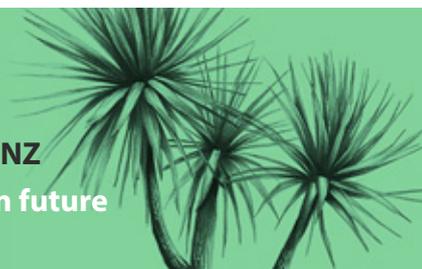


# E-MISSION POSSIBLE

Expert roundtables on thorny questions for a net-zero NZ

Summary of Roundtable 1: Unlocking our low-emission future

29 November 2017



## SUMMARY HAIKU

To lead or follow?  
Lead where you have expertise.  
Leaders can take risks.

## INTRODUCTION

This was the first of four roundtables bringing together diverse experts from New Zealand and overseas to shed new light on particularly thorny questions for New Zealand's low-emission transition. The road to a net-zero future is paved with challenging questions for which there are no definitive answers – just choices to be made under uncertainty and consequences to be faced under risk.

Motu convened the roundtable in collaboration with the New Zealand Productivity Commission, the Institute for Governance and Policy Studies at Victoria University of Wellington, and the Environmental Defence Society.

Keynote speaker Prof Charles Kolstad (Stanford University) and Dr Suzi Kerr and Catherine Leining from Motu gave presentations which are available [online](#). Distinguished panellists and experts discussed the actions that are needed now to preserve desirable pathway options and the new tools, institutions, and processes that would help achieve a faster net-zero transition.

Discussions involving panellists and audience members were held under the spirit of the Chatham House Rule, allowing information to be shared without attribution to individuals. This summary is intended to synthesise the range of issues raised during the presentations and discussion. It does not present a comprehensive account, consensus view or conclusions shared by individual participants. Issues raised during the wide-ranging discussions have been loosely grouped into four themes: social change, policy and regulation, research and practice, and economy.

## SESSION 1A: New Zealand's advantages, opportunities, barriers, and risks arising from the low-emission transition

**Prof Charles Kolstad** presented on “*Uncertainty: Implications for Climate Mitigation Policy*.” He explored the distinction between uncertainty (level of knowledge) and stochastic shocks (which cannot be known in advance), and highlighted policy challenges around managing asymmetries in information, differences in risk perception across different actors in the system, and irreversibility of actions. Both public and private actors need to manage risks around continuous and abrupt climate impacts, mitigation policies, and non-climate-related factors such as commodity prices and technological change. Tools for managing risk include insurance and information markets, financial instruments, and real options analysis.

Where should New Zealand lead versus follow? Market leaders can shape prices, global negotiations, institutions, and perspectives. Market followers may initially experience lower investment costs, but they tend to be price-takers. Market followers experience higher costs when they have to accelerate mitigation. New Zealand does not need to be uniformly aggressive. Given its small open economy, it may benefit by directing investment and action to the areas where it can lead globally or generate value regardless of what happens in other countries.

**Catherine Leining** presented on “*Low Emission Pathways*.” She highlighted the global mitigation challenge to reach agreed temperature goals. To meet its 2030 target under the Paris Agreement and transition to net zero emissions, New Zealand needs to shift from incremental to transformational change. Any number of pathways could work. She presented the pathway solutions framework developed through Motu's Low-Emission Future Dialogue, which involved backcasting from a successful net-zero-emission economy in 2050 to identify key characteristics, milestones, actions and actors in each sector.



The balance between various characteristics of this future economy will be influenced by “pivot points” which permanently close, open or change pathway options. Pathway risks need to be assessed and managed. We should rethink how we set mitigation targets to build in multiple dimensions, linkages to pathways, and consideration of New Zealand’s global GHG footprint (e.g. including cumulative emissions, consumption emissions, fossil fuel production for export and international transport).

