

Indigenous Participation in Geothermal Projects: Learnings from Aotearoa New Zealand

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ABSTRACT

Māori, Aotearoa New Zealand's indigenous people, have a recognized and powerful constitutional role in New Zealand society, and a critical and increasing role in the national economy. Since the early 1900s, access to Māori owned land and the geothermal resource beneath, has been sought for power generation. Māori and their organizations have participated in a range of ways in such developments, from landlords to equity owners, providing substantial returns for Māori whanau (family groups) with commercial interests in these projects.

But Māori-owned businesses are not only motivated by financial outcomes; they are also driven by the tikanga (philosophies and principles) inherent in Māori belief systems. Financial goals must be balanced with social, environmental and cultural aspirations. Creating wealth is not seen as an end in itself. Māori are driven to invest in projects that provide intergenerational prosperity, and to care for the sustainability and health of the resources and environment they are responsible for. This core principle of 'kaitiakitanga' (guardianship) strongly aligns with geothermal reservoir management necessary for long-term (30+ years) sustainable commercial operation, the decarbonization of manufacturing, and catalyzing economic development and employment opportunities. The social benefits of these projects (including electricity security) then extend more broadly to the local communities and the region within which they reside.

This paper provides an actionable guide for indigenous groups on how to participate in geothermal projects, beginning with critical internal pre-work before engaging with developers. It is also for developers to grow their knowledge and capacity to effectively and appropriately engage with indigenous groups.

1. Tīmatanga kōrero | Introduction

E tū ki te kei o te waka, kia pakia koe e ngā ngaru o te wā

Stand at the stern of the canoe and feel the spray of the future biting at your face

Māori have a domestic resident population of 978,246 ca. 19.6% of the general population (Statistics NZ, 2024). Demographically, the Māori population is relatively young, with 70% aged less than 40 years compared to 50% for non-Māori. Importantly, the Māori population is growing at approximately more than triple the rate of non-Māori (Statistics NZ, 2024).

The Treaty of Waitangi is New Zealand’s founding document. Signed on the 6th February 1840, the Treaty is an agreement made between the British Crown¹ and Māori rangatira (chiefs) to found a nation state and build a government in New Zealand.

Referenced in Acts of Parliament, and acknowledged as a part of New Zealand’s common law, the Treaty reflects the partnership contemplated between Māori and Crown. Set up by the Treaty of Waitangi Act 1975, the Waitangi Tribunal is a permanent commission of enquiry that makes recommendations on claims brought by Māori relating to Crown actions that breach the promises made in the Treaty of Waitangi.

Traditional Māori social structures consist of Iwi (tribes), Hapū (sub-tribes) and whānau (extended families). They are held together by kinship with each other and a shared common ancestor.

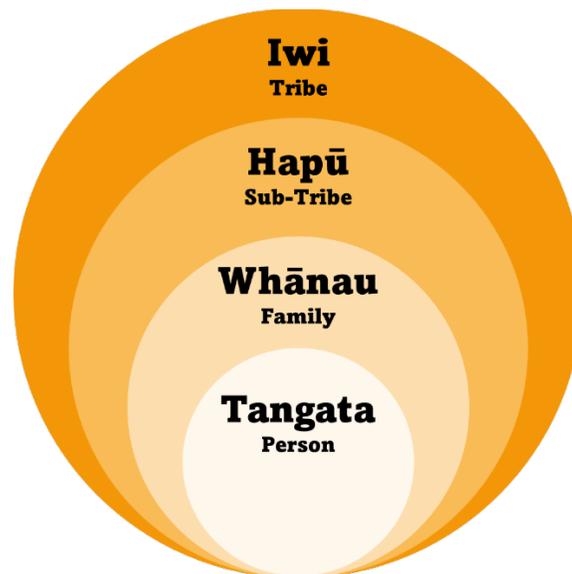


Figure 1. Māori social structures.

Māori-owned businesses are not only motivated by financial outcomes, they are also driven by philosophies and principles inherent in Māori belief systems i.e. they need to balance financial goals with social and cultural aspirations. Creating wealth is not seen as an end in itself (Blair *et al.*, 2018).

A core tikanga is the principle of ‘kaitiakitanga’; the exercise of guardianship, of natural resources such as the land, sea and waterways, as well as flora and fauna and of people. Kaitiakitanga requires that sustainability and environmental protection is valued and prioritized. As kaitiaki (guardians of natural resources), those in leadership roles are responsible for protecting (and/or growing) resources for future generations. Kaitiakitanga reinforces why Māori are less likely to sell land, especially where they are mana whenua, that is, where they have customary authority.

¹ The meaning of “the Crown” varies according to the context in which it is used. The premise is that it was the Crown, through Queen Victoria, that signed the Treaty of Waitangi with Iwi Māori. This notion of an ongoing pact derived from that partnership of Māori and Crown has remained with the reference “Crown” transferred to subsequent New Zealand Governments as executive and their administrative arms (e.g. public Service Agencies and Departments).

‘Māori land is not simply a commodity’ (Savage, 2013). Shares in Māori freehold land are rarely transferred, they are usually succeeded to through inheritance.

Reflecting their tikanga, Māori invest in projects that promise intergenerational prosperity, prioritizing sustainability and the well-being of their resources and environment. This perspective and philosophy aligns with geothermal resource development. Their investment strategies focus on long-term returns rather than short-term cash flow, which complements the extended operational lifespan of geothermal power plants (>30 years) and geothermal reservoirs (>100 years).

