



**Asia-Pacific
Economic Cooperation**

PEER REVIEW ON FOSSIL FUEL SUBSIDY REFORMS IN NEW ZEALAND

Final Report
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Caveats

The opinions expressed in this report are a consensus view of the APEC New Zealand Review Panel after discussions with the New Zealand Government and review of various source documents. Those opinions do not represent any single individual on the Review Panel, or the New Zealand Government, or any other APEC economy or any organization with which a review panel member may be associated. Any errors in the report are solely the responsibility of the members of the Review Panel.

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Acronyms and Abbreviations

ACC: Accident Compensation Corporation
APEC: Asia-Pacific Economic Cooperation
APRNZ: APEC Panel Review for New Zealand
APR: accounting profits royalty
AVR: ad valorem royalty
CoalCorp: Coal Corporation of NZ Ltd
CNG: compressed natural gas
DAP: Seismic Data Acquisition Programme
DRR: demand response resource
DSM: demand side management
DTA: Double-Taxation Agreements
EA: Electricity Authority
EECA: Energy Efficiency and Conservation Authority
EWG: Energy Working Group
GDP: Gross Domestic Product
GHG: greenhouse gas emissions
GST: Goods and Service Tax
GWh: gigawatt hours
IEA: International Energy Agency
IFFSR: Inefficient Fossil Fuel Subsidy Reform
IMF: International Monetary Fund
ktoe: kiloton of oil equivalent
LPG: liquified petroleum gas
mb: million barrels
MBIE: Ministry of Business, Innovation and Employment
MED: Ministry of Economic Development
MEPS: Minimum Energy Performance Standards
MW: megawatts
MYA: Multi Year Appropriation
NGL: natural gas liquids
NZD: New Zealand Dollar
NZEECS: New Zealand Energy Efficiency and Conservation Strategy
NZP&M: New Zealand Petroleum and Minerals
OECD: Organisation for Economic Co-operation and Development
PEPANZ: Petroleum Exploration and Production Association of New Zealand
PJ: petajoule
PREE: APEC Peer Reviews on Energy Efficiency
RPS: redeemable preference shares
SOE: State Owned Enterprise
UNEP: United Nations Environment Programme
USD: United States of America Dollar
VPR: Voluntary Peer Review
VPR/IFFS: Voluntary Peer Review of Inefficient Fossil Fuel Subsidy Reform

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Preface

Starting in 2009, APEC Leaders have annually committed “to rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services.” In 2011, APEC Leaders agreed to set up a ‘voluntary reporting mechanism’ that they would review annually to assess APEC’s progress toward this goal. APEC Leaders in 2013 agreed to build regional capacity to assist APEC economies in rationalizing and phasing out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services.

Fossil fuel subsidies incentivize fossil-fuel production and consumption and can result in increased energy demand. Inefficient subsidies can lead to fiscal pressure on the government, harmful emissions, and potentially undermine APEC’s sustainable green growth agenda. The APEC Energy Ministers noted in the 2012 Energy Ministers’ statement that “the reduction of subsidies will encourage more energy efficient consumption, leading to a positive impact on international energy prices and energy security, and will make renewable energy and technologies more competitive.” Such inefficient fossil fuel subsidies reform (IFFSR) can also reduce local pollution and GHG emissions.

Identifying appropriate reforms and implementing these reforms are challenging despite the benefits for individual economies. Therefore, an APEC Voluntary Peer Review (VPR) process on reform of inefficient fossil fuel subsidies can help APEC economies identify reform options and help disseminate best practices on reform of inefficient fossil fuel subsidies. The VPR can also improve the quality of voluntary reporting to APEC Leaders.

New Zealand is the second of several volunteer member economies that are expected to participate in the Fossil Fuel Subsidy Reform Peer Review process. The New Zealand Government believes, as do other APEC members, that any measure that promotes wasteful consumption of fossil fuels is ineffective and should be reformed. The objectives of Peer Review are consistent with the New Zealand Energy Strategy objective of making the most of its abundant energy potential for the benefit of all New Zealanders. Reaching this objective involves the environmentally-responsible development and efficient use of New Zealand’s diverse energy resources so that: 1) the economy grows, powered by secure, competitively-priced energy; and 2) the environment is recognized for its importance.

Following an Executive Summary, the main report is divided into two parts. The first part presents the need for fossil fuel subsidy reforms, discusses the background to the APEC VPR process and lessons learned in the review process so far, and presents an overview of the New Zealand economy, socio-demographics and the energy landscape. The second part details the history and context of the reviewed measures, and presents the key findings and recommendations from the APEC Review Panel for New Zealand.

[Signature]

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Executive Summary

APEC Leaders in 2013 agreed to build regional capacity to assist APEC economies in rationalizing and phasing out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services. As part of such capacity building, APEC set up a voluntary peer review (VPR) process to evaluate the progress of APEC economies towards the group's shared goal of phasing out inefficient fossil fuel subsidies that promote wasteful consumption. At the APEC Energy Working Group meeting in November 2013, New Zealand volunteered to be the second economy to undergo a Voluntary Peer Review of Inefficient Fossil Fuel Subsidy Reforms (VPR/IFFSR).

The Government of New Zealand worked closely with the EWG Lead Shepherd to provide technical and logistical support for this second VPR/IFFSR in New Zealand. Many of the lessons learned during the first VPR/IFFSR in Peru were applied in the review process for New Zealand. As the APEC Review process has become more institutionalized, the process is gaining efficiency and credibility among APEC member economies. The review process has tremendous robustness in terms of flexibility in handling different contexts and views of what constitutes a subsidy or an energy support measure. The seven-member review panel for New Zealand included not only volunteers from APEC economies, but also several nominated by the host economy. The APEC Review Panel for New Zealand (APRNZ) consisted of seven members from China (PRC), The Philippines, Indonesia, Thailand, the OECD and the United States.

In coordination with the EWG Lead Shepherd, New Zealand selected eight different policy instruments for evaluation by the APRNZ:

- 1. Non-resident off-shore drilling rig and seismic ship tax exemption:** A temporary five-year exemption for non-resident off-shore drilling rig and seismic ship operators from paying tax on their profits.
- 2. Tax deductions for petroleum-mining expenditures:** Tax measures for petroleum exploration and development expenditures, which are designed to reflect specific characteristics unique to the petroleum industry, while remaining broadly consistent with taxation of other sectors in the economy.
- 3. Temporary reduction in royalty rates:** A temporary reduction of the royalty rate for natural gas discoveries made between 2004 and the end of 2009. This measure terminated at the end of its effective period.
- 4. R&D funding for the oil industry:** The funded program acquires seismic and technical data on New Zealand frontier basins, and makes these data available without cost to the public.
- 5. Financial restructuring of Solid Energy:** A state-owned enterprise, which develops and supplies coal in New Zealand and internationally, has under-gone a financial restructuring due to a drastic decline in world coal prices.
- 6. Indemnity for mining land reclamation:** An indemnity was provided to Solid Energy for the company's costs for environmental remediation.
- 7. Motor spirit excise duty refund:** A refund of a motor-spirit excise tax is allowed for eligible off-road vehicles, including off-road agricultural and commercial vehicles and marine transport.
- 8. Funding of international treaty obligations to hold oil stocks:** This annual funding serves as a principal mechanism for mitigating international oil supply disruptions.

These measures were selected on the basis of the OECD inventory approach. This provided for a broader selection of measures than just those affecting consumption. The inventory approach fit New Zealand’s goals for the peer review process. Those goals included: promoting transparency around present fossil fuel support measures more broadly (including subsidies), and drawing lessons from past reforms of these measures; promoting ambition for reform of inefficient fossil fuel support measures by maintaining a free and frank dialogue; and, building political awareness of the issues around reform.

The New Zealand Ministry of Business, Innovation, and Employment (MBIE) produced a pre-briefing packet for the APRNZ and coordinated the peer review meetings held in Wellington during the week of March 16-20, 2015. The APRNZ met with technical staff and senior officials across a number of different ministries, and industrial stakeholders. Based on the pre-briefing materials and the discussions during the meetings with New Zealand, the APRNZ made key conclusions about the energy support measures selected by the New Zealand Government, and developed some recommendations. The key findings and options for reform for each of the reviewed measures are provided in Exhibit E-1.

Exhibit E-1: Key findings and options for reform for the eight evaluated energy support measures

Measure	Key Findings	Options for Reform
Non-resident off-shore drilling rig and seismic ship tax exemption	<ul style="list-style-type: none"> • Measure seems to help correct a distortion in the tax system that is caused by a special rule in New Zealand’s Double-Tax Agreements (DTAs); and, is consistent with New Zealand’s approach to taxation. • Tax exemption does appear to prevent ‘churning’ or cycling of equipment. • Fiscal impacts are neutral or slightly positive. • Measure is reviewed every five years and does have currently an expiration date of 2019. 	<ul style="list-style-type: none"> • Three options are available to minimize effects of the DTA: <ul style="list-style-type: none"> • Make the exemption permanent; • Keep extending the temporary exemption for a further five years; or, • Let the exemption expire at the end of 2019, but resulting in distortive effects of the DTAs.

Exhibit E-2: Key findings and options for reform for the eight evaluated energy support measures (Continued)

Measure	Key Findings	Options for Reform
Tax deductions for petroleum-mining expenditures	<ul style="list-style-type: none"> • Three measures are broadly consistent with New Zealand’s general tax practices across all sectors of its economy. • May be an asymmetry in the treatment of development expenditures since long-lived projects (> 7 years) can be amortized over a 7-year period rather than over the life of the asset. • Termination would require replacement with alternative provisions or movement under general taxation rules which are impractical for implementation in the petroleum industry. • Measures are unlikely to affect consumption through lower oil prices since New Zealand is price taker on world markets. • Measures may increase energy security and reduce the country’s import bill. 	<ul style="list-style-type: none"> • Claw back provisions for exploration expenditures could be extended to include all expenditures of a capital nature. • Provisions around the immediate deductibility of development expenditure from the date at which expenditure is incurred are consistent with general tax policy. • Remove the option to deduct development expenditures in a straight line over seven years and simply to retain the reserve depletion method.
Temporary reduction in royalty rates	<ul style="list-style-type: none"> • Policy introduced in response to a concern over the downward revision of reserves in the Maui gas field in 2002/03. • Petroleum royalties capture natural resource rent for the owner of the mineral rights. • Royalty reduction applies only to fields discovered between 2004 and 2009. • Low royalties or a reduction in an already low royalty rate appear to be insufficient to induce more oil and gas exploration. 	<ul style="list-style-type: none"> • Royalty reduction was applied for only a very short period (approximately 5 years), and has not been renewed. • Government of New Zealand does not plan similar adjustments to the existing royalty scheme.

**Exhibit E-1: Key findings and options for reform for the eight evaluated energy support measures
(Continued)**

Measure	Key Findings	Options for Reform
R&D funding for the oil industry	<ul style="list-style-type: none"> • Measure supports basic understanding of New Zealand’s geology. • Publicly available information fosters transparency and helps attract investment into the development of the country’s natural resources. • Information used for a wide range of other activities. • Measure only funded until June 30, 2018. • More fossil-fuel production in New Zealand would be unlikely to affect world market prices. • To the extent to which geological data collected are a public good, then government intervention is justified. 	<ul style="list-style-type: none"> • Expansion of funding for seismic data acquisition and other geoscience research; • Reduction of basic funding for seismic data acquisition as basic science research; or, • Discontinuance of funding for basic science research.
Financial restructuring of Solid Energy	<ul style="list-style-type: none"> • New Zealand Government has already helped Solid Energy twice in the recent past. • Government has only received dividends in three years since Solid Energy formed in 1996. • Several of the company’s mines are located on the West Coast of the South Island, a region with low economic activity and few employment opportunities. • At the time of the peer review, the company seemed to require coal prices of at least USD 130 per tonne to be viable; prices were around USD 70 per tonne in March, 2015. • Government does not provide subsidies to consumers of coal, nor dictate that they must buy from a New Zealand source. • Impact of Government support for Solid Energy appears to have little or no impact on coal consumption in New Zealand. 	<ul style="list-style-type: none"> • At the time of the review, it was not clear that letting Solid Energy fail would lead to better economic recovery of the reserve/resource base and higher royalty returns to the Crown. • In August 2015, the Board of Solid Energy took the company into voluntary administration with a staged liquidation of assets over a two and a half year period. • At the end of the staged liquidation, the state-owned coal company will no longer exist.

**Exhibit E-1: Key findings and options for reform for the eight evaluated energy support measures
(Continued)**

Measure	Key Findings	Options for Reform
Indemnity for mining land reclamation	<ul style="list-style-type: none"> • Solid Energy is legislatively required to rehabilitate to an agreed condition the land on which its mining activities occur. • New Zealand Government agreed to indemnify Solid Energy for the end of mine life rehabilitation costs (including water) relating to mining activities prior to September 30, 2014. • Indemnity had an estimated present value of NZD103 million as of September, 2014 and improved the company's balance sheet by that amount. • More data would be needed to evaluate the impacts on production costs but impacts on consumption are presumably nil or very low. 	<ul style="list-style-type: none"> • In August 2015, the Board of Solid Energy took the company into voluntary administration with a staged liquidation of assets over a two and a half year period. • The indemnity is being restructured to follow a specified asset and will not be used to satisfy creditors.

**Exhibit E-1: Key findings and options for reform for the eight evaluated energy support measures
(Continued)**

Measure	Key Findings	Options for Reform
Motor spirit excise duty refund	<ul style="list-style-type: none"> • Excise-duty revenues are earmarked for road construction and maintenance, i.e., a user’s fee for roads. • Refund solely available to off-road vehicles, mostly tractors and harvesters in the farming sector and commercial vessels. • Eligible users of fuel need to file an application. • Measure is coherent within the broader context of the country’s motor-fuel taxation, with user charges on on-road diesel-powered vehicles also earmarked for road construction and maintenance. • Total revenues from the excise duty amount to about NZD 1.5 billion (USD 1.12 billion) while total refunds account for around 3% to 4%. • Modest instances of fraud in the registration of eligible vehicles exist. • Monitoring and better data may be needed to streamline refunds. 	<ul style="list-style-type: none"> • Discontinue the refund for non-road uses; • Refine the mechanism used in determination of eligibility for refunds; or • Replace the current refund mechanism.

**Exhibit E-1: Key findings and options for the eight evaluated energy support measures
(Continued)**

Measure	Key Findings	Options for Reform
Funding of international treaty obligations to hold oil stocks	<ul style="list-style-type: none"> • Optimizing New Zealand’s oil security aligns with key government objectives. • This is a Treaty obligation and New Zealand takes its international Treaty obligations seriously. • New Zealand Government is required to hold stocks for 90 days of net imports as part of its IEA treaty obligations. • Levies for financing tickets are akin to a user fee and raise the price of petroleum products to beneficiaries of oil security. 	<ul style="list-style-type: none"> • Withdraw from IEA membership; • Continue purchasing contracts (options) as the lowest cost option to meet New Zealand’s obligations under the international treaty; or • Build and stock sufficient oil storage capacity to meet New Zealand’s obligation under the international treaty.

Overall, the APRNZ concluded that none of the eight measures reviewed constituted ‘inefficient subsidies that encourages wasteful consumption’. One of the measures, a temporary reduction in royalties on new natural gas discoveries, had expired in 2009 and had not been renewed; and, the Government of New Zealand had no plans for renewal. Further, since the review panel visit, Solid Energy, the state-owned coal company, has gone into voluntary administration with a staged liquidation of assets. The company will go out of existence in two and half years, and the New Zealand Government will have exited the coal mining industry.

The Government was consistently monitoring and reviewing the measures put up for review and making changes when required. The tax exemption and deductions for the petroleum industry were all deemed broadly consistent with the general taxation principles governing other industries in New Zealand. There was only one tax measure, the one-off option for producers of long-lived assets (> 7 years) to choose a straight-line depreciation of development expenditure over seven years, which would reduce production costs. The general support measure of R&D funding for the petroleum industry provided basic scientific information that was also used for other purposes; the data collection efforts were considered to be a public good and governmental intervention was justified. Subsequent to the ARP NZ visit, the Board of Solid Energy took the company into voluntary administration with a staged liquidation of assets over two years. As a result, the Government of New Zealand is exiting the coal mining industry. The indemnity previously given to the company is being re-structured to follow the mining assets.

The two measures affecting consumers do not lower prices to consumers. Even with a slight refund of the motor-spirit excise tax of 3% to 4%, consumers in New Zealand still pay prices 22% (at the pump or retail on average) above the average in the OECD, on a purchasing power parity basis. Funds from the motor-spirit excise tax are dedicated to road infrastructure maintenance and construction, and thus, constitute a user’s fee. Similarly, the funding for the IEA treaty obligation comes from a per litre

assessment on petrol and diesel consumption. This again is a dedicated use of the revenues, and increases the price of those commodities to the beneficiaries of oil supply security.

Based on these conclusions and options for reform, as defined by the collaborative discussions between the APRNZ and the Government of New Zealand, a set of consensus-driven recommendations were developed. These recommendations are shown in Exhibit E-2.

Exhibit E-2: APRNZ recommendations for the eight evaluated energy support measures

Measure	Recommendations
Non-resident off-shore drilling rig and seismic ship tax exemption	<ul style="list-style-type: none"> The measure already has a termination date; and the Government reviews the measure for its effectiveness and usefulness in terms of impacts on exploration and production. To provide greater certainty to the petroleum industry, reviews of the measure should be conducted with a lead-time of at least a year prior to expiration of the exemption.
Tax deductions for petroleum-mining expenditures	<ul style="list-style-type: none"> To provide greater certainty to the petroleum industry, reviews should be conducted with a lead-time of at least a year prior to any revisions or changes to the existing legislation.
Temporary reduction of the royalty regime	<ul style="list-style-type: none"> No recommendations made. The measure has already been terminated and the Government of New Zealand has no plans to re-institute a similar measure.
R&D funding for the oil industry	<ul style="list-style-type: none"> Review on a regular basis the effectiveness and usefulness of this expenditure in terms of the impacts on petroleum exploration and production. Consider inventorying other users (besides the petroleum industry) of the data obtained so those impacts may be included in the evaluation of the program. Leverage this funding with additional funding for contestable funding with coordinating research programs at universities, research institutes, and industry.
Financial restructuring of Solid Energy	<ul style="list-style-type: none"> The entry of Solid Energy into voluntary administration in August 2015 voided all recommendations made by the APRNZ during the exit meeting in March 2015. Solid Energy will cease to exist in 2017.
Indemnity for mining land reclamation	<ul style="list-style-type: none"> The entry of Solid Energy into voluntary administration in August 2015 voided all recommendations made by the APRNZ during the exit meeting in March 2015.

Exhibit E-2: APRNZ recommendations for the eight evaluated energy support measures (Continued)

Measure	Recommendations
Motor spirit excise duty refund	<ul style="list-style-type: none"> • Better target the refunds by reviewing eligible vehicle types and fuels on a regular basis or placing a cap on each refund recipient. • Collect more data to enable an analysis of the impacts of fuel prices on the consumption of the agriculture sector and other off-road users. • Review on a regular basis: <ul style="list-style-type: none"> ○ The effectiveness of the measure; and, ○ The broader question of tax rates and incentives for fuel efficiency. • Consider converting the current system from an excise tax to a user’s fee basis similar to that used for diesel.
Funding of international treaty obligations to hold oil stocks	<ul style="list-style-type: none"> • No recommendations made. No clear impact on consumption could be identified and the beneficiaries of oil security pay essentially a user’s fee.

There are linkages among the various APRNZ recommendations for all of the energy measures reviewed and other policies or laws in New Zealand. Therefore reform strategies need to be considered holistically in all cases. The New Zealand Government has already been taking proactive steps to monitor, review, and make changes where necessary in each of the energy measures considered. The Government has considered impacts on industry and consumers in undertaking changes or reforms. In all cases it has used economic principles, and considered issues of equity or fairness. The Government is also monitoring best practices in other economies in the OECD in order to maintain consistency internationally. New Zealand does make every attempt to keep its laws and policies in-line with the international community. These practices have made New Zealand very transparent, and made for an efficient and effective peer review process.

PART 1: BACKGROUND INFORMATION

Part 1 of the report contains background information for the APEC Peer Review of the fossil fuel measures selected by the New Zealand Government. The first section summarizes the need for fossil fuel subsidy reforms in general, the second section describes the lessons learned so far about the APEC Peer Review process, and finally the third section provides an overview of the macroeconomics, socio-demographics, and the energy landscape in New Zealand. The government of New Zealand contributed to the information on the New Zealand economic and energy context.

1. Energy subsidies

Energy subsidies, particularly in low- or middle-income economies, are assumed to protect consumers from sharp increases in energy and other commodity prices (UNEP, 2008; IMF, 2013). Energy subsidies can take forms on both energy production and consumption sides. Providing stable, low cost sources of domestic energy are also thought to provide a means for economic development and growth. However, protection of consumers and producers from energy and commodity price fluctuations comes with a price, as the economy has to compensate for the subsidies in some other way. Government expenditures for ineffective energy subsidies can worsen fiscal imbalances, and divert funds from high priority public spending and private investment. Subsidies can also lead to inefficient allocation of resources, and they often lead to overconsumption of energy. Such a situation can drive imbalances in trade for net energy importers, reduce incentives for the adoption of renewable energy and energy efficiency, and accelerate the depletion of natural resources. Finally, the benefits of energy subsidies are not often limited to the targeted lower income population; instead, most often the benefits are captured by higher income consumers, as well as leading to perverse incentives. These distributional effects actually extend to future generations in the form of reduced availability of key inputs for future growth and increased damages from greenhouse gas emissions (GHG).

Energy subsidies absorb measurable levels of global GDP and government revenue in both developed and developing countries, although estimates vary significantly depending on which definition of 'subsidy' is used. The International Energy Agency measures subsidies using a price-gap approach, which involves a comparison between national prices and international benchmarks. The IEA estimates that the global value of subsidies that artificially lower end-user prices for all forms of fossil energy totalled USD548 billion in 2013 (IEA, 2014a). The OECD defines its broader concept of 'support' in general terms as any measure that keeps prices for consumers below market levels, or for producers above market levels or that reduces costs for consumers and producers. This is broadly in line with the IEA's definition of an energy subsidy. The OECD estimates that producer and consumer support combined fluctuated between USD55 billion and USD90 billion per year between 2005 and 2011 for all OECD countries (OECD, 2013). The IMF definition of 'post-tax subsidies' takes a much broader perspective in that it includes the non-internalised external costs that arise from energy consumption (e.g., environmental and health costs) and road traffic. Using this approach, the IMF estimates total 'post-tax subsidies' of USD5.3 trillion in 2015, based on an assumed carbon cost of USD 35 per metric ton (IMF, 2015a; IMF 2015b). The IMF definition of 'post-tax subsidy' differs significantly from that used by the IEA, the OECD and by the World Trade Organization (all of which New Zealand is also a Member of). Under the WTO Agreement on Subsidies and Countervailing Measures, for instance, a subsidy is considered to exist if it is one of four transfer mechanisms (the direct transfer of funds or liabilities; revenue foregone or not collected; the provision of below-cost goods or services; and the provision of income or price support) and if it confers a benefit that is deemed specific enough.

Despite the negative aspects of energy subsidies, they are often difficult to reform due to political resistance from those stakeholders who are receiving the most benefit (IMF, 2013; Clements, et al., 2014). The reforms also lack political and public support, reflecting lack of trust in a government's ability to reallocate expenditures to programs that support broader initiatives to support vulnerable or low-income population groups. Inflationary concerns and competitiveness issues can also dominate the governmental decision process. In many economies undergoing reform, there is often resistance from state-owned or state-operated enterprises, as they are concerned about the effect on their operations in a more competitive business environment.

1.1. Identification of Fossil Fuel Subsidies

From a practical standpoint in terms of reform, identification of a subsidy is the first step in the process. Exhibit 3 has an overview of the classes of subsidies that can be used in the energy sector (UNEP, 2008). The identification of a subsidy requires an understanding of how the subsidy arose, the costs of the subsidy, who receives the subsidy, and the impacts of the subsidy on the economic and energy systems. An inventory provides a natural vehicle for this type of analysis (Kojima, and Koplow, 2015). Even if the impacts of a subsidy are not quantified, the process of inventorying government policy interventions has value. The goal of an inventory is twofold: to help government officials and citizens understand the overall scale of public spending and policies promoting particular energy pathways, and to help identify the most important leverage points for reform.

Exhibit 3: Main types of fossil fuel subsidies Source: UNEP, 2008

Government intervention	Example	How the subsidy usually works		
		Lowers cost of production	Raises price to producer	Lowers price to consumer
Direct financial transfer	Grants to producers	•		
	Grants to consumers			•
	Low-interest or preferential loans	•		
Preferential tax treatment	Rebates or exemptions on royalties, sales taxes, producer levies and tariffs	•		
	Tax credit	•		•
	Accelerated depreciation allowances on energy-supply equipment	•		
Trade restrictions	Quotas, technical restrictions and trade embargoes		•	
Energy-related services provided directly by government at less than full cost	Direct investment in energy infrastructure	•		
	Public research and development	•		
	Liability insurance and facility decommissioning costs	•		
Regulation of the energy sector	Demand guarantees and mandated deployment rates	•	•	
	Price controls		•	•
	Market-access restrictions		•	

Two general methods exist for the identification of fossil fuel subsidies (Kojima and Koplow, 2015). However, rather than having to choose one method over the other, the two methods are actually complementary and should be used together. The International Energy Agency (IEA) uses an ‘effects test’ to determine whether a subsidy exists. The ‘effects test’ is applied by determining whether a policy instrument lowers production costs of energy or raises prices received by energy producers or lowers energy prices to the consumer. It is not sufficient to have a ‘price gap’ between consumer prices and a reference price (IEA, 2014a).¹ Gaps may occur as a result of any number of causes, so it is necessary to identify a specific policy (i.e., a subsidy or tax) to which the gap can be attributed (Kojima and Koplow, 2015). The alternative approach, the OECD inventory approach, focuses on direct budgetary support and tax expenditures that provide a benefit or preference for fossil-fuel production or consumption, either in

¹ A reference price is defined as costs of supply inclusive of shipping, distribution, and any value added tax. As a result of this approach, estimates of global subsidies will vary with energy prices, price reform, and increased consumption (IEA, 2014a).

absolute terms or relative to other activities or products (OECD, 2013).² The inventory method is a full accounting framework for producer and consumer support estimates and in fact captures price gaps as market transfers to producers or consumers. Whereas, the 'effects test' limits identification of subsidies to a single policy measure, the inventory approach can accommodate the interactions of multiple measures. However, as the OECD points out, not all interventions are necessarily subsidies; its inventory seeks to tabulate all interventions, recognizing that further evaluation is often needed to gauge whether a particular intervention results in subsidies to fossil fuels and whether or not the policy measure achieves its aims (Kojima and Koplow, 2015). With these differences, there is no consensus on the best way to define and value fossil fuel subsidies. Methodologies should be chosen in a flexible way to best accommodate reform purposes.

Once the attributes of a policy measure have been identified, then consideration of potential reform options is possible. Reform options need to be defined in terms of new policies (pricing or taxation), and, if complementary policies are required, then the timing and the potential political strategy also need to be considered. Therefore, the process of reform is not a simple process, and requires a structured, sequential, formalized approach (APEC/EWG, 2012). Once reform is underway, continuous monitoring needs to occur to ensure the desired effects are being obtained and that there are no unintended effects.

1.2. Lessons Learned from Fossil Fuel Subsidy Reform

Over more than a twenty-year period, well over two dozen economies have attempted fossil fuel subsidy reform. These previous fossil fuel subsidy reform attempts can be classified into three categories³ (Clements, et al., 2014):

- Success: Reform led to permanent and sustained reductions of a subsidy;
- Partial Success: Reform achieved a reduction of the subsidy for at least a year, but then the subsidy re-emerged or remained a policy issue; and
- Failure: Reforms rolled back soon after the reform (e.g., resistance to price increases or efforts to improve efficiency in the energy sector pushed back the reforms).

The history of previous reforms can inform the reform process. Generally, energy subsidy reforms are more likely to succeed when the following components exist (Clements, et al., 2014):

- A comprehensive reform plan;
- A far-reaching communications strategy, aided by improvements in transparency;
- Appropriately phased energy price increases, which can be sequenced differently across energy products;
- Targeted mitigating measures to protect the poor; and,

² Rather than referring to their inventory of measures as subsidies, the OECD refers to their inventory as a list of support measures for energy production and consumption (OECD, 2013).

³ Of the 28 economies studied by the IMF, 12 had fully successful reform attempts; 11 had only partially successful attempts while the remainder failed (The Economist, 2014). Fourteen of the economies were receiving money from the fund, and some of these economies were subject to credit downgrades if reform was not undertaken.

- De-politicization of energy pricing to avoid the recurrence of subsidies.

Most successful reforms were well planned and based on a clear reform strategy (Clements, et al., 2014). A comprehensive reform plan requires: 1) establishing clear long-term objectives, 2) assessing the likely impact of reforms, and 3) extensive consultations with stakeholders. Reform efforts are more likely to be successful and durable if they are embedded within a broader reform agenda. Particularly it has been found in other economies that reforms should have both a sustainable approach to energy pricing and a plan to improve the efficiency of energy consumption and supply. Designing a comprehensive subsidy reform strategy also requires information on the likely reform impacts including impacts on various stakeholders and identification of measures to mitigate adverse impacts (which are often temporary). This involves assessing the fiscal and macroeconomic economic impacts along with the winners and losers. Finally, stakeholders should be involved in the development of a subsidy reform strategy.

To gain political and public support for a reform effort requires a communications strategy and transparency (Clements, et. al, 2014). Case studies of reform movements found that the probability of success almost tripled with strong public support and proactive communications.⁴ The benefits of removing subsidies should be couched in terms of ability to finance other high-priority spending (investments) on education, health, infrastructure, and social protection. Transparency is a key element for a successful communications strategy. Some of the relevant information that needs to be communicated: the magnitude of subsidies and how they are funded; the distribution of subsidy benefits across income groups; changes in subsidy spending over time; and, potential environmental and health benefits from subsidy reform.

Pace and timing of price increases, and sequencing of those increases determines success (Clement, et al., 2014). A phased, but consistent, approach to reforms permits both households and enterprises time to adjust, and it permits the government to build credibility by showing that subsidy savings can be put to good use.⁵ A phased approach also helps reduce the impacts of inflation and allows a government to build other more sustainable social safety nets. Further, sequencing reform for 'luxury' products first will shield lower-income groups until later rounds, and further builds public support amongst lower income population. Sequencing should take into account spill-overs across products and the consequences for environmental goals.

Public support for subsidy reforms is reliant on how well the government implements mitigation efforts for the impacts of energy price increases on the poor (Clement, et al., 2014). Targeted cash transfers or near-cash transfers in the form of vouchers are often the preferred mode of compensation. Cash transfers not only provide flexibility for recipients, but also remove governments from the need to be directly involved which can be quite costly. If cash transfers are not feasible, efforts should be focused on programs that can be expanded quickly such as school meals, public works, reductions in health user fees, subsidized mass transit, etc. Subsidy reform can be more acceptable if it is accompanied by complementary measures that support the reform objective. Such measures as providing alternative sources for cooking (substituting LPG for kerosene) or off-grid electricity access can soften the impacts.

⁴ Economies with good public information campaigns include Indonesia (text messaging), the Philippines (nationwide road-show), and Uganda (selling the media on subsidies as a social program) (The Economist, 2014b).

⁵ India is phasing out subsidies slowly, and reducing the overall cost of subsidies from 1% of GDP in 2013 to less than 0.5% in 2016 (The Economist, 2014). Although, the net effect on government revenues will be offset by rising food subsidies.

Finally, initial public reaction to price increases on international energy markets should not be allowed to reverse subsidy reform efforts, i.e., pricing of commodities should be depoliticized (Clement, et al., 2014). Automatic pricing mechanisms reduce the possibility of subsidy reversal by distancing the government from energy pricing; and, this makes it clearer that domestic price changes reflect changes in international markets which are out of the control of a single government. Further, delegation of such pricing mechanisms to an independent entity ensures that reform can proceed as planned. Finally, adoption of a smoothing rule into an automatic pricing mechanism avoids sharp increases in domestic prices.

