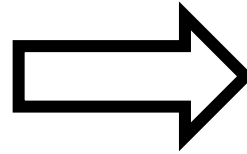
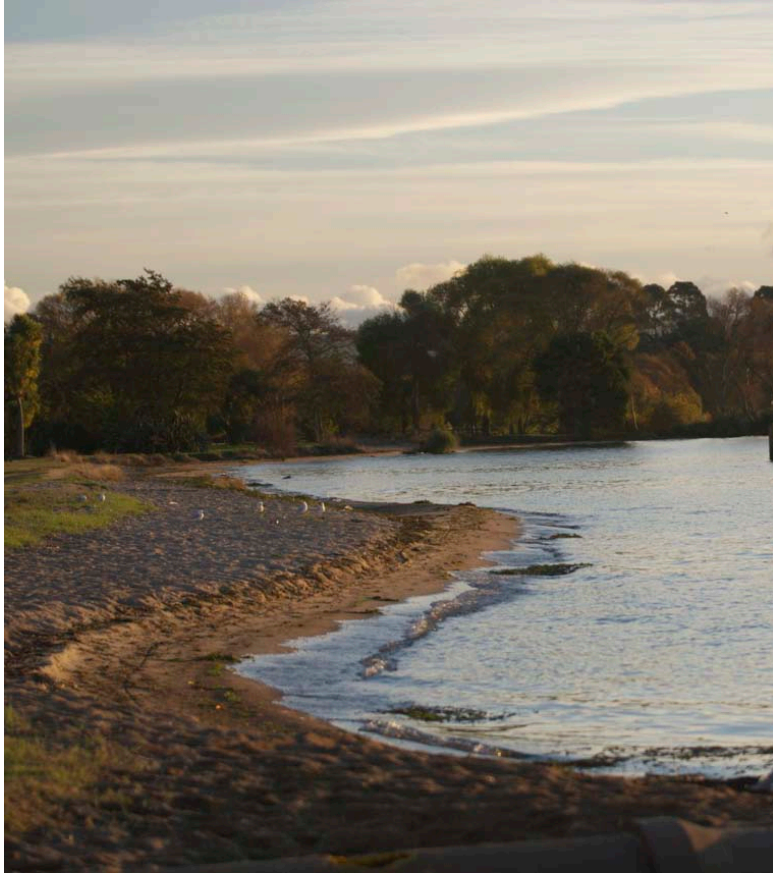


Managing Water Quality using Markets

Suzi Kerr



What's the problem?



Long term aim: inform water
quality policy throughout NZ
by finding excellent solutions
in Rotorua



Why create markets?

Water quality is challenging because society's interests are different from private interests.

Cooperation is hard – not because people are immoral but because all must coordinate and trust each other.

Nutrient trading is part of a solution package for larger catchments.

Complemented by education, research, extension, persuasion, community trust building



Lake Taupo trading scheme

World leading system

Getting good early gains – might find future gains harder – can we do even better?

How does trading work?

Cap - and monitoring system

Allocation

Trading – buy back

Compliance



Lake Taupo trading scheme

World leading system

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How does trading work?

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Trading – buy back

Compliance



Project history: funders

Ministry for the Environment

Bay of Plenty Regional Council

Ministry of Agriculture and Forestry

Ministry of Science and Innovation (FRST)

Many in-kind contributions

- Nutrient trading study group participants

- Rotorua District Council

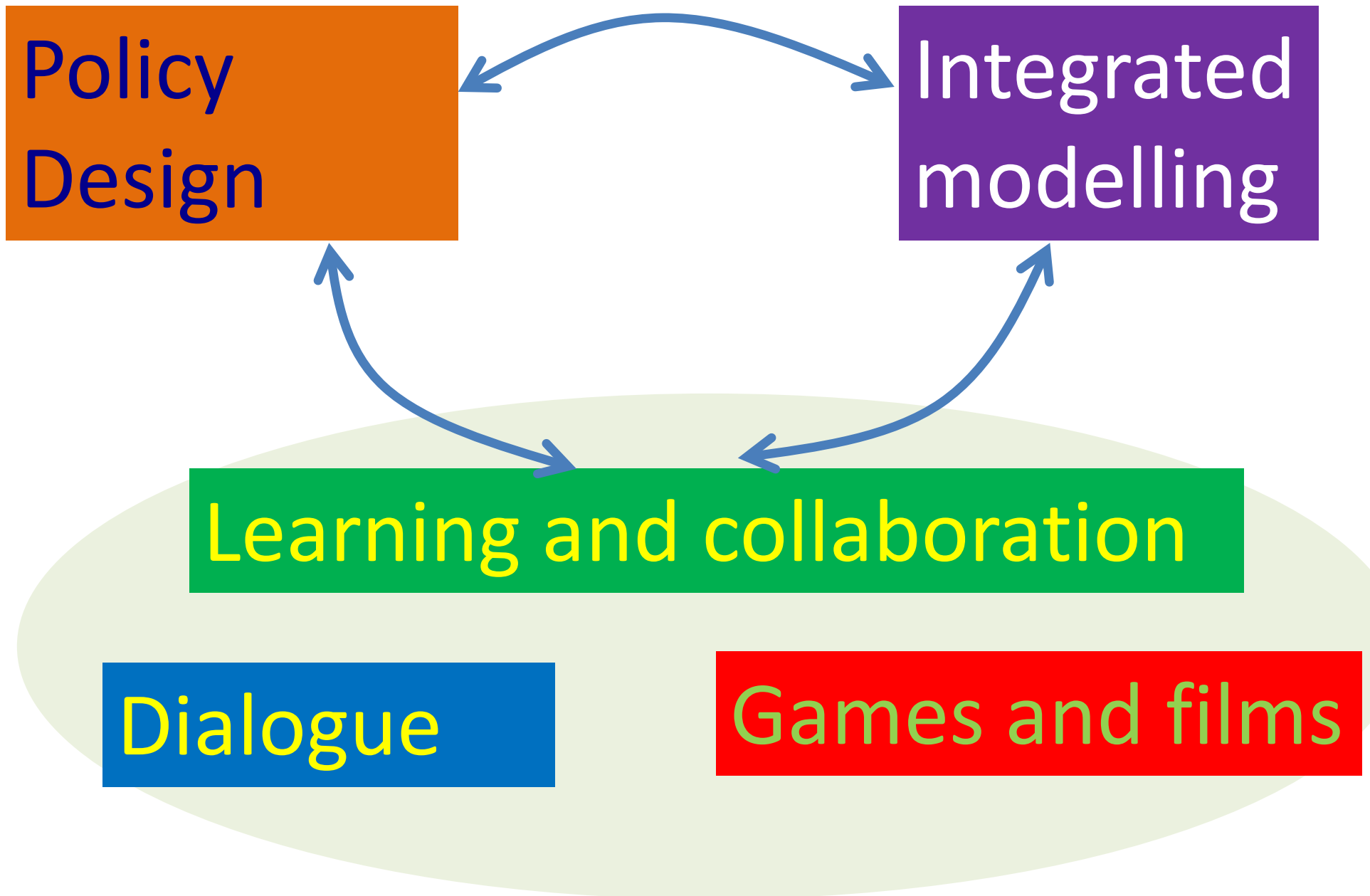
Focused applications of work

- Parliamentary Commissioner for the Environment

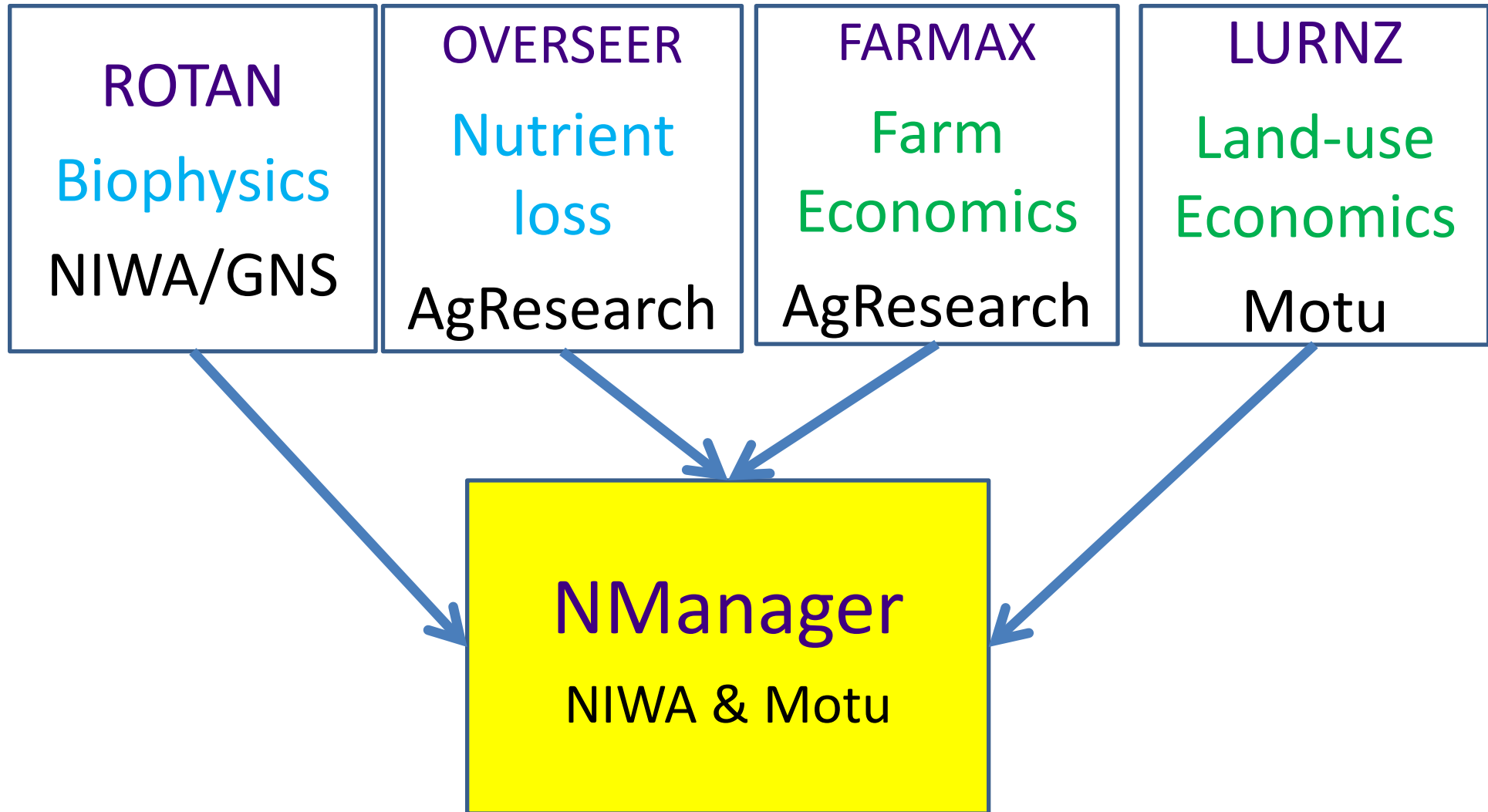
- ECANZ

- OECD





Integrated Modelling



Learning and collaboration

Dialogue

11 meetings over 14 months from
2007+ 5 more finishing in 2012

Glen Lauder

commonground
Aotearoa New Zealand



Learning and collaboration

Dialogue

Nutrient trading study
group participants:
Farmers; Te Arawa;
EBOP; RDC; Fish
and Game; DOC;
LWQS; MAF; MfE;
NIWA; Landcare
Research ...



