

TRANSITIONING TARANAKI TO A VOLCANIC FUTURE

New Zealand universities have been supporting research on the Taranaki volcano for many years at a relatively limited level. In March 2019, our university research partners, led by Auckland University, submitted a major funding application to the MBIE Endeavour Fund. The application was successful.

The MBIE Endeavour Fund “supports ambitious, excellent, and well-defined research ideas which, collectively, have credible and high potential to positively transform New Zealand’s future in areas of future value, growth or critical need”. Applicants must request at least \$500,000 a year for three to five years.

MBIE received 414 applications for funding from the 2019 Endeavour Fund, and 71 were approved. The total approved for this project, \$13,676,785 plus GST over five years, was the second largest grant from the fund this year.

This funding is in addition to already allocated funding from the Resilience to Nature’s Challenge rural and volcanic streams of approximately \$1 million over five years.

New Zealand’s risk management and resilience-building practices have been strongly shaped by a pattern of static hazards and disaster cycles that are sequential and orderly (i.e. risk reduction, readiness, response, then recovery).

Transitioning Taranaki to a Volcanic Future will force a radical rethink of this approach. The project will tackle the problem “What if a hazard event started and never stopped?” The historic record for Taranaki shows that eruption episodes could last for decades or longer, response and recovery becoming disordered and merged. In Taranaki, the regional economy, and those downwind in an ash fallout zone could face daily or weekly disruptions of transport and energy, poisoning of waterways, drinking water and pastures or crops. This will be accompanied by fatigue and fear.

This project aims to protect economic growth by providing tools and capabilities for sectors such as agriculture, tourism, and infrastructure, as well as governance practice to transition in this context.

In summary this project should assist the Taranaki CDEM group to:

- Better predict when an eruption is imminent and make evacuation decisions.
- Understand how each eruption or period of unrest is likely to develop.
- Know what the impacts of each type of eruption are likely to be on infrastructure, people and the economy.
- Make better decisions during responses and recovery phases.
- Understand and help the region to adapt and thrive during long periods of unrest/eruptions.

The outcomes of the project will directly feed into the next Taranaki CDEM Volcanic Response/Recovery Plan project due to begin in July 2020.

Research Aims

The project will develop new science in five areas:

- Creating new decision-support processes for adapting to ongoing disruption under deep uncertainty.
- Developing a socioeconomic modelling toolkit to forecast local, regional and national impacts and considers ongoing changes in hazards and consequences, and adaptation strategy.
- Reviving and building on Mātauranga Māori/Mātauranga-ā-iwi knowledge to support Māori business and community adaptation.
- Constructing new statistical frameworks for probabilities that integrate multiple hazards and apply potential variables during dynamic, long-term hazard episodes.
- Addressing a fundamental scientific weakness in the global evaluation of volcanic hazards, by discovering specific geochemical or geophysical indicators that have predictive power of volcanic potential, which is timely for communities and business.