For international readers, Section 2 below provides a brief overview of how geothermal resources are managed in New Zealand, the constitutional rights of Māori, and how Māori land and assets are managed. For a more detailed review on these topics, readers are directed to Eru and Lovell, 2020.

Section 3 outlines pathways that Māori have taken to be partners in geothermal projects and operations in Aotearoa New Zealand.

Sections 4 and 5 provide advice for other indigenous groups and share lessons and learnings arising from Māori participation in geothermal projects and operations, beginning with critical internal pre-work before doing due diligence on the geothermal landscape and its players.

2. New Zealand Context

2.1 *A brief summary of rights to geothermal resources in Aotearoa*

No-one can ‘own’ geothermal resources, but the government can manage them

‘Ownership’ of natural resources is a highly contentious area, and legal frameworks are ever in flux. The concept of geothermal resources being a sub-surface energy resource arose mid-twentieth century due to the development of engineering technology becoming available to access and harness the energy. Prior to this, any legal regimes in New Zealand were related to the geothermal surface features and tourism; the Thermal Springs District Act 1881 and Scenery Preservation Act 1903 effectively ensured that the Crown (i.e. NZ Government) controlled geothermal areas. The Geothermal Energy Act 1953 created the resource ‘ownership’ approach still in use today.

Within New Zealand it is generally accepted that water (including geothermal water) is not “owned”. The Crown however sets the method and manner by which geothermal resources are *managed*, effectively bypassing the question of who owns the resource. Currently, therefore, geothermal resource use is managed at a regional government level through the Resource Management Act (RMA, 1991) (Kissick, *et al.*, 2021).

Geothermal projects are ‘water take’ not ‘mining’

While geothermal resources are not owned per se, the discharged fluid can be (by the consent holder; Barton, 2015). Likewise, built plant and the underground and surface infrastructure (e.g. wells, piping, other examples, etc.) are owned. Geothermal resources are treated similarly to natural water (rather than petroleum and minerals which are owned by the Crown) whereby volume

takes (t/day) are consented, and thus, there is no present royalty payment charge to the government for the extracted geothermal energy.

Landowners determine access to geothermal resources

While landowners do not own geothermal resources, permission from the landowner is required to access geothermal resources beneath their land. The landowner can defend their rights against an unauthorized intrusion (i.e. trespass). There is no depth at which an intrusion ceases to be trespass, including through the use of directional drilling. There is no rule that restricts the depth to which the owner of land can assert his or her rights to the land (Barton, 2015; Kissick *et al.*, 2021).

Kaitiakitanga is acknowledged in the regulation of geothermal utilization

Successive pieces of New Zealand legislation and governments have attempted to extinguish Māori customary title to geothermal resources. This has been argued in the Waitangi Tribunal and remains a matter of contention between Iwi / Hapū and the Crown.

Under the Resource Management Act, consent holders must have regard to the relationship between Māori, as kaitiaki, and the land. Statutory Acknowledgements (Kissick, *et al.*, 2021) are the instrument within Treaty Settlements² used to acknowledge particular cultural, spiritual, and traditional associations of Iwi / Hapū with a site of significance, including geothermal fields, or resources identified as a statutory area. In practice, Iwi / Hapū whose traditional lands are located above geothermal reservoirs, and irrespective of whether or not they are the current owners of that land, may be included in resource consent (permit) consultation and decisions regarding utilization of geothermal resources.

2.2 A brief summary of Māori land in Aotearoa

Distinct from land owned by Iwi or Hapū through Treaty Settlements or other means, the land subject to Māori Land Court oversight and held under individual Māori ownership still constitutes a very small proportion of New Zealand's total land area. However, in the central North Island and at Ngawha in Northland, approximately 17 high temperature geothermal systems reside under Māori land and therefore the collective ownership of Māori landowners.

New Zealand's history of colonization resulted in a systematic process of sale, confiscation and fragmentation of Māori land. In pre-European times, Māori land was communally owned, based on traditional Māori custom. In this shared ownership model, there were no specific, identifiable share parcels or interests. After the signing of the Treaty of Waitangi in 1840 the Crown quickly obtained Māori land through acquisition or confiscation, utilizing a purpose-built Native Land Court, which subsequently became the current Māori Land Court. Eventually there was little land remaining in Māori ownership. From the 1950's various reforms attempted to improve the situation by giving the Māori Land Court a stronger focus on protecting Māori land, but this was

² Treaty Settlements settle Iwi (tribal) and Hapū (sub tribal) claims of breach by the Crown of the Treaty of Waitangi, which have been considered and accepted by the Waitangi Tribunal.

not without issues; legislation intended to protect remaining lands also created barriers to development.

Te Ture Whenua Māori Act 1993 (TTWMA) remains the Māori Land Court's guiding legislation. It seeks to balance competing objectives of retaining Māori land in Māori ownership with land development. However, Māori land generally has multiple owners and over time as owners decrease, their descendants succeed to their interests. Thus, the number of owners of a single piece of Māori land increases significantly and fragmentation of Māori land ownership remains an issue. With this in mind, over time the emphasis of both the Māori Land Court and landowners has been to identify and use appropriate entities to enable collective management of and decision making over Māori land.

Under TTWMA, there are a range of models for individual landowners to hold their interests collectively (e.g. Table 2). For example, utilizing the trust model, trustees are the legal owners of the trust property, which they hold on behalf of the Māori beneficial owners. Where Māori landowners have sought a more commercial model, the TTWMA has provided for a Māori Incorporation structure, with a Committee of Management acting as governors on behalf of its Māori shareholders. See Section 2.3 for further discussion of structures.

