



New Zealand's transition to a low-emissions economy

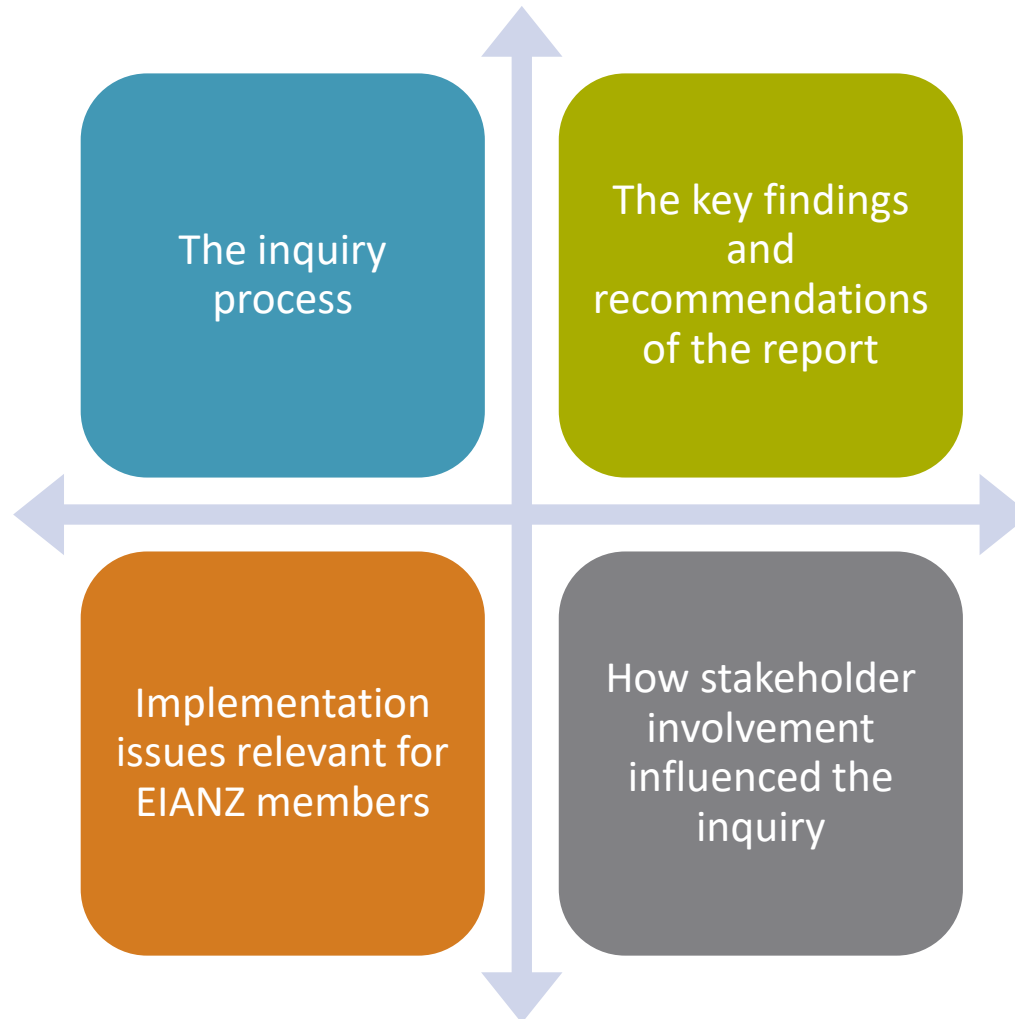
Dr Amelia Sharman, Principal Advisor, on secondment to the Interim Climate Change Committee

