GEOTHERMAL ECONOMIC DEVELOPMENT IN NEW ZEALAND – USING A “KISSING FROGS” APPROACH

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ABSTRACT

New Zealand’s approach to economic development aims to boost regional prosperity by capitalising on local assets and added-value. Geothermal resources offer a local competitive advantage and direct use of geothermal energy has an important part to play in our energy future. This paper demonstrates a “Kissing Frogs” approach to the growth and attraction of foreign direct investment. As per the fairy tale, the analogy is that some frogs will turn into princes. This approach selects and rapidly tests potential options; pursuing limited strong probabilities rather than chasing many low-moderate possibilities. This approach aims to partner with sales channels to accelerate access to market, rather than focussing on investors. Learnings are shared from the development of an industrial-scale wood processing project from Taupō, New Zealand.

1. INTRODUCTION

1.1. New Zealand’s Economy

New Zealand has a small, free market economy, with manufacturing and services sectors complementing an export-oriented agricultural sector base. Half of total goods exports are primary commodities (NZ Government, 2016). The New Zealand Government has an emphasis on economic development through business growth, with a target of $58B business investment by 2025 (NZTE, 2015). Increased foreign direct investment is a key component of this growth, as many technologies, resources and knowledge are imported, and the domestic capital base is relatively shallow. New Zealand has few regulatory restrictions apply for Foreign Direct Investment (FDI), and total FDI stock almost doubled between 2001 and 2015 (from $55b to $100b) (NZIER, 2016). But it is estimated that up to $200 billion of additional investment is needed to support government export, growth, and research and development targets (NZIER, 2016). Currently, around 75% of New Zealand’s FDI comes from the countries of Asia-Pacific Economic Cooperation (APEC).

1.2. Regional Economies

In 2016, New Zealand had a population of 4.6 million and GDP of $251.8 billion (Statistics NZ, 2017). Auckland is one of the fastest growing regions in New Zealand, with around 40% of the population and contributing 37% of national GDP (Table 1). However, other regions (Table 1) also contribute through different specialisations, natural resources, infrastructure and skills.

1.3. Local Government Framework

Economic development in New Zealand is occurring within the complex local government legislative and policy frameworks. New Zealand consists of defined regions (Figure 1); and also has 67 territorial authorities, which may span more than one region. Eleven regions are administered by regional councils (the first tier of local government). The remaining regions are administered by territorial authorities (the second tier of local government).

Typically districts and regions, territorial authorities and regional councils all have economic development agencies and/or functions. Their collective mandate is both economic growth and economic development; to enrich communities through the creation of wealth and jobs by working with business. Yet, New Zealand’s centralised form of government, and policy formation processes, limit local opportunities to try out policies/initiatives that sound locally promising, but are considered risky (Crampton and Acharya, 2015).

Table 1: Regional contribution to the national economy, as measured by GDP (Data sourced from Statistics NZ, 2017; regional locations are shown in Figure 1).

Region	% Population	% GDP Contribution
Northland	1.7%	2.5%
Auckland	40.1%	37.1%
Waikato	7.2%	8.3%
Bay of Plenty	4.3%	5.2%
Gisborne	0.5%	0.7%
Hawkes Bay	2.1%	2.7%
Taranaki	4.3%	3.3%
Manuwatu-Wanganui	0.7%	3.8%
Wellington	16.8%	13.5%
Tasman/Nelson	1.4%	1.7%
Marlborough	1.1%	1.0%
West Coast	0.6%	0.6%
Canterbury	13.5%	13.2%
Otago	3.9%	4.3%
Southland	2.0%	2.0%

1.4. Regional Economic Development

Each New Zealand region and district has the potential to attract further investment, raise incomes and increase employment opportunities by capitalising on local assets and incorporating local added-value into businesses. However, a substantial challenge for the regions is how to ensure alignment and collaboration across a range of sectors, locations, government and businesses. Best practise in the organisation, governance and structure for New Zealand’s regional economic development are still being trialled and established.

Regionally, advances are being made in taxes, planning, infrastructure, innovation, entrepreneurship, industry development, education, environmental management and more (MBIE, 2015b; 2016). The New Zealand Government’s Business Growth Agenda seeks economic growth in six key areas: investment, export markets, innovation, skilled workplaces, infrastructure and natural resources (MBIE, 2015a; 2016). This framework seeks to support region-specific activities.