Notwithstanding the structures however, there have been barriers to development of Māori land. Common problems encountered by Māori wishing to develop or use their land is described in Table 1.

Table 1. Six barriers to the development of Māori land (MLC, 2024)

BARRIER	SPECIFIC PROBLEM
Multiple ownership	This can lead to problems with obtaining agreement about land use and development, and also reduces the economic return to individual owners.
Governance and management issues	While appropriate management structures for the administration of Māori land may exist, there is a lack of expertise to plan and make decisions about administration.
Access to information	Data on the current use of Māori land is not comprehensive, and it is costly to obtain information on potential use of Māori land.
Access to finance	Multiple ownership of land makes it difficult to use land as security when seeking finance for land development.
Access to land	A large proportion of Māori land is landlocked, reducing the options available for its use and/or reducing the options to lease the land.
Rating of Māori land	Some local authorities are more determined than others to collect rates on Māori land. In cases of arrears, some local authorities have tried to sell the land or place charging orders on the land to recover outstanding rates.

2.3 Māori Organizations

As discussed above, there are governance options available to administer Māori land (Lovett & Eru, 2020). The most commonly used in geothermal developments are Māori Incorporations and

Ahu Whenua Trusts (or ‘Māori Trusts’ as they are often called). Some different examples of Māori organizations used in geothermal operations are noted in Table 2.

Table 2. Types of legal business entities with investment, shareholding or ownership in industrial scale geothermal development (Source: Climo *et al.*, 2022).

Type	Descriptor	Example
Ahu whenua trust	A common land trust, established under the Te Ture Whenua Māori Act 1993, designed to promote the use and administration of one or more Māori land blocks or general land owned by Māori on behalf of its owners.	Tauhara North No.2 Trust
Community Trust	A community trust, as outlined in their trust deed, with the trust able to hold shares in a Company on behalf of the Consumers and distribute to the Consumers in their capacity as owners, the benefits of ownership of the shares in the Company.	Top Energy Consumer Trust
Joint Venture (JV)	An alliance between two or more parties working to accomplish a specific task or project. Each partner retains their independence while contributing towards mutually shared goals. An incorporated joint venture is a limited liability company. Being a separate entity, the incorporated JV company owns the assets of the venture, enters into contracts, incurs obligations and liabilities, and makes profits or losses.	Unincorporated: Nga Awa Purua Joint Venture (Tauhara North No. 2 Trust & Mercury NZ Ltd) Incorporated: Rotokawa Joint Venture Ltd (Tauhara North No. 2 Trust & Mercury NZ Ltd)
Māori Incorporation	Māori incorporations are constituted by the Māori Land Court over one or more blocks of Māori freehold land provided that at least one of the blocks has more than two owners. They have the powers of a limited liability company and become the legal owner of any lands or assets vested in it.	Taheke 8C Inc.
Mixed Ownership Model Company	A company where the Crown owns at least 51% of the shares and no one other person owns more than 10% of the shares. These partly state owned are monitored by Treasury but are not state enterprises.	Mercury NZ Ltd
NZ Limited (Liability) Company	A separate legal entity liable for all legal and financial obligations. The liability of shareholders is limited.	Ngāwha Generation Ltd
Partnership	A partnership is when two or more people or organisations form a business. Partners set out in a partnership agreement how they share profits, debts and work. Partners are personally liable for all business losses.	Te Ahi O Maui Ltd Partnership (Eastland Group Ltd & Kawerau A8D Ahu Whenua Trust)
Private Company	A firm held under private ownership. Private companies may issue stock and have shareholders, but their shares do not trade on public exchanges, and they have no obligation to release a financial report every financial year.	Tuaropaki Power Company Ltd
Publicly Listed Company	Shares can be bought and sold, and the Company is required by law to annually publish a financial statement.	Contact Energy Ltd

3. Pathways to Participation

Meaningful active participation is a true partnership, which is mutually beneficial. It's not just about being informed or consulted. As described in Figure 2, social license and project acceptance increases when the community is playing a real role in the project.