Markets for water quality

We are doing well and could do even better

Key issues to move forward

Education of stakeholders

Political acceptance



Collaborative
process and
games

Markets for water quality

Key issues to move forward

Education of stakeholders

Political acceptance

Fairness



Allocation is key

Markets for water quality

Key issues to move forward

Education of stakeholders

Political acceptance

Fairness

Environmental certainty



Compliance is key

Markets for water quality

Key issues to move forward

Education of stakeholders

Political acceptance


Fairness

Environmental certainty

Flexibility and cost effectiveness

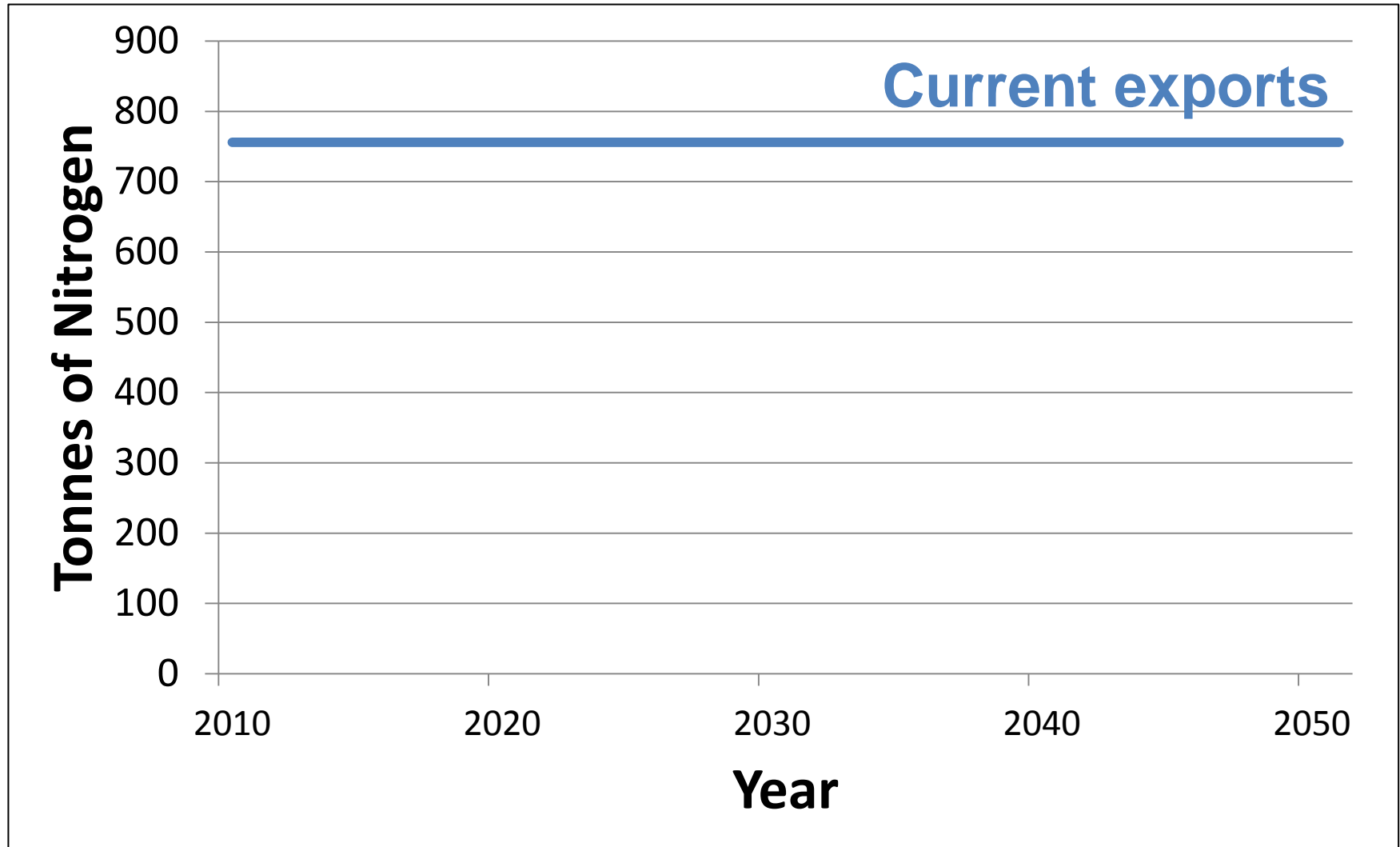


Keep it simple

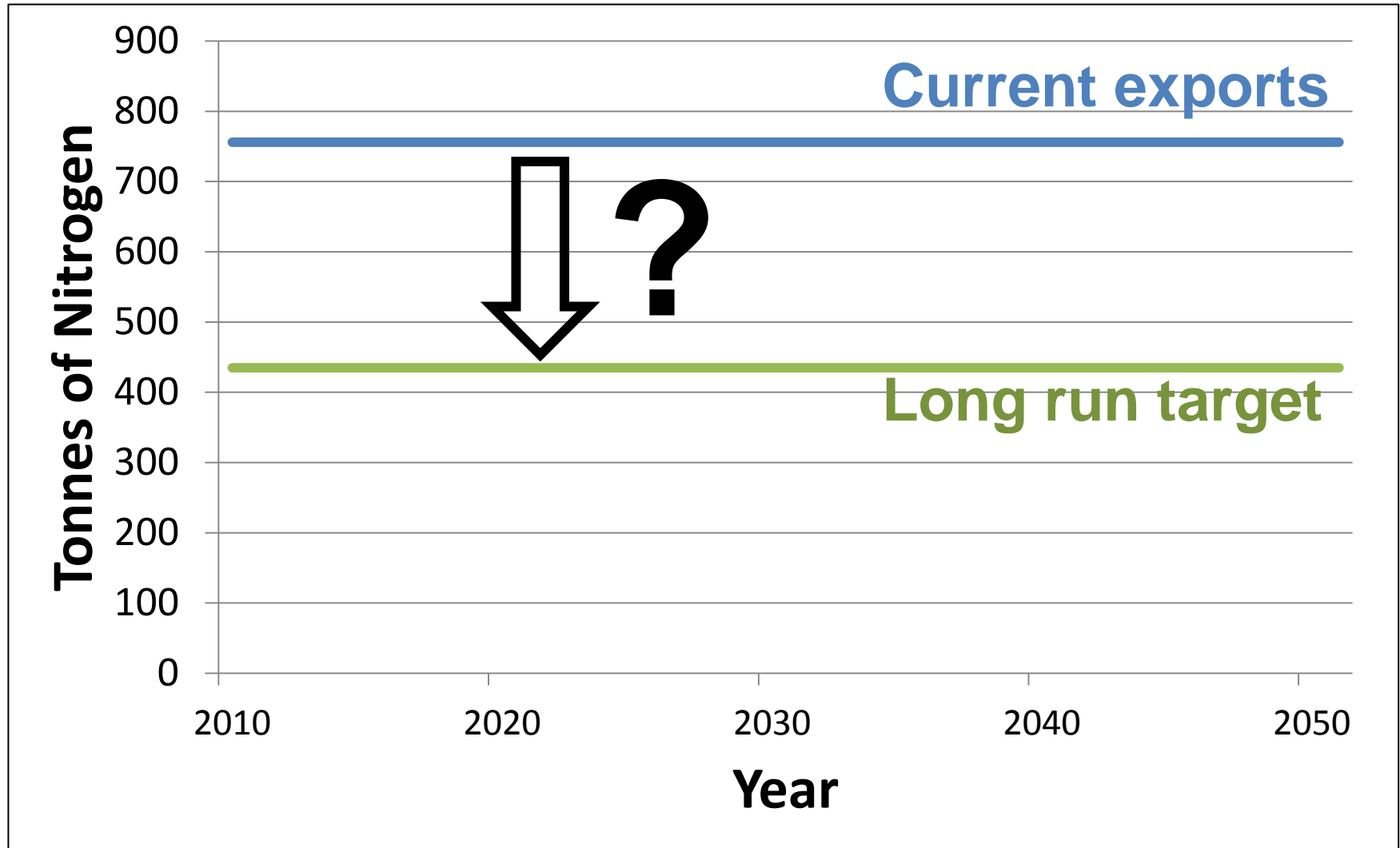


So what do our team
think we should do in
Rotorua?

