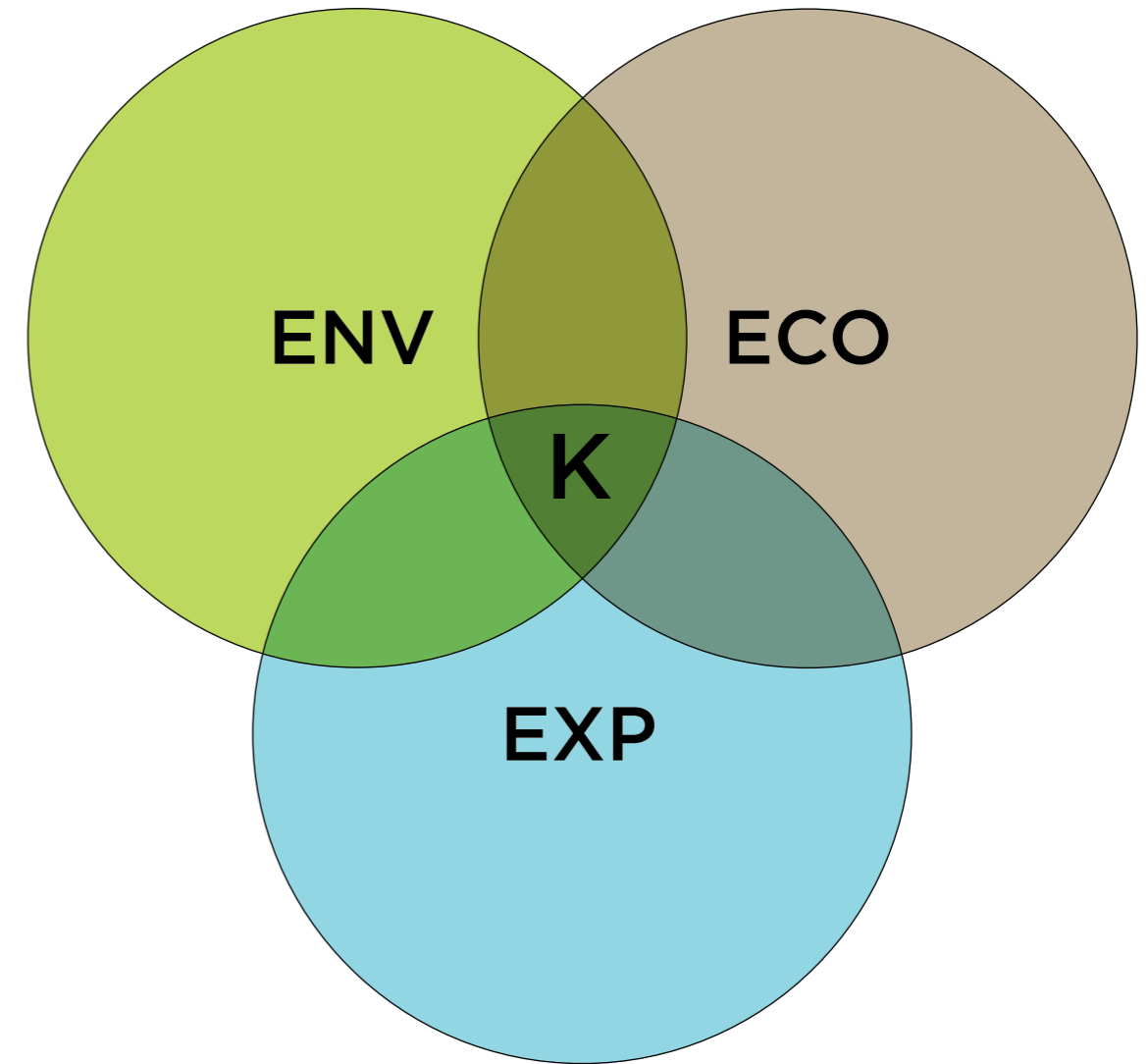
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The answer is Kawerau.





The unique business environment in Kawerau makes it the logical site for sustainable industry development. Here you will find a winning combination of abundant renewable energy, sustainably-grown forestry, excellent logistics, proven operational expertise, and a stable, productive economy. This will deliver the low carbon, low risk and high value solution that companies are seeking to drive their business in the region.



#### **Kawerau**

Centrally located in the heart of the Bay of Plenty and surrounded by an abundance of natural resources and plantation forests, Kawerau is a well established wood processing centre supported by a highly skilled and internationally competitive engineering and maintenance service cluster. Kawerau is known for its sense of community, wonderful climate, abundance of natural resources and its convenient location near the port city of Tauranga. The Kawerau District offers a unique lifestyle and business environment.

