Research Methodology and developments – 2015 update

Henrik Moller
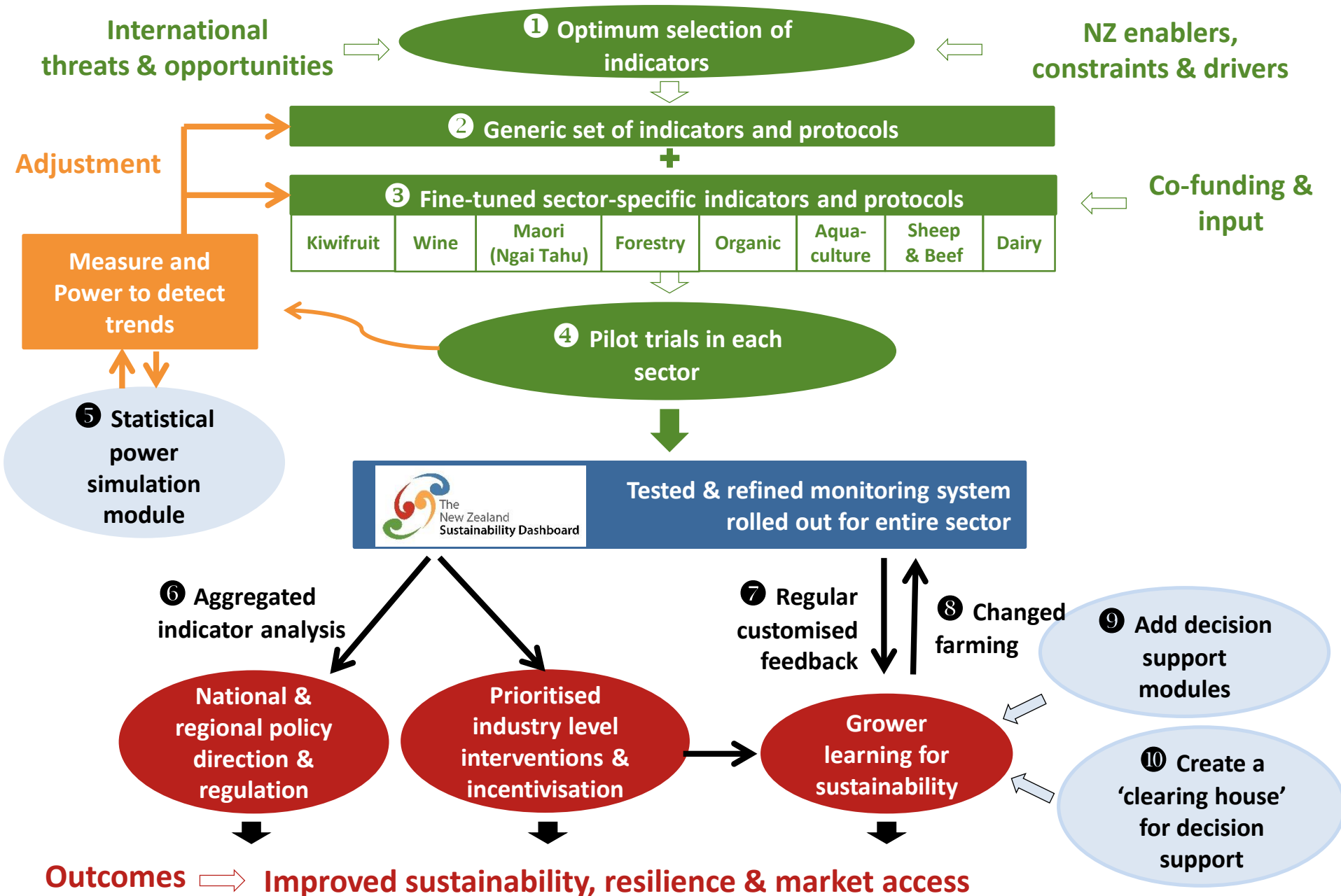
NZSD Annual Stakeholders' workshop