Must control nutrient exports



Must control nutrient exports

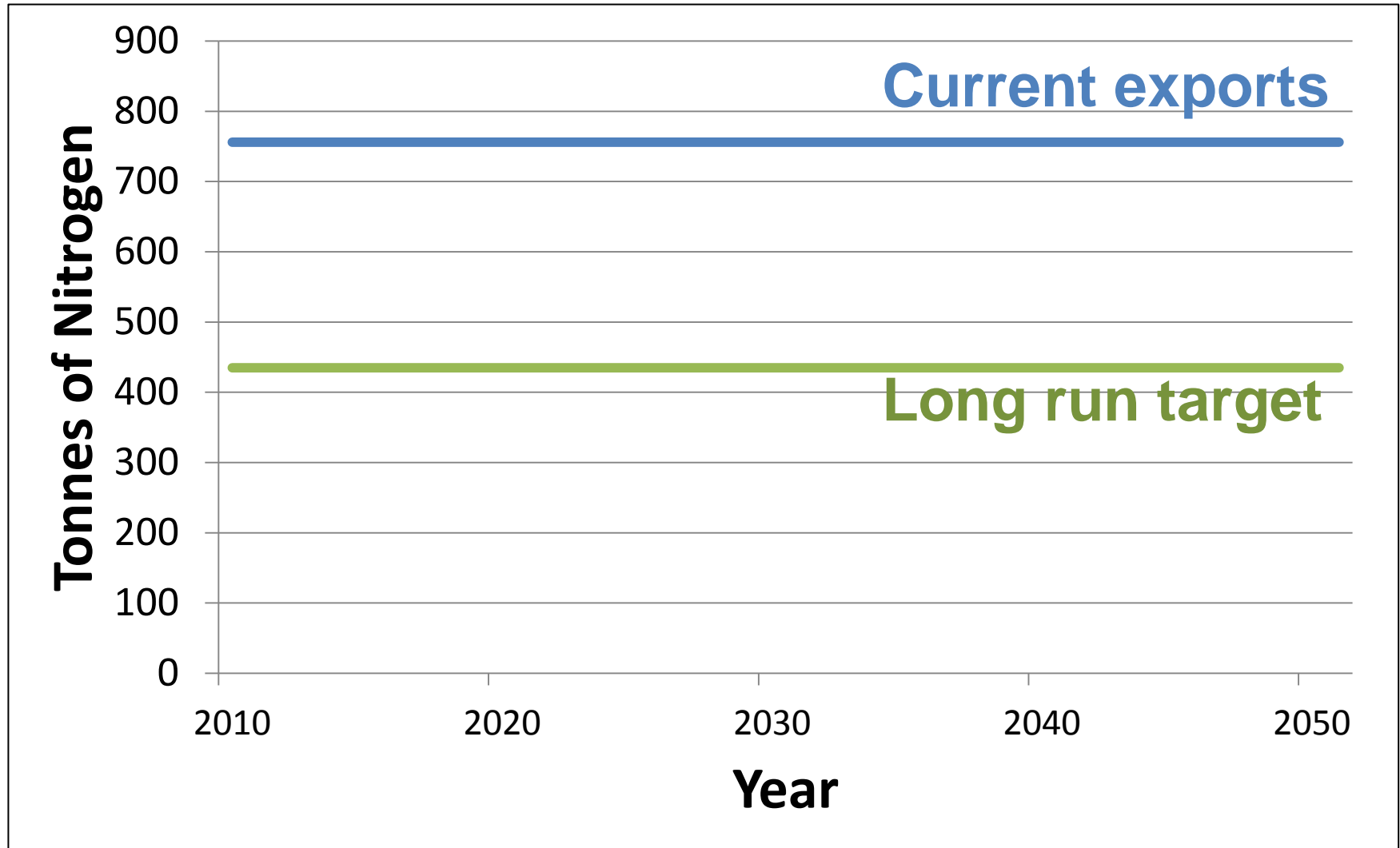


Nutrient trading: effective and efficient

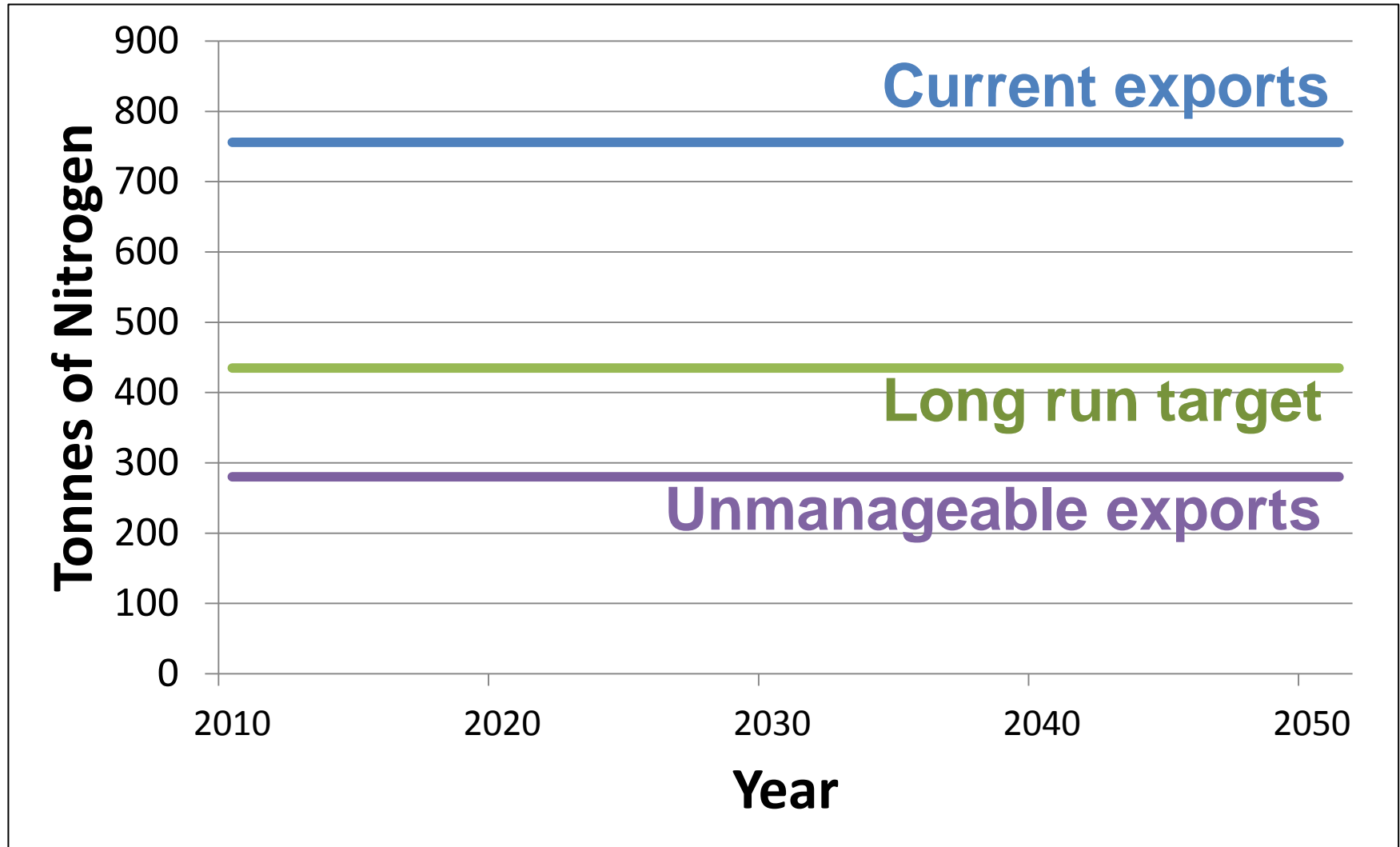
- 1) Environmental certainty
- 2) Cost-effectiveness
- 3) Flexibility for participants



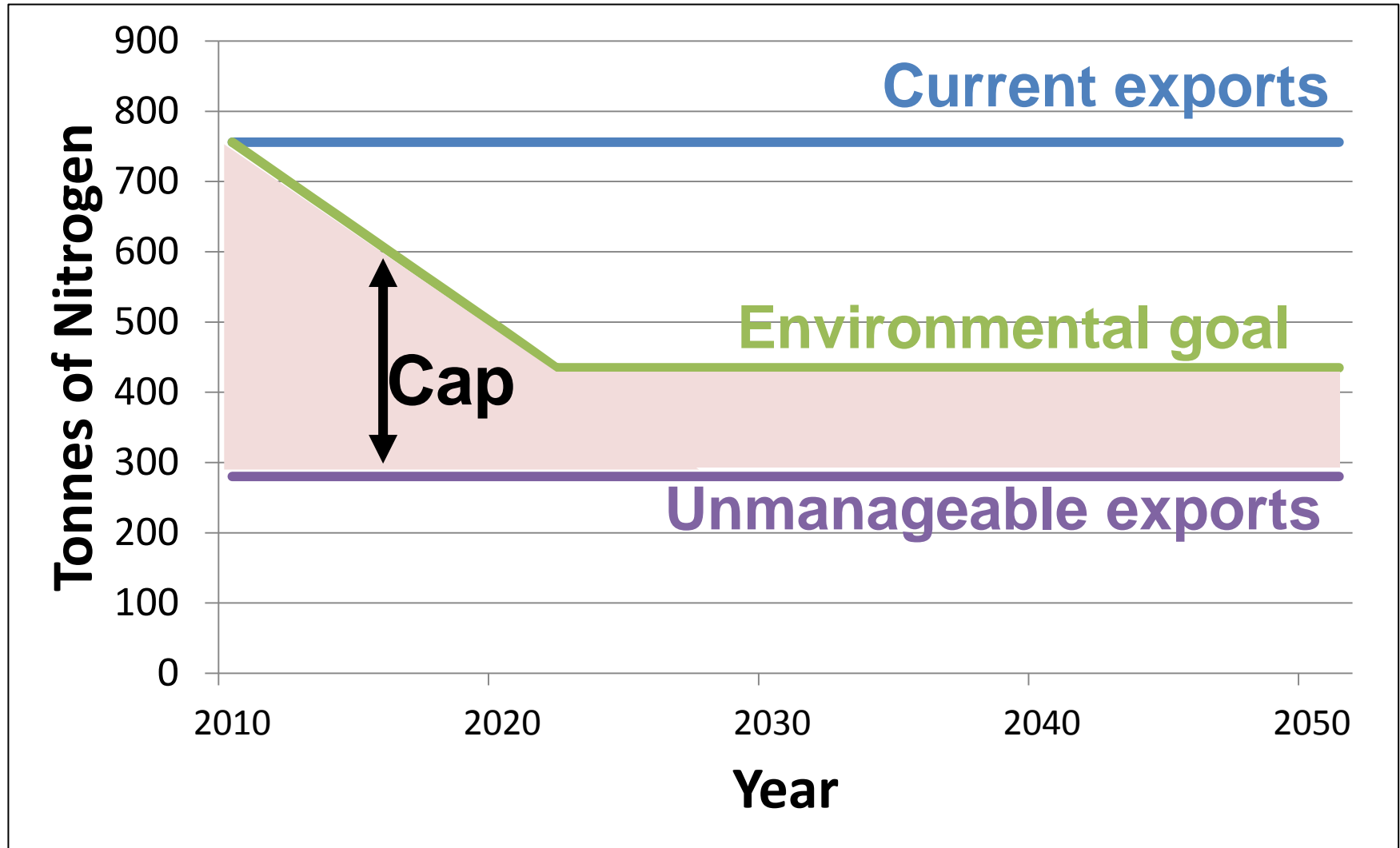
Setting the cap



Setting the cap



Setting the cap



Participants: the more the merrier?