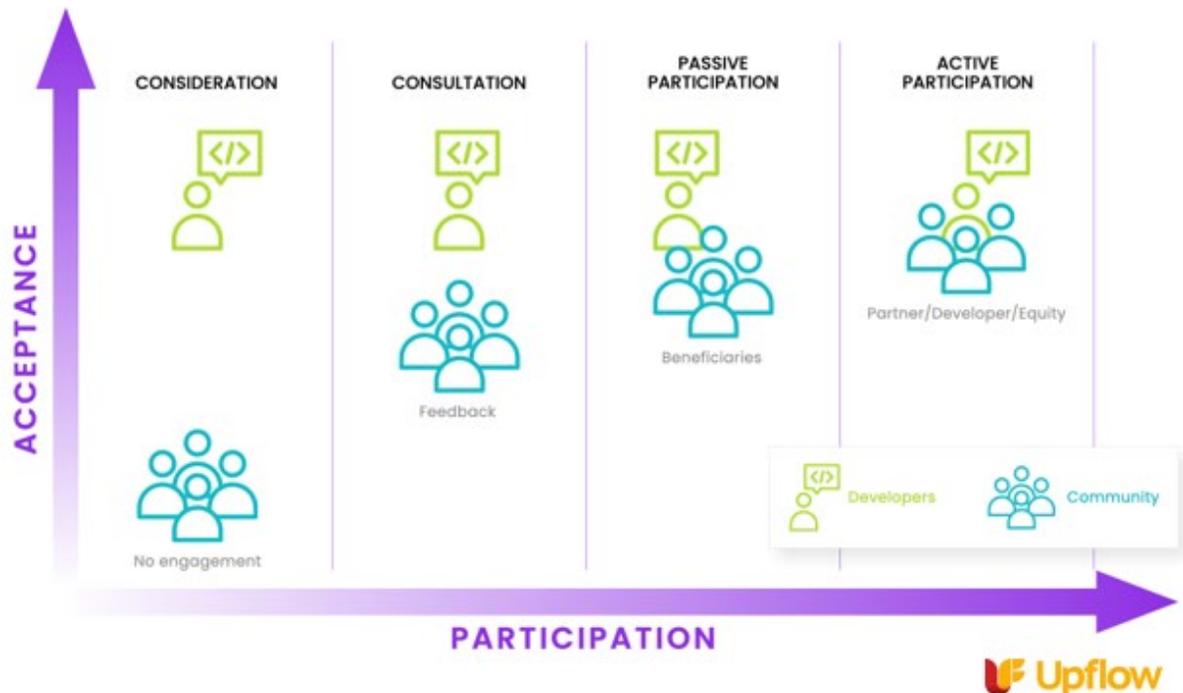


Figure 2. Relationship between participation and acceptance.

There are a variety of bespoke arrangements between private companies, public companies, community trusts and Māori organizations that own and operate large geothermal power stations and industrial scale direct use facilities in Aotearoa New Zealand (Climo *et al.*, 2022). Examples of ways in which Māori have been able to participate in geothermal developments, which varies by project, are outlined below.

3.1 Transfer of government geothermal assets to corporate entities

Geothermal assets (e.g. wells and infrastructure) developed by the Crown on Māori land through to the late 1980's were subsequently transferred out of Government ownership and into Māori ownership via a process of corporatization and deregulation of the New Zealand electricity sector in the 1990's.

Example: Kawerau & Ngāti Tuwharetoa Geothermal Assets

The Kawerau Crown-owned steam-field assets were transferred to Mighty River Power through an agreement with the Crown in 2005 (Beehive, 2005) with the assets immediately on-sold as part of a commercial acquisition to Ngāti Tūwharetoa Geothermal Assets Ltd (NTGA). This was a commercial arrangement and not as redress under a settlement with the Crown (McClintock *et al.*, 2021).

NTGA supply steam and water to the TOPP power plant and supplementary steam to the Mercury KGL power plant, as well as supplying geothermal energy for processes including wood products processing, timber drying (Sequal Lumber, Carter Holt Harvey), fibre production (Oji), tissue paper manufacture (Essity) and dairy processing (Waiū) (McClintock *et al.*, 2020).



Figure 3. Kawerau Industrial Complex and businesses utilizing geothermal energy (McClintock *et al.*, 2021).

3.2 Equity for landowners

Some geothermal operations have brought together landowners with access to geothermal resources and experienced geothermal operators as development partners for electricity generation.

Example: Rotokawa & Tauhara North No2 Trust

Tauhara North No.2 Trust (TN2T) are an Ahu Whenua Trust within the rohe (region) of Ngāti Tahu – Ngāti Whaoa. They have 11,000 owners and beneficiaries and own 326 hectares of land in Rotokawa, Taupō. The Trust and people are kaitiaki of the whenua, Rotokawa geothermal reservoir, and the surrounding natural resources. At Rotokawa, the Trust landowners retain ownership of the land on which the two power stations were built (McLoughlin *et al.*, 2010).

In seeking to secure a long-term revenue stream for the benefit of their people, TN2T established a joint venture arrangement with generation company Mighty River Power (now Mercury). This structure has provided the Trust with the opportunity, from a low capital base, to raise their own finance for buying into the project to agreed levels. It also provided Mighty River Power with the ability to develop and operate the project in partnership with the Trust as resource owner who, through joint ownership, has closely aligned commercial objectives from the power project (McLoughlin *et al.*, 2010).

Separate agreements relate to the fluid supply and generation units (power stations):

- Fluid Supply: TN2T is an equal joint venture partner (50:50) with Mercury in the Rotokawa Joint Venture (JV). This JV owns the steam-field assets that supply geothermal fluid on agreed rate to three geothermal power stations: Rotokawa Power Station, Ngatamariki Power Station, and Nga Awa Purua Power Station.
- Power Generation: The Nga Awa Purua Power Station is owned by Mercury (65%), and TN2T (35%). The Rotokawa and Ngatamariki power stations are owned by Mercury.