EIANZ Symposium, 14 September 2018

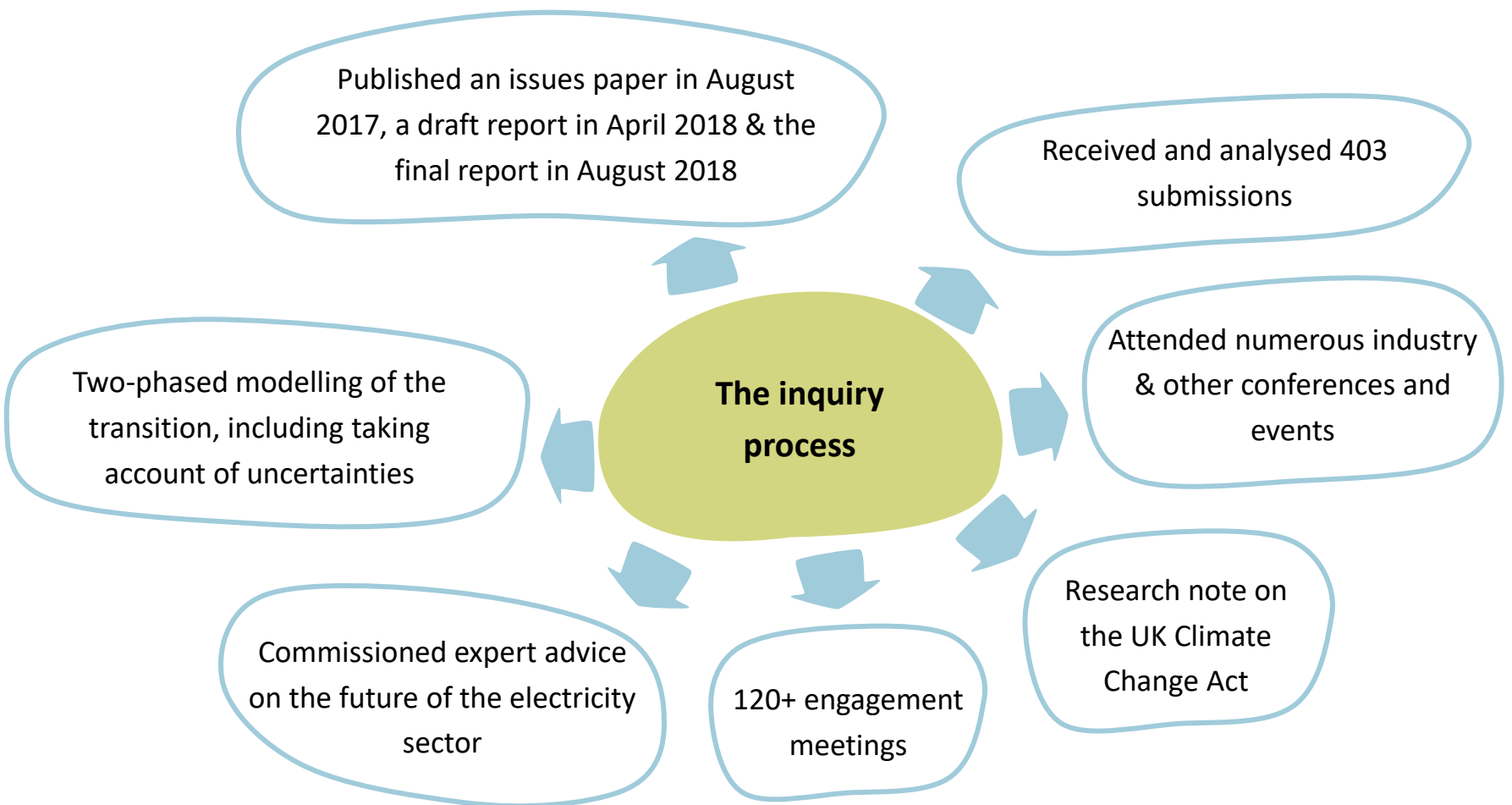
Inquiry into New Zealand's transition to a low-emissions economy

How New Zealand can reduce its domestic greenhouse gas emissions through a transition to a low-emissions economy, while at the same time continuing to grow incomes and wellbeing.

Today's presentation



The inquiry process



The inquiry process

Published an issues paper in August 2017, a draft report in April 2018 & the final report in August 2018

Received and analysed 403 submissions

Two-phased modelling of the transition, including taking account of uncertainties

Attended numerous industry & other conferences and events

Commissioned expert advice on the future of the electricity sector

120+ engagement meetings

Research note on the UK Climate Change Act

The final report: Five parts

1: Setting the scene

Introduces the inquiry and provides context for NZ's low-emissions transition (eg, key emitting sources and trends, and NZ's existing commitments)

2: Low-emissions pathways

Identifies possible future pathways (from modelling commissioned for the inquiry) and examines the nature of major economic and social transitions

3: Policies and institutions

Focuses on cross-cutting policies and institutions pervasive across the economy (eg, laws, emissions pricing, innovation, an inclusive transition)

4: Emissions sources and opportunities

Analyses mitigation opportunities in land use, transport, electricity, heat and industrial processes, waste and the built environment

5: Achieving a low-emissions economy

Focuses on the immediate actions that Government must take to achieve a successful transition

To achieve a low-emissions economy NZ needs:

STABLE AND CREDIBLE
CLIMATE POLICY AND INSTITUTIONS



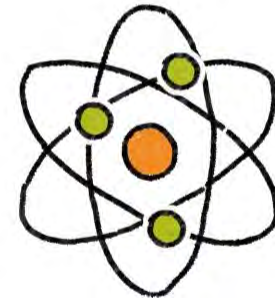
Four pillars

1. EMISSIONS
TRADING SCHEME

2. LEGISLATION
AND INSTITUTIONS

3. COMPLEMENTARY
REGULATIONS
AND POLICIES

4. INVESTMENT
AND INNOVATION



Four pillars

Emissions pricing

- Reform the structure of the NZ ETS, (eg, through setting yearly quantity caps) and increase its coverage to include N₂O from agriculture
- Price biogenic CH₄ (either in a dual-cap NZ ETS or a CH₄ quota system)

Laws & institutions

- New climate legislation, with separate long-term targets and emissions budgets for short- and long-lived gases
- An independent Climate Change Commission to advise government

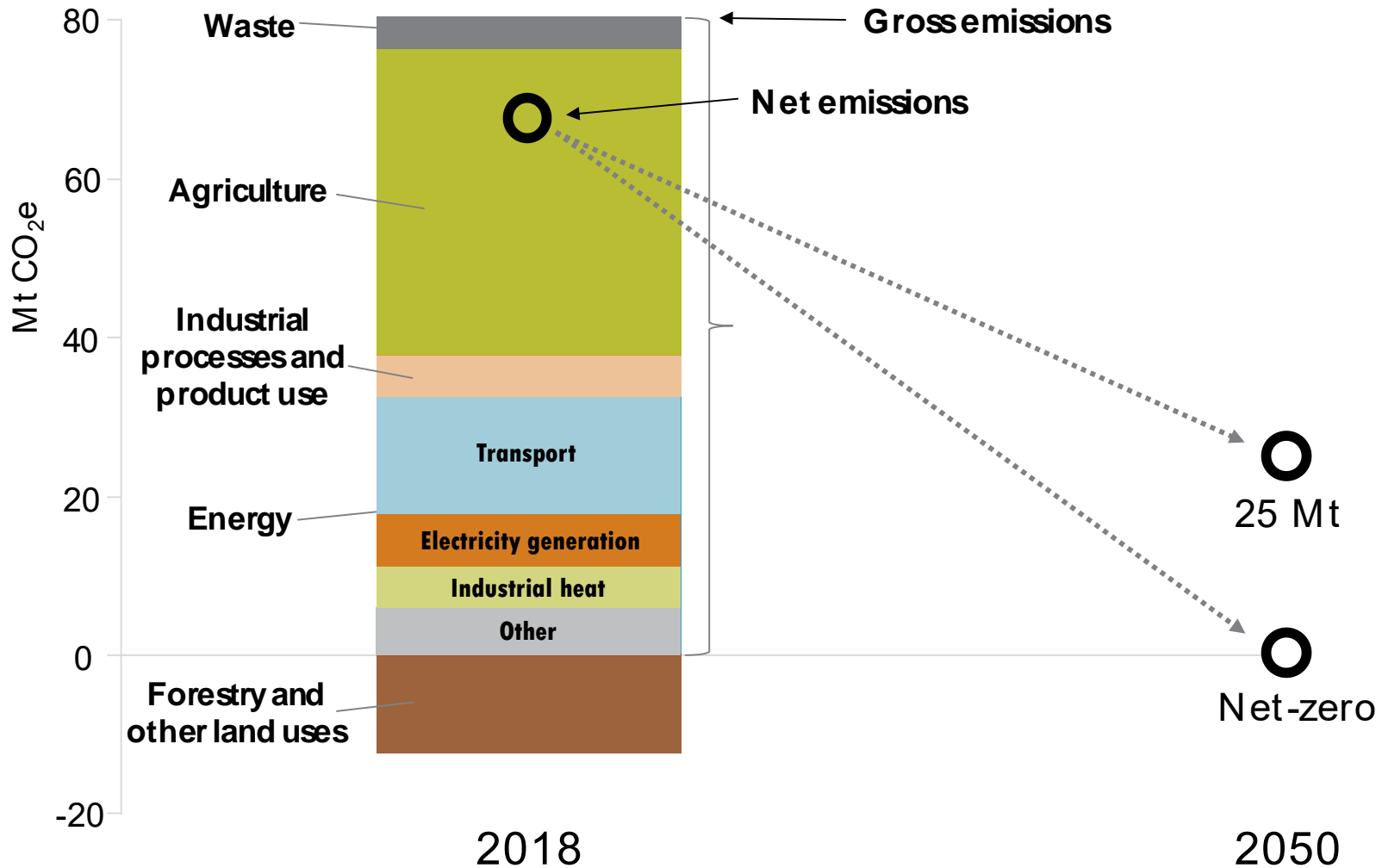
Regulation & policies

- Use prices (eg, feebate scheme for transport and increase the level of the waste disposal levy)
- But other supportive regulation will be needed eg, in electricity distribution, transport and waste etc.

