2020 ENERGY BRIEFING

WORLD ENERGY COUNCIL | BusinessNZ Energy Council

Introduction

As energy leaders and policymakers grapple with the current Covid crisis, New Zealand and the global energy community are reviewing the implications for the speed and direction of energy transition. Energy related projects often stimulate significant investment and can create jobs where there is a sound regulatory environment across the sector.

New Zealand's policymakers, investors and consumers all have important roles to play in shaping how a post-Covid future might look. As we strive to sell our goods and services to the rest of the world, increasingly low carbon energy will be an enabler of this new society by driving innovation, economic recovery and creating a positive image for New Zealand.

Attention in the energy sector has turned to balancing the need for survival and recovery. Recent developments present both challenges and opportunities for New Zealand's economy and energy system with the prospect of New Zealand's major industrial electricity user – the Tiwai Point Aluminium Smelter – exiting the country as well as uncertainty over New Zealand's petrol refinery and steel producer.

Announcements from energy leaders across the globe point to expectations the pandemic will stall demand for oil and gas for a prolonged period and accelerate the global shift to cleaner power and fuels. Renewable energy creates an opportunity to diversify energy sources and increase energy independence.

Meanwhile, energy leaders highlight the accelerating digitalisation opportunities in energy and the new challenges of resilience – for people and value chains, as well as cyber security. To accelerate a clean, affordable, reliable energy transition, we need to think about demand side disruption as part of the 'new normal', particularly in a post-Covid era. This reminds us of the importance and speed of the demand side in achieving changes in the sector. We can't overlook the very real opportunity this crisis provides.

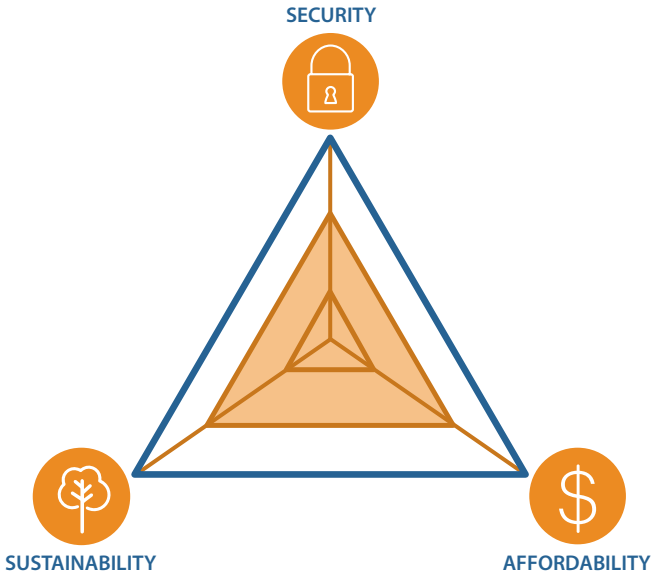
The Energy Trilemma

How can we avoid the risk of polarisation? The Energy Trilemma Index illustrates the need for countries to balance energy security, energy equity and environmental sustainability. The Trilemma has become part of the energy dialogue both globally and in New Zealand. International experience proves that sensible and integrated policymaking accelerates change in the context of energy transition.

New Zealand has one of the world's leading energy systems when it comes to sustainability, security and affordability, ranking 10th out of 125 countries in the 2019 Trilemma Index. The country has consistently been among the top performers across all three dimensions. It is the only country that has had a triple A grade in Energy Security, Energy Equity and Energy Sustainability since 2000. Maintaining this grade also means New Zealand has continuously improved its own performance.

New Zealand continues to deliver against the energy trilemma. The country's unique geography and economy present a real opportunity to diversify and decarbonise energy supply and demand. Hydro, wind and solar are all low carbon energy sources abundant in New Zealand.

New Zealand's energy system is well placed, but despite a sound energy system and a relatively stable policy framework, the country can't be complacent. 60% of New Zealand energy still comes from fossil fuels. There is the potential for hydrogen, bioenergy and electrification to diversify energy supply in transport and heat. Technologies such as batteries present new opportunities to create a more resilient and consumer focused energy system.



TOP 10
OVERALL RESULTS

1. Switzerland
2. Sweden
3. Denmark
4. United Kingdom
5. Finland
6. France
7. Austria
8. Luxembourg
9. Germany
10. **New Zealand**

Achieving the best possible energy system

Together we can achieve the necessary transition to facilitate greater technological diversity without undermining the energy system we have. No system is perfect and while the platform from which we start is not broken, its ongoing development is something for which we all need to take responsibility. This document is designed to highlight key issues from across the energy sector, as identified by our members. We seek to collaboratively and constructively address how rules, incentives and markets can best be harnessed to shape evidence-based policy informed by our scenario modelling. But before we dive into particular energy issues, here are ten things you should know about New Zealand:

1ST

FOR EASE OF

STARTING A BUSINESS

New Zealand ranks 1st out of 190 economies for ease of starting a business based on procedure, time and cost.

