



FRDC

2020-2025 RD&E PLAN

**Process, and progress &
outline of today's input**

Summary

- Context: drivers for planning
- Reflections on the current plan
- A new planning approach for a complex, uncertain world
- The process explained
- Gain your insights
- Discuss next steps.



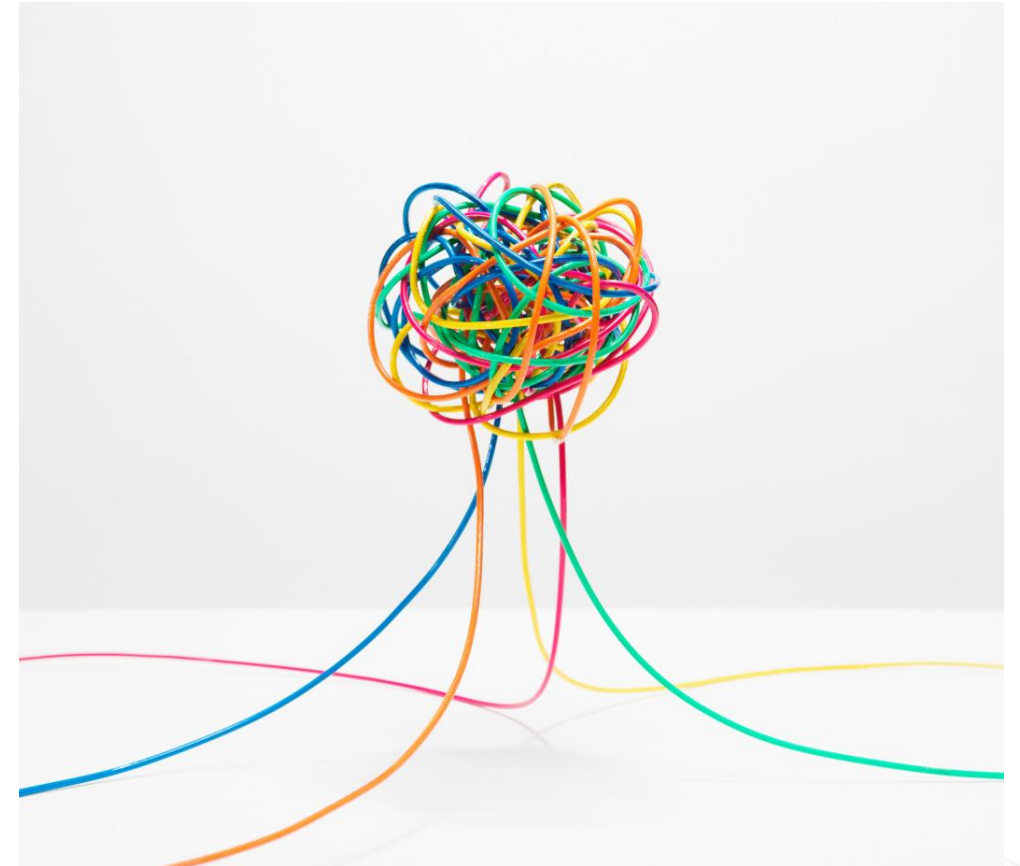
Drivers & Scope

- Funding Agreement between FRDC and the Department of Agriculture and Water Resources (DAWR), and PIRD Act require that FRDC prepare an R&D Plan for each consecutive 5-year period
- Each plan is to include (at a minimum):
 - a statement of the Corporation's objectives and priorities for the period to which the plan is expressed to relate; and
 - an outline of the strategies that the Corporation intends to adopt in order to achieve those objectives.
- Legislation aside, the most important drivers are *impact* and *relevance*.
- To achieve this we must understand the issues that are being faced/will be faced by our stakeholders.
- Must also understand the nature of the system we are operating in. Is it simple, complicated, or complex?

