

# Our Modelling

November 2020



**He Pou a Rangi**  
Climate Change Commission

# Outline

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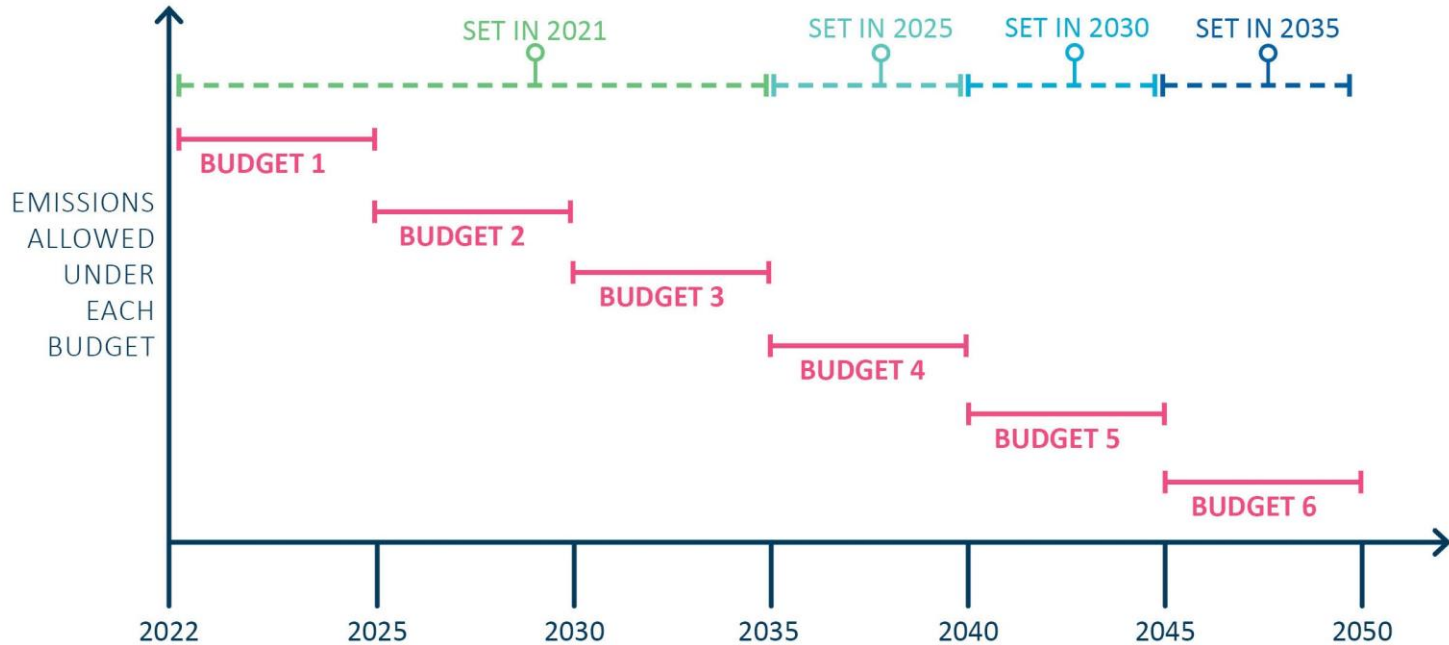
- The Commission's first advice
- Analytical approach
- Models

# The First Advice

## Commission will advise on four areas

- Level of the first three emissions budgets from 2022-2035
- Direction of policy for the Government's Emission Reduction Plan
- Consistency of New Zealand's first NDC with staying below 1.5 degrees of warming
- Eventual reductions in biogenic methane which might be required.