1.5. The Taupō Case Study

This paper aims to share the learning experiences from an innovative approach to local economic development and foreign direct investment from New Zealand's Taupō District. The Taupō District (Figure 2) is a territorial authority that spans four regions. The district's population is around 36,000, with a GDP of ca. $1.7m (ESL, 2017). The district's key industry strengths are pastoral farming, forestry and logging, manufacturing of wood products, geothermal energy, and the tourism/ events sector. This economic development project began in 2014 and the lead agency was Enterprise Great Lake Taupō; the district's economic development agency. The approach they took was beyond the usual norms for such entities, but was seen as a means to deliver significant returns.

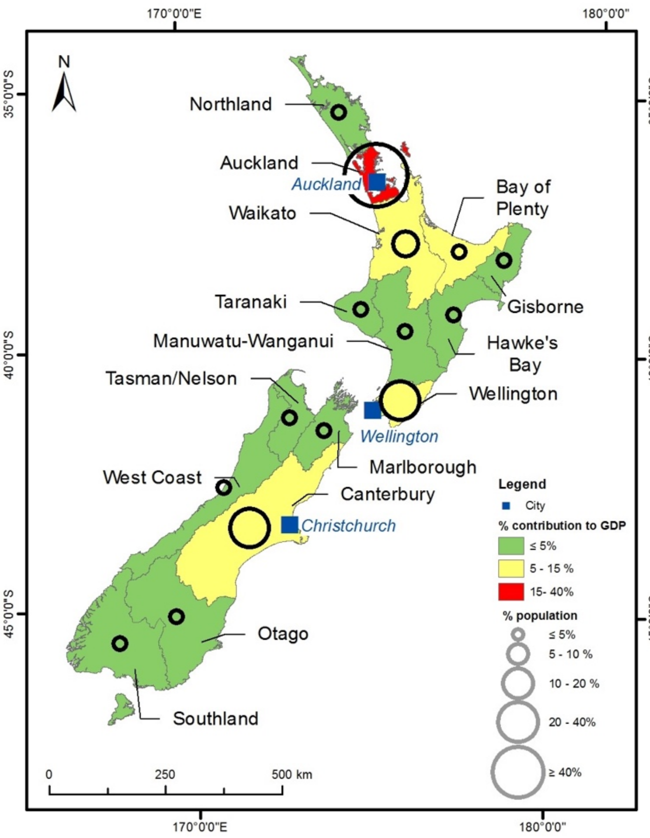

Figure 1: Regional contribution to national population (circles) and GDP (shading).

2. THE KISSING FROGS MODEL

The "Kissing Frogs" model was created as a campaign of selecting and rapidly testing potential options for local economic development and attracting foreign direct investment. As per the fairy tale, the analogy is that some frogs will turn into princes; however, the reality is that while many frogs can be kissed, many just remain frogs and never leave their pond.

The key to this model was its speed. Selection and testing of opportunities had to move along fast and not spend too much time on dead ends. Start-ups, entrepreneurs and small businesses are told that they shouldn't worry about failure, because it's better to quickly realise that something's not working and move on. Shouldn't the same principles apply to economic development initiatives?

This model is one of specificity and focus; of pursuing limited strong probabilities rather than chasing many low-moderate possibilities. A willingness is required to rapidly try and test out new ideas and discard the ones that don't work. The other key difference in this model was not to look for investors, but rather to partner with sales channels to accelerate access to market.

The Kissing Frogs style of campaign evolved into eight key steps. The following sections detail the thinking and activities in each step, along with the specific example of the development of a medium density fibre (MDF) wood processing plant in Taupō, New Zealand.

STEP 1: DEFINE SUCCESS

Leading question: What are we trying to achieve?

Why? It is crucial to first define what success looks like, the scope of operation and the measures of success; relevant to the location, local environment and agencies involved.

The success measures for new economic development projects in the Taupō District were defined as:

- net creation of jobs and industry (not business displacement);
- attraction of foreign direct investment (FDI) into the District;
- growth commodity products that have a large ready-made offshore market;
- no products that require offshore legislative or building code changes, or could not be exported cost efficiently;
- attract a commercial partner at the outset; and
- rapid opportunity evaluation, minimise time spent on dead ends.