World is more volatile, uncertain, complex and ambiguous than ever before

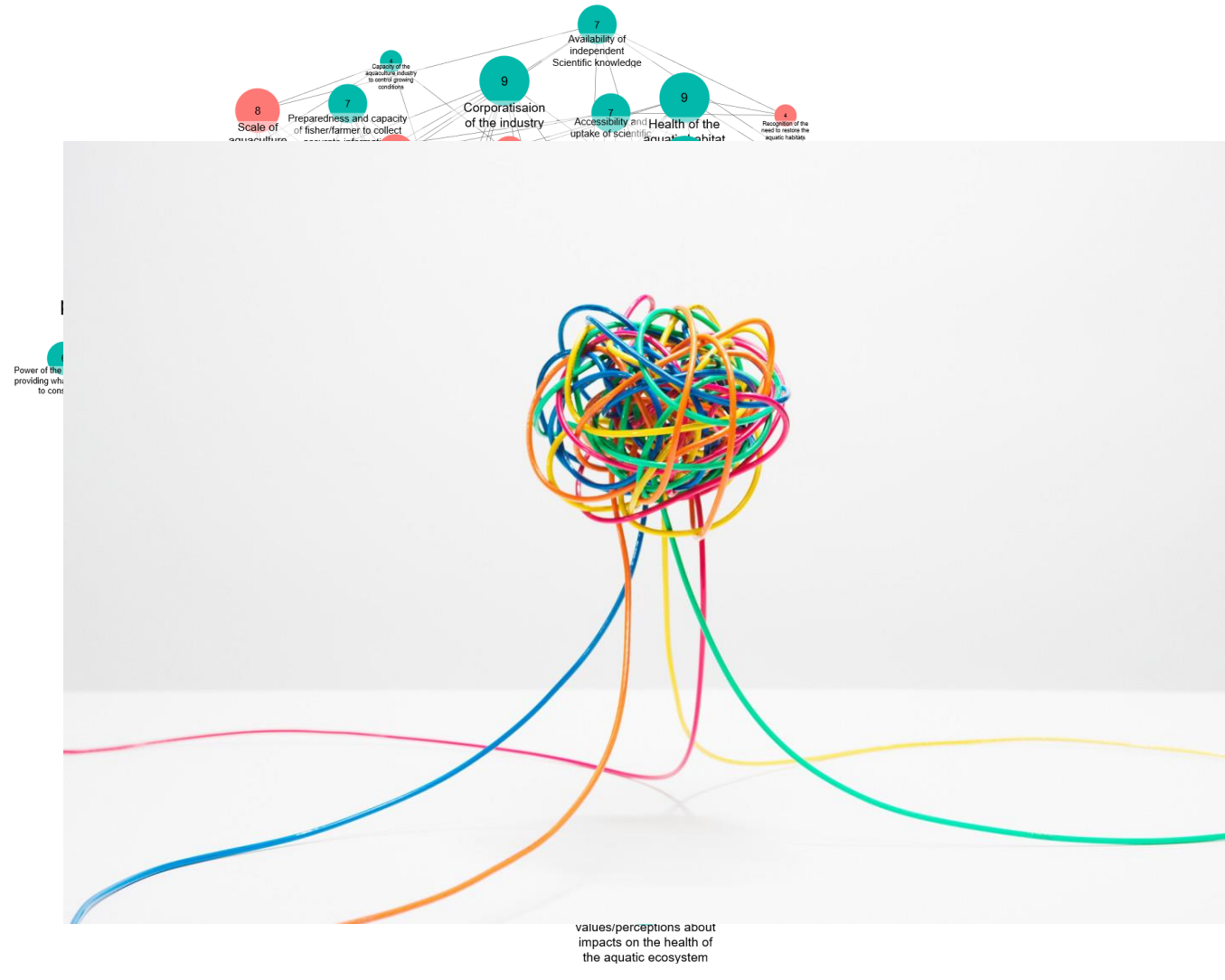


- Things that were isolated from one another 30 years ago are bumping up against each other, often with unexpected results.
- Because of a host of technological and sociological changes that occurred after 1980:
 - digitization of massive amounts of information,
 - smart systems that communicate interdependently,
 - decreasing cost of computing power,
 - increasing ease of communicating rich content across distances,
 - an increasingly wealthy human population, resulting in more participation in the formal economy, and
 - wholesale rewriting of industry norms and business models.



