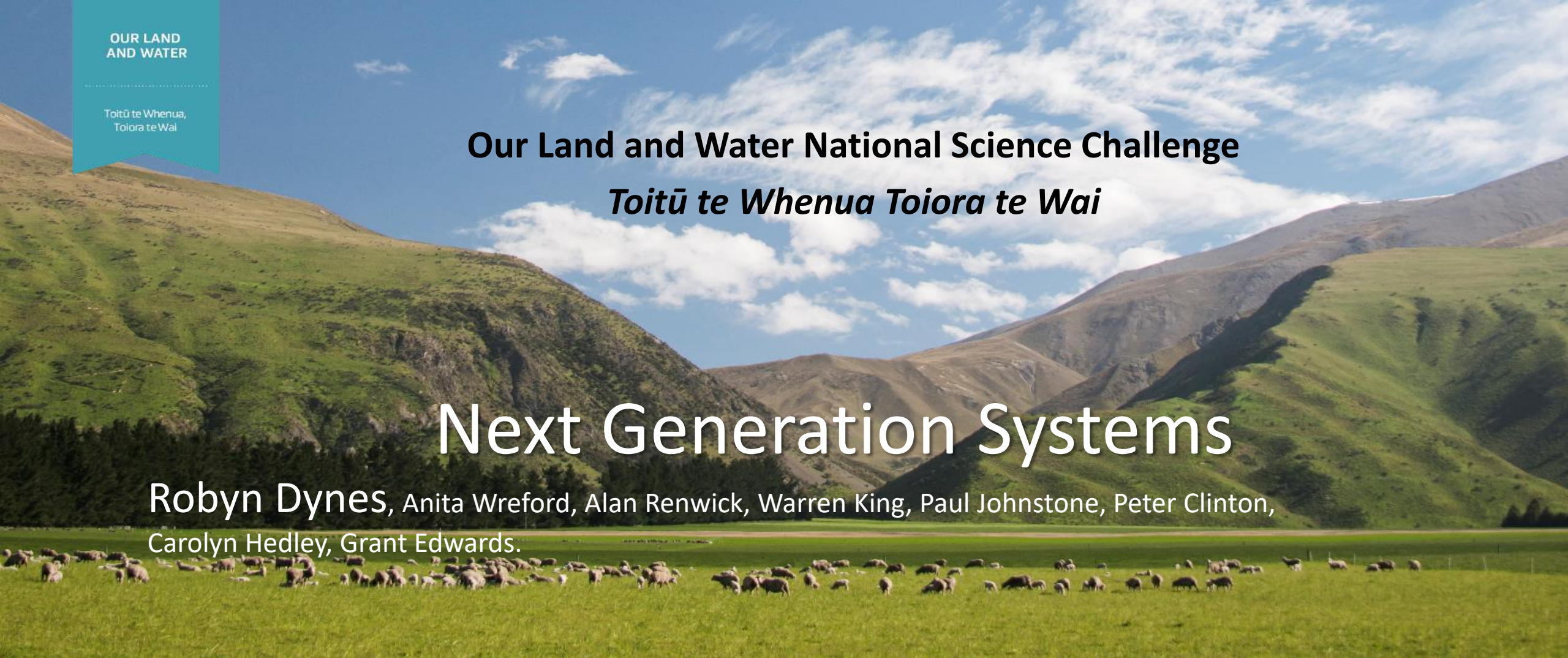


Our Land and Water National Science Challenge

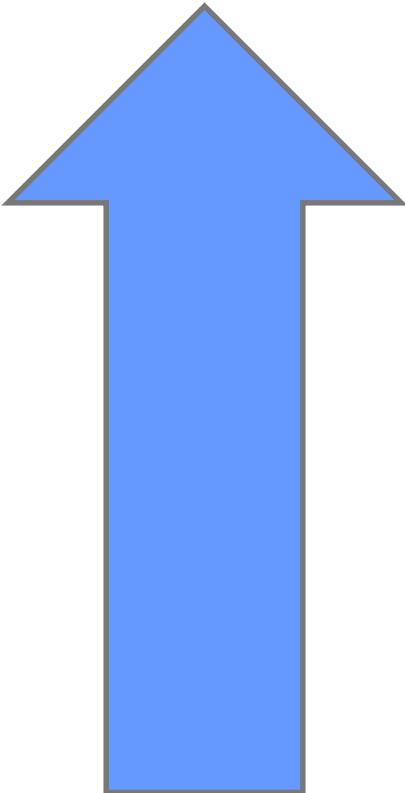
Toitū te Whenua Toiora te Wai

Next Generation Systems

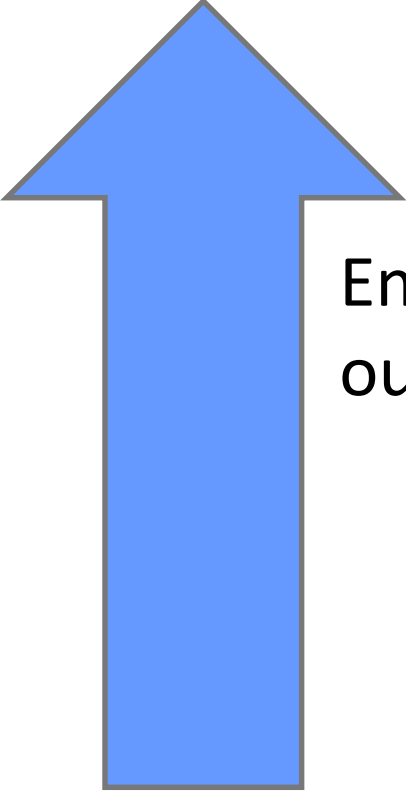
Robyn Dynes, Anita Wreford, Alan Renwick, Warren King, Paul Johnstone, Peter Clinton,
Carolyn Hedley, Grant Edwards.



Beyond business as usual



Exports:
adding
Value to
Volume



Environmental
outcomes



Next
Generation
Systems

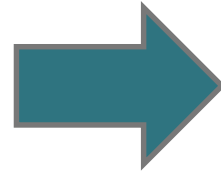
Linking to other Challenge research & aligned research



Sources & Flows

The Problem

- We know Water quality needs to improve
- We know the contaminants are coming from the land



Next Generation Systems:

- new systems
- New technologies
- Transformational change

- So **what** do we need to do on the land and **where**?

