Sponsors:

E-MISSION POSSIBLE

Unlocking our low-emission future:

29 November 2017

Motu Presentation

Catherine Leining on low-emission pathways

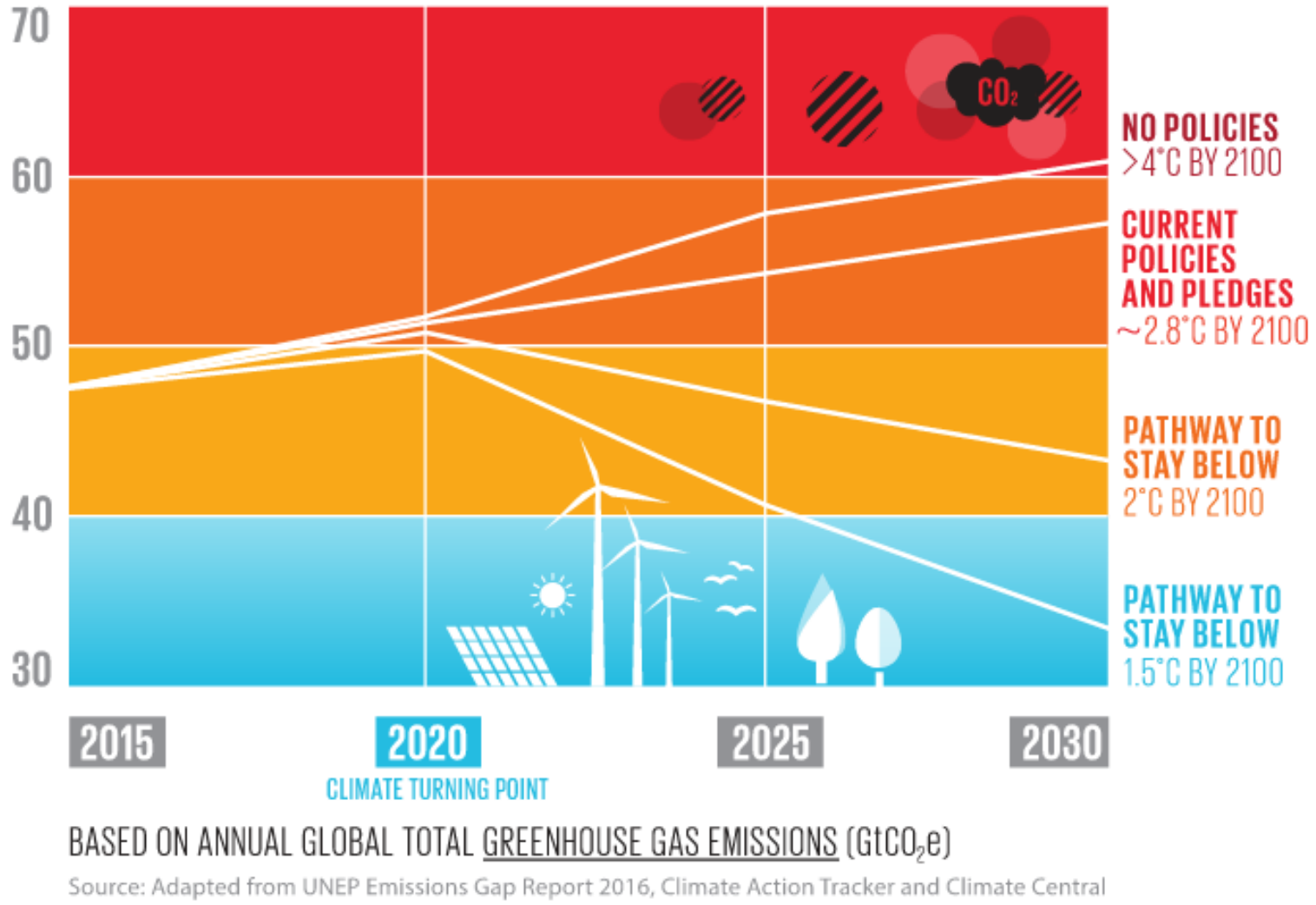
Funders:

Topics

1. Mitigation needs
2. NZ's low-emission opportunities
3. Pathway risks
4. Implications for targets
5. Shaping the solution space