Source: IFC World Bank, Doing Business Report, 2020.

2ND

OUT OF 181 COUNTRIES FOR

CLIMATE CHANGE READINESS

New Zealand is ranked 2nd on the Notre Dame Global Adaption Country Index. The index summarises a country's economic, governance and social readiness and its exposure, sensitivity and capacity to adapt to the negative effects of climate change.

Source: University of Notre-Dame, ND-GAIN Index 2017.

3RD

OUT OF 186 ECONOMIES FOR

ECONOMIC FREEDOM

New Zealand ranks 3rd for advancement in economic freedom, prosperity and opportunity due to a strong commitment to open-market policies that facilitate vibrant flows of trade and investment.

Source: Index of Economic Freedom, The Heritage Foundation, 2020.

4TH

HIGHEST PERCENTAGE

TOTAL PRIMARY ENERGY SUPPLY

New Zealand is 4th in the OECD behind Iceland, Norway and Sweden with 40% of total primary energy supply derived from renewables.

Source: MBIE Energy in New Zealand Report 2017

5TH

OUT OF 161 NATIONS FOR

BUSINESS FRIENDLINESS

New Zealand ranks 5th in the world for best countries for business, measured against factors including property rights, innovation, taxes, technology, corruption, infrastructure, market size, political risk, quality of life, workforce, freedom, red tape and investor protection.

Source: Forbes Best Countries for Business, 2018.

6TH

IN THE WORLD FOR

ENERGY SECURITY

Due to New Zealand's abundant renewable energy resources we are ranked in the top 10 countries in the world for energy security.

Source: International Index of Energy Security Risk 2018

7TH

OUT OF 167 ECONOMIES FOR

PROSPERITY

New Zealand ranks 7th in the world and 1st outside Europe on the Prosperity Index. It is the only global measure of prosperity based on both income and wellbeing.

Source: Prosperity Index, Legatum Institute, 2019.

8TH

IN THE WORLD FOR

HAPPINESS

New Zealand ranks 8th out of 156 countries in the World Happiness Report, measured on variables including life expectancy, trust, social support, generosity, absence of government corruption and GDP per capita.

Source: The World Happiness Report, 2020.

9TH

IN THE WORLD FOR

ARTIFICIAL INTELLIGENCE

New Zealand's Government is the 9th best prepared in the OECD for the looming artificial intelligence (AI) revolution. The index measures nine metrics, ranging from in-country digital skills and government innovation to existing data capabilities.

Source: Oxford Insights, Govt AI Readiness Index, 2017.

10TH

ON WORLD ENERGY COUNCIL

ENERGY TRILEMMA INDEX

The energy trilemma index ranks 125 countries in terms of their likely ability to provide sustainable energy policies based on their security, energy equity and environmental sustainability.

Source: World Energy Council, Energy Trilemma Index, 2019.

Let's talk energy...

The following addresses areas where we would like to work more closely with the incoming government. It also outlines some suggestions of how the transition to a low carbon energy future can be more successful.

#1 Deal with uncertainty in a collaborative way

Siloed thinking risks unintended consequences and poorly allocated resources. Interconnectivity between the electricity and transport markets is already emerging, and throughout the economy the carbon price is binding decision-making together. The prospect of increasing complexity in energy markets suggests caution in designing policy frameworks. A greater degree of transparency is required. The BusinessNZ Energy Council (BEC), businesses, academia, and government have prepared two plausible stories of New Zealand's energy future to 2060 – BEC2060. The scenarios use a New Zealand customised TIMES model, developed by the Internationl Energy Agency (IEA) Energy Technology System Analysis Program. The purpose of this robust, explorative analysis is to help New Zealand think about how the future energy mix might look, and the range of trade-offs and choices it might need to make along the way. Energy transition needs technology and society working together for the best outcomes. These narratives will help all energy leaders manage uncertainties and make more informed decisions in a world where multiple futures can play out.

BEC SAYS: Develop a long-term whole-of-energy strategy to decarbonise the transport, industrial, primary, commercial and residential sectors. This strategy will underpin the policies and market necessary to achieve a resilient and low carbon energy future. An informed and holistic approach from government with respect to the energy sector is needed. Policy makers, businesses and consumers need more timely analysis and delivery of insights. To fill this growing gap, the BEC with its members, will look to leverage off the unique capability that resides in its TIMES-NZ model. The most value to New Zealand will be gained by using the model to move boldly and smartly together to engage effectively with many diverse stakeholders in the energy system transition.