#### **Environment**

The ability to manufacture products with low environmental impact offers industry and businesses operating in Kawerau a number of unique competitive advantages – economic, environmental and social. With an abundance of sustainable natural resources and renewable energy, and a history of environmental stewardship, Kawerau's commitment to the environment is evident.

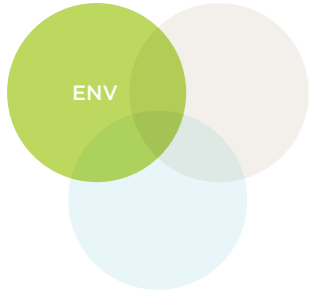
#### **Economics**

Kawerau's strengths in clean energy production, industrial engineering and effective infrastructure is all underpinned by New Zealand's culture of innovation, efficient free market economy and solid stable business environment. With a skilled and deregulated labour base, sound employment and labour laws, and active government support of new industry and clean technology, the World Bank recently ranked New Zealand as the easiest country to do business.

#### **Expertise**

Kawerau demonstrates a depth of experience and expertise in a number of key areas including low carbon manufacturing, transport and engineering. Existing industrial synergies, illustrate how organisations working together, result in excellence, efficiency and effectiveness. Industries are supported by highly skilled design, construction and maintenance engineers, renewable energy providers and the local community.





Mighty River Power in Kawerau is committed to supplying dependable green geothermal energy through our 100 megawatt plant. The plant has been running for three years and was developed in partnership with local iwi\* and Putauaki Maori Land Trust. Working together we have learnt a lot about sustainability. We have learnt how to carefully treat the resource and develop it well.

SPENCE McCLINTOCK / MIGHTY RIVER POWER /  
FIELD MANAGER KAWERAU

**Geothermal energy - New Zealand's most reliable renewable energy source**

Geothermal systems are a clean, abundant and reliable source of renewable energy. Use of geothermal energy for electricity generation or for direct use replaces non-renewable and more polluting resources. Installed geothermal electricity capacity worldwide is equivalent to the combustion of nearly 30 million tonnes of coal.

The Kawerau Power Station is a 100-megawatt geothermal power plant located just outside Kawerau. Following its completion in July 2008 the station boosted the country's geothermal capacity by 25

percent and significantly increased local generation capacity. The plant currently meets one third of residential and industrial demand in the region, and provides cost certainty to local industry.

The Kawerau field is one of the largest in New Zealand. In addition to power generation, the field supplies process steam for the industrial wood fibre processing site which four companies share – Norske Skog Tasman, SCA Hygiene Australasia, CHH Tasman, and CHH Wood Products. The steam is used for drying of wood, the production of pulp, and the production and drying of paper and tissue products. Norske

Skog Tasman is the largest user of geothermal heat for industrial use anywhere in the world.

New Zealand has a formidable history and world renowned expertise in geothermal power generation. The country pioneered large scale geothermal power generation over 50 years ago with the opening of the Wairakei geothermal power plant. These days the development of geothermal resources is experiencing a renaissance with some of the world's largest developments taking place in New Zealand.

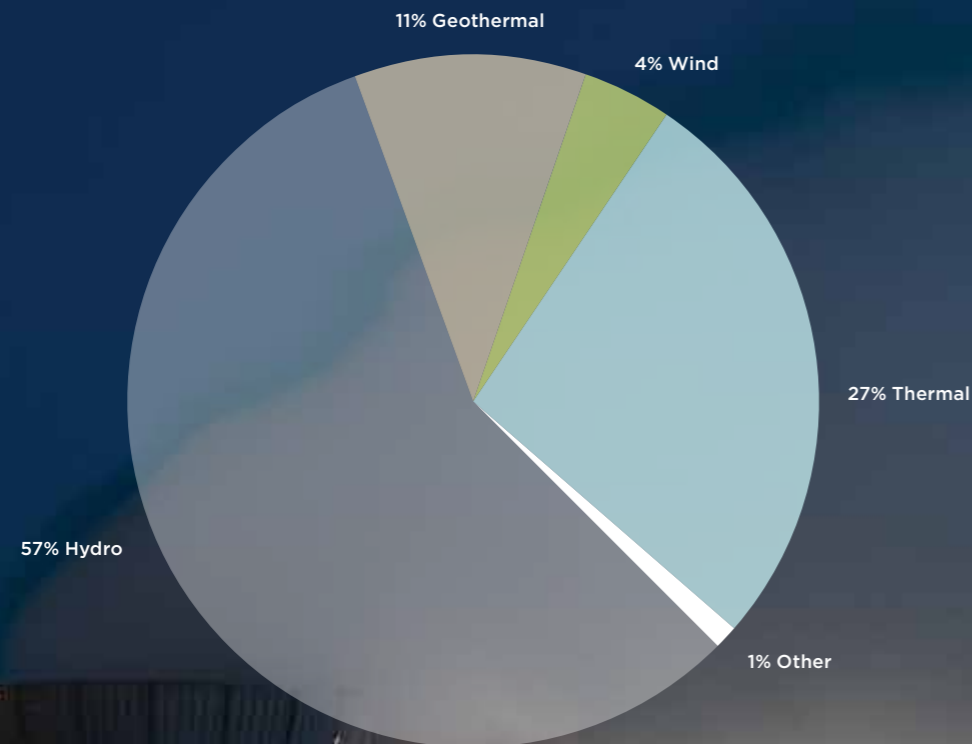
\*Iwi is the name for a Maori tribe. Maori are the indigenous people of New Zealand.





