

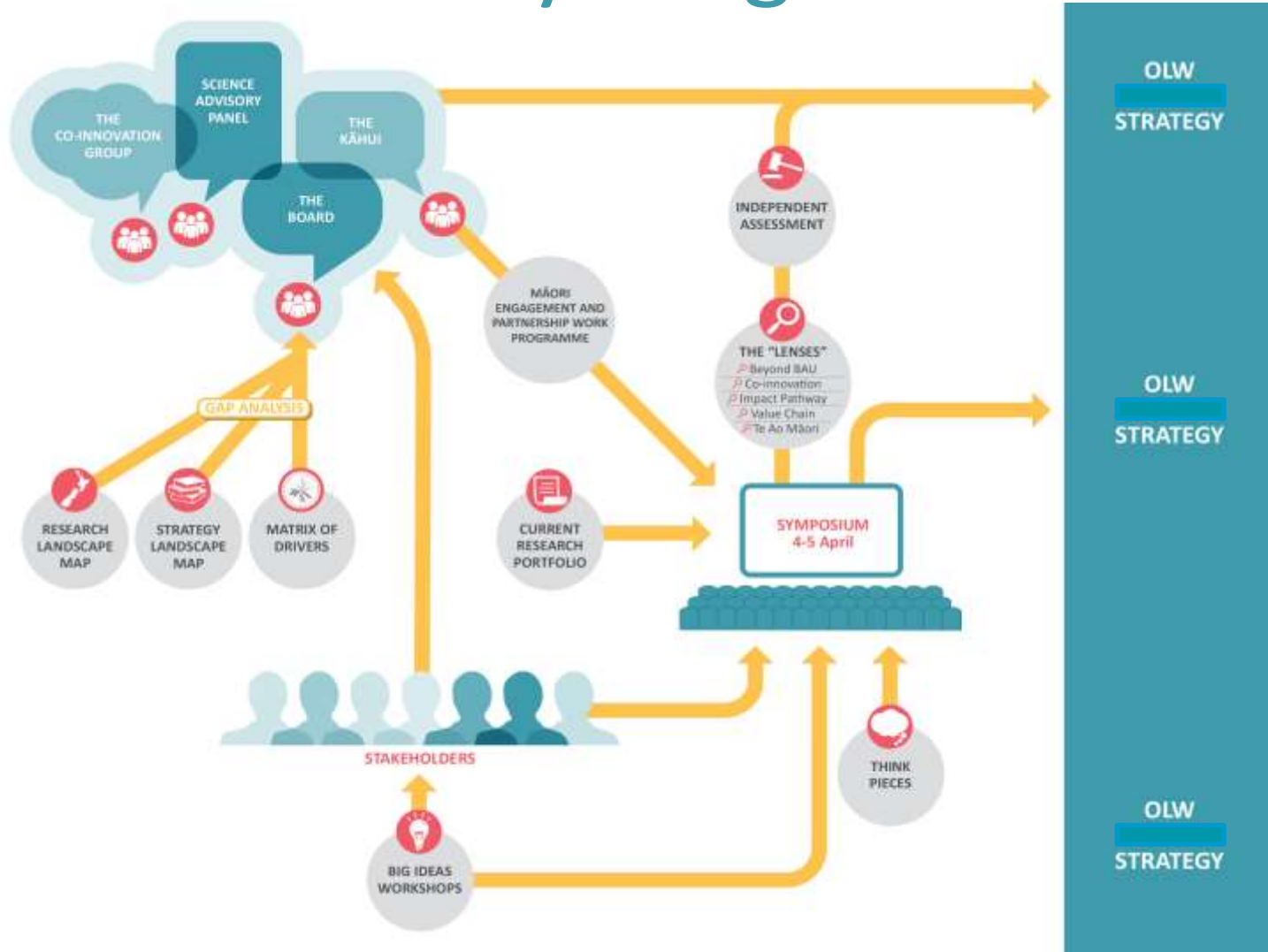
OUR LAND
AND WATER

Toitū te Whenua,
Toiora te Wai