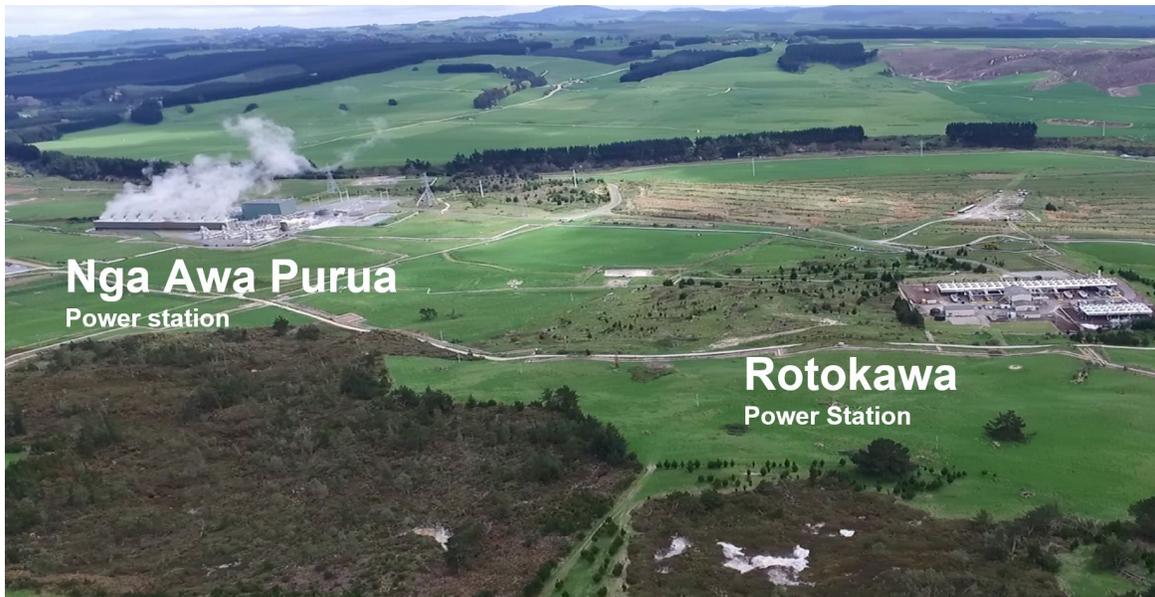


Figure 4. Nga Awa Purua and Rotokawa power stations at the Rotokawa Geothermal Field. Photo credit: Tauhara North No.2 Trust.

3.3 Partnering for direct use

Partnerships also occur with Māori landowners in the direct use of geothermal heat.

Example: Mokai and Tuaropaki Power Company

Since acquiring the Mokai geothermal investigation wells from the Government in 1996 (Menzies *et al.*, 2001), Tuaropaki Power Company (Tuaropaki) has been an equity partner with Mercury in the Mokai Power Station (75:25).

Additionally, Tuaropaki are partners in, and supply heat to, a milk processing plant (Miraka), geothermally heated glasshouses (Mokai Gourmet), and the world's first green hydrogen plant (Halcyon Power, 1.25 MW). There are mutually beneficial relationships between the individual operations, for example:

1. The geothermal operation provides heat to the Miraka milk drying facility.
2. The biological residues from the milk drying process are sent to a worm farm, transforming this sludge into a highly valued fertilizer and soil conditioner known as vermicast, for use in agriculture, horticulture, nurseries, and recreation areas.

- The vermicast is used in a native plant nursery, where plants are grown for riparian planting in the neighboring dairy farm operation for improved environmental performance.



Figure 5. Related operations at the Mokai Geothermal Field. (Photo Credit: MBC, 2024)

4. Internal Pre-work: Get your own house in order first

The first step towards participation in geothermal projects is not to engage with developers. There is a lot of internal pre-work that needs to be done before an indigenous group can have a meaningful conversation with a developer about participation in a geothermal project. Establishing leadership, decision-making processes, authority, legal structures and mandate to make decisions on behalf of the group needs to occur prior to any ‘deal’ or negotiation being discussed. It is critical to do this early and deeply to establish the ‘right’ foundation to provide a pathway forward – it is possible to change things later, but it’s a lot harder to ‘fix’ something than to spend time early in the process to build a strong foundation for success.

4.1 Strategy

What is your group’s vision and strategic plan for the future?

There must be a mandate from beneficiaries/owners to participate in geothermal development, and that mandate has to be sustained long term (as these projects can take decades to eventuate). This requires an indigenous group to know what they want and how they intend to operate. Identify up front what the priorities are and have a strong sense of who you are. This includes tikanga (protocols), but also the appetite for risk, priorities for investment, expectations about returns, when they might come and how they will be dispensed and managed.

Do we know what is important to us? What are our non-negotiables, for example the non-securitization of the land? What are we prepared to give up? Do our values align with geothermal projects? Is this really helping the future generations and succession planning?

Who do we want to work with and why? And, just as importantly, who do we not want to work with? This refers not just to developers, but also technical, financial, legal and governance expertise and advisers.

4.2 Leadership

Who are the champions? What kind of leader do you need?

The direction of ambitious future projects will differ depending on who is in charge, if they hold the vision and whether or not they are prepared to make, at times, decisions that will be challenged. These leaders may respond to a calling, or be volunteered, but it is critical that their personal vision and values align with the goals of the entity (e.g. trust, business) first and with the implementation of the project. Implementation must be in accord with the entity's, and its leaders', expectations because leadership is a long-term commitment and requires bravery.

In Māori culture, women are often the leaders who bring people with them. This is why we see many women in critical enabling and influential roles in Te Ao Māori. Whilst they may not always have official titles, they certainly have strong influence upon outcomes.

Collective asset ownership will never reach a consensus so strong leadership is essential. Visionary leaders are required to manage the complexity of negotiating with family – because the people involved are tied to the same place and each other for the long-term. Conflict must be managed – it can't be avoided. This requires time and ongoing honest conversations where the participants keep pushing (peel the layers back) to get to the core issues.

Good leaders will see the multiple views and drivers of others, understand their positives and negatives, and put a plan in place to ensure (notwithstanding differing perspectives) that everyone can choose to join the journey. Leadership will often come with adversity, dealing with different perspectives on strategic direction, backlash on decisions, and critique on, for example, where/when to spend money now versus saving funds for future generations. Geothermal projects require significant investment in capital costs and expertise, but this is necessary for successful outcomes. Whilst the need for financial rigor is paramount, so too is the confidence needed to spend these large sums of money for the future good.