## NEW ZEALAND ELECTRICITY PRODUCTION BY FUEL TYPE

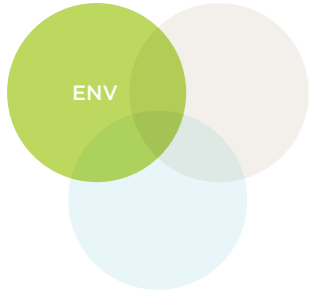
SOURCE: MINISTRY OF ECONOMIC DEVELOPMENT DATA FILE 2010



Over 70% of New Zealand's electricity generating capacity comes from renewable sources. By 2025, that figure is targeted to rise to 90% and new generating capacity will come from renewable sources such as geothermal, wind, biomass and marine.

New Zealand has many decades of experience in generating electricity from our abundant hydro resources. We also have a significant geothermal resource with a resurgence of interest and investment in geothermal power. New Zealand has an exceptional wind resource. This is being harnessed throughout the country with nine wind farms already operational and new farms being developed or planned in many regions.





We've got one of the very best carbon footprints for a paper manufacturing site in the world. The fibre we use is from the residues of a renewable plantation forest, and by using geothermal steam and geothermal electricity to process the residues we are unique in the world. I haven't come across a better place to do business than here. Kawerau has it all.

PETER McCARTY / NORSKE SKOG TASMAN / MILL MANAGER

#### Sustainable forestry resources

The central North Island and Bay of Plenty are the principal forestry growing and harvesting regions in New Zealand. The Kaingaroa Forest, which borders Kawerau, is the largest plantation forest in the southern hemisphere. The wood processing industry in Kawerau was established in the 1950s. All wood used in the wood processing industry in Kawerau is from sustainable forestry.

Norske Skog, one of the world's largest suppliers of newsprint, has a major plant in Kawerau to take advantage of this strategic resource. Norske Skog Tasman primarily uses

the lower value part of the tree, as well as residues from the forest.

Norske Skog Tasman has worked continuously over the last ten years to reduce emissions and discharges. The company believes that industry must participate actively in the process to control climate change. Norske Skog has been a pioneer in setting a global industry standard for social responsibility and worker-management relations. They were an early adopter of the ten principles in the UN Global Compact.