# Budgets to meet the 2050 target



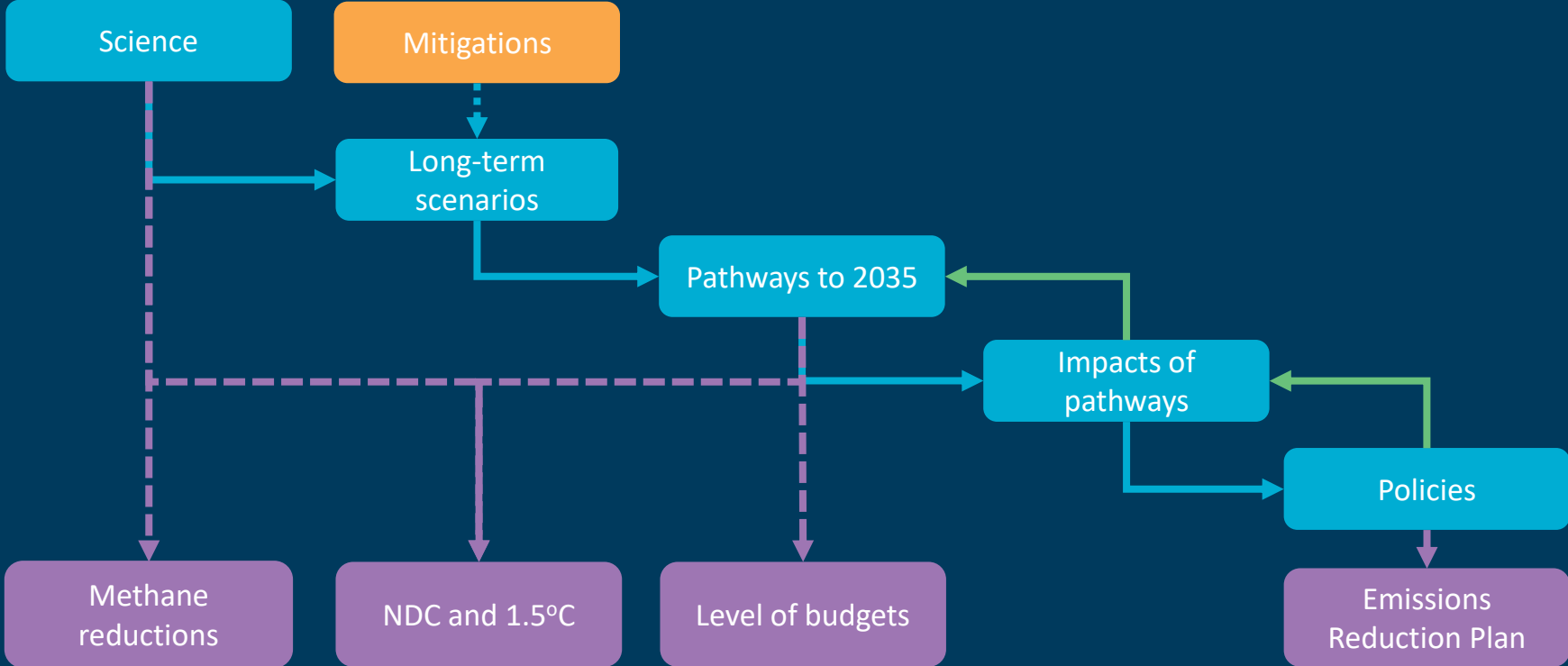
# Considerations in the Act

- Existing technology + anticipated developments
- Technically + economically achievable
- Economic effects
- Social, cultural, environmental + ecological circumstances
- Distribution of benefits, costs + risks between generations
- Crown-Māori relationship

# Analytical Framework



# Analytical Approach



# Science of Warming

**1.5c**  
**GOAL**

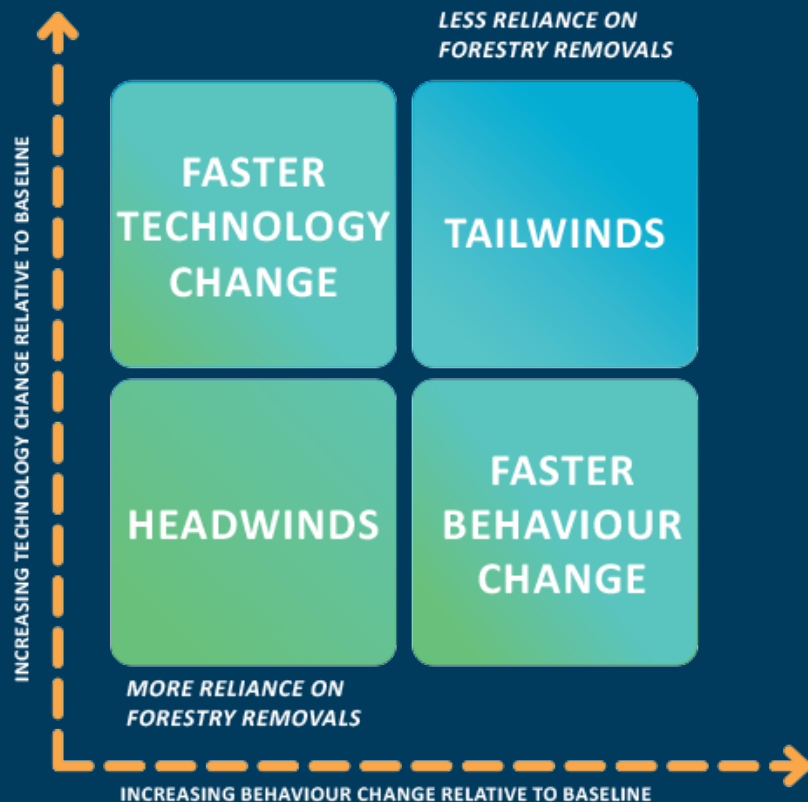




# Scenarios to meet 2050 target

Economic, demographic, social, behavioral and technology changes – all uncertainties.