– Within a catchment

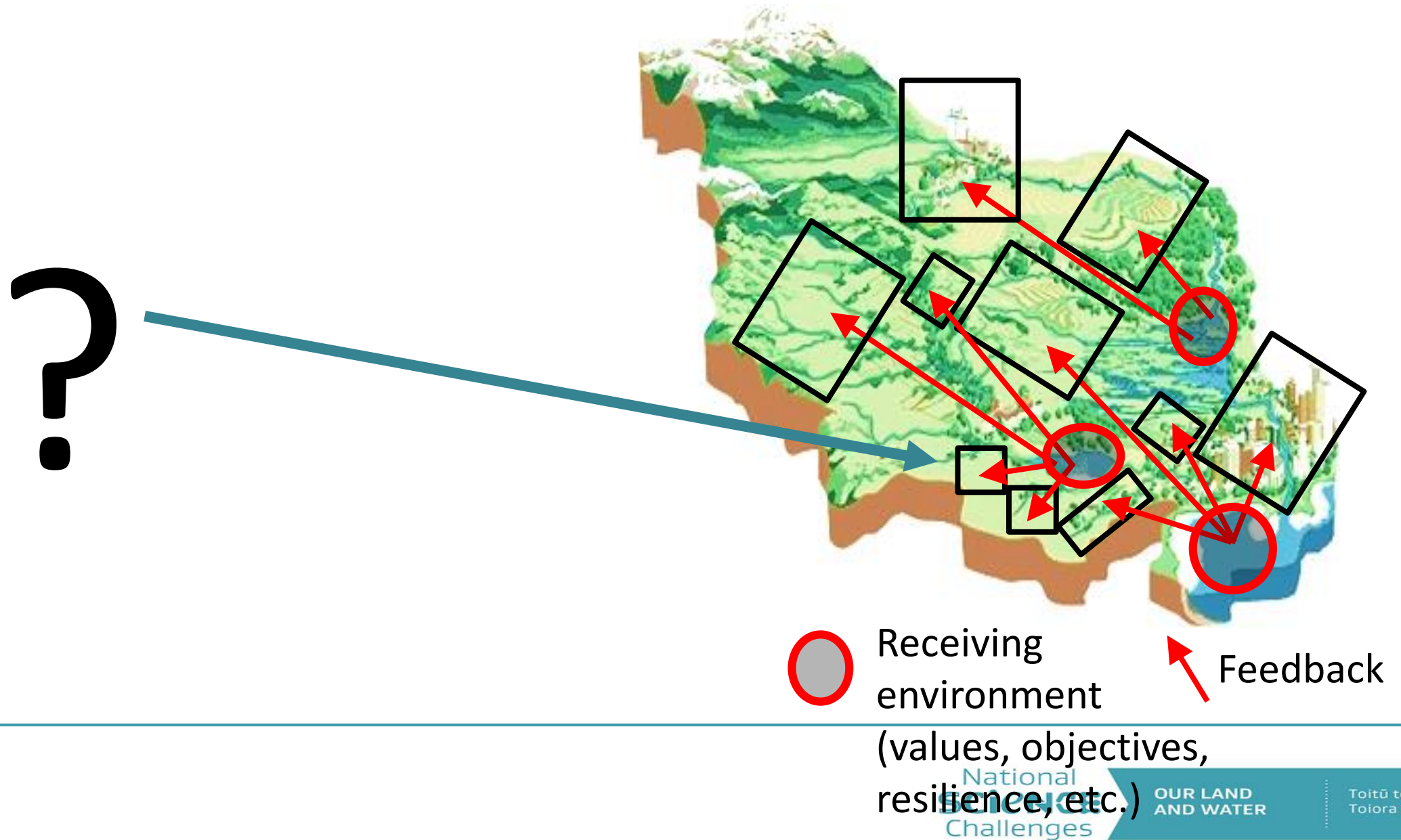
- Sources = what to target

Flows = where to target

What and where
In catchment & in landscape



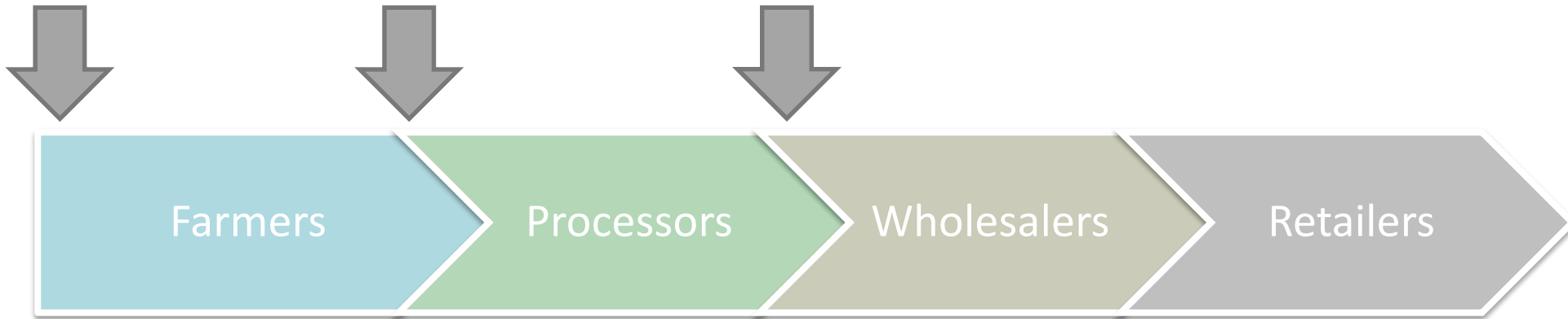
Feedback from receiving environments to land use decisions at source areas.



The value chain

Next Generation Systems:

- Science supporting business innovation
- Selecting NGS in with complex drivers
- Multiple criteria decision making.



Vision Mātauranga

--- partners in transformation

--- sharing collated data

---- case studies in value chain

----- case studies in supply chain development?