Innovation & investment

- Substantially increase funding for innovation into clean technologies and agricultural emissions mitigation
- Promote low-emissions investments (eg, by mandatory financial disclosure of climate risks)

NZ's challenge to get to net-zero emissions



Key changes that need to occur

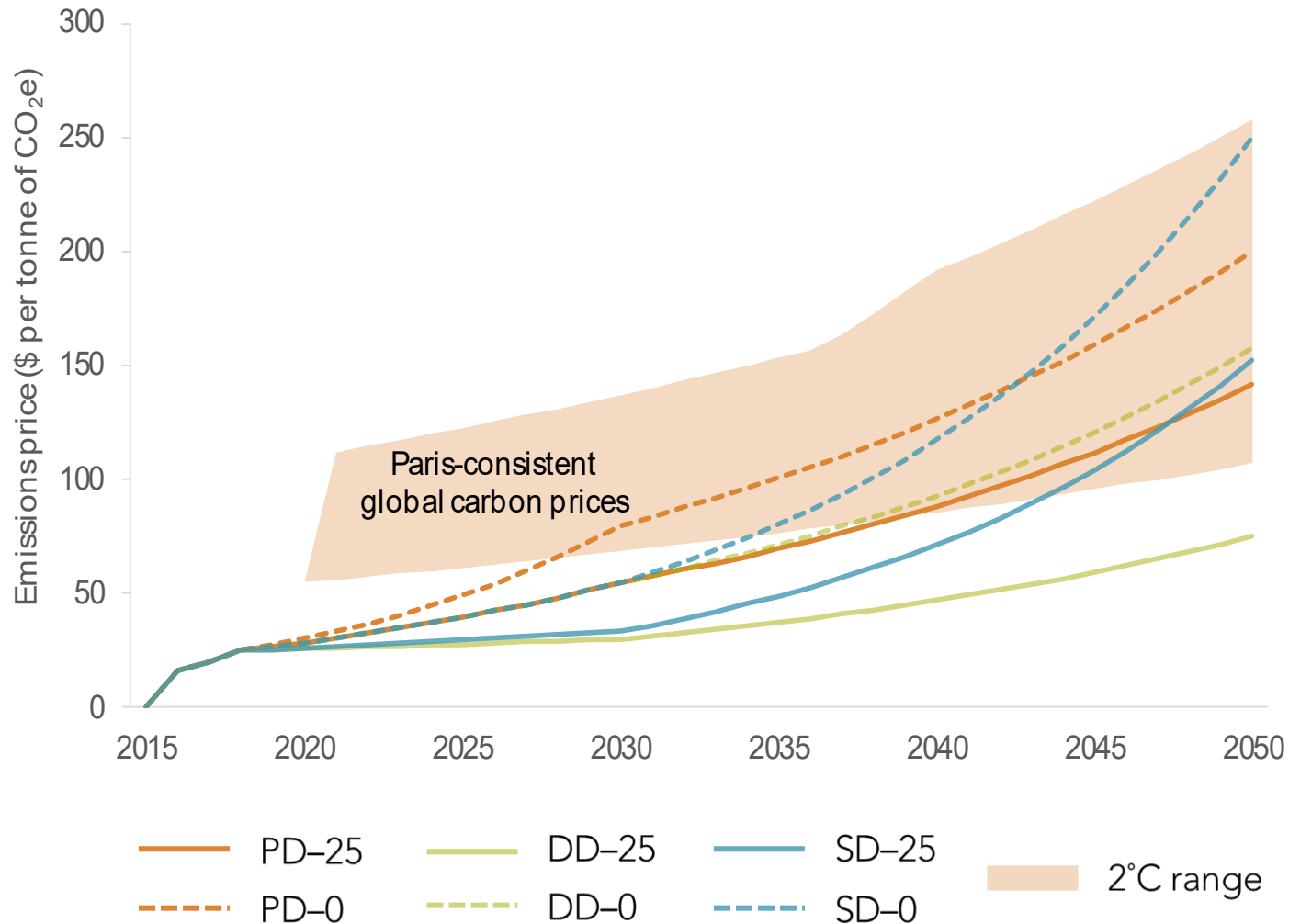
1. Replace fossil fuels with electricity and other low-emissions fuels