Characteristics of VUCA world

- Every part of the system effects and is affected by all other parts of the system.
- Cause and effect can only be understood in retrospect, and is not necessarily linear.
- Progressive issues are inter-sectoral and can't be achieved in silos
- Delivers a climate wherein impact (e.g. policy change) is hard to achieve
- Practice that leads to real change is emergent
- Difficult to plan within complex systems – including prioritising RD&E needs.



[LIVE MAP](#)

Methods for delivering results in each type of system are different



Complex

Relationship btw cause & effect
unpredictable, & may be
perceived in retrospect
Probe – sense - respond

Complicated

Relationship btw cause and effect
requires analysis and/or
application of expert knowledge
Sense – analyse - respond

Chaotic

No relationship btw cause &
effect at system level
Act – sense - respond

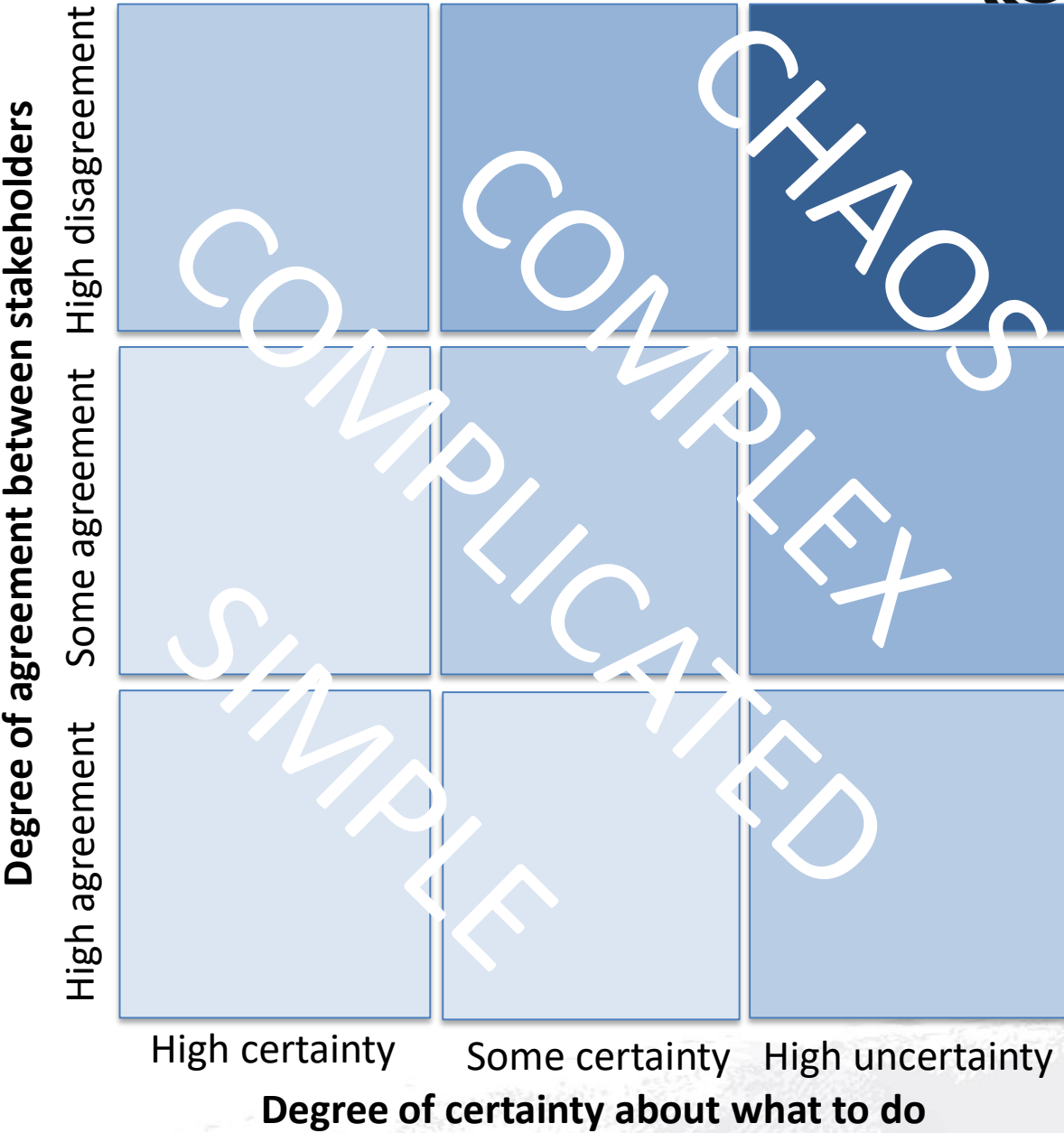
SIMPLE

Relationship btw cause and effect
is obvious to all
Sense – categorise - respond

Inappropriate methods waste resources and confuse



- Taking a complicated approach to a simple problem wastes resources
- Complicated thinking applied to a complex problem creates confusion when things don't go to plan, and/or wastes resources looking for 'right' answer
- We tend to revert to problem solving approach we are familiar with, whether or not it fits the problem or space



Planning methods for complex systems are not the same either



- Future is unpredictable in complex systems
- Disruption is hard to predict and plan for