2. Lessons Learned from APEC FFSR Peer Review Process in New Zealand

The APEC Energy Working Group (EWG) endorsed a Voluntary Peer Review of Inefficient Fossil Fuel Subsidy Reform (VPR/IFFSR) proposal in March 2013, at the EWG45 meeting in Thailand. The proposal put in place an ongoing series of reviews of inefficient fossil fuel subsidies across APEC economies that volunteer to be a part of this review process. The reviews are ‘peer reviews’: i.e., the reviewers are from peer APEC economies and relevant institutions, with expertise in energy, fossil fuels, finance and economics. Guidelines for the VPR/IFFSR process were approved at the EWG46 meeting in Vietnam.⁶ The VPR/IFFSR Guidelines are modelled after the ongoing APEC Peer Reviews on Energy Efficiency (PREE).

At the November EWG46 meeting, Peru and New Zealand volunteered to undertake the VPR/IFFSR. Peru undertook its review in June 2014; and, New Zealand underwent its review in March, 2015. As the first APEC VPR/IFFSR review, Peru served as a testing ground for the initial set of peer review processes. The lessons learned in Peru proved invaluable for improving the process in New Zealand. With this evolving experience, some clear lessons are beginning to emerge that are useful for other APEC economies to consider if they have volunteered already or plan to volunteer in the near future for a peer review. Peer reviews tend to become more effective over time as:

- The process becomes more institutionalized with more established processes, roles, and expectations by host economies;
- Member economies increasingly recognize the value of the peer review process;
- Member economies build trust that the process is meant to encourage a collegial exchange of views and experience in the area of fossil fuel subsidy reform; and
- Technical expertise and experience accumulates.

Allow sufficient time for the review process. Lead-time for a review process needs to be sufficiently long for preparations by the host economy. For Peru, only slightly more than three months was allowed. This was too short for the amount of coordination and thought that a review requires. New Zealand was fortunate to have an individual on its government team who had been on the review panel for Peru. With his counsel, New Zealand started preparations a good six months prior to the review panel visit. This extended period allowed for discussions within the various government organizations, and preparation of a very detailed set of pre-briefing materials. Economies planning for a peer review should use the New Zealand experience as a guide.

The APEC review process can successfully accommodate different host economy objectives or goals. The objectives of the two host economies to date were different. Peru’s objectives included: exchanging

⁶ <http://www.ewg.apec.org/documents/EWG46%20Summary%20Record.EWG46.Website.pdf>

information on best practices for reform for selected fossil fuel subsidies; obtaining policy recommendations for effectively eliminating or reducing subsidies to fossil fuels in the long-run; and, exploring alternatives for addressing the objectives that instruments were meant to address. New Zealand's goals included: promoting transparency around present fossil fuel support measures more broadly (including subsidies), and drawing lessons from past reforms of fossil fuel subsidies; promoting ambition for reform of inefficient fossil fuel subsidies by maintaining a free and frank dialogue; and, building political awareness of the issues around reform. Both sets of goals were clearly within the guidelines for the peer review process, and each economy set the goals when volunteering to host a review.

The APEC review process can accommodate different definitions of what constitutes a subsidy or support measure according to the requirements of the host economy. The APEC review process emphasizes review of policy measures that “encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services.” These are the key words in the Terms of Reference. Peru and New Zealand emphasized different aspects of this phrase; and, those differences guided the selection of the instruments put forward for review. Peru put forward only three measures for review, all of which focused on providing for ‘those in-need’. However, New Zealand selected eight measures which might lead to ‘wasteful consumption’. Peru used the definition promoted by the World Bank, and the IEA: this definition is a widely-accepted definition of a subsidy and focuses on consumers of energy. New Zealand chose to adopt the broader concept of ‘support’ and put forward all measures included in the OECD inventory of ‘fossil fuel support measures’. This approach uses an inventory of all budgetary transfers and tax expenditures that encourage the production or use of fossil fuels in OECD economies. The focus on ‘support’ seems to provide a more flexible and neutral framework since it captures all measures that may result in a preference for a particular activity in absolute or relative terms. Both approaches are acceptable for the review process, and the choice of what to emphasize during a peer review is the first critical task that a host economy undertakes. This choice determines the scope of a peer review, which is limited by the words ‘encourages wasteful consumption’.

Active participation of the host economy is vital for the success of the review visit. Robust reviews result from a host economy's involvement in preparations for the visit. For the Peruvian visit, out-of-country consultants performed most of the preparation with the assistance of two in-country consultants. For New Zealand, a dedicated group within the responsible government agency performed the preparation for the review panel visit. Because of the active involvement of New Zealand in the process, materials were more thorough, accurate, and timely. Host economies need to assume the following responsibilities in order to have a robust and efficient review panel visit:

- Determination of the scope of the review and selection of the measures for evaluation;
- Development of pre-briefing materials including not only materials describing the economy context, but also following the APEC Terms of Reference for the review process through completion of the templates for each instrument to be reviewed and interacting with the Lead Shepherd of the EWG;
- Acceptance of volunteer reviewers or nomination of candidates and obtaining acceptance of the proposed panel by the Lead Shepherd on behalf of the EWG;
- Organization of efficient technical meetings for the review panel visit;
- Provision of timely feedback to the Review Panel during the review process and interactions with the Team Leader prior to the Peer Review panel visit;

- Approval of the final report and its recommendations, with sufficient interactions during the drafting process;
- Completion of annual, voluntary reports on status of reform efforts; and
- Conduct of potential follow-on reviews in a 3-4 year time span.

Participation of stakeholders provides for balanced, in-depth reviews. Peru provided a good-cross section of stakeholders from within and outside the Peruvian government for meetings with the review panel. New Zealand’s review involved a good range of government departments relating to all the policies selected and organized intensive technical meetings with them. Although New Zealand had sent out invitations to key stakeholders, only one set from the petroleum industry responded; and, this response disappointed the New Zealand Government. The Peruvian consultants, who were not particularly identified with the government, sent the invitations for that review. This suggests that in order to achieve fuller participation by stakeholders that a third, apparently neutral party should be enlisted in the invitation effort, in good coordination with the host economy. A third party could come from a consulting firm, a non-profit in the economy, or a university. As an alternative, the review team leader might be a good source. Such a third party represents the review process as it truly is—an unbiased, neutral effort to understand and offer assistance.

Composition of the peer review panel leads to a robust review process. Both the Peruvian and the New Zealand review panels came from the energy industry. All members of the New Zealand panel had experience in evaluating fossil fuel subsidies (or support measures) both in their home economies and internationally. Several for the New Zealand review had participated in previous international subsidy review efforts including previous APEC, G-20 effort or bilateral review efforts.⁷ (Biographical sketches for the seven members for New Zealand appear in Appendix B.) This level of expertise meant the panel for New Zealand was very effective in evaluating the instruments up for review and very engaged. Continuity from the previous APEC review of Peru also meant that knowledge gained in the process was transmitted to the New Zealand effort. In selection of future review panel members, consideration should be provided to the inclusion of panel members with such specialties as climate change and environmental regulation, as well as expertise on different energy market structures. This will add depth to the review process. In addition to volunteers from APEC economies and nominations from the APEC Secretariat, a host economy may nominate review panel members. By using all of these sources, a more balanced set of panel members will result.

Selection of the panel review team leader is crucial for an effective review process. Team leaders are nominated by the host economy; and, the host economy should have trust that the leader can guide a process that is collegial and neutral. The team leader serves a number of important functions, and the person nominated should be aware of the necessary time commitment to perform those responsibilities. Those responsibilities include:

- Interfacing with the designated individuals in the host economy;

⁷ The panel, which consists of members from five APEC economies and one international organization (OECD), is with rich policy experiences on energy subsidies issues. Two members of the panel from an APEC economy (China) are from the Energy Research Institute (ERI) of NDRC, which has conducted a range of research and international cooperative projects on energy subsidies reform, and has also been providing technical support on both domestic reform and international cooperation to China’s central government.

- Discussing with the host economy and making suggestions concerning individuals in the host economy with whom the panel should meet during their visit;
- Reviewing the pre-briefing materials prior to dissemination to ensure that they satisfy the APEC Terms of Reference and have sufficient detail for the panel visit;
- Communicating with the review team in terms of expectations of the visit;
- Maintain an open and collegial atmosphere during the panel visit, but one that also encourages open and free dialogue between the panel and the host economy;
- Build consensus in the team during the panel visit such that a set of recommendations can be presented to the host economy at the end of the review panel visit;
- Lead the preparation of the post-visit materials such as the presentation of results to the EWG; and,
- Shoulder the major responsibility of preparing the draft final report, obtaining input from the review team, and the acceptance of the host economy.

3. Macroeconomics, Socio-demographic Conditions and Social Policy, and Energy in New Zealand

In this section the macroeconomic situation, the socio-demographic conditions, social policy and programs, the energy landscape, energy policy framework, ownership and investment in energy assets, and policies affecting energy markets in New Zealand are presented. These elements provide a context for evaluation of the eight instruments for review put forward by the New Zealand Government, and for the development of recommendations by the Peer Review Panel.

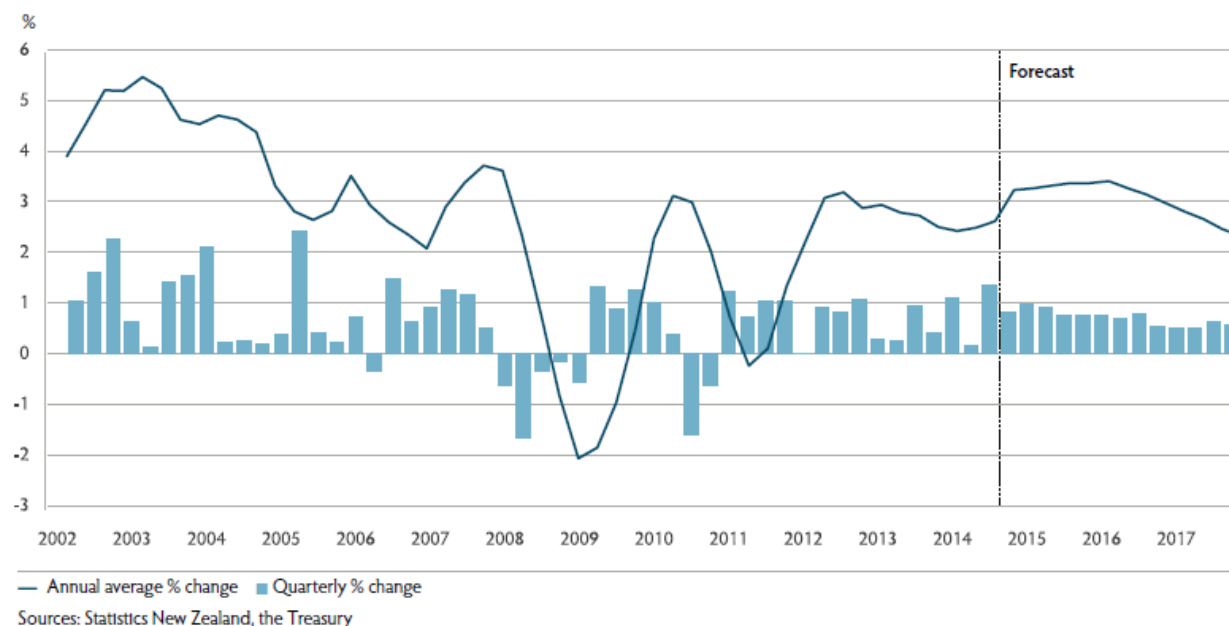
3.1. New Zealand Macroeconomy

New Zealand is an island economy in the South Pacific, consisting of the North Island, South Island and numerous outer islands. While its land area is between that of Japan and the United Kingdom, its low population of about 4.4 million is comparable to a medium-sized Asian city. Over the past three decades, the New Zealand economy has changed from being one of the most regulated in the OECD to one of the least regulated. The National Party Government has aimed to lift the long-term performance of the economy through four key policy drivers: responsibly managing the Government's finances, building a more competitive and productive economy; delivering better public services; and rebuilding Christchurch (National Party, 2015).

New Zealand's high proportion of winter sunshine hours, considerable rainfall and resource rich land have meant agriculture, forestry, fishing and energy industries play a fundamentally important role in the economy, particularly in the export sector and in employment. New Zealand is also a popular overseas visitor destination and tourism is an important source of export income. Since the March quarter of 2010 New Zealand's annual growth has averaged 2.2% with the primary sector directly accounting for 7.5% of real GDP and more than 50% of New Zealand's total export earnings.

With regard to recent economic performance, annual growth peaked at 3.3% in the December quarter of 2011 after a slow recovery from the Global Financial Crisis. Looking forward, the New Zealand Treasury forecasts for real production GDP growth of 3.4% in the year to December 2015 and 3.0% in 2016 (The Treasury, 2015). However, low domestic inflation and weak international commodity prices, particularly crude oil, mean nominal GDP growth will be slower.

Exhibit 2: Gross domestic product Source: The Treasury, 2015



Global demand is expected to push export prices higher, leading to an increase in the goods terms of trade over the forecast horizon. This is a key impetus for income growth and growth in the nominal economy, supporting tax revenues. The exchange rate has fallen steadily in 2015, from 76 US cents in January to 65 cents in August. This decline makes New Zealand’s exports more competitive on world markets (The Treasury, 2015).

The Canterbury Earthquake rebuild is expected to provide significant impetus to growth over the forecast horizon, chiefly through additional residential and business investment, but also through related consumption spending. The rebuild will also contribute to an improvement in the labor market, with the unemployment rate forecast to fall to 4.5% by 2019. It is expected a significant proportion of the residential rebuild will be completed by 2017, but levels of investment should remain high beyond this as the commercial rebuild continues and there is a more widespread pickup in activity (The Treasury, 2015).

Inflation is expected to rise gradually in 2015 to just under the mid-point of the Reserve Bank’s target band of 1% to 3% owing to solid domestic demand, the decline in the exchange rate in the second half of 2014 and into 2015 and capacity constraints associated with the Canterbury rebuild and residential construction in Auckland. Annual inflation is forecast to be steady at around 2% in 2016, 2017, and 2018 as monetary policy tightening keeps domestic price pressures in check (The Treasury, 2015).

Exhibit 3: Summary of key economic forecasts Source: The Treasury, 2015

March Years	2014	2015	2016	2017	2018	2019
Annual average % change	Actual	Forecast	Forecast	Forecast	Forecast	Forecast
Private consumption	3.3	3.6	3.4	3.1	1.7	1.6
Public consumption	1.7	1.6	-0.5	0.1	2.8	2.5
Total Consumption	3.0	3.2	2.6	2.5	2.0	1.8
Residential investment	17.0	15.3	12.2	4.5	0.9	(2.6)
Non-market investment	(2.6)	(2.0)	5.1	2.4	2.4	2.4
Market investment	8.8	6.2	7.1	6.7	4.4	2.9
Total Investment	10.6	8.2	8.4	6.5	3.9	2.0
Stock change ²	0.3	0.5	(0.8)	(0.1)	(0.1)	0.1
Gross National Expenditure	4.7	4.9	3.3	3.4	2.4	1.9
Exports	0.3	0.5	1.8	3.5	3.1	2.5
Imports	8.0	5.9	1.7	5.0	3.2	1.7
Expenditure on GDP	2.5	3.3	3.4	2.8	2.3	2.1
GDP (production measure)	3.2	3.5	3.4	2.8	2.3	2.2
- annual % change	3.8	3.3	3.2	2.5	2.3	2.0
Real GDP per capita	2.2	1.9	1.8	1.7	1.3	1.3
Nominal GDP (expenditure basis)	6.7	3.0	4.9	5.7	4.1	3.6
GDP deflator	4.1	(0.2)	1.5	2.8	1.8	1.5
Output gap (% deviation, March year average) ³	(0.6)	0.1	0.6	0.6	0.3	0.2
Employment	2.5	2.9	1.7	1.6	1.3	1.1
Unemployment (% March quarter s.a.) ⁴	6.0	5.4	5.1	4.7	4.5	4.5
Participation rate ⁵	69.2	68.9	68.7	68.8	68.8	68.8
Wages (average ordinary-time hourly, ann % change) ⁶	2.5	2.8	2.8	3.1	3.3	3.5
CPI Inflation ⁷	1.5	1.3	2.0	2.1	2.0	2.0
Terms of trade ⁸	13.5	(3.9)	(3.6)	3.7	0.5	0.4
House prices ⁹	8.0	5.4	3.9	2.5	2.3	2.0
Current account balance – \$billion	(6.0)	(12.4)	(15.2)	(14.8)	(15.4)	(16.4)
Current account balance – % of GDP	(2.7)	(5.3)	(6.2)	(5.8)	(5.7)	(5.9)
TWI-5 ¹⁰	78.7	76.5	76.5	76.6	75.6	73.6
90-day bank bill rate ¹⁰	3.0	3.7	3.9	4.4	4.8	5.2
10-year bond rate ¹⁰	4.6	4.0	4.2	4.7	5.0	5.1

1 Forecasts finalised 10 November 2014.

2 Contribution to GDP growth.

3 Estimated as the percentage difference between actual real GDP and potential real GDP.

4 Percent of the labour force, March quarter, seasonally adjusted.

5 Percent of the working-age population, March quarter, seasonally adjusted.

6 Quarterly Employment Survey, average ordinary-time hourly earnings, annual percentage change.

7 Annual percentage change.

8 System of National Accounts (SNA) and merchandise basis, annual average percentage change.

9 Quotable Value New Zealand (QVNZ) House Price Index, annual percentage change.

10 Average for the March quarter.

Source: The Treasury

3.2.Socio-demographic Conditions and Social Policy in New Zealand

New Zealand is considered a developed economy and has a standard of living comparable to or better than other OECD economies and China. Exhibit 4 illustrates this comparison. New Zealand has a highly educated population with over 54% of the population aged 25 to 34 achieving more than a high school diploma (US comparison). Formal education is compulsory between the ages of 6 and 16. Compared to other OECD economies, New Zealand has a healthy labor market with a labor participation rate of 82.4% of the working age population in 2013; an employment to population ratio approximately 12% higher than the OECD average; and, an unemployment rate 21% lower than the OECD average (New Zealand Statistics, 2015). New Zealand has a lower poverty rate than the USA; 23.8% of the New Zealand population has a disposable income (before taxes and transfers) 50% or less of the median income while in the USA 29.2% live on 50% or less of the median disposable income.

Exhibit 4: Comparison of New Zealand with other countries Source: New Zealand Statistics, 2015

Subject	Unit	New Zealand	Australia	China, PR	United States	United Kingdom	Germany
Total population (estimated)	Million	4.51	23.49	1,360.72 ⁽¹⁾⁽⁴⁾	318.86	64.11 ⁽¹⁾	80.59 ⁽¹⁾
Annual rate of population change	Percent	1.52	1.58	0.49 ⁽¹⁾⁽⁴⁾	0.74	0.63 ⁽¹⁾	0.23 ⁽¹⁾
Male life expectancy at birth	Years of life	79.6 ⁽¹⁾	80.1 ⁽²⁾	72.4 ⁽³⁾	76.4 ⁽¹⁾	78.9 ⁽²⁾	77.7 ⁽²⁾
Female life expectancy at birth	Years of life	83.3 ⁽¹⁾	84.3 ⁽²⁾	77.4 ⁽³⁾	81.2 ⁽¹⁾	82.7 ⁽²⁾	82.7 ⁽²⁾
% of population aged 65+ years	Percent	14.4	14.7	9.7 ⁽¹⁾⁽⁴⁾	14.1 ⁽¹⁾	17.4 ⁽¹⁾	20.8 ⁽¹⁾⁽⁴⁾
% of population aged under 15 years	Percent	20.2	18.8	16.4 ⁽¹⁾⁽⁴⁾	19.3 ⁽¹⁾	17.6 ⁽¹⁾	13.1 ⁽¹⁾⁽⁴⁾
CPI change (annual)	Percent	1.6	3.0	2.2	2.1	1.7	1.1
GDP per person (rounded) ⁽¹⁾⁽²⁾	US\$	34,400	44,100	11,900	53,000	38,300	43,100
Unemployment as % of labour force	Percent	5.6	6.1	2.9 ⁽³⁾	6.1	6.3	5.0
Employment as % of people aged 15–64	Percent	74.1	71.6	75.1 ⁽³⁾	68.2	72.0	74.0

2014 data unless footnoted. 1. Data for 2013. 2. Data for 2012. 3. Data for 2010. 4. Data at 31 December. 5. Purchasing power parity adjusted.

Sources: All data sourced from official statistical agencies. For more information see www.stats.govt.nz/NZIP2015.

New Zealand has a pronounced policy of ‘social inclusiveness’ and a very well developed social safety net. The ‘social inclusiveness’ policy in New Zealand calls for raising the overall level and distribution of wellbeing (New Zealand Statistics, 2015). To implement this policy, New Zealand has a tradition of providing support for old age pensions, unemployed workers, disabled individuals, low-income housing, and family benefits and programs. These programs and levels of support are comparable to other economies in the OECD. In addition, in recognition of the indigenous Maori, which constitute approximately 16% of the population and have consistently been disadvantaged economically, the Government of New Zealand has developed supplementary programs to improve health, education, and the general well-being of this segment of the population. Further, seven seats in the New Zealand Parliament are set aside for Maori representatives and consultations are routinely held with this minority on pending changes in government policy and regulations.

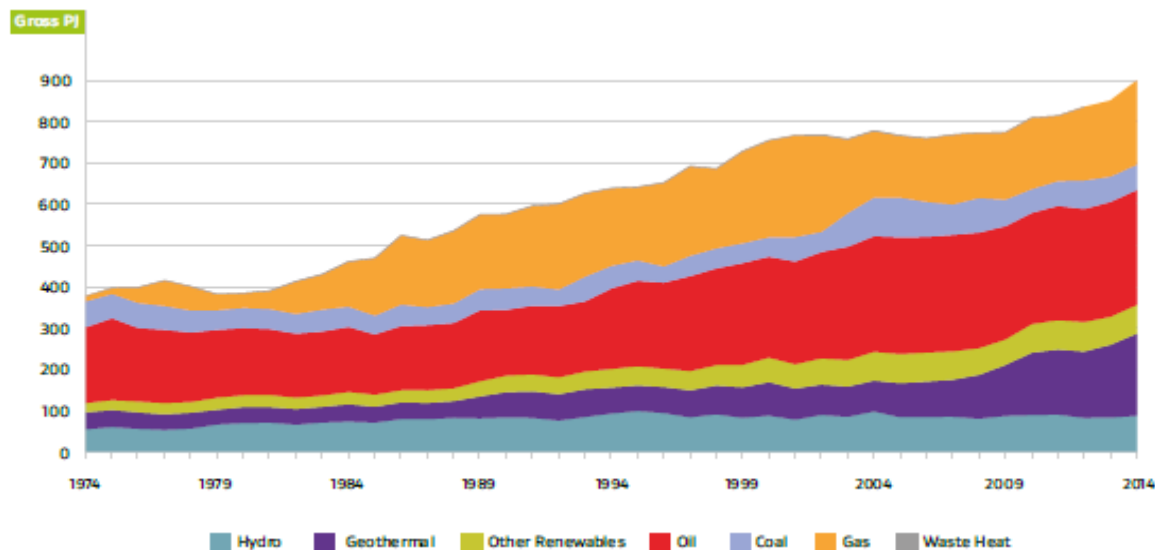
3.3. Energy Landscape of New Zealand

Due to its remote location, New Zealand has no electricity or pipeline connections to other economies but is self-sufficient in all energy forms except for oil and seasonal supplies of LPG. The current period is one of rapid change for the energy industry both globally and in New Zealand. Renewable energy potential is largely from hydro, geothermal and wind which accounted for around 80% of electricity generation in 2014. Fossil energy reserves while more modest includes: 115.4 million barrels of oil, 57.1 billion cubic meters of natural gas and LPG and 571 million metric tons of coal at the end of 2013 (MBIE, 2015a; BP, 2014). As a result New Zealand is a net exporter of coal, importer of oil and is self-sufficient in natural-gas. On balance, imports account for 38% of total energy supply (MBIE, 2015a).

3.3.1. Energy Resources

According to the World Bank, New Zealand’s resource endowment per capita is very high, ranking 8th in the world in terms of overall natural capital (and 1st if calculated on renewable resources per capita) (MBIE, 2012). This equated to a total primary energy supply of 21,610 metric tons of oil equivalent (ktoe) in 2014 including oil (31%), gas (23%), geothermal (22%), hydro (10%), coal (7%), biomass (6%), with wind, biogas, waste heat, solar and biofuels providing the remainder (1%). Exhibit 5 illustrates the growth and mix of primary energy supplies since 1974. Since 2008, growth in New Zealand’s primary energy supply has been increasing at an average annual rate of 2.5% (MBIE, 2015a). However, in 2014 as compared to 2013, primary energy supplies increased by 6% due to increases in natural gas and geothermal production.

Exhibit 5: Total primary energy supply by fuel source: MBIE, 2015a



3.3.1.1. Non-Renewables

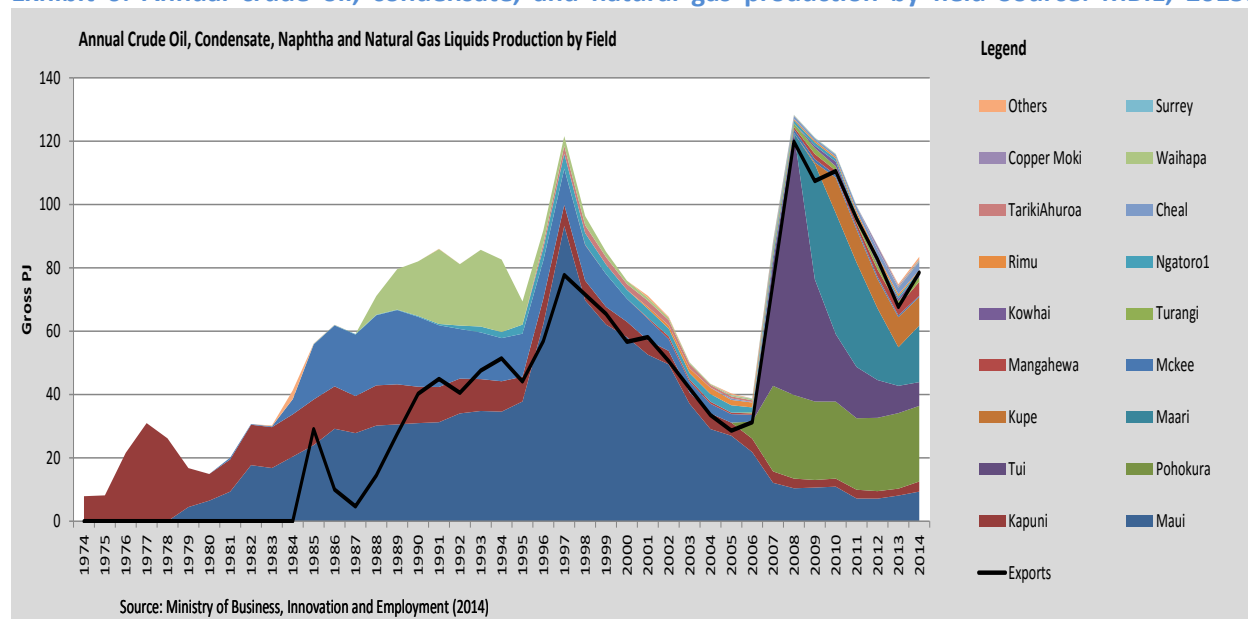
New Zealand benefits substantially from the development and sale of petroleum and mineral resources including gold, silver and petroleum (oil and gas). Coal predominantly lignite is currently New Zealand’s most abundant resource although 49% of the 4.0 million metric tons produced in 2014 was bituminous of which 89% was exported to the steel making industry (MBIE, 2015a). A further 43% of coal produced in 2014 was sub-bituminous coal sold domestically primarily for electricity generation, co-generation or steel manufacturing.

New Zealand also has a number of small (by world standards) natural gas fields, with only the Taranaki region (in the North Island) having been explored and developed (Exhibit 6). This includes the country’s largest gas and condensate field discovery: the off-shore Maui field discovered in the 1969 (MBIE, 2015a). Domestic natural gas supplies are seen as adequate to meet demand (most commonly for electricity generation and in methanol and urea production) for at least the next 10 years, with proven plus probable reserves of 1,992 PJ (MBIE, 2015a).

Oil is New Zealand’s largest source of energy demand and therefore has a strong influence on the New Zealand economy. The vast majority of domestic oil demand is met by importing crude oil and refining it at the one New Zealand refinery at Marsden Point near Whangarei. Despite this, the economy’s mineral estate is a significant national asset with the potential to make a large and long term contribution to economic prosperity. Due to its high quality, oil sourced from New Zealand’s 19 fields is mostly exported. In 2014 it was the fourth largest mercantile export with a value of around NZD 4 billion (USD 3.33 billion)⁸ annually, supporting 6,000 jobs directly and thousands more indirectly (NZP&M, 2014). In recognition of this potential, the oil and gas industry has invested close to NZD 12 billion (USD 9.04 billion) in the last eight years in oil and gas exploration, production and processing activity.

⁸ NZD were converted to an equivalent amount in USD using a purchase power parity NZD 1.2 to USD 1.0. Purchasing power parity conversion factor is the number of units of a country’s currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States (World Bank, 2015).

Exhibit 6: Annual crude oil, condensate, and natural gas production by field Source: MBIE, 2015a



3.3.1.2. Renewables

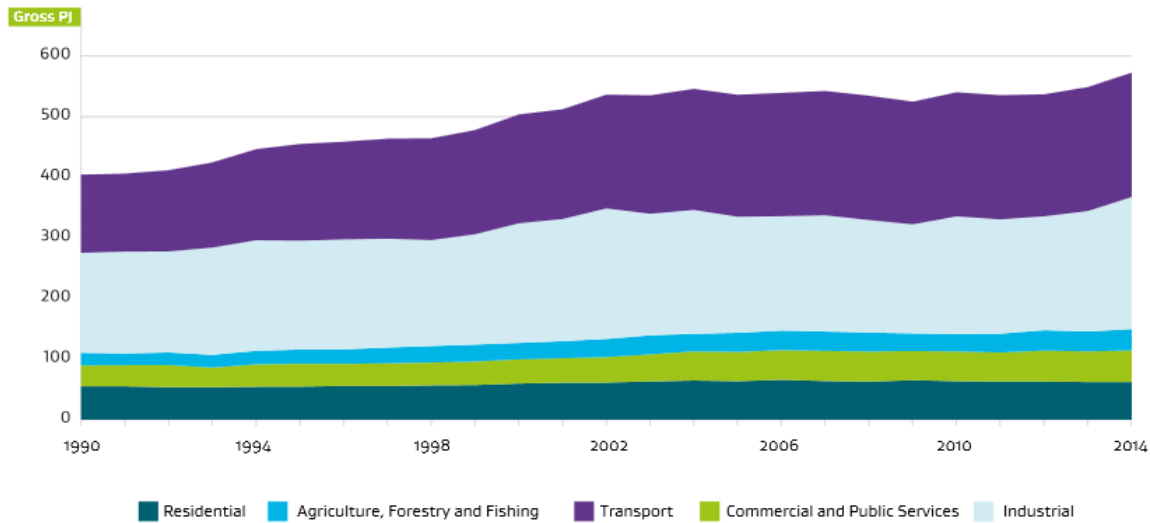
New Zealand is well-endowed with hydro, geothermal, wind, biomass and potentially ocean energy. Unlike many other countries, New Zealand's high level of renewable electricity supply has historically developed without significant explicit subsidies. Hydro has historically been the major source of renewable energy accounting for 57.1% of the 42,231 GWh of electricity generated in 2014. Around two thirds of hydroelectricity is generated in the South Island fluctuating year to year depending on rainfall. With the best hydro sites already developed, geothermal and wind have become the next most economically viable renewable technologies. Consequently the focus has been on developing geothermal and wind energy to meet the 90% target. Geothermal currently accounts for 16.2% of electricity generation while wind is at 5.2% nearly all of which is generated in the North Island.