STEP 2: FOCUS

Leading question: What are we good at?

Why? A successful strategy leverages strengths to seize opportunities. A tight focus is necessary to maximise the value of effort and to deliver rapid outcomes.

The words of Theodore Roosevelt are relevant to regional economic development: "do what you can, with what you have, where you are". While all regions can leverage the national brand attributes (e.g. 100% pure New Zealand; a nation of renewable energy; Lord of the Rings), each area must identify and leverage the local strengths and differentiate from other areas. Local strengths may include the natural resources, historical events, a locational advantage, logistical infrastructure, skilled people, niche markets, points of difference (abundance or scarcity), growing demand, demographic changes, and more. Weaknesses must also be identified, and the analysis must be realistic. No matter how good the area is, a fatal flaw (within the region or externally) will undermine any chance of successful development.

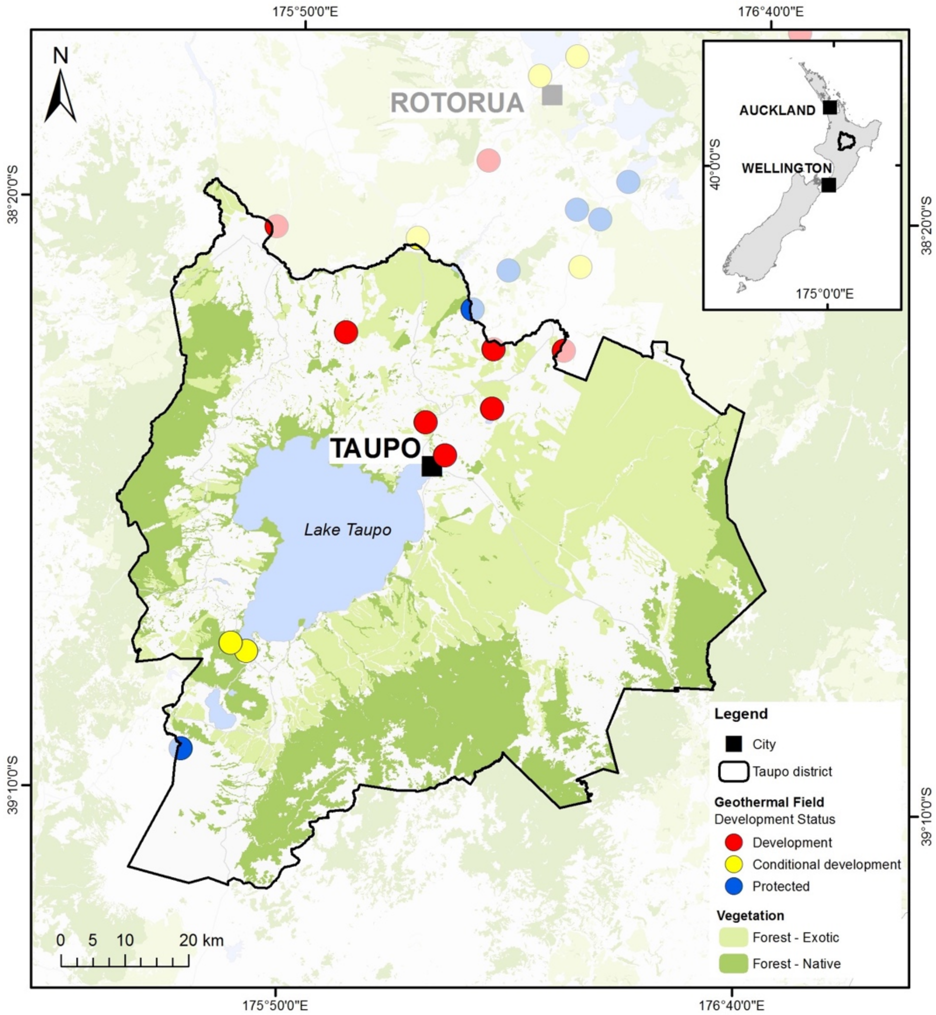

Figure 2: Taupō District; co-location of geothermal energy (dots) and forestry resources (green shading). Geothermal data, from Climo et al (2016); development status of each geothermal area is protected (blue), conditional development (yellow) or development (red). Forestry data from NZ Topo50 Data (2017); exotic (light green) and native (dark green) forest areas.

