

# Has the New Zealand Geothermal Industry Reached Critical Mass?

EFNZ  
15 April 2011

# Overview

1. Where The Industry is Now
2. Where the Industry is Going
3. Some Observations on the Journey

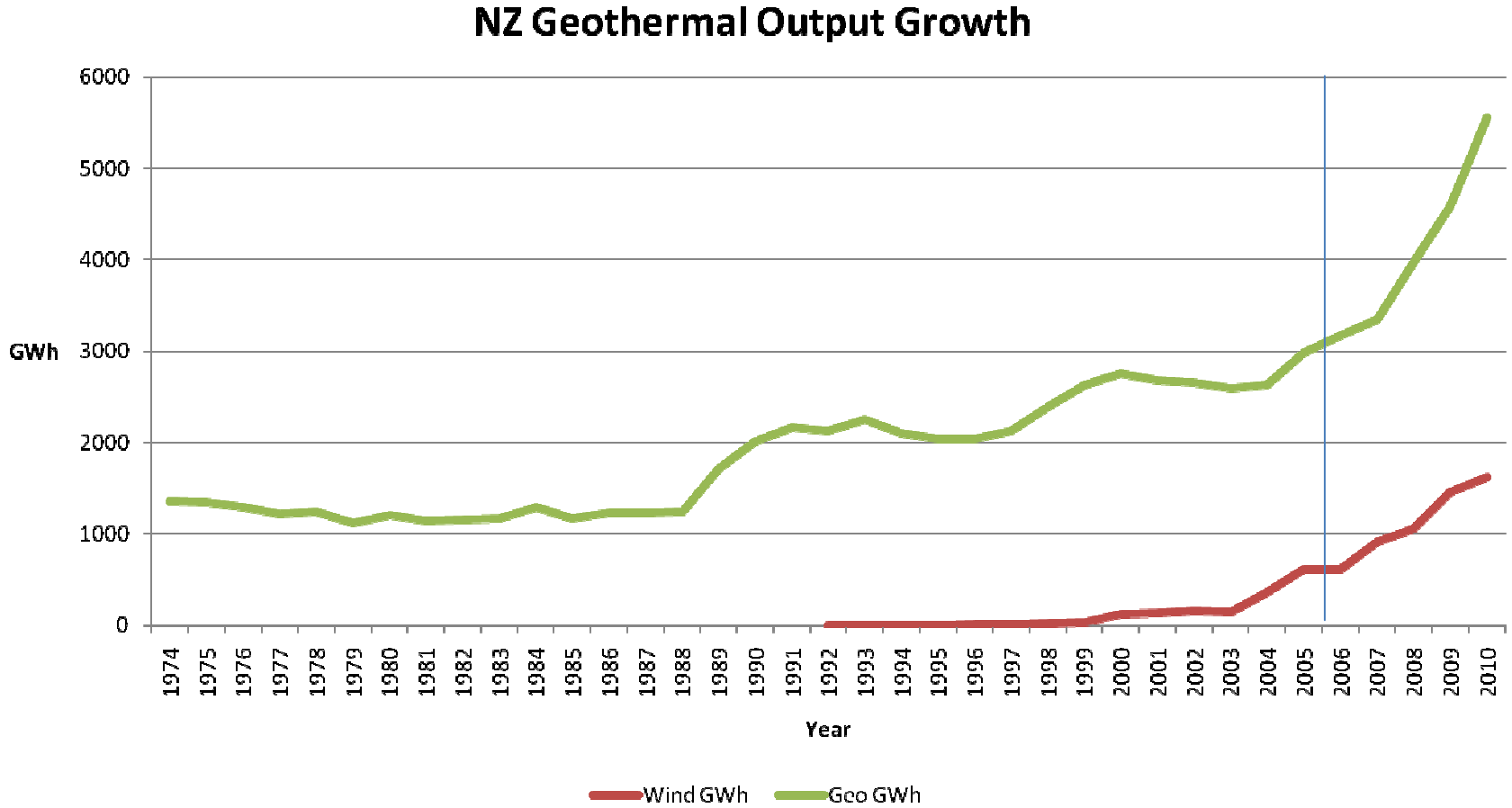


*Disclaimer: the views expressed in this presentation are my own and not the views of Contact Energy Ltd.*



