



Geothermal Opportunities

New Zealand & International

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NZ Geothermal Workshop
November 23rd 2011

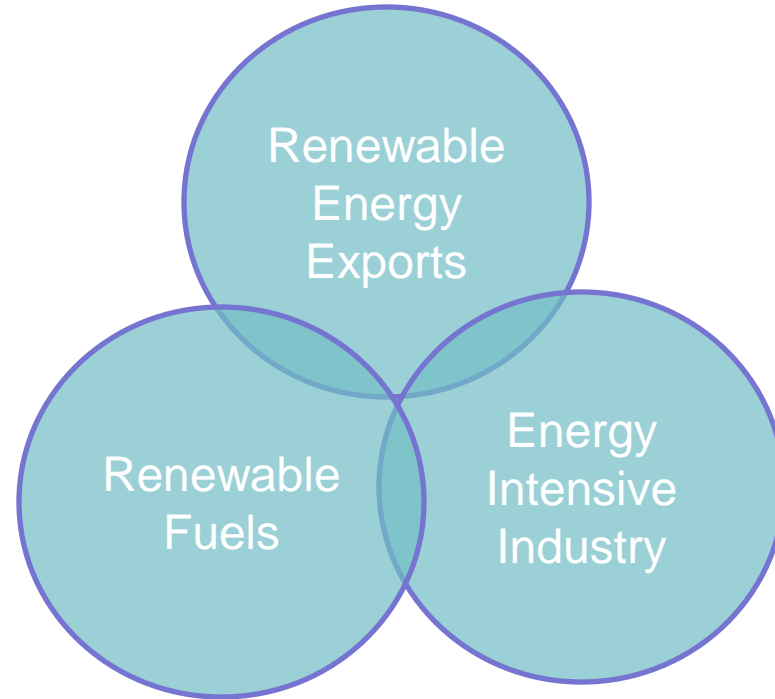




Renewable energy – a key enabler for prosperity and export opportunity in its own right for NZ Inc given global push towards clean energy and low carbon economic development