In early August, 2015, Genesis Energy, a New Zealand utility, announced that it planned to retire the remaining two coal-burning electricity generators at the Huntly Power Station, in the north of the country by December 2018 unless there were significant changes in electricity markets (Hill, 2015). At its peak, Huntly emitted around 5,000 kiloton (metric) of CO₂ per year, which amounted to around 5% of New Zealand's total GHGs. Coal-fired generation may no longer be necessary in New Zealand due to better management of dry year events, development of lower cost renewable options (wind and geothermal), and flatter growth in electricity demand. The significant growth in geothermal generation (base load) may have replaced the need for coal generation as a back-stop, while the industry has thus far been unwilling to pay for the security of supply afforded by having coal-fired generation as peaking capacity, i.e., security of supply (Graeber, 2015). Investments of NZD 1.5 billion (USD 1.25 billion) in renewable sources in New Zealand over the last six years have placed it fourth globally in its share of renewable energy.

3.3.3. Energy Consumption and Intensity

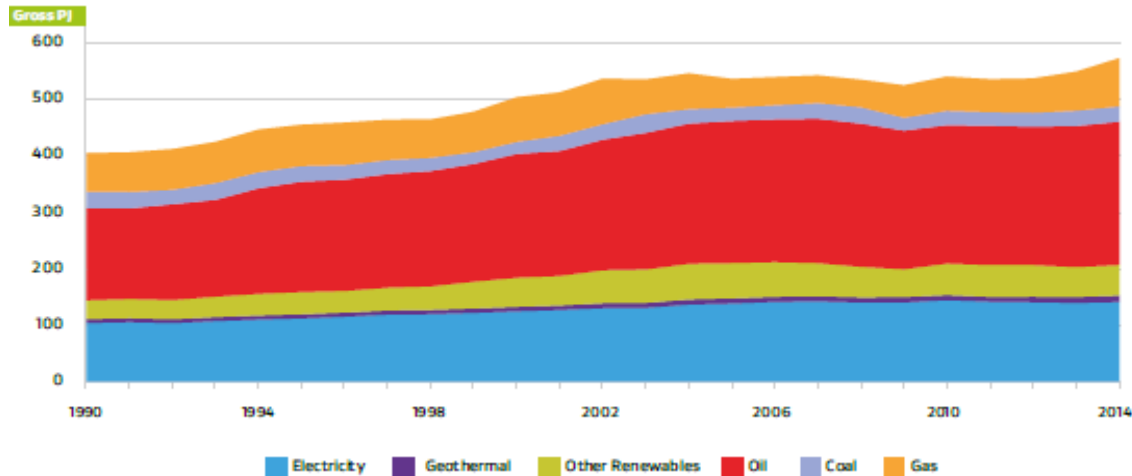
Observed consumer energy demand in 2014 rose by 4.4% to 573 PJ. Exhibit 7 shows a time series of final energy consumption between 1990 and 2014. The rise in consumer energy demand in 2014 was a result of increased demand from the primary sector (up 10%), the industrial sector (up 10%) and commercial sector (up 2%), balanced by a drop from the residential sector (down 2%).

Exhibit 7: Final energy consumption by end-use sector Source: MBIE, 2015a



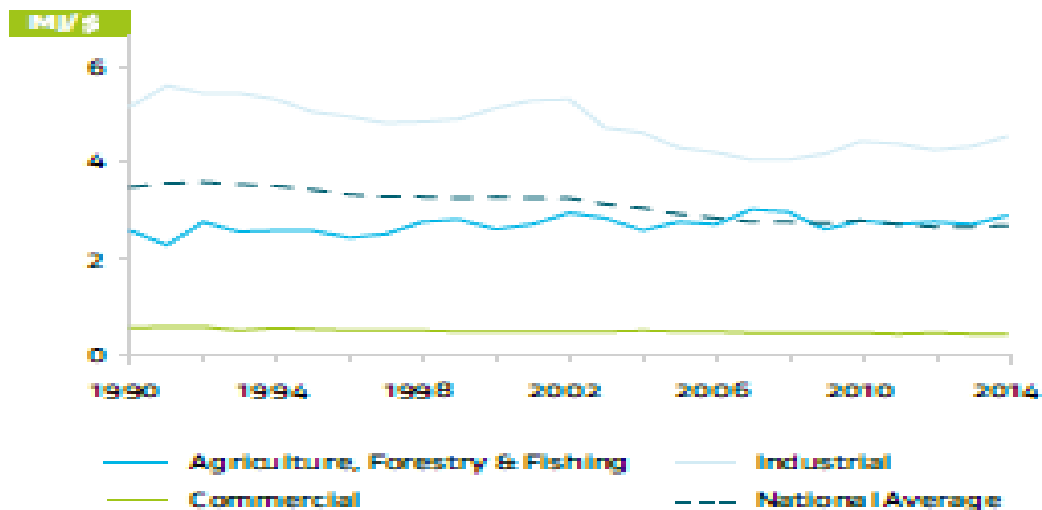
Oil (44%) and electricity (25%) made up the bulk of consumer energy in 2014, with the other fuels making up the balance (see Exhibit 8). The industrial (38%) and transport (36%) sectors consumed the bulk of consumer energy in 2014. The industrial sector, whose demand grew by 19 PJ (10%) in 2014, and which contributed to total a gas demand increase by 17 PJ (9%), saw the greatest increase of end-using sectors in 2014. Domestic passenger and freight transport in New Zealand is dominated by private road vehicles. Consequently, transport is the main consumer of petroleum products, accounting for 81% of domestic oil consumption in 2014. Consumption of oil products in the other sectors was shared between residential, commercial and agricultural (12%), industry (7%) (MBIE, 2015a).

Exhibit 8: Consumer demand by fuel source: MBIE, 2015a



Since 1990, the overall energy intensity of the economy has improved (i.e., declined) in real terms by an average rate of 1.1% per annum (MBIE, 2015a). The most significant factor in this almost 23% improvement in energy intensity has been the rapid growth of the commercial sector (low energy intensity) relative to the industrial sector (high energy intensity). New Zealand's energy intensity of primary energy in 2014 was 2.67 MJ/NZD, GDP in real 2009/10 prices (MBIE 2015a). (See Exhibit 9).

Exhibit 9: Energy intensity of New Zealand industries Source: MBIE, 2015a



3.4. Energy Policy Framework

In July 2012 a new Ministry of Business, Innovation and Employment (MBIE) was created through the merger of four government ministries. These were the recently established Ministry of Science and Innovation, the Ministry of Economic Development (formerly responsible for energy policy), the Department of Labour and the Department of Building and Housing. The merger was part of a broader effort to simplify government departments, enhance performance and reduce government spending. MBIE is responsible for developing New Zealand's energy policies and strategies with assistance from a number of other agencies, and it reports to the Minister of Energy and Resources.

New Zealand's oil and gas exploration and production activities are undertaken by publicly listed and private corporations. Rights to explore for and develop petroleum are awarded on the basis of competitive tender. New Zealand welcomes investment in oil and gas exploration by foreign firms. Electricity generation and marketing is also open to competition. In 2013, the government began a process of privatizing 49% of the three remaining state-owned electricity generators. Transpower is the transmission grid operator, a 100% state-owned enterprise. The New Zealand Electricity Authority (EA) oversees the conduct of the electricity market, but does not regulate electricity prices. The coal mining industry in New Zealand is dominated by Solid Energy, a state-owned firm currently undergoing a staged liquidation of its assets, although there are private operators as well.

3.5. Ownership and Investment in Energy Sector

The following paragraphs present a chronological list of major energy and resource events that directed New Zealand policy. In New Zealand, the ownership of all petroleum, gold, silver and uranium rests with the Crown, regardless of the ownership of the land. Under royal prerogative it owns all gold and silver, and by statute it owns petroleum and uranium in their natural state, wherever they are found. However

about half of New Zealand's known coal, non-metallic minerals and industrial rocks and stones, are privately owned (Harris 2004). Other areas of private ownership, both in the past and present, included ownership of production – mines, power generation, as well as of major users of fossil fuels and their products.

Until the end of the nineteenth century New Zealand coal mines were all privately owned and operated. State Coal Mines was corporatized in 1987 and was called the Coal Corporation of NZ Ltd (CoalCorp). In 1997, Coal Corporation of New Zealand was renamed Solid Energy New Zealand Ltd and the export operation became Solid Energy International. Solid Energy is the dominant producer in the coal industry. It produces two-thirds of New Zealand's coal from eight mines. There are also three medium-sized private sector coal companies (Francis Mining, Bathurst Resources, Birchfield) and a total of fourteen relatively small privately-owned coal mines (NZP&M, 2015b).

Historic Government investment in various aspects of the fossil fuel market has been driven to a significant extent by strategic concerns and by opportunism. Strategic concerns arise in a number of areas, including reliance on imported fuels, the availability or attraction of capital to develop fossil fuel resources; and the significance of fossil fuel resources for key industrial and agricultural production.

The government was a 51% shareholder in BP (New Zealand), one of the wholesale suppliers of petroleum products, from 1946 to 1955. The building of the Marsden Point oil refinery, completed in 1964, was a joint venture between the original five wholesalers – Mobil, Shell, Caltex, BP and Europa – and meant that New Zealand became a producer of refined petroleum products. The objective of the refinery, from the government's perspective, was to save foreign currency and to secure a strategic resource (Pickford and Wheeler, 2001). The discovery of natural gas at the Kapuni gas field in Taranaki in 1959 was the first commercially viable find in New Zealand. The Natural Gas Corporation was established to buy, process and wholesale the new resource.

The oil crises of the 1970s created a drive to move away from dependence on imported oil. This had a huge influence on policy, and led to significant spending based on borrowing. There were concerns that New Zealand had no bargaining power in a crisis situation, and would always be the last in the chain because of size and distance.

The discovery of the Maui gas/condensate field in 1969 appeared to provide an opportunity to address the reliance on imported fuel, but it required high capital investment and a reasonable revenue stream to provide a viable rate of return. The subsequent 'Think Big' program in the early 1980's saw the construction of the Motunui synthetic gasoline plant, the expansion and development of the Marsden Point refinery to produce higher volumes of diesel and aviation fuel, and the building of a stand-alone methanol plant at a combined capital cost of over NZD 3 billion (USD 2.5 billion). Related projects included the NZ Steel expansion, the electrification of the North Island main trunk railway, and a third pot-line at the Bluff aluminium smelter. Huntly, once New Zealand's largest coal-fired thermal power station with a total generating capacity of 1000 MW was also commissioned between 1973 and 1985 (for a list of projects under 'Think Big' see Wikipedia, 2015).

These and other activities aimed at reducing dependence on imported oil, including consideration of alcohol fuels, and promotion of CNG and LPG, were based on assumptions about continuing increases in the price of oil. The Labour Government of the 1980s sold off the synthetic fuel and methanol plants at a fraction of their value, and privatized or converted other activities to State Owned Enterprises with commercial objectives.

State Owned Enterprises (SOEs) are businesses (typically companies) listed in the First Schedule to the State-Owned Enterprises Act 1986 (New Zealand Parliament, 1986). SOEs operate as a commercial business but are owned by the State. They have boards of directors, appointed by shareholding Ministers to take full responsibility for running the business. Solid Energy is the only SOE engaged in activities related to fossil fuels or energy production.

The Government also retained a controlling 51% interest in the following energy companies that were formerly SOEs but that are now listed on the NZX and ASX. These companies include:

- Genesis Power Limited, a large electricity generator, with approximately 60% of its generation being thermal and the other 40% hydro and wind (Brantley, 2015).
- Meridian Energy Limited, New Zealand's largest state-owned electricity generator, supplying one third of the nation's power, generating electricity entirely from renewable resources.
- Mighty River Power Limited, which generates electricity primarily from renewable sources, with nine Waikato River hydro power stations, four geothermal stations, and a gas-fired open-cycle generation plant. The open-cycle, gas-fired power station known as Southdown is due to close by end-2015 (Mighty River Power, 2015).

3.6.Oil and Gas Market Reforms

New Zealand's energy sector has been subject to many reforms. Broadly they have aimed to improve economic growth through efficient resource use, provide clear price signals and where possible competitive markets.

Until 1988 the oil industry in New Zealand was subject to a significant degree of regulation, with controls on supply, through distributor licensing, and on prices and margins at all levels of distribution (Pickford and Wheeler, 2001). These controls were primarily for economic and strategic objectives. Environmental concerns have emerged only in more recent times as a driver of government policy.

Today the New Zealand Petroleum & Minerals (NZP&M) business unit within the MBIE manages the New Zealand Government's upstream oil, gas, mineral and coal resources, known as the Crown Mineral Estate. NZP&M was formed in May 2011 to maximize the gains to New Zealand from the development of its oil, gas, coal and mineral resources, in line with the government's objectives for energy and economic growth. Its role is to efficiently allocate rights to prospect for, explore for and mine Crown owned minerals; the effective management and regulation of those rights; and ensuring a fair financial return to the Crown for its minerals (New Zealand Parliament, 1991). NZP&M also has a role in promoting investment in the mineral estate. NZP&M replaces the former Crown Minerals Group. The Resource Markets Policy team of the Energy and Resource Markets Branch of MBIE, advises the New Zealand Government on policy and operational regulation of the mineral estate.

Since 2004, New Zealand's downstream gas sector has been co-regulated by the government and the Gas Industry Company, an industry body established under the Gas Act 1992 (New Zealand Parliament, 1992). The Gas Industry Company pursues the government's objectives and outcomes as set out in the Gas Act 1992 and the Government Policy Statement on Gas Governance. Its work is primarily driven by its own engagement with the gas sector and, to a much lesser extent, ministerial requests (Gas Industry Co., 2015).

3.7. Taxation and Royalties

In the early 1980s the New Zealand tax system was characterized by narrow bases, high tax rates, and a heavy dependence on income taxes. One of the main reasons for the narrow base in 1981 was the provision of incentives or concessions for activities seen as having social or economic merit. However, the introduction of the Goods and Services Tax (GST), which replaced sales taxes in 1986, and the reforms undertaken at about the same time restored the credibility of the company tax. Through the late 1980s further reforms lowered personal and company tax rates, removed tax preferences for various sorts of activities such as exports, eliminated taxes such as stamp and estate duties and widened the tax base. These changes improved the efficiency and equity of the tax system; and, resulted in one of the least distortionary systems in the OECD (McLeod, et al., 2001; Victoria University of Wellington, 2010).

On 16 December 1991 the Government announced its intention to introduce new tax legislation affecting the petroleum mining sector in order “to eliminate the current punitive tax treatment of petroleum exploration and development expenditure, both onshore and offshore” (Inland Revenue, 1992). The new legislation was intended to achieve broad international comparability of tax treatment of petroleum exploration and development expenditures, both on-shore and off-shore. The measures contained in the new legislation were to be effective from that date. Key elements of the changes involved the tax treatment of exploration and development expenditures and the assignment of income and expenditures in the case of a farm-out agreement. Additional provisions covered the definition of off-shore development; exploration expenditures deemed to be development along with a clawback provision allowing previously deducted expenditures to be clawed back, without interest, and treated as a development expenditures; rules covering deductions for the sale or disposal of a permit; and, joint ventures would no longer to be defined as partnerships.

In 2005, further changes were made to the rules on exploration and development expenditures. Development expenditures could be allocated on a straight line or (from 1 April 2008) on a reserve depletion method. Also, development expenditures allocated to future income years became deductible in full in the income year in which a permit is relinquished or disposed of for consideration. Costs relating to failed production wells became deductible in the year of abandonment, instead of deductions being spread over seven years. The distinction between on-shore and off-shore petroleum mining development was also removed.

Corporations earning income in New Zealand were previously taxed at a flat rate of 30% (Inland Revenue 2012). The tax rate dropped to 28%, effective from 1 April 2011 (Inland Revenue 2012). Corporations are also required to pay other indirect taxes such as payroll tax and fringe benefits tax.

For petroleum production, companies must pay an ad valorem royalty (AVR) of 5% (i.e. 5% of the net sales revenues obtained from the sale of petroleum) or an accounting profits royalty (APR) of 20% (i.e. 20% of the accounting profit from petroleum production), whichever is greater in any given year. For discoveries made between 30 June 2004 and 31 December 2009, an AVR of 1% was applied to natural gas or an accounting profits royalty of 15% on the first NZD 750 million (USD 625 million) for off-shore projects or 15% on the first NZD 250 million (USD 208.33 million) for on-shore projects (NZP&M, 2004).

For the production of Crown-owned coal, the royalty payable depends on when the initial permit was awarded. For initial permits awarded between 1991 and 2008 an AVR of 1% of net sales revenue is payable on net sales between NZD 100,000 (USD 83,333) and NZD 1 million (USD 833,333). For producers with net sales revenues in excess of NZD 1 million (USD 833,333), the royalty payable is either

1% of net sales revenue or 5% of accounting profits, whichever is higher (NZP&M, 1996a; NZP&M, 1996b). For initial permits awarded between 1 February 2008 and 23 May 2014, a unit-based royalty of NZD 1.40 (USD 1.17) per metric ton is payable for hard and semi-hard coking coal, NZD 0.80 (USD 0.67) per metric ton is payable for thermal and semi-soft coking coal, and NZD 0.30 (USD 0.25) per metric ton is payable for lignite (NZP&M, 2008). For initial permits awarded since 24 May 2014, an ad valorem royalty of 2% of net sales revenue or 10% of the accounting profits, whichever is greater, is assessed (New Zealand Parliament, 2013).

3.8. New Zealand Energy Strategy 2011-2025

In August 2011, the government released New Zealand's overarching energy policy framework, the New Zealand Energy Strategy 2011–21: Developing Our Energy Potential (the Energy Strategy) (MED, 2011; MBIE, 2012). This strategy replaced the 2007 New Zealand Energy Strategy. The new strategy focused on four priorities: diverse resource development; environmental responsibility; efficient use of energy; and secure and affordable energy. The government has recognised that New Zealand's future economic growth and competitiveness rely on efficient, environmentally responsible development and use of its energy resources – both renewable and non-renewable.

Key to the non-renewable strategy is the government led Petroleum Action Plan launched on the 18th of November 2009 (MBIE, 2013). Recognising New Zealand's largely unexplored oil and gas resource the action plan was designed to make New Zealand a highly attractive destination for international exploration and production investment (Brownlee, 2009; NZTE, 2011). To do so it used a number of work streams, including:

- Reviewing the royalty and taxation regime to ensure the government receives a fair return from petroleum resources while providing sufficient incentives for investors;
- Investing in data acquisition to improve resource knowledge and to foster more investment, particularly in frontier resources; and,
- Developing a fit-for-purpose legislative framework for the petroleum sector (Coull, 2013).

In August 2011, the government announced a new approach to allocating petroleum exploration rights. Previously, New Zealand primarily used a 'first-in, first-served' priority-in-time allocation scheme. Under the new scheme, the government announces annual 'block offers' for specific acreage and invites competitive bids to explore and develop them.⁹ The goal of the change is to attract significant additional investment to New Zealand while allowing the government to strategically manage all petroleum exploration permits (NZP&M, 2015).

On the other hand the government sees the economy's extensive renewable energy resources as important in the effort to make New Zealand more resilient in the face of fluctuating commodity prices and energy-related GHGs (MBIE, 2012). The Government's goal is for 90% of electricity to be generated from renewable sources by 2025, providing supply security is maintained. A major tool to achieve this goal is the Emissions Trading Scheme discussed further in the Climate Change section (MBIE, 2012). Arguably New Zealand is well on the way with 80% of electricity generated from renewable sources in 2014. Long term, 300 MW of renewable electricity generating capacity is currently under construction and an additional 3,600 MW have the necessary resource consents (MBIE, 2012).

⁹ The scheme was further altered in 2013 onward to a 'graticular' system whereby companies can effectively create the shape of their permit based on combining a number of smaller blocks (NZP&M, 2015).

New Zealand also has a relatively long tradition of promoting energy efficiency. In particular the Energy Efficiency and Conservation Act 2000 led to the country's first energy efficiency strategy and the establishment of the Energy Efficiency and Conservation Authority (EECA) to spearhead the strategy's implementation (New Zealand Parliament, 2000; EECA, 2015). In August 2011, the government released the New Zealand Energy Efficiency and Conservation Strategy 2011–16 (NZECS) to replace the 2007 strategy (MED, 2012). The overall goal of the new strategy is for New Zealand to continue to improve its energy intensity (energy used per unit of GDP) by 1.3% per year to 2016. In addition, New Zealand is part of the voluntary APEC-wide target to reduce energy intensity by 45% from its 2005 levels by 2035 (APEC, 2011; APEC, 2014). Some of New Zealand's major policies for promoting energy efficiency include:

- Fuel efficiency labelling for light vehicles and support for public transport improvements, such as the electrification of the Auckland rail system;
- Support for the innovative and replicable projects, awarding prizes for efficiency excellence, and energy auditing support.
- Assistance for over 275,000 homes to install insulation and clean heating equipment, energy efficiency building codes, and energy efficiency rating tools for homes; and
- Minimum Energy Performance Standards (MEPS) and related labelling (coordinated with Australia) (MBIE, 2012; EECA, 2015).

3.9. Climate Change Policy

In July 2015, the New Zealand Government announced its post-2020 climate change target to reduce greenhouse gas emissions to 30 per cent below 2005 levels by 2030 (Groser, 2015). The target has been tabled with the United Nations Framework Convention on Climate Change (UNFCCC) in advance of the Paris Conference of the Parties in December 2015. New Zealand's target will remain provisional until the new international agreement is ratified (MENV, 2015a).

New Zealand's existing target is to reduce greenhouse gas emissions to 5 per cent below 1990 levels by 2020. The new post-2020 target is equivalent to 11 per cent below 1990 levels by 2030 (MENV, 2015b). New Zealand will meet these responsibility targets through a mix of domestic emission reductions, the removal of carbon dioxide by forests and participation in international carbon markets.

New Zealand's post-2020 target forms part of its wider contribution to the global effort to reduce greenhouse gas emissions, which includes:

- participating actively in negotiation of the new global climate change agreement;
- investing NZD 45 million (USD 36.89 million) through to 2019 into technology to reduce agricultural greenhouse gas emissions and forming the Global Research Alliance on Agricultural Greenhouse Gases;
- playing a leading role in the Friends of Fossil Fuel Subsidy Reform, a group of countries that support the reform of inefficient fossil-fuel subsidies internationally;
- having a strong and ongoing commitment to low-carbon renewable energy, with around 80 per cent of New Zealand's electricity coming from renewable sources, and a domestic target to increase this to 90 per cent by 2025; and
- supporting sustainable economic development and resilience in the Pacific through investment of NZD 100 million (USD 81.97 million) in clean, efficient and affordable energy.

New Zealand's primary domestic climate change policy is its emissions trading scheme, which was established by the Climate Change Response (Emissions Trading) Amendment Act 2008 (New Zealand Parliament, 2008; MENV, 2015c). The scheme places a price on GHGs to provide an incentive to reduce emissions. The scheme covers all gases covered under the Kyoto Protocol and for which New Zealand has emissions: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (New Zealand Parliament, 2002).

In November 2009, the government amended the legislation to make a number of amendments to the emissions trading scheme. These included amendments to the timeframe for entry of various sectors into the scheme. The amendment bill also introduced transitional measures: a price cap (participants were able to purchase permits from the government at a fixed price of NZD 25 (USD 20.83) per metric ton of CO₂-equivalent); and a provision that all sectors except forestry would have to surrender only one permit for every two metric tons of CO₂-equivalent emitted, effectively reducing the capped emission price to NZD 12.50 (USD 10.42) per metric ton (New Zealand Parliament, 2009).

These transitional provisions were intended to be withdrawn over several years. However they were then extended by the Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012 (New Zealand Parliament, 2012).

Previously all sectors of the economy were expected to be included from 2015. The 2012 amendments also deferred inclusion of biological emissions from the agriculture sector until there are economically viable and practical technologies for emission mitigation. A number of minor changes were also included, such as allowing the establishment of offset forests to balance deforestation of pre-1990s forest land.

For energy, the point of obligation under the scheme generally lies with energy suppliers, not with end-users. This means that only energy suppliers and a few large industrial facilities are mandatory participants in the scheme. The government is providing freely-allocated units to industries which are emission-intensive and make products that are exposed to international competition (MENV, 2015d).

New Zealand is a party to the Kyoto Protocol, and according to the latest Ministry for the Environment projections, New Zealand is likely to comfortably meet its greenhouse gas emissions reduction target for the first commitment period (2008-2012) (MFE, 2013). Despite New Zealand not tabling a target under the second commitment period of the Kyoto Protocol, it will apply the Kyoto Protocol framework of rules to its unconditional 2020 target under the UNFCCC to ensure its actions are transparent and have integrity (MENV, 2015b).

PART 2: KEY FINDINGS & RECOMMENDATIONS

Part 2 of the report summarizes the background, key findings and consensus recommendations of the APRNZ regarding the eight policy instruments selected by New Zealand for review.

New Zealand Government officials identified eight policy instruments to be evaluated by the peer review panel. These fall into three categories: production; consumption; and, general service support measures as defined by the OECD Inventory of Support Measures for Fossil Fuels. A copy of the current list can be found in Appendix C.

The energy support measures reviewed include:

- Non-resident off-shore drilling rig and seismic ship tax exemption
- Tax deductions for petroleum-mining expenditures
- Temporary reduction in royalty rates
- R&D funding for the oil industry
- Financial restructuring of Solid Energy
- Indemnity for mining land reclamation
- Motor spirit excise duty refund
- Funding of international treaty obligations to hold oil stocks

The findings and recommendations for these measures were developed from meetings with the New Zealand Government and other stakeholders (See Appendix D for the schedule of meetings held during the APRNZ visit). Additional materials in the form of the completed pre-review templates are included in Appendix E.

For each of the eight policy instruments, the report details: a) the history and context for the measure; b) options for reform of the measure; c) a summary of key findings based on the APEC Panel Review for New Zealand's (APRNZ) discussions with New Zealand Government officials and other stakeholders; and, d) consensus conclusions and recommendations from the APRP. Finally, this part of the report ends with a brief conclusion.

1. Non-resident Off-shore Drilling Rig and Seismic Ship Tax Exemption

No New Zealand companies own off-shore rigs or seismic vessels, so any company wishing to explore in New Zealand waters needs to use a rig or seismic vessel provided by a non-resident owner. In 2005, the Government provided a temporary five-year exemption for non-resident off-shore drilling rig and seismic ship operators from paying tax on their profits, which was subsequently extended through to 2014. Cabinet subsequently agreed to further extend this exemption through 2019.

Ordinarily, a broad base, low-rate framework applies to the tax system. A consistent application of this framework will normally minimize any distortions caused by tax rules. However, with seismic vessels and rigs used for exploration work, there is a question about whether the normal tax rules provide the right outcome. The tax exemption was introduced to address an issue created by New Zealand's Double Taxation Agreements (DTA), under which such operators are only taxable in New Zealand if they are present in territorial waters for at least 183 days. The exemption is described in Section CW 57 of the Income Tax Act 2007 (New Zealand Parliament, 2007).

1.1. History and Context

New Zealand generally taxes non-residents on income that has a source in New Zealand. However, New Zealand's DTAs provide that non-residents are only taxable on their New Zealand-sourced business profits if they have a 'permanent establishment' in New Zealand. Many of these DTAs (such as the New Zealand/United States DTA) have a specific rule providing that a non-resident enterprise involved in exploring for natural resources only has a permanent establishment in New Zealand if they are present for a particular length of time, often 183 days in a 12 month period. Once a non-resident has a permanent establishment in New Zealand, they are taxed on all their New Zealand business profits starting from day one. Non-resident off-shore oil rig and seismic vessel operators generally have tax indemnity clauses in their contracts with New Zealand exploration companies. This means that the incidence of any tax imposed on a non-resident rig operator is borne by the company engaging in exploration in New Zealand who has engaged the rig operator's services.

The tax exemption was introduced to address an issue caused by this DTA provision — seismic vessels and rigs used in petroleum exploration were leaving New Zealand waters before the 183 day limit was reached so they would not be subject to New Zealand tax. This meant that in some cases a rig would leave before 183 days and a different rig was mobilized to complete the exploration program. This churning of rigs increased the cost for companies engaged in exploration and delayed exploration drilling and any subsequent discovery of oil or gas. It also meant that there was no revenue collected from seismic vessels and rigs. The introduction of the exemption directly addressed the issue of churning rigs caused by the DTA provisions.

Comparing the period since the exemption has been in place with the 2000-2004 period suggests that the exemption has extended the time that off-shore rigs and seismic vessels are staying in New Zealand waters. Between 2009 and 2012, for example, there have been three non-resident off-shore rigs operating in New Zealand, with an average length of stay of around eight months. By contrast, between 2000 and 2004 (before the exemption was introduced), no rigs stayed in New Zealand waters beyond six months. The same observation can be made for seismic vessels. The average length of stay has extended from four months pre-2005 to eight months post-2005.

There have been 17 off-shore wells drilled between 1 January 2009 and 30 June 2012. Only one well, the Manaia extended reach well drilled from the Maari platform, has resulted in new reserves being brought to market. The Manaia well was drilled from the EnSCO 107 jack-up rig which had been in New Zealand

waters for well over six months when drilling at Manaia commenced (drilling commenced on 1 August 2009 but the Ensco 107 had been in New Zealand waters since October 2007). The well produced 2.3 million barrels of crude oil between 2009 and 2012, generating an estimated royalty take of NZD 4.9 million (USD 4.02 million) and corporate tax of NZD 5.5 million (USD 4.10 million). In the absence of the exemption, it is likely this revenue would have been generated at a later time, because of the impact of rig churning delaying exploration and development activities.

At the time the exemption was being reconsidered in fiscal year 2013, there was a major drilling campaign being prepared for the 2013-14 drilling season with 20 confirmed wells and a further seven wells being classed as contingent, probable or possible. Of the 20 confirmed wells, approximately four to five wells were intended to be drilled by rigs that would have been in New Zealand for over six months. It was considered likely that there would have been a delay in the drilling of these wells if the existing tax exemption was not in place. It is also possible that some wells may not have been drilled at all.

In addition, if the wells were drilled at a later date because the exemption was removed, it is likely that there would be additional costs relating to mobilizing and demobilizing rigs. The mobilization and demobilization costs for an off-shore rig are approximately USD 10-15 million (NZD 12.2-18.3 million). These additional costs are deductible by the exploration company engaging rig services against income that is earned from a successful well.

While the exemption does not at first sight appear consistent with the standard broad-based, low-rate tax framework, the exemption is likely to minimize distortions in economic behavior and bring forward more tax revenue rather than less. That is because, if the exemption was removed, rig operators would likely resume churning. This could mean a delay in the collection of Crown revenue from royalties and corporate taxes on oil and gas production, due to delays in exploration programs. No company tax would be paid by the oil rig operators while the increased costs from churning would be deductible to the domestic purchaser (the New Zealand exploration firm). Officials estimate these additional exploration costs would equate to approximately USD 36 million (NZD 43.92 million) if the exemption was not in place (based on the information available on rig activity for the 2013/14 drilling season).

1.2.Options for Reform

The New Zealand Government considers this measure to be revenue neutral or possibly revenue positive. That is because, if the exemption was removed, rig operators would likely resume behaviors that occurred prior to the exemption being introduced. This could mean a delay in the collection of Crown revenue from royalties and corporate tax on oil and gas production, due to delayed exploration programs. No company tax would be paid by the oil rig operators while the increased costs from churning would be deductible to the domestic purchaser (the New Zealand exploration firm).

There are three options available to minimize the effects of the DTA:

- Make the exemption permanent;
- Keep extending the temporary exemption for a further five years; or,
- Let the exemption expire at the end of 2019, but resulting in the distortive effects of the DTA.

Making the exemption permanent would provide more certainty to exploration companies and save the administrative costs of reviewing the exemption every five years. While the 183 day rule remains in New Zealand DTAs, the removal of the exemption at any time will result in oil rigs resuming churning (with

the associated additional costs).

The effect of letting the exemption expire at the end of 2019 would be to delay both the costs of extra exploration and the probability of additional revenue arising from the increased exploration activity. As well as a delay in exploration activity, letting the exemption lapse would mean firms engaging rig operating services would face higher costs associated with mobilizing and demobilizing rigs around the 183 day period.

1.3. Findings

- The measure seems to help correct a distortion in the tax system caused by a special rule in New Zealand's DTAs. The measure appears consistent with New Zealand's general approach to corporate taxation. Based on reported drilling activity before and after the exemption, the measure did seem to attract positive attention by the industry.
- Also, the tax exemption does appear to prevent 'churning' or cycling of equipment. Curtailing this practice avoids unnecessary costs, including additional fuel consumption (i.e., wasteful consumption by drilling operators), and associated GHG emissions.
- Fiscal impacts are neutral or slightly positive. Churning can lead to delays in exploration and development programs. This delays royalty and income-tax payments to the New Zealand Government with the associated opportunity costs this entails. Also, the tax deductions stemming from the additional costs that the provision implies have the effect of reducing income taxes paid by New Zealand firms, thereby shifting a larger share of the overall tax burden to tax payers.
- The measure has been reviewed every five years and currently has an expiration date at the end of 2019.