Why science in NGS

- Development, redesign, New technologies
- Science supporting innovation
- Business decision
- Which solutions have comparative advantage??



Which system?



Financial

Capital investment
Return/ha (profitability of enterprise)
Return on Investment
Payback period
Variability in profit

Environment Domain

N leaching, Erosion,
P losses, E. coli
GHG emissions

Market factors

Scale of market
Ability to capture value added
Supply variability
Strength of supply chain,

System choice

Regulation

Water,
Animal welfare
Food safety
Building

Social well-being

Community acceptability
Impact on communities
Quality of life

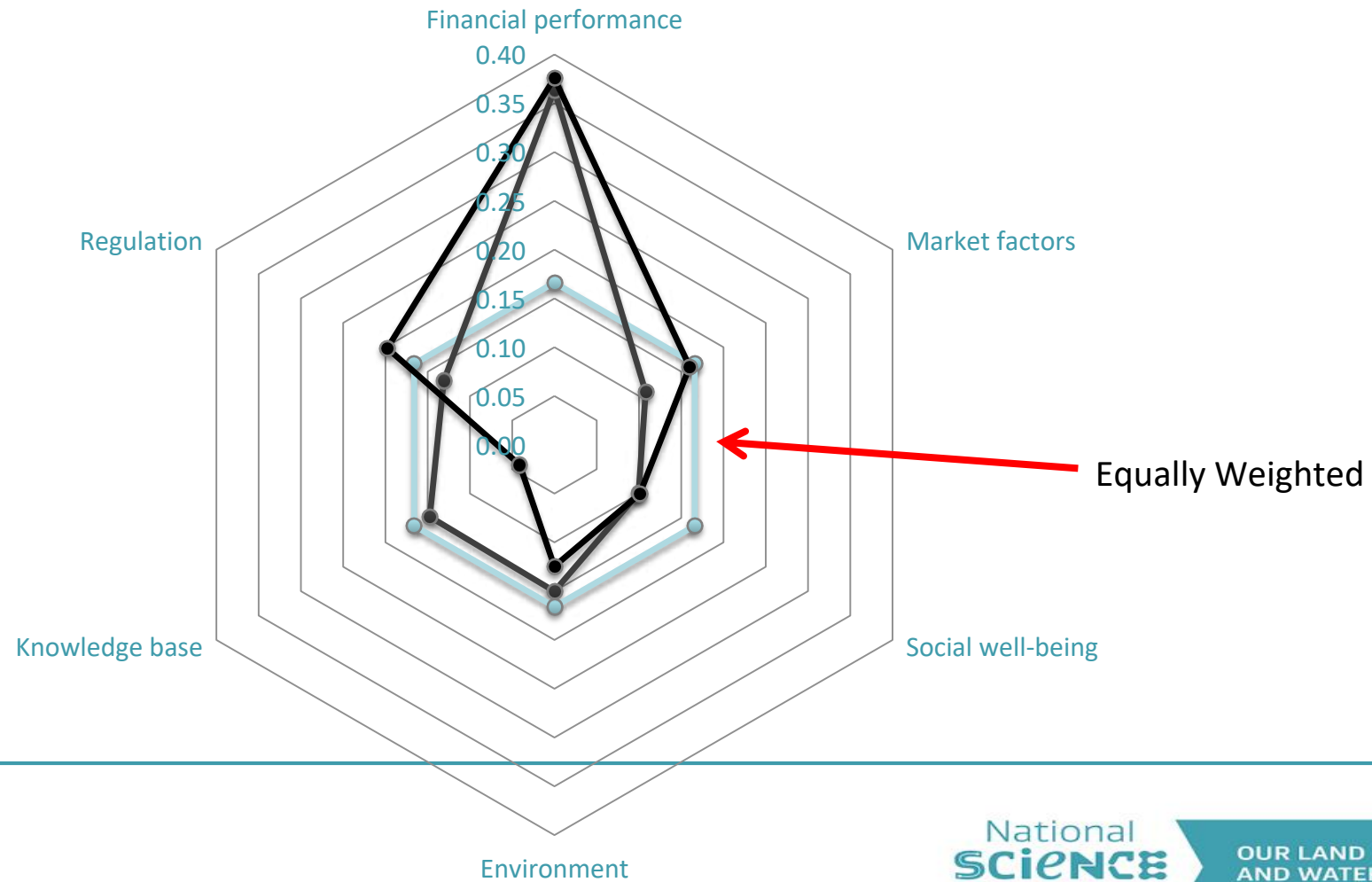
Knowledge base

Current state of knowledge
Similarity to existing systems
State of Technology
Level of Confidence