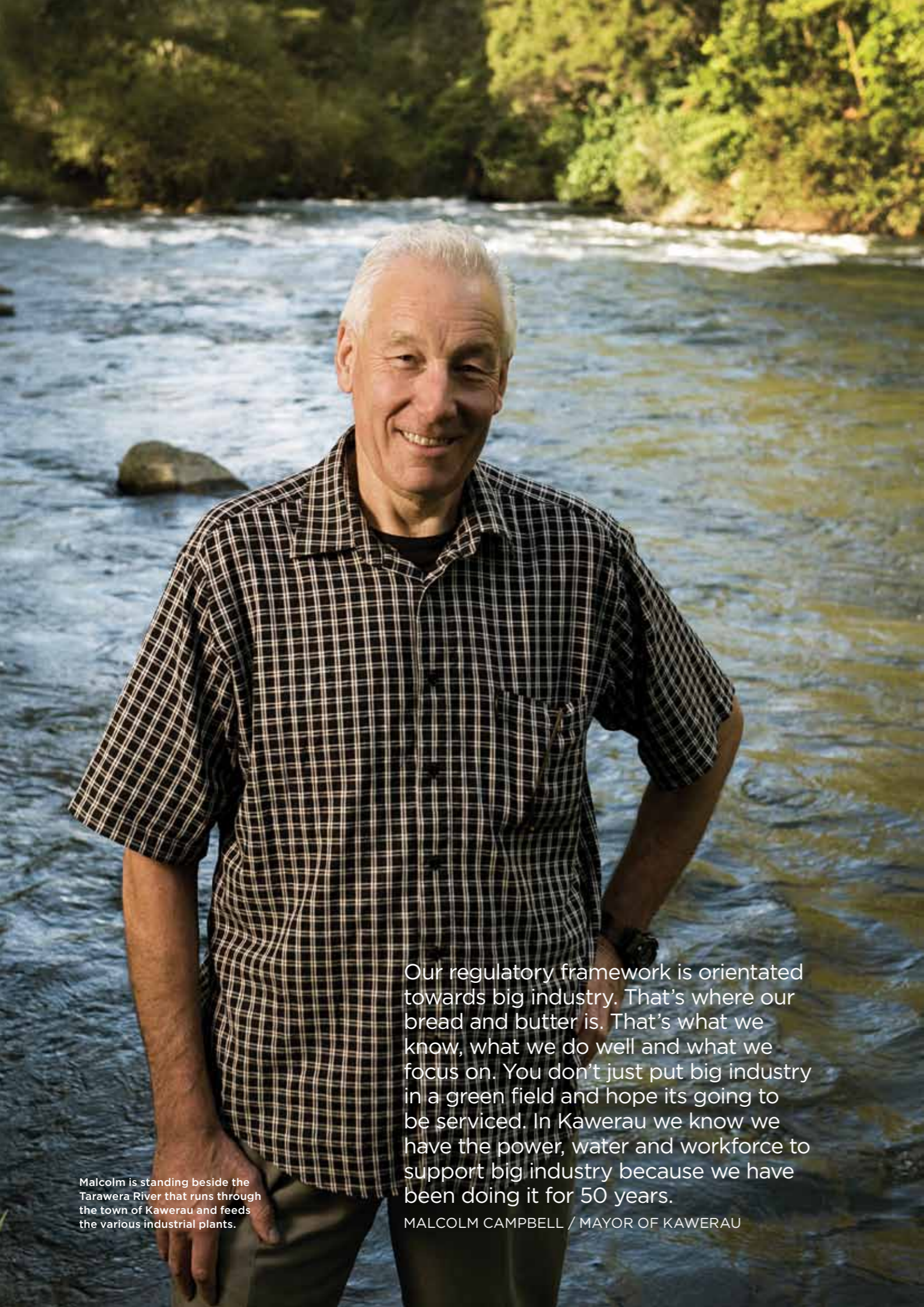
An extensive re-engineering and investment programme over the last ten years has made Norske

Skog Tasman one of their lowest cost and most profitable mills. The company continues to look at ways to drive productivity and profitability through investigating new commercial opportunities. These include the processing of wood fibre residues into high value products, and the value added use of waste heat and by-products from effluent.

Norske Skog's Kawerau mill is an excellent example of commitment to sustainability.







Malcolm is standing beside the Tarawera River that runs through the town of Kawerau and feeds the various industrial plants.

Our regulatory framework is orientated towards big industry. That's where our bread and butter is. That's what we know, what we do well and what we focus on. You don't just put big industry in a green field and hope its going to be serviced. In Kawerau we know we have the power, water and workforce to support big industry because we have been doing it for 50 years.

MALCOLM CAMPBELL / MAYOR OF KAWERAU

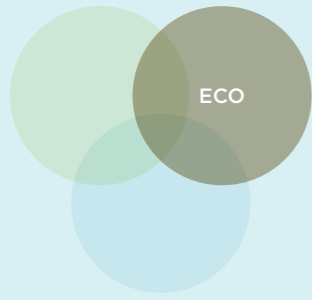


Beverley is standing on land dedicated for industrial use at the foot of Mt Putauaki.

We want our industry partners to be able to reduce waste by seeing that whatever might have been waste is actually part of the product that they can harvest. This is what we'd like to see. This is what we believe will reduce environmental impact and will increase productivity.

BEVERLEY NAWARIHI HUGHES PAHIPOTO /  
MANAGER, ENVIRONMENT NGĀTI AWA





Exporters can face longer distances to market, but in terms of relative competitiveness with Australian ports we're 40% more competitive in productivity and 40% more competitive in price.

MARK CAIRNS / PORT OF TAURANGA / CHIEF EXECUTIVE OFFICER



**Infrastructure**

Extensive rail, road and port infrastructure in the Kawerau region allows for cost effective and reliable transport to market destinations across the globe. The Port of Tauranga, only 90km from Kawerau, is currently the most productive port in Australasia and is ahead of Singapore by 14 percent based on gross crane productivity.

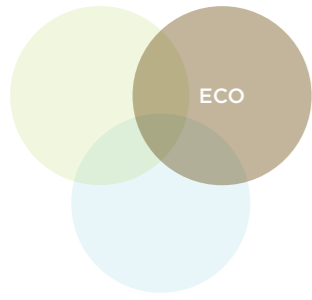
A planned \$30 million extension to the Tauranga Wharf terminal and crane facilities will allow the handling of larger container ships and an increase in productivity. Tauranga will become one of the few port calls for the larger container ships able to carry 7000TEUs.