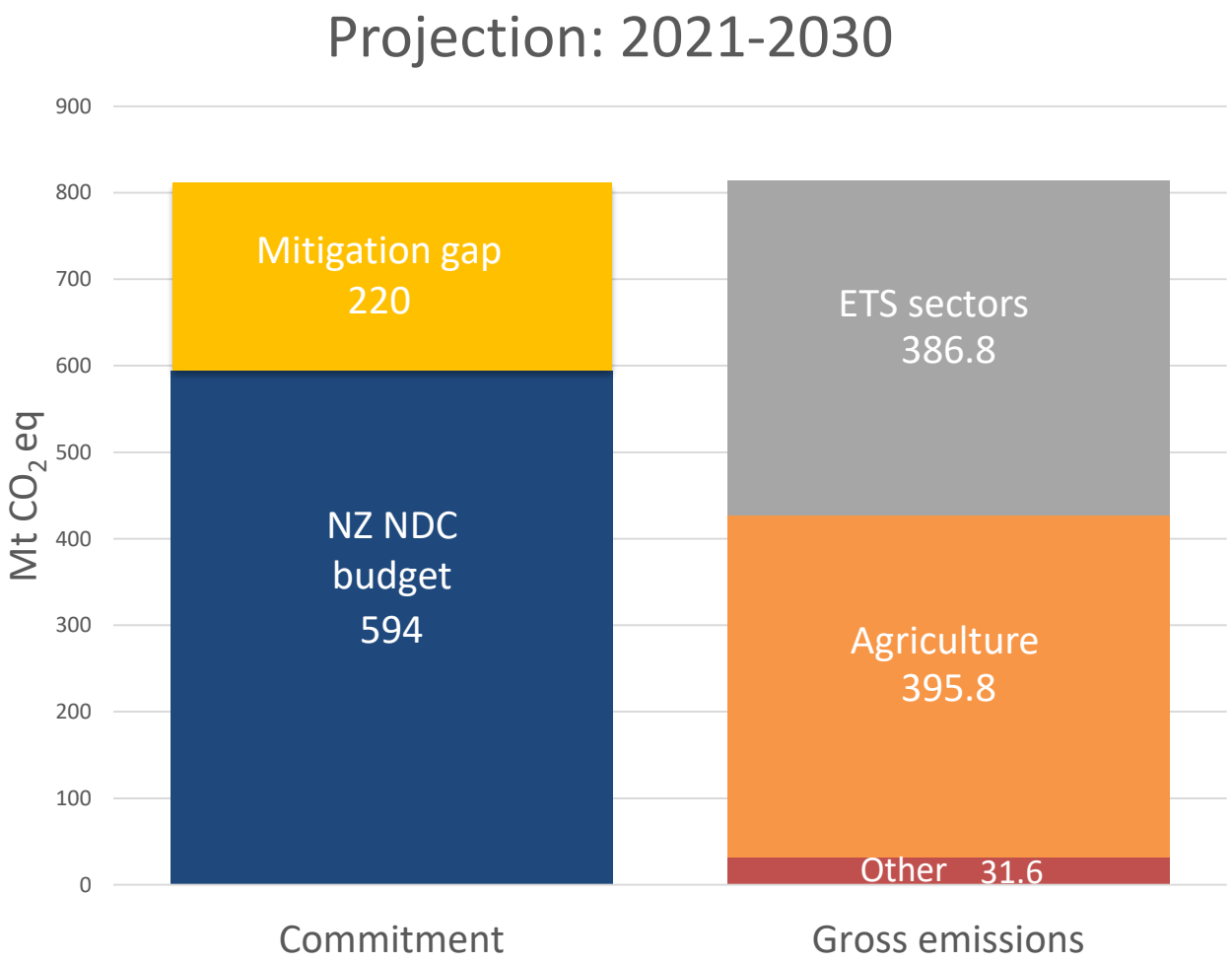
Disclaimer: This presentation does not necessarily reflect the views of or endorsement by Low-Emission Future Dialogue participants, their organisations, or programme funders.