6 August 2015

Agenda

- Re-orientation: the NZSD Roadmap

- Updates:

  - Prioritising indicators and initiatives using choice modelling: a wine case study

  - Māori Sustainability Dashboard

  - Kiwifruit: demonstration of the orchard, Packhouse and Zespri Dashboards

  - Simulation toolbox for refining monitoring and learning

  - SWNZ reporting overview

- Future: 'TempAg' and 'Our Land & Water' NSC
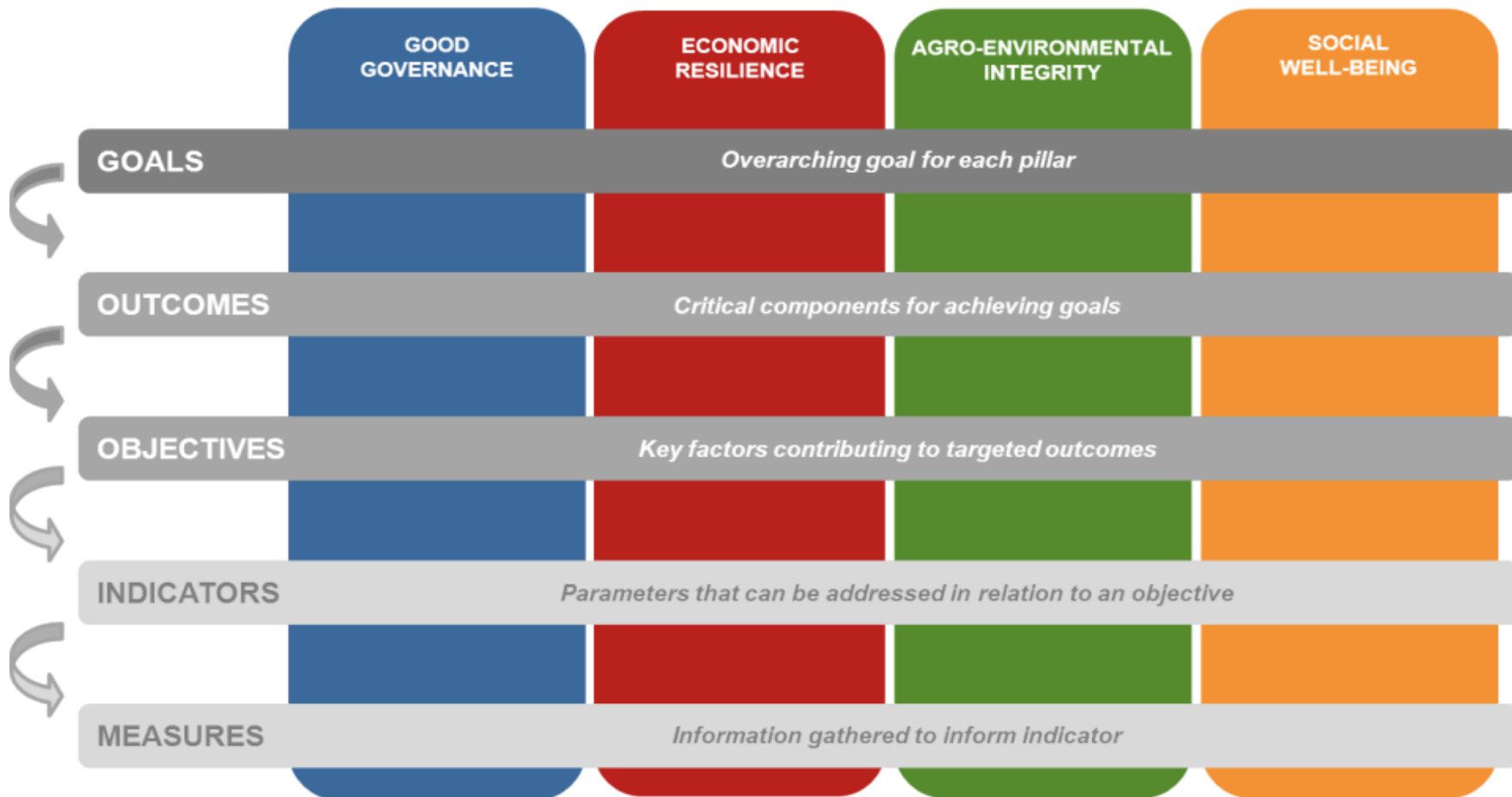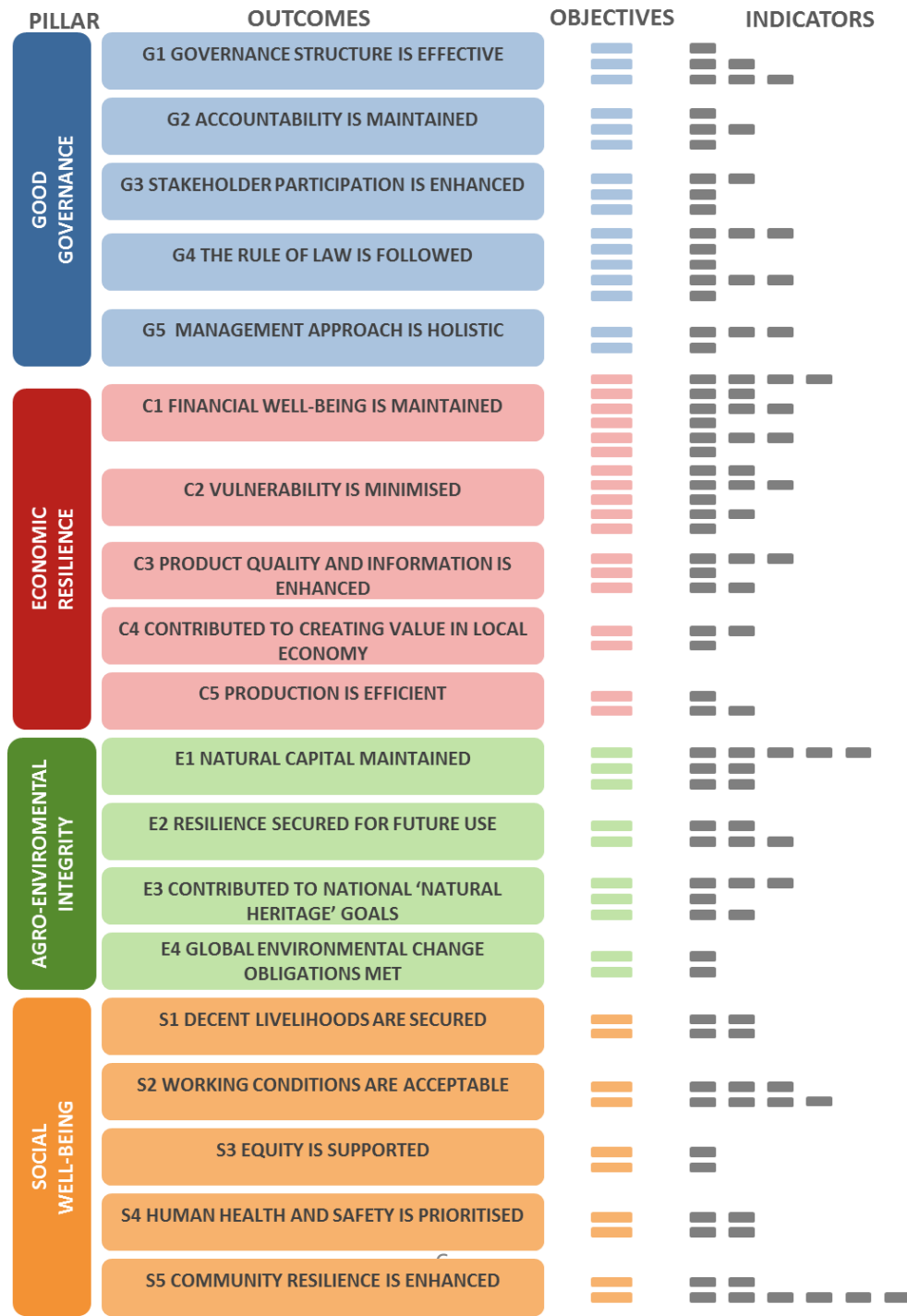
- Questions and Discussion