The city of Tauranga is a dynamic commercial centre. Tauranga is being developed as New Zealand's

key transportation, distribution and logistics hub. The port has ample land to sustain growth. A planned integrated logistics park, smart transport corridors and a wide choice of suitable commercial property make Tauranga an ideal location for distribution to international markets.







The World Economic Forum is increasingly recognising sustainability as the new business model. New Zealand provides a perfect opportunity for many global companies to position their operations strategically, because it supports their sustainability branding. New Zealand provides companies with a real low carbon option for production.

DAN ATKINS / SHAPER GROUP / MANAGING DIRECTOR

**Industrial symbiosis**

Industrial symbiosis is a relatively new term to describe collaboration between different industries for which the geographic proximity of each increases the viability and competitive advantage of the other.

It involves the exchange of materials, energy, water, by-products, services, knowledge, intellectual property, social capital and networks to reduce resource costs, increase revenues and create new business opportunities.

The wood processing industry in Kawerau has essentially been

practicing industrial symbiosis for a number of years. The region's industrial companies actively participate in the sharing and provision of resources while promoting sustainability and environmental stewardship.

Dan Atkins, an industrial symbiosis specialist, at Shaper Group, believes that Kawerau can become a world leader in industrial symbiosis by not only leveraging its existing green credentials and synergies between industry, but by focusing on a range of new opportunities to create value for businesses in the region.

Shaper Group is undertaking a project for the New Zealand Government to use industrial symbiosis to attract new investment to the region. They are working with a wide range of stakeholders from business, community and local agencies. Some of the opportunities identified include the conversion of forestry and processing residues to high value products including biofuels, the creation of high value products from waste, and the use of low grade waste heat for other commercial activity such as food production.







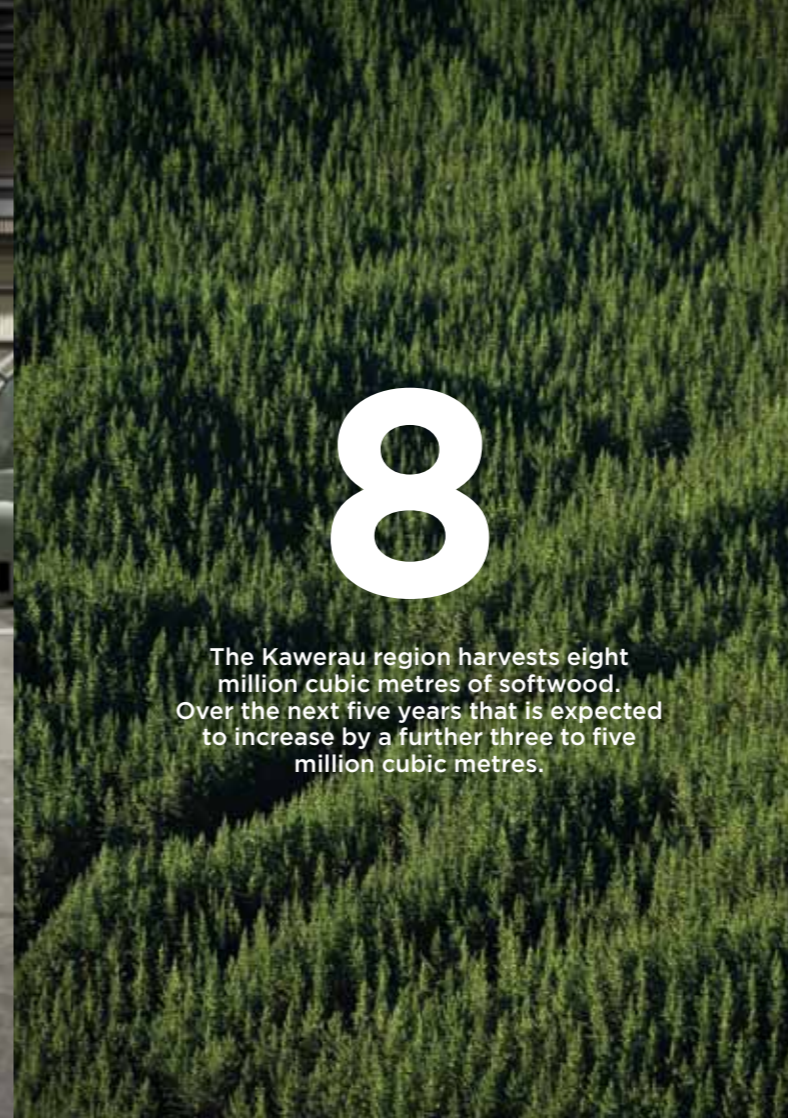
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The Norske Skog Tasman mill in Kawerau is the only mill in the world using 100% geothermal steam to produce newsprint.