**WHERE WE ARE**

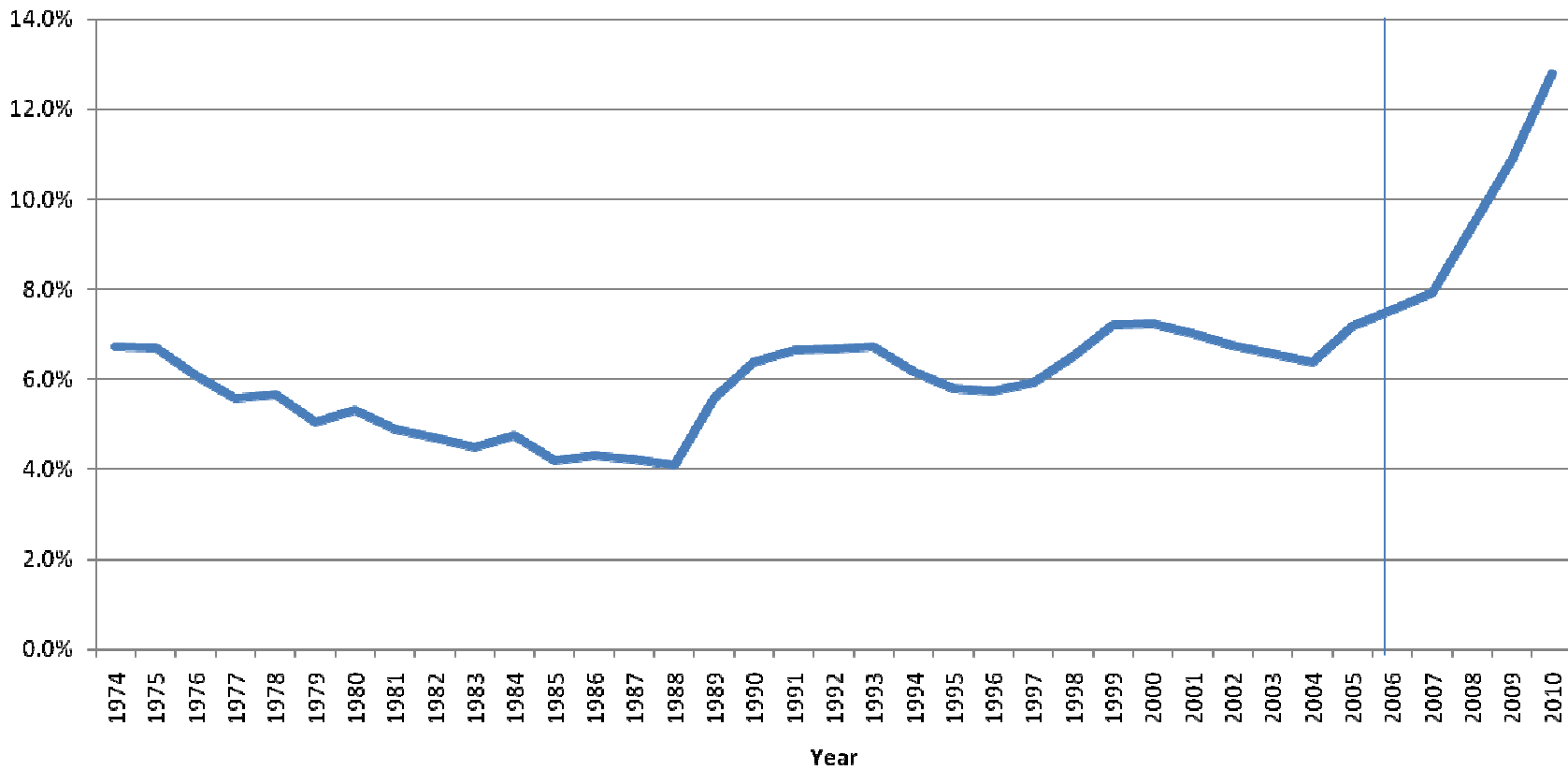
# Geothermal Generation Has Almost Doubled Since 2006