Everyone knows the disruptors within their own organizations. To avoid hostile takeovers, do your homework and hold yourself and these individuals to account. Understand the legal frameworks you and your Māori entity operate within and the limits – get good advisors and advice.

Some projects may require the same leadership to stay in place for longer than usual rotations to maintain continuity and achieve the early development goals. For example, TN2T had the same leadership (i.e. no elections) between 1994-2008 while the geothermal developments occurred at Rotokawa. Then, once the power station was operational, elections resumed. This was achieved by changing the trust order (deed) on two occasions (Note: this is not always legally possible).

During the different stages of geothermal projects, different thinking may be required i.e. in the early exploration phase, leaders need to be comfortable with managing significant risk and the unknown, whereas during power production and (the more predictable) operational phases, a different leader may be more appropriate. Understanding the leadership potential within beneficiaries/shareholders and building capacity and succession are also essential components of leadership within Māori, always thinking to what will be needed in the future.

4.3 Internal Legacy Issues

Does your organization have the legal power to engage in a development?

Indigenous land ownership, as noted in the sections above, differs from private ownership. Typically, mainstream lawyers and financial institutions don't understand indigenous systems and are risk adverse to what is seen as unusual, so you have to know your legal position well from the start and be able to confidently discuss and explain it to others.

Understand your legal rights, laws and legislation. Understand how this works in the regulatory space. Also, if you know how you want to participate in a geothermal development (e.g. equity, lease, royalties), are you legally/structurally ready for each of those approaches? Is your ship in order? Are your land titles appropriately in place? Is your shareholding or beneficiary register up to date? Do you have your systems in place for communicating with your whānau?

Sort out structural legal legacy issues. Where are the gaps? Can the organization actually do what it wants to structurally and legally within existing trust/entity powers and constitution/deeds etc? Internal legacy issues can hold up the future, because everyone is so busy looking at development they forget to resolve internal issues. This is very common and could delay projects for years.

Example

A Māori organization interested in a geothermal project had a constitution that did not include the powers to establish geothermal activities on its land. Powers were limited to traditional agricultural activities, such as forestry and farming. This meant the Committee of Management did not have a mandate for geothermal development. In the absence of that power, the Committee could not enter into commercial geothermal arrangements and risked Māori Land Court review if shareholders sought a decision for deviation from the Incorporation's constitution. The Constitution was, therefore, subsequently amended. However, this took 12 months and caused delays to development aspirations.

Māori Trusts (more so than Māori Incorporations which are more commercially focused) are broadly risk adverse – they are holding assets for future generations to benefit from. In recent times, these trusts have been more likely to seek to separate risk to their assets by setting up subsidiary investment companies or entering limited partnership arrangements with developers. This however raises a number of questions such as: how do you ensure the appropriate people are appointed to those companies? How does the Trust ensure that the relationship between company or general partner (developer) and Trust (asset owner) is maintained, that delegations are clear, and reporting and oversight is robust?

Review the internal health of the organization to make sure that internal systems support the vision and can't be 'misused' to stall or disrupt advancement. Do you understand your own internal systems policies and culture? How can you use them? How could they be used against you?

Many Māori trusts and incorporations in New Zealand's Bay of Plenty also have had a legacy of external accounting firms holding custodial governance roles or positions of influence whereby they made the decisions and the Māori governors were treated as figureheads. Colonial / patriarchal structures such as these are being slowly dismantled so that Māori entities can manage their own assets. However, there must be a high level of commercial competency at the decision-making

table. If the required skills are not present amongst existing board/trustees, regardless if they are indigenous or not, well-governed organizations will need to bring in external and independent board members and technical advisors where required. The key is to balance self-determination with reliance on external expertise – you need both to be successful.

4.4 He Tangata (people)

The advantage of being connected to the whenua (land) is that, unlike corporate organizations, Māori will always retain their inherent connection to their traditional lands (whether they are legal owners of that land or not). This means institutional knowledge and capabilities can be maintained, succession appropriately planned, and longer-term outcomes are acceptable (i.e. significant benefits from projects may be realized long past the lifetime of those that negotiated agreements). And this outcome may be regarded as success – a strength that indigenous intergenerational philosophies can bring to a negotiating table for long-term projects.

Who are your people? What is your plan for engaging your people, especially the next generation, in the development activities?

The skills required will change during course of the project, and the organization will have to adapt and evolve. This provides long term employment and personal / professional development opportunities to grow capability.

Māori women are good at identifying future leaders and succession. Elders will often tell the younger generation what skills are going to be needed in the future (e.g. legal, technical, resource management) and encourage them to pursue these areas.

4.5 Know the resource

What do you know about your geothermal resource?

Find out everything you can about your geothermal system. What are your traditional stories and long held beliefs relating to the geothermal resource? Look in public repositories for data and publications. Ask and understand. Build and maintain your own information repository – don't rely on others to hold your knowledge.

4.6 Know your neighbors

Can you work with your neighbors?

Geothermal operators look for access to reservoir (depending on the consenting framework), but the boundaries of sub-surface geothermal reservoirs don't match the fence/trust boundaries on the surface. This means that partnering with your neighbors is a likely prospect in order to have a strong landowner voice when negotiating with developers and operators.

It is really difficult to determine a split for benefit sharing when the exact split of the geothermal resource is unknown. The benefit sharing does not have to be equal, but no-one should get something for nothing. Fringe/minority elements shouldn't have unrealistic power/expectations. Those with the most to put in have the most to lose. You should coordinate with your neighbors and organize a structure in which to operate prior to any engagement with a developer.