Our four scenarios allow us to test uncertainty and recommend budgets that can be achieved in a wide variety of future circumstances.



# Pathways to 2035



# Impacts of the budgets

People - Employment, household bills

Groups - Iwi/Māori, low-income

Economy - Growth, incomes, output,  
trade, prices

Generations

Regions / Communities

Environment / Ecology

# Policies to meet the budgets

- Looking at the direction of policy needed to meet the budgets
- Cross-sectoral: Emissions Trading Scheme
- Sector specific policies
- Pricing and market incentives, behavior change, innovation and technology.



# Models

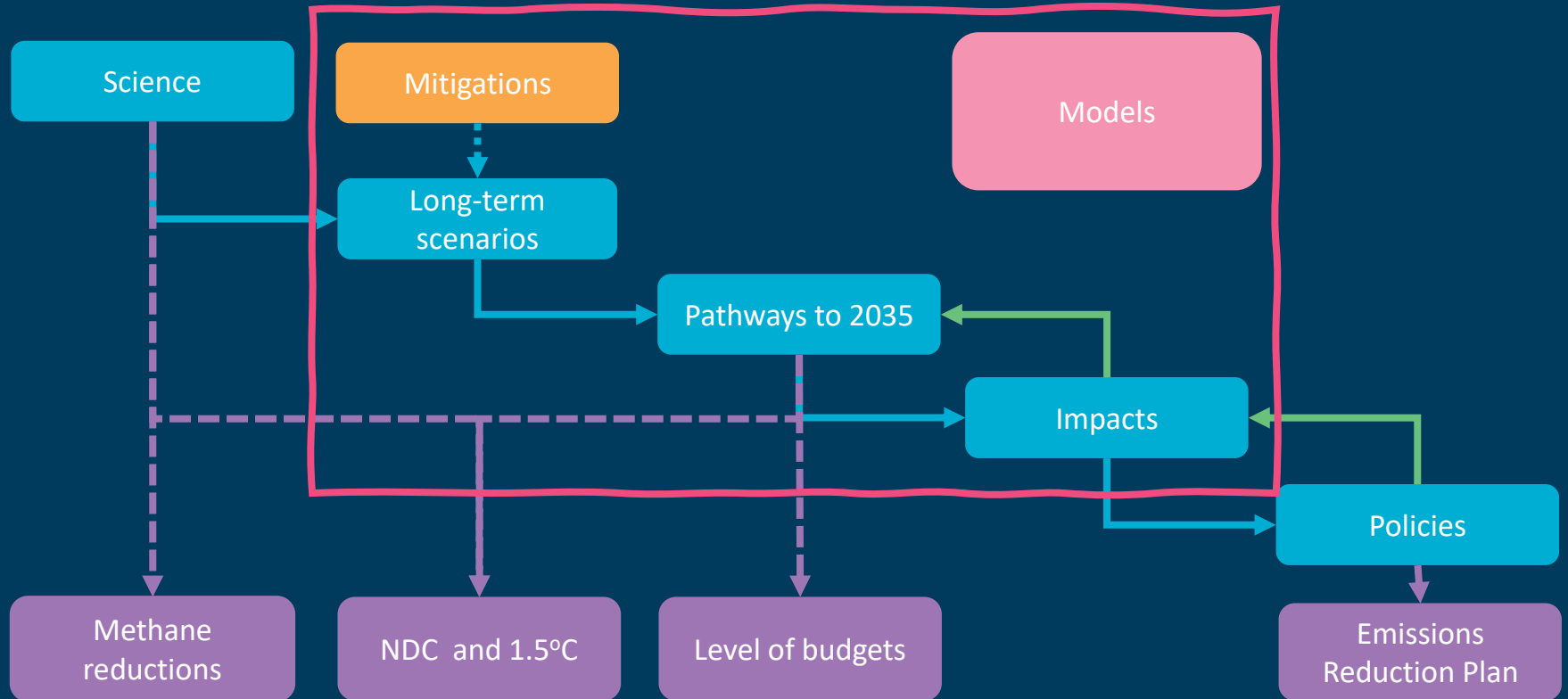
# Using Models

Models are only a tool.  
We need to interpret the outputs carefully.