Source: MED

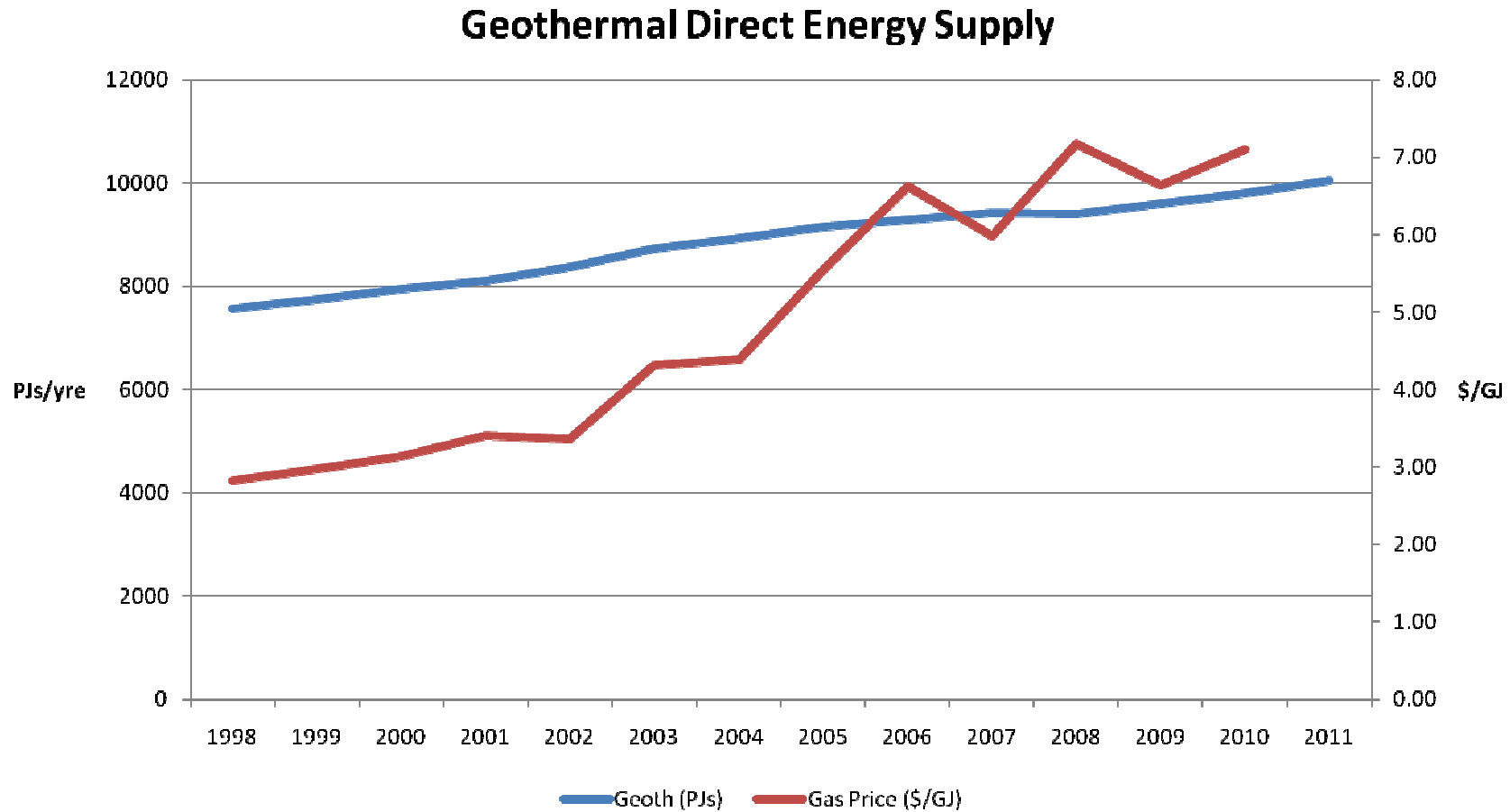
# Geothermal Generation's Contribution to Electricity Supply Continues to Rise

## Percent Geothermal Generation



Source: MED

# Direct Energy Supply Continues to Grow With Increasing Gas Prices



Source: MED & NZGA

# Even in NZ, Geothermal is a Niche Industry

- Annual Revenue: \$430 million
- Industry Position: 58 percentile of NZ
- No Employees (FTE): < 1000
- Uneven firm distribution
- Few pure players
- Collective Behaviour: Fractious
- Shared Capability with
  - Oil & Gas
  - Forestry
  - Dairy (increasingly)
  - Power

Segment	# Firms
Owner/Operators	7
Service Providers	
Geoscience	3
technical consulting	12
business consulting	0
drilling	13
Construction/Fabrication	12
Energy Audit & Law	3
Financing	0
Education/Research	2
Software	1
<b>Total</b>	<b>53</b>

Industrial segments taken from Porter (2010)