- More mitigation options

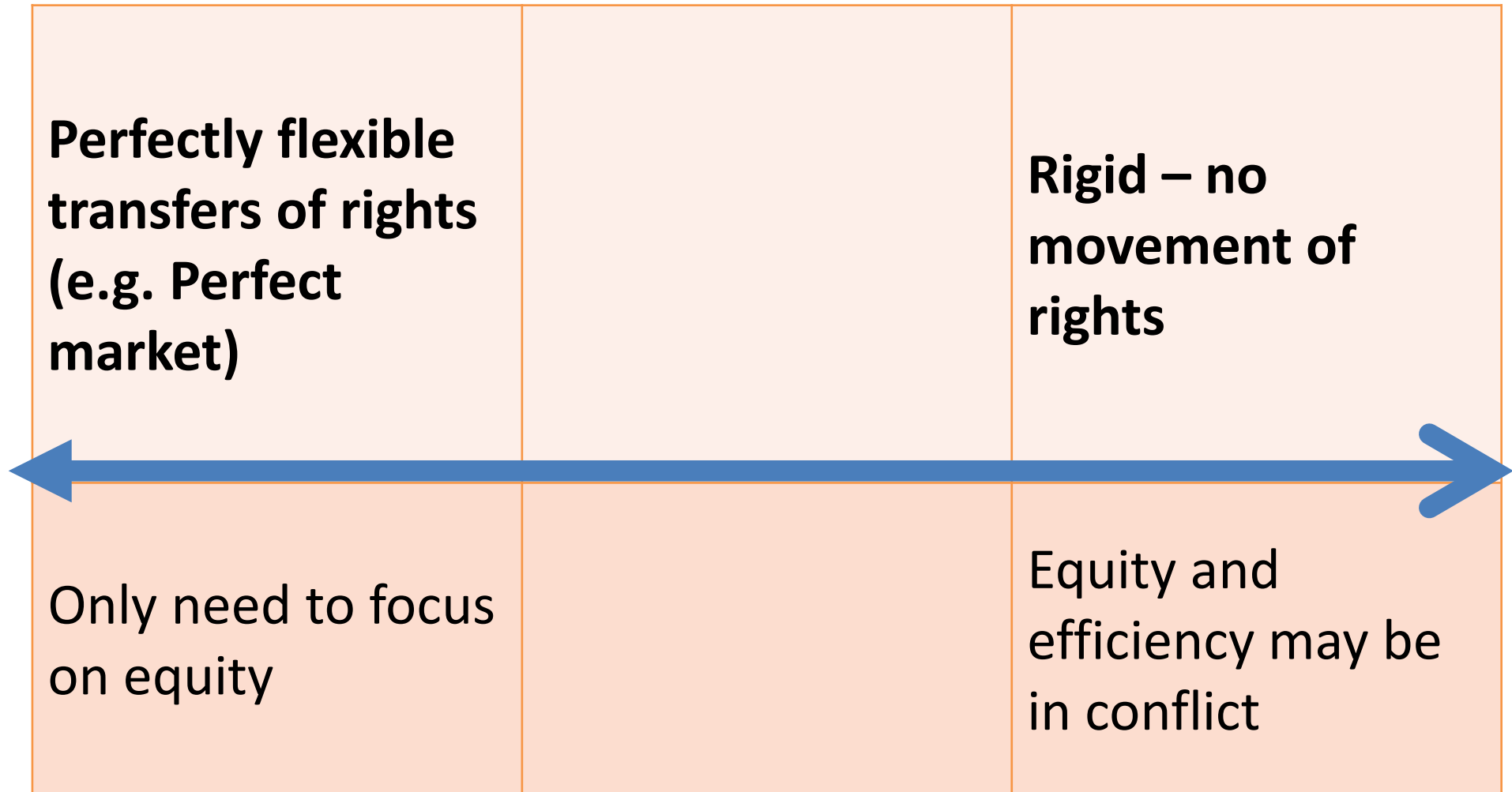
– More efficient
Graduated participation

- Higher set up and administration costs

How can we allocate rights to discharge nutrients efficiently, equitably and acceptably?



Allocation and regulatory context





There are many valid views on the fair sharing of costs

This is not a technical question

Principles for sharing costs

1. Those who benefit should pay
2. 'Polluters' should pay (sources/users)
 - Current
 - historical (if long-term damage)
3. Landowners have implicit rights to emit/use
 - Current users
 - Potential users
4. Do not penalise those who have already tried to control nutrient loss/conserves water
5. Protect the poor and vulnerable.
6. The tangata whenua are distinctive in their roles and responsibilities in very iwi/hapu specific ways.
7. 'Similar' sources/users should be treated similarly

Allocation: who bears cost?

Short run: Grandparenting

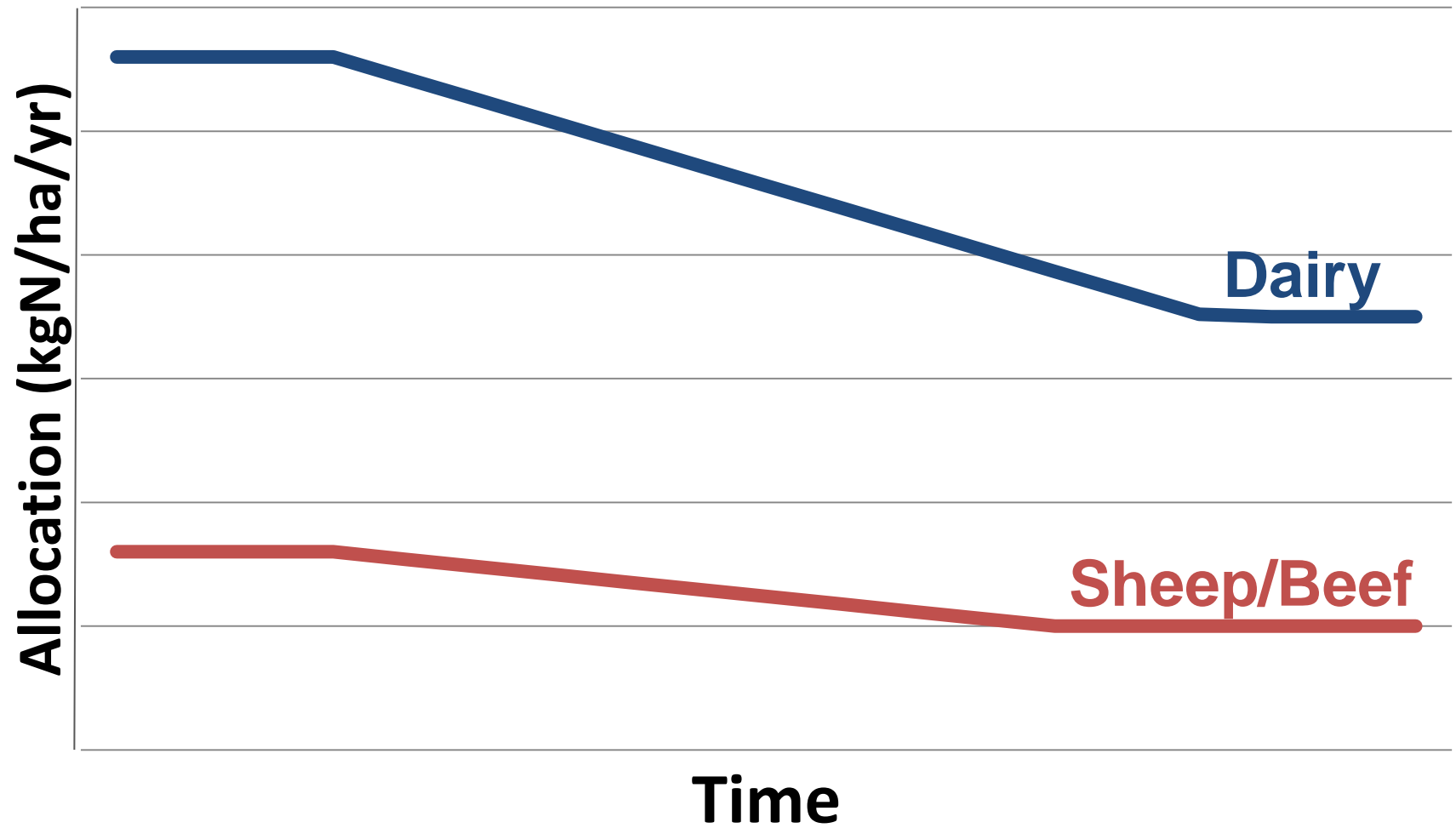
- Ease transition
- efficiency and equity