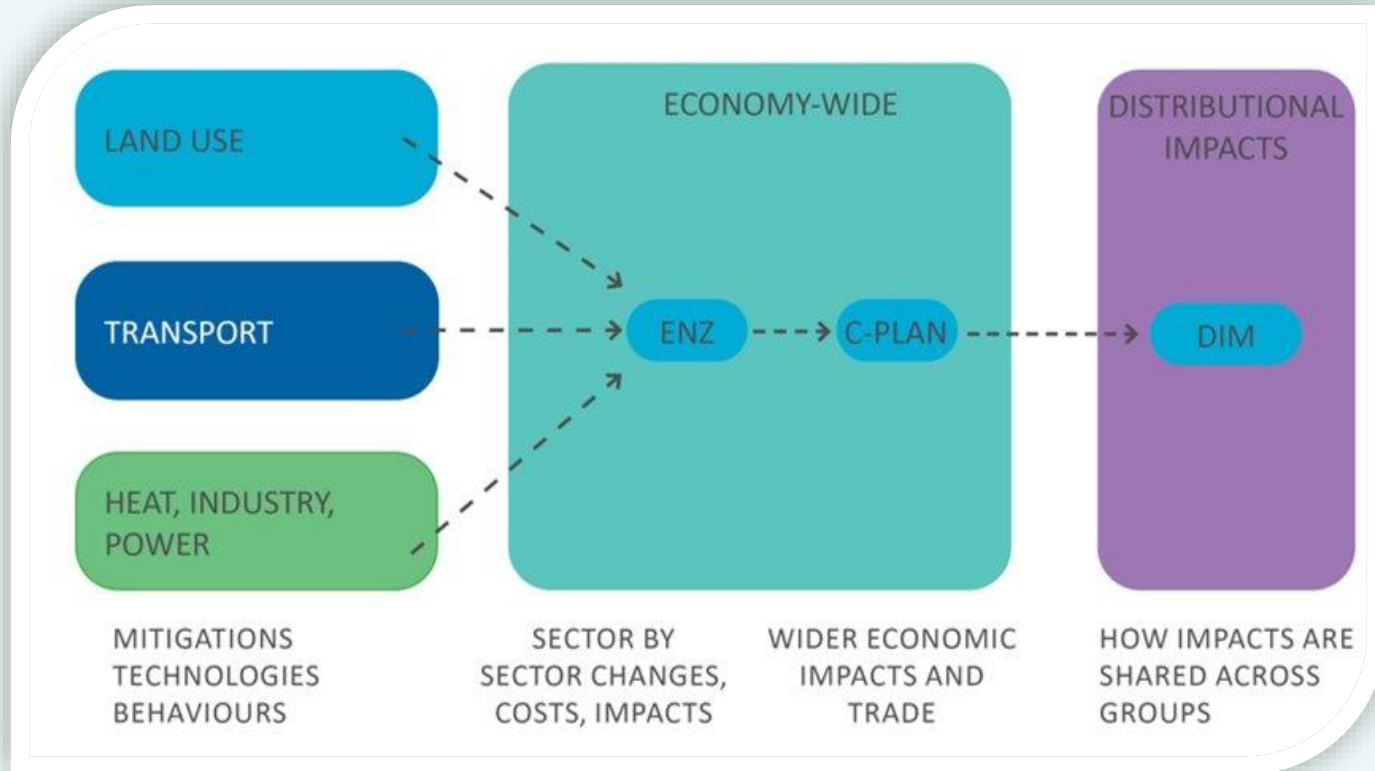
Look to:

- Balance complexity with clarity
- Ensure coherence and consistency within the models
- Be transparent about assumptions
- Recognise their limits

# Where models fit in



# Commission's Models





# Energy and Emissions in New Zealand (ENZ)

- Detailed 'bottom up' model of main emitting sectors:
  - Heat, industry and electricity (including product use)
  - Land use (agriculture and forestry)
  - Waste
  - Transport
- Detailed representation of technology/behaviour
- Where evidenced, predicts decision making based on economics
- Captures dynamics of sector  
(e.g. fleet turn-over)
- Represents connections between sectors  
(e.g. increase EV => increase electricity demand)