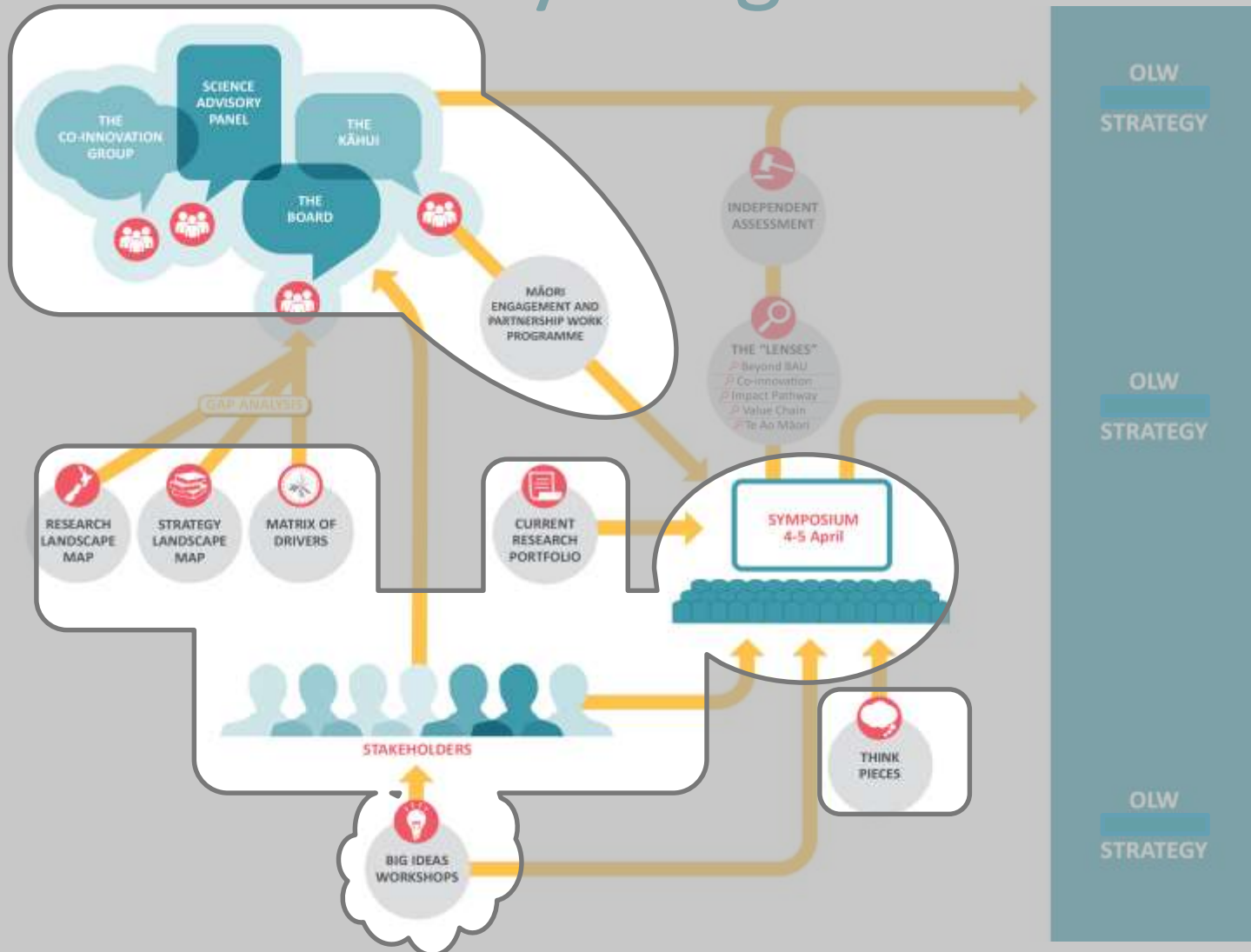
**The way forward – key learnings and
strategy validation discussion:
(random reflections)**