Long run: Based on potential nutrient loss

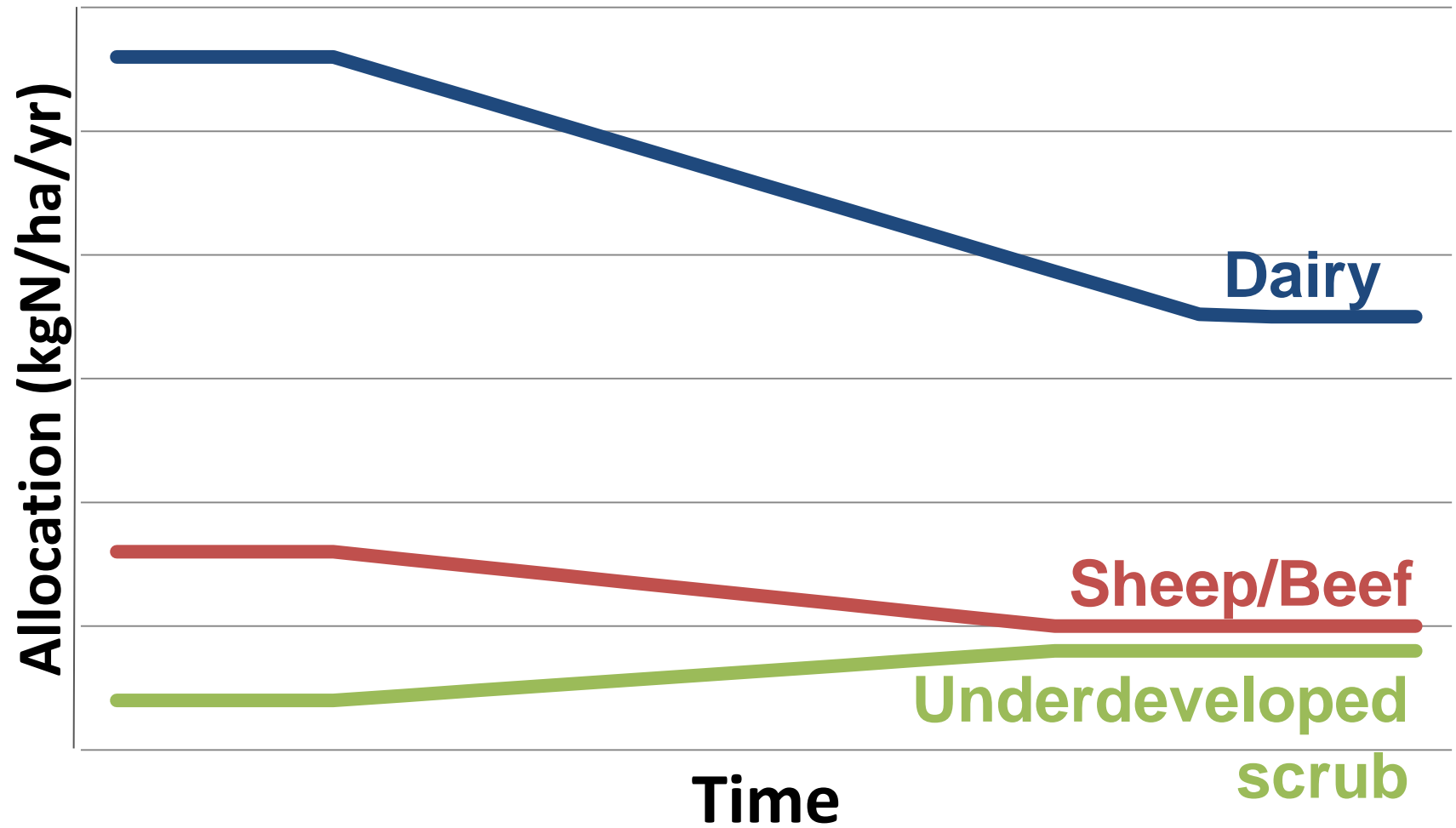
- Those with low initial leaching rates should reduce less
- equity only



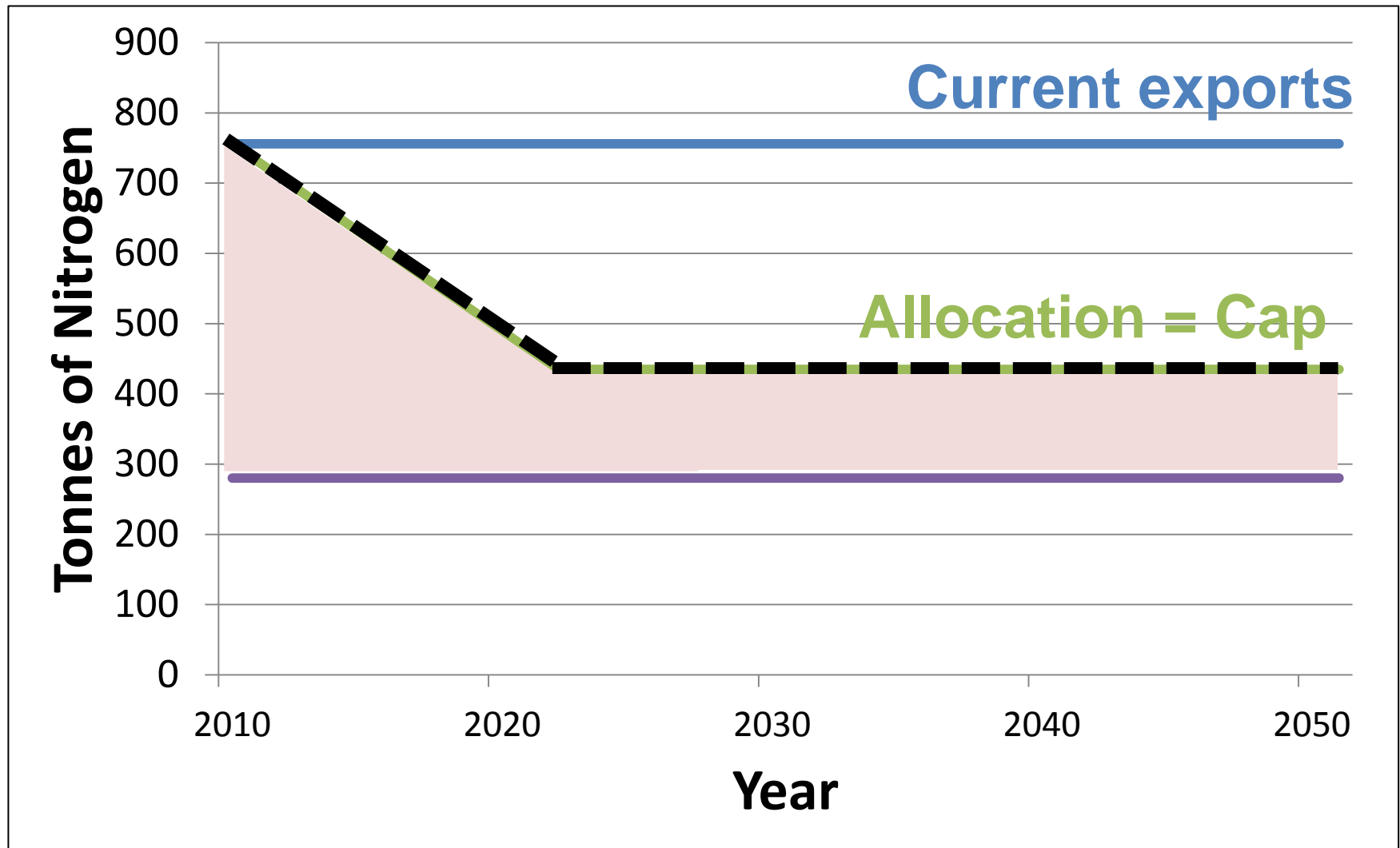
Allocation: who bears cost?



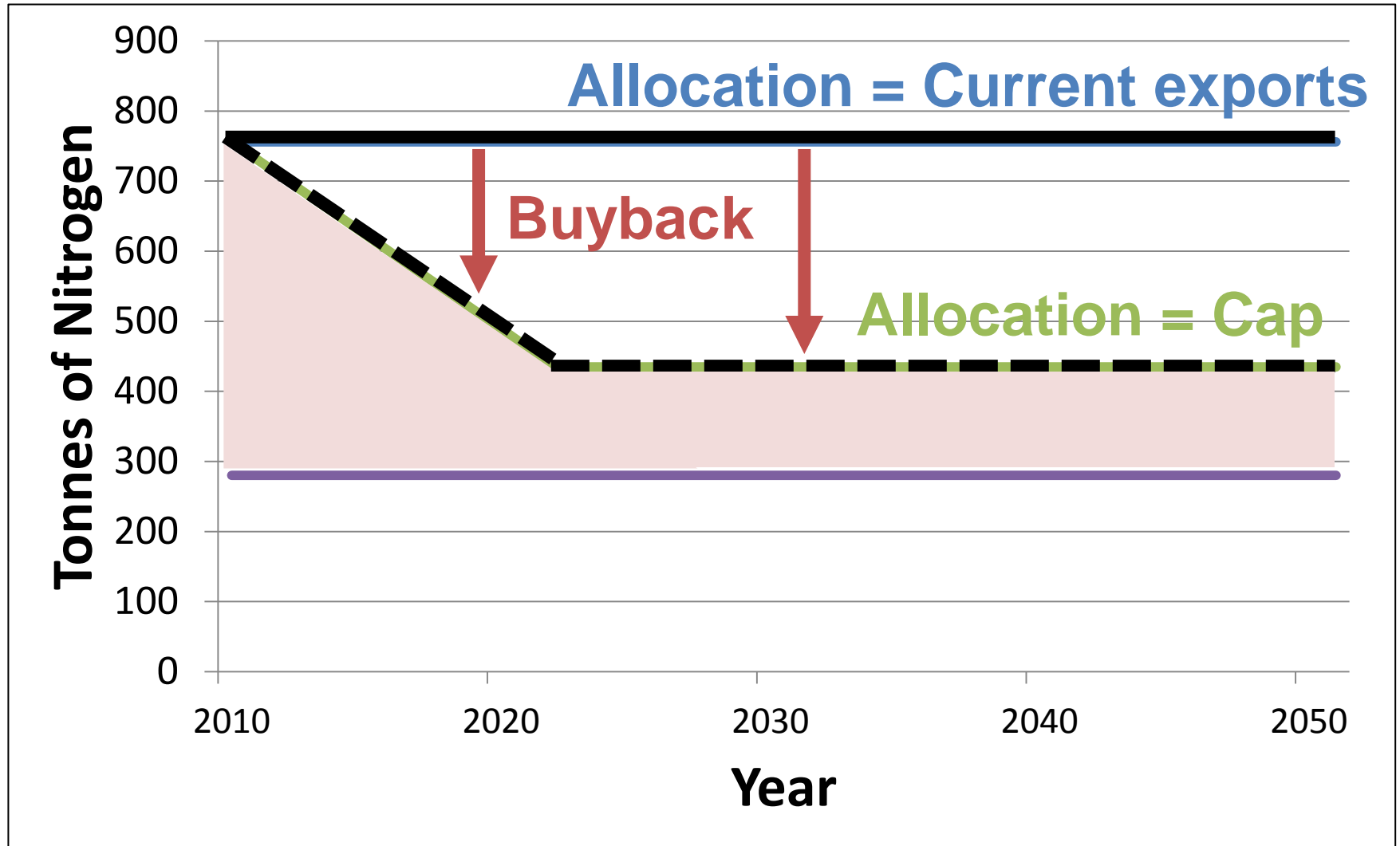
Allocation: who bears cost?