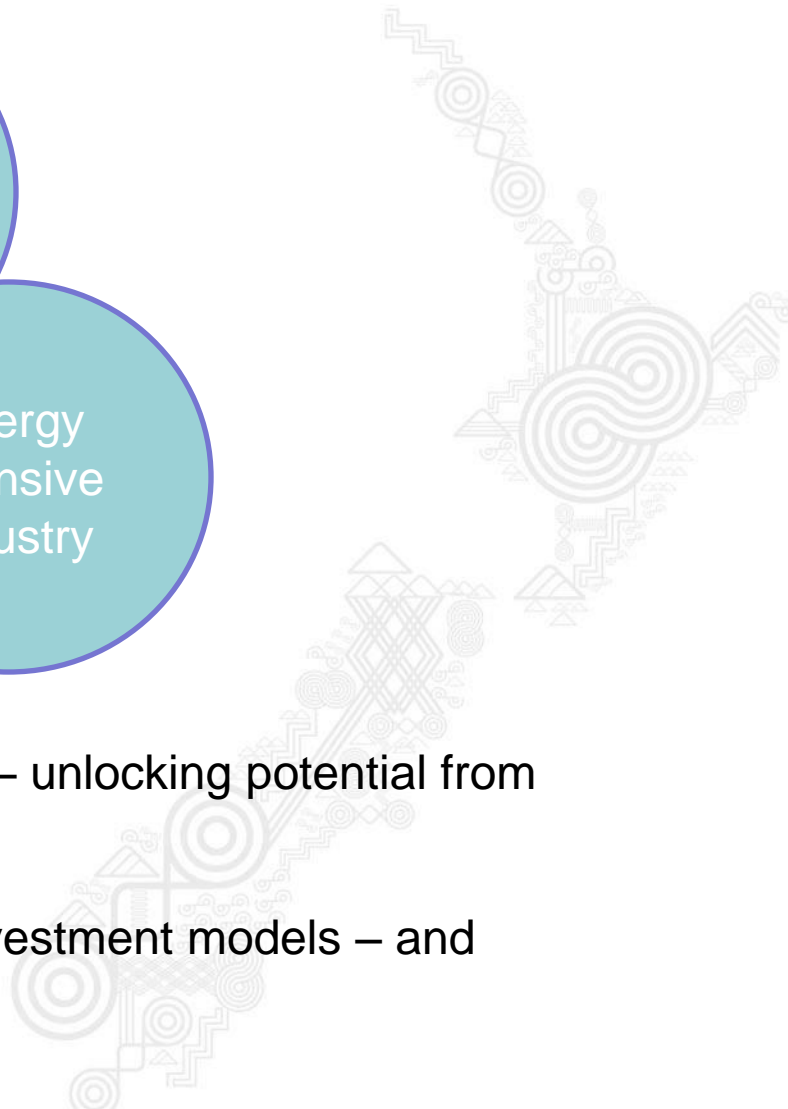
Three focus areas for NZTE Investment

1. Renewable energy – export of products and services – particularly geothermal – ODI and FDI to support this
2. Renewable transport fuels – production of renewable diesel and jet-fuel from forestry biomass via hydrothermal processes
3. Low carbon energy intensive industry – retaining existing and attracting new industry and businesses



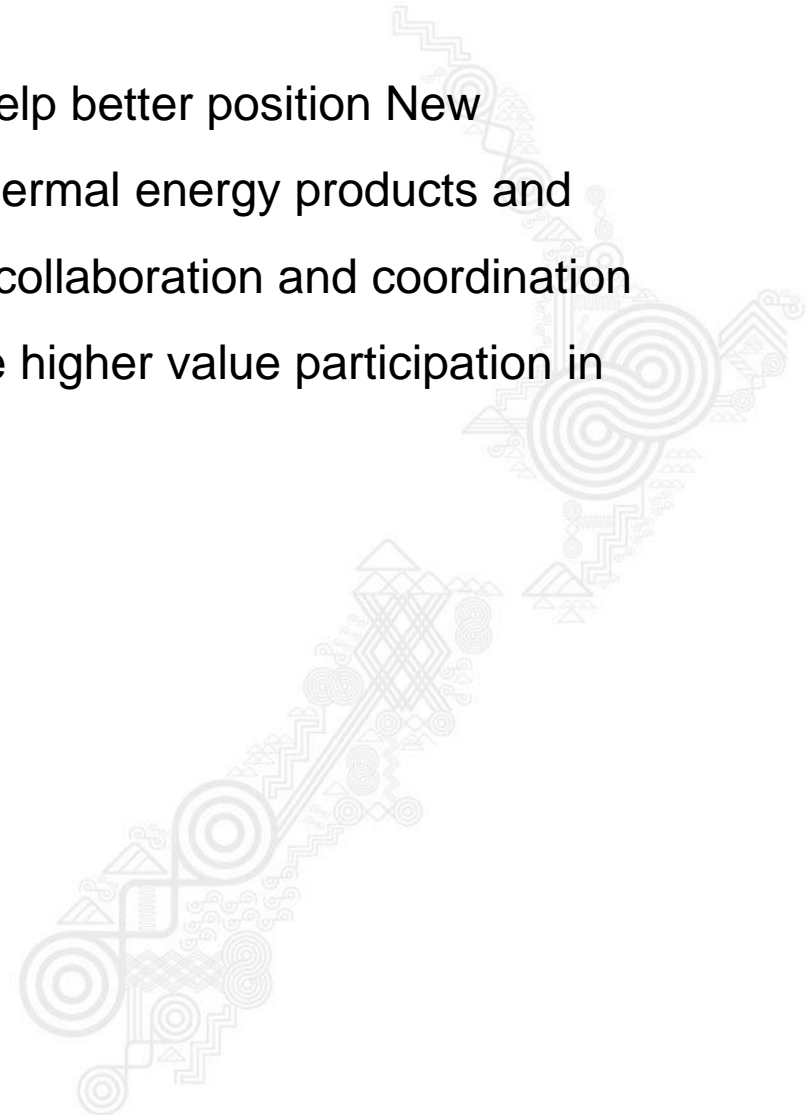
Intersection point is **geothermal energy** – unlocking potential from forestry biomass – key opportunity

Need new industry development and investment models – and government agency co-ordination NZTE





A government and industry initiative to help better position New Zealand as a leading provider of geothermal energy products and services and to foster effective levels of collaboration and coordination across the value chain in order to secure higher value participation in geothermal projects around the world