From these identified strengths, a focus should be chosen to direct investment and effort. What is and isn't going to be done? With limited funding and resources, it is not possible, practical, nor viable for economic development agencies or businesses to pursue a multitude of opportunities in parallel. It is possible to hurt growth by focusing on too many products, which end up being subpar because the resources are shared unequally. Instead, a concentrated effort on strengths is more likely to result in failing or succeeding fast, learning fast, and less expensive failures.

The Taupō District identified that their ideal project would bridge geothermal energy, forestry, tourism and agriculture, as these were the strongest sectors in the District. The focus was further narrowed to business opportunities in agriculture and/or forestry that needed large thermal energy input, as geothermal energy was seen a local advantage and an enabler for other sectors. Geothermal offers a large saving over gas and electricity for thermal use. However, geothermal energy must be used close to where it is located. But this potential weakness could be made into a unique position and cost advantage, when paired with the right industrial sector.

Agriculture and tourism were not deemed to be as promising as forestry resources for Taupō. While tourism is responsible for one in three jobs in Taupō, it only accounts for 15% of the local GDP. Other sectors account for similar and higher GDP, and have the opportunity to create higher income jobs.

The Taupō team focused on investigating forestry options, given the abundance of natural resource in the area (Figure 2). It was known that 16 million cubic metres of unprocessed logs is exported annually from New Zealand, with no added value, so there is an abundance supply of raw product available (Poyry, 2011).

Two previous studies were used as key references for information:

- A study for the Bay of Connections (Poyry, 2011) undertook a high level assessment for future opportunities of wood products from New Zealand
- The WoodScape Project (Goodison et al, 2013) identified a value chain of uses for forestry wood products.

For the Taupō project, the shortlisted options were biofuels and medium density fibre (MDF); both offered the highest heat requirement for processing. Ultimately, MDF was selected as the niche manufacturing commodity to pursue, with the stronger market opportunities. The lifecycle of an MDF plant is over 20 years, and would be expected to deliver large numbers of jobs and investment over a long time period. MDF also has the advantage of further downstream value addition potential. For example, once a local source of MDF comes available, flooring manufacturers could be attracted to the region.

STEP 3: BUILD A BUSINESS CASE

Leading question: Is this niche viable?

Why? To learn everything about the target market and any competition.

How? Build a business case, determine the market size, run the numbers and identify potential investors.

A basic business case should be built to capture the reasoning for initiating the project. A compelling business case adequately outlines the quantifiable and non-quantifiable characteristics of the proposed project. Elements of the case includes objectives, alternatives, market information, dependencies, risk analysis, cash flow projections, and competition. This exercise also serves to further focus the project, segmenting markets and products to identify the strongest offering.

The Taupō team built a business case for developing an MDF industry in Taupō. The market was further segmented specifically to 3-8 mm, high-density MDF. This niche is best sourced from a single source species, such as radiata pine near Taupō. Data was sought for the energy requirements of the process, as well as other primary materials and component costs, capital investment and logistical needs. Specific data and model inputs are not provided here due to commercial sensitivities. The business case was validated by an independent investment advisor.

The world market for MDF was examined, concluding that the US and European markets were flat, and that the best growth prospects were identified in South-East Asia and China. Research further focussed the target foreign nation to China, which was expected to be a net importer of MDF by 2018 (Poyry, 2011). Additionally, China had a policy of going abroad for energy, matching the energy being offered by the central North Island's geothermal advantage.

Further research identified the ten largest MDF companies in China; those ranging from manufacturing of 2.5 million cubic metres to 400,000 m^3 of MDF production per annum. For comparison, New Zealand's total cumulative MDF manufacture is 960,000 m^3 per annum (Poyry, 2011).

The process of progressively narrowing focus is summarised in Figure 3.

STEP 4: ASSEMBLE A GREAT TEAM

Leading question: Who are the key people?

Why? Nothing is more important for business growth than having the right people.

