2021 Supporting Evidence Consultation Feedback and Updates

Part 2: Sectoral challenges and opportunities

Themes we heard through consultation

We received lots of feedback through consultation on our analysis of opportunities and challenges for reducing emissions. A range of perspectives came through and this section summarises the main themes we heard relevant to each sector.

Energy and industry

The role of alternative fuels was a common theme that came through in consultation. There were suggestions that we give more consideration to alternatives such as hydrogen and biogases to support energy diversity while reducing emissions from buildings and process heat. It was also suggested that we give more weight to the role of energy efficiency, distributed generation and demand-side management to reduce emissions within the electricity system.

We heard broad support for the phase out of coal use for process heat and electricity generation. For process heat, there were concerns around supply chain security for low-emissions fuels, industry competitiveness and cost of transitioning. For electricity generation, there were concerns raised over maintaining energy affordability and security of supply. Submissions also suggested there could be further emissions reductions from fossil fuel production from the cessation of domestic coal mining.

Another strong theme that came through was whether future and emerging technologies were sufficiently assessed against achieving potential emissions reductions to 2035. Some submitters thought that we can expect greater emissions reductions from emerging technologies than what our analysis suggested. However, submissions also cautioned against assumptions that new technologies and practices would be widely adopted by 2035.

We also heard concern over the cost, reliability and security of supply of electricity and concern around the time that it will take to build out the electricity system to support the amount of change in the recommendations. There was support for optimising the use of existing fossil gas and refinery infrastructure to produce low-emissions fuels for industry and transport sectors, maintain consumer choice and support energy resilience. There were mixed views from submitters on the cost for the emissions reductions that can be achieved through a pumped hydro storage scheme.

In relation to developing a bioeconomy, some industry submitters believed bioenergy sources were underutilised and underdeveloped, while others worried there would not be enough bioenergy to meet our needs. It was also suggested that the evidence relating to bioenergy was spread across the report, making it difficult to comprehend.

Transport

We heard a wide variety of views on our transport analysis. An overarching theme was that our advice needed greater emphasis on designing a broader transport system that is less car centric. This

includes delivering better urban form and more convenient, accessible and affordable public, shared and active transport.

The public, academics and some businesses were, in general, supportive of a move to electric vehicles (EVs). We heard concerns from industry around more detailed issues such as the prices of EVs and combustion engine vehicles, availability of EV supply and the speed with which they could be procured. Regarding heavy EVs, there was mixed feedback as to when these would be available and suggestions of alternatives such as electrofuels, hydrogen, or biofuels. We also heard that aviation needed special attention given the challenges it faces to decarbonise.

There was concern around the environmental and social impacts of a large-scale shift to EVs such as battery lifecycles and the mining of materials to make the batteries.

Buildings and urban form

Regarding buildings and urban form, we heard that there were significant remaining emissions reduction opportunities from energy efficiency, switching to low-emissions fuels for heating and improved building and system design across all buildings. We also heard that increased use of timber in building construction to displace more emissions intensive materials, where feasible, could reduce whole-of-life emissions from buildings from a consumption-based accounting approach.

Some submitters highlighted that reducing operational energy use in buildings through improved energy efficiency could support indirect emissions reduction in electricity generation as it can reduce peak demand.

Some submitters highlighted that insufficient consideration had been given to the embodied emissions of buildings. There was support for our analysis to account for embodied carbon by using consumption-based accounting methods. We also heard that more compact urban form could support emissions reductions in related sectors such as transport and buildings.

Agriculture

We heard support from many submitters for the potential to reduce on-farm emissions through improved farm management practices which could lead to reduced stocking rates and lower animal numbers. We received significant interest in the possibility of reducing agricultural emissions through more regulation, such as prohibiting further land conversions to dairy farming, and input controls on the use of synthetic nitrogen fertiliser and imported feed such as palm kernel extract. Some stakeholders thought we had not considered the potential for these approaches sufficiently.

Many stakeholders were interested in the potential of regenerative and organic farming practices along with the concept of ‘nature-based solutions’. This was accompanied with great interest in soil carbon sequestration.

Regarding technology, we heard a great deal of support for promoting rural digital connectivity. We also heard concern about relying on currently unavailable technologies to reduce emissions instead of making improvements to farm management practices now. Many submitters voiced the importance of supporting farmers to make changes through information and outreach.