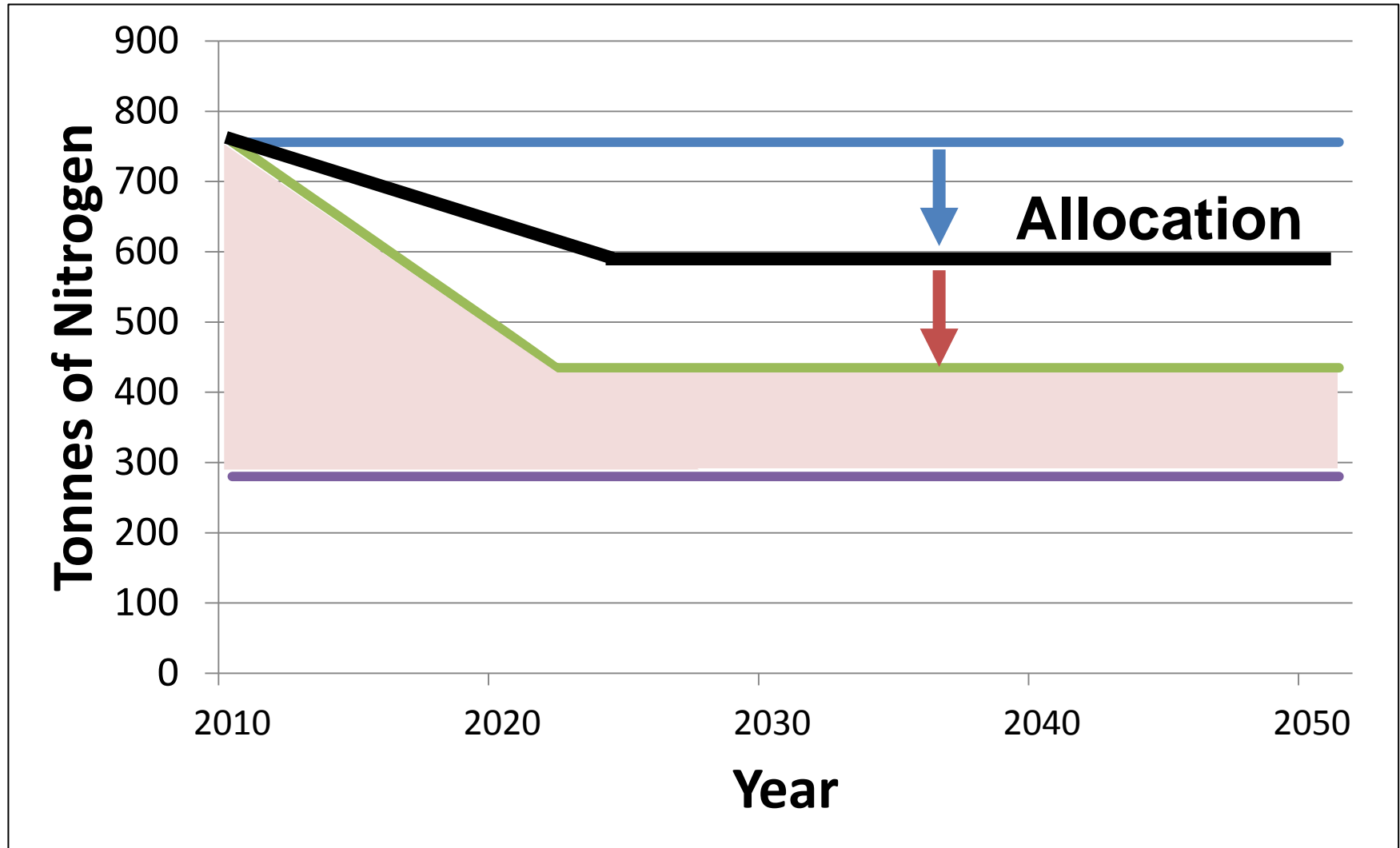
Allocation: who bears cost?



Allocation: who bears cost?



Allocation: who bears cost?



Key take-away messages

- Increase flexibility where possible to reduce need to consider efficiency in initial allocation
- Focus on equity of cost bearing (resource sharing) – not allocation itself
- Avoid reallocation – set out transition path at start



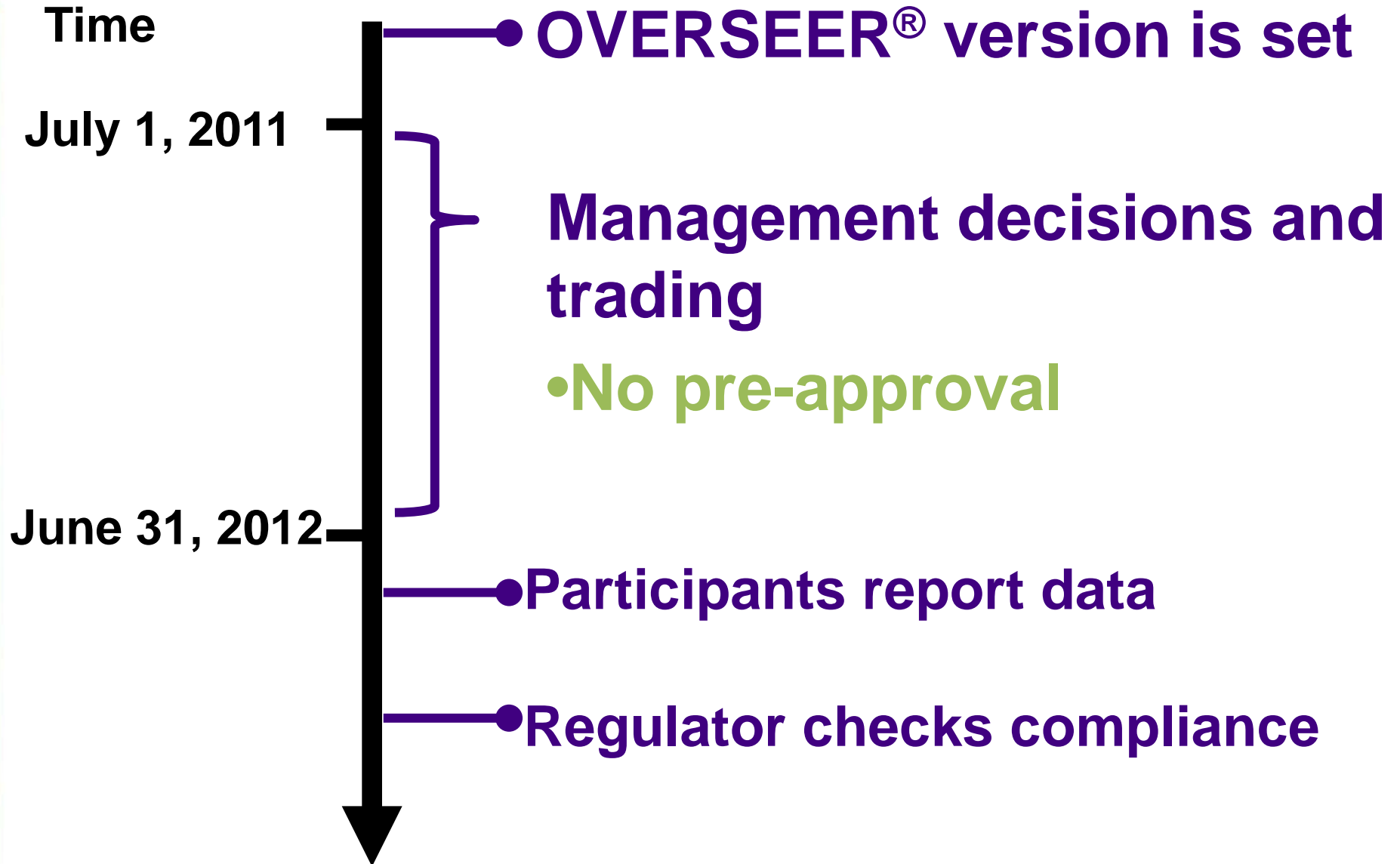
Trading and compliance: Minimise transaction costs

Aims:

- Low transaction costs
- Participants held responsible only for what they can control



Trading and compliance



Enforcement

Penalties:

- ✓ Fast
- ✓ Certain
- ✓ Large

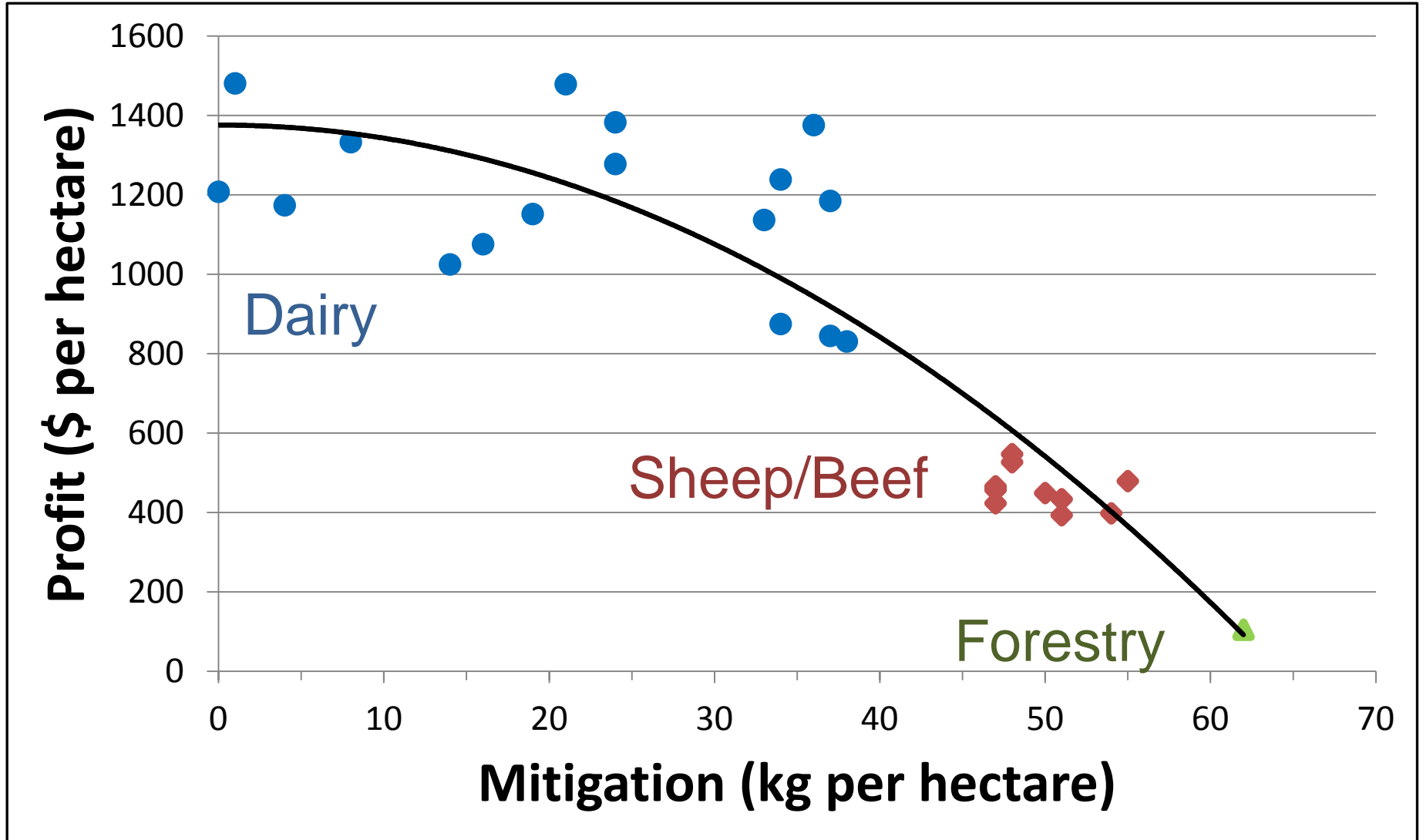


Governance: plan for change!