How? Convene the local experts and partners; secure international partners in the sales channels to open industry doors.

Locally and internationally, experts should be engaged in the areas relevant to the development project, ensuring the right network of contacts is accessed.

Next, the Taupō project searched for sales channels. Arguably, investors are relatively easy to find for any sound business proposition. However, having an investor does not guarantee market success. Instead, the Kissing Frogs approach was to target sales channels. These are the companies that bring products or services to market, so that they can be purchased by consumers. The sales channels are harder to reach than investors or consumers, but have better opportunities for delivering a positive outcome.

To gain access to the shortlisted MDF manufacturers in China, the Taupō team were first and foremost looking for international sales channels partners. This meant partnering with the only two global MDF machine manufacturers, who between them have a machine in every MDF manufacturer worldwide. These partners were motivated to sell machines. They assisted in shortlisting and accessing the target MDF manufacturing companies, as well as identifying specific individuals within the shortlisted companies. They also assisted in setting up contacts and meetings.

Following the completion of the business case, the Taupō team expanded from the initial economic development agency staff to include:

- economic development agency staff;
- an independent, overseas investment advisor,
- a wood processing specialist/expert with experience in greenfield developments,
- a commercial geothermal energy partner,
- environmental, forestry and resource consent planning advisors,
- Māori partners, and
- local council staff.

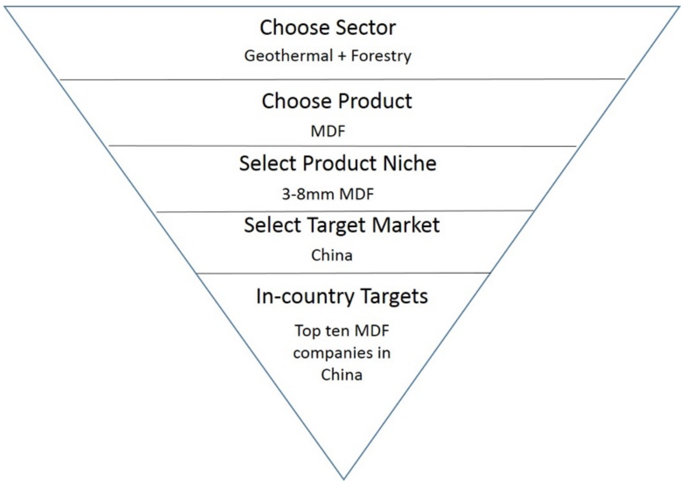

Figure 3: Progressive focusing in the Taupō development project.

STEP 5: TEST THE MARKET

Leading question: Do we understand the market's needs?

Why? To have a credible offering for target companies

How? Develop a pitch and practise it on the companies ranked lowest on your shortlist.

In this instance, the 'market' to be understood first is the sales channels. These companies are targeted to bring direct foreign investment into the district/region to establish a new business or industry. The shortlist of companies must be ranked, from most to least preferred.

A convincing pitch to these companies should then be developed. This pitch should build from the business case, leverage the expertise in the team, and include the key factors to influence the company's decision making. It should be short and concise, including summary level information only.

The pitch is tested on the market using the lower ranked companies, those that are unlikely to fit with the offering (e.g. too small, different goals). In the Kissing Frogs analogy, these could be the right sort of frog, but are not the ones that you expect to leave their pond for yours!

The practise pitch is undertaken without travelling, relying on email, phone and video conferencing as appropriate. This is an opportunity to gain valuable market feedback, to learn quickly, and to strengthen the pitch for the preferred company targets.

A two-page fact sheet was developed for the MDF manufacturing opportunity in Taupō. It overviewed the area and the opportunity at a high level. In specifics, it summarised eleven key factors important for foreign investment decision making; such as land availability and zoning, availability and supply of inputs, expectations of permitting, anticipated costs and expected payback period.

This fact sheet was printed in both English and Mandarin, and emailed to identified individuals within three shortlisted, but low ranked, companies from the original list of ten targets. Importantly, the three companies chosen were not those deemed most likely to be a match for the Taupō offering. Follow up was via email and phone conversations.

STEP 6: BUILD THE FOUNDATIONS

Leading question: Is it a done deal at home?