2. Significant afforestation

3. Changes to the structure and methods of agricultural production



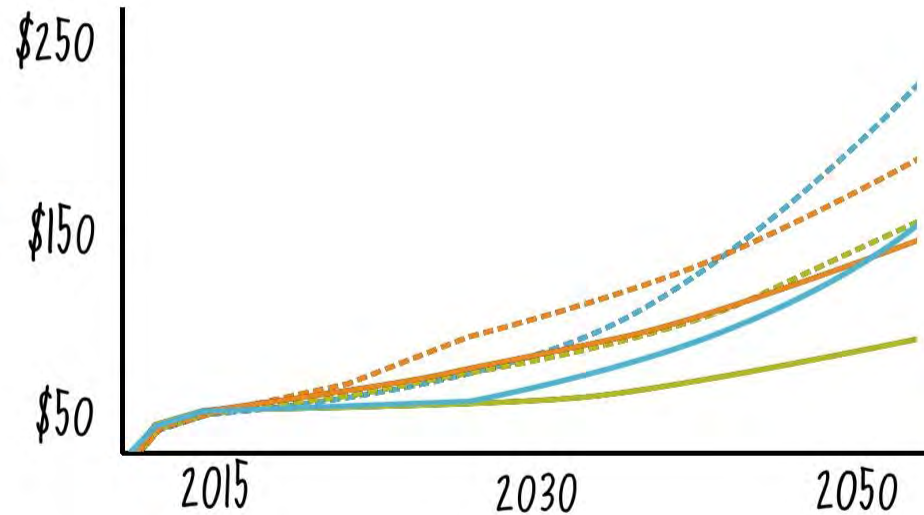
Let an effective emissions price do its work