Bending the global curve



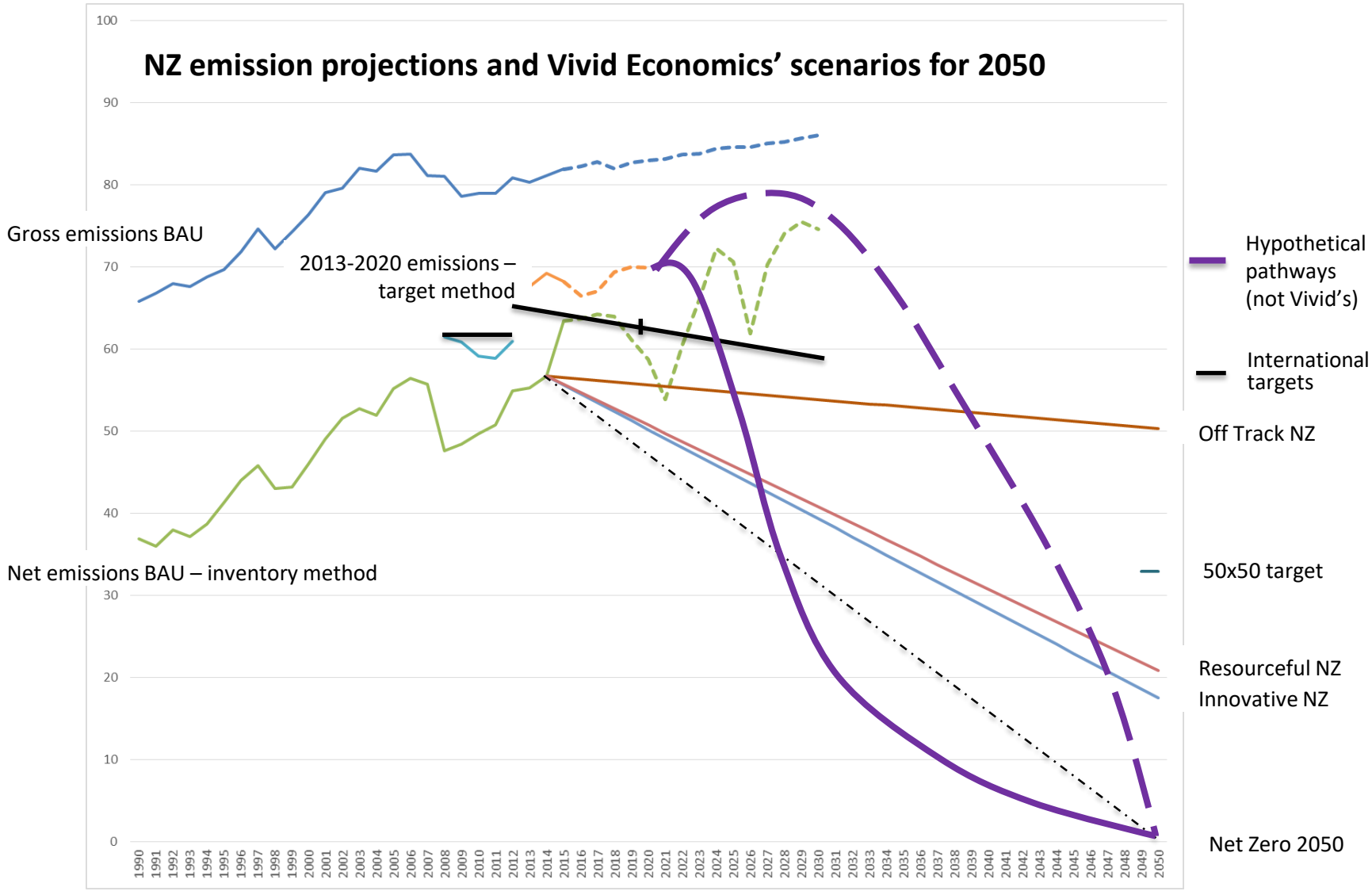
Source: Carbon Tracker Initiative et al. (2017). *2020: The Climate Turning Point*. Mission 2020.

