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# Evaluating RS&T impact in New Zealand's Crown Research Institutes

T Williams, T White, W Kaye-Blake, G Greer & H Percy

Open Evaluation, Vienna, November 2016



OUR SCIENCE IS GROWING FUTURES™



**1. New Zealand's Science  
& Innovation System**

**2. Delivering and  
measuring impact from  
science investments**

**3. Capturing the value of  
co-innovation to  
enhance impact**



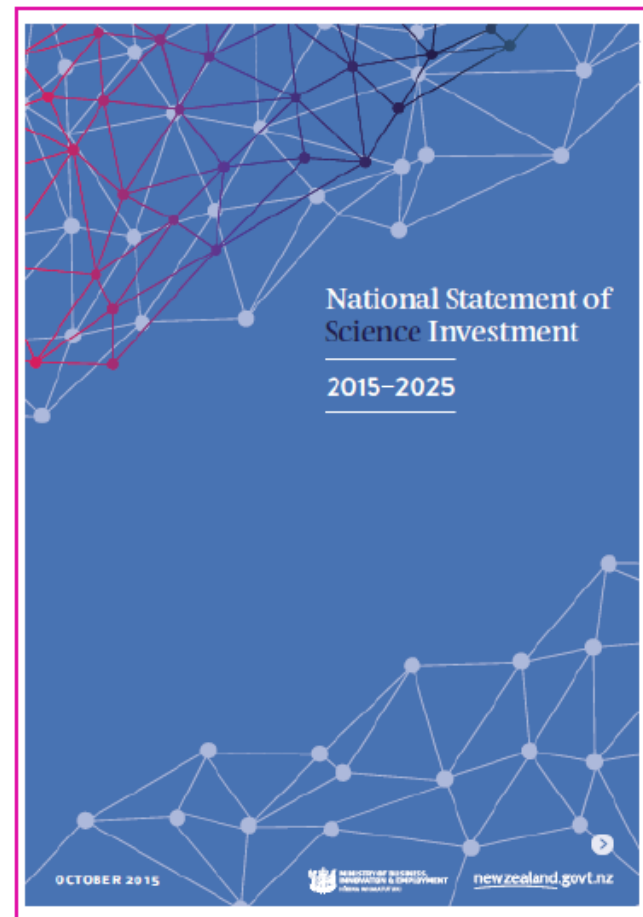


# Plant & Food Research's place in the NZ Innovation System

# Government's vision for New Zealand's science system

## National Statement of Science Investment 2015-2025

- A highly dynamic system that enriches New Zealand, making a more visible, measurable contribution to our productivity and wellbeing through excellent science.
- Focus is on two pillars:
  - Excellence
  - Impact – economic, environment, social and health



# New Zealand's seven Crown Research Institutes – providers of excellent science and impact

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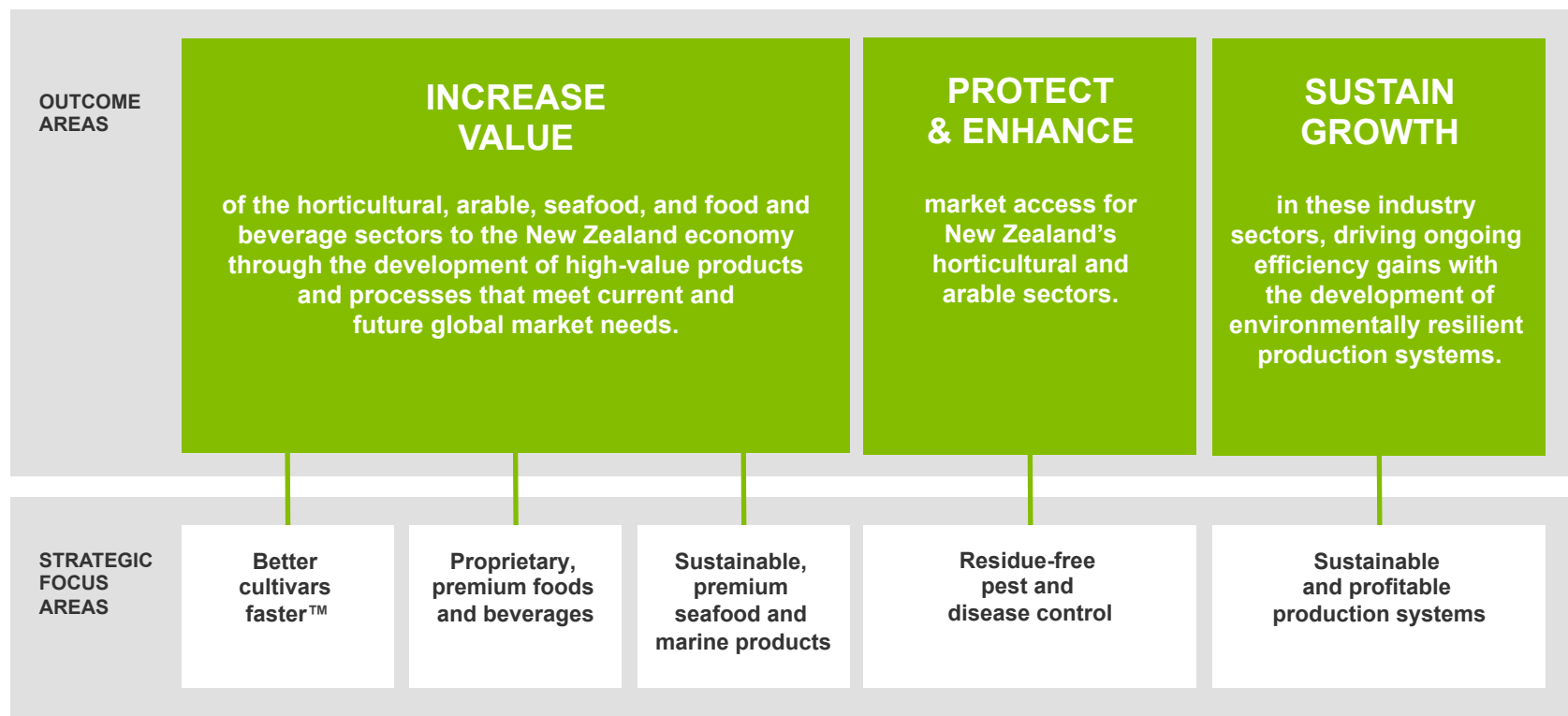