Be aware of the impact developers can have and what they have done in the past. They can sour relations between neighbors (perhaps by only engaging with one landowner to the exclusion of others) or may even avoid prospects where the landowner relations are too fraught (because they haven't sorted it out between themselves).

5. External Pre-work: Engage with developers

Once you've done all the activities in the Section 4, you are ready to do the pre-work to engage with developers.

5.1 Trusted Advisors

Who do you trust? What skills or insights are missing from the leadership table?

Good advisors are critical. It's important to identify current and future gaps in knowledge, context, insights and capability. It's not only essential to find people and organizations that can supply this expertise, but also to have aligned ethics and values so you can build strong trusting relationships that can withstand being tested over time.

Geothermal utilization is deeply complex and ongoing management of successful operations requires the ability to make decisions in uncertainty. Unlike predictable factory environments, geothermal subsurface and surface operations require constant and agile decision-making frameworks to optimize outputs. Reservoir, steam-field and power production assets and operational decisions constantly interfere with the performance of each other – to manage these projects requires highly trained specialist teams. Therefore, Māori groups must have access to technical insights to provide context for decision making. This may be achieved by internal hiring, contracting external consultants/advisors, or through an independent board role. Either way, all trustees/governors should increase their geothermal literacy prior to and during geothermal developments.

5.2 Due Diligence: Geothermal Operator/Partner

Understanding the organization(s) you plan to engage with is a first step to understanding their purposes, powers and capacity to work with you. Are they willing to learn what's important to you? Who are the people that are leading the organization?

Study their track record. Do they have history you should know about? Do they have a good record in their dealings with other indigenous or community groups? Talk to those who have partnered with them. Some developers/operators can have both good and bad track record. This is subjective – it must align with your values. Have they changed recently? What is their future commitment?

Some geothermal resources have changed hands, and operators often change names and legal structures. Look into these changes and understand the 'real' story. Past behavior may leave both positive and negative impressions. Is this history remembered? Trace back the full history of organizational behavior to ensure you are comfortable with partnering.

There are many examples of 'land banking' whereby organizations secure land and rights to geothermal resources and then do not develop them. This can be for a variety of reasons and sometimes over long periods of time. Having a good agreement (see Section 5.4) that stipulates

investment requirements and timeframes for when activity must occur is important to avoid these situations.

Characteristics of a good geothermal development partner include:

- **True partnership** – respect means treating the indigenous group as a serious commercial entity, important to the success of the project.
- **Understands indigenous frameworks** – good partners don't expect you to teach them about Māori concepts. They recognize that values and barriers are not the same.
- **Respect the taonga (treasure)** - tikanga and the geothermal reservoir is the key concern for Māori groups. This is the resource they have to care for as kaitiaki – the power station on the surface will come and go but the resource will remain (if well managed).³
- **Meaningful participation is recognized** through a variety of equity and benefit options in agreements. Land and resource access are acknowledged as having real and tangible value. Provide opportunities for the indigenous group to participate in the project at a level that they want. Options are the rights to increase equity (%) position to a max level at certain times over the power plants life, based on fair market value, with rules around timing and excising.
- **Sustainability is core practice** – evidence of well managed resources for sustainability, good environmental track record, good internal policies and procedures and culture. Any agreement must talk to the health of the reservoir at the end of a power station project.
- **Staff are well regarded**, and they have worked for the company over a long period of time. The geothermal industry is a small industry, and individuals are well known.
- **High transparency** – the developer is open with challenges, issues and opportunities, shares information, and provides greater insight when asked.
- **Good communicators** are developers who have regular engagement with the indigenous group. This can be informal or formal channels, including structured regular meetings, informal chats, briefings on key upcoming investment decisions, etc.

Most importantly, indigenous groups don't want to spend the next 30 years convincing a geothermal development partner of their value. If the developer can demonstrate behaviors and real-life examples of the above thinking and actions, and put pen to paper on this basis, you may actually end up with an arrangement that meets both indigenous values and respects the structures you need for long term partnership.

³ Examples of splitting access and utilization of the resource via separate fluid supply agreements and power station ownership has in some instances ensured that the Māori landowners interest in the reservoir are maintained. See the TN2T example in Section 3.2. Equally, other Māori entities have sought other arrangements to ensure their taonga is protected.

5.3 Funding Structures & Systems

Systems can be used to accelerate or stop development, to provide protection or to undermine authority of Māori landowners. We see this in the use of the RMA, the Māori Land Court, as well as through relationship structures.

Understand what legal structures are possible. Because of the high costs of development for a power station, parties focus heavily on the negotiation of building and operating power stations. This includes funders, i.e. banks, investors etc. However, the geothermal reservoir will last longer than the surface assets. Explore the structures that best suit a long-term vision and your values. Mainstream does not always mean best.

A point of change in New Zealand landscape that recognized a legal structure with more than one owner and the equity in the resource occurred during Tuaropaki Power Company's initial project to build the Mokai 1 geothermal power station. This was 100% debt financed by Westpac Bank (McLoughlin *et al.*, 2010; Menzies *et al.*, 2001), the first financial arrangement of its kind in New Zealand. Existing wells drilled by the Crown proved the resource and provided sufficient steam for the project's technical and economic feasibility to be demonstrated without further equity injection, and state-owned generation company Mighty River Power (now Mercury) held the power offtake agreement (McLoughlin *et al.*, 2010).