We face a mitigation gap to 2030…



Source: MfE (2017). *The NZ ETS and New Zealand's Provisional Carbon Budget for 2021-2030.*

…and are not on track for 2050



Note that actual emissions and future targets are based on the 1990-2014 National GHG Inventory.
Source: Adapted from Vivid Economics (2017). *Net Zero in New Zealand. Report commissioned by GLOBE-NZ.*

Climate policy framework

Past objective: Least-cost compliance with modest international responsibility targets

= *Incremental change*

New context: Joining global decarbonisation

= *Transformational change*

LEF Dialogue process: Backcasting

Bold sector visions for zero net emissions

Sector characteristics supporting the vision:

Balance will vary under different pathway choices

Sector milestones producing the characteristics:

Technology, policy/regulation, business, behaviour

Sector actors and actions producing milestones:

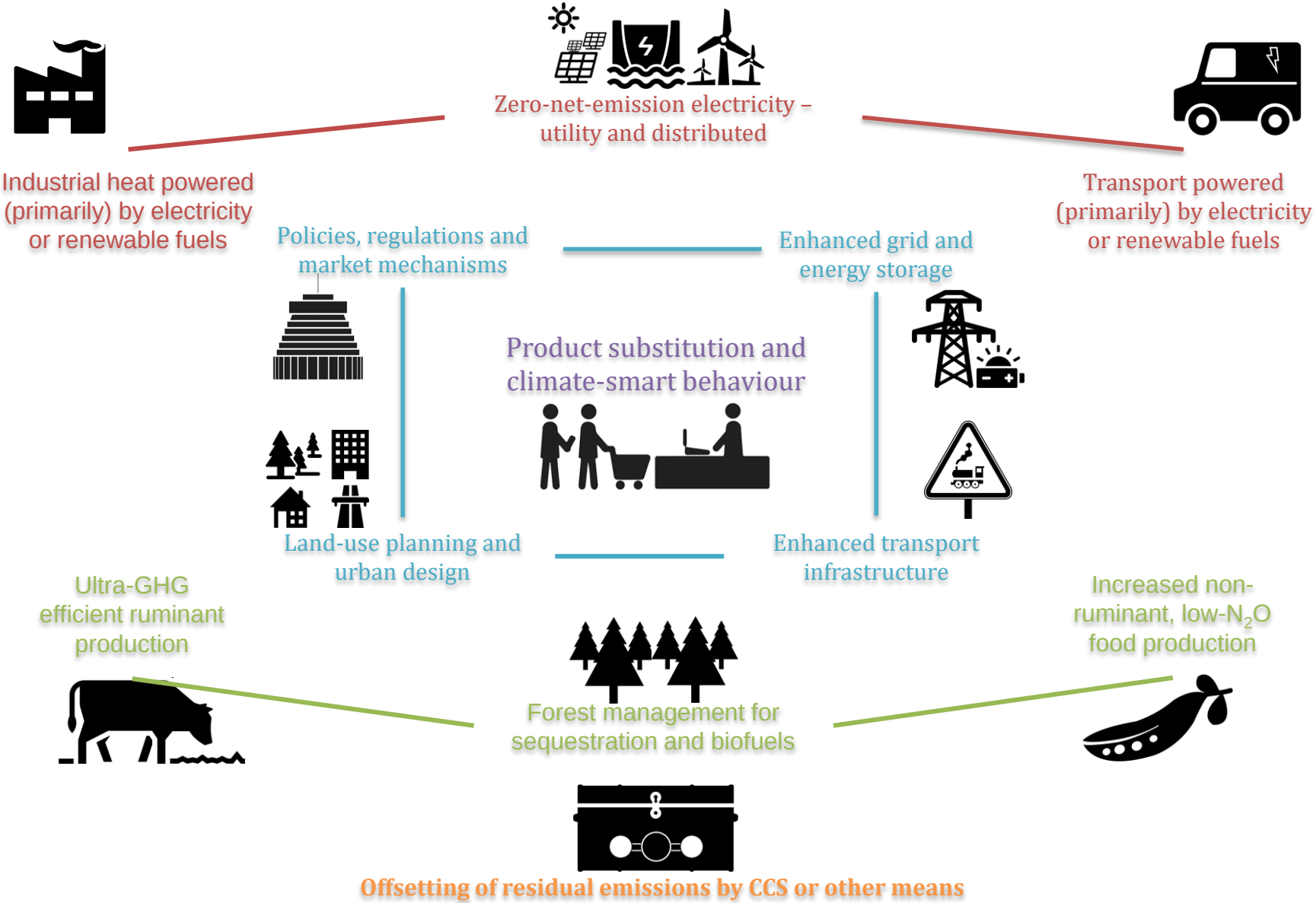
Who made change happen and how did they do it?