**Landcare Research**  
**Manaaki Whenua**

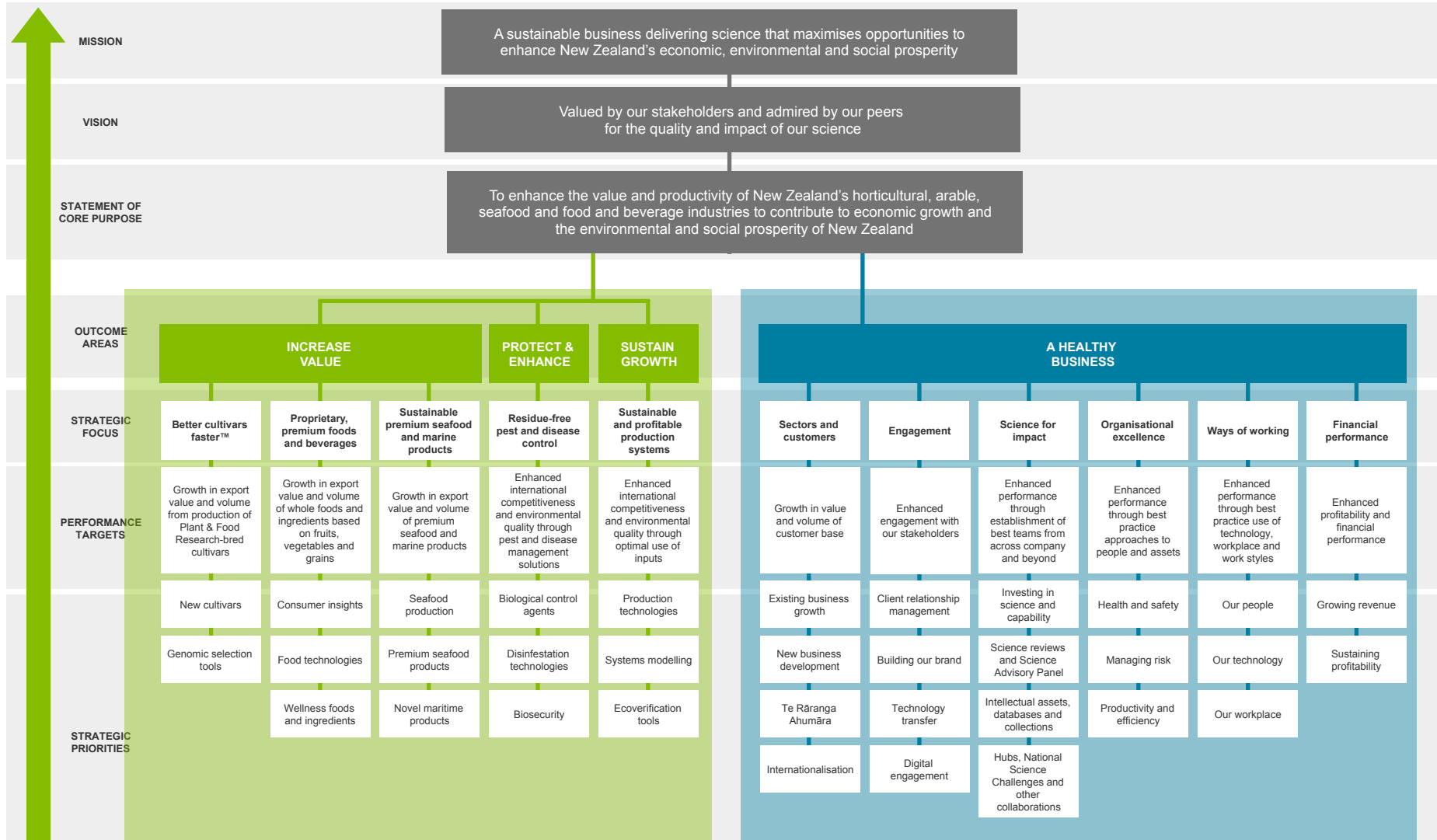


# Plant & Food Research's core purpose – our impact brief

**We are measured by three Core Purpose outcomes:**

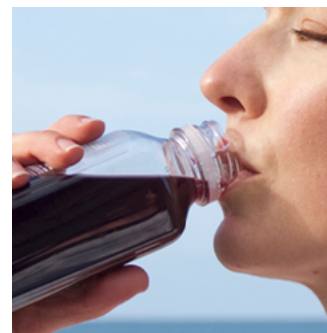
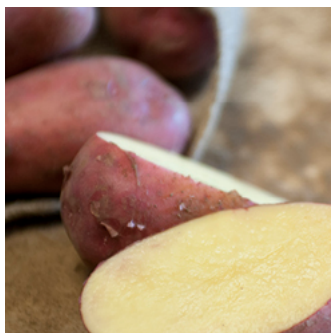