 - objectives become obsolete as conditions shift
 - partners change their strategies
 - assumptions about what will lead to results fail
- Static plans, desired targets and KPIs are largely ineffective
- Plans are still needed, but must be emergent and iterative
 - Basic agreement on shared narrative, goals,
 - Open up boundaries of planning so as to not be caught out by changes in the system
- More frequent experimentation, risk-taking and learning is key.

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6. Develop insights from the future for today

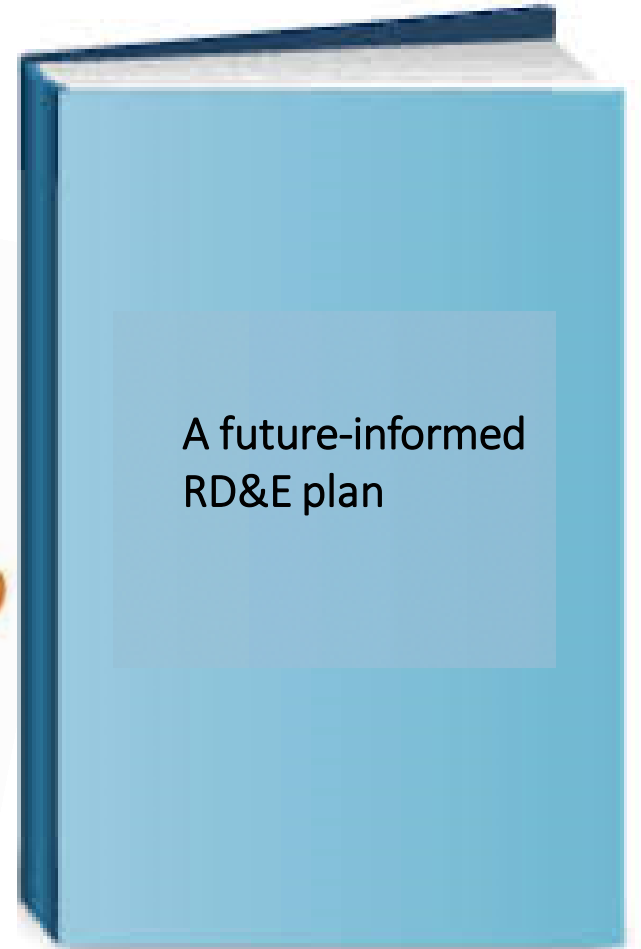
5. Develop scenarios of the future

4. Identify critical areas of uncertainty

3. Identify key driving forces shaping the F&A system

2. Map dynamics of the F&A system
(System mapping)

1. What are the key questions that keep us up at night?



Co-design groups to help shape the plan



Leadership Group Membership

Name	Role
Patrick Hone	Managing Director, FRDC
Kate Brooks	FRDC Board
Colin Buxton	FRDC Board
Jane Lovell	CEO, SIA
Russell Conway	Chair, Recfish Australia
Colin Tannahill	Managing Director, Shimano Fishing Australia Pty Ltd
Aaron Irving	Chairman, National Aquaculture Council
Stan Lui	Chair, Indigenous Reference Group
Jo McCrea	Fisheries & Seafood Manager, WWF
Sean Sloan	Member, Australian Fisheries Management Forum
Brian Skepper	General Manager, Sydney Fish Market
Andrew Sullivan	Commonwealth Fishers Association (CFA)
Dave Smith	Chair, Research Provider Network
Melissa Brown	Assistant Secretary, Fisheries Branch, Dept of Agriculture
Barry McGookin	Food Innovation Australia Ltd