Why? Encourage a company to undertake due diligence, and reduce the time required, by providing endorsed local information in advance.

How? Obtain all the required local support and progress essential agreements for the new development, before you pitch to your market.

A foreign investor will always undertake a due diligence investigation into any potential business opportunity, to identify the potential risks and pitfalls associated with the venture. Due diligence is a substantial investment of funding and takes time.

The Taupō team regrouped and used the test market's feedback to strengthen their MDF offering and the investment pitch. This included revision of the key factors, and expansion of the two-page summary proposition into a comprehensive proposal, complete with detailed local information. The full prospectus included pre-approved agreements and contracts for supply of energy and raw materials, land lease agreements, quotes for plant construction, and pre work for securing of necessary permitting and consents. All financial values were as honest as possible, to build trust and a realistic picture.

This comprehensive foundation served to reduce the risk and effort required by the preferred MDF companies to examine the Taupō opportunity.

STEP 7: HOOK THE PREFERRED TARGETS

Leading question: Can we tempt the preferred targets?

How? Offer the focussed, detailed prospectus to the preferred companies, with an offer expiry to add pressure.

In the Kissing Frogs analogy, the top 2-3 companies on the shortlist are frogs that you want to kiss and have them move to your pond. This requires a personal visit and the strongest pitch that can be crafted.

For the Taupō MDF project, the full prospectus was pitched in person to the three top shortlisted companies in China. The New Zealand delegation included the wood processing expert and representatives from the economic development agency, commercial energy partner as well as the MDF machine manufacturer, who was the sales channel contact. The latter was the critical partner to enable translation and the Taupō team getting past the gate-keepers and in front of the decision makers. In all cases, appointments were with each company's Chairman, General Manager, Business Development Manager, or all three. The offering made to each company was to come to New Zealand within three months to verify the information provided and thus to secure the first mover advantage. This timeframe ensured that the pressure stayed on, and that progress continued.

STEP 8: FOLLOW THROUGH

Leading question: Can we close the deal?

How? Follow through with promises and deliver on due diligence.

Having hooked the preferred company and convinced them to come undertake an in-country visit, follow through with the promised details for the opportunity. Two of Taupō's top three preferred Chinese MDF manufacturers sent delegations to New Zealand within three months of the visit to China. It was at this point that New Zealand Trade and Enterprise offered assistance to the project. One Chinese company signed an agreement for one-year exclusivity to the data and contracts. This relationship and the due diligence continues to develop. And two years later, a repeat visit to China was made to the same shortlist, following the same route but with a different commercial partner, to repeat the process.

3. KEY LEARNINGS

3.1 Timeframes & Costs

The Taupō MDF project took about two years from the initial goal setting to signing of an exclusivity agreement. Steps 4 (Assemble Team) through 8 (Follow Through) took around eight months. However, the team assert that this timeline could be shortened significantly with greater funding availability, and with the experience gained through the first iteration of the model. The process cost approximately $80,000 in cash and in-kind funding support from the local economic development agency and the New Zealand businesses over the two-year period. In comparison, the Chinese MDF manufacturer spent around $1.2M on due diligence in their exclusive first year, and utilised the expertise of the New Zealand wood processing expert.

3.2 Competition

One key lesson learned was the reality of operating in a competitive environment. Other parties will leverage success and contacts, so operating fast and limiting information to a tight circle was essential. Taupō is still pursuing these opportunities with international partners. However, while geothermal energy is a key strength of the Taupō District, it is not the only local area with geothermal and forestry resources. Neighbouring areas can claim the same resources and the same mandate for economic development and business growth. Consequently, this specific MDF opportunity, using this model of engagement, was quickly taken up by other geothermally and forestry endowed areas, who have since been pursuing the same targets, in the same markets, for the same opportunity.

4. SUMMARY

The Kissing Frogs model for economic development offers a reproducible process for leveraging the local strengths to attract foreign direct investment. Taupō's MDF wood processing example details how one team undertook this route, and the learnings that were made along the way. Positive learnings reiterated the value found by focussing, ensuring a robust business case, utilising sales channels and establishing information in advance of due diligence. The most important component of the whole project was the people, working in collaboration. Identifying and engaging the right people, from a range of sectors, with the right networks and expertise was vital. This was the foundation that allowed the rest of the steps to be delivered to an exceptional standard.