# Our strategy roadmap – a performance story





# Delivering impact to customers in our sectors

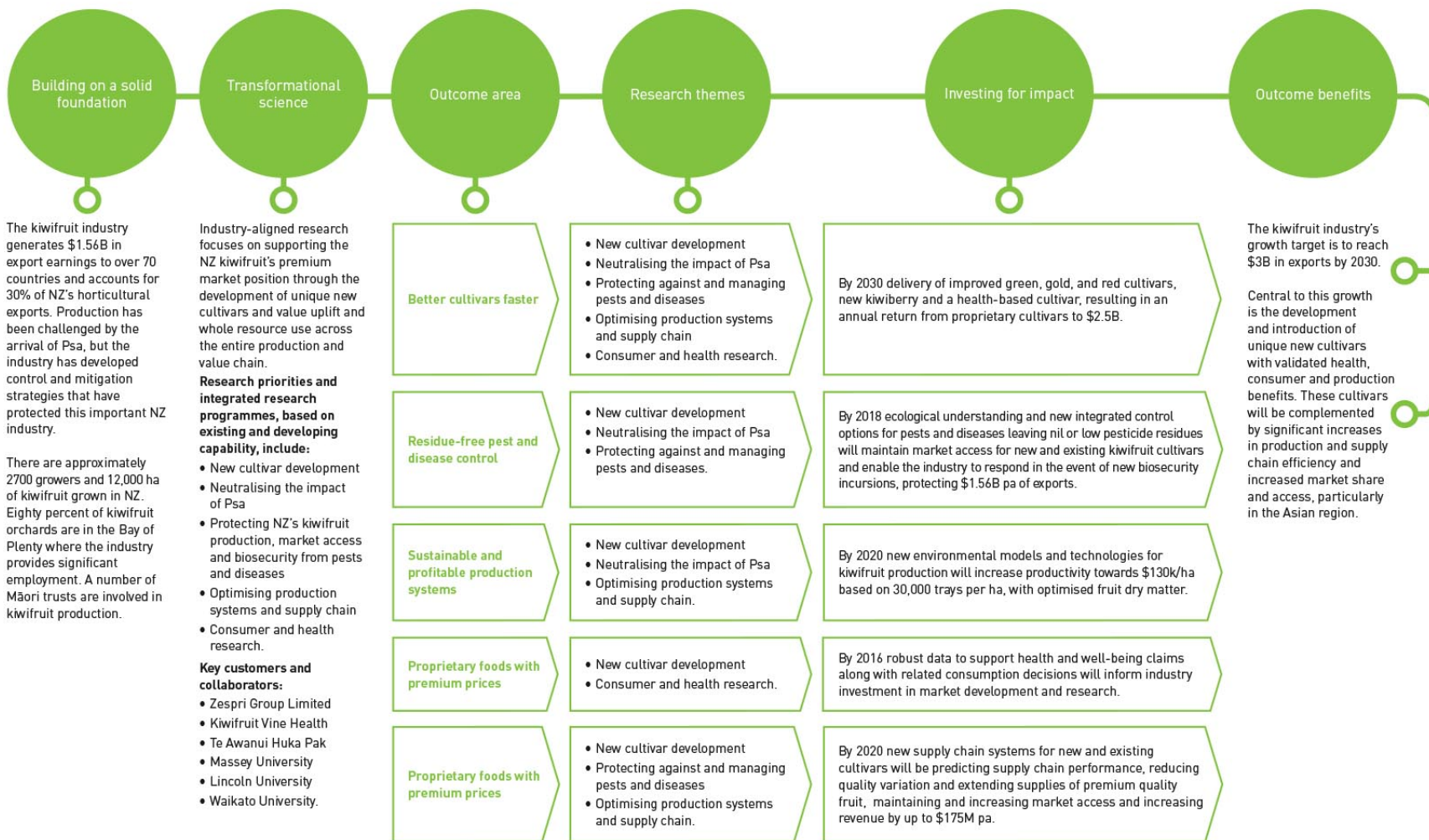




# 12 road maps with sector impact targets

## Kiwifruit sector

## ROAD MAP TO IMPACT



# Making progress towards impact – tracking critical steps

## Avocado sector

## CRITICAL STEPS TO IMPACT



# Measuring science excellence – knowledge, collaboration, networks

## Indicators of science quality



16

International  
awards



8

Invitations  
onto editorial  
boards



35

Invitations onto  
international  
committees



9.0

Average  
number of  
citations per  
published paper