A fresh climate narrative

New Zealand is responding to climate change with smart solutions that safeguard our future, enable a thriving low-emission economy, create new opportunities for our communities, and can be shared with other countries.

We are accelerating this transition by decarbonising our stationary energy and transport sectors, improving energy efficiency, making our agricultural production ultra-efficient, enhancing forest sinks, and strengthening partnerships across sectors.

Driving a zero-net-emissions future



Range of possible futures

Stationary energy

Renewable electricity:
utility, distributed

Storage:
hydro lakes, batteries, hydrogen, disruptor

Industrial heat:
electric, renewable, hydrogen, disruptor

Energy efficiency, conservation

Carbon capture and storage

Transport

Transport supply:
vehicle technology, networks, infrastructure

Transport demand:
mode shift, urban planning, culture change, technology change, disruptor

Transport energy:
electricity, biofuel, hydrogen, disruptor

Food production:
ultra-GHG-efficient livestock, zero-CH_4, low-N_2O nutrition
synthetic meat/milk

Reduced food waste

Consumer demand for low-emission food

Agriculture

Pivot points – nodes

Stationary energy

Major gas field discovery

Export carriers for renewable electricity

Aluminium smelter operation

Smart grid technology

Commitment to end energy poverty

Battery technology

Commercially viable CCS

Transport

Sustained change to oil prices ↕

EV costs

Auckland transport investment

Biofuel technology

International shipping supply/ demand/cost

Social norms for vehicle ownership

Rail decommissioning

Lithium shortage

Agriculture

Methane vaccine

Consumer tastes

Tech change/water shortages affect milk powder demand

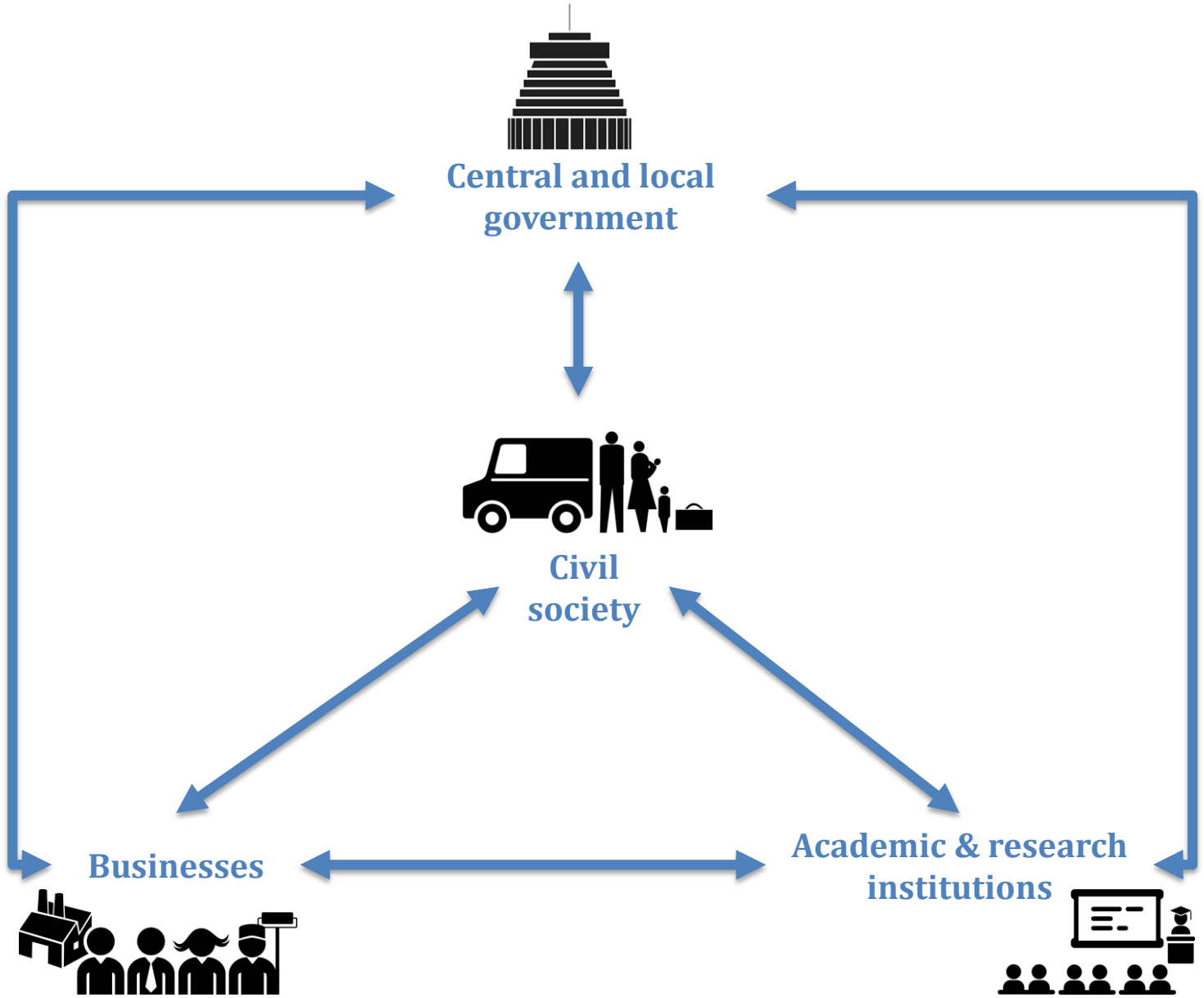
Biomass demand ↕

Fish stock collapse

Pests or disease

Synthetic milk/meat

Who will make change happen?



Sample actions: Industrial heat

- Characteristic: Industrial heat (primarily) is produced with renewable electricity or other non-fossil fuels.
  - Milestone: All boilers are zero-emission
    - Actors and actions
      - Treasury develops policy and legislation for carbon-based fees for commissioning new fossil fuel boilers
      - Finance and Environment Ministers commission officials to calculate the social cost of carbon and ETS trajectories/scenarios
      - Treasury develops fee revenue recycling towards R&D activities
      - Treasury and Motu develop models for tax reform from variable ETS revenue