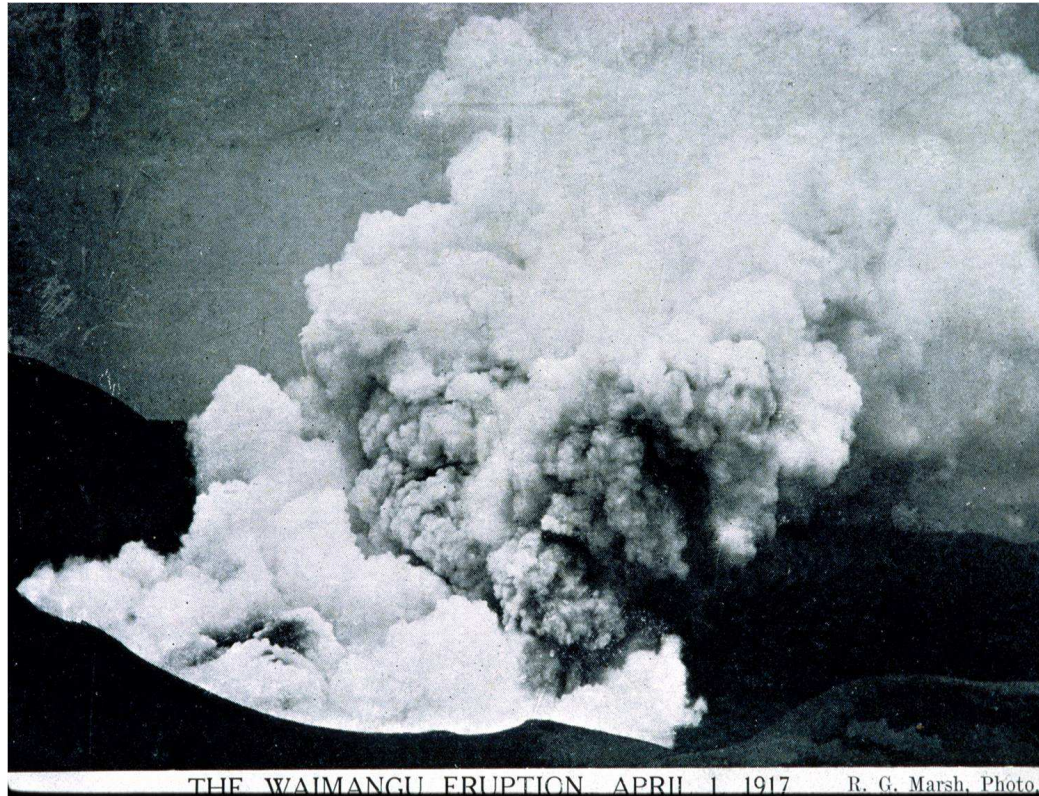
# Despite 50 Years of Operations, The Geothermal Industry has a Immature Profile

## Extractive Industry Maturity Classification

- Phase 1: production only – equipment & services imported
- Phase 2: import substitution for some inputs & equipment  
**New Zealand**
- *Phase 3*: cluster begins – first exports of equipment & services
- Phase 4: value of support industries exceeds value of mineral extraction

Countries do not get rich from having natural resources and nothing else

From Ontario Ministry of Mines



THE WAIMANGU ERUPTION APRIL 1 1917 R. G. Marsh, Photo.

**WHERE WE ARE GOING**

# Critical Mass? The appropriate scale depends on what NZ is trying to achieve

## Consensus Industry Goals:

- Attain the financial strength to maintain existing capabilities
- Continued growth to facilitate firm specialisation and productivity
- Increase NZ competitiveness
- Explore overseas expansion (services and operations)

# New Zealand Ranks Sixth in Net Geothermal Capacity (fifth if you include high temp industrial use)

Country	Net Gen Capacity MWe
USA	3,040
Philippines	1,980
Indonesia	1,007
Mexico	958
Italy	723
New Zealand	697
Iceland	421
Costa Rica	163

# International Clusters Emerging to Support Growth

Country	Cluster Location	Strengths
Iceland	Reykjavik (by design)	Integrated Value Chain Concentration of fields Education-research
Indonesia	Bandung	Local content requirements High level of activity Large experienced firms Growing capability
USA	Reno (NV)	Specialist firms High level of activity
New Zealand	Taupo-Rotorua (self organising)	Concentration of fields Capability links to industry
Australia	Adelaide	Financial & govt support Education-research Aggressive firms