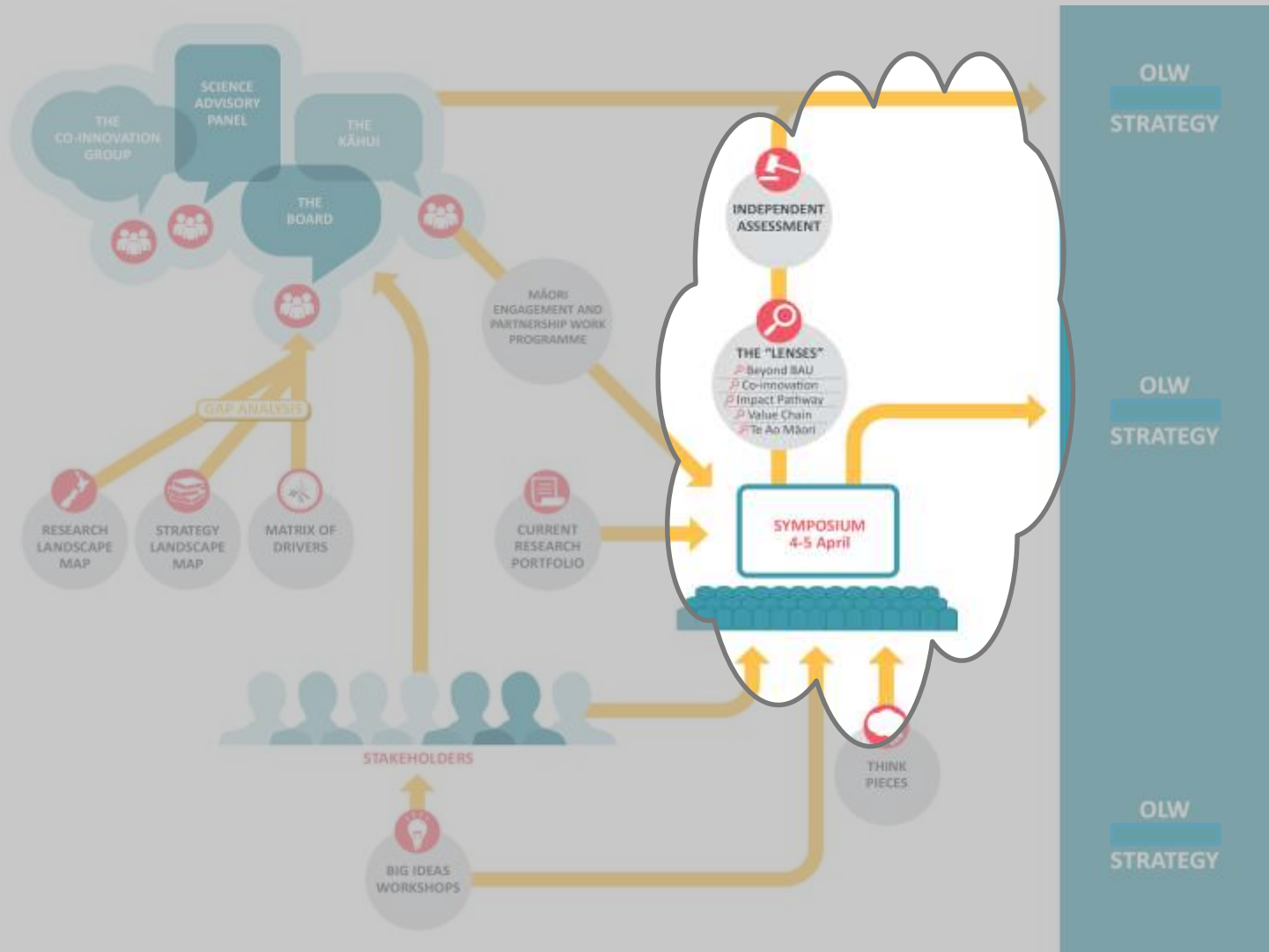
Don't forget to say
thankyou!

Where does everything fit?



Where does everything fit?





The characteristics we are looking for in our research portfolio



Te Ao Māori

“The Māori world view acknowledges a natural order to the universe, a balance or equilibrium, and that when part of this system shifts, the entire system is put out of balance. The diversity of life is embellished in this world view through the interrelationship of all living things as dependent on each other, and Māori seek to understand the total system and not just parts of it”

Harmsworth and Awatere 2013

Co-development (co-innovation)

a systemic approach to helping to change practice when addressing complex challenges

=> science involved in multi-participant partnerships

*“Co-innovation is a systemic approach to facilitating practice change, and more broadly innovation, when addressing **complex challenges**. Taking a systemic approach means considering as a whole, the **wider ecological, political, economic, social and cultural system** in which a problem is situated. The interactions among the parts of the system then become as important as the individual parts. Innovations are, therefore, a complementary mix of technological, practice, market, social and policy changes. These changes evolve together through **an iterative process** of practical actions and experiments that challenge the current way of doing things”. Klerkx, et al. (2012)*