Waste

We heard support for a cross-sectoral approach to be taken in considering options for the sector, including by accounting more for embedded and consumption emissions. We also heard mixed

views about the potential for landfill gas (LFG) capture. Some stakeholders expressed concern that we have underestimated the potential for LFG capture while others were worried it is not as efficient as advertised or could divert attention from waste diversion.

Forests and removals

In general, we received positive feedback supporting the potential of establishing new native forests. This was often linked to submitters interests in biodiversity and their recognition of a global biodiversity crisis. We had technical experts highlight that the focus should not just be on planting but also on reversion and the regeneration of existing forests. Farmers and the public expressed some reluctance to further planting of large-scale pine forests. Industry voices emphasised the value of focusing on carbon storage and therefore using fast growing exotic species or using pines as nurse crops for natives.

We heard support for more attention to be paid to the role of forests in contributing to the bioeconomy. This included increased use for timber as a low-emissions building materials.

The importance of partnership with Iwi/Māori came through consultation as something that must be considered centrally within our analysis. This includes the need to recognise legacy issues and potential constraints on land use for lands received through Treaty settlements.

We also received feedback asking for more attention to the mitigation role of oceans, blue carbon, wetlands and urban forests. This included support for early action to be taken with the planting of urban forests to get community buy in.

We received fairly limited feedback on carbon capture and storage (CCS) and related technologies such as direct air capture and bioenergy with CCS. There was general support for reducing emissions from geothermal power generation through reinjection of fossil gases.

Iwi/Māori perspectives

Several themes emerged from feedback we received from Iwi/Māori, including through submissions. Concerns were raised that climate action that fails to comply with Te Tiriti o Waitangi/The Treaty of Waitangi (The Treaty) will compound historic grievance, further disadvantage Iwi/Māori and fail to achieve an equitable transition. We heard that tikanga and mātauranga Māori need to be recognised as equal, particularly the Treaty Partnership, climate leadership, and the science and knowledge we draw from to address climate change.

Whenua Māori (taonga tuku iho) was another important theme. Many Iwi/Māori, and others, were concerned that climate action will compound historic grievances such as restrictions on land use and further obstruct Iwi/Māori from exercising rangatiratanga, mana motuhake and kaitiakitanga. It was noted that Iwi/Māori have a whakapapa connection to whenua, and it is important that government understands land use decision making from a te ao Māori view.

On the Māori economy, we heard that action that constrains Māori-collectives from exercising rangatiratanga and mana motuhake over their whenua and other cultural assets, will have flow on effects that will compound historic grievance and increase disadvantage for Māori-collectives compared with private landowners and corporations.

There were calls during consultation for a stronger emphasis on local and regional development, which would promote more resilient Iwi/Māori communities better prepared to respond to economic and environmental shocks. We heard concerns that if existing barriers inhibiting Māori economic development and cultural vitality, which have flow-through effects to social and environmental wellbeing, are not addressed, there is a risk climate action will further disadvantage Iwi/Māori.

Errors and misrepresentations

We heard during consultation about a small number of errors or missing information in our analysis, along with some misunderstandings of what we had written. This section highlights these.

Transport

People were concerned that we failed to consider the lifecycle impact of EVs and internal combustion engines; this has been included in our analysis. An EV used in Aotearoa emits about 60% fewer emissions over its full life cycle than an equivalent petrol vehicle. This includes accounting for emissions from raw material extraction, manufacture, and shipping. There was also a misunderstanding from some that Aotearoa might import EVs without proper safety standards.

It was identified that there was an absence of a gender or disability perspective in our analysis of urban spaces and their link to transport solutions or rural communities.

Forests

Regarding forests, there was a common misunderstanding during consultation that our analysis of establishing new native forests was solely focused on planting trees. Our discussion of establishment intended to consider both planting and reversion of land to native forest.

New evidence and analysis

We received additional evidence during consultation that we have incorporated into the chapters of *Part 2*, alongside additional analysis that we conducted ourselves. This section highlights the key aspects of this.

Energy and industry

We considered additional information regarding the potential supply and uses of biogas and hydrogen. This included their potential for blending into existing pipelines and the costs and timelines associated with this.