NZSD high-level plan

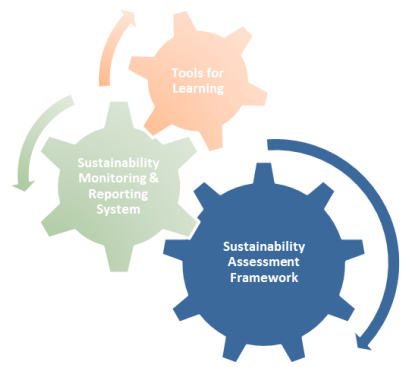**International threats & opportunities** ⇒ **❶ Optimum selection of indicators** ⇐ **NZ enablers, constraints & drivers**

⬇

❷ Generic set of indicators and protocols

+

❸ Fine-tuned sector-specific indicators and protocols ⇐ **Co-funding & input**

Kiwifruit	Wine	Maori (Ngai Tahu)	Forestry	Organic	Aqua-culture	Sheep & Beef	Dairy

Adjustment

Measure and Power to detect trends

⬇

❹ Pilot trials in each sector

❺ Statistical power simulation module

The New Zealand Sustainability Dashboard

Tested & refined monitoring system rolled out for entire sector

❻ Aggregated indicator analysis

❼ Regular customised feedback

❽ Changed farming

❾ Add decision support modules

National & regional policy direction & regulation

Prioritised industry level interventions & incentivisation

Grower learning for sustainability

❿ Create a 'clearing house' for decision support

Outcomes ⇒ **Improved sustainability, resilience & market access**

Tools for learning

Decision support, risk assessment and power analysis modules

Monitoring & reporting system

Protocols & software for collecting, analysing & reporting data

Sustainability assessment framework

Indicators and measures used to assess whether goals are met

NZSD Framework – based on SAFA

Sustainability goal for New Zealand's production landscapes
(defined by society's needs and values)

	GOOD GOVERNANCE	ECONOMIC RESILIENCE	AGRO-ENVIRONMENTAL INTEGRITY	SOCIAL WELL-BEING
GOALS	Overarching goal for each pillar			
OUTCOMES	Critical components for achieving goals			
OBJECTIVES	Key factors contributing to targeted outcomes			
INDICATORS	Parameters that can be addressed in relation to an objective			
MEASURES	Information gathered to inform indicator			