## DISCUSSION POINTS:

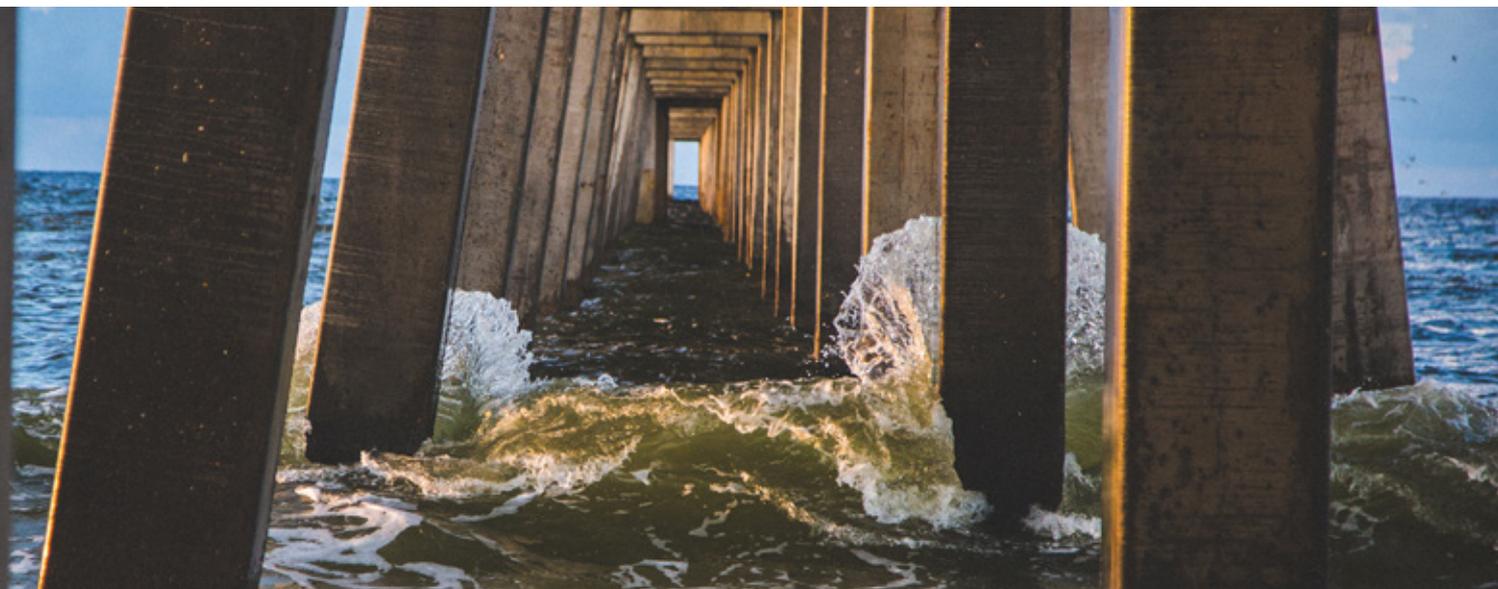
### Theme: Social change

1. Behaviour change is critical for rapid take-up of new technologies. We have advantages as a small economy. New Zealand can be a country focused on finding solutions and helping show others this can be done.
2. The world is changing faster than the conversations we are having would suggest. Leadership needs to apply in a broad systems manner.
3. We need a more positive framing of this debate. Why can't this be fun?
4. The government can't dictate change; people have to want to change. People have to buy into the solutions, and we need more discussions to enable this to happen.
5. We need to embed psychology into our strategies for action. Behaviour change is complex and it happens at the level of the individual, families, organisations, communities and societies. There are educational and spiritual dimensions as well as economic and technical enablers. We also need to make individual actions more transparent.
6. If we really love New Zealand, we need to become its guardians.
7. We need to turn actions by first movers into stories to help shift social norms. Seeing others change can do more to shape willingness than regulation or information. For example, farmers see themselves as stewards of the land. Farmers are good problem solvers.
8. Is there social buy-in to the notion of a central coordinating body helping to set sectoral pathways for change?

### Theme: Policy and regulation

9. What are the merits of a carbon tax versus emissions trading? We want countries to be trying hard, and we don't know what the “right” amount of emissions or emission price is. Both instruments have challenges and both can be designed well or poorly. Legislators can complicate the performance of either instrument.
10. California’s climate package has been structured around making progress without messing up the economy. Given the broader package of regulations and the level of ambition, the ETS auction has been delivering the floor price. There has been some reliance on subsidies. The state has a strong interest in the environment and there is social support for the goals of the state government.
11. We need to move beyond a focus on our major urban centres. Solutions should help to build the regional economies.
12. New Zealand’s emissions can get to zero in some areas but not others. This can get obscured in bundling of gases in our targets. We can get fossil fuels to zero, but if we keep eating, we are going to keep generating methane and nitrous oxide.
13. We need long-term policy consistency and consideration of integrated needs and impacts across multiple issues (e.g. some water quality solutions are not good for climate change).
14. We need more than just the ETS to make change happen. We need coordinated responses and partnerships between government and civil society based on a common vision and plan. We also need practical technological and engineering solutions.
15. We need to commit with conviction and start. New Zealand has yet to commit to reducing domestic net or gross emissions; so far it has relied on buying credits and planting trees. We need to consider commitment devices. For government, this could include setting long-term targets in legislation (e.g. Zero Carbon Act), a process for creating policy plans, establishment of an independent climate change commission, and establishing cross-party agreements on the goals and frameworks. Businesses can develop road maps for change. There are also roles for civil society groups to nurture conviction.
16. When thinking about the pace and scale of action, we could consider the approach from Rockström et al. which involves halving gross emissions every decade.