1.4. Conclusions and Recommendations

- The tax exemption for off-shore drilling rigs and seismic survey ships is not an 'inefficient subsidy that encourages wasteful consumption of fossil fuels'.
 - New Zealand is a small producer and a net importer of crude oil. Increased production from New Zealand is therefore unlikely to affect prices on world markets and increase consumption domestically or abroad.
 - This measure helps, however, to improve the country's energy security, but only to a limited extent given the specifics of New Zealand's resources (e.g. remoteness and geological conditions).
- The measure already has a termination date; and the Government reviews the measure for its effectiveness and usefulness in terms of impacts on exploration and production. Short of re-negotiating the DTAs with the associated difficulties and complications, this is the only course of action that the Government of New Zealand can pursue at this time.
- To provide greater certainty to the petroleum industry, the reviews of the measure held every five years should be conducted with a lead-time of at least a year prior to expiration of the exemption.

2. Tax Deductions for Petroleum-mining Expenditures

New Zealand has a number of provisions for the tax treatment of petroleum exploration and development expenditures, which are meant to provide an attractive investment environment for the petroleum industry in New Zealand. These measures are in accordance with the principles of general taxation governing the New Zealand tax system.

Three such provisions were reviewed by the APRNZ:

- The immediate deductibility of an exploration expenditure in the year in which it is incurred;
- The ability for producers to amortize a development expenditure from the date it is incurred; and
- The option for development expenditures to be either deducted in a straight line over seven years, or in line with a field's production profile.

Allowing the immediate deduction of exploration expenditures considers the specific characteristics unique to petroleum exploration. An immediate deduction can be justified in that it is not clear that all of the expenditure is of a capital nature, since it is more likely than not that a particular exploration well will not result in a revenue generating asset. If the petroleum exploration expenditure does end up creating such an asset, the expenditure is clawed back and depreciated over the useful life of the field. This approach is consistent with New Zealand's broad-based low-rate tax principles, and is intended to avoid distortions between sectors. This deduction is described in the Income Tax Act 2007: Sections DT 1, DT 3, DT 4 DT 7 and CT (New Zealand Parliament, 2007).

The general tax rule in New Zealand is to allow tax deductions for capital assets to be made beginning in the year when they are incurred and amortized over the life of the asset. This rule applies to petroleum development expenditures and virtually all other sectors of the New Zealand economy. This deduction is described in the Income Tax Act 2007: Section DT 5 (New Zealand Parliament, 2007).

The original policy rationale for allowing development expenditures to be deducted in a straight line over seven years was to ensure that New Zealand's regime was competitive with other jurisdictions. Following arguments made by the Petroleum Exploration and Production Association of New Zealand (PEPANZ) in 2008 that the seven year period disfavored wells with short lives, producers were allowed to choose between the seven year deduction method and a deduction in line with the field's production profile. A unit of production depreciation method is consistent with economic theory that deductions for the fall in value of capital goods should try to approximate an asset's actual decline in value. In this way tax rules do not interfere with the good's value. This deduction is described in the Income Tax Act of 2007: Sections EJ 12 and EJ 12B (New Zealand Parliament, 2007).

2.1. History and Context

2.1.1. Immediate deductibility of exploration expenditure in the year that it is incurred.

The current taxation scheme for petroleum mining has been in place since 1991. Exploration expenditures are fully deductible in the year in which they are incurred. Qualifying exploration expenditures include those for drilling an exploratory well; prospecting (e.g., geophysical surveys) and acquisition of an existing or new prospecting permit; and, exploration permits.

Economic theory suggests that expenditure of a capital nature should be capitalized and amortized over the economic life of the asset. The question arises as to whether an exploration expenditure should be treated as a capital expenditure or as research and development which is normally deductible. In New Zealand, a typical rule of thumb for the probability of an off-shore commercial discovery is one in twelve wells drilled, while for on-shore exploration wells the probability is one in eight. It is therefore far from clear at the time exploration expenditures are incurred as to whether the expenditures are of a capital nature since it is more likely than not that a particular exploration well will not result in a revenue generating asset.

If a well results in a commercial discovery and the well is subsequently used for production then the expenditures associated with this well are clawed back and depreciated over the useful life of the field. This approach seeks to recognize the inherent uncertainty of exploration activity within New Zealand's broad-based low-rate tax principles.

The following comments can be made with regard to this measure:

- The measure favors existing players with producing assets over new entrants to the extent that existing players can offset deductions against other income while new entrants with no income will only be able to carry the losses forward. In some jurisdictions (notably Norway), the State will pay a portion of a firm's exploration losses in the same year as they are incurred (in the case of Norway in the same proportion as the State claims back if there has been a commercial discovery). New Zealand does not do this.
- The measure is consistent with the taxation of all other sectors as only expenditures that do not relate to drilling are not directly related to an income producing asset. There is therefore no estimated useful life to amortize the expenditure over.
- Most exploration expenditures will relate to wells which are not successful, so that no revenue generating capital asset was created by those expenditures. Allowing a deduction for an expenditure that does not create a capital asset is consistent with New Zealand taxation principles and the treatment of other industries (e.g., a deduction for R&D black hole expenditures which do not create a capital asset).

Since the claw back provisions are limited to the income producing asset and due to confidentiality laws it is very difficult to estimate how much of the NZD 2.96 billion (USD 2.47 billion) spent on exploration and prospecting permits relates to the eight fields discovered since 2000 and how much of this expenditure was of a capital nature. Fields discovered since 2000 include: Pohokura (2000), Turangi (2006), Kowhai (2006), Onaero (2011), Copper Moki (2011), Puka (2012), Tui (2002) and Maari (2003)¹⁰. Across all exploration and prospecting permits, NZD 2.96 billion (USD 2.47 billion) was spent between 2000 and 2013, compared to NZD 10.27 billion (USD 8.56 billion) on production permits and licenses.

2.1.2. Starting deductibility of development expenditure from the year that it is incurred.

It is a general tax policy that expenditures are deductible for the purposes of tax assessment in the year that they are incurred. Up until 1 April 2008, there was a distinction drawn between the tax treatments

¹⁰ The Maari field was first discovered in 1983 but further drilling was required in 1998 and 2003 to determine commercial viability.

of off-shore versus on-shore development wells. Off-shore development expenditures were deductible from the date that those expenditures were incurred, while on-shore development expenditures were only deductible from the date that commercial production started. The difference in treatment was based on the longer lead times, greater risk, and higher costs of off-shore developments.

This original policy of distinguishing between on-shore and off-shore development was based on a mix of the location of the reservoir and the location of the drill-site. Developments in horizontal drilling technology meant that this boundary was no longer sustainable. Horizontal drilling techniques allowed wells to be drilled off-shore from an on-shore location. However, the previous tax rules also encouraged drill-sites to be located on the seaward side of the high-tide mark, when in the absence of tax policy the drill-site might have been located on-shore (for oil and gas reservoirs close to New Zealand shores).

The Government decided to do away with the boundary between on-shore off-shore developments. The current rules are more consistent with the way deductible expenditures are treated across virtually all other sectors of the New Zealand economy. If the previous tax rules had remained in place, the State would not have suffered a financial loss as there have been no off-shore discoveries made since 1 April 2008 when the new tax rules came into effect. The continuing development expenditures undertaken at off-shore fields such as Maui, Maari, Kupe, Tui and Pohokura would all have been deducted at the same time, and at the same rate, as on-shore fields, as each of these fields were producing assets.

2.1.3. The option for development expenditure to be either deducted in a straight line over seven years or in line with a field's production profile.

As of 1 April 2008, petroleum firms have a one-time option to choose whether development expenditures are to be deducted in equal amounts over seven years, or on a reserve depletion method (also referred to as a units-of-production method). Prior to this point in time, development expenditures could only be deducted in a straight-line over seven years. This meant that income from a petroleum field with a life shorter than seven years might be over-taxed as a result, while income from a petroleum field with a life of more than seven years may end up being under-taxed.

Economic theory suggests that deductions for the fall in value of capital goods should try to approximate an asset's actual decline in value. The reserve depletion depreciation method is deemed to be consistent with economic theory. Due to taxpayer confidentiality, it is not known whether the permit holders elected to depreciate on a straight line basis over seven years or on a reserve depletion basis. The change in this component of the tax code would only apply to three very small on-shore fields: Onaero (2011), Copper Moki (2011), and Puka (2012).

2.2.Options for Reform

The goals of the New Zealand Government for its taxing schemes are:

- Economic justification for all provisions with as few distortionary measures as possible in order to ensure good investment decisions;
- Equity where all participants in its economy are treated in the same fashion (e.g., non-concessionary); and,
- Administrative ease to reduce costs and ambiguities.

In making the changes to the tax code with respect to petroleum exploration and development, the Government considered the impacts when providing the direction for the changes:

- For the deductibility of exploration expenditures when it is incurred, an issue occurs in the case where an exploration well leads to a commercial discovery, and not all of the capital expenditure is clawed back and treated as income. The judgment was made by the Government of New Zealand that this measure is consistent with New Zealand's taxation principles and the treatment of other industries.
- For the deductibility of development expenditures when it is incurred, there was no impact from the change in tax rules from 1 April 2008. The new rules are consistent with general tax principles and there have been no new off-shore discoveries made which might have been (adversely) affected if the old rules had continued to apply.
- For the option on the choice of depreciation method, the goal was to provide consistency with other industries such as mineral mining in the New Zealand economy.

The Government has suggested the following additional reforms could be undertaken, if these measures contribute to the 'wasteful consumption of energy':

- The claw back provisions for exploration well expenditure could be extended to include all exploration expenditures of a capital nature. For unsuccessful exploration efforts, the current tax rules only benefit permit holders with other producing assets. It does not do anything for new entrants who have no income in New Zealand against which to offset these exploration losses.
- The provisions around the immediate deductibility of development expenditure from the date at which expenditure is incurred are consistent with general tax policy. Any reform along the lines of what existed under the old rules would be inconsistent with current tax policy whereby all sectors in the New Zealand economy are treated the same.
- An option for reform of the third measure would be to remove the option to deduct development expenditures in a straight line over seven years and simply to retain the reserve depletion method.

The Government may make further changes to the tax code with respect to the petroleum sector to address particular issues as they arise.

2.3. Findings

- The measures for exploration and development expenditures are broadly consistent with New Zealand's general tax practices across all sectors of its economy. The changes made in April, 2008 do not appear to be distortionary or particularly concessionary. The changes made are based on economic theory and are similar to provisions that apply to other natural resource industries in New Zealand.
- There may be an asymmetry in the treatment of development expenditures since long-lived projects (> 7 years) can be amortized over a 7-year period rather than over the life of the asset. Currently, the option to choose either a 7-year amortization period or units of production amortization method applies to only three small on-shore fields and no data is available as to the choices made by the operators. Therefore, although an asymmetry may exist, the impacts at this time appear to be minor.

- These measures have no definite date of termination. Termination would require replacement with alternative provisions or movement under general taxation rules which are impractical for implementation in the petroleum industry.
- While these measures may serve to increase future production of fossil fuels at the margin, they are unlikely to affect consumption through lower oil prices since New Zealand is a price taker on world markets. The relevant oil and natural gas prices for both consumers and producers are market prices.
- At the margin, the measures may increase energy security and reduce New Zealand's import bill. Industry representatives, however, indicated that drilling decisions are not based on current tax policy; and, other factors play a much greater role, such as geology. The relatively low drilling activity, witnessed since the changes in the taxing scheme were made, confirms this observation.

2.4. Conclusions and Recommendations

- The tax deductions for petroleum mining expenditures are not 'inefficient subsidies that encourage wasteful consumption of fossil fuels'.
 - New Zealand is a small producer and a net importer. Increased production from New Zealand is therefore unlikely to affect prices on world markets and increase consumption domestically or abroad.
 - These measures may help, at the margin, to improve the country's energy security, but only to a limited extent given the specifics of New Zealand's resources (e.g. remoteness and geological conditions).
- These measures are in line with the general taxation principles of New Zealand in terms of treating the petroleum industry in a fashion similar to all other sectors.
- To provide greater certainty to the petroleum industry, reviews of these tax provisions should be conducted with a lead-time of at least a year before undertaking any revisions or changes in the existing regulations.

3. Temporary Reduction in Royalty Rates

All mineral rights for oil and natural gas are owned by the Crown. To provide the Crown with a fair financial return on these assets, all petroleum exploration and mining permits are granted subject to conditions that require the permit holder to calculate and pay royalties on production. New Zealand's petroleum royalty regime is designed to provide a fair return to the Crown as owner of the resource; be neutral and non-distortionary; provide appropriate risk-sharing between private investment and the Crown; and be simple to administer for both the Crown and industry. This means that the royalty regime is competitive against other jurisdictions, so that New Zealand remains an attractive investment destination for petroleum exploration and development. In 2012, a review of New Zealand's petroleum royalty regime confirmed that the regime is competitive with other jurisdictions and is considered appropriate given the country's geological risk profile.

In an attempt to attract additional exploration for natural gas after a downward revision of reserve estimates for its largest natural field in 2003, the Government of New Zealand reduced the royalty rate for natural gas discoveries made between 2004 and 2009. During the effective period, only two small on-shore discoveries were made. Given the limited impacts on drilling activity, the reduction was not renewed in 2009 and no consideration is currently being given to re-instating it. This temporary reduction is discussed in Chapter 7 of the Minerals Programme for Petroleum (NZP&M, 2004).

3.1. History and Context

In 2003 there was a major downward revision in reserve estimates for the Maui field. The Maui field is the largest gas and condensate field ever discovered in New Zealand, and it underwrote the development of the domestic gas market for over thirty years. The outlook for gas supply following the Maui reserve write down was bleak, with projections at the time of gas demand exceeding gas supply by the end of the decade. As an isolated market disconnected from the rest of the world, there were no obvious alternatives other than to find additional gas to meet New Zealand's ongoing requirements.

In response to the Maui reserve write-down, the Government introduced a suite of measures in 2004 to encourage exploration for new natural gas reserves. One such measure was a temporary reduction in royalty payments for any discovery made between 30 June 2004 and 31 December 2009 (NZP&M, 2004). For fields discovered during this period, the permit holders were subject to the higher of either:

- An ad valorem royalty (AVR) component of 1% on natural gas and 5% on oil; or
- An accounting profits royalty (APR) component of 15% on the first NZD 750 million (cumulative) gross sales from an off-shore discovery, the first NZD 250 million (cumulative) gross sales from an on-shore discovery, and a 20% accounting-profits royalty on any additional production.

The standard royalty regime consisted of paying the higher of either:

- An AVR component of 5% payable on the basis of either a sales price received or, where there has been no sale or no arm's length sale, the arm's length sales price; or
- An APR component of 20% payable on the difference between revenue received from the sale of products and the costs of extracting, processing and selling those products up to the point of valuation.

With respect to an exploration permit, the permit holder is liable to pay only the AVR. For all mining permits with net sales above NZD 1 million (USD 833,333), the permit holder is required to calculate for each period for which a royalty return must be provided both the AVR and the APR, and pay whichever is the higher. Typically, AVR is paid in the early period of production as prior costs are netted against revenue and at the end of the field's life, as production falls. APR is typically paid during the peak period of production of non-marginal fields.

A further royalty measure was introduced that allowed prospecting and exploration costs incurred anywhere in New Zealand between 30 June 2004 and 31 December 2009 to be deductible for the purposes of calculating the accounting profits (NZP&M, 2004). Outside this time frame, prospecting and exploration costs deductible for the purposes of calculating the accounting-profits royalty are ring-fenced, in that they are limited to the area of the mining permit and preceding exploration permit. This change in the royalty scheme also expired as of 31 December 2009.

There are only two fields to which this measure applies – the Turangi and Kowhai on-shore fields, both operated by Greymouth Petroleum. Both of these fields are relatively small on-shore fields. The Turangi

field has a 50% probability of ultimate recoverable gas reserves of 264.1 PJ as at 1 January 2015, while the Kowahi field has 50% probability of ultimate recoverable gas reserves of 83.2 PJ as at 1 January 2015. At an indicative gas price of NZD 5.50 (USD 4.58) per GJ, total sales would be NZD 1.91 billion (USD 1.59 billion) over the life of both fields. A 1% AVR equates to NZD 19.1million (USD 15.90 million), while a 5% AVR equates to NZD 95.51 million (USD 79.50 million). The difference in royalty rates equates to an undiscounted nominal NZD 76.4 million (USD 63.6 million) over the life of the two fields. The actual impact is likely to be considerably higher as all fields pay the higher APR except in the very early stages of production.

3.2.Options for Reform

Petroleum royalties are designed to capture natural resource rent. The owner of petroleum and mineral resources may license a party to extract those resources while paying a royalty on the value or the resulting profits from the use of another entity's property. Royalties are, by definition, over and above conventional taxation and cannot be considered a subsidy. In New Zealand, all petroleum mineral rights are owned by the Crown and all permit holders pay the Crown a royalty on production. Rates may differ depending on the royalty rates applicable at the time the original permit was awarded. This provides the permit holder with certainty around the fiscal terms that apply for the entirety of the project from the moment that the holder commences investment. As a result, royalty rates will differ for petroleum fields that were awarded prior to the current royalty rates that were introduced in 1991. The royalty structure applied in New Zealand, where the Crown shares both the rewards and risks with producers, is commonly found in other countries that use a royalty system. Prices that a producer receives are determined by demand-supply conditions.

The royalty reduction was applied for only a very short period (approximately 5 years), and has not been renewed. The reduction had very little effect in terms of increasing natural gas supplies or drilling activity. Given this outcome, the Government of New Zealand does not plan similar adjustments to the existing royalty scheme.

3.3.Findings

- This policy was introduced in response to a concern over the downward revision of reserves in the Maui gas field. Since the Maui gas field was the major source of gas for New Zealand markets, the royalty reduction was an attempt to keep supplies increasing to meet growing demand.
- Petroleum royalties capture natural resource rent for the owner of the mineral rights. Since the Crown is the owner of mineral rights in New Zealand, the Government may set or change the rates at which royalties are collected.
- The royalty reduction applied only to fields discovered between 2004 and the end of 2009. Only two small, on-shore fields (Turangi and Kowhai) discovered during that time qualified for the reduction. The government decided not to extend the measure after 2009 in light of its limited effects. As a result, the New Zealand Government lost royalty revenues estimated at no greater than NZD 100 million (USD 81.97 million).
- Prior to 2004, New Zealand already had among the lowest royalty rates (top 10 according to Ministry officials). However, low royalties or reductions in an already low royalty rate appear to have been an insufficient economic incentive to induce more oil and gas exploration.

Discussions with members of the industry indicated other factors play as significant or a more significant role in the decision to drill (e.g., geologic characteristics).

3.4. Conclusions and Recommendations

- The temporary reduction in royalties is not an ‘inefficient subsidy that encourages wasteful consumption of fossil fuels’.
 - Payment of royalties from a producer and the New Zealand Government, does not impact production costs. Royalties capture resource rent and are not a tax or subsidy.
 - This measure did not have the desired effect of increasing natural gas production in New Zealand. Other factors besides the royalty rate have a much greater influence on exploration activity.
- The measure has already been terminated and the Government of New Zealand has no plans to re-institute a similar measure.

4. Acquisition of Petroleum Exploration Data

The New Zealand Government funds a number of measures of general application that benefit the oil and gas industries as a whole (i.e., the measures do not support individual producers themselves). These include funding for a number of scientific research programs that relate to fossil fuels such as the acquisition of petroleum exploration data. The Seismic Data Acquisition Programme (DAP) was introduced in 2004 as part of a set of actions designed to increase interest in exploration of potential off-shore oil and gas fields in New Zealand. DAP acquires seismic and technical data on New Zealand frontier basins, and then makes these data available without cost to the public (Garlick and Ilg, 2014). In 2008, limited seismic surveys were also completed for remote areas on the New Zealand continental shelf and submitted to the UN.

New Zealand Petroleum and Minerals (NZP&M) administers DAP funds for acquisition of seismic data. The Crown Research Institute GNS Science provides technical advice to NZP&M during the selection process and then performs analysis of the new data. GNS Science, a limited liability company owned by the Government of New Zealand, provides most of the oil and gas specific research under multi-year program contracts to MBIE. This work ranges from ‘big-picture’ research into the tectonic evolution of the New Zealand continent, to detailed laboratory analysis of key geological and geochemical components of geologic systems. Thus, the funding for DAP has been leveraged in the form of contestable research grants.

Since 2004, the Government has invested around NZD 46 million (USD 38.33 million) into initiatives to improve the quality and availability of pre-commercial geological information about New Zealand’s off-shore petroleum basins. For the period 2014 to 2018, the total amount of new funding available for data acquisition activities will be NZD 2.0 million (USD 1.7 million) per annum for four years.

4.1. History and Context

A major barrier to the exploration of frontier basins is the absence of basic geological information to allow exploration investors to make well-informed decisions. For such basins the information collected by the State is fundamental to informed decision-making by industry and government. There is a clear role for the government in collecting basic scientific information about the Crown’s resources and the information that has been collected is made publicly available to any interested party. The information

collected can also be used for other purposes, such as hydrology, understanding benthic morphology, and identifying geological faults.

Although New Zealand has the second highest contribution of renewable energy to total primary energy supply in the OECD behind Iceland, it is still heavily dependent on non-renewable energy sources which provided 60% of total primary energy supply in 2014. While in 2004 New Zealand was a relatively energy rich country, being self-sufficient in all energy sources other than oil, it was highly dependent on the Maui gas field. In 2003 a redetermination of the Maui field significantly reduced the original gas quantities and introduced uncertainty in the future supply. Although there were some other smaller discoveries, generally the level of exploration was low. At that point, the New Zealand Government considered levels of petroleum exploration unlikely to result in the discovery and production of natural gas in sufficient quantities to meet future gas demand.

In particular the Government was interested in exploration targets in frontier areas which had not been previously drilled. However, few exploration companies showed interest in frontier regions due to the lack of seismic data. A further issue was that much of the data that did exist was of poor quality or not in modern digital formats. As a result a number of initiatives to boost gas exploration were introduced including the acquisition of seismic data on the frontier basins in New Zealand. An initial Multi Year Appropriation (MYA) of NZD 15 million (USD 12.30 million) phased over three years was approved, covering fiscal year 2004 through fiscal year 2006 for the acquisition of seismic data on New Zealand's off-shore basins. This was subsequently increased leading to total appropriations between fiscal year 2004 and fiscal year 2011 of NZD 46 million (USD 38.33 million).

Before the introduction of DAP, the Crown only acquired seismic data through an obligation on all exploration firms to submit copies of the data they acquired as a result of exploration activities to Crown Minerals; the Crown acted as a data aggregator, but did not collect data on its own account. In 2004, the New Zealand Government stock of seismic data consisted of approximately 196,000 km of off-shore and 8,400 km of on-shore 2D which at that time was estimated as requiring in excess USD 400 million (NZD 488 million) to replace, with almost a further USD 100 million (NZD 122 million) to replace the 3D data.

Reliance on industry reported data had resulted in two major issues – firstly data coverage was concentrated on the Taranaki basin, accounting for 95% of data held, and very little data on the frontier basins. Secondly, much of the data held on the frontier basins was in an outdated paper format, with only 15% of the data not related to Taranaki being held in a digital format that could be easily analysed with modern techniques, the remainder requiring significant effort and thus cost to use in any exploration decision.

The DAP budget has been used to fund three main types of activity:

- Direct acquisition of data, where NZP&M/Crown Minerals contracted directly with seismic operators to collect new seismic data;
- Acquisition of the rights to existing data, to enable it to be made available without charge as part of the package supporting block offers;
- Other supporting studies including remote petroleum sensing, geological and geophysical interpretation; and,
- Supporting activities included reprocessing of data, publishing and marketing, and updating databases.

DAP is currently in its second phase. The first phase (2004-2007) focused on areas with lesser commercial barriers to exploration with the goals of increasing industry activity, and quickly demonstrating the value of the initiative. The second phase (post 2007) addressed areas studied by GNS Science that had favorable geological features but were not included in the first phase. At this stage the earlier basin attractiveness study was revised with GNS Science in the light of new information and recommendations by the industry and other interested parties. Also, these studies identified a number of areas as being highly prospective but which were not prioritized for data acquisition because of reasons such as proximity to infrastructure or existing levels of information.

Between 2010 and 2012, the budget was also used to fund the Petroleum Exploration and Geosciences Initiative implemented by GNS Science. The two-year PEGI program was aimed at improving the underpinning knowledge and access to information on New Zealand's oil and gas resources. PEGI consisted of a suite of 14 inter-related projects, and the provision of eight existing GNS Science data products. The PEGI projects included a range of evaluations and upgrades of knowledge on Taranaki and other key basins along with specialist studies of the geochemistry of oils and gases and their source rocks, detailed palaeontology control of wells, petrography of reservoir rocks and screening of frontier basins. These studies were used to further refine collection of pre-exploration seismic under DAP. Since 2012, coordinated efforts similar to PEGI, but at a smaller scale have continued with funding from New Zealand Petroleum & Minerals and other sources.

4.2.Options for Reform

Current funding for DAP expires June 30, 2018. Funding for seismic data acquisition is not expected to be maintained at current levels, and most likely will be reduced. There will, however, be a continuing need for some Government funding for basic science research, which will include ongoing development of the understanding of New Zealand's petroleum estate.

Three events appear to be triggering these changes in funding levels for DAP include:

- Following the review of the Crown Minerals Act 1991 regime in 2013, the data confidentiality period has been extended from five years to 15 years for speculative seismic survey companies. Although a very limited period exists for analysis (from May, 2013), a much greater appetite for private investment in seismic survey over frontier basins exists. In 2013, 6,825 square kilometres of 3D- seismic were acquired compared to just 164 square kilometres in 2012. A further 5,743 km of 3D- seismic were acquired in 2014. The additional seismic data acquired in 2013 and 2014 was collected by speculative seismic survey companies using the new 15-year confidentiality period.
- Natural gas reserve estimates on 1 January 2014 were revised upwards by 31 percent from 1 January 2013, and the remaining reserves at 2,642 PJs are now the highest in 13 years. This reflects a significant increase to the reserves at several key fields. Sustained drilling programs at Maui and Mangahewa, as well as a number of well surveys at Pohokura and Kupe, provided a better understanding of these fields (MBIE, 2015b). While natural gas reserves subsequently declined to 2,372.6 PJ as at 1 January 2015, natural gas demand for electricity generation is in decline. The Southdown open-cycle gas turbine plant is due to close by end-2015, the 400 MW combined-cycle gas turbine of Otahuhu B closed on 21 September 2015, while the remaining two Rankine units at Huntly, which can operate on either coal or gas, are due to shut by end-2018, subject to no major changes in the electricity market. The net result of these

announcements is that the overall natural gas supply position appears relatively comfortable.

- Changes in the exploration block offer processes to a more modern process and an increase in frequency by the New Zealand Government in 2012 resulted in increased exploration expenditures and activity (NZP&M, 2015a). Oil and gas exploration and development expenditure increased to NZD 1.577 billion (USD 1.30 billion) in 2013, up 7 percent from 2012, and rose a further 31% in 2014 to NZD 2.065 billion (USD 1.69 billion). In 2014, 33 wells were drilled to a cumulative depth of over 99 km. In 2013, 32 wells were drilled to a cumulative depth of over 93 km (MBIE, 2015b). Prior to 2012, the Government attempted to guide exploration activities by placing tracts up for bid in specific (i.e., targeted) regions or basins. After 2012, this restriction was removed and resulted in an increase in the number of tracts offered.

Options for reform include:

- Expansion of funding for seismic data acquisition and other geoscience research;
- Reduction of basic funding for seismic data acquisition as basic science research; or
- Discontinuance of funding for basic geoscience research.

4.3. Findings

- The measure helps generate a basic understanding of New Zealand's geology. For example, DAP funding has supported projects such as a range of evaluations and upgrades of knowledge on Taranaki and other key basins along with specialist studies of the geochemistry of oils and gases and their source rocks, detailed paleontological and petrographic studies of reservoir rocks, and screening of frontier basins. These studies would not be undertaken normally by the private sector. Or, if they were undertaken by the private sector, the results would not be publicly disseminated for five years; however, these types of studies do expand basic understanding of New Zealand's geology and benefit the public.
- Publicly available information fosters transparency and helps attract investment into the development of New Zealand's natural resources. Publicly available data ensures that all entrants into New Zealand begin on the same basis, i.e., competition is encouraged initially. Further, Government decisions, concerning the exploration and development of Crown resources, can be evaluated independently. As demonstrated by a 71% increase in drilling expenditures by petroleum firms in New Zealand in 2014, even during a period of low world oil prices, government funding of the acquisition of basic geologic knowledge does attract investment for the development of New Zealand's natural resources. This development benefits the New Zealand public through additional tax revenues, increased royalty payments and expanded economic opportunities, i.e., well-paying jobs in the petroleum industry.
- A wide range of other activities use the information acquired through DAP. More over pre-commercial data is an enormous asset to a range of disciplines and applications beyond the petroleum sector. Examples of its uses in other public good areas include:
 - General geosciences including earth modelling;
 - Conservation and marine protection;
 - Geological hazard assessment;
 - Identification of other natural resources including mineral and geothermal energy resources.

- Currently, DAP is only funded until June 30, 2018. Therefore, a termination date for the current structure of the program including funding for seismic data acquisition in support of the petroleum industry exists. Depending on changes in exploration expenditures and the numbers of privately funded seismic surveys, public funding levels for seismic data acquisition will probably be reduced.
- If the data were to induce more fossil-fuel production in New Zealand, it would be unlikely to affect world market prices. Currently, the Asia Pacific region (including New Zealand) only accounts for approximately 9.5% of daily world oil production and 2.5% of world oil reserves (BP, 2014). Further, New Zealand currently imports 70% of its petroleum needs. Given such small shares, it is highly unlikely that any increases in petroleum production in New Zealand would affect world market prices.
- To the extent to which the geological data collected are a public good, then government intervention is justified. Economic theory uses Pareto criteria to judge whether a transaction should be undertaken. That is if there are no externalities, if both parties to the transaction see improvement and no one else harmed, then the transaction enhances total welfare. This criterion, however, fails when confronted with a public good which is defined by non-exclusivity and non-rivalry, e.g., an absence of well-defined property rights. Non-exclusivity arises when a good is available to all and is costly to produce. Generally, as the number of people required for producing a good increases, the feasibility of producing a good in a market declines and welfare gains are difficult to achieve from a private transaction. As Adam Smith pointed out, this a justification for government intervention:

“The third and last duty of the sovereign or commonwealth, is that of erecting or maintaining those public institutions and those public works, which, although they may be in the highest degree advantageous to a great society, are, however, of such a nature, that the profit could not repay the expense to any individual or small number of individuals, and which it therefore cannot be expected that any individual or small number of individuals should erect or maintain” (Smith, 1776: Book 5, Ch. 1).

On the basis of this argument, geologic data collected during basic research is a public good. Demand for such data cannot be measured in the usual terms of an ordinary good where a price can be determined for discrete units, e.g., research is indivisible. Further, most individuals in the general public do not have the information or understanding to establish stable and well-formed preferences for the output of basic science. Therefore, demand for geologic data will be limited to a very few users, and certainly not enough to create a market.

Since basic science is not patentable (defining a property right), the benefits cannot accrue to a single person or firm; and, as a result few will undertake research. In the case of the DAP, industry representatives indicated that few companies would undertake pre-exploration collection of data. However, the aggregate benefits to society such as increased economic development and activity or improved quality of life usually far outweigh costs. In the case of DAP, New Zealand gained seismic data worth approximately NZD 500 million (USD 416.67 million) for roughly NZD 46 million (USD 38.33 million) over a ten year period. As a result of this expenditure, New Zealand became more attractive for petroleum exploration with additional expenditures by the industry. Expenditures by the industry have a multiplier effect which

increases and distributes the benefits throughout the economy. Thus, there is a much greater benefit to the New Zealand economy than the cost to the Government. As a result, some degree of government intervention is justified.