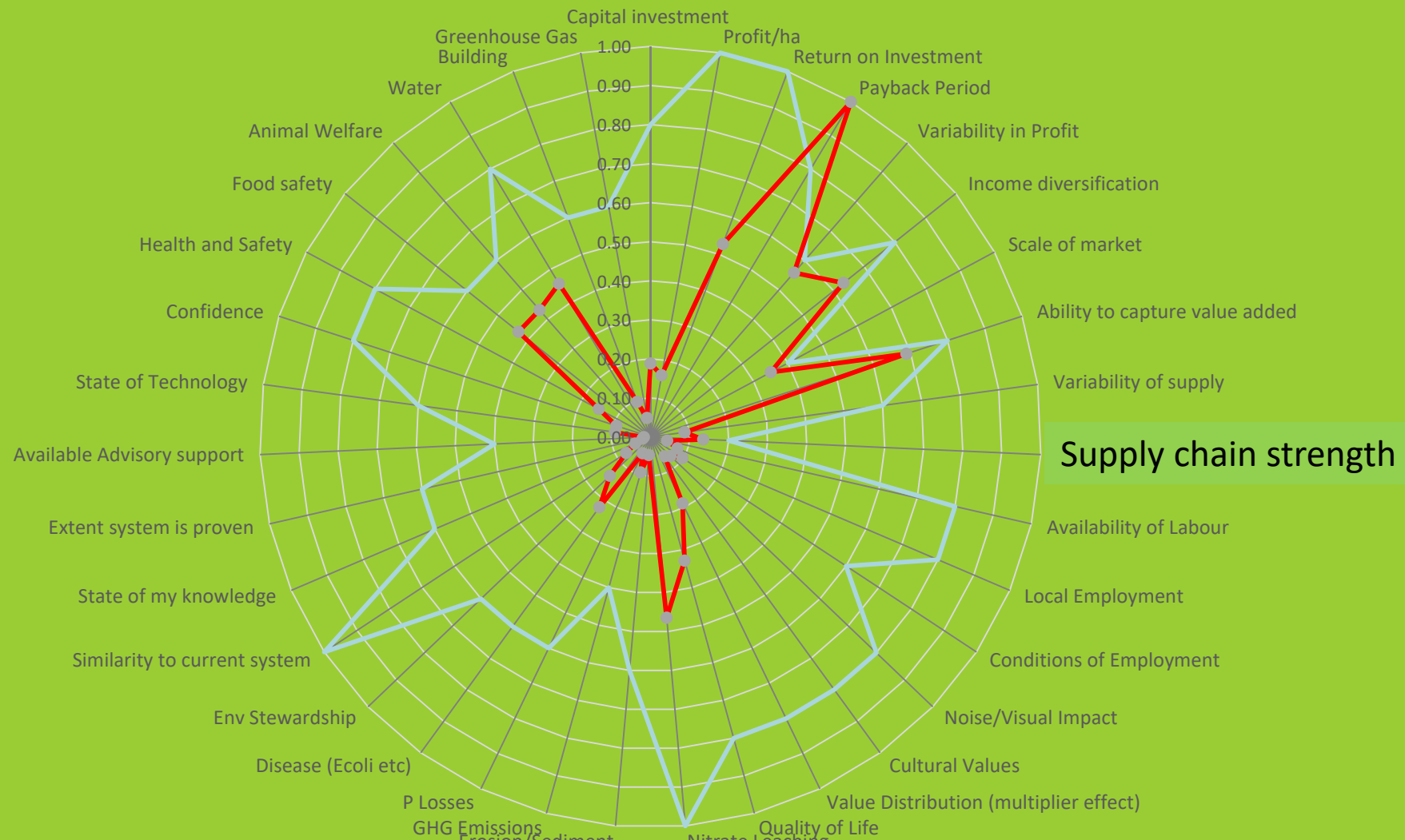
Case study-sheep milking



Weights at Domain Level



Weighting of each alternative under each criteria – sheep dairy example



Selection of Preferred Options

	Milking Sheep (Actual)	Dairy Goats	Blueberries	Specialty seeds
Int 1	3.69			
Int 2	3.77			
...	...			
...	...			
Score				



