

Strategic Science Investment Fund (SSIF) Case Study 2018-19
Platform 1 – Geological Resources

Tapping in directly to geothermal heat

GNS Science is a key player in a sector-wide initiative to increase the use of geothermal direct heat in New Zealand. One of the aims is to reduce the reliance on fossil fuels, particularly in industrial settings, and make the country's energy use greener and more sustainable.

At present, New Zealand uses about 9 Peta Joules (PJ) of energy a year from direct heat from geothermal resources. Our aim is to increase this by more than 30 percent by 2030.

Direct geothermal heat is used successfully in timber drying, commercial-scale glasshouses, milk processing, tissue and paper manufacturing, aquaculture, honey processing and bathing. There is considerable scope for further uptake.

Increasing uptake and creating jobs

In partnership with the New Zealand Geothermal Association, we have developed a Geoheat Strategy (2017 to 2030) that sets out steps to build steadily towards an additional 7.5 PJ in primary geothermal energy use. The strategy development work was funded through the SSIF Programme 'New Zealand's Geothermal Future'.

The strategy notes that benefits will accrue by increasing the 'depth of understanding' in industries which may not fully appreciate the advantages of using a renewable energy source rather than fossil fuels. It focuses on the higher temperature central North Island and Northland geothermal resources but doesn't discount lower temperature resources in other regions.

As well as increasing the amount of geothermal used by industry, the initiative is seeking to create about 500 new jobs in regional New Zealand.

GNS Science has worked with the Bay of Plenty Regional Council's economic development agency, Bay of Connections, and with the Taupō District in promoting direct geothermal use as an enabler of regional economic development.

Action is happening

Over the past 18 months we have developed an Action Plan to drive activity and set up an Action Group organised by GNS Science which meets every two months.

This group of 'like minds' has a wide cross-section of industry players including Bay of Connections, Mercury New Zealand, Contact Energy, New Zealand Geothermal Association, and Tauhara North No. 2 Trust. It focuses on activities to help connect potential users who may establish new or modified enterprises using geothermal energy directly.

Our involvement has helped to socialise the Geoheat initiative and we provide leadership, organisational and technical assistance.

New businesses using geothermal directly

We are excited that two new enterprises have recently joined the list of those benefitting from direct geothermal use. Craft brewing operation Rogue Bore Brewery is scheduled to start production in early 2020. Based in the heart of the Wairakei geothermal steamfield just north of Taupō, it will produce beer that is brewed and carbonated using 100 percent geothermal energy.

Geo40 is the first company in New Zealand to successfully extract silica from geothermal fluids in a commercial demonstration plant. Silica produced from Geo40's plant at Contact Energy's Ohaaki facility is being sold for use in consumer goods such as tyres, paint and building materials.

This provides an environmentally sound source of silica that would otherwise need carbon-intensive energy to produce. They have recently received a Provincial Growth Fund grant of \$15 million to assist in enlarging production seven-fold in a commercial operation.

Looking ahead

While the emphasis is currently on promoting commercial and industrial use, there is also potential for growth in domestic use.

Achieving the goals of the Geoheat Strategy will:

- help meet New Zealand's energy needs from renewable sources
- contribute to economic and social development in regional New Zealand
- increase renewable and clean energy use, helping meet our 2030 greenhouse gas reduction commitments.

For more information

See: <https://nzgeothermal.org.nz/geoheat-strategy-for-aotearoa-nz-2017-2030/>