4.4. Conclusions and Recommendations

- Government funding for the acquisition of geologic data supports basic science research. As such, it is not an ‘inefficient subsidy that encourages wasteful consumption of fossil fuels’.
 - New Zealand is a small producer and a net importer. Increased production from New Zealand is therefore unlikely to affect prices on world markets and increase consumption.
 - This measure does help, however, to improve the country’s energy security, but only to a limited extent given the specifics of New Zealand’s resources (e.g. remoteness and geological conditions).
- Review on a regular basis the effectiveness and usefulness of this expenditure in terms of the impacts on petroleum exploration and production.
- Consider inventorying other users (besides the petroleum industry) of the data obtained so those impacts may be included in the evaluation of the program.
- Leverage this funding with additional funding for contestable funding with coordinating research programs at universities, research institutes, and industry.

5. Financial Restructure of Solid Energy

Solid Energy New Zealand Limited (Solid Energy) was incorporated as a private company under the Companies Act 1955 and re-registered under the Companies Act 1993 (New Zealand, 1993). Solid Energy is a state-owned enterprise under the State-Owned Enterprises Act 1986 (New Zealand Parliament, 1986). The shareholders of Solid Energy are the Minister for State-Owned Enterprises and the Minister of Finance (MOJ, 2013).

Solid Energy develops and supplies coal resource-based products in New Zealand and internationally. Solid Energy’s business activities involve developing and producing coal and lignite from a resource base of 1.5 billion metric tons, from four major operating mines producing approximately 3.3 million metric tons in the year to 30 June 2014 supplying the export and domestic markets (Solid Energy, 2014).

In September 2013, Solid Energy underwent a financial restructure that gave the company NZD 100 million (USD 83.33 million) in balance sheet equity and access to liquidity facilities. The main features of the restructure included:

- The five creditors rescheduled their debts in a syndicated term loan facility maturing September 2016;
- The five banks and note holder, TSB, exchanged NZD 75 million (USD 62.5 million) of the debt owed by the company for NZD 75 million (USD 62.5 million) of equity in the form of non-voting redeemable preference shares (RPS);
- The Crown contributed NZD 25 million (USD 20.83 million) in cash for RPS; and

- The Crown provided NZD 130 million (USD 108.33 million) in secured loans for the company to use if required (Solid Energy has not required any of these loans to date).

Following the financial restructure, Solid Energy focused on downsizing its non-profitable operations and embarked on a program to divest non-core and surplus assets. However, in August 2015 the Board of Solid Energy placed the company into voluntary administration, which is likely to lead to the managed wind-down and liquidation of the company.¹¹

5.1. History and Context

Under the 1901 Coal Mines Amendment Act, the Government of New Zealand was allowed to open and work coal mines and to set aside Crown land required for coal mining. 'State Coal Mines' was established as a government trading enterprise and by 1950 was the largest coal producer in New Zealand. In 1987, the state-owned enterprise, CoalCorp, was formed from State Coal Mines, inheriting many of its assets and liabilities. CoalCorp was rebranded as Solid Energy in 1996. Solid Energy operates a number of South Island coal mines located both on the West Coast (Stockton and Reddale) and in Southland (New Vale). On the North Island, the company's largest mines are the Huntly East mine and the nearby Rotowaro Opencast Mine.

During a period of financial distress (1996-2000) resulting in part from the Asian financial crisis, the Government of New Zealand took steps towards disbanding Solid Energy. However, the management was able to turn the company around and return it to profitability. Coal sales increased from 2.81 Mt in 2000 to 4.6 Mt in 2005, total revenues increased and Solid Energy undertook a diversification strategy (Source Watch, 2015). This diversification strategy included the development of unconventional coal projects such as a coal gasification pilot plant, a coal seam gas demonstration plant, a lignite briquetting plant, and studies of a lignite to fertilizer project and a coal to liquid fuels project (Source Watch, 2015). The company also made limited investments in renewable energy.

Sales and profits continued to increase during the following five years (2005 to 2010), but in this period dividends (of NZD 20 million or USD 16.67 million) were paid only in 2006 (Source Watch, 2015). From 2005, Solid Energy had a healthy cash flow every year; but, the amounts invested in mining assets, and expanding production regularly exceeded annual cash flow. Debt levels started increasing from NZD 15 million (USD 12.5 million) in 2007 to NZD 295 million (USD 245.83 million) in 2012 and then almost NZD 400 million (USD 333.33 million) in 2013. Retained earnings and borrowings financed most of the revenue growth, as the Crown issued no new shares during a 12-year period.

In a 2008 briefing paper for the Minister for State-Owned Enterprises, Solid Energy was described as one of the strongest performing SOEs and one of New Zealand's largest exporters. Solid Energy forecasted annual profits of NZD 170 – NZD 180 million (USD 141.67 – USD 150 million) for 2008 through 2011, with dividends of NZD 100 – NZD 130 million (USD 83.33 – USD 108.33 million) per annum. The significant increase over past performance was due to strong international coal prices. The Board made more than

¹¹ Voluntary administration (VA) is intended to be a relatively short-term measure that freezes the company's financial position while the Administrator and the creditors determine the company's future. In a VA, an independent and suitably qualified person (an Administrator) takes full control of the company to try to work out a way to save either the company or its business. If it is not possible to save a company or its business, the aim is to administer the affairs of the company in a way that results in a better return to creditors than they would have received if the company had instead been placed straight into liquidation. Voluntary administration allows the creditors to determine the future of the company. If creditors approve that the company should continue to trade in some form, that approval is recorded in a deed of company arrangement (DOCA) (Solid Energy, 2015).

a six-fold increase in its estimate of Solid Energy's commercial value; from NZD 475 million (USD 395.83 million) in 2007 to NZD 2.954 billion (USD 2.46 billion) in 2008. The Treasury advised a movement towards a greater private sector involvement in SOEs, while observing that partial listing would not be consistent with, "the Government's policy to retain 100% ownership of SOEs." SOEs received pressure to increase their gearing (i.e., the ratio of debt to equity or capital) by borrowing more from the private sector and paying special dividends to the Crown.

Solid Energy had a net profit of NZD 87.2 million (USD 72.67 million) in 2011, which was an increase from NZD 67.8 million (USD 56.5 million) in 2010 (Source Watch, 2015). As a result, at the beginning of 2012 the company was planning a major expansion of existing mines and the development of new projects for both domestic and export markets. By mid-year, however, it was evident that the company was in serious difficulties and, following a loss of NZD 40.2 million (USD 33.5 million), needed to face up to a major restructuring of its activities.

Solid Energy was pushed to near financial collapse, recording losses of NZD 335 million (USD 279.16 million) in FY 2013, following a steep and sustained fall in coal prices in mid to late 2012 that neither the company nor the analyst community had foreseen. In the lead up to that failure, Solid Energy had reduced its capacity to manage through a period of distress by increasing its gearing and cost structure. The increase in gearing primarily arose from a decision to fund investment activity from debt. This investment activity related to both its core coal business and diversified activities (underground coal gasification, coal seam gas, lignite conversion projects, wood pellets and biodiesel).

The financial difficulties in 2012 resulted in a significant retrenchment focusing Solid Energy's activities on its core coal business. The retrenchment included:

- The resignation of the Chief Executive and the Chairman of the Board;
- The entire Board was renewed and mining industry expertise added;
- The Spring Creek mine was put into care and maintenance, and production at Huntly East and Stockton reduced;
- Approximately half of the company's staff were made redundant, with over 790 less staff out of 1,658 staff employed in 1 July 2012;
- The company sold significant land holdings in the South Island which included much of its former lignite holdings;
- The company rationalized some of its permit holdings, with a total of 20 permits either surrendered, left to expire, or pending applications withdrawn since mid-2012;
- The company reduced its average mining costs from NZD 179 (USD 149.17) per metric ton in June 2012 to NZD 125 (USD 104.17) per metric ton by the end of 2013.

Solid Energy's investments in a range of 'new energy' and renewable projects, and away from its traditional coal business, were in line with a business strategy that was in place up until 2012. This strategy was underpinned by the Company's long-term view on energy prices which were generally well above consensus market expectations and which has subsequently proven to be erroneous. Since 2012, Solid Energy has been divesting itself of these projects, and has focused on its core business of producing coal.

In September 2013 Solid Energy underwent a financial restructure that gave the company NZD 100 million (USD 83.33 million) in balance sheet equity and access to liquidity facilities. The main features of the restructure included:

- The five main creditors (Bank of New Zealand, Commonwealth Bank of Australia's New Zealand branch, Westpac New Zealand, ANZ Bank and Bank of Tokyo-Mitsubishi UFJ) rescheduled their debts in a syndicated term loan facility maturing in September 2016;
- The five banks and note holder TSB exchanged NZD 75 million (USD 62.5 million) of the debt owed by the company for NZD 75 million (USD 62.5 million) of equity in the form of non-voting RPS;
- The Crown contributed NZD 25 million (USD 20.83 million) in cash for RPS; and the Crown provided NZD 130 million (USD 108.33) in secured loans for the company to use if required. This includes a secured working capital of NZD 50 million (USD 41.67 million), repayable within three years; a secured mortgage-backed facility of NZD 50 million (USD 41.67 million), repayable within three years; and a secured standby facility of up to NZD 30 million (USD 25 million) if required. To date, Solid Energy has not required any of these loans.

Control of the company remains with the Shareholding Ministers, whom own all of the company's 60.9 million ordinary shares. The refinancing package reduces the company's drawn bank debt from NZD 300.5 million (USD 250.42 million) to NZD 239.3 million (USD 199.42 million) and Medium Term Notes from NZD 95 million (USD 81.67 million) to NZD 81.2 million (USD 67.67 million). Even after restructuring of its debt, Solid Energy had forecasted gearing of more than 70 percent from 2014/15 onward; typical gearing ranges in the mining sector are between 20 and 50 percent (Source Watch, 2015). For operating year 2014/15, gearing had increased to 95% after further asset impairments, while the shareholders equity had decreased from NZD 91.6 million (USD 76.33 million) to NZD 12.5 million (USD 10.42 million). Total assets at 30 June 2014 were NZD 636 million (USD 530 million), down NZD 223 million (USD 185.83 million) from the same time the previous year (Source Watch, 2015).

TSB Bank was one of a group of lenders to Solid Energy who wrote off NZD 75 million (USD 62.5 million) of the NZD 369.7 million (USD 308.08 million) in exchange for (non-voting) preference shares. By the end of February 2015, the bank had written off its entire NZD 53.9 million (USD 44.92 million) loan (Source Watch, 2015). On 2 March, the chief executive for TSB confirmed that Solid Energy was negotiating a fresh restructure which could see lenders accept more losses on their loans. He said that the State Owned Enterprises Minister had communicated to lenders that the Government was not willing to put more taxpayer funds at risk in order to help Solid Energy. The Prime Minister indicated that Solid Energy's private debt was the banks' problem and denied that the company was continuing to trade on the basis of an implicit guarantee that the Government would rescue the company. He would not comment on whether the company would be liquidated if the banks did not accept further losses.

On 11 March 2015, the acting chairman of Solid Energy presented the company's annual review to Parliament. He stated that the company was 'marginally cash positive' but was looking at another significant loss. Solid Energy did not expect further financial assistance from the Government. The company was in 'critical' discussions with the banks who were owed NZD 300 million (USD 250 million); a debt which would not be sustainable beyond 2016. Further job losses would be inevitable and the company was looking at selling parts of its business.

In August 2015, the Board of Directors placed Solid Energy and all associated companies into voluntary administration (Solid Energy, 2015). Although production costs had been extensively reduced, prices for hard coking coal had continued to decline. As a result, the Board felt that the current capital structure was no longer sustainable. The Board viewed the process of voluntary administration as preferable to immediate liquidation, and in all likelihood would net creditors greater returns on outstanding debt. The Board's proposal included the following terms:

- Solid Energy would engage an investment bank and undertake an orderly, managed sale of its assets over the next two-and-a-half years.
- The existing Board would continue to manage Solid Energy, and be monitored by and reporting to the Deed Administrators and a monitoring committee of certain creditors.
- Solid Energy's debt as at the date of the VA would be divided into categories and paid as indicated below:
 - Trade debt (day-to-day debts which the Companies incurred in the ordinary course of operations prior to the commencement of the VA) would be paid promptly once the proposal had been adopted.
 - Accrued employee entitlements that were outstanding at the date of commencement of the VA (e.g. holiday pay) would be paid as per normal.
 - Participant creditors' debt would be restructured into a two-and-a-half year facility. This would give Solid Energy time to carry out an orderly and managed sale of assets, without the pressure of having to make significant debt repayments. Participant creditors include Solid Energy's banks and medium term noteholders.
- All costs incurred in the normal course of ongoing trading would be paid when they fell due and rank ahead of all other debt. This means trade creditors can continue to trade with the Companies with confidence of payment.
- Existing Crown indemnities for site rehabilitation costs would be restructured to provide certainty for affected local authorities and assist the asset sale process.
- Participant creditors would get what's left at the end, after payment of all trade creditors and employees, as settlement of their debt. If the proceeds were less than the outstanding debt, the participant creditors would release the shortfall.
- If any assets cannot reasonably be sold, they would be put into a safe and secure state, all employee entitlements would be fully met, and the asset will be closed.

As of mid-September, creditors, local authorities, and other New Zealand businesses indicated backing for the Solid Energy proposal (New Zealand Herald, 2015a). Under the Solid Energy proposal, participant creditors (e.g., banks) might expect to receive between NZD 0.35 to NZD 0.40 (USD 0.29 to USD 0.33) on the New Zealand dollar. Immediate liquidation would probably result in only NZD 0.15 to NZD 0.20 (USD 0.12 to USD 0.16). The creditors finally accepted the proposal by Solid Energy on September 17, 2015, and the control of the company was returned to the Board which will oversee the orderly liquidation of assets (New Zealand Herald, 2015b).

5.2. Options for Reform

Two main options for Solid Energy existed in March, 2015:

- Let Solid Energy go into liquidation and reallocate its mining licenses/permits to other parties;
- Financially restructure Solid Energy in the expectation that it can trade its way back into financial health.

At the time of the Peer Review Panel visit, it was not clear that letting Solid Energy fail would lead to better economic recovery of the reserve/resource base and higher royalty returns to the Crown. The commodity market for hard coking coal remains depressed and all coal companies are retrenching their capital investments. Subsequent to the Peer Review Panel visit in March, the Board of Solid Energy placed the company into voluntary administration in August. This action is likely to lead to the managed wind-down and liquidation of the company (Solid Energy, 2015).

5.3. Findings

- The Government has already helped Solid Energy twice in the recent past alongside a commercial debt compromise between the company and its private sector lenders. The Government has provided support of the company's balance sheet in two different forms: (1) NZD 25 million (USD 20.83 million) in cash in exchange for RPS; (2) NZD 130 million (USD 108.33 million) in secured loans. In addition, the Government has provided an indemnity for mine rehabilitation, which also strengthened the balance sheet by shifting a liability to an asset (see instrument discussion in Section 6). Finally, the Government provided its backing for the restructuring of debt with five creditors.
- The Government has only received dividends in three years since Solid Energy was formed in 1996. In the case of liquidation, holders of RPS would be in line before holders of common equity (100% held by the Government). With a 95% gearing ratio currently, the Government would probably not recover the full market value of its equity shares. Solid Energy is paying minimal taxes due to the sizable losses since 2011. Finally, with reduced production at currently low prices, the Crown is receiving lower royalty payments.
- Several of the company's mines are located on the West Coast of the South Island, which is a region of low economic activity and few employment opportunities. Between 2011 and June, 2014, Solid Energy has reduced its workforce in this area by 790 at three different mines; further reductions have occurred or are expected to occur in 2015. One of the mines in the area has been put into care and maintenance, while the other two have had levels of production reduced. These employment reductions are not limited to Solid Energy; both KiwiRail and Lyttelton Port (Christchurch) will be facing layoffs given the production reductions at the Solid Energy mines. The economy of the West Coast of the South Island is dominated by the natural resource (mining and forestry) industries.
- At the time of the peer review, the company seemed to require coal prices of at least USD 130 (NZD 158.60) per metric ton to be viable. In March 2015, prices averaged around USD 70 (NZD 85.40) per metric ton (on an annual basis). Coal prices on international markets are volatile. Although Solid Energy has been able to reduce costs, the company is a price taker on these markets (0.2% of coal trade) with prices capped at world market prices.
- Power generators or other entities remain free to buy imported coal or domestic coal at market prices. The Government does not provide subsidies to consumers of coal, nor dictate that they must buy from a New Zealand source. Consumption of New Zealand coal by Solid Energy's two largest domestic customers has declined since 2011.
- Since the impacts of balance sheet re-structuring would not substantially reduce production costs to a competitive position within international markets, the impact of Government support for Solid Energy appears to have little or no impact on coal consumption in New Zealand.

5.4. Conclusions and Recommendations

- Government assistance to Solid Energy does not constitute an 'inefficient subsidy that encourages wasteful consumption'.

- Due to declining revenues from sales and low coal prices on international markets, Solid Energy is curtailing operations and attempting to reduce costs. However, the company is still operating at a loss.
 - New Zealand coal consumers are under no obligation to purchase coal from Solid Energy; domestic sales by the company declined by 35 percent in 2013/14.
 - New Zealand's coal consumption only grew at an annual rate of 0.77% between 2011 and 2014. Prices vary depending on the type of coal, with lignite typically set in reference to the long-run marginal cost of a mine, thermal coal at some point between import-parity and export-parity, and coking coal at export parity. There are no instances where coal prices are set or subsidized by the New Zealand Government.
- The Terms of Reference for an APEC FFSR Peer Review Panel narrowly defined the scope of such reviews as to whether a policy instrument was resulting in 'wasteful consumption'. Without substantially more data and a much longer review period, suggesting a course of action for the New Zealand Government with respect to Solid Energy is not possible.
 - As demonstrated by reports from the New Zealand Treasury, Government auditing functions, and independent external audits, the financial issues and economic viability are being seriously evaluated and well-monitored.
 - The decision of the Solid Energy Board to enter voluntary administration with a staged liquidation of assets, subsequent to the Peer Review Panel visit, voided the panel's recommendations made during the exit meeting.

6. Indemnity for Mining Land Remediation

In September 2014, following further deterioration in coal prices and no near-term improvement forecast, the Crown provided an indemnity to Solid Energy for the company's cost for environmental remediation. Solid Energy is required to remediate the environmental damage caused by its mining operations and carries a liability on its balance sheet that reflects outstanding land remediation. The indemnity covers remediation costs up to a Net Present Value of NZD 103 million (USD 85.83 million), with forecast costs of NZD 6 million (USD 5 million), and NZD 11 million (USD 9.17 million) in FY2015 and FY2016 respectively (The Treasury, 2014).

There is no overall impact on the Crown's fiscal position because the indemnity simply transfers a liability from an entity that is 100% owned by the Crown to the Crown itself. No change is proposed to the requirements or timing of the remediation work program which has been agreed between the company and the relevant local authorities. The only difference is that these costs will now be met directly by the Crown.

6.1. History and Context

During 2012, it became apparent that Solid Energy was in some financial difficulty. Falling international coal prices, coupled with a strengthening New Zealand dollar, resulted in a significant reduction in revenue. As a result, a significant write-down in the value of Solid Energy's assets occurred during the fiscal year ending May 31, 2013. Further significant write-downs in the value of Solid Energy's assets occurred during the fiscal year ending May 31, 2014 because of lower coal prices and higher exchange rates than previously forecast. The signing of a Deed of Indemnity and Bond Facility agreement with the

Crown after 30 June 2014 enabled the Directors of Solid Energy to continue to assert that the company is a going concern (Controller and Auditor General, 2014). This transaction strengthened Solid Energy's balance sheet, but did not directly affect the Government's financial statements because the transaction was between entities within the Government.

The Deed creates an asset for Solid Energy and a liability for the Crown, recognized on signing, of NZD 103 million (USD 85.83 million) in present value terms. Under this Deed, the Crown will reimburse the mining rehabilitation expenses of Solid Energy for post-1987 mining activities. Solid Energy is required by various pieces of legislation controlling its mining activities to rehabilitate to an agreed condition the land on which its mining activities occur. Rehabilitation liabilities are spread across a number of mines including Stockton, Ohai, Maramarua and Huntly East. A large proportion of the mine site rehabilitation should be completed by 2020. However, problems associated with acid mine drainage will take several decades to remedy and the final cost cannot be established with certainty.

This Deed of Indemnity extends a similar remediation agreement made in 1987 whereby the Crown agreed to indemnify Solid Energy for the end of mine life rehabilitation costs relating to mining activities prior to 1 April 1987 (The Treasury, 2014). This dates back to the establishment of Coal Corporation of New Zealand Limited. In the Agreement for Transfer of Assets (March 1988) between the Crown (Ministers of Finance and State-Owned Enterprises) and Coal Corporation of New Zealand Limited (rebranded as Solid Energy Limited in 1996), the Crown agreed to indemnify Solid Energy for liabilities, costs and expenses arising out of mining operations by State Coal Mines prior to 1 April 1987. These costs include those relating to the rehabilitation (including water treatment) of former State Coal Mines mine sites present within the coal mining licenses granted to Solid Energy under the Asset Transfer Agreement.

6.2.Options for Reform

Two main options for Solid Energy currently exist:

- Let Solid Energy go into liquidation and reallocate its mining licenses/permits to other parties;
- Financially restructure Solid Energy in the expectation that it can trade its way back into financial health.

At the time of the Peer Review Panel visit, it was not clear that letting Solid Energy fail would lead to better economic recovery of the reserve or resource base, and higher royalty returns to the Crown. The commodity market for hard coking coal remains depressed and all coal companies are retrenching their capital investments. The Government sees the Deed of Indemnity as analogous to the provision of equity and would not be inconsistent with the usual practice of commercial investors. As the 100% owner of Solid Energy, the Government sought to strengthen the balance sheet of a company in financial distress in the same way that any commercial investor might choose to do in the circumstances. Subsequent to the Peer Review Panel visit in March, the Board of Solid Energy placed the company into voluntary administration in August. This action is likely to lead to the managed wind-down and liquidation of the company (Solid Energy, 2015). The indemnity is to be restructured to follow or support rehabilitation of specific assets.

6.3.Findings

- Solid Energy is legislatively required to rehabilitate to an agreed condition the land on which its mining activities occur. The Resource Management Act 1991 and its amendments is the major

piece of environmental legislation that controls the use of land in New Zealand (Nathan, 2012). This legislation defines a comprehensive framework for the development and protection of almost all physical and natural features. Mineral extraction is excluded from the sustainability provision of the act, but as mining invariably involves the use and modification of land, all other parts apply. Territorial authorities (district and regional councils) are responsible for administering the Resource Management Act.

- The New Zealand Government agreed to indemnify Solid Energy for the end of mine life rehabilitation costs (including water) relating to mining activities prior to September 30, 2014. It does not cover rehabilitation costs arising from mining activities carried out after that date. Since the Government owns Solid Energy 100%, this is an internal action within the Government of New Zealand. The indemnity extends a previous agreement (1987) covering mining activities inherited from State Coal Mines. These liabilities were transferred to Coal Corporation of New Zealand Limited (rebranded as Solid Energy Limited in 1996).
- The indemnity had an estimated present value of NZD103 million (USD 85.83 million) as of September, 2014 and improved the company's balance sheet by that amount. However, with rehabilitation costs highly uncertain particularly for acid drainage along with the length of time required, these costs could be higher.
- More data would be needed to evaluate the impacts on production costs but impacts on consumption are presumably low. Consumers of coal in New Zealand are under no requirement to purchase coal from a SOE and are free to purchase supplies from the lowest cost provider (including private firms in New Zealand or import markets).

6.4. Conclusions and Recommendations

- Government assistance to Solid Energy does not constitute an inefficient subsidy that encourages wasteful consumption.
 - Due to declining revenues from sales and low coal prices on international markets, Solid Energy is curtailing operations and attempting to reduce costs. However, the company is still operating at a loss.
 - New Zealand coal consumers are under no obligation to purchase coal from Solid Energy; Solid Energy's domestic sales declined by 35% in 2013/14.
 - New Zealand's coal consumption only grew at an annual rate of 0.77% between 2011 and 2014. Prices vary depending on the type of coal, with lignite typically set in reference to the long-run marginal cost of a mine, thermal coal at some point between import-parity and export-parity, and coking coal at export parity. There are no instances where coal prices are set or subsidized by the New Zealand Government.
- Government assistance to improve Solid Energy's balance sheet does not affect domestic coal prices to end-users.
 - The Indemnity created an asset of NZD 103 million (USD 85.83 million) on the balance sheet. However, no cash was transferred.
 - An asset on the balance sheet does not affect actual production costs during a year or a pricing decision for output.
 - Under the voluntary administration proposal tabled by Solid Energy in August 2015, the existing Crown indemnities for site rehabilitation costs are to be restructured to provide

certainty for affected local authorities and assist the asset sale process (see discussion in Section 5.1).

- The decision of the Solid Energy Board to enter voluntary administration with a staged liquidation of assets, subsequent to the Peer Review Panel visit, voided the panel's recommendations made during the exit meeting.

7. Motor-spirit Excise Duty Refund

A motor-spirit excise tax is charged on transport fuels, the proceeds of which are paid into the National Land Transport Fund, which funds road construction and maintenance. A refund of this levy is allowed for eligible off-road vehicles, including off-road agricultural and commercial vehicles and marine transport, as these vehicles do not use the roads that the excise funds. Diesel fuel does not qualify for any refunds since it is not subject to the motor-spirits excise duty. However, users of diesel fuel do pay a user's charge through a vehicle-kilometres-travelled or distance-based levy. The refunds of the excise tax typically account for around 3 to 4% of the revenue collected through the motor-spirits excise duty.

The motor-spirit excise duty refund was promulgated in September 2004 in the Land Transport Management (Apportionment and Refund of Excise Duty and Excise-Equivalent Duty) Regulations 2004 (New Zealand Parliament, 2004). This set of regulations resulted from the passage of the Land Transport Management Act 2003, Sections 41 through 45 (New Zealand Parliament, 2003). The current regulations governing motor-spirit excise duty refunds revoked regulations promulgated in 1998 (Transit New Zealand (Apportionment and Refund of Excise Duty) Regulations 1998 (SR 1998/94).

7.1. History and Context

The Government of New Zealand allows a refund of the excise duty and the GST charged on motor spirits (e.g., gasoline, CNG, and LPG) for fuel consumed in off-road usage. Examples of eligible uses for refunds would include agricultural vehicles (e.g., tractors and harvesters), commercial vessels, and certain licensed vehicles. Refunds are applied for and verified by the New Zealand Transport Agency. Only those applicants meeting legislative and regulative requirements have their refund applications approved (MOT, 2015). The refunds typically account for around 3% to 4% of the revenue collected through the motor-spirits excise duty.

Prior to October 1, 2008, revenues derived from the excise duties were treated as general revenues to the New Zealand government. Currently, all funds from the excise duty—along with road-user charges, motor-vehicle registration, and licensing fees—are paid into the National Land Transport Fund and used for road construction and maintenance purposes only (MOT, 2015). The current treatment of revenues falls under the general policy adopted by New Zealand, according to which those that cause the damage to the nation's roads should be the parties responsible for paying for its repair and maintenance of road infrastructure. Under this logic, it follows that those parties, who do not consume motor-spirits on roads, should not be subject to this excise tax.

In addition to the refund of excise duties for off-road purposes, provision has been made for the refund of the Accident Compensation Corporation (ACC) Levy for exempted vehicles and for fuel used for

commercial purposes (currently NZD 0.069 or USD 0.058 per litre).¹² The ACC levy was introduced on 1 July 2003 and goes into the ACC Motor Vehicle Account, which covers the cost of accidents and rehabilitation for victims of accidents. These refunds are automatically added onto the refund of fuel excise duty.

In fiscal year 2013, the National Land Transport Fund was made up of (MOT, 2015):

- NZD 1,620 million (USD 1350 million) from fuel excise duty
- NZD 415 million (USD 345.83 million) from light road user charges
- NZD 795 million (USD 662.5 million) from heavy road user charges
- NZD 185 million (USD 154.17 million) from motor vehicle registration and licensing fees.

Note: additional funds sometimes come from revenue from sale of land, additional government contributions, or through cash flow borrowing.

In contrast, diesel fuel does not qualify for any refunds since it is not subject to the motor-spirits excise duty. In New Zealand, light vehicle users pay for their use of roads through either fuel excise duty or road user charges (which apply to diesel vehicles and other vehicles not subject to fuel excise duty). All vehicles are also subject to an annual licensing fee, which varies depending on whether the vehicle is petrol or diesel (MOT, 2015).

Road user charges are distance based, and can be purchased in multiples of 1,000 kilometres from the NZ Transport Agency and approved road user charges agents. The cost of a license varies, depending on the type of vehicle and its weight (MOT, 2015). The current cost for a road user charges license for light diesel vehicles (weighing 3.5 metric tons or less) is NZD 62 (USD 51.67) per 1,000 kilometres.

An estimated 36 percent of diesel is used off-road. This includes vehicles and machinery used in farming, manufacturing, industrial and commercial ventures, and boats. Analysis by the New Zealand Government concluded that taxing diesel for these uses would impose an unfair burden on these sectors. Further, operating a refund system would be costly and cumbersome to administer and involve compliance costs without any related benefit. Finally, a refund system would also potentially be susceptible to fraudulent refund claims. A fiscal year 2008 review of the road user charges system considered the introduction of a diesel tax carefully, but determined that light road user charges continue to be the most appropriate charging system for light diesel vehicles.

7.2.Options for Reform

Three options for reform exist:

- Discontinue the refund for non-road uses;
- Refine the mechanism used in determination of eligibility for refunds; or
- Replace the current refund mechanism.

The New Zealand Government expects the motor-spirit excise duty refund to continue for the foreseeable future. However, work is currently underway to review the list of vehicles exempt from paying motor spirit excise duty. This work should reduce the number of vehicles that qualify for a

¹² As of July 1, 2015, the ACC Levy went down by NZD 0.03, but the excise levy per litre was raised by NZD was raised by 0.03 at the same time. As a result, there was no change in the price to New Zealand Consumers and revenues to the National Land Transport Fund remained the same (New Zealand Customs, 2015).

refund. This will decrease the value of refunds from the National Land Transport Fund. These changes are not expected to take effect until 2016.

7.3.Key Findings

- Excise-duty revenues from sales of motor fuels in New Zealand are earmarked for road construction and maintenance, i.e., they are akin to a user's charge for roads. The excise-duty revenues are channeled through the National Land Transport Fund along with other sources. The Fund is dedicated to the maintenance and construction of roads in New Zealand.
- The refund focuses on off-road vehicles, mostly tractors and harvesters in the farming sector and commercial vessels. The Ministry of Transport (New Zealand Transport Agency) verifies eligibility for a refund.
- Eligible users of fuel need to file an application. Eligibility is defined by the relevant legislation.
- The measure is coherent within the broader context of New Zealand's motor-fuel taxation system, with user charges on on-road diesel-powered vehicles also earmarked for road construction and maintenance. However, users of diesel-powered vehicles purchase a license for traveling blocks of 1000 kilometers by vehicle weight. This provides a more consistent link to the actual damage caused by wear and tear. Increasing vehicle efficiencies or changes in mode mitigate the impacts of fuel excise taxes.
- Total revenues from the excise duty amount to about NZD 1.5 billion (USD 1.12 billion) while total refunds account for around 3% to 4% of that amount. The revenues from the excise duty are the largest source of funds for the National Land Transport Fund; and, expenditures from the fund cannot exceed revenues in any given year. This is mandated by New Zealand law.
- There are instances of fraud in the registration of eligible vehicles, such as where non-farm vehicles (e.g. motorcycles, automobiles) benefit from the measure, but they are modest. The New Zealand Transport Agency is currently reviewing the eligibility criteria for refunds in order to reduce potential for fraud.
- Monitoring and better data may be needed to streamline refunds. The system currently relies on self-reported data on fuel consumption for off-road purposes. Further, monitoring and data verification will increase the administrative burden and corresponding costs.

7.4.Conclusions and Recommendations

- This measure does not constitute an 'inefficient subsidy that encourages wasteful consumption'. Even with a refund of 3% to 4%, the excise tax combined with the ACC actually raises the price of motor fuel to New Zealand consumers. New Zealand consumers pay approximately 22% above the average gasoline price in OECD economies using a Purchase Power Parity comparison (MBIE, 2015c). New Zealand consumers have consumption on a per capita basis of 6% over the OECD average and this may be due to a lower population density and the higher proportion of economic activity than the average OECD economy provided by agriculture and the natural

resources sector.