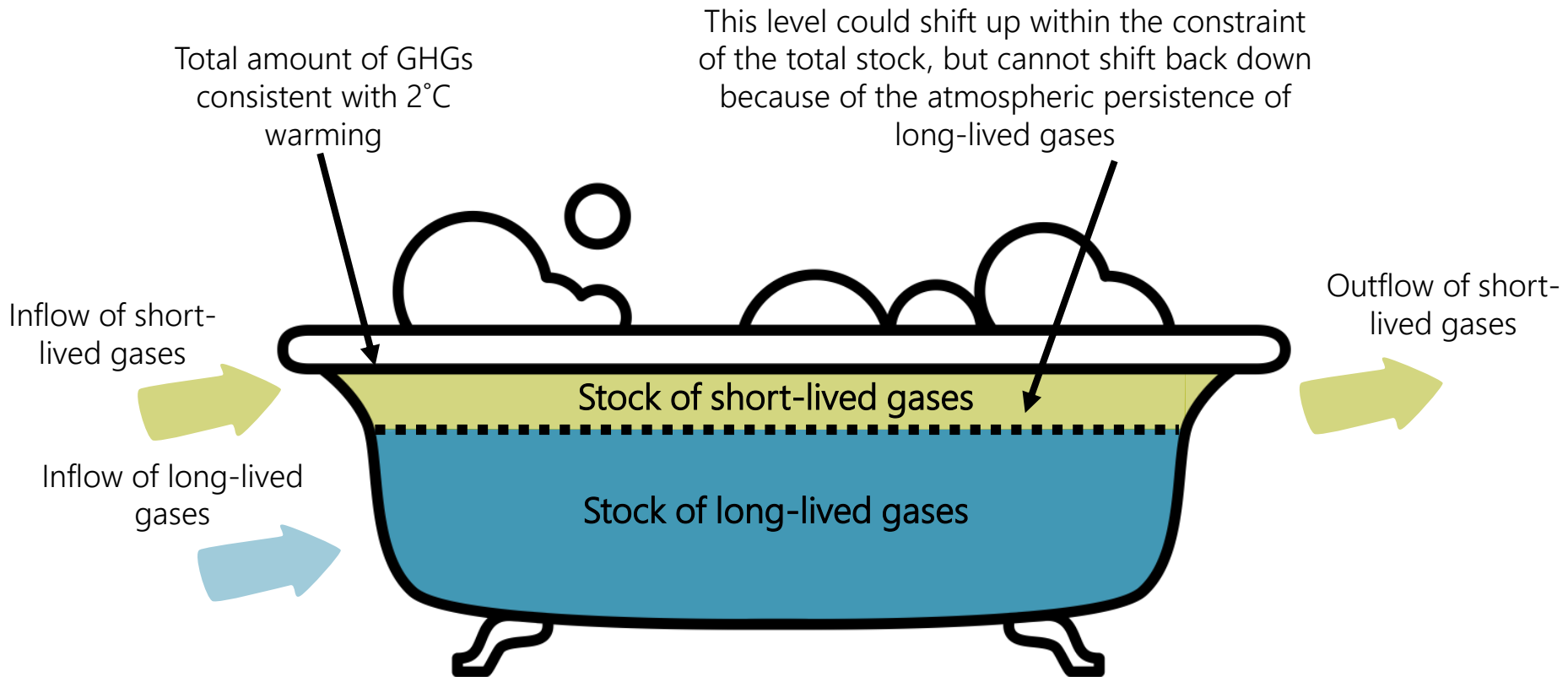
Setting New Zealand up for the future



\$75 - \$200+ PER TONNE BY 2050

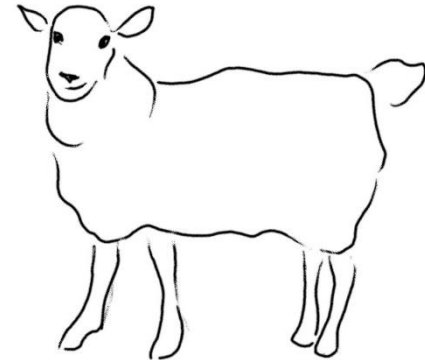


Short- and long-lived gases



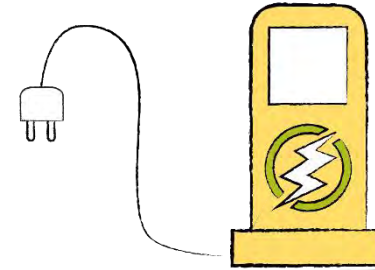
The long-lived gas steady state requires that inflows are net-zero.
The short-lived gas steady state requires inflow = outflow.

Implementation issues: Land use



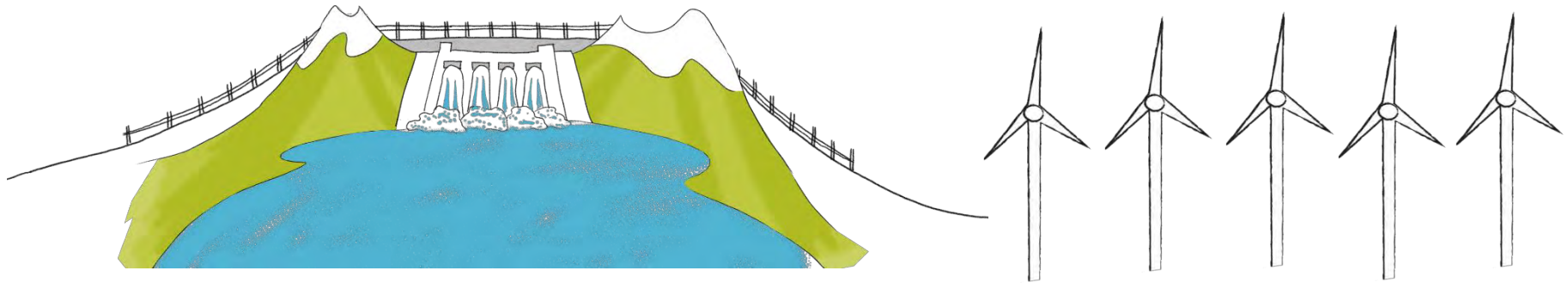
- Substantial increase in afforestation (between 1.3 and 2.8 million ha by 2050), mostly from marginally profitable sheep and beef land, and more in some regions than in others
- Rapid growth in horticulture (from a relatively small base)
- Investments needed in upstream supply capacity, new farming methods, and downstream processing, distribution and marketing capacity
- Include nitrous oxide in NZ ETS and biological methane in an emissions pricing system (either a dual-cap NZ ETS or a methane quota system)
- Specific issues around Māori land ownership and tenure limiting access to investment capital