# New Zealand has a Modest International Geothermal Capability Reputation

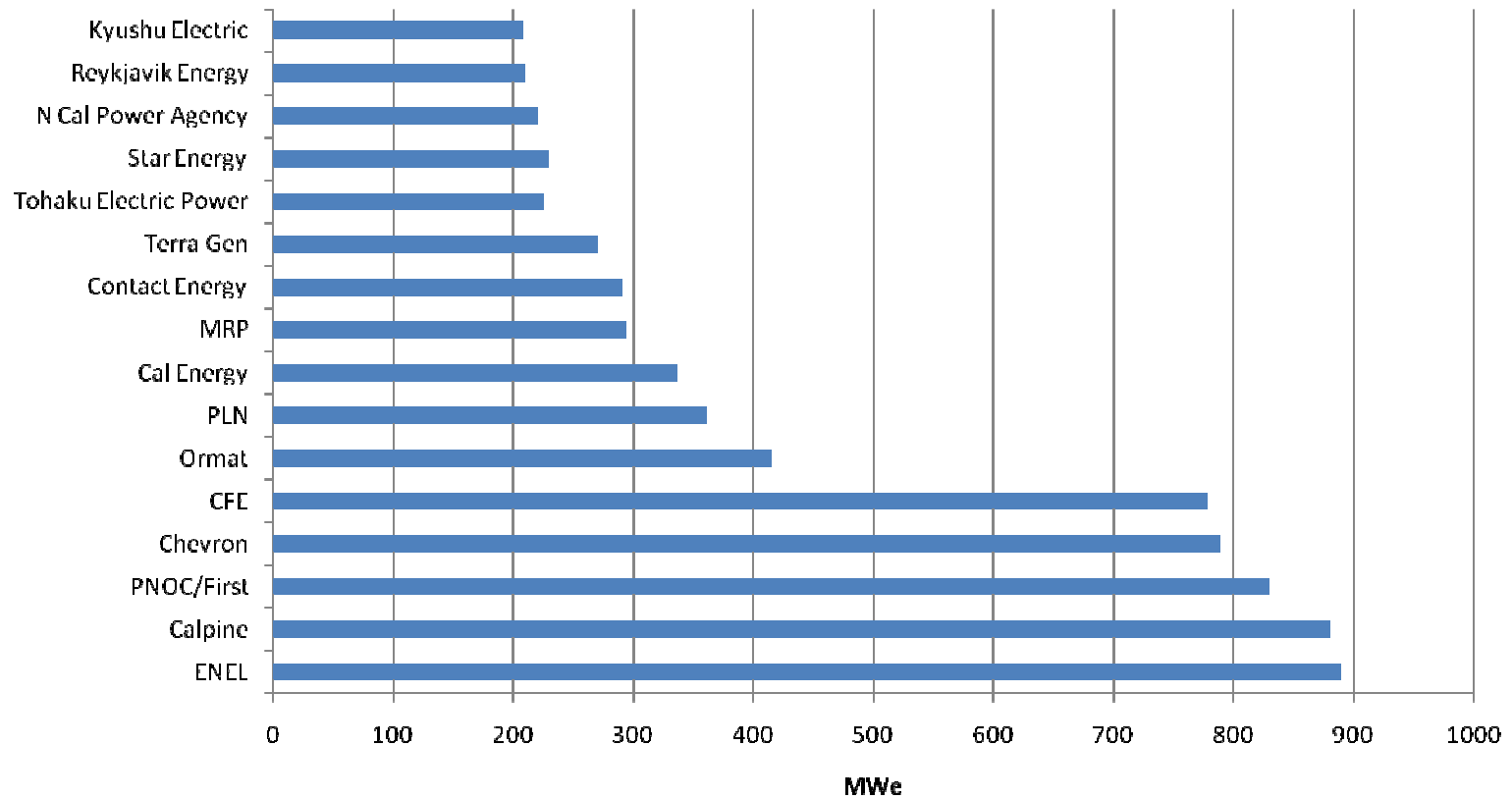
Competitive Factor	NZ score	CAN score	ISD score
Resource endowment	7	4	7
Exploration & drilling capability	5	7	8
Technical capability	6	7	8
Experienced developer/operators	5	7	8
Capital Markets	1	9	8
Equipment Suppliers	1	3	5
Education-Research	5	7	8
Political Environment	7	8	8