- Over-all the excise-duty raises prices of motor fuels to the beneficiaries of expanded or well-maintained road infrastructure. All of the revenues collected are earmarked for the National Land Transport Fund for the maintenance and construction of road infrastructure.
- Recommendations:
 - Better target the refunds by reviewing eligible vehicle types and fuels on a regular basis or placing a cap on each refund recipient.
 - Collect more data to enable an analysis of the impacts of fuel prices on the consumption of the agriculture sector and other off-road users.
 - Review on a regular basis:
 - The effectiveness of the measure; and,
 - The broader question of tax rates, and incentives for fuel efficiency and emissions reductions from the transport sector.
 - Consider converting the current system from an excise tax to a user's fee basis similar to that used for diesel to reduce administrative burden, the potential for fraud, and other perverse consequences of fuel excise taxes (e.g., distributional or equity issues).

8. Funding of International Treaty Obligation to Hold Oil Stocks

New Zealand's principal mechanism for mitigating an international oil supply disruption is its contribution to the International Energy Agency (IEA) global strategic oil stockholding. New Zealand is too small to mitigate international oil supply disruptions on its own and the Government considers the collective arrangement under the IEA to be New Zealand's best choice for coping with such disruptions. The collective stockholding mitigates the market power of oil-producing countries, and releasing stock during major international disruptions helps to moderate extreme oil price spikes.

Under the International Energy Programme Agreement, New Zealand has a treaty obligation to hold oil stock equivalent to 90 days of net imports. This treaty obligation was ratified by the New Zealand Government in the International Energy Act of 1976 (New Zealand Parliament, 1976) and the Petroleum Demand Restraint Act of 1981 (New Zealand Parliament, 1981). New Zealand presently meets this obligation through commercial inventories held by companies in New Zealand, and by entering ticket contracts with off-shore companies. Tickets are an option, in return for an annual fee, to purchase specified quantities of stock at market prices in the event of an IEA-declared oil emergency. At around 10 percent of the cost of building domestic oil stockholding, tickets are by far the lowest cost option for meeting New Zealand's IEA obligation. The cost of meeting New Zealand's obligation has risen in recent years, principally due to a decline in domestic oil production. Prior to 2015, this obligation was funded through general taxation; however, the obligation is now covered with a 'user pays' levy assessed on all motor fuels on a per litre basis (i.e., gasoline, diesel, ethanol, and biodiesel).

8.1. History and Context

The IEA is the energy forum for 28 industrialized countries. IEA member governments are committed to taking joint measures to meet oil supply emergencies. They also have agreed to share energy information, co-ordinate their energy policies and co-operate in the development of rational energy programs. These provisions are embodied in the Agreement on an International Energy Program, the treaty pursuant to which the Agency was established in 1974 (IEA, 2012).

In meeting the objective of oil supply emergencies, IEA members are required to meet two key obligations: to hold oil stocks equivalent to at least 90 days of net oil imports; and to maintain emergency response measures that can contribute to an IEA collective action in the event of a severe oil supply disruption. Response measures include stock draw, demand restraint, fuel switching and surge oil production. A collective action is not triggered by prices on world oil markets which may reflect other factors, but by a physical shortage (IEA, 2012). Further, the decision for a collective action depends on the expected duration and severity of an oil supply disruption, and also takes into account any additional oil which may be put on the market by producer countries.

The IEA minimum stockholding obligation is based on net imports of all oil, including both primary products (such as crude oil, natural gas liquids [NGLs]) and refined products. It does not cover naphtha and volumes of oil used for international marine bunkers. The 90-day commitment of each IEA member is based on average daily net imports of the previous calendar year. This commitment can be met through both stocks held exclusively for emergency purposes and stocks held for commercial or operational use, including stocks held at refineries, at port facilities, and in tankers in ports. The obligation specifies several types of stocks that cannot be counted toward the commitment, including military stocks, volumes in tankers at sea, in pipelines or at service stations or amounts held by end-consumers (tertiary stocks). It also does not include crude oil not yet produced.

Member countries can arrange to store oil outside of their national boundaries and include such stocks in meeting their minimum requirement. This option is particularly important for countries in which storage capacity constraints or supply logistics make domestic storage insufficient. To exercise this option and count the stocks held abroad toward the obligation, the governments involved must have bilateral agreements assuring unconditional access to the stocks in an emergency.

Historically, New Zealand relied on commercial stocks held domestically to meet the IEA stockholding obligation. In 2004 it became apparent that, as a result of falling domestic production, and the realization that stock in ships destined to New Zealand could not be counted towards New Zealand's obligation, New Zealand was not holding sufficient stock to meet its obligation.

During 2004 through 2006 various options to remedy New Zealand's non-compliance were investigated, including building public domestic stockholding. Petroleum exploration firms were also concurrently making investment decisions to bring domestic oil discoveries into production. Even with potential increases in domestic production, New Zealand's stock requirement appeared to be highly variable and in some years commercial stocks might again be sufficient to meet the IEA obligation. Given this variability, holding long-term reserve stock in New Zealand was considered to be an unnecessary expense and other methods of holding stock were investigated including the use of 'ticket contracts'.

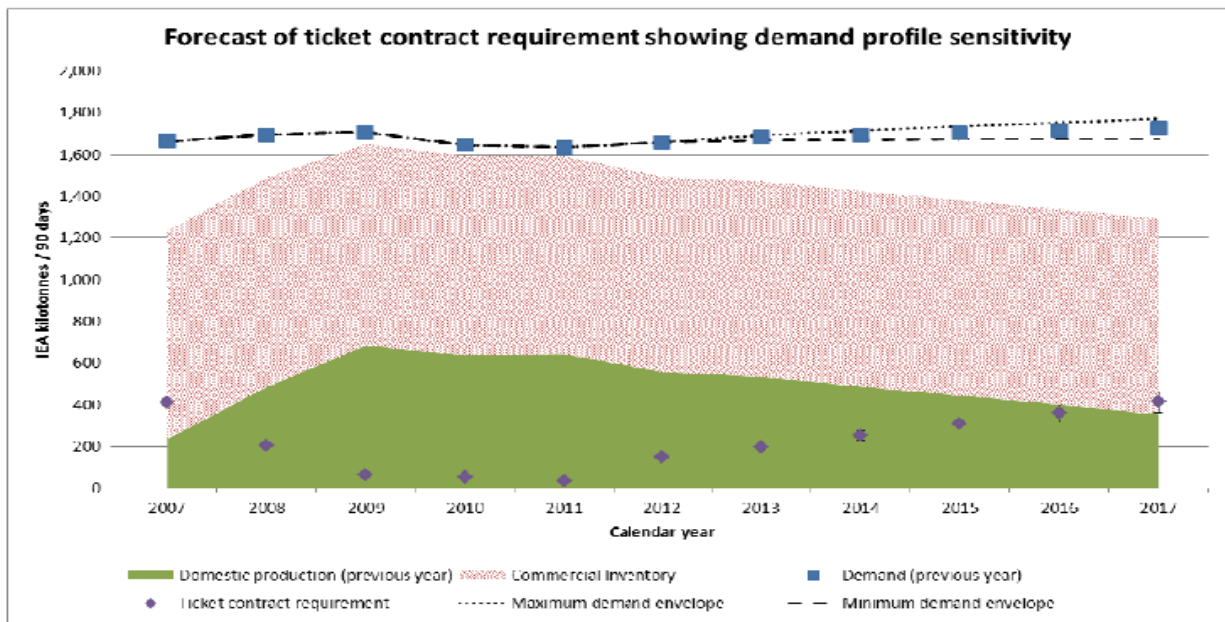
Rather than physically holding the stock, the IEA allows members to enter into ticket contracts to meet their obligations. Tickets are an option, in return for an annual fee, to purchase specified quantities of stock at market prices in the event of an IEA-declared oil emergency. The ticketed stock that is held on a member's behalf must be held within another IEA member's territory. And, this ticketed stock may not be counted towards the host member's obligation. Further, the ticket must be backed by a government-to-government agreement that stipulates that the host member will not impede the release of the stock in the event of an IEA emergency.

In recent years in New Zealand, stock held by commercial operators contributed roughly half of the IEA 90-day requirement, depending on production in a given year (see Exhibit 9). The volume of commercial

inventory has remained relatively stable in recent years at 8 million barrels (IEA, 2014b); however, domestic production has been declining and demand has been increasing. New Zealand places no minimum stockholding obligation on industry; and, until 2007, the Government relied on industry holdings to meet the 90-day net-import obligation. Since 1 January 2007, the New Zealand government has routinely acquired ticket reservations for stocks held in other IEA countries to supplement domestic commercial stocks to ensure that it meets its 90-day obligation. Ticket contracts have been entered into with overseas companies (oil companies and traders) with the stocks held in Australia, Japan, the Netherlands, and the United Kingdom.

All tickets are held directly by the New Zealand Government, rather than through an agency on the government’s behalf. In the event of an IEA-declared emergency with release of stock onto the global market, two options are available with the ticket contracts: release where a ticket is terminated allowing the stockholder to sell that stock on the international market; or, purchase which allows the ticket holder to purchase the stock at prevailing market prices from the stock holder. New Zealand would likely contribute to the collective response by releasing public stocks (e.g., ‘tickets’), and possibly implementing a campaign for voluntary demand restraint (IEA, 2014b). The government would likely only exercise the purchase option if companies operating in New Zealand were willing to purchase the stock (i.e. those companies cannot source stock on their own at market prices) (MED, 2012). Any decision to release stocks is the responsibility of the Minister of Energy and Resources in consultation with colleagues.

Exhibit 9: Historical and forecast ticket contract requirements Source: MED, 2012



Since 2007, Vote Energy,¹³ the New Zealand budgetary approval for government expenditures for energy, has included an ongoing appropriation of NZD 3 million (USD 2.5 million). With increasing demand and a greater dependence on imports, this appropriation is insufficient to cover treaty

¹³ In 2015, Vote Energy was merged into a new Vote entitled Vote Business, Science and Innovation (Treasury, 2015).

obligations in the near-future (See Exhibit 10). Further, given the principal beneficiaries of the stockholding are fuel consumers, it was questionable whether it was economically efficient to cover the costs of the obligation through Crown funding.

Exhibit 10: Forecast of ticket contract expenditure Source: MED, 2012

Fiscal year	<i>2013/14</i>	<i>2014/15</i>	<i>2015/16</i>	<i>2016/17</i>
Cost (NZD million)	5.2	6.7	8.7	10.6

MBIE analysed a range of options, including withdrawal from the IEA; building domestic stockholding; placing a mandate on industry to hold stock; and different options for funding the ticket regime. This analysis indicated that all of these options either had significant drawbacks or much higher costs (MED, 2012). MBIE’s preferred option was to continue to meet the IEA obligation via government procured ticket contracts, and to implement a ‘user-pays’ system to meet costs. The costs of government ticket contracts was one-tenth that of building and maintaining domestic stockholding. Assessing a ‘user-pays’ levy was considered more equitable and did not require the implementation of a compliance regime. The necessary legislative changes were made with the passing into law of the Energy (Fuels, Levies, and References) Amendment Act 2015 on 23 February 2015 (New Zealand Parliament, 2015). The increase in the levy rate to cover a multi-year appropriation for 2013/14 – 2015/16 under this levy would be approximately NZD 0.110 cents per litre (which amounts to NZD 4.4 cents for a 40 litre tank). This levy will be imposed on petrol, diesel, ethanol, and biodiesel.

8.2.Options for Reform

Three options for this measure exist:

- Withdraw from IEA membership;
- Continue purchasing contracts (options) as the lowest cost option to meet New Zealand’s obligations under the international treaty; or
- Build and stock sufficient oil storage capacity to meet New Zealand’s obligation under the international treaty.

8.3.Key Findings

- Optimizing New Zealand’s oil security aligns with key government objectives to:
 - Build a more competitive and productive economy (the government’s principal economic objective)
 - Ensure secure and affordable energy, in particular to ensure security of oil supply (New Zealand Energy Strategy 2011-2021)
 - Ensure resilient infrastructure (one of the six guiding principles for infrastructure development in the National Infrastructure Plan).
- New Zealand will experience a significant down-side to termination of IEA membership or failure to meet treaty obligations of membership.
 - New Zealand belongs to the IEA to increase global security against an international oil supply disruption. New Zealand contributes to collective security proportionally to its oil and product imports. Oil security is closely linked to overall security, and oil is a key driver of the foreign and security policies of many OECD economies.

- No member has ever withdrawn from the IEA, and a number of other significant trading partners are seeking to join (including Russia, China, Indonesia, and Chile).
 - The reputational risk to New Zealand from withdrawing from the IEA, or becoming noncompliant with its treaty obligations, is significant. It is likely that New Zealand would come under considerable pressure from some of its closest partners to remain in the IEA and to maintain compliance with its obligations.
 - IEA membership provides: New Zealand with ready access to IEA publications, studies, statistics and policy advice; the opportunity for New Zealand scientists to participate actively in ongoing collaborative R&D projects with major industrialized economies; and a five-yearly in-depth review of New Zealand’s energy policies by an IEA expert panel.
- The Government is required to hold stocks for 90 days of net imports as part of its IEA treaty obligations.
 - This requirement is partially met using emergency ticket contracts for purchasing oil abroad at current market prices. Using tickets allows for variability in domestic production which may potentially increase, levels of import of oil and refined products, and demand which may decrease in response to conservation or energy efficiency measures.
 - NZ commercial operators contribute to between half of the requirement to the entire requirement in some years. However, the Government has no obligation for commercial operators to do so; and, there is no effective means of verification or enforcement. Meeting the IEA treaty obligation through ticket purchases appears a less expensive option than holding the stocks physically. Purchase of tickets costs approximately one-tenth of the annualized costs of adding storage and holding physical stocks.¹⁴
 - Tickets are now financed through higher levies on refined products (NZD 0.110 cents per litre or USD 0.082 per litre). The recent Energy (Fuels, Levies, and References) Amendment Bill expands the purpose of the current Petroleum and Engine Fuels Monitoring Levy to provide a funding mechanism for the Crown’s financial obligations under the IEA treaty obligations. This provision was previously funded through general taxation pending an expected legislative change to funding from a levy on petroleum sales.
 - The levies for financing tickets are akin to a user fee and raise the price of petroleum products to beneficiaries of oil security. User fees should be assessed directly on those receiving the benefit of a service (in this case oil security). Security of oil supplies supports long-term growth in economic activities which is one of the objectives of the New Zealand Energy Strategy.

8.4. Conclusions and Recommendations

- A user’s fee for oil security is not an ‘inefficient subsidy that encourages wasteful consumption’.

¹⁴ As an example of how expensive and risky holding physical stock can be, the United States is a primary example (WSJ, 2015). The US can now meet its IEA obligation with domestic production (9.7 million BOPD). In its Strategic Petroleum Reserve the US holds another 138 days of physical stock which is valued at USD 74.77 per barrel. With world prices hovering at USD 50 per barrel, if the US were to attempt to sell any of that stockpile in the near term, it would suffer a substantial loss and further depress the price.

- The fee is used to satisfy a binding international treaty obligation.
 - Collective stockholding, even in the context of widely available supply, mitigates the potential market power of oil-producing countries, and does not constitute support of market prices.
 - Releasing stock during major international disruptions helps to moderate extreme oil price spikes.
 - Modifying the obligation is beyond the sole control of New Zealand, and would require negotiations with other IEA members.

- No clear impact on consumption could be identified.

9. Conclusion

The second APEC VPR/IFFSR was conducted successfully in New Zealand, with significant interest and active engagement of the New Zealand Government in the APEC process. As the process has become more institutionalized, the process has become more effective with established processes, recognized and trusted by APEC economies, and technical expertise has accumulated. However, as with the first APEC APR/IFFSR review in Peru, a number of 'lessons learned' were identified in New Zealand concerning the process. Those lessons and the results of the peer review in New Zealand are documented in this report, and may prove valuable to other APEC countries undertaking a volunteer peer review of fossil fuel subsidies (or energy support measures).

The New Zealand Government selected eight measures for review by the APRNZ. These measures included five measures affecting producers, one general support measure, and two affecting consumers. Based on a review of the background material submitted by New Zealand, the APRNZ concluded that none of these energy support measures were 'inefficient subsidies that resulted in wasteful consumption'. Further, that the New Zealand Government was taking proactive steps to review and refine the measures in place. New Zealand has actively participated in the international community in fossil fuel subsidy reform. As a result, New Zealand has a transparent policy development environment and does make it a general policy of adopting 'best practices'. New Zealand has well established mechanisms for inter-ministerial coordination, and these mechanisms need to be used to have focused discussions among relevant ministries on the APRNZ recommendations. These mechanisms should be used to continue to ensure New Zealand remains at the fore-front of good energy policy formation.

Of the energy support measures affecting the petroleum industry, four of them are a tax exemption and three are deductions. In designing these measures good general taxation principles were applied while remaining consistent with the broader principles governing taxation in New Zealand. The non-resident off-shore drilling rig and seismic ship tax exemption is a temporary five-year exemption for non-resident off-shore drilling rig and seismic ship operators from paying tax on their profits. The APRNZ found the exemption was effective in mitigating the distortive effects of DTAs that New Zealand has with other countries. Those effects included reducing churning of off-shore drilling and seismic equipment, reducing delays in petroleum exploration and development programs, and possibly bringing forward revenues to the Crown in the form of royalty payments and corporate income taxes. The review panel did recommend, however, that the Government provide a lead-time of at least a year every time the measure was renewed.

The three tax deductions for petroleum exploration and development expenditures, which are designed to reflect specific characteristics unique to the petroleum industry, are broadly consistent with New Zealand's taxation policies. The changes made in April, 2008 do not appear to be distortionary or

particularly concessionary. The changes made are based on economic theory and are similar to provisions that apply to other natural resource industries in New Zealand. While these measures may serve to increase future production of fossil fuels at the margin, they are unlikely to affect consumption through lower oil prices since New Zealand is a price taker on world markets. The review panel did recommend, however, that the Government provide greater certainty to the petroleum industry by conducting reviews at least a year in advance prior to implementing any revisions or changes.

The final measure applicable to petroleum producers was a temporary reduction in the royalty rate assessed on natural gas production. The reduction was implemented in response to the downgrade of reserves in Maui Field, the largest natural gas field in the country. The reductions only applied to discoveries made between 2004 and the end of 2009. The royalty reductions only applied to two small natural gas discoveries during that period of time. Low royalties or reductions in an already low royalty rate, appear to have been an insufficient economic incentive to induce more oil and gas exploration. Evidently, other factors play as significant or a more significant role in the decision to drill (e.g., geologic characteristics). Since the reduction was previously terminated and the Government has no plans to initiate similar reductions, the APRNZ did not make any recommendations.

R&D funding for the petroleum industry is a general support measure. The funded program acquires seismic and technical data on New Zealand frontier basins, and makes these data available without cost to the public. If collected by private entities, this basic scientific data would not be publicly disseminated. Public dissemination fosters transparency and helps attract investment into the development of New Zealand's natural resources. Publicly available data ensures that all entrants into New Zealand begin on the same basis. Further, Government decisions, concerning the exploration and development of Crown resources, can be evaluated independently. Finally, since basic science is a public good and the tax payers benefit substantially from the information collected under the program, government intervention is justified. The ARPNZ had four recommendations including: review on a regular basis the effectiveness and usefulness of this expenditure; inventory other users for inclusion in the program process; and, leverage this funding with additional funding for contestable funding with coordinating research programs at universities, research institutes, and industry.

Solid Energy, a state-owned enterprise, which develops and supplies coal in New Zealand and internationally, was also put forward for review by the Government of New Zealand. Even after financial restructuring due to a drastic decline in world coal prices, there were concerns that Solid Energy was not economically viable. Since the Government does not set or subsidize prices and consumers in New Zealand are not required to purchase coal from the company, the ARPNZ concluded that review of this entity was outside the APEC Terms of Reference for Peer Reviews of Fossil Fuel Subsidies. The ARPNZ, however, did make several recommendations for continuance of monitoring and evaluation by the Government. In August, the Board of Solid Energy took the company into voluntary administration which will lead to a staged liquidation of assets. With that action, New Zealand's state-owned coal company will no longer exist.

In 2014, an indemnity was provided to Solid Energy for the company's costs for environmental remediation. The ARPNZ found that Government assistance to improve Solid Energy's balance sheet does not affect domestic coal prices to end-users. The Indemnity created an asset on Solid Energy's balance sheet; however, no cash was transferred. Further, an asset on the balance sheet does not affect actual production costs during a year or a pricing decision for output. Finally, in the voluntary administration proposal tabled by Solid Energy in August 2015, the existing Crown indemnities for site rehabilitation costs are to be restructured to provide certainty for affected local authorities and assist

the asset sale process. Although, the panel did make recommendations for this measure during the exit meeting with the New Zealand Government, a decision of the Solid Energy Board to enter voluntary administration with a staged liquidation of assets voided those recommendations.

The Government of New Zealand put forward for review two measures that impact energy prices to consumers. The first measure is a refund of a motor-spirit excise for eligible off-road vehicles, including off-road agricultural and commercial vehicles and marine transport. The motor-spirit excise tax is assessed on all vehicle fuels with the exception of diesel fuels; owners of diesel-powered vehicles purchase permits on a kilometre travelled basis. Funds from both of these sources are dedicated to the maintenance, repair, or construction of road infrastructure in New Zealand. Users of motor-spirit fuels who do not use road infrastructure are eligible for a refund of excise charges and the ACC upon application and verification. Refunds constitute approximately 3% to 4% of total revenues from that source. Modest instances of fraud have been noted, and the APRNZ made series of recommendations to reduce those instances. Many of those recommendations are being currently implemented by the New Zealand Ministry of Transport.

The second measure, which impacts New Zealand consumers, is the funding of international treaty obligations to hold oil stocks, which is a principal mechanism for mitigating international oil supply disruptions. Under this obligation the New Zealand Government is required to hold 90 days of net imports either in the form of physical stock within the country, or as an option to purchase stocks from another IEA member. The Government has determined that the lowest cost option is to purchase options, and has been doing so since 2007 with an annual appropriation. The funding for this obligation was converted into a user's fee assessed on a per litre basis in early 2015. If New Zealand were to attempt to terminate this binding treaty obligation or fail to meet this obligation, there would be significant damage to its standing and reputation in the international community. Further, funding of a mechanism that supports oil security aligns with other Government objectives. The user's fee does raise prices slightly to users of oil and petroleum products, and no clear impacts on consumption could be identified. As a result, the APRNZ had no recommendations to make on this energy support measure.

There are linkages among the various APRNZ recommendations for all of the energy measures reviewed and other policies or laws in New Zealand. Therefore reform strategies need to be considered holistically in all cases. The New Zealand Government has already been taking proactive steps to monitor, review, and make changes where necessary in each of the energy measures considered. The Government has considered impacts on industry and consumers in undertaking changes or reforms. In all cases it has used economic principles, and considered issues of equity or fairness. The Government is also monitoring best practices in other economies in the OECD in order to maintain consistency internationally. New Zealand does make every attempt to keep its laws and policies in-line with the international community. These practices have made New Zealand very transparent, and made for an efficient and effective peer review process.

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Appendix B: Team Members

Dr Lorna Greening (Team leader): Dr. Greening is a Research Fellow at the University of Tennessee, Knoxville, Tennessee, USA. And, during the first half on 2015, she was a Visiting School at Hong Kong Baptist University where she taught graduate-level Energy Economics and undergraduate Energy Management. The FFSR review effort in New Zealand is her second such effort; in June, 2014 she worked on the APEC FFSR review of Peru.

Dr. Greening holds a doctorate in economics from the Colorado School of Mines and a BS from the University of Michigan in geology. She has well over 30 years of experience in the energy industry, including consulting, research, academia, the public utility industry, and the petroleum industry as an exploration geologist.

As an energy and natural resource economist, Dr. Greening has expertise on competitive markets for electricity (i.e., wholesale markets and transmission), and oil and natural gas markets in the US and internationally. She has worked for several, US ISO/RTO's in various capacities, and for the largest public power entity in the world. Her experience has included renewable, distributed and new conventional generation technologies in addition to conventional generation. Much of her work has included evaluation of demand side management (DSM) and demand response resource (DRR) opportunities.

Dr. Greening also has expertise in the evaluation of GHG mitigation options, policy, regulation, allowance trading and registries nationally and internationally. She served as a member of the advisory panel for the first study of the impacts of the Kyoto Protocol on the US economy (Energy Information Administration); advised on the measurement of energy efficiency in the US economy; and, served as a contributing author on the Second IPCC Assessment and reviewer for several other IPCC Assessments.

Dr. Greening has published in *Energy Economics*, *Journal of Regulatory Economics*, *Energy Policy*, *Applied Economics*, *Energy*, and in the *International Handbook of Energy Economics*. She served as Editor for *Energy Policy* between 2013 to 2015, after previously serving on the Advisory Board of *Energy Policy* (2006-2013). Currently, she is an Associate Editor and a member of the Board of *Energy Economics*. She has been a special issue editor for *Energy Economics* (Industrial Energy Consumption) and for *Energy* (Demand Response Resources).

Professor Han Wenke (Team Representative to 49th Meeting of the Energy Working Group, Gyeongju, Korea, June 22-26, 2015): Professor Han is Director General of the Energy Research Institute (ERI) of National Development and Reform Commission (NDRC), P.R.China. He is also the a member of the Expert Advisory Committee of China's National Energy Commission, the Director of China Economic and Social Council, the Director of China Center for International Economic Exchanges, the Standing Director of the China Energy Research Society and China Energy Conservation Association.

Professor Han has over 30 years of energy policy research, covering issues on energy development strategy and planning at the national and regional levels, industrial energy policies, sustainable energy policies, energy market reform and energy pricing reform, energy subsidies reform, China and global energy governance. As Director General of ERI, he has directed comprehensive studies of energy issues in China. ERI's research mainly focuses on the fields of energy economics, energy supply and demand forecasts, energy security, energy efficiency, energy environment & climate change and renewable energy. Professor Han has led a range of research and international cooperation projects on energy subsidies reform, including cooperative projects with the World Bank, the Energy Foundation and major Chinese institutes. Currently, Professor Han is also an Adjunct Professor at the Northwestern

Polytechnical University, and an Adjunct Professor of Zhejiang University. He graduated from Xi'an Jiaotong University with a degree in computer science.

Other Panel Members in Alphabetical Order:

Luningning G. Baltazar: Ms. Baltazar is Division Chief, Power Market Development Division, Department of Energy, The Philippines. As Division Chief of the Power Market Development Division, she has contributed to the formulation of various policy directives issued by the Department mainly concerning competition in the electricity market, analyzing pricing issues and security, reliability and sustainability of the supply of electric power.

Ms. Baltazar holds a master's degree in Public Administration from the National College of Business and Arts (The Philippines) and has completed significant work towards a master's degree in applied statistics at Polytechnic University, The Philippines. She received a BS in Mathematics from Pamantasan ng Lungsod ng Maynila.

Prior to becoming Division Chief, Ms. Baltazar worked for the Energy Policy and Planning Bureau (EPPB) focusing mainly in the preparation and formulation of energy policies as embodied in the Philippine Energy Plan. Her work included energy supply-demand forecasting and modeling, and analysis of energy issues in The Philippines. She also contributed extensively to national and regional studies conducted under the auspices of ASEAN on electricity generation in that region.

Dr. Rofyanto Kurniawan: Dr. Kurniawan is Director for Center of Budget Policy, Fiscal Policy Agency, Ministry of Finance the Republic of Indonesia. The Center evaluates the impacts of various policies in Indonesia including the rationalization of fuel subsidies.

Dr. Kurniawan holds a doctorate from Universiti Sains Malaysia, master's degree in business administration from Nanzan Nagoya, Japan, and a BS in civil engineering from Institut Teknologi Bandung, Indonesia.

Dr. Kurniawan has over 20 years of government service and industrial experience. He has held high-level positions in the Ministry of Finance for over 18 years. These positions have overseen the budgeting and fiscal policy setting processes for Indonesia requiring an understanding of markets, pricing, and macroeconomics. Prior to joining the Ministry of Finance, Dr. Kurniawan held various positions with an international oil company.

An Qi: Ms. An is a Research Associate at the Energy System Analysis Center of the Energy Research Institute of National Development and Reform Commission, P.R.China. Her main research areas include global and China's energy security, sustainable energy development, energy subsidies reform, global energy governance and other energy economic and policy issues. Ms An has participated in a range of ERI research and international cooperation projects on energy subsidies reform, including cooperation projects with the World Bank, Energy Foundation and major Chinese institutes. She is a member of the China team of the Peer Review on Inefficient Fossil Fuel Subsidies Reform under the G20. Ms. An holds a master's degree in Engineering Science from Oxford University.

Jehan Sauvage: Mr Sauvage is a Trade Policy Analyst in the Trade and Agriculture Directorate of the OECD. He specialises on questions at the interface of trade and environmental policies. He is a lead

author of the OECD's Inventory of Support Measures for Fossil Fuels. As an internationally recognized expert on fossil-fuel subsidies, he participated in several discussions of the G-20's Energy and Sustainability Working Group on fossil-fuel subsidies and in the production of joint reports for the G-20 in collaboration with the IEA, the World Bank, and OPEC.

Mr. Sauvage holds a MSc in European political economy from the London School of Economics and Political Science, and a MPhil in economics from SciencesPo, Paris.

In addition to his contributions on fossil-fuel subsidies, Mr. Sauvage's work has also focused on international services trade, including the estimation of trade costs and the preferential content of services trade agreements. In some of his research, he has examined the relationship between the stringency of environmental regulations and trade in environmental goods. This work has included participating in discussions of the OECD's Joint Meetings of Tax and Environment Experts (JMTEE) and of the Joint Working Party on Trade and Environment (JWPTE).

Dr Ruengsak Thitiratsakul: Dr. Thitiratsakul is the Deputy Executive Director, Petroleum Institute of Thailand. The Petroleum Institute of Thailand (PTIT) is a neutral, independent, non-profit organization established in September 1985, with a mission to foster better understanding of the petroleum, petrochemical, and related industries in Thailand with emphasis on human resources development, information services, technical services, public policy and regulatory support, to ensure sustainable development and competitiveness of the industry and the country.

Dr. Thitiratsakul holds a Ph.D. in Chemical Engineering from University of Toronto, Canada, two master's degrees (Chemical Engineering, University of Toronto, Canada and Manufacturing Administration, Western Michigan University, USA), and a BS in Chemical Engineering, Chulalongkorn University, Thailand.

Dr. Thitiratsakul has extensive industrial and research experience on energy issues with an emphasis on the Asian Pacific region. He has worked for several international majors in the oil industry and held high-level management positions in the processing and refining industries. He has written on such topics as fuel standardization; bio-fuel development in the ASEAN region; and, LPG and natural gas markets and pricing in Southeast Asia. He has given invited lectures at educational and research institutions in Thailand and elsewhere in Asia.