The key learnings can be summarised as:

1. Look at local strengths
2. Make a plan and work the plan
3. Build up a business model, fast
4. Find commercial partners
5. Fail that model fast
6. If model stands up, build a GREAT team
7. Have a comprehensive proposal with detailed and specific costings, and agreements
8. Find sales channels and partners, not investors
9. Find the top ten companies you want to approach
10. Trial your pitch on the ones that don't fit
11. Visit in market and run a transparent, competitive process with more than one party
12. Loose lips sink ships. Keep the circle of need to know small. Have a media plan.
13. Expect the proposal and information to be shopped around by others, including government agencies. The idea and approach won't remain local for long.

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6. REFERENCES

Climo, M., Milicich, S., White, B. (2016) A history of geothermal direct use development in the Taupō Volcanic Zone, New Zealand. Geothermics, 59, 215-224.

Crampton, E. and Archarya, K. (2015) In the Zone. Creating a toolbox for regional prosperity (NZ Initiative, 2015). https://nzinitiative.org.nz/ insights/reports/in-the-zone-creating-a-toolbox-for-regional-prosperity/

ESL – Economic Services for Success (2017) Taupō District: Economic Monitor December Quarter 2016. greatlaketaupo.biz/doing-business/ research/item/62-research-reports

Galbraith, J. and Rae, B. (2010) Report on Wood Processing Strategic Competitive Factors. Report for prepared for the Bay of Connections. www.bayofconnections.com/

Goodison, A., Hall, P., Jack, M., Barry, L. (2013) WoodScape Study – Technology and Markets. www.usewoodfuel.org.nz/documents/resource/WoodScape-TechnologyMarkets Report-Feb2013.pdf

MBIE - Ministry of Business, Innovation & Employment (2015a) The Business Growth Agenda: Towards 2025. ISBN 978-0-908335-72-5 Online. www.mbie.govt.nz/info-services/ business/business-growth-agenda/towards-2025

MBIE - Ministry of Business, Innovation and Employment (2015b) Regional Economic Activity Report 2015. ISSN 2324-2698 (print). webrear.mbie.govt.nz/summary/new-zealand

MBIE – Ministry of Business Innovation and Employment (2016) Regional Economic Development. www.mbie.govt.nz/info-services/sectors-industries/regions-cities/regional-economic-development

New Zealand Government (2016) New Zealand Economic and Financial Overview 2016. www.treasury.govt.nz/economy/overview/2016/nzefo-16.pdf

NZIER - New Zealand Institute of Economic Research (2016) Foreign Direct Investment in New Zealand: A brief review of the pros and cons. Report to Export New Zealand. March 2016. www.businessnz.org.nz

NZTE - New Zealand Trade and Enterprise (2015) NZ Investment Attraction Strategy. www.mbie.govt.nz/info-services/business/ business-growth-agenda/pdf-and-image-library/towards-2025/mb13078-bga-investment-a3-v2-5.pdf

NZ Topo50 Data. (2017) Vegetation: NZ Native Polygons and NZ Exotic polygons sourced from LINZ Data Service, https://data.linz.govt.nz/. Contains data sourced from Land Information New Zealand and Landcare Research under CC-BY, reativecommons.org/licenses/by/3.0/nz

Poyry. (2011) High Level Assessment for Future Opportunities of Wood Products from New Zealand. Report for prepared for the Bay of Connections by Poyry Management Consulting (NZ) Ltd. www.bayofconnections. com/ downloads/Future-Opportunities-report-Poyry-April-2011.pdf

Samuels, W. (2016) Power in the Provinces: Economic Development for New Zealand's Regions. Report for Winston Churchill Memorial Fellowship. www.community matters.govt.nz/

Statistics New Zealand (2017) Regional Gross Domestic Product: Year ended March 2016. www.stats.govt.nz/browse_for_stats/economic_indicators/ NationalAccounts/RegionalGDP _HOTPYeMar16.aspx

Statistics NZ (2013) 2013 Census Quickstats about a Place. www.stats.govt.nz/Census/ 2013-census/profile-and-summary-reports/