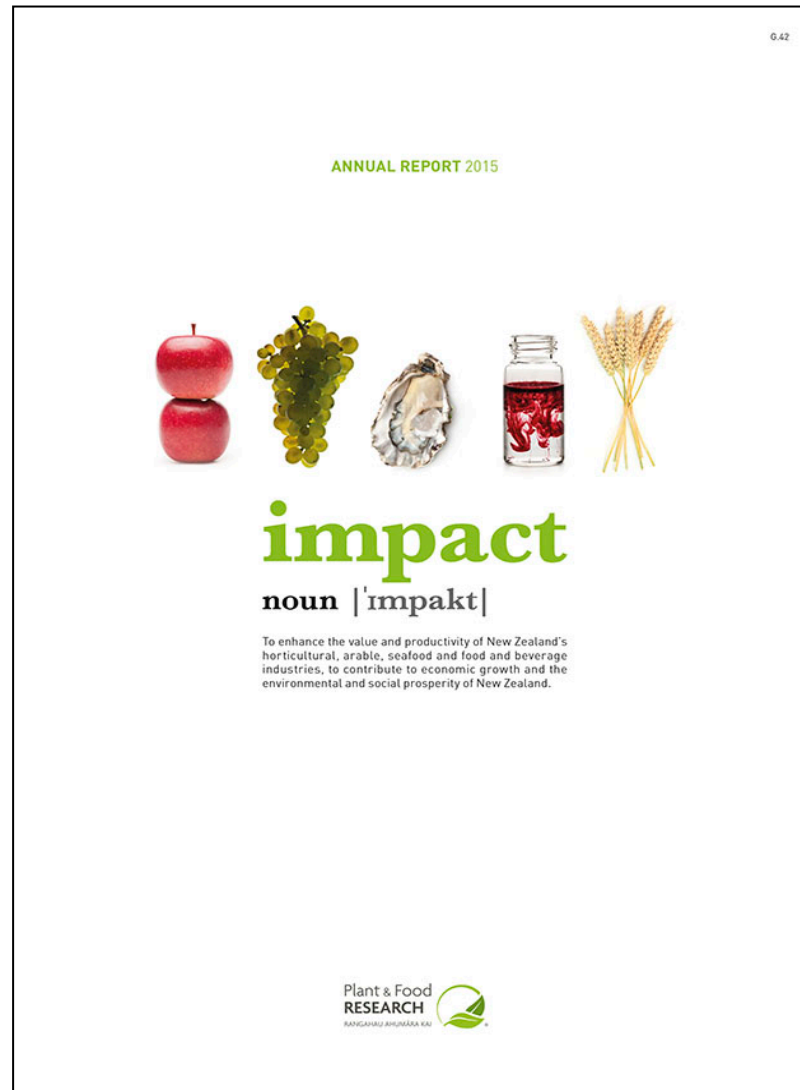


20%

Proportion of  
published papers  
in top 25  
international journals

# Accountability and advocacy

## – Annual report ... award winning!






# Accountability and advocacy

## – Growing Futures website

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→  
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Dr Andrew Allan

## Red apples for consumer health

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Revealing red flesh

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Scientist Richard Espley explains research to understand how red flesh occurs in apples.