- Determine cost sharing up-front
 - Changing nutrient caps
 - Adjusting to new science
- Scientific and technical support
 - Updating OVERSEER®



Simulating regulation in Rotorua



For Rotorua

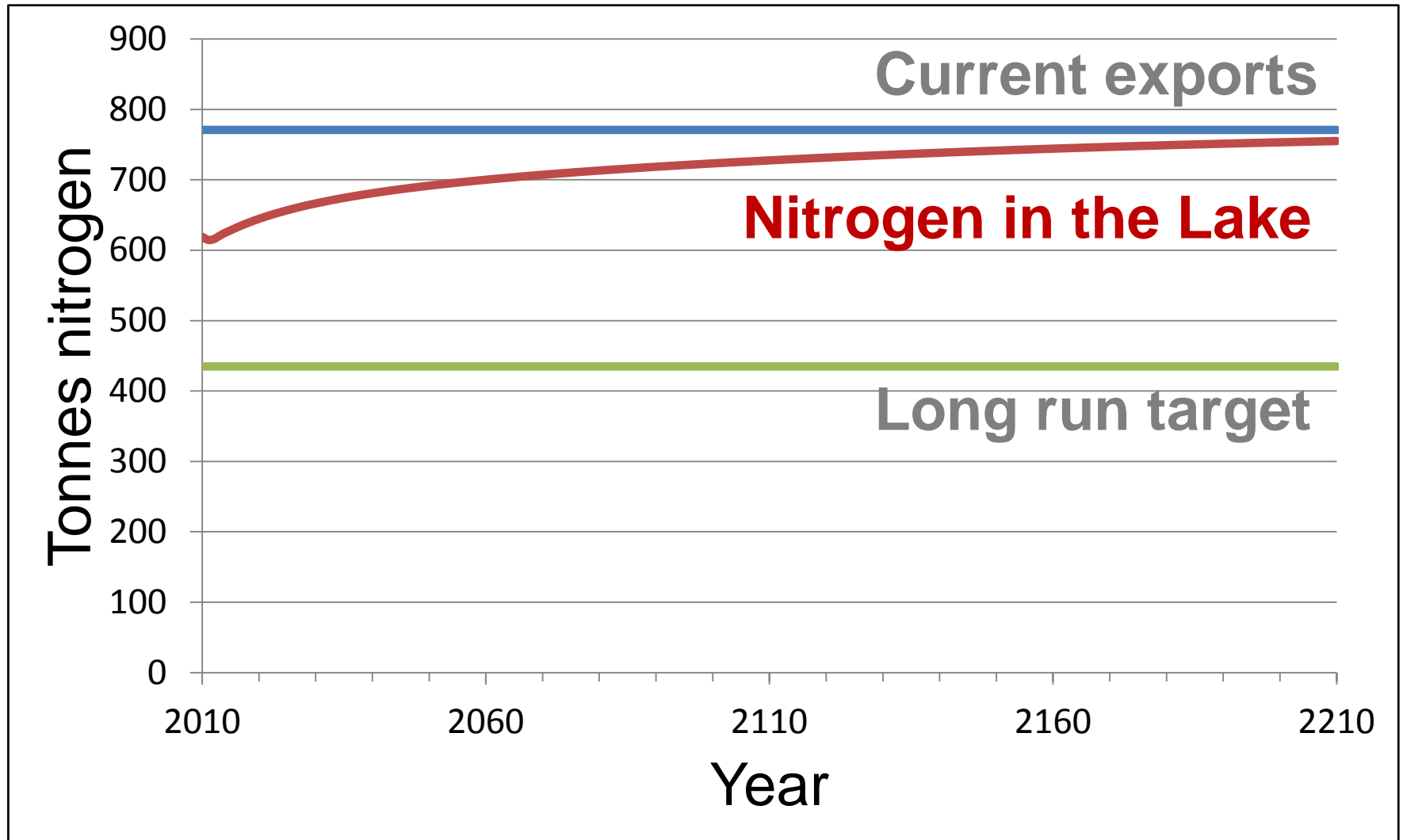
Minimising nutrient loads on farms with existing land use is not enough.

Land retirement only may seem attractive but it's 20% more expensive than nutrient trading