Appendix C: OECD Matrix of Energy Support Measures

Statutory or Formal Incidence (to whom and what a transfer is first given)

		Production							Direct consumption	
		Output returns	Enterprise income	Cost of intermediate inputs	Costs of Production Factors				Unit cost of consumption	Household or enterprise income
					Labour	Land and natural resources	Capital	Knowledge		
Transfer Mechanism (how a transfer is created)	Direct transfer of funds	Output bounty or deficiency payment	Operating grant	Input-price subsidy	Wage subsidy	Capital grant linked to acquisition of land	Capital grant linked to capital	Government R&D	Unit subsidy	Government-subsidized life-line electricity rate
	Tax revenue foregone	Production tax credit	Reduced rate of income tax	Reduction in excise tax on input	Reduction in social charges (payroll taxes)	Property-tax reduction or exemption	Investment tax credit	Tax credit for private R&D	VAT or excise-tax concession on fuel	Tax deduction related to energy purchases that exceed given share of income
	Other government revenue foregone			Under-pricing of a government good or service		Under-pricing of access to government land or natural resources; Reduction in resource royalty or extraction tax		Government transfer of intellectual property right	Under-pricing of access to a natural resource harvested by final consumer	
	Transfer of risk to government	Government buffer stock	Third-party liability limit for producers	Provision of security (e.g., military protection of supply lines)	Assumption of occupational health and accident liabilities	Credit guarantee linked to acquisition of land	Credit guarantee linked to capital		Price-triggered subsidy	Means-tested cold-weather grant
	Induced transfers	Import tariff or export subsidy	Monopoly concession	Monopsony concession; export restriction	Wage control	Land-use control	Credit control (sector-specific)	Deviations from standard IPR rules	Regulated price; cross subsidy	Mandated life-line electricity rate

Appendix D: Schedule of Meetings With Stakeholders, Wellington, New Zealand, March 16 through March 20, 2015

	Monday 16 March	Tuesday 17 March	Wednesday 18 March	Thursday 19 March	Friday 20 March
9 - 9.30 am.					
9.30 - 10 am		Technical Meeting with IRD Venue: Terrace Conference Centre	Reserved for Panel Meeting Venue: Terrace Conference Centre	Technical Meeting with MBIE Venue: Terrace Conference Centre	Closing Technical Meeting Venue: MFAT 13.10
10-10.30 am	Initial welcome, introduction to scope, overview of programme Host: David Buckrell and Bruce Parkes (MBIE) Attendees: MFAT and MBIE Venue: MFAT 13.12				
10.30 -11 am					
11- 11.30 am					
11.30 am -12 pm					
12 - 12.30 pm		Technical Meeting with Treasury Venue: Terrace Conference Centre			
12.30 - 1 pm		Working lunch (Treasury meeting continued over lunch if necessary) (Catering to be provided)	Working lunch (Catering to be provided)	Working lunch (Catering to be provided)	
1 - 1.30 pm					
1.30 - 2 pm					
2 - 2.30 pm				Stakeholder Meeting with Petroleum Exploration & Production Association of New Zealand (PEPANZ) Venue: Terrace Conference Centre	
2.30 - 3 pm	Visit to parliament and meeting with Minister Bridges	Technical Meeting with Ministry of Transport Venue: Terrace Conference Centre	Reserved for Panel Meeting Venue: Terrace Conference Centre		
3 - 3.30 pm				Reserved for Panel Meeting Venue: Terrace Conference Centre	
3.30 - 4 pm					
4 - 4.30 pm	Te Papa tour - Maori Highlights	Technical Meeting with NZP&M Venue: Terrace Conference Centre			
4.30 - 5 pm					
5 - 5.30 pm		Reserved for Panel Meeting			
5.30 - 6 pm					
6-6.30pm					
6.30pm-7pm	Official Dinner at Shed 5 Host: Jo Tyndall (Climate Change Ambassador) Attendees: MFAT, IRD, Tsy, MBIE				
7pm-7.30pm					
7.30pm onwards					

Policy allocation

Policy	Agency
Motor spirit excise duty refund	Ministry of Transport
Funding of international treaty obligation to hold oil stocks	Ministry of Business, Innovation and Employment (MBIE)
Non-resident drilling rig and seismic ship tax exemption	Inland Revenue Department (IRD) & MBIE
Tax deductions for petroleum-mining expenditures	IRD
Petroleum tax and royalty regime	MBIE
Financial Restructure of Solid Energy	Treasury
Indemnity for mining land remediation	Treasury
Research and development funding for the oil industry	New Zealand Petroleum & Minerals

Venue information

Ministry of Foreign Affairs & Trade	Level 12 (reception), 195 Lambton Quay, Wellington
Terrace Conference Centre	Level 3 (reception), 114 The Terrace, Wellington
Ministry of Business, Innovation and Employment	Ground floor (reception), 15 Stout Street, Wellington

Appendix E: Completed Templates for Each Measure

Support Measure Title:	Non-resident drilling rig and seismic ship tax exemption
Description:	<p>There is a temporary exemption from tax on the income of non-resident offshore oil rig and seismic vessel operators. The exemption was introduced to address an issue created by our double tax agreements (DTAs), under which such operators are only taxable in New Zealand if they are present for at least 183 days.</p> <p>The exemption from tax on the income of non-resident offshore oil rig and seismic operators was introduced in 2004. This exemption was rolled over in 2009 for a further five years and then again in 2014 for a further five years.</p> <p>Ordinarily, a broad-base, low-rate framework applies to the tax system. A consistent application of this framework will normally minimise any distortions caused by tax rules. However, with seismic vessels and rigs used for exploration work, the normal tax rules create undesirable outcomes.</p> <p>New Zealand generally taxes non-residents on income that has a source in New Zealand. However, our DTAs provide that non-residents are only taxable on their New Zealand-sourced business profits if they have a "permanent establishment" in New Zealand. Many of our DTAs (such as the New Zealand/United States DTA) have a specific rule providing that a non-resident enterprise involved in exploring for natural resources only has a permanent establishment in New Zealand if they are present for a particular period of time, often 183 days in a 12 month period. Once a non-resident has a permanent establishment in New Zealand, they are taxed on all their New Zealand business profits starting from day one. Non-resident offshore oil rig and seismic vessel operators generally have tax indemnity clauses in their contracts with New Zealand exploration companies. This means that the incidence of any tax imposed on a non-resident rig operator is borne by the company engaging in exploration in New Zealand who has engaged the rig operator's services.</p> <p>The exemption was introduced to address an issue caused by this DTA provision — seismic vessels and rigs used in petroleum exploration were leaving New Zealand waters before the 183 day limit was reached so they would not be subject to New Zealand tax. This meant that in some cases a rig would leave before 183 days and a different rig was mobilised to complete the exploration programme. This churning of rigs increased the cost for companies engaged in exploration and delayed exploration drilling and any subsequent discovery of oil or gas. It also meant that there was no revenue collected from seismic vessels and rigs.</p> <p>The introduction of the exemption directly addressed the issue of churning rigs caused by the DTA provisions under which income is only taxable after the non-resident has been in New Zealand for 183 days.</p> <p>Comparing the period since the exemption has been in place (2005-2012) with the 2000-2004 period suggests that the exemption has extended the time that offshore</p>

rigs and seismic vessels are staying in New Zealand waters. Between 2009 and 2012, there have been three non-resident offshore rigs operating in New Zealand, with an average length of stay of around eight months. By contrast, between 2000 and 2004 (before the exemption was introduced), no rigs stayed in New Zealand waters beyond six months.

The same observation can be made for seismic vessels. The average length of stay has extended from four months pre-2005 to eight months post-2005.

There have been 17 offshore wells drilled between 1 January 2009 and 30 June 2012. Only one well, the Manaia extended reach well drilled from the Maari platform, has resulted in new reserves being brought to market. The Manaia well was drilled from the Ensco 107 jack-up rig which had been in New Zealand waters for well over six months when drilling at Manaia commenced (drilling commenced on 1 August 2009 but the Ensco 107 had been in New Zealand waters since October 2007). The well produced 2.3 million barrels of crude oil between 2009 and 2012, generating an estimated royalty take of \$4.9 million and corporate tax of \$5.5 million over the period. In the absence of the exemption, it is likely this revenue would have been generated at a later time, because of the impact of rig churning delaying exploration and production activity.

At the time the exemption was being reconsidered in 2013/2014, there was a major drilling campaign being prepared for the 2013/14 drilling season with 20 confirmed wells and a further seven wells being classed as contingent, probable or possible. Of the 20 confirmed wells, approximately four to five wells were intended to be drilled by rigs that would have been in New Zealand for over six months. It was considered likely that there would have been a delay in the drilling of these wells if the existing tax exemption was not in place. It is also possible that some wells may not be drilled.

In addition, if the wells were drilled at a later date because the exemption was removed, it is likely that there would be additional costs relating to mobilising and demobilising rigs. The mobilisation and demobilisation costs for an offshore rig are approximately US\$10-15 million. These additional costs are deductible by the exploration company engaging rig services against income that is earned from a successful well.

The cost of drilling a well is between US\$10-150 million (which is deductible to the New Zealand exploration company).

While the exemption does not at first sight appear consistent with the standard broad-base, low-rate tax framework, our best judgement is that, in light of the DTA provisions only taxing non-resident rig and seismic vessel operators who are here for at least 183 days, the exemption is likely to minimise distortions in economic behaviour and bring forward tax revenue. That is because, if the exemption was removed, rig operators are likely to resume churning, i.e. the behaviour that occurred prior to the exemption being introduced. This could mean a delay in the Crown revenue collected from royalties and corporate tax on oil and gas

	<p>production, due to the churning delaying exploration programmes. No company tax would be paid by the oil rig operators while the increased costs from churning would be deductible to the domestic purchaser (the New Zealand exploration firm). Officials estimate these additional exploration costs would equate to approximately US\$36 million if the exemption was not in place (based on the information available on rig activity for the 2013/14 drilling season).</p>
Weblink to Legislation/Regulation (page #):	<p>Section CW 57 – Income Tax Act 2007</p> <p>http://www.legislation.govt.nz/act/public/2007/0097/latest/DLM1512301.html?src=qs</p>
Subsidy Type:	Producer.
History:	The exemption from tax on the income of non-resident offshore oil rig and seismic operators was introduced in 2004. This exemption was rolled over in 2009 for a further five years and then again in 2014 for a further five years.
Recipients:	<p>Offshore rigs and seismic vessels owned by non-residents. They are used to drill for oil and gas and gather data on potential oil and gas finds.</p> <p>Rigs are generally of two types – semi-submersibles and jack-up rigs. There is a worldwide market in rigs and seismic vessels. No New Zealand company owns offshore rigs or seismic vessels, so any company wishing to explore in New Zealand waters needs to use a rig or seismic vessel provided by a non-resident owner.</p>
Duration:	Five years. The current exemption expires on 31 December 2019.
Financial Value:	Officials consider this measure to be revenue neutral and possibly revenue positive. That is because, if the exemption was removed, rig operators are likely to resume churning, i.e. the behaviour that occurred prior to the exemption being introduced. This could mean a delay in the Crown revenue collected from royalties and corporate tax on oil and gas production, due to the churning delaying exploration programmes. No company tax would be paid by the oil rig operators while the increased costs from churning would be deductible to the domestic purchaser (the New Zealand exploration firm). Officials estimate these additional exploration costs would equate to approximately US\$36 million if the exemption was not in place (based on the information available on rig activity for the 2013/14 drilling season).
Potential Impacts:	Minimization of economic distortions by removing the incentive for rig operators and seismic vessels to churn – thereby delaying drilling programmes and increasing exploration costs. These exploration costs are tax deductible against other revenue generating activities.
Affected Government Ministries/Departments:	Inland Revenue, the Treasury, the Ministry of Business, Innovation & Employment.
Affected Stakeholders:	Offshore explorers and producers.
Inefficient? If so, why?:	Efficient in light of the DTAs. This measure does not result in the wasteful consumption of fossil fuels in New Zealand.
Options for Reforms:	There are three options: 1) make the exemption permanent, 2) keep extending the temporary exemption for a further five years or 3) let the exemption expire at the

	<p>end of 2019.</p> <p>Making the exemption permanent would provide more certainty to exploration companies and save the administrative costs of reviewing the exemption every five years. While the 183 day rule remains in our DTAs, the removal of the exemption at any time will result in oil rigs resuming churning (with the associated additional costs).</p> <p>The effect of letting the exemption expire at the end of 2019 would be to delay both the costs of extra exploration and the probability of additional revenue arising from the increased exploration activity. As well as a delay in exploration activity, letting the exemption lapse would mean firms engaging rig operating services would face higher costs associated with mobilising and demobilising rigs around the 183 day period.</p>
Benefits of Reform:	If the exemption was made permanent it would provide more certainty
Expected Changes Regarding Value and Recipients:	None.
Planned Action (if any):	A further review of the exemption will need to be undertaken in 2018/19 prior to the expiry of the exemption at end-2019.
Timeframe:	As above.
Current Status:	In force.

Support Measure Title:	Tax deductions for petroleum-mining expenditures
Description:	<p>There are three measures to be reviewed. These are:</p> <ol style="list-style-type: none"> 1. The immediate deductibility of exploration expenditure in the year that it is incurred; 2. The ability for producers to amortise development expenditure from the date it is incurred; and 3. The option for development expenditure to be either deducted in a straight line over seven years or in line with a field's production profile.
Weblink to Legislation/Regulation (page #):	<p>For 1), refer to sections DT 1, DT 3, DT 4, DT 7 and CT 3 of the Income Tax Act 2007 - http://www.legislation.govt.nz/act/public/2007/0097/latest/DLM1514039.html</p> <p>For 2), refer to section DT 5 of the Income Tax Act 2007 - http://www.legislation.govt.nz/act/public/2007/0097/latest/DLM1514053.html</p> <p>For 3), refer to sections EJ 12 and EJ 12B of the Income Tax Act 2007 - http://www.legislation.govt.nz/act/public/2007/0097/latest/DLM1515128.html</p>
Subsidy Type:	Producer
History:	<p>1) Immediate deductibility of exploration expenditure in the year that it is incurred.</p> <p>The current taxation scheme for petroleum mining has been in place since 1991. Exploration expenditure is fully deductible in the year in which it is incurred. Qualifying exploration expenditure includes exploratory well expenditure, prospecting expenditure, and expenditure to acquire an existing privilege, a prospecting permit for petroleum, or an exploration permit for petroleum.</p> <p>Economic theory suggests that expenditure of a capital nature should be capitalized and amortised over the economic life of the asset. The question arises as to whether exploration expenditure should be treated as a capital expenditure or more like research and development which is normally deductible. In New Zealand, a typical rule of thumb is that the ratio of exploration wells leading to commercial discoveries is one in twelve, while for onshore exploration wells the ratio is one in eight. It is therefore far from clear at the time exploration expenditure is incurred as to whether the expenditure is of a capital nature since it is more likely than not that a particular exploration well will not result in a revenue generating asset.</p> <p>If an exploration well results in a commercial discovery and the well is subsequently used for production then the expenditure associated with this well is clawed back and depreciated over the useful life of the field. This approach seeks to recognize the inherent uncertainty of exploration activity with New Zealand's broad-based low-rate tax principles.</p>

The following comments can be made with regard to this measure:

- The measure favors existing players with producing assets over new entrants. In some jurisdictions (notably Norway), the State will pay explorers a portion of their exploration losses (in the case of Norway in the same proportion as the State claims back if there has been a commercial discovery). New Zealand does not do this;
- The measure can be seen as concessionary as only the exploration expenditure that is clawed back in the case of a successful commercial discovery is very limited. All exploration expenditure which relates to the acquisition of seismic data, its interpretation and any other exploration wells which are not subsequently used in the production phase, will not be clawed back. In practice, very little exploration expenditure is ever clawed back and treated as income in the commercial success case.
- However, most exploration expenditure will relate to wells which never reach a development stage therefore no revenue generating capital asset was created by this expenditure. Allowing a deduction for expenditure that does not create a capital asset is consistent with BBLR principles and the treatment of other industries; see for example the recently introduced tax Bill which allows a deduction for R&D black hole expenditure which does not create a capital asset. Therefore, it can be considered that the immediate deductibility of exploration expenditure and subsequent partial claw back is not concessionary.

2) Starting deductibility of development expenditure from the year that it is incurred

It is a general tax policy that expenditure is deductible for the purposes of tax assessment in the year that it is incurred.

Up until 1 April 2008 there was a distinction drawn between the tax treatments of offshore versus onshore development expenditure. Offshore development expenditure was deductible from the date that the expenditure was incurred, while onshore development expenditure was deductible from the date that commercial production started.

The differences in the treatment of onshore and offshore development was based on the longer lead time, more risk and higher cost of offshore developments.

This original policy of distinguishing between onshore and offshore development was not based on good tax policy principles. Instead it was based on a mix of the location of the reservoir and the location of the facilities. Developments in horizontal drilling technology meant that this boundary was no longer sustainable. Horizontal drilling techniques allowed wells to be drilled offshore from an onshore

	<p>location.</p> <p>The policy concern with any boundary is whether it gets in the way of sensible investment decisions. In the absence of horizontal drilling, offshore development is encouraged over onshore development. This was a problem with the original policy. However, with horizontal drill the previous tax rules encouraged facilities to be located on the seaward side of the high-tide mark, when in the absence of tax they may have been located the facilities onshore (for oil and gas reservoirs close to New Zealand shores).</p> <p>The Government decided to do away with the onshore/offshore boundary. The current rules may be seen as concessionary relative to the previous rules but they are consistent with the way expenditure is treated across virtually all other sectors of the New Zealand economy. To that extent, the current rules are not concessionary at all.</p> <p>Development expenditure is deductible either in a straight line over seven years or in on a reserve depletion basis (see below).</p> <p>3) The option for development expenditure to be either deducted in a straight line over seven years or in line with a field's production profile</p> <p>As of 1 April 2008, petroleum miners have a one-off option to choose whether development expenditure is to be deducted in equal amounts over a seven-year period or on a reserve depletion method (also referred to as a units-of-production method).</p> <p>Prior to 1 April 2008, petroleum miners were only able to deduct development expenditure in a straight-line over seven years. This meant that income from a petroleum field with a life shorter than seven years may be over-taxed as a result of this provision, while income from a petroleum field with a life of more than seven years may end up being under-taxed.</p> <p>Economic theory suggests that deductions for the fall in value of capital goods should try to approximate an asset's actual decline in value. In this way tax rules do not interfere with the good's economic value. The reserve depletion depreciation method is consistent with economic theory.</p>
Recipients:	Explorers and producers
Duration:	Indefinite.

An estimate of the financial value of these tax measures has not been attempted. Given the very limited number of oil and gas fields in New Zealand, any attempt to quantify these measures runs into issues of taxpayer confidentiality.

1. Immediate deductibility of exploration expenditure

The claw back provisions are very narrowly defined and it is therefore unlikely that much exploration expenditure has been clawed back and treated as income.

By way of context, there have been eight fields discovered since 2000. These include: Pohokura (2000), Turangi (2006), Kowhai (2006), Onaero (2011), Copper Moki (2011), Puka (2012), Tui (2002) and Maari (2003)¹⁵. Across all exploration and prospecting permits, NZ\$2.96 billion was spent between 2000 and 2013, compared to NZ\$10.27 billion on production permits and licences. Due to taxpayer confidentiality, it is not known how much of this \$2.96 billion spent on exploration and prospecting permits relates to the eight fields discovered since 2000 and how much of this expenditure was of a capital nature.

2. Starting deductibility of development expenditure from the year that it is incurred

As noted, the move to remove the distinction between the tax treatment of onshore versus offshore development expenditure was consistent with general tax principles. The measure may be seen as concessionary relative to the previous rules but the previous tax rules were inconsistent with the good tax policy.

That said, even if the previous tax rules had remained in place, there would be no financial loss to the State as there have been no offshore discoveries made since 1 April 2008 when the new tax rules came into effect. The continuing development expenditure undertaken at offshore fields such as Maui, Maari, Kupe, Tui and Pohokura would all have been deducted at the same time, and at the same rate, as onshore fields, as each of these fields were producing assets.

3. The option for development expenditure to be either deducted in a straight line over seven years or in line with a field's production profile

There have been only three very small onshore fields discovered since 1 April 2008 to which the new tax rules could apply. These are Onaero (2011), Copper Moki (2011), and Puka (2012). Due to taxpayer confidentiality, it is not known whether the permit holders elected to depreciate on a straight line basis over seven years or on a reserve depletion basis.

Financial Value:

¹⁵ The Maari field was first discovered in 1983 but further drilling was required in 1998 and 2003 to determine commercial viability.

<p>Potential Impacts:</p>	<p>1) Immediate deductibility of exploration expenditure</p> <p>The impact of allowing virtually all exploration expenditure to be deducted when it is incurred will tend to benefit existing producers over new entrants with no producing assets.</p> <p>The issue is not so much around the immediate deductibility of exploration expenditure from the date that it is incurred but more that in the case where exploration leads to a commercial discovery, not all of the capital expenditure is clawed back and treated as income. The judgment made has been that the benefits of reforming this measure outweigh the costs in terms of investment attractiveness.</p> <p>2) Immediate deductibility of development expenditure</p> <p>There is no impact from the change in tax rules from 1 April 2008. The new rules are consistent with general tax principles (i.e. they are non-concessionary) and there have been no new offshore discoveries made which might have been (adversely) affected if the old rules had continued to apply.</p> <p>3) The option for development expenditure to be either deducted in a straight line over seven years or in line with a field's production profile</p> <p>This measure allows producers to opt for a depreciation method that is favorable to it. The ability to deduct development expenditure in line with a field's production profile is consistent with other industries such as mineral mining. The ability to deduct development expenditure over seven years can be considered concessionary for longer lived petroleum development to that similar options are not provided to other sectors of the economy.</p>
<p>Affected Government Ministries/Departments:</p>	<p>The Treasury, Inland Revenue, the Ministry of Business, Innovation & Employment</p>
<p>Affected Stakeholders:</p>	<p>Producers.</p>
<p>Inefficient? If so, why?:</p>	<p>None of the measures result in the wasteful consumption of fossil fuels in New Zealand.</p>
<p>Options for Reforms:</p>	<p>1) The claw back provisions for exploration well expenditure could be extended to include all exploration expenditure of a capital nature. For non-successful exploration efforts, the current tax rules only benefit permit holders with other producing assets. It doesn't do anything for new entrants who have no income in New Zealand against which to offset these exploration losses. In order to put existing permit holders and new entrants on the same footing, another option would be for the Government to reimburse a portion of the exploration costs in the case of exploration failure (i.e. as is done in Norway).</p> <p>2) The provisions around the immediate deductibility of development expenditure from the date at which expenditure is incurred is consistent with general tax policy. Any reform along the lines of what existed under the old rules would be inconsistent with general tax policy.</p>

	3) An option for reform of the third measure would be to remove the option to deduct development expenditure in a straight line over seven years and simply to retain the reserve depletion method.
Benefits of Reform:	If the purpose of reform is to reduce wasteful consumption of fossil fuels resulting from inefficient subsidies, then there are no grounds for reform. None of the measures described results in the wasteful consumption of fossil fuels.
Expected Changes Regarding Value and Recipients:	There are no expected changes to recipients. As no attempt has been made to estimate the financial impact of each measure, other than to note that it is likely to be minimal at best, no judgment has been made about expected changes in the future. This will depend on the size of future exploration expenditure and any resulting commercial success.
Planned Action (if any):	None.
Timeframe:	No changes are planned.
Current Status:	In force.

Support Measure Title: Temporary reduction in royalty rates

Description:

In 2002/03 there was a major downward revision in reserves estimates at the Maui field. The Maui field is the largest gas/condensate field ever discovered in New Zealand and it underwrote the development of the gas market for over thirty years. The outlook for gas supply following the Maui reserve write down was bleak, with projections at the time of gas demand exceeding gas supply by the end of the decade. As an isolated market disconnected from the rest of the world, there were no obvious alternatives other than to find additional gas to meet New Zealand's ongoing demand requirements.

In response to the Maui reserve write down, the Government introduced a suite of measures in 2004 to encourage exploration for new natural gas reserves. One such measure was a temporary reduction in royalty payments for any discovery made between 30 June 2004 and 31 December 2009. For fields discovered between this time, the permit holders were subject to the higher of either:

- An ad valorem royalty (AVR) component of 1% on natural gas and 5% on oil; or
- An accounting profits royalty (APR) component of 15% on the first \$ 750 million (cumulative) gross sales from an offshore discovery, the first \$ 250 million (cumulative) gross sales from an onshore discovery, and a 20% accounting-profits royalty on any additional production.

This compares to the standard royalty regime which consisted of paying the higher of either:

- An ad valorem royalty (AVR) component of 5% payable on the basis of either a sales price received or, where there has been no sale or no arm's length sale, the deemed sales price; or
- An accounting profits royalty (APR) component of 20% payable on the difference between revenue received from the sale of products and the costs of extracting, processing and selling those products up to the point of sale.

In respect of an exploration permit, the permit holder is liable to pay only the AVR. For all mining permits with net sales above NZD 1 million, the permit holder is required to calculate for each period for which a royalty return must be provided both the AVR and the APR, and pay whichever is the higher. Typically, AVR is paid in the early years of production as prior costs are netted against revenue and at the end of the field's life, as production falls. APR is typically paid during the peak years of production of non-marginal fields.

A further royalty measure introduced was that prospecting and exploration costs incurred anywhere in New Zealand between 30 June 2004 and 31 December 2009 were made deductible for the purposes of calculating the accounting profits. Outside this time frame, prospecting and exploration costs deductible for the purposes of calculating the accounting-profits royalty are ring-fenced, in that they

	are limited to the area of the mining permit and preceding exploration permit. As such, the measure no longer applied as of 31 December 2009.
Weblink to Legislation/Regulation (page #):	Chapter 7 - http://www.nzpam.govt.nz/cms/about-nzpam/doc-library/rules-and-regulations/minerals-programme-petroleum-2005.pdf
Subsidy Type:	Producer
History:	As described above.
Recipients:	Petroleum producers who made a discovery between 30 June 2004 and 31 December 2009. There are only two fields to which this measure applies – the Turangi and Kowhai onshore fields, both operated by Greymouth Petroleum.
Duration:	The measure continues to apply to fields discovered between 30 June 2004 and 31 December 2009 for as long as they are in production.
Financial Value:	<p>Royalty information per field is confidential. The Turangi and Kowhai fields to which this royalty measure applies are relatively small onshore fields.</p> <p>By way of context, the Turangi field has P50 ultimate recoverable gas reserves of 247.9 PJ as at 1 January 2014, while the Kowahi field has P50 ultimate recoverable gas reserves of 87.8 PJ as at 1 January 2014. At an indicative gas price of NZ\$5.50 per GJ, total sales would be \$1.85 billion over the life of both fields. A 1% AVR equates to \$18.5 million, while a 5% AVR equates to \$92.3 million. The difference in royalty rates equates to a non-discounted nominal \$73.8 million over the life of the fields. The actual impact is likely to be considerable higher as all fields pay the higher APR royalty except in the very early stages of production.</p>
Potential Impacts:	Loss of royalty to the Crown. The measure will not create long-term perverse incentives as the royalty provisions were limited to discoveries made within a short time period which has since expired.
Affected Government Ministries/Departments:	Ministry of Business, Innovation & Employment.
Affected Stakeholders:	Producers.
Inefficient? If so, why?:	Petroleum royalties are designed to capture the economic rent, or the super profit, from petroleum extraction. Royalties are, by definition, over and above conventional taxation and cannot be considered a subsidy. They do not result in the wasteful consumption of fossil fuels in New Zealand. The temporary reduction in royalty rates has had no impact on fossil fuel consumption in New Zealand.
Options for Reforms:	The measure was short-lived and no longer applies for future discoveries.
Benefits of Reform:	None.
Expected Changes Regarding Value and Recipients:	None.

Planned Action (if any):	None.
Timeframe:	No change planned.
Current Status:	In force for fields discovered between 30 June 2004 and 31 December 2009.

Support Measure Title:	Research and development funding for the oil industry
Description:	<p>A major barrier to the exploration of frontier basins is the absence of basic geological information to allow exploration companies to make well informed decisions. To remain competitive globally, relevant and up-to-date information on prospectivity is essential. There is a clear role for the Government in collecting basic scientific information about the Crown’s resources and for the information collected to be made publicly available to any interested party.</p> <p>Government data acquisition is primarily aimed at stimulating investment and thereby generally occurs ahead of competitive allocation mechanisms. Pre-commercial information has public good characteristics and it is common for governments to take such a leadership investment role.</p> <p>Government’s investment is guided by the following criteria:</p> <ol style="list-style-type: none"> a. rationale – the public-good argument for collecting such information is compelling (there should be no funding for activities that would otherwise be undertaken by the private sector). Project data should be readily available to the public. b. relevance – the information relates to a geographic area in which acreage release is likely in the near future. The data should be fit for purpose and use. c. return – the acquisition of such information should provide a higher return to the Crown than competing alternatives. <p>While New Zealand is still vastly under-explored, there has been significant investment to date in data acquisition. This has supported increased levels of interest and entry of new companies to New Zealand.</p> <p>To date, government has directly invested data acquisition funding in:</p> <p>Pre 2014 - Petroleum: \$46 million for seismic data and studies over the last 10 years, which is of specific value to exploration interests. The data is freely available through New Zealand Petroleum & Minerals’ (NZP&M) online database, and is also used to construct Block Offers and the National Petroleum Exploration Data Pack to support promotion.</p> <p>Post 2014 - A further \$8 million was allocated in budget 2014 to be spent on pre-commercial data acquisition to encourage investment in mineral and petroleum exploration and development. Of this \$1.6M has been set aside for petroleum related activities. Namely an audit of the technical success of petroleum wells and frontier basin data acquisition. The remainder, \$6.4 million is allocated to onshore aeromagnetic and mineral prospectivity studies</p> <p>This funding compliments government’s annual contestable science research funding rounds for Energy and Minerals. GNS Science, a Crown Research Institute, usually provides most of the oil and gas specific research under multi-year programme contracts to MBIE. This work ranges from “big-picture” research into the tectonic evolution of the New Zealand continent, to detailed laboratory analysis</p>

of key geological and geochemical components of petroleum systems.

For example, the 2014 funding round included a contribution toward an atlas of petroleum prospectivity (\$2m over 4 years, GNS Science) and in 2015 proposals have been called for research to:

Improve quantity and quality of data in the pre-commercial phase of the exploration and/or deep water development of New Zealand's petroleum resources to improve decision-making.

In 2015, the total amount of contestable funding available through science funding channels will be \$2.4 million per annum for four years.

More over pre-commercial data is an enormous asset to a range of disciplines and applications beyond the petroleum sector. Examples of its uses in other public good areas include:

- general geosciences including earth modelling;
- In conservation and marine protection;
- In geological hazard assessment;
- To identify and other natural resources including mineral and geothermal energy resources.

Weblink to Legislation/Regulation (page #):

Subsidy Type:

General

History:

Background

The Seismic Data Acquisition Programme (DAP) was introduced in 2004 as part of a set of actions designed to increase interest in exploration of potential offshore oil and gas fields in New Zealand, with a particular emphasis on areas outside the Taranaki Basin. This was mainly as a response to the decline of Maui reserves and the need to secure future gas and petroleum supplies for New Zealand.

Over the period of the programme, appropriations in the region of \$42 million were allocated for the acquisition, processing and analysis of seismic data on these frontier basins, which was then made available to the petroleum exploration companies on demand and as part of data packages supporting the block offers process.

Why the data acquisition programme was introduced?

Although New Zealand has the second highest contribution of renewable energy to total primary energy supply in the OECD behind Iceland, it is still heavily dependent on non-renewable energy sources. Despite rapid growth in renewables over the past few years non-renewables still make up 62% of total primary energy supply and in 2004 this stood at 69%. The main non-renewable sources are oil (37% in 2004, falling to 33% in 2012) and gas (19% in 2004, rising to 22% in 2013), the remainder being made up almost entirely of coal with a marginal contribution from waste heat.

While in 2004 New Zealand was a relatively energy rich country, being self-sufficient in all energy sources other than oil, it was highly dependent on the Maui gas field, with gas being particularly crucial for the electricity sector.

At that time the main sources of gas/condensate were the Maui field, 35km offshore in Taranaki Bay, which was discovered in 1969 and came on-stream in 1979, and the smaller Kapuni field, on-shore in Taranaki which had been discovered in 1959 and started full production in 1969. In 2002/2003 a redetermination of the Maui field significantly reduced the original gas quantities and introduced uncertainty in the future supply. Although there were some other smaller discoveries, generally the level of exploration was low, and focused entirely on the Taranaki Basin. Supply was failing to keep pace with accelerating demand.

This dependency on rapidly declining gas fields would have serious implications for the security of gas supply in New Zealand. At that point it was also considered that levels of petroleum exploration were unlikely to result in the discovery and production of natural gas in sufficient quantities to meet future gas demand. This was recognised in June 2004 by the Cabinet Business Committee.

In particular the Government was interested in pursuing new areas of exploration in deep water Taranaki, East Coast North Island, Canterbury and the Great South Basin since it was considered that exploration targets in Taranaki may not be sufficient to meet demand for gas, given the existing finds there and the volume of seismic surveys. Few exploration companies, however, showed interest in frontier regions due to the lack of seismic data. A further issue was that much of the data that did exist was of poor quality or not in modern digital formats.

As a result a number of initiatives to boost gas exploration were introduced including the acquisition of seismic data on the frontier basins, changes to the royalty regime and a campaign of marketing exploration opportunities in New Zealand.