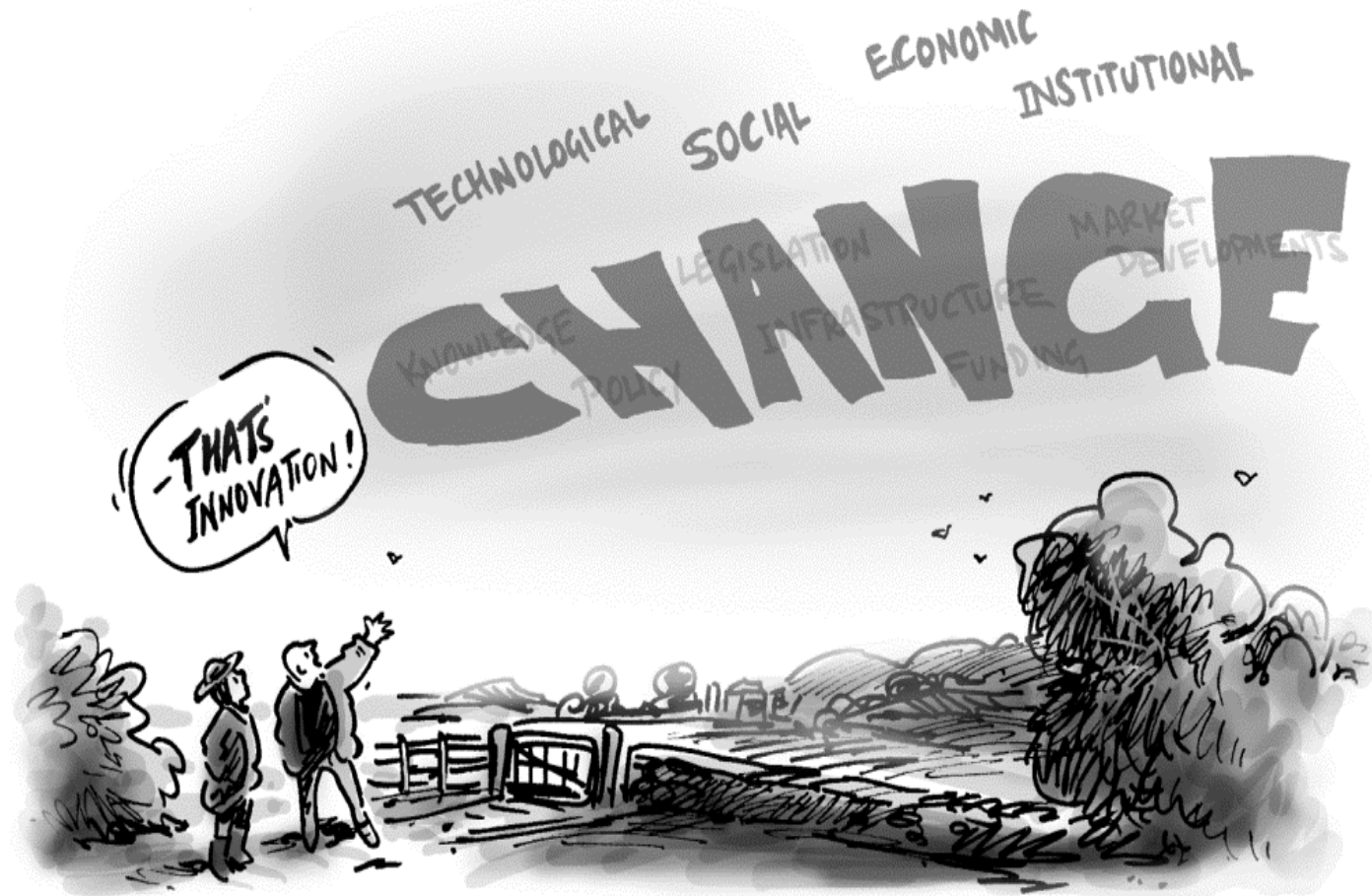




**Delivering and  
measuring impact  
from science  
investments**



# Discovery + commercialisation = impact



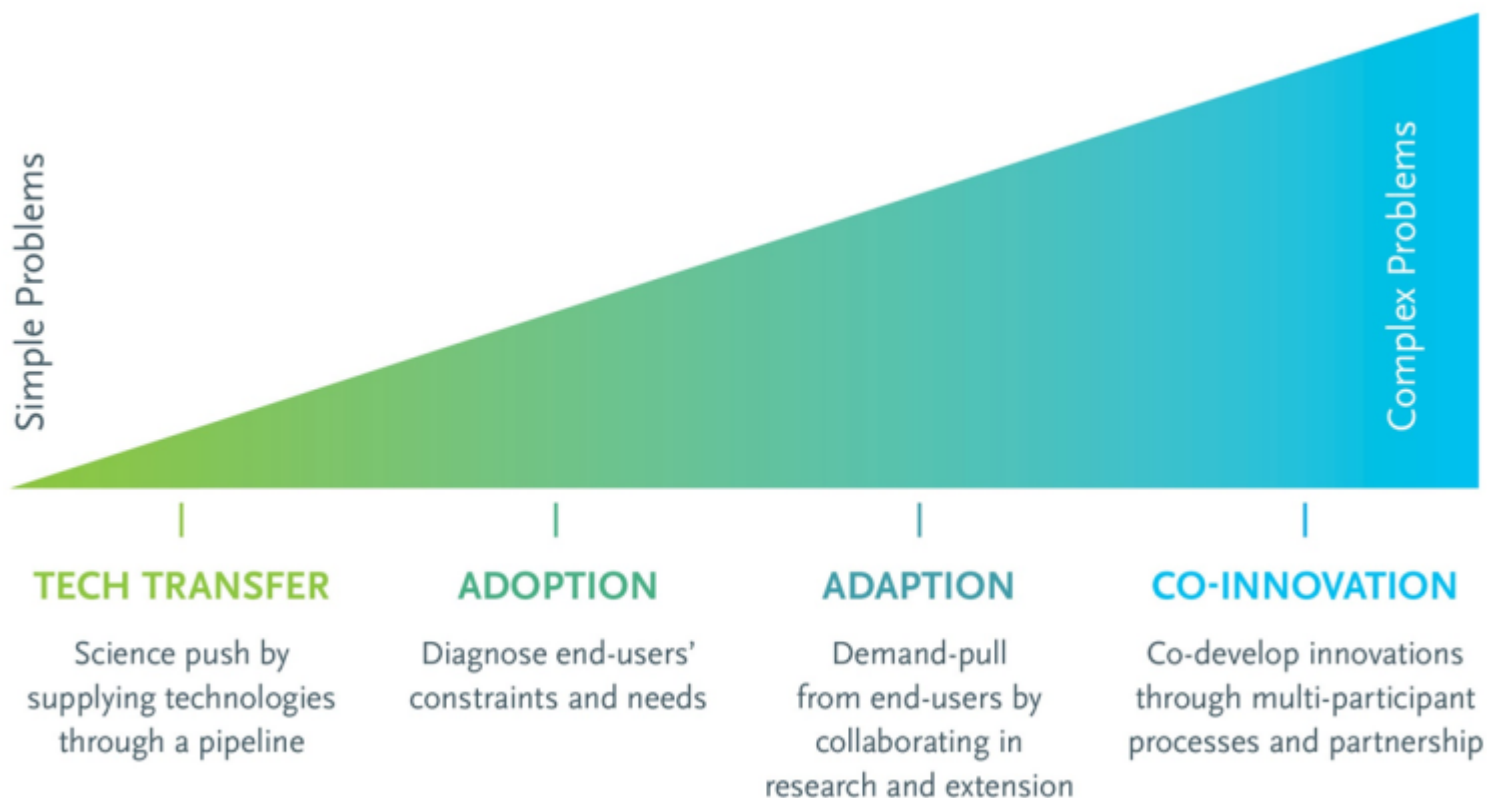
*From Klerkx 2012. Evolution of systems approaches to agricultural innovation: concepts, analysis and interventions. Chapter 20. In: Farming systems research into the 21<sup>st</sup> century: the new dynamic. Darnhofer, I et al. (ed.) Pp. 459-485.*





# The role of co-innovation

## – from theory to best practice in New Zealand



# Developmental evaluation for complex contexts

Michael Quinn Patton (2011):

“Developmental evaluation supports innovation *development* [impact] to guide adaptation to emergent and dynamic realities in **complex** environments.”