Key note session



“the unintended consequences of an unsustainable farming model”

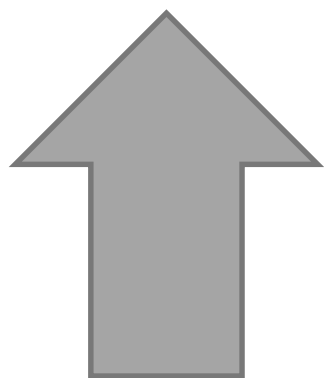
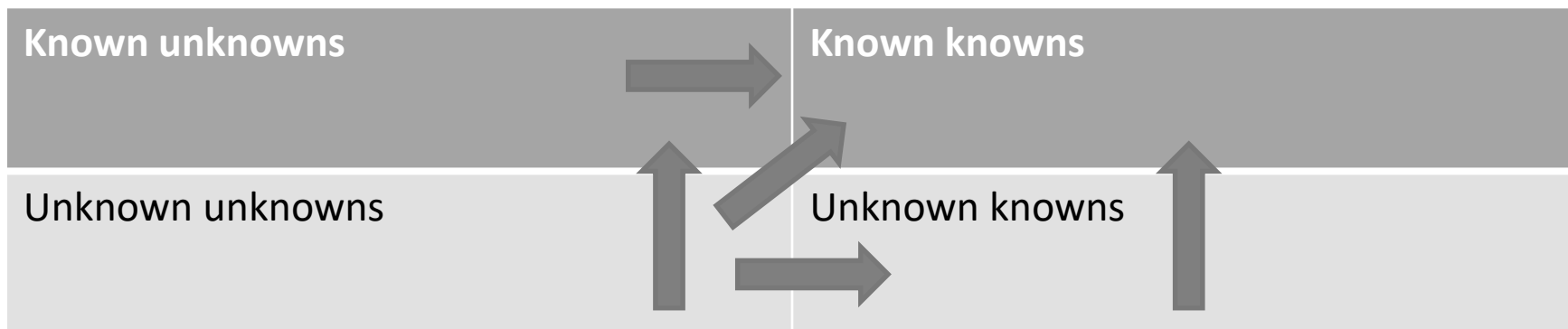
- Think about farming differently
- Go niche
- Build supply chain infrastructure

“future proof predominance of animal farming or change the mix of land uses to deliver better outcomes”

- Changing operating environment (baby boomers)
- Planning context – adversarial v collaborative
- Low impact diverse , resilient multi-functional landscapes (but how do we make it pay?)
- Balance of reg v non-reg

“Being a good trans-disciplinary researcher is not a simple add-on”

- Different disciplines deal with different unknowns
- In-built inertia or resistance to change = once something exists its hard to get rid of
- Wicked problems as systems



“Vision Mātauranga is generated in partnership with Māori communities....Mātauranga Māori is the distinctive set of circumstances within Māori communities”

Priorities

- Partnerships
- Mātauranga Māori
- Capacity

Māori play a long game.

Innovation and diversification

Think piece session

“Thinking and doing transformation –would we know it if we saw it?”

- Multiple insights. Changing values and hearts
- Profoundly political
- Shifts at a deep level – new rules, institutional, path dependencies
- Problem definition. Multiple perspectives. Scaffolding. Ecology of knowledges

UNSDGs

- **Strong alignment between SDGs and NSCs**
- Case studies
- Leadership and direction. Govt lead. Linkages with govt priorities
- NSCs potential role

“Knowledge we need to support a sustainable transformation of NZ’s land based industries”

- An integrating lens
- Four kinds of knowledge – Te Ao Māori, alignment of entity choices (cooperatives), governance (accountability input vs output controls), learn-as-we-go
- Science of better transitions - agency

What are we hearing?

From the keynote session:

- How do we construct optimum value chains?
- How is policy co-created to support transformational change?
- How do we increase the pace of change (19.5 years)?
- How do land use systems translate into change on the ground?
- How do we ensure that multi- and trans-disciplinarity is embedded in our research agenda?
- If transformation implies upheaval, how do we deal with it?