#2 Animate action

Let's not drop the ball on our watch. While we see the recently reformed Emission Trading Scheme (ETS) as the primary mechanism for addressing climate change through sending market signals in favour of decarbonisation, a supportive policy environment is still needed to accelerate the development of zero carbon energy sources. Appropriate policies provide the investment security needed to speed up decarbonisation. Without supporting policies there is the potential for delays, inhibiting New Zealand's decarbonisation commitments. However, the challenge is to strike a balance between supporting positive change and providing the market with space to innovate. Policies should avoid picking winners, support competitive outcomes and steer investment away from high carbon and high cost energy sources. Too much focus on one form of energy would not drive prices down, create resilience or be diverse enough to cope with different scenarios.

BEC SAYS: The Government should work closely with business to shape policies that will help New Zealand's transition to a low carbon economy. Supplier and technology neutrality is paramount as we consider regulatory changes across a range of industries and regulations. Identifying and removing any significant "first mover disadvantages" frees up energy investment. A range of initiatives can help speed up New Zealand's decarbonisation without picking technology winners. Emissions reduction efforts should place emphasis on the marginal costs of abatement as also highlighted by the Fenwick Forum Report 2020. Potential initiatives include partnerships with fossil fuel users to explore electrification or clean fuel options, renewable fuel certification schemes, fuel efficiency standards for imported vehicles, direct investment in decarbonising hard to treat emissions and enabling the Electricity Industry Participation Code to expand market and technology partners.

#3 The long-forgotten friend – energy and investment efficiency

Let's not lose sight of the importance of energy efficiency which is critical for increasing the proportion of renewables in the energy system and, therefore, for arriving at a net zero carbon economy by 2050. In the shorter term, efficiency can deliver quick wins for net reduction in critical areas such as process heat and energy poverty. Despite this, there are cases where energy efficiency investment does not happen due to a lack of upfront capital, even though it makes sense in the long run. Considering the consequences of Covid-19, there is now an opportunity to rebuild the economy and support New Zealand's climate change efforts through investment in smart future-ready infrastructure. This will support a high value innovation economy and provide a viable alternative to more poles and wires that future generations must pay for.

BEC SAYS: It is important for the public and private sectors to work closely to address the barriers preventing the removal of inefficient equipment and investment in best practice energy efficient technology. Increased energy efficiency will lead to reduced energy consumption, reducing emissions and deferring investment requirements to support existing technologies.

#4 Energy hardship – more than an energy pricing issue

Energy inefficiency in housing is a key driver of energy hardship. For example, New Zealand has the 10th cheapest household electricity in the developed world and the average annual power bill has in real terms decreased by $156 over the past five years, after adjusting for inflation. However, inefficient housing is leading to higher energy consumption, higher energy bills and higher carbon emissions. One reason is New Zealand's poor history of housing regulation and existing houses are often not sufficiently insulated. Families in energy hardship often are in housing which is difficult to heat and keep dry in winter. Now, the effect of Covid-19 may lead to an increase in energy poverty as more Kiwis get into debt and may not be able to afford to heat their homes.

BEC SAYS: As a country it is important that we continue to retrofit housing and strengthen regulation to ensure houses are properly insulated and ventilated. This will make houses cheaper and easier to heat, saving consumers money, driving better health outcomes, reducing carbon emissions and allowing energy to be used in other ways.

#5 Solve the transport dilemma

New Zealand's transport system still runs primarily on fossil fuels, raising environmental concerns around climate change, pollution and air quality. While there is a strong case for the electrification of light vehicle transport in New Zealand, to address these challenges, there has been less emphasis on how we deal with our heavy vehicle fleet. The use of hydrogen to decarbonise our heavy vehicle fleet needs to be investigated further. The Ministry of Transport's recently published strategic working paper on green freight in New Zealand outlines the challenges and opportunities alternative green fuels present to transition the vital road freight industry to cleaner fuels. Transitioning to clean fuels will play a key role in moving New Zealand's economy to net zero carbon by 2050. The production and supply of clean fuels may also lead to a reduction of New Zealand's reliance on fuel imports and increase our energy security. Supporting infrastructure will be essential to encourage the transition to clean fuels. As we are making decisions today, investment in the right infrastructure will be essential for the future. For example, the UK Department of Transport outlined in a paper that providing all charging infrastructure with smart capability up front would be half the cost of retrofit installations. A useful reminder that today's investment decisions will affect the capability and economics of tomorrow's infrastructure.