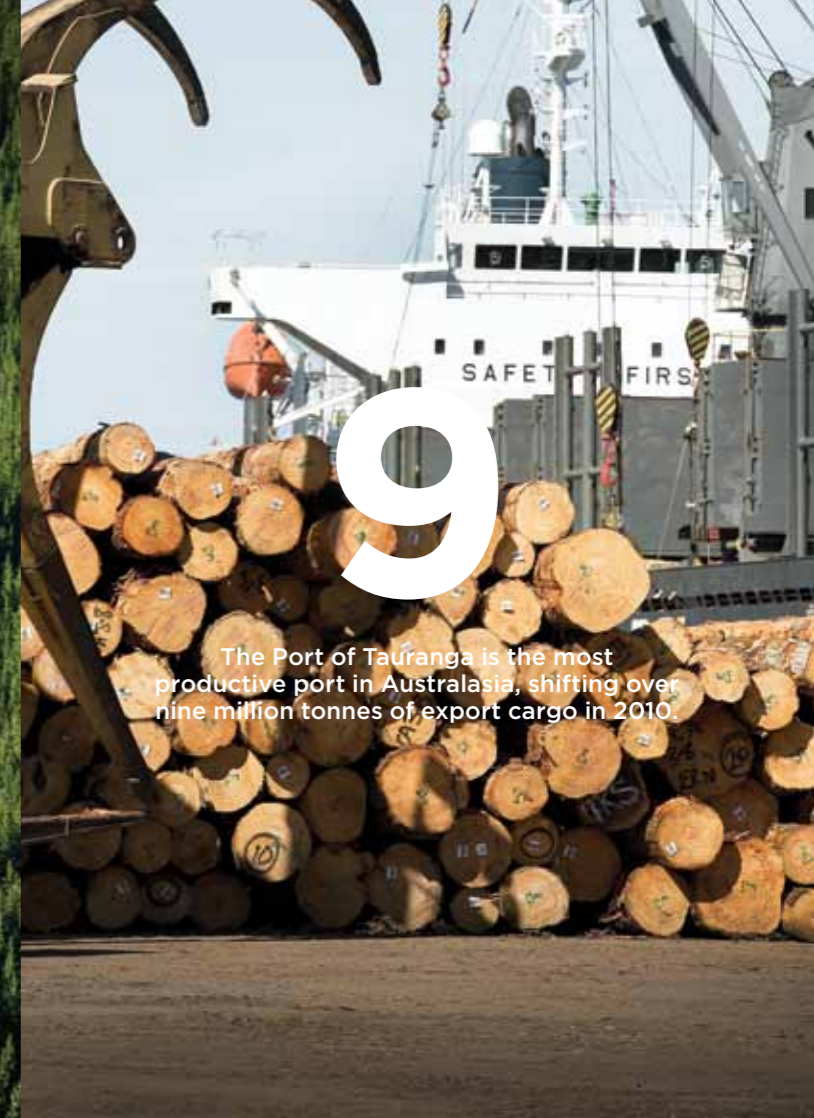
# 10

Allied Industrial Engineering took only ten weeks to refurbish an entire geothermal turbine, one sixth of the time it would have taken the original manufacturer.



# 8

The Kawerau region harvests eight million cubic metres of softwood. Over the next five years that is expected to increase by a further three to five million cubic metres.



# 9

The Port of Tauranga is the most productive port in Australasia, shifting over nine million tonnes of export cargo in 2010.



# 3

Plantation forest trees grow up to three times faster in New Zealand than the same trees would in other environments.