17. We need to think about reducing overall consumption. Consumption-based mitigation policies and economics and better use of data on consumption could help shift production.
18. Carbon neutrality endeavours are not easily supported under the current policy framework.
19. Pricing of electricity transmission is a barrier to innovation and changes are needed to the system to allow new approaches to emerge and enable early movers to act. One option is establishment of “capacity rights.”

#### **Theme: Research and practice**

20. There are opportunities to create partnerships between Māori land owners and emitters that encourage native forest planting for carbon sequestration and co-benefits. Emission unit prices under competing land uses are an important trigger. There are options to create “premium units” that reflect co-benefits. “Tactical planting” could enable natives to emerge. Price points on exported products are also important triggers.
21. We should do more to deploy the technologies available now. Immediate options are biofuels, solar electricity, hybrid vehicles, real-time data to drive behaviour change, and opportunities to export renewable electricity.
22. We need to enable communities to partner in solving problems. For example, instead of taking remote communities off grid, they could be positioned to support distributed generation technologies and store energy as “batteries.”

#### **Theme: Economy**

23. There can be value in moving ahead on multiple fronts simultaneously.
24. Conversely, given budget constraints, it is important not to be spread too thinly. New Zealand should invest for comparative advantage.
25. We are in a transition from “growth economics” to “impact economics.” Strategic deployment of capital is essential.
26. Businesses need to make economically efficient decisions. A shift away from traditional energy sources such as fossil fuels towards renewable energy requires availability of resources and infrastructure development. There are timing and regulatory considerations as well as capital and operating costs. We need to think carefully about what we do with our current infrastructure.
27. We need to look ahead to coming changes, like introducing synthetic meat and milk.

### **SESSION 1B: Frameworks and institutional and research needs for decision making under uncertainty**

**Dr Suzi Kerr** discussed approaches to adaptive decision making under uncertainty. Strategies for investing under uncertainty include delaying investment until more information becomes available, investing in shorter-lived or more adaptable options, and/or focusing on different types of investment (e.g. investment for learning). Real options analysis can help decision makers assess the value of different decisions. There are merits to starting with lower-cost actions now rather than delaying and forcing faster and more costly change later.



Modelling cannot provide crystal-ball predictions. Modelling can build understanding of technical feasibility, sources of mitigation and timing of changes under current options, and help test the performance of short-term strategies under different assumptions.

Key roles for government include establishing targets and ETS settings, making strategic investments, phasing out old technologies, and facilitating learning, coordination and engagement. Policy stability and commitment are essential to build investor confidence. Financial instruments can be used to create effective price signals and provide better price certainty and protection to investors. Strong governance structures are needed to stabilise policy and support social decision making. Two possible governance models are “ferry” (where there is a large centralized process) or “flotilla” (where multiple initiatives are undertaken by different parties with coordination). A “straw man” prototype for governance involves coordinated leadership by a new climate change commission, cross-sector and Iwi leadership groups, and cross-party political leaders; support by expert working groups; and engagement with ongoing networks.

## DISCUSSION POINTS:

### Theme: Social change

1. Western approaches to problem solving can be short-sighted and driven by politics, profits and non-objective science. People need to look beyond GDP-based success and toward wellbeing. We cannot support infinite growth on a finite planet. Our Parliamentary process does not support policy continuity, cross-party collaboration and the highest interests of people and the planet. We need a model more like “doughnut economics.”
2. An alternative paradigm is offered by indigenous peoples’ traditional values systems, approaches to scientific and metaphysical understanding, and decision-making processes. We need boldly different and holistic systems-based approaches to decision making. This change needs to be incorporated into our education systems and normalised in society.
3. We need a change of ethic.
4. We need to give everyone permission to be bold and make mistakes.
5. How might artificial intelligence play a role here? We can already see cases where our human ethics have not kept up with our technological advancement. With the risks, uncertainties and uneven distributional impacts we are facing, it is hard to envisage how AI would tackle the “heart” element of these difficult decisions.