Innovator Group membership

Name	Position
Wayne Dredge	Director, Piscari Industries Pty Ltd
Serena Zipf	Director Rockaqua Pty Ltd
Steve Davies	Director Lands End Australia
Josh Fielding	FRDC Senior Projects Manager
Ewan McAsh	Director McAsh Oysters Pty Ltd
Umar Nguyen	Director, Platinum Provedore
Patrick Sachs	Assistant Director, Southern Bluefin Tuna Taskforce, DAWR
Dave Ciaravolo	CEO, AFANT
Mike Gilby	Aboriginal Project Officer, Victorian Fisheries Association
Rachel King	EO, Australian Council of Prawn Fishers
Brett Patience	National Seafood Development Manager, Bidfoods
Katherine Winchester	CEO, Northern Territory Seafood Council
Alan Haroutonian	CEO, X-lab
Craig Copeland	CEO, OzFish Unlimited
Elizabeth Keys	Indigenous Reference Group
John Wakeford	Director, Fishing Untangled Pty Ltd

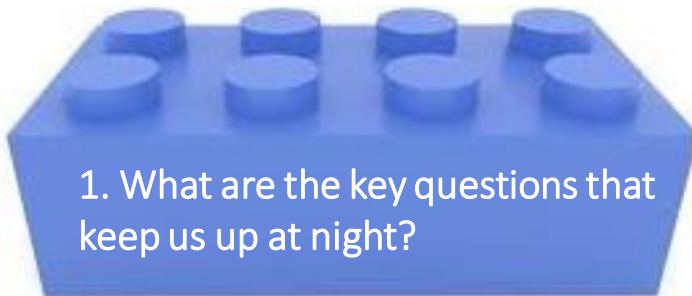
Advantages of this approach over conventional planning



- Acknowledges complexity and uncertainty
 - Allows strategic intent to become emergent
 - Future cannot be predicted in complex systems. Scenarios deal with possibility, not probability
- Scenarios enable us to work with abstraction
 - Art comes before language in human evolution
 - Moving up to a level of abstraction avoids ‘gaming’
- This approach also deliberately seeks to increase cognitive load
 - To get people thinking ‘slow’, not ‘fast’. Reflection, not immediate response.
- Allows us to work on consensus, as well as scientific certainty.



2020-25 RD&E Planning Process explained



1. What are the key questions that keep us up at night?



1. Access to marine and freshwater resources and their utilisation

How will Australia's aquatic resources (marine and fresh) be accessed in 30 years by:

- Oil/mining/gas industry
- Energy sector
- Shipping
- Defence
- Farming/Irrigation
- Tourism & non-extractive users
- Recreational fishers
- Commercial fishers
- Aquaculturists
- Indigenous fishers
- and how will Indigenous communities play a role in determining access?

2. Role of aquatic resources in providing benefit

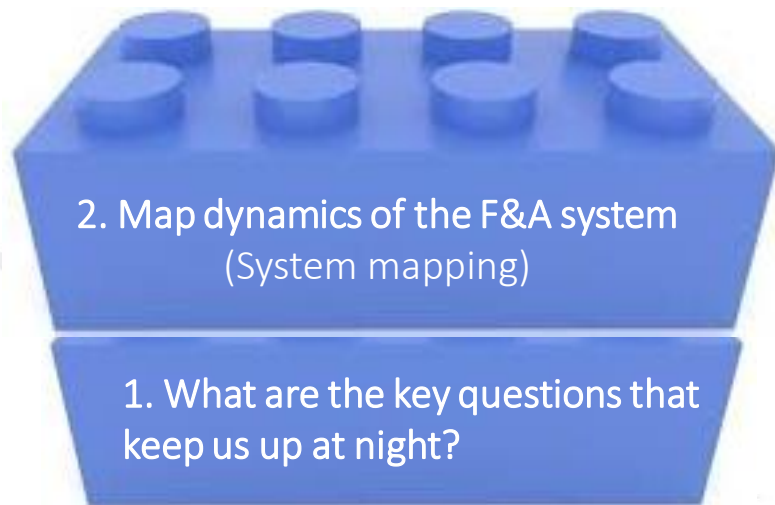
What are the roles of Australian aquatic resources as a source of benefit to populations domestically and internationally?