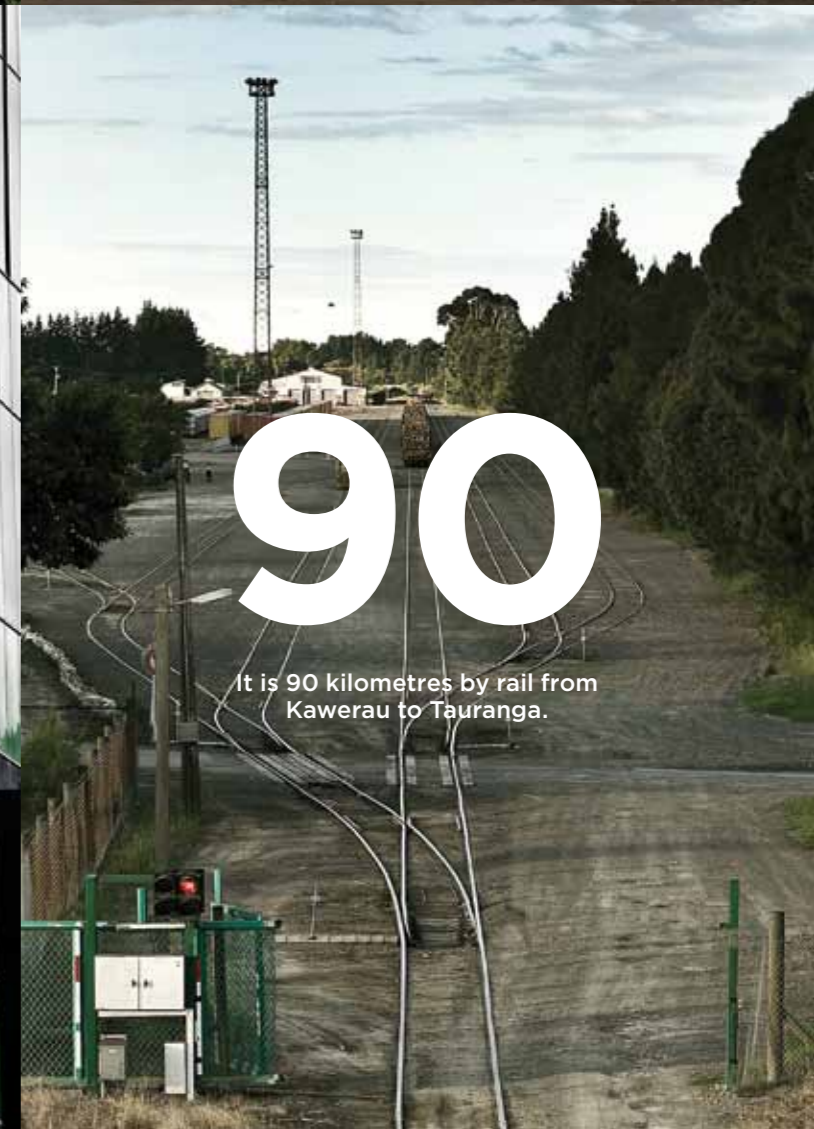
# 30

The Port of Tauranga are investing \$30 million to extend facilities to accommodate larger container ships.



# 1

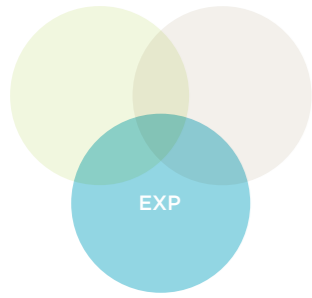
New Zealand is ranked first by the World Bank for protecting investors.



# 90

It is 90 kilometres by rail from Kawerau to Tauranga.





The technical expertise that you find in Kawerau is second to none. We have highly skilled engineers and a large pool of support contractors who have generations of experience and innovative thought processes around heavy industry. There have been many occasions where we have re-engineered a piece of plant or machinery beyond the capabilities of the original equipment manufacturer.

JEVON PRIESTLY / ALLIED INDUSTRIAL ENGINEERING

#### Heavy Engineering

There are a number of well established heavy engineering companies in Kawerau that support industry. One such company is Allied Industrial Engineering (AIE).

AIE specialises in component manufacturing, maintenance and re-engineering services. These services include machining, balancing, fabrication, fitting, design, draughting and project management.

With modern Computer Numerical Control (CNC) milling and lathe ability, AIE has the capacity to accurately machine complicated three-dimensional shapes more cost effectively than conventional machines can achieve.

AIE has a highly skilled and experienced workforce and is committed to continuous development and improvement.

AIE is recognised internationally for its heavy engineering expertise and its work ethic.

**The skills and approach to the work shown by Allied Industrial Engineering would match any I have encountered in the southern hemisphere.**

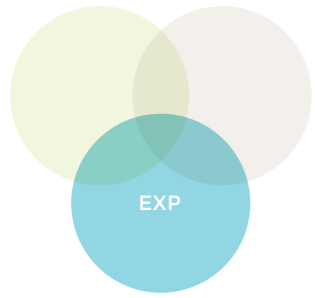
JOE PARRY / PARRY CONSULTANTS, AUSTRALIA. **PROJECT:** NORSKE SKOG TASMAN OVERHAUL OF UNIT 2 GENERATOR ROTOR. **We were absolutely**

**staggered by the level of commitment and professionalism demonstrated by the AIE team. The quality of workmanship and accuracy, as well as attention to detail and a friendly approach to work was impressive.**

STEVE CLOVER / THE CHURCHILL MACHINE TOOL COMPANY LTD, UK. **PROJECT:** CHURCHILL GRINDER REFURBISHMENT.