Regulation	Land Retirement	Export Trading
NPV of mitigation (\$m)	84.8	68.2

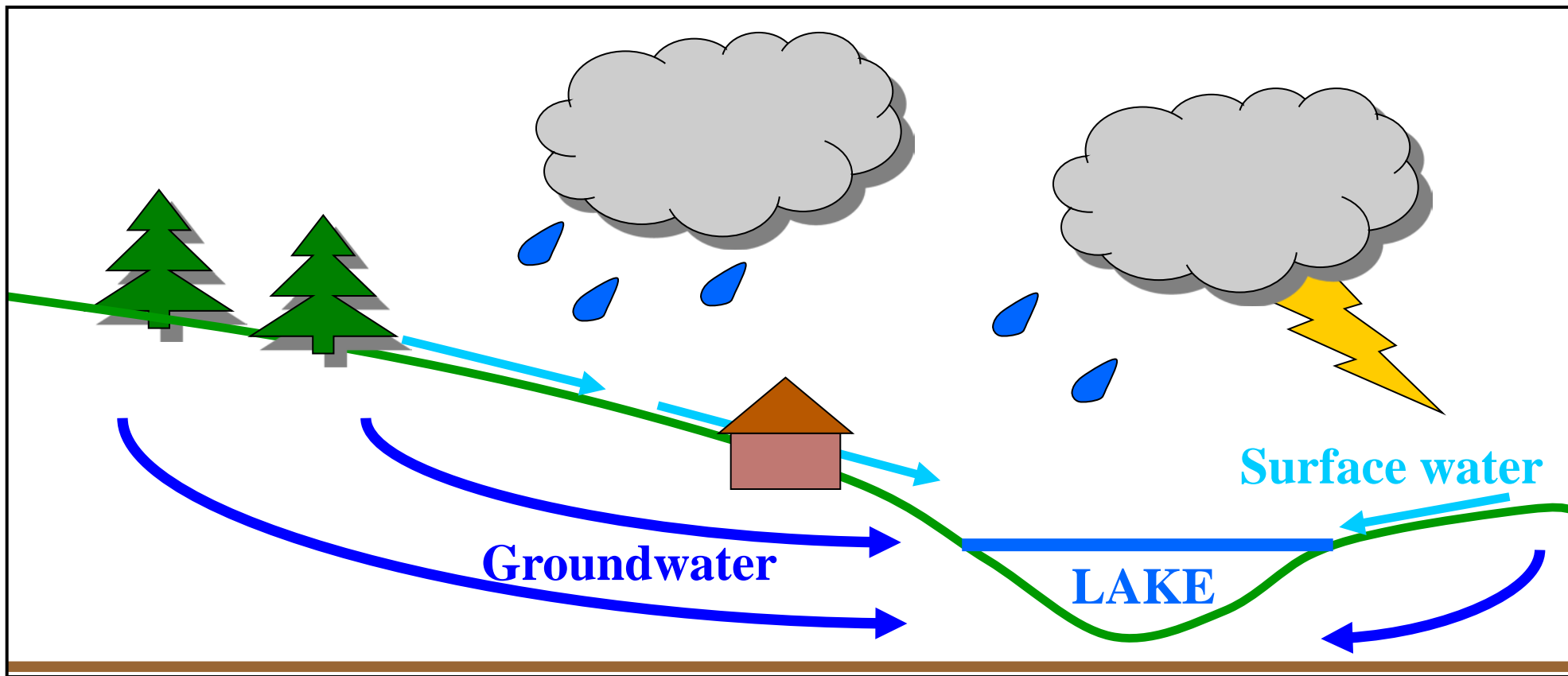


Groundwater: a potentially complexing factor



The ways nitrogen reaches the Lake

- 47% via surface water
- 53% via groundwater



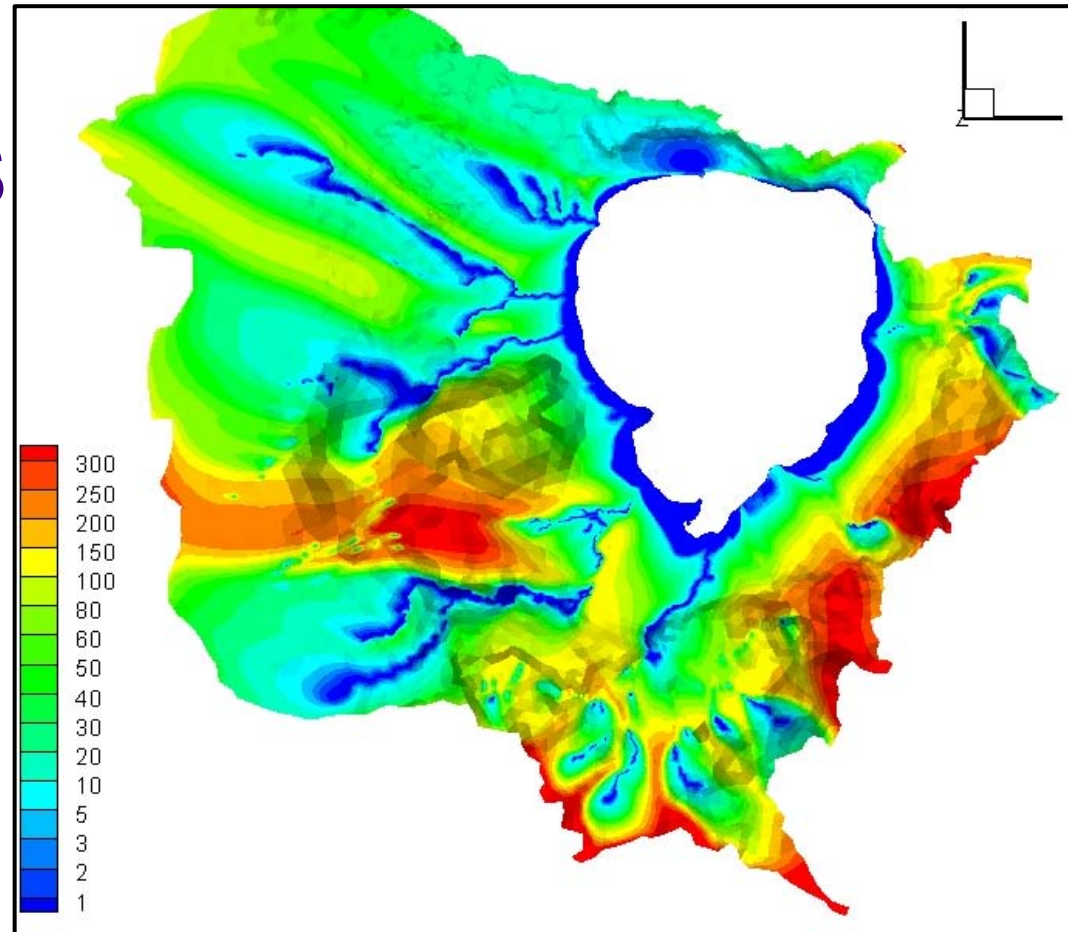
Maps of Groundwater Travel Times

- NIWA and GNS maps are vital

- Example from GNS

- *Red =*
long lag time

- *Blue =*
short lag time

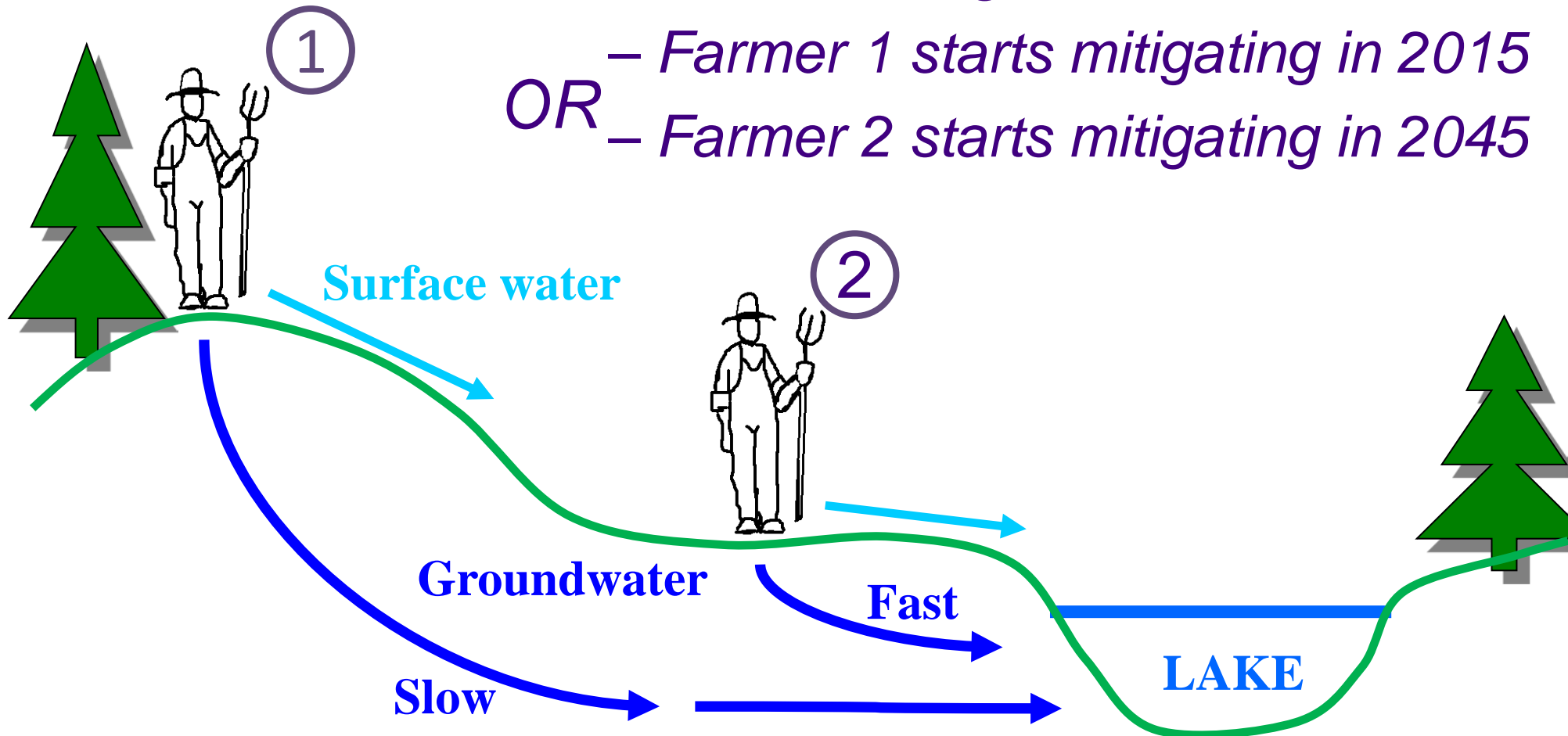


Designing Cost Effective Regulation

- Reduce nitrogen load in 2050

OR

- *Farmer 1 starts mitigating in 2015*
- *Farmer 2 starts mitigating in 2045*

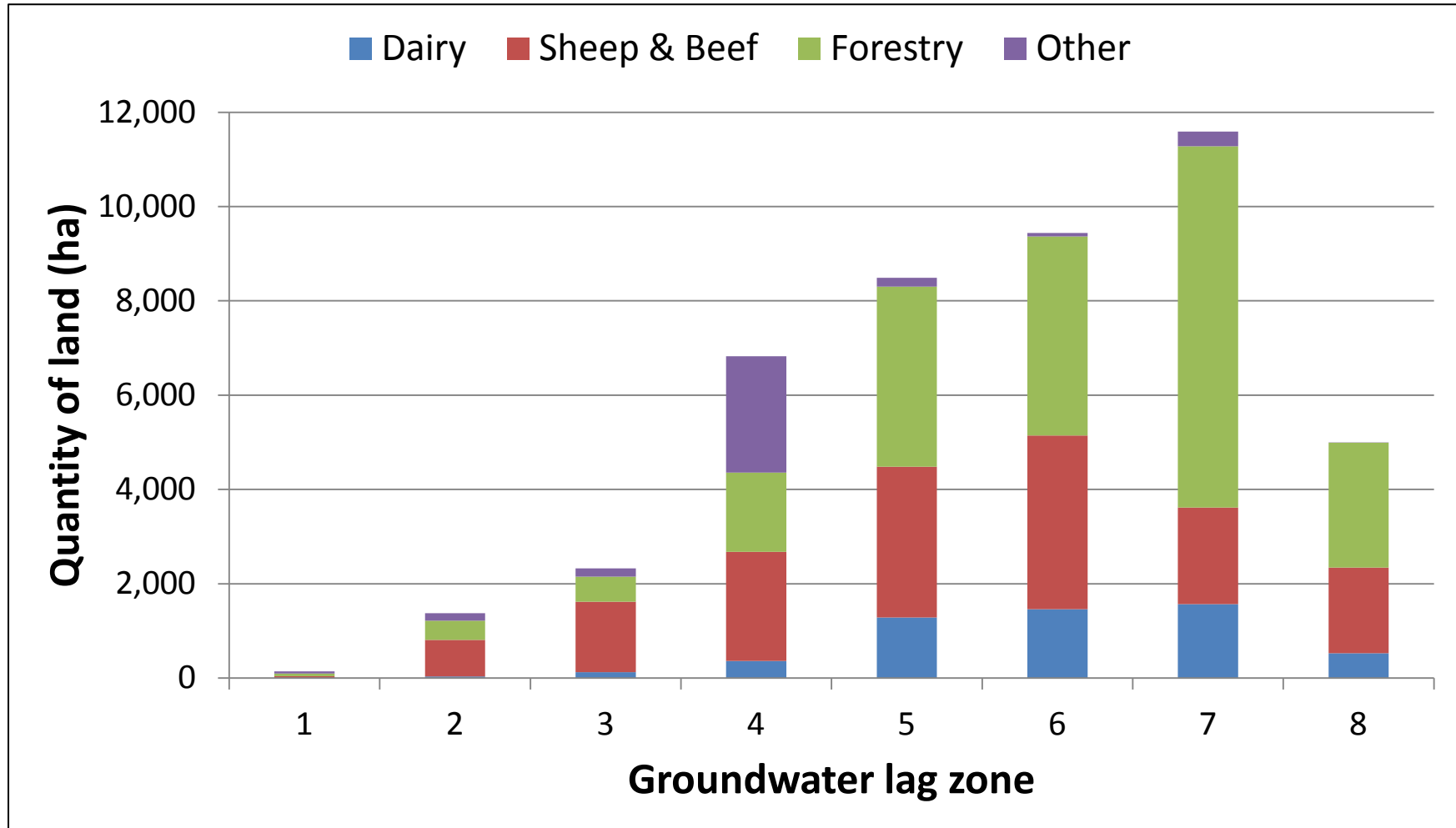


Cost of Regulation

Regulation	Export Trading	Efficient Regulation
NPV of mitigation (\$m)	68.2	67.5

- 1% difference between export trading and the most cost effective regulation

The Initial Land Uses



Collaboration and education are critical

Allocation is key

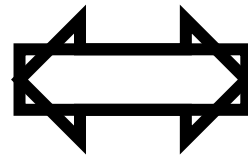
Compliance is critical

Trading is valuable and feasible for some
catchments

Try to keep it simple



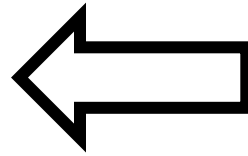
Rotorua Nutrient Trading Prototype



- Cost effectively meet environmental goals
- Low transaction costs



Rotorua Nutrient Trading Prototype



Kerr, Suzi and Hugh McDonald. 2012. "Nutrient Trading in Lake Rotorua: A Policy Prototype," forthcoming Motu Working Paper.

Available online at www.motu.org.nz/research/detail/nutrient_trading