ARGOS

The NZSD framework

Refining the Sustainability Assessment Framework

- NZSD Framework – high number of indicators
  - Costly! Monitoring fatigue? Undermines focus?
- Indicator and measures prioritization
  - Salience, risk/relevance, trust & reliability
- Prioritization of services **=>** business case analysis for each service.
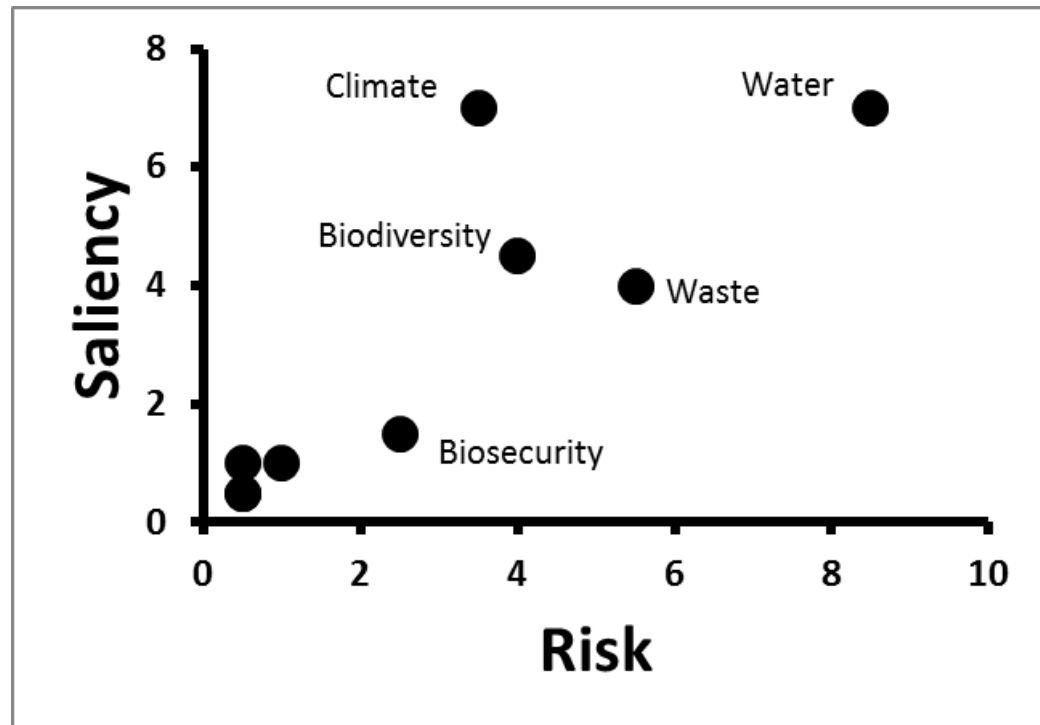
Prioritization tools

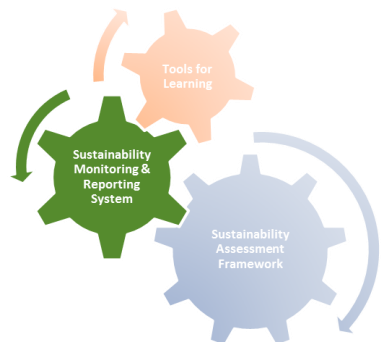✿ Tools to help select and prioritise sustainability services and indicator/measure selection – choice modelling, 1000Minds

Jay Whitehead

AERU, Lincoln University

Sustainable Winegrowing New Zealand

Tools for learning

Decision support, risk assessment and power analysis modules

Monitoring & reporting system

Protocols & software for collecting, analysing & reporting data

Sustainability assessment framework

Indicators and measures used to assess whether goals are met

Sustainability Monitoring and Reporting systems

Contrasting software tool development experiments:
trading-off speed, cost, flexibility and customization

- Wine => WiSE based on *SOFI* (*PE International*)
- Māori/Forestry => customized *FluidSurveys* solution
- AQNZ => they have selected *EcoPortal*
- Organic => tbc, based on *BioGro* existing IT systems
- Kiwifruit => bespoke NZSD solution developed by Lincoln Agritech
- Farm Environmental Plans => reused the KF dashboard to apply it to a related application

Sustainability Monitoring and Reporting systems
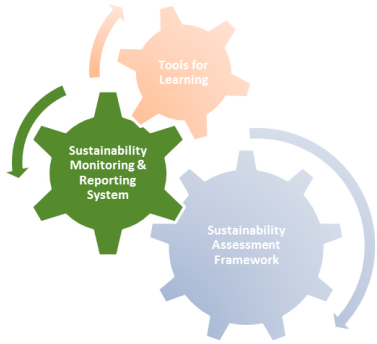
🌀 Māori and Forestry Dashboards

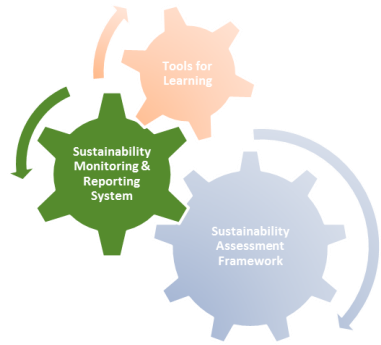=> **John Reid,** Ngāi Tahu Research Centre, University of Canterbury