What are we hearing?

Te Ao Māori provides us with a fundamental unifying perspective

The value chain “lens” is still critical

And how important is climate change???

Multi-functional landscapes (diversity, mosaics) seem to be very important – but how do we transition?

How do we bridge the research-implementation gap?

The science policy interface is really important – but what’s the role of OLV?

Connections are everything – many of our big questions cross NSC boundaries

Vision Mātauranga is critical – “but who does the unlocking?”

Data ecosystems create opportunities

What are we missing?

We “get” impact – but can we describe the pathway that enables us to transition to a transformative state?

How do we grasp the opportunities Mātauranga offers us?

What do co-innovation behaviours actually look like?

Where to from here? – the big ideas

Two-pagers from presentations due by 5 pm on the 26th of April.

Criteria and weightings to be confirmed by the board tomorrow.

Assessed on the 1st of May (independent stakeholders + scientists), with recommendations soon after.



Where to from here? – building the strategy

- It doesn't stop here
- Reflections on what we've heard
- Writing the document
- Who to talk to (Director and Chief Scientist)
- Developing the narrative
 - Coherence
 - Completeness
 - Gaps and duplications
- Continue to engage to maintain science excellence and improve impact
- Keep working with the other NSCs



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Diversified catchments - JQ

Māori land based enterprise context

Treaty settlements

But constrained (allocation limits etc)

New opportunities here

Essentially a series of case studies

Review of catchment studies

- Laboratories for transdisc

Six focus catchments

- Coinnovation – visualisation. Nested approach

Link across existing programmes. SIFF funding

Q. Cant we just learn from overseas example?

Visualisation and enhancing implementation?

Visualisation tools that allow for scenarios to be tested

“see or experience”

Eg of google map

Conversion of data into decision-relevant info

Learning by exploration

Common basis for comms

Enhancing implementation

Must be appropriate for scale context problem

Need to understand barriers to imp

Issues of equity in understanding. Link to interoperable models

Serious gaming

Iterative design

Q. Talked to gaming industry?

Understanding decision making is complex. Are you going to get appropriate expertise in?

Q. Are you going to look at uncertainty? An aerage never killed anyone?

Opportunities for connected data. Rogier

Anecdote re satellite data and cloud computer services

Technologies rapidly improving

But NZ underuses those data –piecemeal, inconsistent

- Impedes collab
- Creates trans boundary issues

Solution – suite of open data and open source big data and machine learning tools for improved env and agr outcomes

Connecting rather than building. Iterative

For everyone. Connected to iwi

Q. Game plan for building capability so that these tools can be used?

Legal structures and IP?

Precision productivity services. Hedly

Precision sensor surveys LT 10m. LT 1day. High spatial and temporal resolution

Maximising the value of irrigation, fertigation, drainage, runoff, saturation, compaction

LiDAR, spectral reflectance, water quality. Feed into soil mapping

Tasmania – soil sensitivity

Coinnovation?

Q.Potential to add climate data?

Critical traits. Paul J

Traits to improve env outcomes, incr resilience, lift efficiencies

Incr ec dvt

Productive env

Kaitiaki

Genes environment management interactions

Eg FRNL. Sp like plantain reduce urinary N by 50%

Cereal yields linked to irrigation 15%

Significant gaps in NZ

Forestry, red apples, sheep

Eg catch crops.

Challenge drivers

Q. If traits are tangible is there an opportunity to work with landowners?

farmer traits – understand the farmer as a variable?

need to set up new trials or look at what's happening in situ?

Future proofing env credence attributes

Sarah McL

Problem. Public concern, clean green image under scrutiny (planetary boundaries)

GHG emissions 7th worst of 41 nations

Env certification o/s proceeding apace. Origin Green. European commission product env footprint programme

Lack of mechanisms for driving env improvements. Some schemes but not coordinated.

Opportunity

1. demonstrate NZ credentials
1. NZ scheme or participate in international schemes
2. Looking at engagement of NZ producers in cert schemes

3. Q. Look at the wine industry?
4. Should we look at other options for dealing with this? Busy space?
5. Corporate social responsibility? Lead from private sector

Discussion of first 6 ideas

Rod. What are the big gaps in the innovation system? Where are investors which will make the innovation go faster?