3. Trust in and social licence for the F&A community

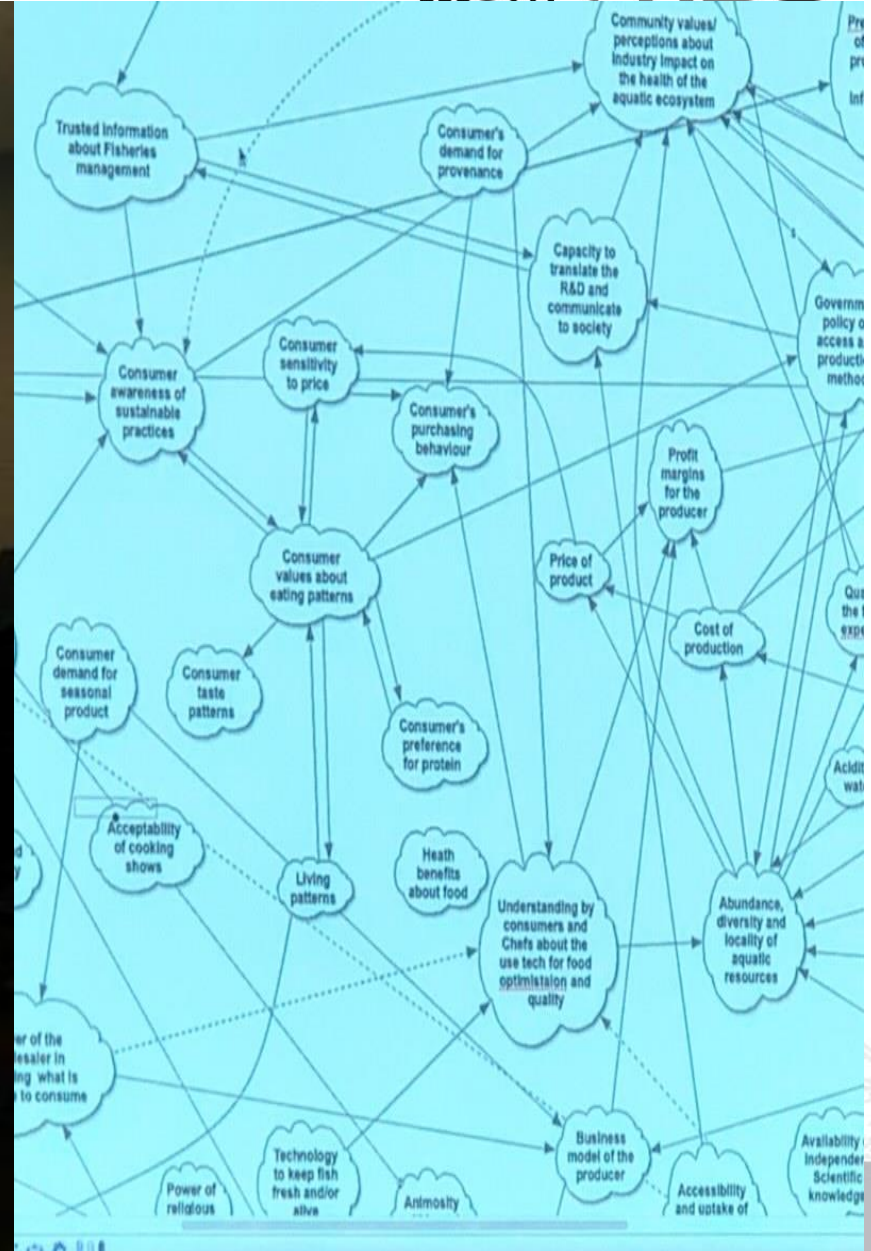
Why would the Australian population trust products derived from Australian aquatic resources?