Non linear

Emergent

Dynamic

Uncertain

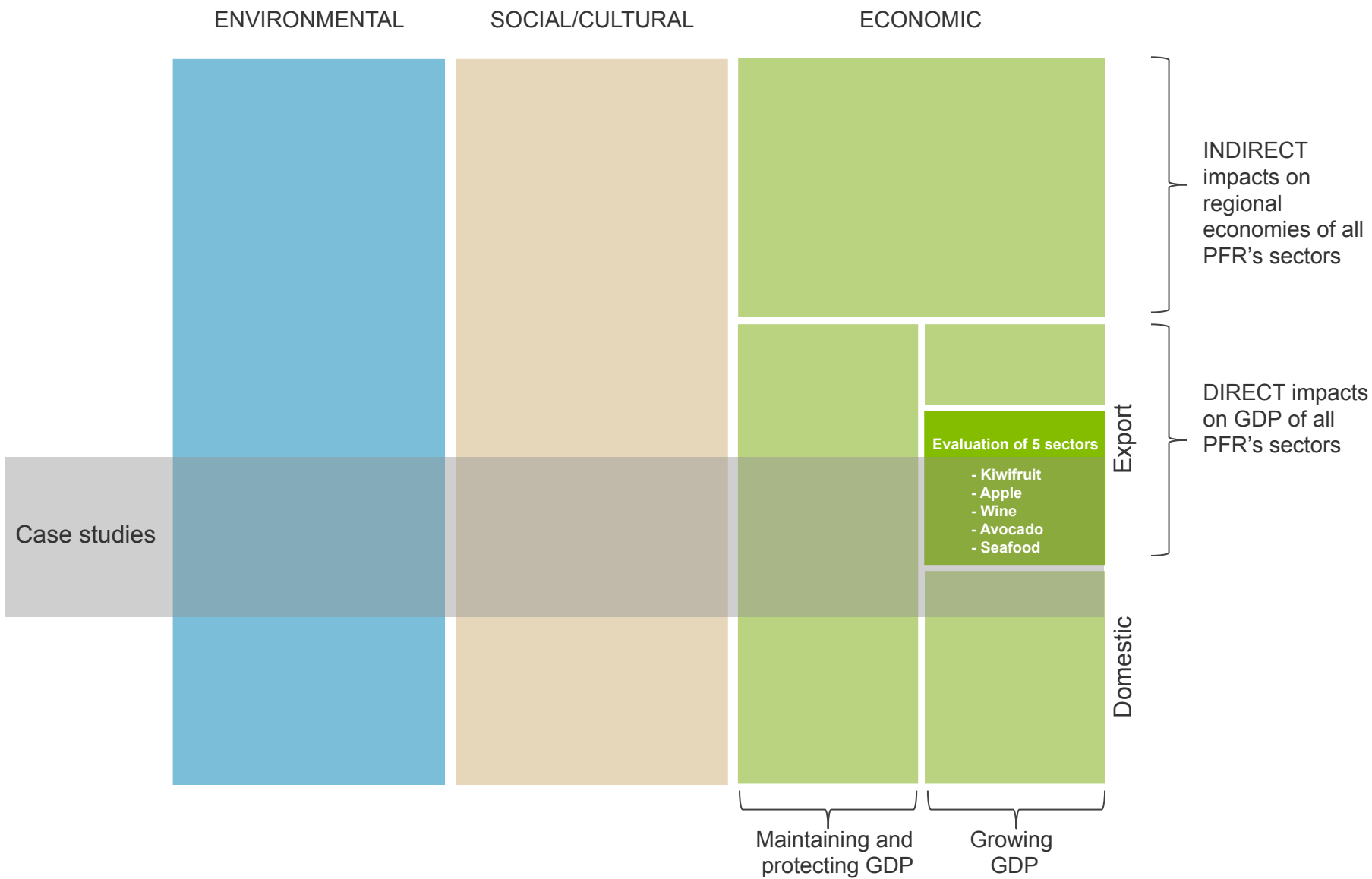
Adaptive

What is being developed ...?

# A novel, *top-down* valuation approach – total economic contribution of PFR

- » 5 biggest sectors: avocado, seafood, wine, kiwifruit, apples
  - » Contribution to their performance 2000–15
  - » Benefits of research (value added, GDP), not costs of research
  - » Industry and research experts confirm drivers of innovation:
    - » Government
    - » Industry
    - » **PFR research**
    - » Market
    - » Wild card
  - » Estimate the change in contribution of each sector to NZ's GDP over 15 years
- 
- » Partition economic growth to the drivers, particularly **PFR research**
  - » Quantify benefits (\$) per sector >> total PFR value







# A *bottom-up* approach to enhance impact

## – AgResearch's Adoption and Practice Change Roadmap

Understanding what leads to impact, based on co-innovation theory and practice ...



# Learnings



- » Create innovation networks across science : industry : community stakeholders to enable impact
- » Embed capability in evaluation within research teams, a network of champions
- » Build resources – website, impact planning tool, M&E, program logic

# A website of resources

## www.beyondresults.co.nz



About

Success Principles

Case Studies

Tools

Support

Primary Innovation

## Science with impact

Beyond Results is our response to the increasing complexity and scale of the issues that are being researched – where it takes more than a simple piece of knowledge or technology to bring about change, whether on-farm or for another end user.

This website includes tools and approaches to enable research organisations and stakeholders to plan science for meaningful change in the New Zealand agricultural sector.

Click on the video below to find out more about Beyond Results.