JQ. Need to dev rich stories. PJ. Conversations needed with industry. SM. Dev of an env culture. CH. Now getting systems together which will make this happen. RW. Need shared data approach. People need to see what the data can do. SL. Outdoor labs where we can work with communities.

ROD. Tell us about the LCA centre. SM came from the food miles scare. Involves a number of orgs.

Troy. Should we be looking incremental, or how opportunity comes out of crisis? JQ. We know crises are coming. Should be looking at where we should be planting trees. SL. Could scenario test to extremes to inform this. RW.

How are you going to incorporate Vision Mātauranga? RW. Ngai tahu and wetlands in Southland. Ngati Awa in Waikato want better info about impact of crops on groundwater quality. CH. MW have developed tools to help Māori dev ideas about collaborative land uses. SL visualisation similar – can add value to understanding of the landscape. PJ. Need to have that conversation to understand connections with traits. SM. Can learn from Māori sense of interconnectedness.

Achieving a low c Bioeconomy: Anita

Mitigation v adaptation

OECD report last year

Need to adapt to CC if we are To move to bioeconomy

Short v long term decision making

Consequences of moving to lcb?

80% of footprint of NZ lamb on a plate in Europe is on farm...

Project aim to assess all of the opportunities in moving

What it might look like...impacts

Yealands vineyards...regenerative ag. - mixed land use.

Catchment scale (CZ). Role of forest for c sequestration. And improve land and water quality.

Dynamic land use optimisation. Dynamic LUS.

****Making decisions under uncertainty

Q do you have economists on oard?

Connections to Deep South?

Catalysing social accountability – fostering catchment groups. CR

Embodying Māori concepts

Co develop shared responsibility frameworks

Not bound by existing policy or institutions

Moving from Compliance mindset to kaitiakitanga

Suite of mechanisms reg and non reg. Social interpretation

Mechanisms advocated by practitioners and blue sky thinkers

“a competition of disciplines” to flush out solutions. Champions/cynics

Impact. Kaitiaki. Generational. Pride

Address legacy

Q. Working group interacting with researchers?

Have you talked to Callaghan about their seed project last year?

No. of existing case studies eg MGM, are looking at them...? General vs specific?

Strong biological networks for biological production. Jacqui Todd

Can we encourage the biota that are beneficial? Organisms don't recognise boundaries...

Why bio networks are important.

Degraded landscapes

Pressure to change eg pesticides

Strong bio networks can help us env benefits and ecosystem services

Can we enable land managers to produce resilient

Building biologically functioning landscapes – no of benefits

Selecting plants to grow at crop margins

Te Ao Turoa. The generational concept of resource sustainability

Method – identify a community of practice

Q. Ellen. How would you encourage doing this at the landscape scale?

Identifying and apportioning water and contaminant source to stream? Clint

Contam yields vary in space and time even when land use pressures are similar

Idea is to unmix the water. Signatures in water.

Link to parts of the catchment

Leads to better decision making and economic efficiency

Mitigations when and where.

Basis for targeted investment

Landscape level info of the drivers of variation in wq outcomes

Using science requires multiple perspectives & contributions

Q. Paul Mudge. How does this differ from what OLW are currently doing, and previous work on critical source areas?

How can you use this to forecast?

Value without capital gain? Shane L

Māori agri business. Optimise value chain by increasing throughput value, decreasing inventory and operating expenses

Relationships and provenance

***Scale up from tribe to Aotearoa

3 research questions

Criteria to evaluate chains

Q. How is this programme different from bio economy and integrated value chains projects?

Opting out. The land futurists. Chris P.

Holden's comments about maori never leaving their land. The land will never change...

Chris' story. The coarse paint brush...hides micro diversity.

Global drivers.

Wakatu. Land wellness indicators

Ngati Apa. What alternatives are there to pine trees.

Metrics other than GDP

Technologies to help production and other values such as diversification

Innovation at the edge.

How fine can we go?

Gter ecosystem services, multiple value chains

Best team needs to extend well beyond the researchers

Aldo Leopold quote

Q. So exciting to see this kind of perspective. Can achieve scale by collectivism?*****

How much of this would involve looking back to the past?

Is it the same as scaling up a community garden?

Garth: Does this paintbrush look across the peri urban area?

Troy: Great pitch. What limits the scope of this idea?