# Climate Policy Analysis (C-PLAN)

- ‘Top down’ whole of economy model
- Specifically designed for understanding climate policy
- Represents only key technologies directly
- Used to understand wider impacts of meeting budgets (impacts on economy)
- Assumptions/inputs aligned with ENZ

# Distributed Impacts Model

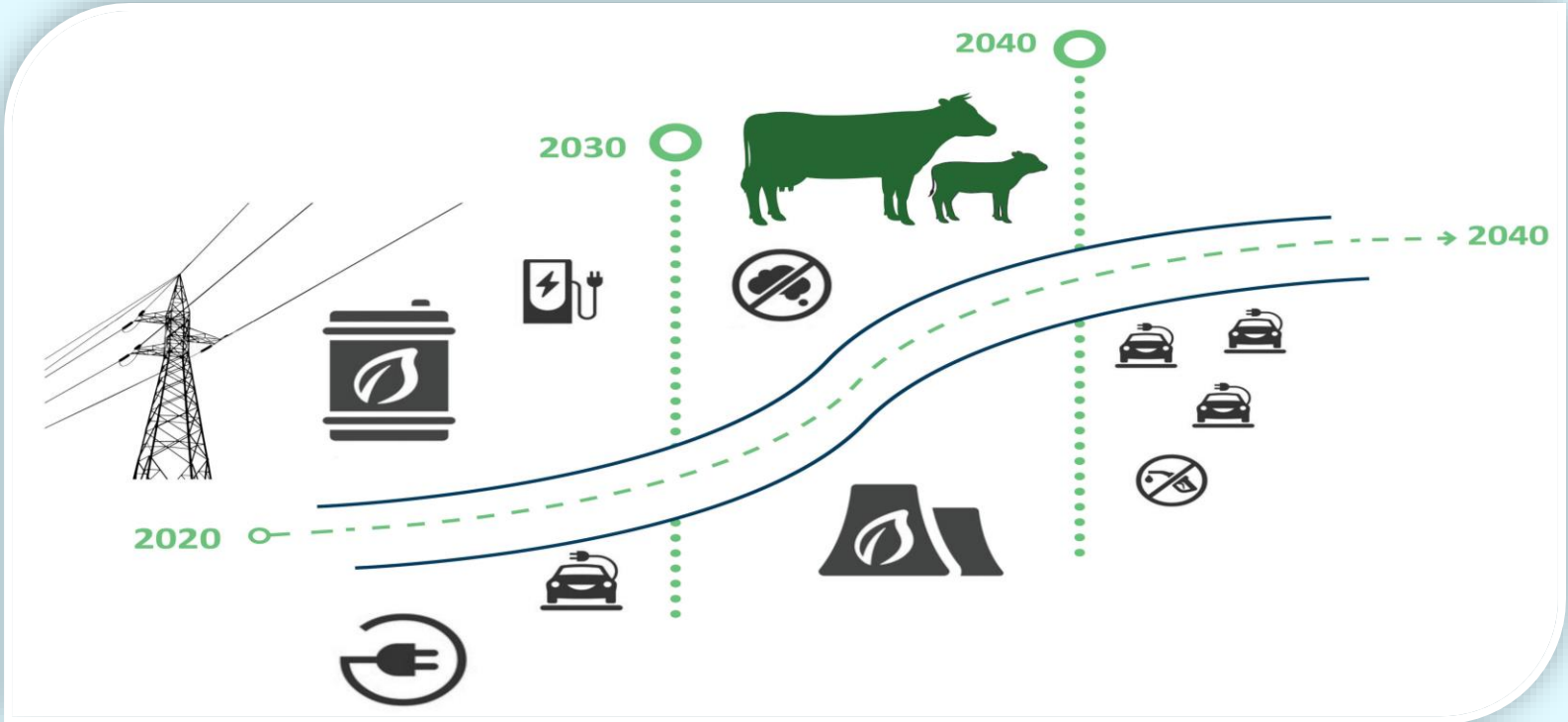
- Statistical model (data rich) based on Stats NZ data (IDI and LDB)
- Helps explore employment impacts based on C-PLAN results
- Looks at how employment might change based on:
  - Worker characteristics
  - Firm characteristics
  - Sector characteristics

# Why use three models?

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- Complementary perspectives
- Complementary strengths
- Broader understanding of impacts
- Provides greater confidence
- Overcomes limitations from previous modelling exercises

# Pathway to 2050?



# Thanks



Want to get in touch?  
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