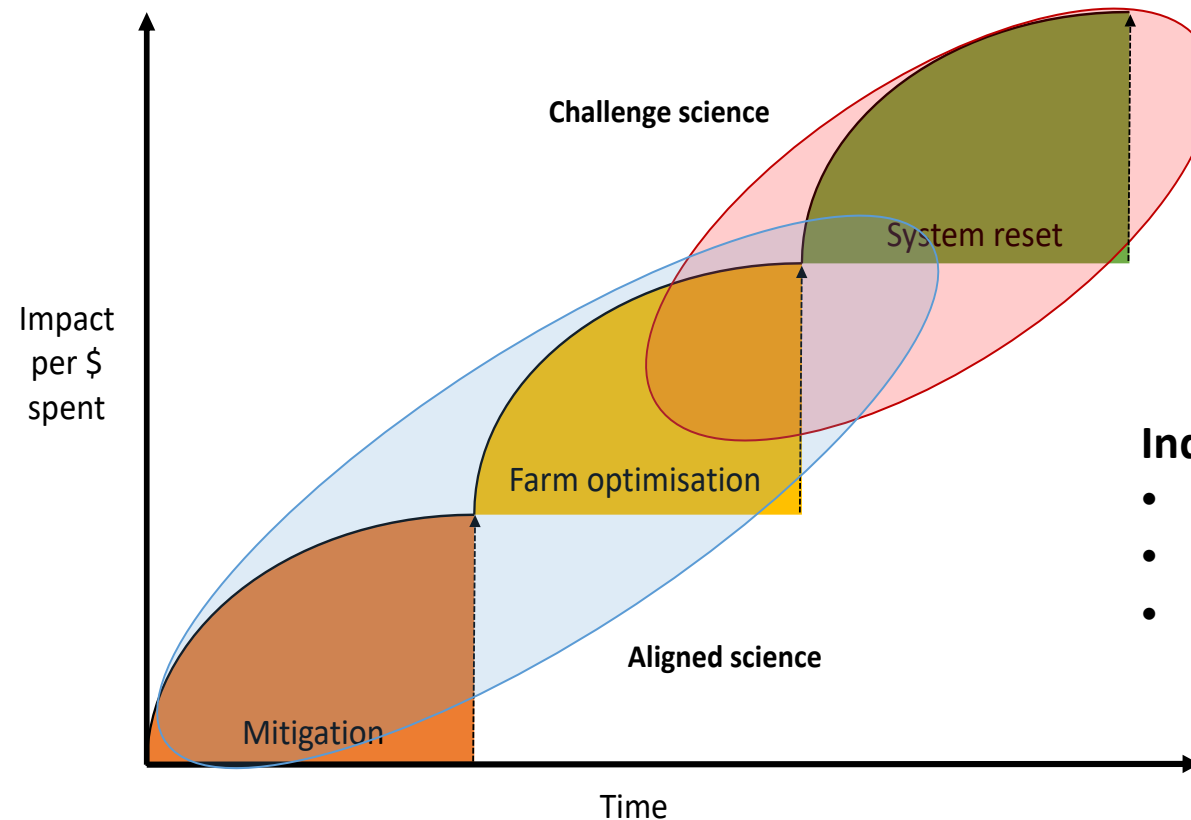
What are the benefits from partnering with NGS?