### Theme: Policy and regulation – targets

6. Do we actually know that our destination is domestic decarbonisation? We need to clarify the framing of our goals. Are we aiming to reduce domestic emissions and use forests as offsets? Are we focused on a global responsibility target with use of international carbon markets? Are we looking at all gases, or all long-term gases, or CO<sub>2</sub> only? We may be able to achieve more for the world by investing in cheaper mitigation in other countries, but we also need to make an effective





domestic transition. We should not interpret the Paris Agreement as constraining sensible domestic policies that align with its key goals.

7. It is important to chart the direction for the domestic transition to net zero even if we do not know when and how we are going to get there precisely.
8. We do not necessarily need to see New Zealand's international contributions integrated into our target. They could sit alongside the target.

#### **Theme: Policy and regulation – legislation and institutions**

9. Law has an important role to play. We need climate change legislation that provides a constitutional function to enable better policy making. Good laws make it possible to do good policy.
10. Five desirable elements for climate change legislation are targets, budgets and pathways, policies and measures that are aligned with targets and budgets, sectoral coordination, and rules for the information base.
11. In New Zealand, the targets themselves and their relationship with policy making are not clear. Without both pathways and policies to drive it forward, a target is weak. The RMA is a good example of law that compels a decision maker to deliver on a target. We need to clarify how different institutions will coordinate their effort to address climate change. We have critical information gaps in our understanding of mitigation options and costs.
12. We need to think about what decision-making functions belong to government relative to an independent climate change commission.
13. It can be useful to have independent bodies providing advice. If a new commission is tasked with making major policy decisions, it may not last for very long. An effective commission should improve transparency, credibility and predictability. Adding a new entity creates further complexity and we need to make sure it solves the problems that we have.
14. Decisions with high short-term costs and long-term benefits can be hard politically. Having an independent commission with a long-term view and well-informed advice can help with boosting courage to act and overcoming the ministerial bias toward short-term decision making.
15. There are functions that a commission can and cannot do. Beyond a climate change commission, we need broader processes to engage expertise across New Zealand and internationally. How can we coordinate and fund efforts more broadly and effectively?



16. We could benefit from an effective advocacy institution in New Zealand. This would be distinct from a climate change commission. This would need to be able to litigate, independently coordinate research, and help to change hearts and minds. We need to help build awareness. For example, we could add hard-hitting images to our emission-intensive products. We need positive messages, including co-benefits.
17. We have existing institutions that can be used to greater effect. Local government is one example. We can provide new mandates to existing institutions.
18. We need to improve information sharing by the government. We would benefit from an open-access, sector-by-sector analysis and information tool on our mitigation potential to guide decision making inside and outside of government.
19. Where does the coordination function sit and how can we feed in expertise? What coordination needs to be inside and outside of government?
20. We face a challenge around managing information flows for evidence-based decision making. We need to be able to apply commercially sensitive and negotiations-sensitive information for decision making inside and outside of government. There are also decisions where we do not have to wait for perfect information and we can learn by doing. There is information that goes through the Environment Court that could be useful. A new political climate could help with information previously withheld under the OIA.
21. We need to capture the benefits of localism. Cities can have huge local ambition. The RMA does not enable local and regional authorities to give adequate consideration to climate change and take pride in their contribution. We need to integrate climate change considerations across multiple pieces of legislation.