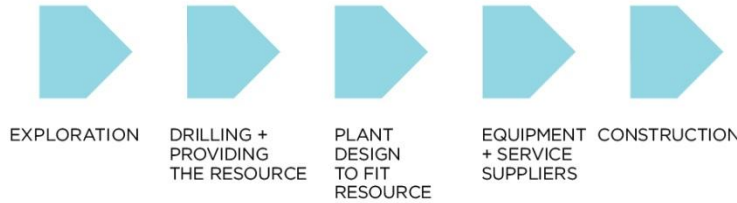
Geothermal Value Chain

Institutional and legal framework for geothermal development



Explore, Evaluate, Design and Construct

PROJECT MANAGEMENT



Economic Value Add





Kawerau – largest geothermal industrial site in the world



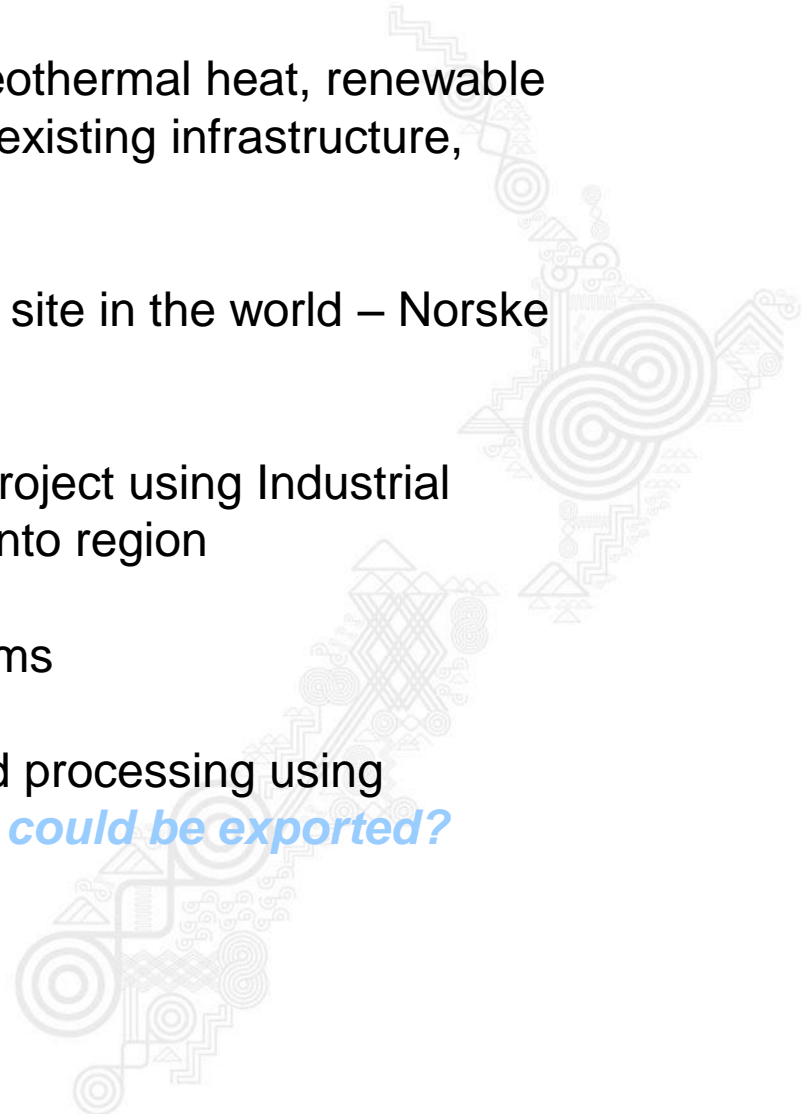


Industrial development – leveraging geothermal heat, renewable power, renewable forestry resource and existing infrastructure, expertise and logistics

Already the largest geothermal industrial site in the world – Norske Skog/CHH and SCA