Business

- Certainty of investment
- Less risk

Science

- Investment priorities



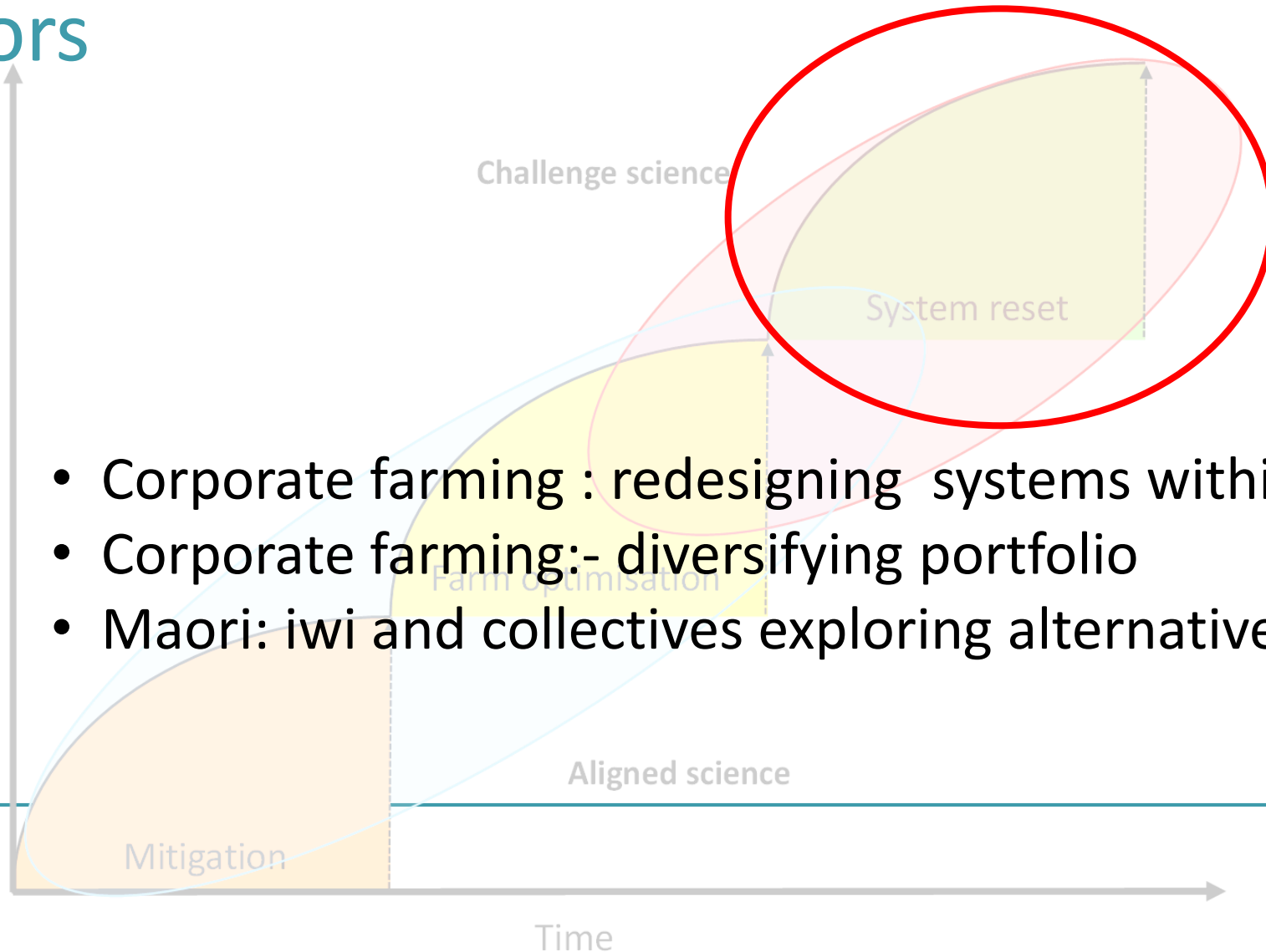
Industry

- Consistency of desired product
- Valued NZ brand
- Shifting culture and performance