As part of this, an initial Multi Year Appropriation (MYA) of \$15 million phased over three years was approved, covering 2004/5 to 2006/7 for the acquisition of seismic data on New Zealand's offshore basins to support the promotion of blocks offers. This was subsequently added to leading to total appropriations between 2004/5 and 2011/12 of \$42 million.

The Crown Minerals Review undertaken in June 2004 predicted a probable gas short-fall if no significant discoveries were made before the end of 2004. There was therefore, at the time of developing the programme, a need to increase both the volume and the pace of exploration activity to ensure security of future supply.

In fact there have subsequently been further discoveries in the Taranaki basin, and improvements in technologies which have increased the rate of recovery from existing fields which have reduced the urgency of the issue, at least in the short term.

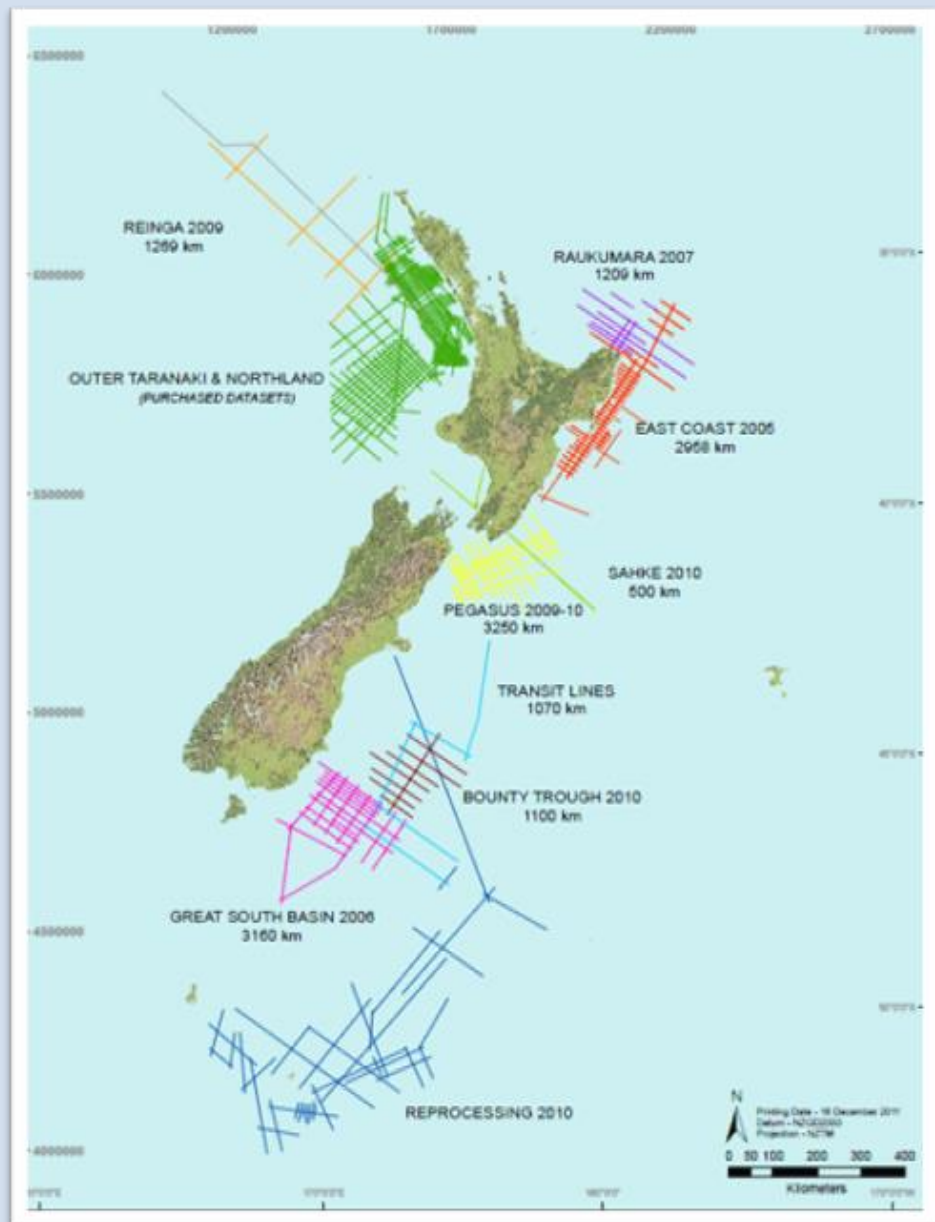
Data baseline

Before the introduction of the data acquisition programme, the Crown acquired seismic data through an obligation on all explorers to submit copies of the data they acquired as a result of exploration activities to Crown Minerals, with the Crown acting as a data aggregator, but not collecting data on its own account.

The Operational Review of Exploration and Mining Services to the Petroleum Industry in 2004 reported that the stock of seismic data was approximately 196,000km of offshore and 8,400 Km of onshore 2D which at that time was estimated as requiring in excess US\$400 million to replace, with almost a further US\$100m to replace the 3D data.

This reliance on industry reported data had resulted in two major issues – firstly data coverage was concentrated on the Taranaki basin, accounting for 95% of data held, and very little data on the frontier basins. Secondly, much of the data held on the frontier basins was in an outdated paper format with only 15% of the data not related to Taranaki being held in a digital format that could be easily analysed with modern techniques, the remainder requiring significant effort and thus cost to use in any exploration decision.

The data acquisition programme has added data based on modern, industry-standard seismic surveys (e.g., Deepwater Taranaki 2001–2009, Raukumara 2005–2007, Reinga 2009, Great South Basin 2006 and 2009, Bounty 2009 and Pegasus 2010). For remote areas, limited seismic surveys were also completed for the 2008 New Zealand continental shelf submission to the United Nations, outside the scope of the data acquisition programme. Additional information from gravity and magnetic surveys and satellite data help define the potential of little known basins.



Objectives of the data acquisition programme

The purpose of the data acquisition programme was to proactively acquire seismic and technical data on the New Zealand frontier basins, and to make this available without cost to the petroleum exploration industry. Given the nature of the information need, the majority of this data was 2D, with some satellite seep studies and other supporting data.

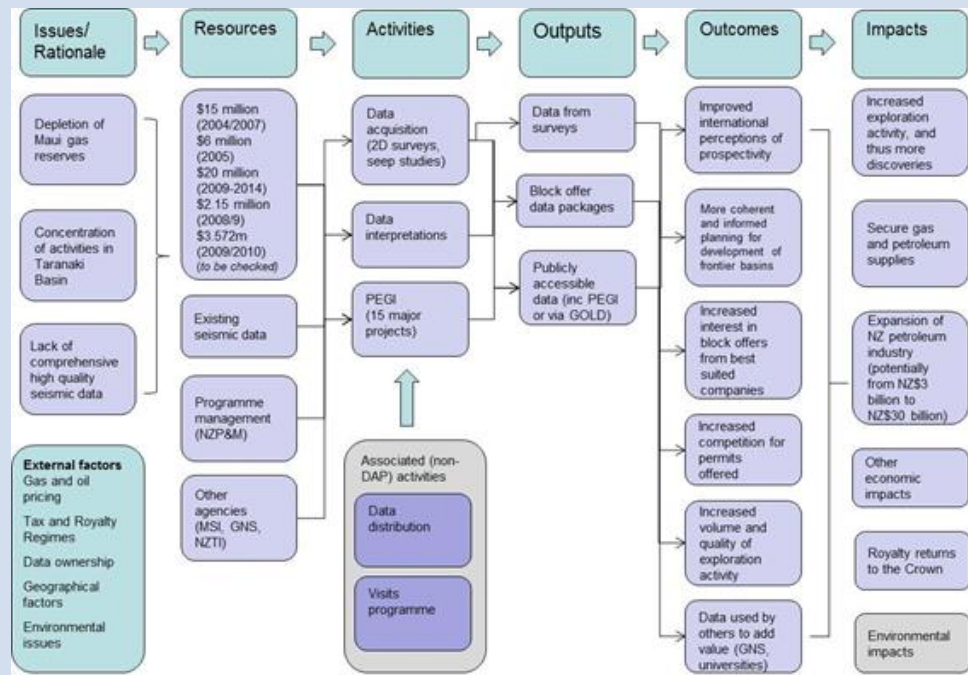
It was perceived that the availability of 2D seismic data would achieve the following outcomes:

Improve international perceptions of New Zealand's prospectivity

- Enable a more coherent and better-informed plan for the development of New Zealand's frontier basins (ie beyond onshore and near shore Taranaki)
- Increase interest in block offers from international exploration companies of the scale and track record likely to be best suited to development of the frontier petroleum basins
- Increase competition for permits offered, and, in particular, bids which will commit to more aggressive exploration drilling options
- Increase the volume and the quality of exploration activity thereby shortening the timeframes and increasing the likelihood of successful discoveries.

These should lead to increased exploration activity and thus more discoveries. This in turn should secure gas and petroleum supplies for the future and expand the NZ petroleum industry, thus increasing economic benefits and ultimately royalty returns to the crown.

This was based on a judgement that the market would not collect the necessary data without government intervention, and that extending the data confidentiality period would not provide a sufficient incentive, as the market for commercial data was not developed adequately to support speculative multi-client surveys at that time.



The activities of the data acquisition programme

The DAP budget was used to fund three main types of activity:

- Direct acquisition of data, where NZP&M/Crown Minerals contracted directly with seismic operators to collect new seismic data
- Acquisition of the rights to existing data, to enable it to be made available

without charge as part of the package supporting block offers

- Other supporting studies including remote petroleum sensing, geological and geophysical interpretation
- Supporting activities included reprocessing of data, publishing and marketing, and updating databases.

Selection of the areas across which data were to be acquired was carried out with the assistance of the Institute of Geological and Nuclear Sciences (GNS Science) who were contracted to provide this input and a range of related geological studies to interpret and complement the seismic data. There was also consultation with a group of industry representatives.

The programme could be characterised as having two phases – the first phase (2004-2007) focused on areas with lesser commercial barriers to exploration to improve the chances of successful block offers and the likelihood of any new discovery being developed. The objective was also to quickly demonstrate the value of the data acquisition initiative. The second phase (post 2007) addressed areas studied by GNS Science that had favourable geological features but were not included in the first phase. At this stage the earlier basin attractiveness study was revised with GNS Science in the light of new data, and recommendations by the exploration industry and consultation with Geoscience Australia were incorporated. Also identified by GNS Science in these technical studies was a number of areas identified as being highly prospective but which were not prioritised for data acquisition because of reasons such as proximity to infrastructure or existing levels of information.

From 2010 the budget was used to fund the Petroleum Exploration and Geosciences Initiative implemented by GNS Science. The two-year PEGI programme was aimed at improving the underpinning knowledge and access to information on New Zealand's oil and gas resources. PEGI comprises a suite of 14 inter-related projects, and the provision of eight existing GNS Science data products. The PEGI projects are a range of evaluations and upgrades of knowledge on Taranaki and other key basins along with specialist studies of the geochemistry of oils and gases and their source rocks, detailed palaeontology control of wells, petrography of reservoir rocks and screening of frontier basins. PEGI was funded with \$4 million from New Zealand Petroleum & Minerals and \$3.8 million from GNS Science programme grants.

Recipients:	Seismic surveying companies and the science community, particularly GNS Science.
Duration:	In 2015, the total amount of contestable funding available will be \$2.4 million per annum for four years.

Support Measure Title:	Financial restructure of Solid Energy
Description:	<p>In September 2013 Solid Energy underwent a financial restructure that gave the company \$100 million in balance sheet equity and access to liquidity facilities. The main features of the restructure included:</p> <ul style="list-style-type: none"> • The five main creditors (Bank of New Zealand, Commonwealth Bank of Australia's New Zealand branch, Westpac New Zealand, ANZ Bank and Bank of Tokyo-Mitsubishi UFJ) rescheduled their debts in a syndicated term loan facility maturing in September 2016; • The five banks and note holder TSB exchanged \$75 million of the debt owed by the company for \$75 million of equity in the form of non-voting redeemable preference shares; • The Crown contributed \$25 million in cash for redeemable preference shares (RPS); and • The Crown provided \$130 million in secured loans for the company to use if required. This includes a secured working capital of \$50 million, repayable within three years; a secured mortgage-backed facility of \$50 million, repayable within three years; and a secured standby facility of up to \$30 million if required. To date, Solid Energy has not required any of these loans to date <p>Control of the company will remain with the Shareholding Ministers who own all of the company's 60.9 million ordinary shares. The refinancing package reduces the company's drawn bank debt from \$300.5 million to \$239.3 million and Medium Term Notes from \$95 million to \$81.2 million.</p> <p>The Government sees this measure as analogous to the provision of equity and not inconsistent with the usual practice of commercial investors. As the 100% owner of Solid Energy, the Government sought the assistance of the company's major creditors to rectify the balance sheet of a company in financial distress in the same way that any commercial investor might choose to do in the circumstances.</p> <p>Commodity markets are inherently risky and it is not possible to assess with any certainty what rate of return may be earned on the increase in investment represented by the indemnity. We note that many private owners of mining companies are currently choosing to support loss-making operations in the belief that coal prices will rise in future.</p>
Weblink to Legislation/Regulation (page #):	http://www.solidenergy.co.nz/solid-energy-secures-financial-restructuring-package-from-crown-and-lenders/
Subsidy Type:	Producer
History:	Solid Energy was pushed to near financial collapse, recording losses of \$335 million in FY 2013, following a steep and sustained fall in coal prices in mid to late 2012 that neither the company nor the analyst community had foreseen.

	<p>In the lead up to that failure, Solid Energy had reduced its capacity to manage through a period of distress by increasing its gearing and cost structure. The increase in gearing primarily arose from a decision to fund investment activity from debt. This investment activity related to both its core coal business and diversified activities (underground coal gasification, coal seam gas, lignite conversion projects, wood pellets and biodiesel).</p> <p>Solid Energy's investments in a range of "new energy" and renewable projects, and away from its traditional coal business, were in line with a business strategy that was in place up until 2012. This strategy was underpinned by the Company's long-term view on energy prices which were generally well above consensus market expectations and which has subsequently proven to be erroneous.</p> <p>The company's culture at the time has also been the subject of criticism. In 2012 it employed 84 staff on \$200,000 a year or more – more than twice as many just two years earlier.</p> <p>Since the company's near financial collapse in 2012, a significant retrenchment has occurred with the company focusing its activities on its core coal business. Of note:</p> <ul style="list-style-type: none"> • The former Chief Executive, Don Elder, and Chairman of the Board, John Palmer, have resigned; • The entire Board has been renewed; • The Spring Creek mine has been put into care and maintenance, and production at Huntly East and Stockton have been reduced; • Approximately half of the company's staff have been made redundant, with over 790 less staff out of 1,658 staff employed in 1 July 2012; • The company has sold significant land holdings in the South Island which included much of its former lignite holdings; • The company has rationalised some of its permit holdings, with a total of 20 permits either surrendered, left to expire, or pending applications have been withdrawn since mid-2012; • The company has managed to reduce its average mining costs from NZ\$ 179 per tonne in June 2012 to NZ\$ 125 per tonne by the end of 2013.
Recipients:	Solid Energy
Duration:	One off.
Financial Value:	As noted above.
Potential Impacts:	Remediated Solid Energy's balance sheet at a time of financial distress.
Affected Government Ministries/Departments:	The Treasury, Inland Revenue.
Affected Stakeholders:	Solid Energy
Inefficient? If so, why?:	Potentially. The Government has stated that it is not prepared to expose taxpayers

	to on-going losses if Solid Energy's business was not considered viable. However, the Government was prepared to provide support for the company if there was a reasonable chance it could be made viable. It has not resulted in the wasteful consumption of fossil fuels in New Zealand.
Options for Reforms:	The two main options were/are: <ul style="list-style-type: none"> • Let Solid Energy go into liquidation and reallocate its mining licences/permits to other parties; • Financially restructure Solid Energy in the expectation that it can trade its way back into financial health.
Benefits of Reform:	At this stage it is not clear that letting Solid Energy fail will lead to better economic recovery of the reserve/resource base and higher royalty returns to the crown. The commodity market for hard coking coal remains depressed and all coal companies are retrenching their capital investments.
Expected Changes Regarding Value and Recipients:	Unknown at this stage. The company remains in discussions with its creditors and the Crown as challenging market conditions continue.
Planned Action (if any):	The Crown is continuing to closely monitor the financial performance of Solid Energy. All options are on the table given the Government's previous announcements that it was not prepared to expose taxpayers to on-going losses if Solid Energy's business was not considered viable.
Timeframe:	Ongoing review.
Current Status:	The company remains in discussions with its creditors and the Crown as challenging market conditions continue.

Support Measure Title:	Indemnity for mining land remediation
Description:	<p>In September 2014, following a further deterioration in coal prices and forecasts, the Crown provided an indemnity to Solid Energy for the company's cost for environmental remediation. Solid Energy is required to remediate the environmental damage caused by its mining operations and carries a liability on its balance sheet that reflects outstanding land remediation. The indemnity covers remediation costs up to a net present value of \$103 million, with forecast costs of \$6 million, \$11 million in FY2015 and FY2016 respectively. As at 30 June 2014, Solid Energy had provisions of \$60.1 million on its books.</p> <p>There is no overall impact on the Crown's fiscal position because the indemnity simply transfers a liability from an entity that is 100% owned by the Crown to the Crown itself.</p> <p>No change is proposed to the requirements or timing of the remediation work program which has been agreed between the company and the relevant local authorities. The only difference is that these costs will now be met directly by the Crown.</p> <p>The Government sees this measure as analogous to the provision of equity and not inconsistent with the usual practice of commercial investors. As the 100% owner of Solid Energy, the Government sought to strengthen the balance sheet of a company in financial distress in the same way that any commercial investor might choose to do in the circumstances.</p> <p>Commodity markets are inherently risky and it is not possible to assess with any certainty what rate of return may be earned on the increase in investment represented by the indemnity. We note that many private owners of mining companies are currently choosing to support loss-making operations in the belief that coal prices will rise in future.</p>
Weblink to Legislation/Regulation (page #):	http://www.beehive.govt.nz/release/extension-solid-energy%E2%80%99s-remediation-indemnity
Subsidy Type:	Producer
History:	<p>Under the Deed of Indemnity and Bond Facility signed in September 2014 between Solid Energy and the Crown, the Crown will reimburse the costs of the rehabilitation expenses of Solid Energy, Pike River (2012) Ltd and Spring Creek Mining Company to the extent of \$103 million in present value terms.</p> <p>The discount rate estimate for rehabilitation costs uses a risk-free rate for discounting future rehabilitation costs. At 30 June 2014 the risk-free discount rate was assessed as ranging from 3.7% for cash flows in one year's time to 5.5% for cashflows in greater than 20 year's time (2013: 5.50%) nominal with inflation estimated at 2.1% to 2.50% (2013: 2.50%). The rates used are the rates published by the New Zealand Treasury for use in accounting valuations.</p> <p>Solid Energy is required by various pieces of legislation controlling its mining activities to rehabilitate to an agreed condition the land on which its mining activities occur. The final cost of rehabilitation cannot be established with certainty.</p>

	<p>This Deed of Indemnity extends a similar remediation agreement made in 1987 whereby the Crown agreed to indemnify Solid Energy for the end of mine life rehabilitation costs relating to mining activities prior to 1 April 1987. This dates back to the establishment of Coal Corporation of New Zealand Limited. In the Agreement for Transfer of Assets (March 1988) between the Crown (Ministers of Finance and State-Owned Enterprises) and Coal Corporation of New Zealand Limited (rebranded as Solid Energy Limited in 1996), the Crown agreed to indemnify Solid Energy for liabilities, costs and expenses arising out of mining operations by State Coal Mines prior to 1 April 1987. These costs include those relating to the rehabilitation (including water treatment) of former State Coal Mines mine sites present within the coal mining licences granted to Solid Energy under the Asset Transfer Agreement.</p> <p>Rehabilitation liabilities are spread across a number of mines including Stockton, Ohai, Maramarua and Huntly East. A large proportion of the mine site rehabilitation should be completed by 2020. However, problems associated with acid mine drainage will take several decades to remedy.</p>
Recipients:	Solid Energy
Duration:	A large proportion of the mine site rehabilitation should be completed by 2020. However, problems associated with acid mine drainage will take several decades to remedy.
Financial Value:	As at 18 September 2014, the remediation costs had a present value of \$103 million.
Potential Impacts:	Remediated Solid Energy's balance sheet at a time of financial distress.
Affected Government Ministries/Departments:	The Treasury.
Affected Stakeholders:	Solid Energy
Inefficient? If so, why?:	Potentially. The Government has stated that it is not prepared to expose taxpayers to on-going losses if Solid Energy's business was not considered viable. However, the Government was prepared to provide support for the company if there was a reasonable chance it could be made viable. It has not resulted in the wasteful consumption of fossil fuels in New Zealand.
Options for Reforms:	<p>The two main options were/are:</p> <ul style="list-style-type: none"> Let Solid Energy go bankrupt and reallocate its mining licences/permits to other parties. It is uncertain as to how feasible this option really is given the size and uncertainty of Solid Energy's remediation liabilities; <p>Financially restructure Solid Energy in the expectation that it can trade its way back into financial health.</p>
Benefits of Reform:	<ul style="list-style-type: none"> Uncertain.
Expected Changes Regarding Value and	N/A

Recipients:	
Planned Action (if any):	The Crown is continuing to closely monitor the financial performance of Solid Energy. All options are on the table given the Government's previous announcements that it was not prepared to expose taxpayers to on-going losses if Solid Energy's business was not considered viable.
Timeframe:	Ongoing review.
Current Status:	In force.

Support Measure Title:	Motor spirit excise duty
Description:	<p>A motor-spirits excise duty is charged in New Zealand on the sale of certain types of fuel to final consumers (currently NZD 0.56524 per litre on gasoline as from 1 July 2014 and due to increase by a further NZD 0.03 per litre from 1 July 2015). Taxable fuels include gasoline, LPG, and compressed natural gas (CNG). As of 1 October 2008, all the revenue from this excise duty—along with road-user charges, motor-vehicle registration, and licensing fees—are paid into the National Land Transport Fund and used for road construction and maintenance purposes only. Prior to this date, the government retained a large proportion of the revenue collected from the excise duty charged on gasoline in the general consolidated account. This falls under the general policy that those that cause the damage to the nation’s roads should be the one’s paying for its repair and maintenance. It follows that those do not consume motor-spirits on roads should not be subject to this excise rate.</p> <p>In general terms, the government allows a refund of the excise duty and the goods and services tax (GST) charged on motor spirits for fuel consumed in off-road usage. Examples of eligible uses would include agricultural vehicles, commercial vessels, and certain licensed vehicles. Refunds are applied for and verified by the New Zealand Transport Agency. Only those applicants meeting legislative and regulative requirements have their refund applications approved.</p> <p>In addition, provision has been made for the refund of the Accident Compensation Corporation (ACC) Levy for exempted vehicles and for fuel used for commercial purposes (currently NZD 0.099 per litre). The ACC levy was introduced on 1 July 2003 and goes into the ACC Motor Vehicle Account, which covers the cost of accidents and rehabilitation for victims of accidents. These refunds are automatically added onto the refund of fuel excise duty.</p> <p>Diesel fuel does not qualify for any refunds since it is not subject to the motor-spirits excise duty. Estimates of the annual fuel-tax refunds are available within the Budget documents. The refunds typically account for around 3 to 4% of the revenue collected through the motor-spirits excise duty.</p> <p>If excise duties were considered like general taxation revenue then any excise duty refund would be considered a “support measure”. This was the general practice pre 2000s.</p>
Weblink to Legislation/Regulation (page #):	<p>Land Transport Management Act 2003 – sections 41 – 45 – http://www.legislation.govt.nz/act/public/2003/0118/latest/DLM226230.html?src=qs</p> <p>Land Transport Management (Apportionment and Refund of Excise Duty and Excise-Equivalent Duty) Regulations 2004</p>

	http://www.legislation.govt.nz/regulation/public/2004/0238/latest/DLM276772.html?src=qs The Accident Compensation Act 2001 – sections 213 – 217 http://www.legislation.govt.nz/act/public/2001/0049/latest/DLM99494.html?src=qs Accident Compensation (Motor Vehicle Account Levies) Regulations 2014 - http://www.legislation.govt.nz/regulation/public/2014/0161/latest/DLM6112487.html?src=qs														
Subsidy Type:	Not a subsidy. Benefits certain classes of consumer.														
History:	The Land Transport Management (Apportionment and Refund of Excise Duty and Excise-Equivalent Duty) Regulations 2004 came into force on 9 September 2004.														
Recipients:	Users of gasoline, LPG and CNG who consume gasoline, LPG and CNG off-road.														
Duration:	Indefinite.														
Financial Value:	<table border="1"> <thead> <tr> <th colspan="2">Fuel excise duty refunds</th> </tr> <tr> <th>Year</th> <th>\$ million</th> </tr> </thead> <tbody> <tr> <td>2010</td> <td>32.5</td> </tr> <tr> <td>2011</td> <td>35.6</td> </tr> <tr> <td>2012</td> <td>35.1</td> </tr> <tr> <td>2013</td> <td>36.3</td> </tr> <tr> <td>2014</td> <td>38.5</td> </tr> </tbody> </table>	Fuel excise duty refunds		Year	\$ million	2010	32.5	2011	35.6	2012	35.1	2013	36.3	2014	38.5
Fuel excise duty refunds															
Year	\$ million														
2010	32.5														
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2012	35.1														
2013	36.3														
2014	38.5														
Potential Impacts:	The policy objective is one of user pays. In this instance, those excise duty is solely used for the maintenance and development. It follows that only those that use roads should pay for their maintenance and development, while those that don't should be reimbursed.														
Affected Government Ministries/Departments:	Ministry of Transport, New Zealand Transport Agency														
Affected Stakeholders:	Off road users such as agricultural vehicles, commercial vessels and certain licenced vehicles.														
Inefficient? If so, why?:	Efficient. New Zealand does not see this as a "support" measure, much less a subsidy. It meets the policy objective. It does not lead to wasteful consumption of fossil fuels in New Zealand.														
Options for Reforms:	N/A														
Benefits of Reform:	So long as the purpose of excise duty is to fund the maintenance and development of roads then there is no benefit to reform. Previously when excise duty on motor spirits was treated as a general revenue gathering exercise, the amount of excise duty collected was insufficient for the country's road maintenance and development requirements. By fully hypothecating excise duty to road maintenance and														

development, the amount of excise duty can be more accurately calculated.	
Expected Changes Regarding Value and Recipients:	Policy work is currently underway to review the list of vehicles exempt from paying motor spirit excise duty. This work will reduce the number of vehicles that qualify for a refund. This will decrease the value of refunds from the National Land Transport Fund. These changes are not expected to take effect until 2016.
Planned Action (if any):	None.
Timeframe:	No timeframe for change.
Current Status:	In force.

Support Measure Title: Funding of international treaty obligation to hold oil stocks

Description:

New Zealand's principal mechanism for mitigating an

International oil supply disruption is its contribution to the International Energy Agency (IEA) global strategic oil stockholding. New Zealand is too small to mitigate international oil supply disruptions on its own and the collective arrangement under the IEA is New Zealand's best choice for coping with such disruptions. The collective stockholding mitigates the market power of oil-producing countries, and releasing stock during major international disruptions helps to moderate extreme oil price spikes.

New Zealand has a treaty obligation to contribute 90 days of net oil imports to the IEA stockholding. New Zealand presently meets this obligation through domestic oil production, commercial inventories held by companies in New Zealand, and by entering ticket contracts with offshore companies.

Tickets are an option, in return for an annual fee, to purchase specified quantities of stock at market prices in the event of an IEA-declared oil emergency. At around 10 percent of the cost of building domestic oil stockholding, tickets are by far the lowest cost option for meeting New Zealand's IEA obligation.

MBIE forecasts that ticket costs will rise from NZD 5.2 million in FY2013/14 to NZD10.6 million in FY2016/17, principally due to a forecast decline in domestic oil production in the medium term (which increases the stock that we are required to hold).

Ticket costs have historically been met through Crown funding.

As part of a review of oil security in 2012 (<http://www.med.govt.nz/sectors-industries/energy/energy-security/oil-security/oil-security-review-2012>) MBIE considered several options for responding to these rising costs. The preferred option, accepted by Cabinet, was to continue to meet the IEA obligation via government procured ticket contracts, but to implement a 'user-pays' system to meet costs.

The necessary legislative changes were made with the passing into law of the Energy (Fuels, Levies, and References) Amendment Act 2015 on 23 February 2015. The expected increase in the levy rate to cover a multi-year appropriation for 2013/14 – 2015/16 under this levy would be approximately 0.110 cents per litre (which amounts to 4.4 cents for a

40 litre tank). This levy will be imposed on petrol, diesel, ethanol, and biodiesel.

Weblink to Legislation/Regulation (page #):	Sections 14 and 24 http://www.legislation.govt.nz/act/public/1989/0140/latest/DLM194754.html
Subsidy Type:	Not a subsidy.
History:	<p>New Zealand historically relied only on commercial stocks held by companies in New Zealand to meet the IEA stockholding obligation. In 2004 it became apparent that, as a result of falling domestic production, and the realization that stock in ships destined to New Zealand could not be counted towards New Zealand's obligation, New Zealand was not holding sufficient stock to meet its obligation.</p> <p>During 2004-2006 various options to remedy New Zealand's non-compliance were investigated, including building public domestic stockholding. Petroleum explorers were also concurrently making investment decisions to bring domestic oil discoveries into production. When the expected production from these developments was taken into account, it became apparent that New Zealand's stock requirement would be highly variable and in some years commercial stocks would again be sufficient to meet the IEA obligation. Given this variability, holding long-term reserve stock in New Zealand was considered to be an unnecessary expense and other methods of holding stock were investigated including the use of 'ticket contracts'.</p> <p>Rather than physically holding the stock, the IEA allows members to enter into ticket contracts to meet their obligations. The ticketed stock that is held on a member's behalf must be held within another IEA member's territory. This ticketed stock may not be counted towards the host member's obligation. The ticket must be backed by a government-to-government agreement that stipulates that the host member will not impede the release of the stock in the event of an IEA emergency.</p> <p>The IEA calculates the 90 day requirement for a given year by multiplying the average daily net imports of the previous year by 90. At month-end each member is required to submit data for that month to verify its compliance.</p> <p>In recent years in New Zealand, stock held by commercial operators contributes to between half of the requirement to the entire requirement, depending on production in a given year. The volume of commercial inventory has remained relatively stable in recent years.</p> <p>New Zealand makes up the remainder of its requirement by entering into ticket contracts with overseas companies (oil companies and traders). To date, New Zealand has held tickets in Australia, Japan, the Netherlands, and the United Kingdom.</p>

	<p>Vote Energy had an ongoing appropriation of NZD 3 million per year to cover the costs of New Zealand's IEA obligations. This appropriation was unlikely to be sufficient to cover the forecast costs. Further, given the principal beneficiaries of the stockholding are fuel consumers, it was questionable whether it was economically efficient to cover the costs of the obligation through Crown funding.</p> <p>MBIE analyzed a range of options, including withdrawal from the IEA; building domestic stockholding; placing a mandate on industry to hold stock; and different options for funding the ticket regime. MBIE's preferred option was to continue to meet the IEA obligation via government procured ticket contracts, and to implement a 'user-pays' system to meet costs.</p> <p>The necessary legislative changes were made with the passing into law of the Energy (Fuels, Levies, and References) Amendment Act 2015 on 23 February 2015.</p>
Recipients:	Fuel consumers.
Duration:	Indefinite.
Financial Value:	Variable. Forecast to rise from NZ\$5.2 million in 2013/14 to NZ\$10.6 million in 2016/17.
Potential Impacts:	None. The <i>primary</i> beneficiaries of oil security now directly pay for this cost via a small levy on fuel purchased.
Affected Government Ministries/Departments:	Ministry of Business, Innovation & Employment, Customs NZ, the Treasury.
Affected Stakeholders:	Fuel consumers
Inefficient? If so, why?:	Not a subsidy. Does not lead to the wasteful consumption of fossil fuel subsidies.
Options for Reforms:	Reform completed.
Benefits of Reform:	The primary beneficiaries of oil security now directly pay for this cost.
Expected Changes Regarding Value and Recipients:	The cost of meeting New Zealand's IEA treaty commitments is forecast to rise to NZ\$10.6 million by 2016/17.
Planned Action (if any):	No further action planned.
Timeframe:	N/A
Current Status:	In force.