Implementation issues: Transport



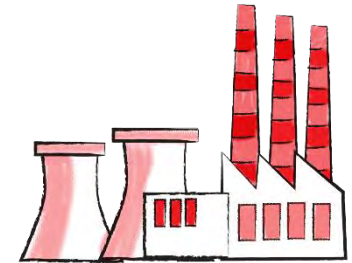
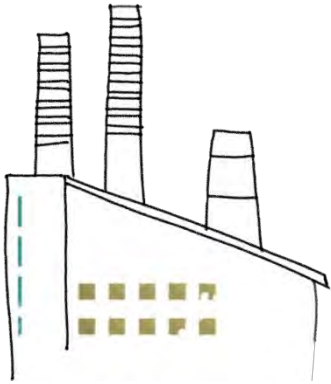
- Electric vehicles (EVs) are the most significant opportunity to reduce transport emissions. Because of the slow turnover of the vehicle fleet in New Zealand, fast early uptake is critical
- A feebate scheme to encourage consumers to purchase lower-emitting vehicles (including EVs) and emissions standards for vehicles entering the fleet. Support for innovation is important for heavy transport
- Shifts to other low-emitting transport modes (eg, public transport and cycling)
- Better pricing of other vehicle externalities (eg, congestion and air pollution). Government should make emissions reductions an ongoing strategic focus in transport investment

Implementation issue: Electricity



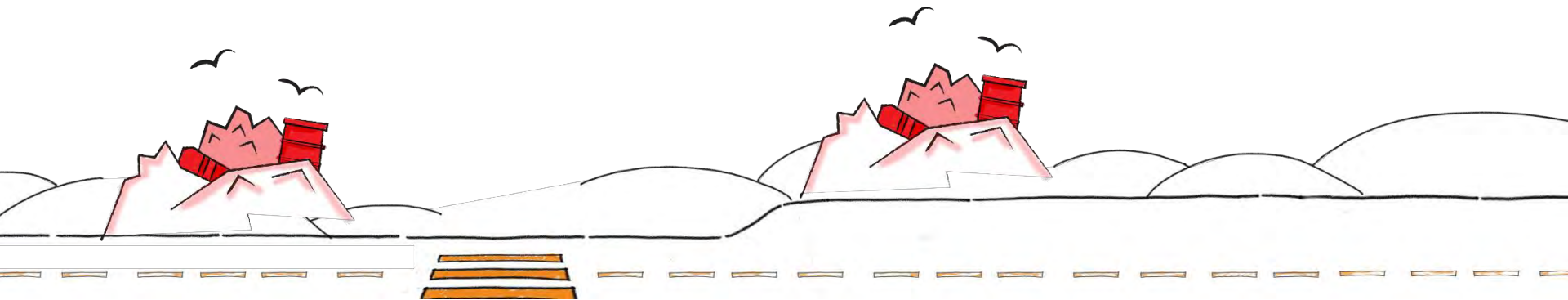
- Low-emissions electricity is central to the transition. Electricity demand will increase greatly as other parts of the economy replace fossil fuels with cleaner electricity
- New Zealand has abundant unused sources of renewable energy (especially wind but also solar) – difficulties in obtaining resource consents under the RMA must be addressed (eg, via strengthened NPS-REG and NPS-ET)
- Demand-side management (eg, time-of-use pricing) and distributed energy (eg, solar power and batteries) will play an increasingly important role in complementing grid-scale renewable energy generation
- The emissions price should guide new investments (and decommissioning of existing) in electricity generation, and innovation should not be hampered by statutory provisions

Implementation issues: Heat and industrial processes



- Energy and process efficiency improvements can materially reduce emissions, but some fuel-switching will be required
- Emissions prices will drive a switch to low-emissions heat plants (eg, electrification or using sustainably sourced biomass), but this change could be slow due to the long lifetimes of capital assets
- Support from government is also needed (EECA to help address information and coordination barriers, and procurement rules should limit the installation of new fossil-fuel powered plant for low-temperature heat in publicly owned buildings)
- Barring technological breakthroughs, opportunities to significantly reduce industrial process emissions from iron & steel, cement and aluminium production are limited. The viability of carbon capture and storage in New Zealand remains unclear