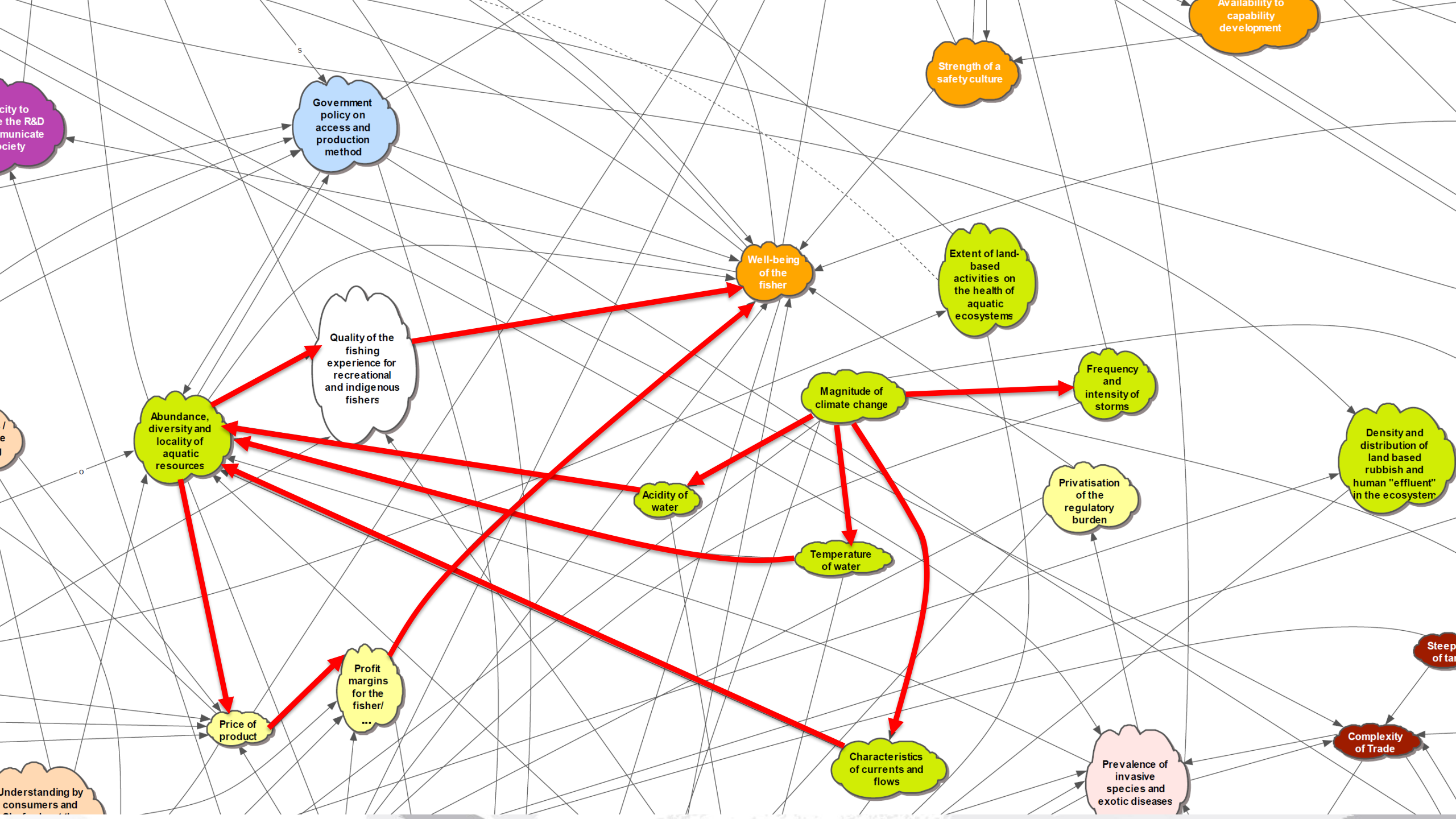
4. Capacity of the F&A community to mitigate and adapt to climate change

How must the Australian fishing and aquaculture sectors mitigate and adapt to climate change in a sustainable way?