Next Generation Systems: partnerships with innovators

- Regional Councils
- Land owners

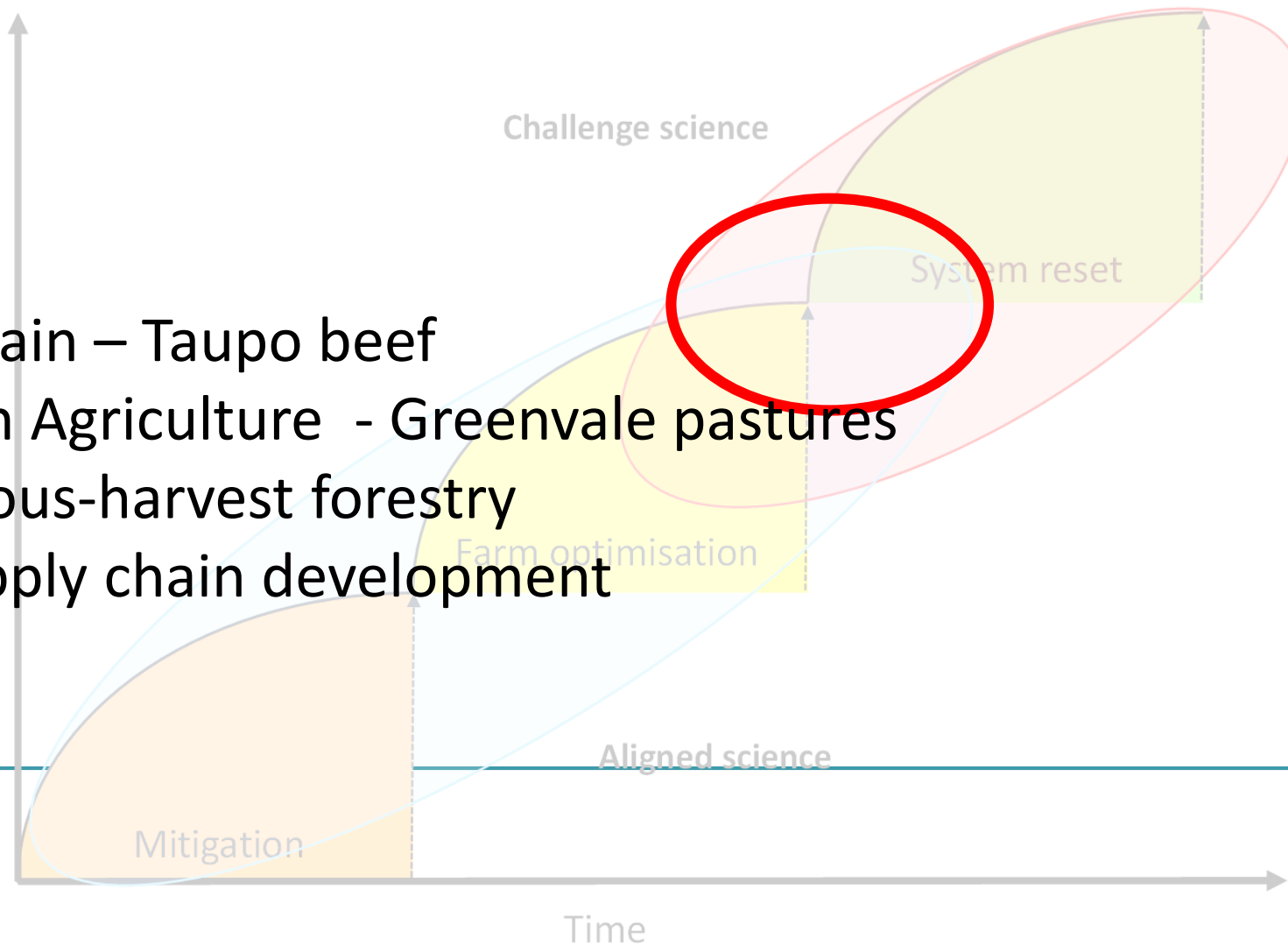
Impact per \$ spent



- Corporate farming : redesigning systems within nutrient limits
- Corporate farming:- diversifying portfolio
- Maori: iwi and collectives exploring alternatives

Next Generation Systems: case studies of optimised systems

- Value chain – Taupo beef
- Precision Agriculture - Greenvale pastures
- Continuous-harvest forestry
- Iwi – supply chain development
- ????



OUR LAND
AND WATER

Toitū te Whenua,
Tōiora te Wai