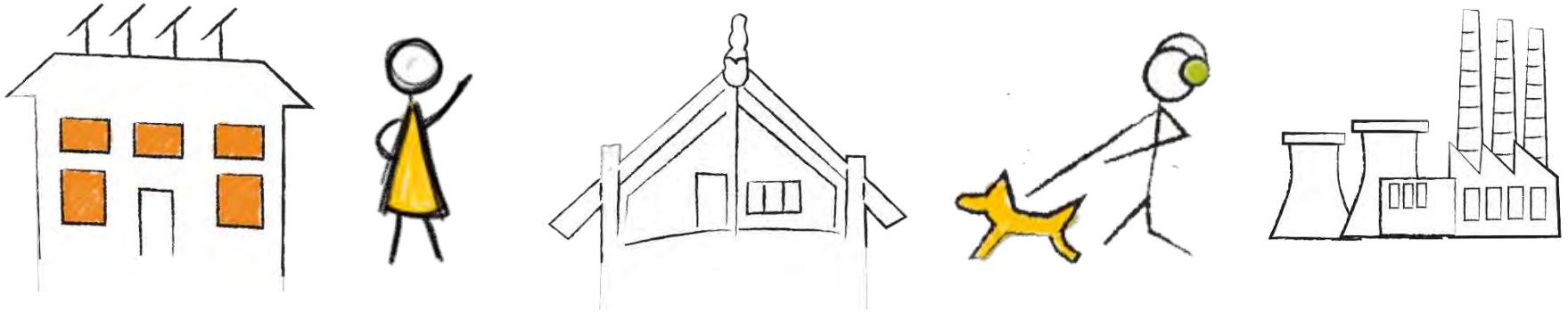
Implementation issues: Waste



- Better waste data should be the focus of efforts to reduce waste emissions –significant uncertainty exists around emissions sources
- Along with agricultural methane, waste methane should be included in an emissions pricing system (either a dual-cap NZ ETS or a methane quota system)
- The waste disposal levy should be extended and the rate (especially for active waste) increased over time. Councils must also be supported to reduce emissions at unmanaged solid waste sites (eg, farm dumps)
- Including wastewater treatment plants in an emissions pricing system should only occur after the relevant recommendations of the Three Waters review have been enacted
- A circular-economy approach has significant potential to reduce emissions by acting as a platform for innovation

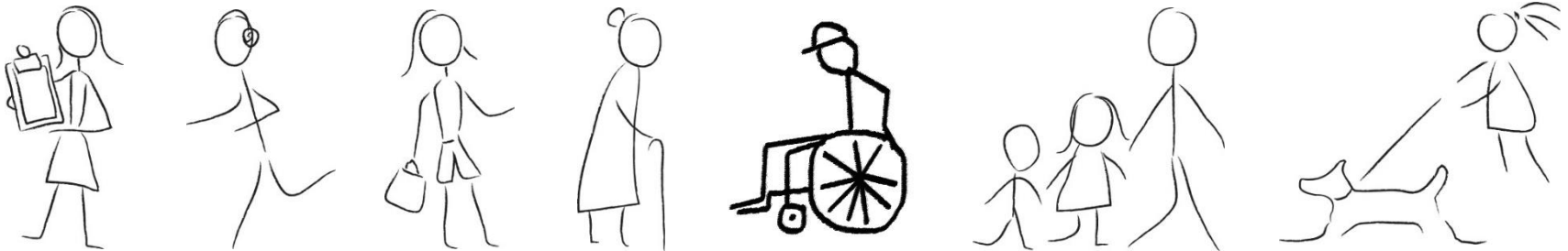


Implementation issues: The built environment



- Forthcoming reviews of the Building Code – they should allow for building materials and techniques with low embodied emissions
- Improving building energy efficiency provides a valuable opportunity for tempering electricity demand (particularly during peak times)
- Increasing urban density can reduce vehicle emissions and lower operational and embodied emissions in housing per person. Councils should review (and remove if justified) barriers to higher-density development
- The life-cycle emissions of infrastructure should be taken into account. As a transitional measure, government agencies should use a shadow emissions price when assessing options for new infrastructure investment

Stakeholder involvement



Submissions on, and engagement meetings about, the issues paper substantially influenced the path of the inquiry

From draft to final, many changes based on stakeholder input, including:

- The nature of legislated emissions reduction targets (no longer recommended a single, overarching all-gases mitigation target)
- Determining the point of obligation for agricultural emissions
- Biofuels and process heat
- National Policy Statement on Renewable Electricity and amendment to the competition regime for electricity distribution (stronger incentives for innovation)
- Scrappage scheme for fossil-fuel vehicles (aimed at low-income households)

Concluding remarks

- The low-emissions transition will be **challenging but achievable**
- New Zealand needs to act early to avoid high-emissions lock-in – delaying action is likely to make the transition costlier and more abrupt and limit viable and cost-effective mitigation options in the future
- Support is needed for communities facing significant transition costs (eg, through the tax and welfare system, and via retraining opportunities)



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www.productivity.govt.nz/lowemissions