Sustainability Monitoring and Reporting systems
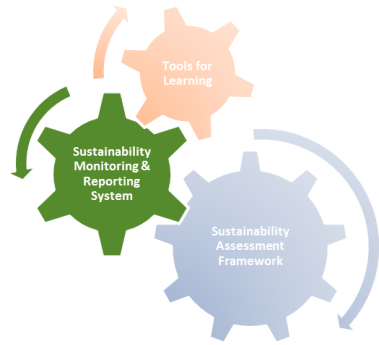
🌀 Kiwifruit Dashboard - <u>Demo</u>

=> Jayson Benge, The AgriBusiness Group

Farm Environmental plans, pastoral farming in Canterbury

Tool mockup

- Based on Kiwifruit Dashboard applied to ECAN's requirement for FEPs

- Moving from Excel sheet to online tool

- Will be further developed in Year 4

Farm Environmental Plan – mock-up

Year 2014/15 ▼   Save

Size

Property total area	134 ha
Number of Land Management Units	2 ▼

LMU A

Name	
Contour	
Current use	
Area	89 ha

LMU B

Name	
Contour	
Current use	
Area	45 ha

Farming Operations

Farming types ☐ Dairy ☐ Arable ☑ Sheep ☑ Beef & Dairy replacements ☑ Dairy Support Winter Grazing
☐ Other (deer, pigs)

Units % ▼ ❓

	Sheep	Beef & Dairy	Dairy Grazing	Total	
Area	45	19	70	134	ha
Stock no.	55	15	30	100	

Farms

Farm 1

Property

Property Names

Operations

Soils

Irrigation

LMU Risks

Biodiversity

Nutrients

Compliance

Resource Consents

Farm Maps

< >

Year | 2014/15 ▼   Save

Farms

Farm 1

Property

Soils

Irrigation

Miscellaneous

Information

Effluent

LMU Risks

Biodiversity

Nutrients

Compliance

Resource Consents

Farm Maps

Effluent Irrigation Area

Consented area	1	ha
Applied area	2	ha
Max application rate	3	mm/hr

Effluent Irrigation Type

Effluent irrigation type   ☐ Pivot ☐ Low pressure - K-Line ☐ Spray - travelling irrigator ☐ Other

Other

Effluent Consents

Number of consents   2 ▼

Consent 1

Consent number   230

Consent 2

Consent number   6789

Effluent Storage

Type/system	Spray from sun ▼
Lining type	Earth ▼
Other	
Days	

<   >

Tools for learning

Decision support, risk assessment and power analysis modules

Monitoring & reporting system

Protocols & software for collecting, analysing & reporting data

Sustainability assessment framework

Indicators and measures used to assess whether goals are met

Tools for Learning

- SWNZ Reporting – Water, Energy, Agrichemical inputs

=> **Andrew Barber**, The AgriBusiness Group

- Video (YouTube)

Tools for Learning

- A simulation toolkit to optimize investments in monitoring and test limits of interpretation of data

=> **Catriona MacLeod & Peter Green**, Landcare Research

Research Afternoon Session

- Demo Kiwifruit Dashboard – if you want to play with it (Jayson Benge and Aaron Rimmer)

- Posters on:

  - Organic Dairy case study- pre analysis (Orane Dupont and Charles Merfield)

  - Forestry case study (Courteney Sealey)

  - Power Analysis application (Peter Green)

  - NZ Transition towards Sustainable Winegrowing practices (Marion Sautier)

Next steps - research

- *'TempAg'* (Temperate Agriculture international research network)

- National Science Challenge – Our Land and Water – Context and link to NZSD

⇒ **Paul Dalziel**, AERU, Lincoln University

⇒ **Tim Payn**, SCION

Questions & Discussion

What do you think about our progress?

Risks and opportunities for our last 3 years?