BEC SAYS: Robust trialling, piloting, and clear policy frameworks will level the playing field for technology development and adoption. There are a number of clean fuel options and emerging vehicle technologies that could address current environmental concerns. Vehicle emissions standards could be implemented to build a more carbon effective fleet. Electrification, biofuels and even hydrogen could have a place in our future transport system. However, we must be wary of "betting the house" on any one technology. No silver bullet will create a renewable energy future and a resilient mix of renewable energy is required.

#6 Democratise access to real-time data

Access to more real-time consumption and other energy data, typically generated by smart meters, and the ability to authorise the sharing of this data with third party service providers, are key enablers of digital innovation in the electricity sector. The Electricity Authority (EA) "Additional consumer choice of electricity services" (ACCES) project and new data access arrangements under the Default Distributor Agreement are steps in the right direction but more open and real-time access should be encouraged to enable innovation to flourish in the sector.

BEC SAYS: Improve access to electricity data such that new data-driven products and services are both possible and commercially viable. This will require work to get it right, in particular the protection of privacy and intellectual property rights, but the benefits are worth pursuing. The UK's Energy Data Taskforce is engaged in a similar project, with the following expected benefits: improving data flows to optimise the operation of the energy system; improving the handling of real-time data and forecasting capabilities to integrate efficiently solutions such as demand response, electric vehicles and storage; improving data visibility; providing better access to data for both existing and new players in the system; increasing competition in existing markets; enabling the creation of new markets and providing protection from cyber-security risks.

#7 Support your local

Decarbonisation and diversification of New Zealand's energy system may require growth in local, renewably sourced energy. The localisation of energy can support greater resilience and keeping it local can provide more resilience for the power system, particularly in remote areas. To support New Zealand's decarbonisation, we might also consider capacity that can be deployed rapidly and incrementally. "Distributed Energy Resources" (DERs) can help transform our energy system, presenting both challenges and opportunities. DERs are smaller-scale devices that can either use, generate or store energy, and form a part of the local distribution system, serving homes and businesses. DERs can both decarbonise and optimise our energy system. For example, technologies such as electric vehicles, battery and hydrogen storage, solar and other smart appliances can provide significant value to the electricity system by alleviating peak demand periods and reducing the need for greater generation and transmission investment. One of the greatest challenges for local energy projects is pulling together all the threads needed to make this happen (for example, financing, hardware installation, distributor support, retailer support etc).

BEC SAYS: Accelerate pro-community renewable energy. One way to do this would be establishing a community energy panel, whose role is to help deliver community energy projects. It would provide communities with a useful "go to" point. Activities this panel might perform include: proposal review and recommendations; establishing a pre-vetted panel of suppliers; case studies and publicity for projects; creating project templates that are known to work; providing a tendering service for councils, property developers or others who are looking to source coherent community-based solutions; be a conduit for project financing by investors, government etc.

#8 Drive entrepreneurship and skills in energy

Energy leaders are increasingly concerned about the talent pipeline. Decarbonising our economy will involve transforming our workforce, requiring many thousands of new, highly skilled workers in the long-term and providing more, high-paying jobs over the next 15 years. Digitalisation is an important component in demand reduction and efficiency of energy supply. Just as New Zealand is building a good track record in digital innovation, we should look to further encourage the development of the right skills and entrepreneurship in both the supply and demand sides of our energy sector, be it through new business models or new technologies. This would see more start-ups worthy of the Start-up Energy Transition (SET-100) participation coming from New Zealand.

BEC SAYS: To ensure the right skills are in place when we need them, the energy sector will need to undertake workforce planning to drive the skills pipeline, improve vocational training, promote greater workforce diversity, and develop a stronger sector brand that attracts young people motivated by the goal of decarbonising New Zealand. Government plays a critical role in enabling this and should be involved in leading innovation. Regulators must keep pace with technological and business model innovation. Policy makers need to be open to new approaches such as interim regulatory changes that can be regularly refined and iterated over time. The uncertainty that interim regulations could produce, can be balanced with a clear roadmap to reach finalised regulatory frameworks.