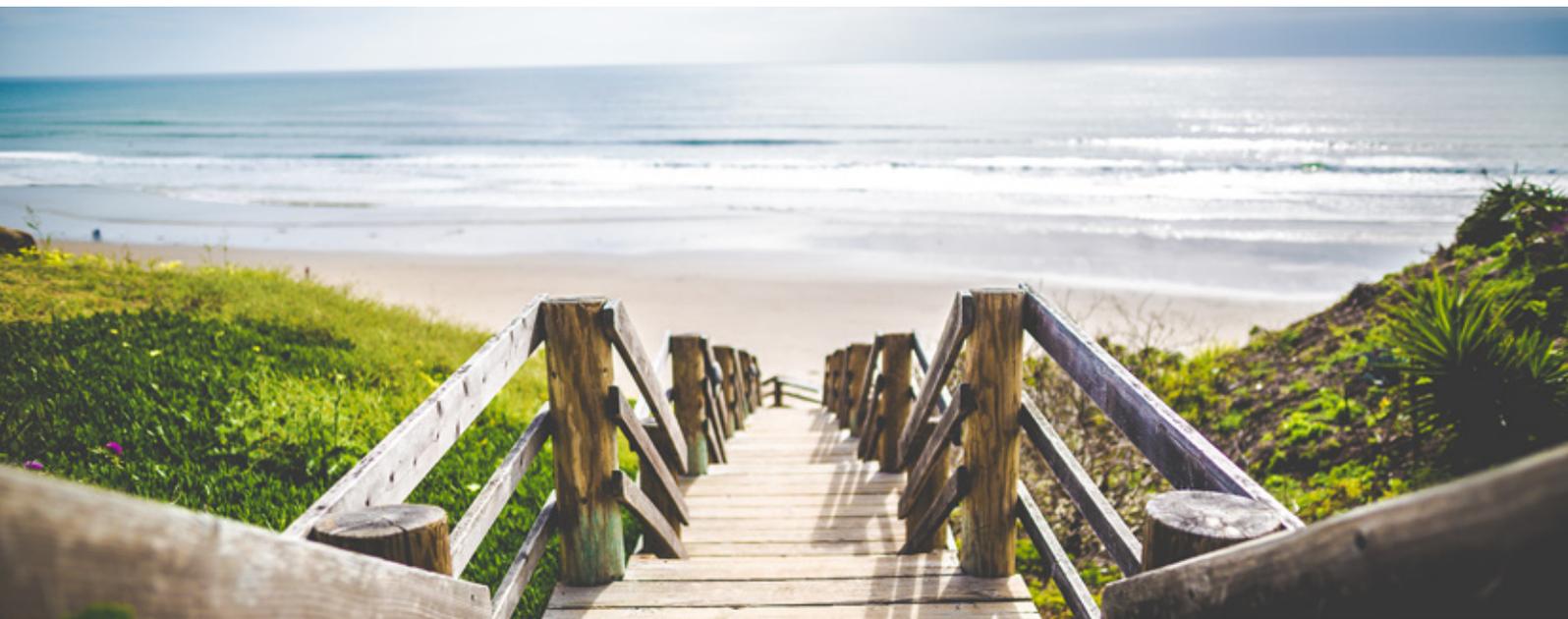
### **Theme: Policy and regulation**

22. We need better evidence-based decision making. We need to be careful about “picking winners” and perverse outcomes. If we can let prices do the heavy lifting, we may find a “least regrets” pathway toward a low-emission economy.
23. The shift to renewable generation offers a case study for change. As the price of carbon increases, it becomes more cost effective to switch fuels to a point but then it gets significantly more expensive to move from ~95% to 100% renewable generation. Because of the nature of our economy, aiming for 100% may counterintuitively lead to higher emissions than 95%. This is not just about fossil fuels; geothermal will become a significant greenhouse problem.
24. Under what circumstances is it appropriate to commit to irreversible decisions as a means of moving forward? Irreversible decisions tend to be easier for governments to make than companies.
25. What is the role for government in addressing emissions from international aviation and shipping? Work is underway in those sectors internationally but the agreements are not yet strong. New Zealand could take additional action in these areas, particularly where our exports and tourism are vulnerable to the approaches taken.
26. We are seeing growing convergence on many of these issues, although the land sector is still contentious. Ten years down the track, we may not find this level of challenge around decision making.

### **Theme: Research and practice**

27. We should do the things that make sense right now, like parking regulations, urban form, insulating our homes, planting on erosion-prone land... How can we get the “no brainers” across the line? Reforming the RMA would help with urban design. A better understanding of behavioural economics and psychology would help.





## CONCLUDING REMARKS

Of the ~65 participants, 51 participated in a survey at the time of roundtable registration. Of those, 88% indicated that New Zealand can achieve a net-zero-emission economy sometime this century, 10% said it cannot, and 2% said they didn't know.

There are possibilities for an ultra-low-emission future even if we cannot get all the way to net zero. We need to clarify what "net zero" means for New Zealand. We don't need to have solutions for the "last 5%" to make real progress now.