Transport

For transport, we incorporated additional evidence regarding EVs. This included recent commitments by vehicle manufacturers and countries regarding electrification and the new IEA outlook for EVs. All of these reinforced the trends towards a rapid uptake of EVs. We also incorporated more evidence about the health co-benefits of mode shifts towards active and public transport.

Buildings and urban form

On buildings, we received and incorporated additional evidence around urban form, and its relationship to emissions in other sectors such as transport, waste, and energy. We also looked at additional studies regarding the embodied emissions of buildings and the behavioural change required to adopt some emissions reduction opportunities.

Agriculture

We carried out additional analysis on the potential of reducing synthetic nitrogen fertiliser use and lower intensity farm systems such as organic and regenerative agriculture. We also received updated information regarding the development of methane inhibiting technology.

Waste

We analysed new information about non-municipal landfills in Australia and the emissions associated with organic decomposition in non-municipal fills and added more detail on recovery options and potential transport emissions from recovery options.

Additional information regarding the potential for LFG capture to mitigate emissions from historic waste was also considered. This included analysis of the potential for LFG capture to be installed on sites that did not have it before. We also considered additional analysis on the importance of source separation to reduce cross-contamination.

Forestry and removals

We conducted additional analysis of the costs of native forest establishment and the difference between planting and natural reversion.

Iwi/Māori perspectives

Additional information and statistics were received from BERL about the impacts of climate action on Iwi/Māori and the Māori economy. We analysed this to be able to bring more and updated information about the Māori economy and the potential disproportionate impacts of climate action on Iwi/Māori into our report.

What we have changed in Part 2 as a result of consultation:

We have made a range of changes to the chapters in *Part 2* after consultation. These included some significant changes, which are described below, and many smaller edits.

Chapter 4: Reducing emissions – opportunities and challenges across sectors

- No substantive changes

Chapter 5: Reducing emissions from energy and industry

- Renamed chapter to better align with the structure of our recommendations and the flow of energy supply and demand in the economy
- Included more details on the potential of biogas and hydrogen as alternative low-emissions fuels sources

Chapter 6: Reducing emissions from transport, buildings, and urban form

- Incorporated additional evidence into our discussion of transportation mode shift, including the potential for shift to active transport (cycling and walking) and associated co-benefits
- Expanded our Auckland case study with information about Auckland's local targets, cycling, regulatory barriers, and the Auckland Transport Alignment Project
- Updated our sections on EVs based on recent developments globally
- Gave greater attention to the potential of hydrogen and biofuels as low-emissions transport fuels
- Expanded material on improving national freight efficiency, including improving operational efficiency and mode shift to rail and shipping
- Added substantially more content regarding urban form and its potential for supporting climate change mitigation and adaptation
- Added content on embodied carbon in the built environment

Chapter 7: Reducing emissions from agriculture

- Included additional detail regarding the potential for reductions in nitrogen fertiliser and conversion to organic and regenerative farming systems to reduce emissions
- Added content regarding farm extension services, including for Māori, the role of farm advisors, and farm management plans
- Added more detail regarding research, development and deployment
- Included information about supporting early action to reduce emissions
- Provided additional detail about the role of He Waka Eke Noa and Te Aukaha

Chapter 8: Reducing emissions from waste

- Incorporated additional details about waste recovery across different waste types
- Added additional content to our discussion of LFG capture, including evidence from Australia
- Added more information on the potential risks of a narrow focus on LFG capture
- Added content around transportation emissions from waste
- Expanded circular economy content in multi-sector chapter
- Expanded discussion of consumption-based accounting

Chapter 9: Removing carbon from our atmosphere

- Expanded and nuanced our discussion of forestry to more explicitly cover the potential of roles of different types of species and forest management practices
- Restructured the chapter to better frame our discussion of soil carbon
- Made linkages to additional carbon sources and sinks such as oceans, wetlands, and urban forests
- Added connections between our material on carbon capture and storage technologies and *Chapter 5: Reducing emissions from energy and industry*

Chapter 10: Perspectives from Tangata Whenua: Considering emissions reductions and removals from a Te Ao Māori view

- Drawn on consultation feedback to strengthen the narrative where applicable
- Incorporated additional and updated data from BERL about the Māori economy, Māori Land, and impacts of climate action on Iwi/Māori