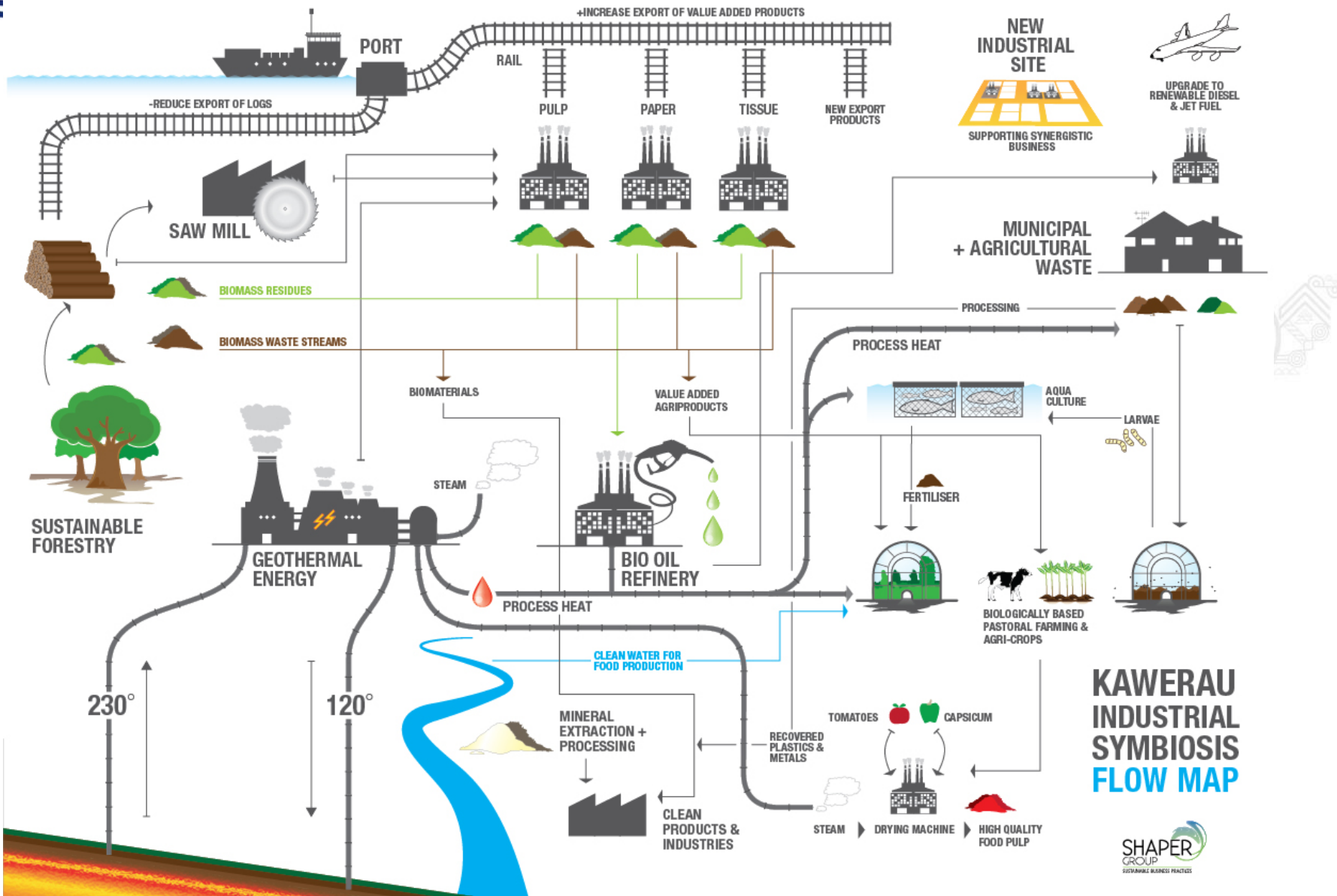
NZTE funding an investment attraction project using Industrial Symbiosis thinking – attract new MNCs into region

- Optimal use of energy and waste streams
- Industrial synergies – existing and new
- Forestry fibre, waste, minerals and food processing using geothermal – ***economic value add that could be exported?***