#9 Adapt and adopt

More than ever, we are facing uncertainty in the energy system, not just as a consequence of Covid-19 but also because of the need for carbon emission reductions and investment in new technologies. These are creating significant challenges and opportunities for New Zealand's energy system's future. Our responses to these technologies, particularly in the wake of Covid-19, will have economic, social and environmental impacts. Research and Development (R&D) and innovation will be a critical part of finding commercial solutions for decarbonisation. To better manage risks and capitalise on opportunities that will arise, New Zealand needs to address the opportunities unique to this country that require significant use of an "adapt and adopt" approach if we are to become world class. If we see ourselves as having a competitive advantage from exporting clean energy-based products and services, what will those industries look like and what can we do about existing energy-based industries? For our manufacturing sector, it is important New Zealand avoids a situation of exporting jobs and importing carbon.

BEC SAYS: Invest in green energy R&D for commercialisation in areas that are hard to decarbonise through currently commercially viable renewables. Applied energy research is very poorly funded in New Zealand. Programmes such as the Australia Renewable Energy Agency (ARENA) fund in Australia and the Clean Energy Finance Corporation would be beneficial, enabling the necessary investment in zero carbon energy sources to occur.

#10 Don't burn the gas bridge

Renewables are the greatest opportunity to decarbonise, but it's not exclusively an electricity story. Over 60% of New Zealand's energy supply still comes from non-renewable sources. Gas typically contributes 20-25% of primary energy supply and is an essential fuel and feedstock for the petrochemical industry, electricity generation, and the industrial, commercial and residential sectors. Gas continues to provide critical support for the electricity system to cover the intermittency of renewable fuels – particularly water, wind and sun. A successful transition includes natural gas as part of the energy mix. Supply constraints experienced during 2018 extended into 2019 and are expected to continue again in 2020, and likely beyond. This uncertainty can be expected to be reflected in gas and electricity prices, which ultimately flow through to end users including households. Stabilising the domestic gas market – and therefore also the domestic electricity market – requires the commitment of substantial reinvestment capital to extend the lives of existing gas fields and a focus on diversification. Features such as long-term policy coherence, credibility and accountability, while critical in capital intensive industries with long-life assets, become even more important. Alongside this investment, we can work to repurpose existing gas infrastructure to carry net zero carbon fuels, such as green hydrogen and biogas.

BEC SAYS: Strive for a diverse and secure energy supply which is resilient to sharp price rises in dry years, and which makes best use of New Zealand's abundant renewable energy resource. Energy security becomes more important in a renewable world and an informed, public conversation on a diverse energy mix is needed. Smart investment in the resilience of our energy system is required to ensure the wider reach of electricity is not compromised by the very problem it is trying to fix. We also need to take care not to neglect the opportunity to use biofuels and hydrogen to deliver low-emissions outcomes to sectors of the economy facing a tougher decarbonisation path.

New Zealand continues to deliver against the energy trilemma. The country's unique geography and economy present a real opportunity to diversify and decarbonise energy supply and demand.

About BEC

The BusinessNZ Energy Council (the 'BEC') is a multi-sectoral group of New Zealand business, government and academic organisations taking on a leading role in creating a sustainable energy future for New Zealand. BEC is New Zealand's representative of the World Energy Council (WEC) and a division of BusinessNZ. Together with its members the BEC is shaping the energy agenda for New Zealand.

WORLD ENERGY COUNCIL | BusinessNZ Energy Council

Members

ARUP
bp
ChargeSmart
CEP
Certified Energy
New Zealand Energy Certificate System
COMMERCE COMMISSION NEW ZEALAND
Te Komihana Tauhokohoko
contact
DBA - David Butcher and Associates
Deloitte.
EECA
TE TARI TIAKI PŪNGAO
ENERGY EFFICIENCY & CONSERVATION AUTHORITY
ELECTRICITY AUTHORITY
TE MANA HIKO
emhTrade
enerlytica
independence | intelligence | insight
Firstgas Group
Fletcher Building
flux
Frazer Lindström
climate change and energy sector strategic advice
Gas Association of New Zealand
GAS INDUSTRY COMPANY LIMITED
genesis
GRAYMONT
hale & twomey
HIRINGA
INFRATEC
karit
LZ NEW ZEALAND
MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI
Mercury
Meridian.
methanex
the power of agility
Ministry of Transport
TE MANATŪ WAKA
mta ASSURED
NERI
National Energy Research Institute
nova energy
NEW ZEALAND OIL & GAS
NEW ZEALAND STEEL
NZX
OJI
Beyond the Boundaries
OMV
POWERCO
REFINING NZ
Your Energy Hive
RioTinto
RBP
ROBINSON BOWMAKER PAUL
STRATERRA
NATURAL RESOURCES OF NEW ZEALAND
TESLA
Forecasting Solutions
THE UNIVERSITY OF AUCKLAND
BUSINESS SCHOOL
TRANSPOWER
Trust power.
unison
VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA
vector
WE
wellington electricity
Z