Based on surveys; rank from 1 to 10

After Islandsbank (2010) and GRC pers observations

# NZ Developers Are Mid Sized in the International Market

**Geothermal Operators by Net Capacity**

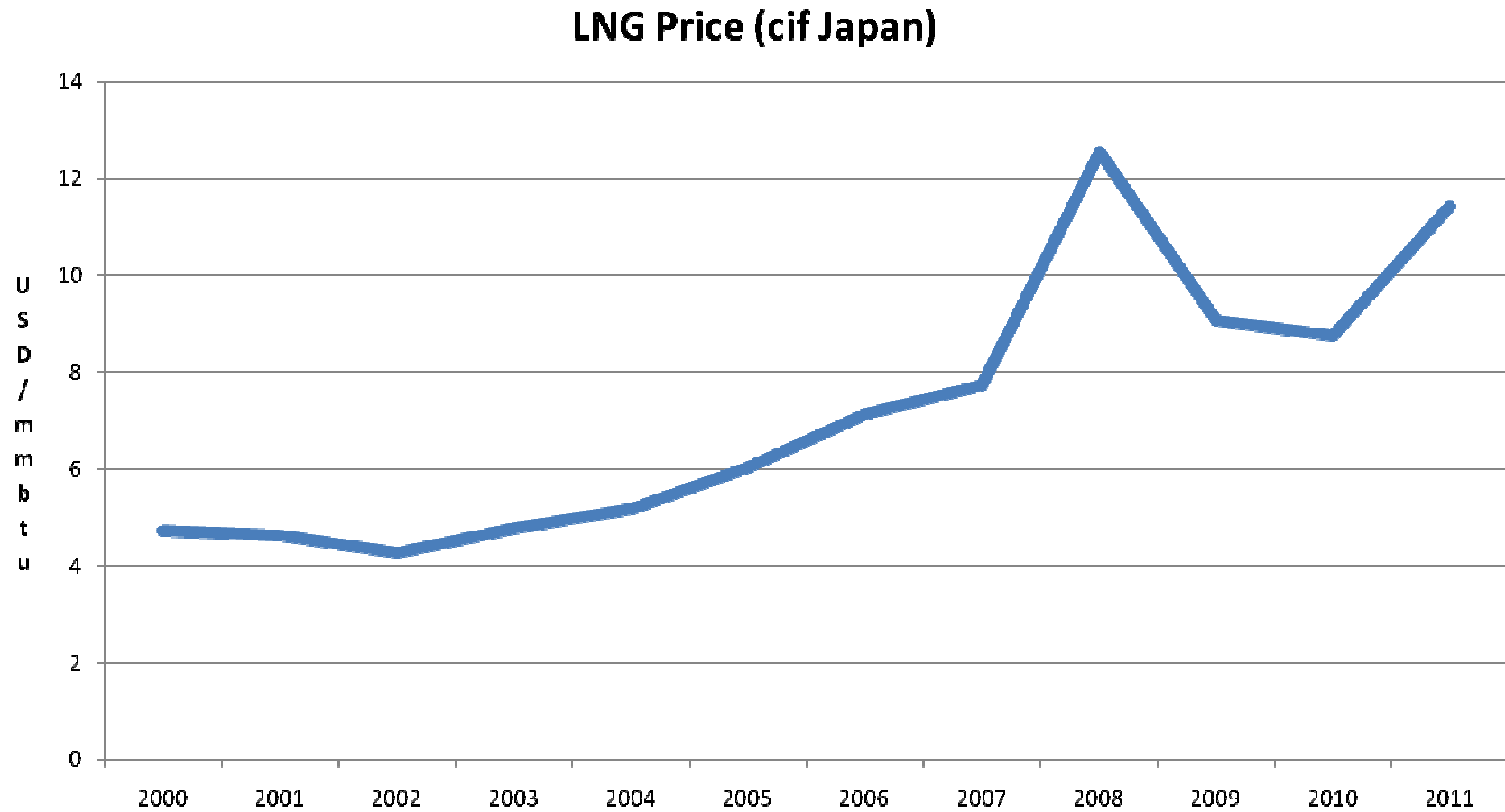


## Some Observations on the Journey

- Geothermal industry needs to grow into the 40th percentile of firms to attain critical mass (depending on electricity market growth and/or thermal retirements)
- Increasingly important contribution to NZ:
  - Export potential – but in the longer term
  - Extraction without Mineral Curse
  - Near term: Increasing NZ industrial comparative advantage

# The Opportunity: Asia LNG Costs Rising

## Primary Processing Comparative Disadvantage



BP Statistical Review, Petroleum Economist