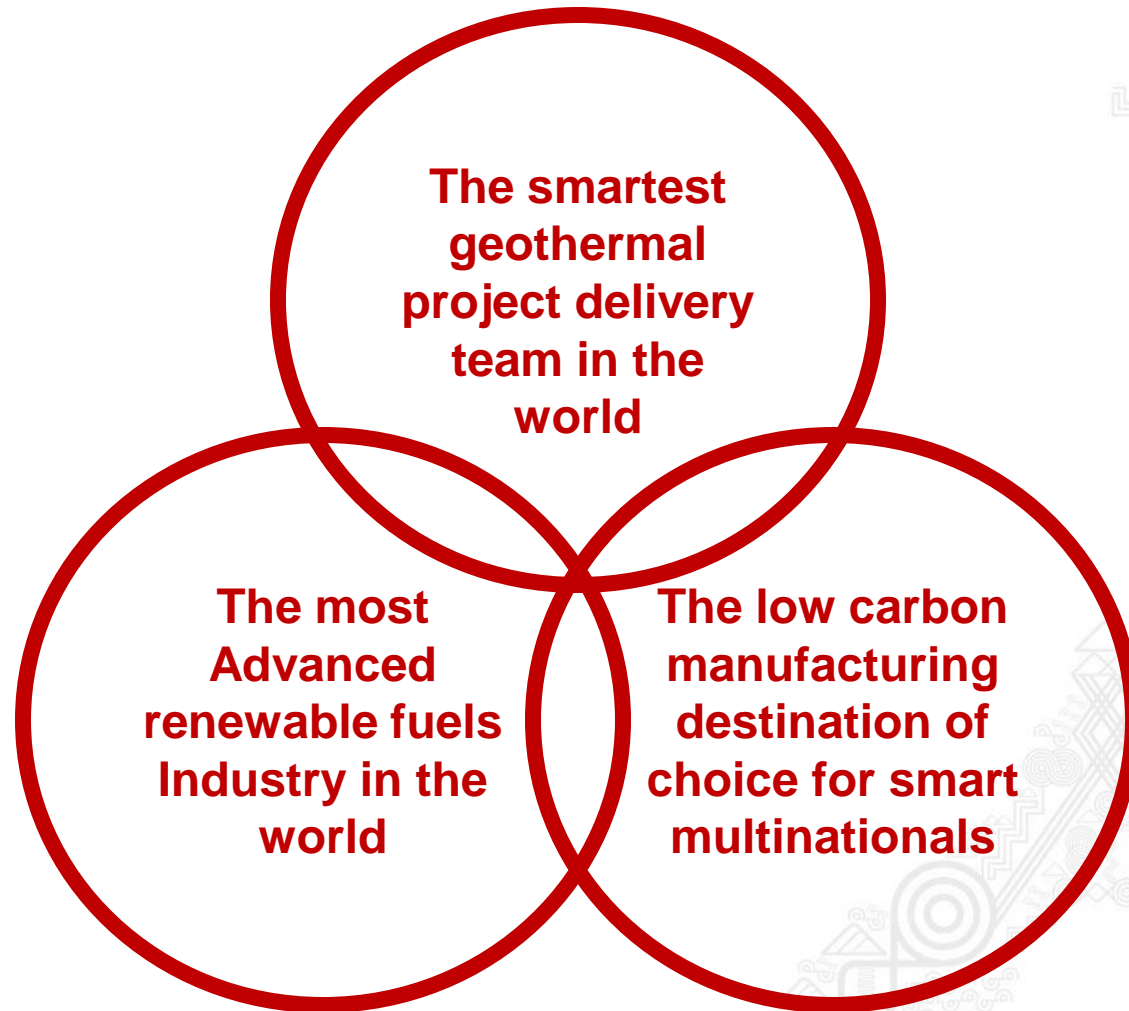
Kawerau Investment Opportunities





Key Learnings and Insights





= Central North Island – the geothermal capital of the world