5.4 Good Agreements vs Bad Agreements

There isn't one perfect, 'right' legal agreement for participating in a geothermal development. But there are Good Agreements and Bad Agreements.

Good agreements are fair and equitable, acknowledging the respective values of the parties, and they will have a level of future proofing (and thus respond favorably to changing future scenarios).

Developers and operators may utilize changing entities and structures, based upon commercial expediency, and where projects no longer fit within their values or ethos they may dispose of those interests. In contrast, Māori landowners cannot leave the land or the geothermal resource; both are "taonga tuku iho" – eternal treasures.

Māori landowners are constant. This consistency, and therefore inability to implement the standard business solution to a failed relationship or partnership of sale, requires careful consideration and differing legal solutions when documenting developer/Māori entity partnership arrangements. A good analogy is sharing a house! Indigenous groups can't leave the house, so we need to ensure it is comfortable and we have to have the ability to review our tenancy agreements with the flat-mate/spouse and to ultimately divorce if need.

Examples of bad agreements are those which:

- i. don't value your contribution or knowledge,
- ii. sit on the asset without implementation (land banking) or
- iii. fail to future proof the relationship.

They may lock in for long timeframes, often without meaningful financial or other recompense, and then don't allow an exit when you want/need to.

Contracting is about hoping for best but expecting/preparing for the worst. You have the most leverage and power at the beginning of the contract negotiations (assuming your legislative and constitution rights are supportive), so use this time to build strong legal arrangements that reflect not only the relationship at the start, but also the evolving relationship over the long term and ultimately, should the need occur, at termination. You can't easily change things later. Get it right the first time so you (or more likely your children or grandchildren) are not regretting your decisions later.

5.5 Time is an asset

Use time horizons to your advantage. Māori will utilize their land and resources for the benefit of future generations, so must diversify on site to increase benefits and reduce risk. This means being innovators, including, for example, not only direct use but in indirect use of geothermal heat. NTGA and Tuaropaki lead the way in large scale direct and indirect use in New Zealand and are focused on more than electricity production.

Operators come and go. Consents expire. But the resource and the tangata whenua (people of the land) are forever. Operators are focused on short-term returns for their shareholders, so commercial frameworks tend to be short-sighted.

This means that Māori can structure arrangements differently, because investment now doesn't have to be realized in the short term. Māori can outlast some industries. This might look like an option to take on the geothermal plant / operation at the end of an agreed term. So long as there are legal mechanisms in place to ensure the developer doesn't over exploit the resource or not maintain the plant, Māori groups can inherit assets in the long term which will generate many more years of revenue. Note that geothermal assets can become a burden at the end of their lives, so it's imperative to understand the true cost to maintain and utilize these assets prior to any agreement.

Longevity in location also means that Māori can also outlast market trends/cycles. When the interest in geothermal is high there are more opportunities and choice for selecting partners. Use time as leverage to get what you need for your people. You have more time leverage than most.

There is a constant tension within indigenous groups between spending revenues now to make the lives of current owners and beneficiaries better and investing/saving for future generations to ensure wealth and prosperity. Whilst there are tools to help consider this, it really comes down to the values and vision of the group.

5.6 Demand Respect

Be intolerant of bad partners, notwithstanding if you are the minority in the financial and equity relationship. The land and the resource are in your control and a developer can do nothing without both, and therefore you. It takes bravery to sit at the table – demand the space and then grow into it.

Your mana (authority and status) should be meaningfully acknowledged by a development partner and they should be willing to support you, and to have the structures and processes in place to ensure that you and your entity can participate. Meetings should be board chair to board chair, despite different size organizations.

Remember: Big opportunities can be turned down if they don't fit your values and vision. You have time and it's better to wait than to participate in unhealthy relationships. Geothermal projects are 30+ year relationships, choose wisely.

6. Whakamutunga | Conclusion

**Te tū, ki te hoe,
Puritia, kia mau ki tō ngakau.
Whāia ngā whetū,
ki ngā hau
ki ngā au o te moana,
hoea whakamua.
Tihei mauri ora.**

*Seize the paddle,
hold it firmly to your heart.
Follow the stars,
with the winds,
with the currents of the ocean,
paddle forward.*

Kuputaka | Glossary

Te Reo Māori Terms used in this paper.

Term	Description
Hapū	A group of a Māori people or community connected by whakapapa (genealogy). Hapū sometimes are sub-sets of Iwi (tribes) and in other instances they are self-determining groups in their own right.
Iwi	An extended kinship group, tribe, often refers to a large group of people descended from a common ancestor and associated with a distinct territory.
Kaitiaki, kaitiakitanga	Guardian of natural resources and the act of guardianship; principle of intergenerational sustainability and the practices to achieve it
Mana	Prestige, authority, status
Mana whenua	Customary authority; territorial rights
Māori	The Indigenous peoples of Aotearoa New Zealand
Mātauranga Māori	Knowledge, culture, values, and world view held by Māori
Rangahau	Research; to seek, search out, pursue, research, investigate.
Rangitira	Chief
Reo	Language
Rohe	Region
Tangata whenua	People of the land
Taonga	Treasure, property, asset
Te Ao Māori	Māori world views
Tikanga	Correct procedure, custom, practice, protocol - this customary system of values and practices has developed over time and are deeply embedded in the social context
Whanau	Family group
Whenua	Land

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Further Reading

The following list is a selection of papers that contain more information about Māori participation in geothermal development and resource management in New Zealand. These papers are downloadable from the [International Geothermal Association conference database](#) or the link provided.

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