      - Industrial CEOs assess preferred zero-emission alternatives to industrial heat
      - Industrial CEOs investigate co-location of boilers with biomass and geothermal heat production
      - MBIE creates consortium of CRI and business to research zero emission alternatives to industrial heat
      - MBIE funds contestable research programme funds for low-emission industrial heat production
      - Consumer New Zealand demands higher environmental integrity from emissions-intensive industries
      - Consumer NZ advocates for GHG and water intensity labelling on food

Pathway risks

- Moving too slowly
  - Locking in high emissions
- Moving too quickly
  - Locking out new innovations or generating perverse outcomes
- Disproportionate impacts on businesses and communities
- Uneven supply chain coordination
- Regulatory barriers and inconsistencies
- Politicisation of pathway options
- Uncertainty as an excuse for inaction
  - Climate change science
  - Global response and trade exposure
  - Economic and social impacts of measures

Implications for domestic targets

Targets without pathways are just numbers – and can be scary numbers

Pathway progress will not be linear and will be unpredictable

Re-thinking targets

- Multiple dimensions/indicators across sectors – not just emissions per year
- Linkages to pathways, actions and actors
- Taking responsibility for NZ's whole footprint:
  - Cumulative emissions, consumption emissions, fossil fuel production for export and international transport
  - Important for business as well as government
- Evolution over time

Shaping the solution space

1. Our destination is domestic decarbonisation, and any number of pathways could take us there.
2. This is not just about government; we need many kinds of actions by many kinds of actors.
3. Multidimensional targets can encourage more specific and ambitious actions.
4. We need to balance risks of action and risks of inaction under uncertainty.
5. An adaptive approach is supported by:
   a. Building our capacity
   b. Enabling experimentation
   c. Leaving desirable options open
   d. Avoiding lock-in to high-emission pathways.

Where do we go next?

"In times of change, learners inherit the earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists."

Eric Hoffer

Social writer and philosopher

Key questions for the future:

- What is the case for accelerating domestic transformation?
- What actions are needed now to preserve desirable pathway options, and where can we be confident enough to start making choices?