GEOHERMAL NEW ZEALAND





New Zealand – geothermal energy today

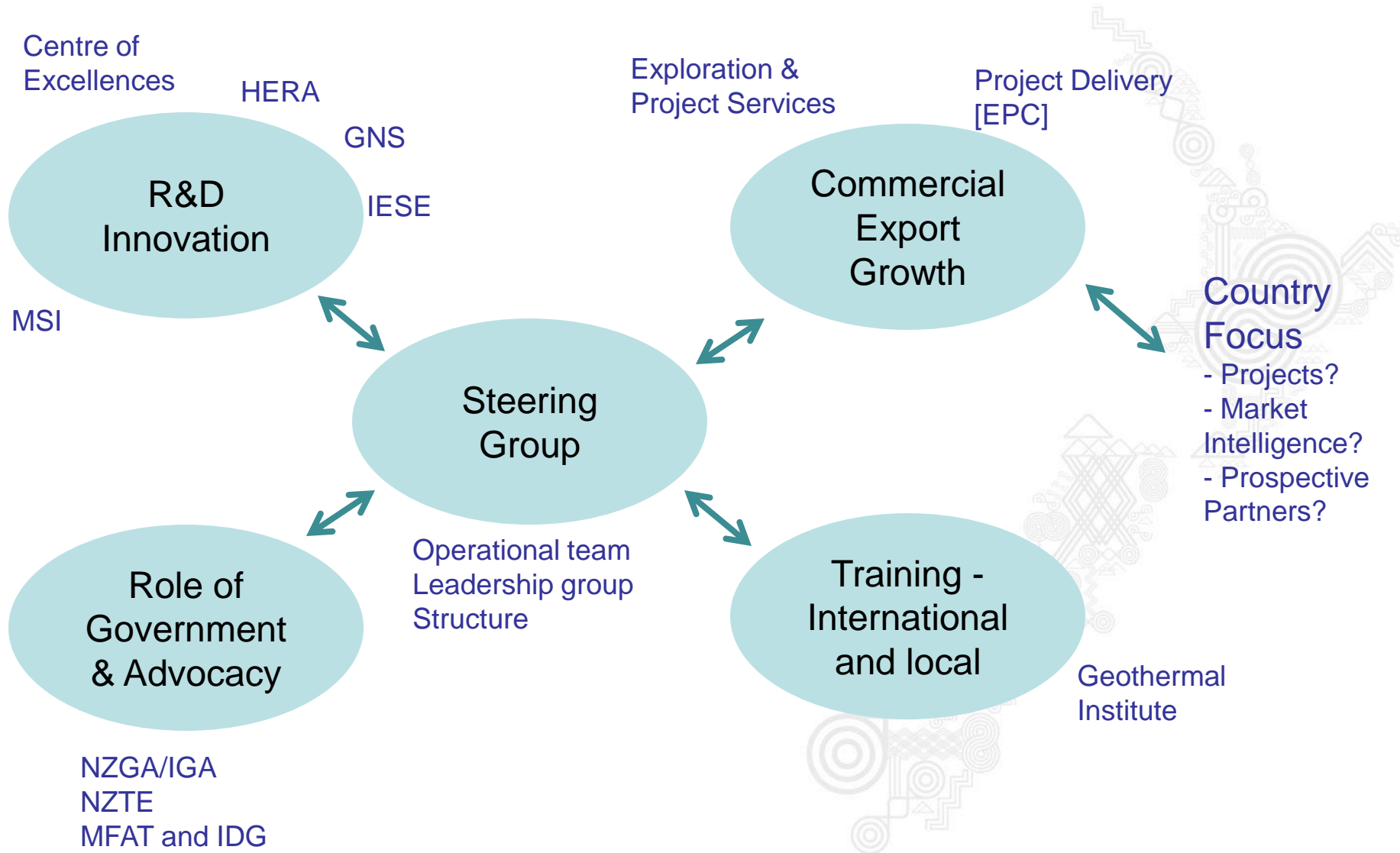


Nga Awa Purua – Joint development between Mighty River Power and Tauhara North No 2 Trust