**Capturing the value  
of co-innovation**



# Applying co-innovation and developmental evaluation in RS&T programs

- » New capability needed in science teams – social/economic/reflexive
- » Managing industry expectations around short-term problem solving and risky science
- » Managing funder expectations around delivery (on time!)
- » Bringing parties together in the spirit of co-innovation (old behaviours and territory/power)
- » Capturing, valuing and scaling up `soft' impacts (learning, trust, networks)
- » Capturing longer term impacts due to time lags



# Evaluating case studies or research programs

- » Apply co-innovation principles
- » Design and apply program logics with stakeholders to navigate through the project
- » Build a solid Theory of Change and test assumptions
- » Use SNA to map interactions and identify key actors
- » Commit to an M&E plan with KPIs (quant and qual)



Reflect > Learn > Reflect > Learn ...

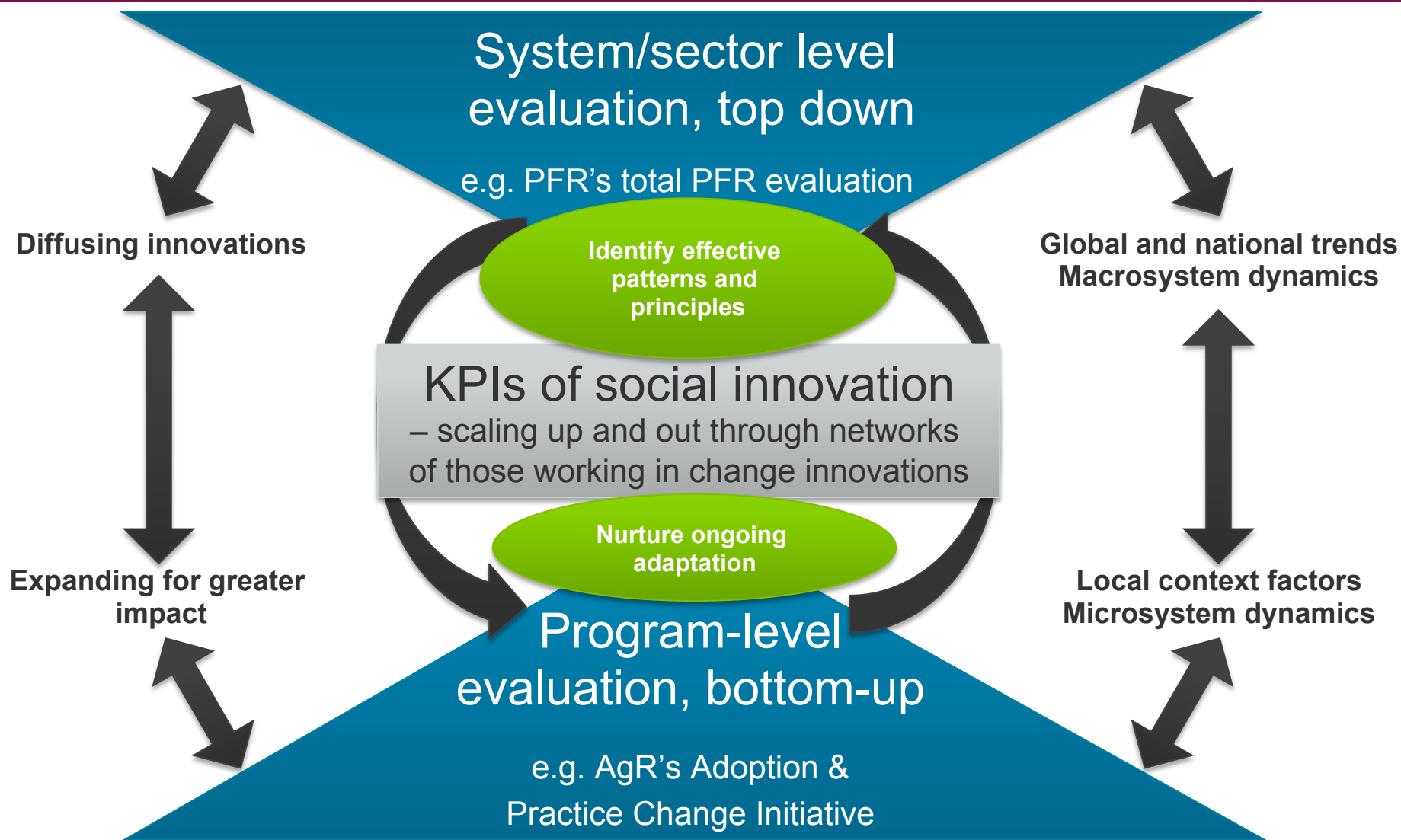
# Evaluating organisations, sectors or systems

- » System-level overview
  - The NSSI
- » Domain Plan
  - addressing questions
- » Science Intel Database – mapping inputs and outputs
- » Annual Science & Innovation Systems Performance Report
- » Generic indicators applied across organisations



## The challenge of scaling up and out ...

# Navigating the middle ground







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