For many in the room, climate policy influences their organisation's planning and investment decisions. We have a lot of uncertainty about what the future policy will look like, just like we have uncertainty regarding the climate problem and the climate solutions. How do we make planning and investment decisions today in that context? There are tools for managing risks. We deal with risks and uncertainties every day. The uncertainty does not have to get in the way of getting started with the things that have clear value today.

New Zealand does have viable opportunities to transition to net zero emissions. There are things we could be deploying now and we need to unlock the barriers in the way. Communities sit at the heart of change, and what we do has to work at the community level.

We need consistency and coherence of targets, policies and legislation.

We need to usher out the old at the same time we usher in the new as part of our transitional pathways. How can we accelerate the transition and help those who are most impacted?

In the survey, participants were asked what action would have the most impact right now to place New Zealand on a low-emission pathway. The most common response was improvements to emission pricing. Another prominent cluster was around coherent, predictable government policy. Some suggested concrete actions in the energy and land sectors. Responses are detailed in the table below.

If we start taking steps, the pathway will come.

**We gratefully acknowledge IGPS for hosting the series, and the Aotearoa Foundation and our other funders:**



Motu Economic and Public Policy Research is an independent research institute operating as a charitable trust. It is the top-ranked economics organisation in New Zealand and in the top ten global economic think tanks, according to the Research Papers in Economics (RePEc) website, which ranks all economists and economic research organisations in the world based on the quantity and quality of their research publications.

**SURVEY RESPONSES TO THE QUESTION:**

“In your view, what action would have the most impact right now in supporting an effective transition to a low-emission economy in New Zealand?”

Government policy	Cross-cutting	Carbon price/ETS	Energy sector	Land sector
Having the right central government policies Climate change policy certainty Greater direction from central government Superior public policy Independent Commission and Zero Carbon legislation Cross-party agreement on a zero carbon target and long-term framework Establishment of a plan under the Climate Commission for achieving zero net emissions and its adoption by government Sector by sector analysis of mitigation potential after which set a domestic carbon budget Public funding of major demonstration technology projects	Building a workforce with robust knowledge of emissions measurement, accounting and mitigation techniques Committing to reducing our climate-damaging emissions as quickly as we can to net-zero and recognising that: <ul style="list-style-type: none"> <li>we have many more natural and financial resources than many other nations,</li> <li>the faster we can move the better our future overall,</li> <li>there are important climate co-benefits especially in health,</li> <li>the transition to zero-net emissions must be fair</li> </ul> Fairness means recognising both the Tiriti o Waitangi rights and the needs of NZ’s most vulnerable who are also most threatened by climate changes. Otherwise our transition to zero-net emissions becomes zero emissions colonisation [For] New Zealand to see climate change both as arguably our biggest global health threat, and an unprecedented opportunity this century for real immediate health gains Embedding the notion of sustainability right across New Zealand society	Carbon price across the economy :) Reducing allowances for all sectors in the ETS to reduce supply in the market and force higher carbon prices A significantly higher but credible emissions price Introducing a high domestic carbon price Dramatic increase in the price of carbon An effective (i.e. adequately high) carbon price with an associated quantity cap An effective ETS Setting an ambitious ETS cap Setting a stringent 5 year cap on New Zealand’s ETS, including agricultural emissions ETS: Bring in agriculture Bring agriculture into the ETS, make carbon price unable to go down and make all emitters buy enough credits to fully offset their emissions Adding a high and rising shadow cost of carbon to government and business investment decisions	Electrification of the transport sector Adoption of EVs EVs Aggressive electrification of the transport sector (incl. push to electric maritime) Transport: Phase in of Feebate system on internal combustion vehicles. Increase active and public modes (taking into account advent of e-bikes). Freight to rail Changes to land transport Motor vehicle GHG emissions standards Reducing personal trips in private motor vehicles run on fossil fuels Target areas of greatest fossil fuel use (transport, industrial and electricity production). Get on with low cost opportunities, more investigation of options and risk reduction for less certain areas Deep electrification of the energy system coupled with greatly increased renewable electricity supply build Industrial heat: Regulations designed to phase out use of coal Moving all energy to renewable sources Growing liquid fuels Ending fossil fuel exploration, mining, use and export	[See Carbon price/ETS for comments on bringing agriculture into the ETS] Forestry: Increase incentives and expand planting Greater research into cost effective solutions to reducing agricultural emissions Land use change Collaborative planning for a transition in the land-based industry sector On farm environmental (soil, water, air) monitoring, by farmers To support agricultural innovation Aggressive push for afforestation