Geothermal New Zealand Capable partners





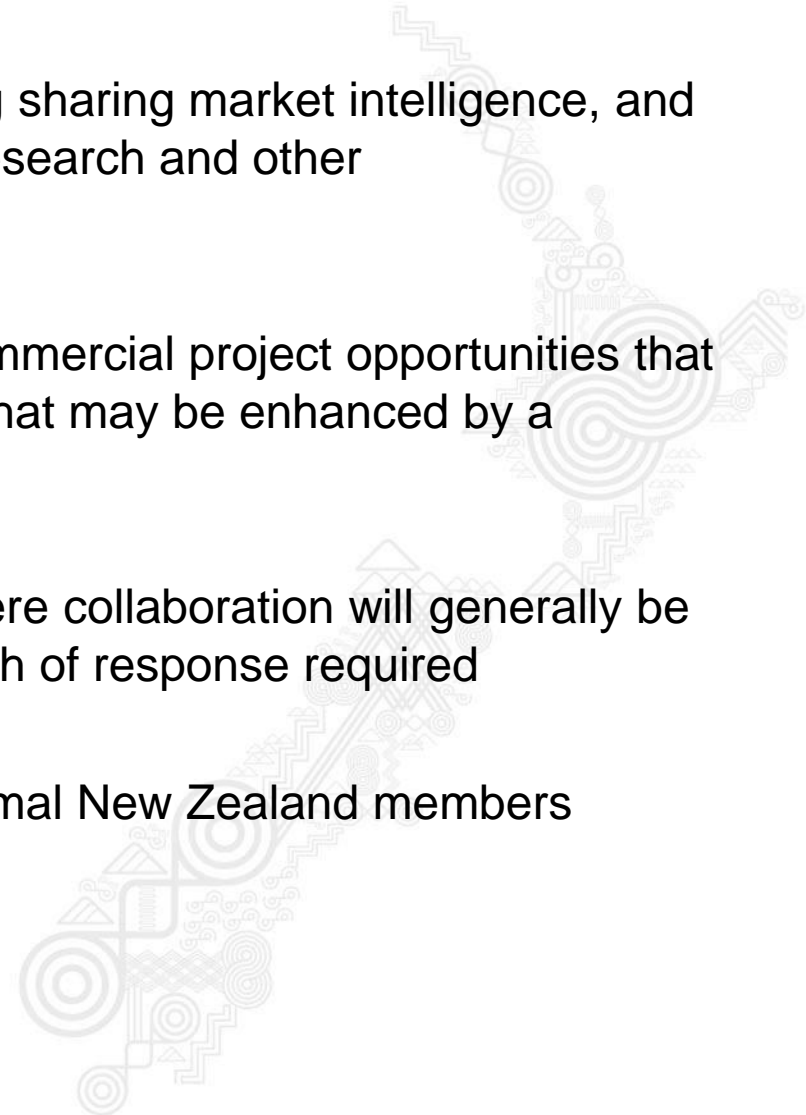


- Hawkins / NZTE funded research – NZ Inc Export Growth reports
- July- August - Implementation Meetings and Company interviews
- September-October
 - Develop Industry Implementation Plan
 - Begin market research
 - Visit to Japan
 - Participate at GRC
- December
 - Market visit to Indonesia





- There is value in soft networking, including sharing market intelligence, and assisting where appropriate with market research and other development/promotional work
- Geothermal New Zealand may identify commercial project opportunities that we have not previously been aware of or that may be enhanced by a collaborative approach
- Will focus on large scale opportunities where collaboration will generally be necessary to achieve the scale and breadth of response required
- Will refer smaller opportunities to Geothermal New Zealand members