The Kawerau and Nga Awa Purua geothermal projects were both completed ahead of due dates and under budget, and are both producing significantly more power than expected. We refer to this as the 'triple crown of achievements'. This success is testament to a mix of our expertise, and the flexibility, willingness to learn and collaboration of our local partners.

SEAN MCLEOD / SUMITOMO NZ LTD / GENERAL MANAGER

Sumitomo was the engineering, procurement and construction contractor for Mighty River Power's most recent geothermal developments.

#### Technical expertise

Kawerau's industry is supported by a highly skilled and internationally competitive engineering and maintenance service cluster. Based in the town, a diverse and complementary range of businesses provide support for the forestry, energy, wood processing and pulp and paper industries. When undertaking major new construction projects, these companies can be called upon, along with engineering and contracting companies from the wider region to support international companies to ensure that projects come in on time and budget.

Kawerau and the wider region operate a range of specialist industry training programmes to ensure that its workforce is highly skilled and has current operational knowledge.



New Zealanders, particularly in Kawerau, have an amazing can-do attitude. For example the information technology systems that we use here are ones that we have built in-house. They give us a competitive edge and that just makes us better at doing what we do.

JACOB KAJAVALA / KAJAVALA FORESTRY / MANAGING DIRECTOR



For Ngāti Tuwharetoa it's about embracing new industries. It's seeing opportunities and working with industry to achieve outcomes that focus on the most efficient use of the resource.

ANTHONY OLSEN / CHAIRMAN / NGĀTI TUWHARETOA HOLDINGS



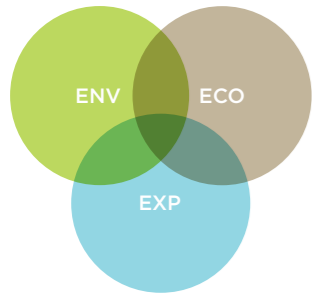
Umapokapoka Hot Springs in Kawerau

Most mills in the world have an oil or coal powered boiler. We are blessed here in this part of the world with natural geothermal steam coming out of the ground. No fossil fuel, no coal, and very little carbon. Amazing!

MIKE GOMMANS / NORSKE SKOG / PROJECT MANAGER







New Zealand's competitive edge for the next 50 years is not cheap labour, it's environmental stewardship. It's the clean technologies that the world is going to crave.

We're talking about a win-win situation. By moving to this pathway you're going to have better environmental outcomes and lower carbon emissions. At the same time industry will grow wealthier not poorer.

I've looked everywhere around the world for places which have this perfect storm of opportunity and Kawerau is such a place.

DR BEN McNEIL / THE UNIVERSITY OF NEW SOUTH WALES, AUSTRALIA / CLIMATE SCIENTIST AND ECONOMIST

#### Industrial symbiosis

Dr Ben McNeil is the author of "The Clean Industrial Revolution". The central theme of the book is that those countries that embrace the fundamental shift to a low carbon global economy will be the most prosperous of the 21st century.

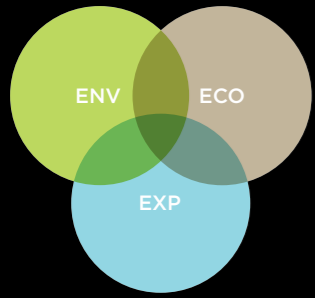
As the world starts to put a price

on carbon pollution and value energy conservation it will be nations that embrace this that will prosper through low carbon exports and foreign investment. Dr McNeil believes that the nation with the largest natural advantage to capture these economic opportunities in the developed world is New Zealand.

Dr McNeil undertook research for the New Zealand government to identify specific opportunities to attract international investment to this country. His work logically led to Kawerau. For Ben, the clean industrial revolution starts here.







Ngāti Awa would embrace and look after you and say 'Haere Mai. Welcome!' This is the right place to invest in. We want you to come to our shores. We want you to be part of our rivers, part of our mountain and our community.

POUROTO NGĀROPO / DEPUTY CHAIRMAN OF  
TE RŪNANGA O NGĀTI AWA





In the age of industrial evolution and with a move towards sustainable industry, there is a small town in the heart of Bay of Plenty already well ahead of the pack. Boasting a number of strengths in clean industry, Kawerau leads the way in the development of future-aware technologies that minimise impact on the environment.

Kawerau's strengths in clean energy production, industrial engineering and effective infrastructure are all underpinned by New Zealand's culture of innovation, efficient free market economy and solid stable business environment. With a skilled and deregulated labour base, sound employment and labour laws, and active government support of new industry and clean technology, the World Bank recently ranked New Zealand as the easiest country in which to do business.

Kawerau has the **environment**. Kawerau has the **economics**. Kawerau has the **expertise**.

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The answer is Kawerau.