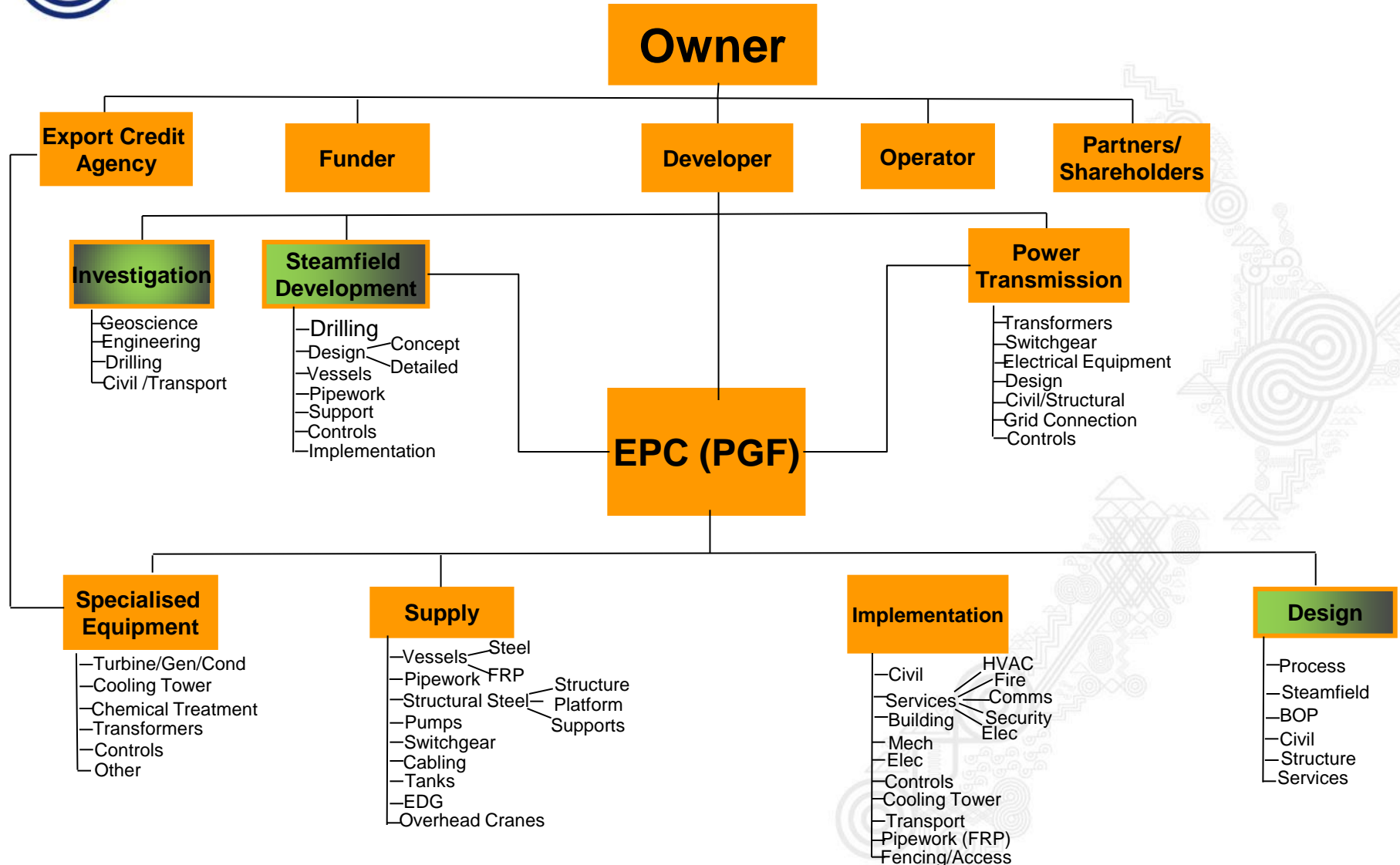




- Major Geothermal Developments around the world are typically completed utilising the Engineer, Procure and Construct (EPC) contracting model - with variations
- A 100MW greenfield's offshore project (from Prospecting to Full Production) costs USD300-350 million in total. Current NZ participation might be \$5-45 million
- Through a collaborative/cluster approach to marketing, information sharing and project implementation—the NZ Industry is well positioned to substantially increase its share of the project revenue to 30%.



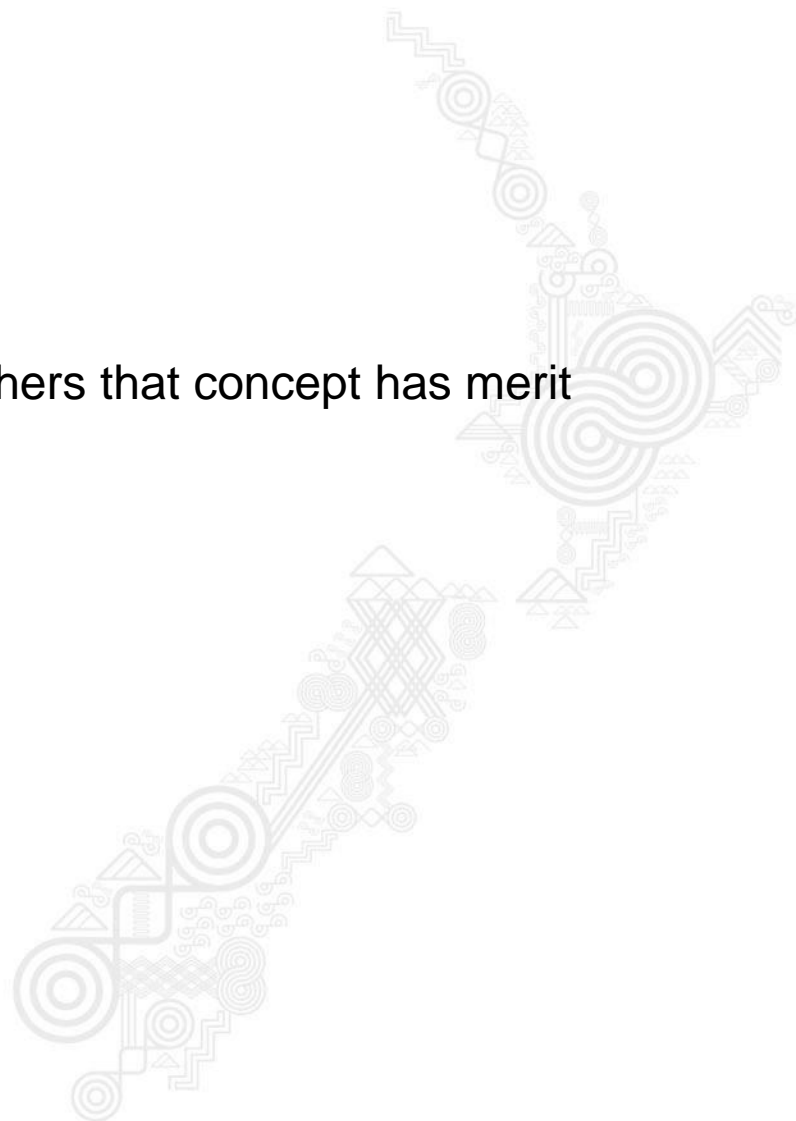
Increasing our share of EPC Contracting





What's Next?

- In market work – Indonesia
- International project database
- Convince ourselves and demonstrate to others that concept has merit
- Secure funding for next phase
- Establish more formal structure





THANK YOU

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