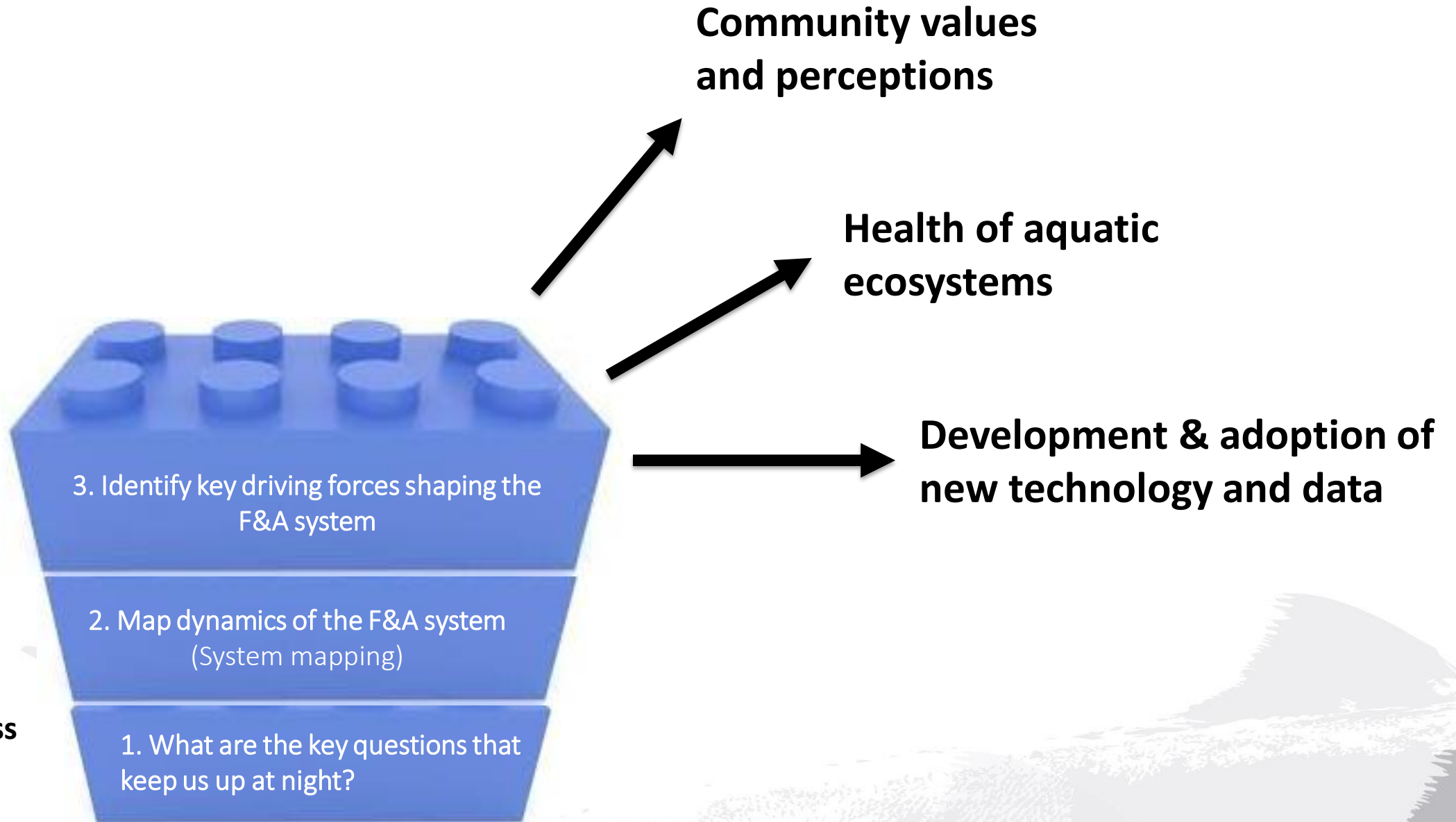


**Consultation:
key stages**



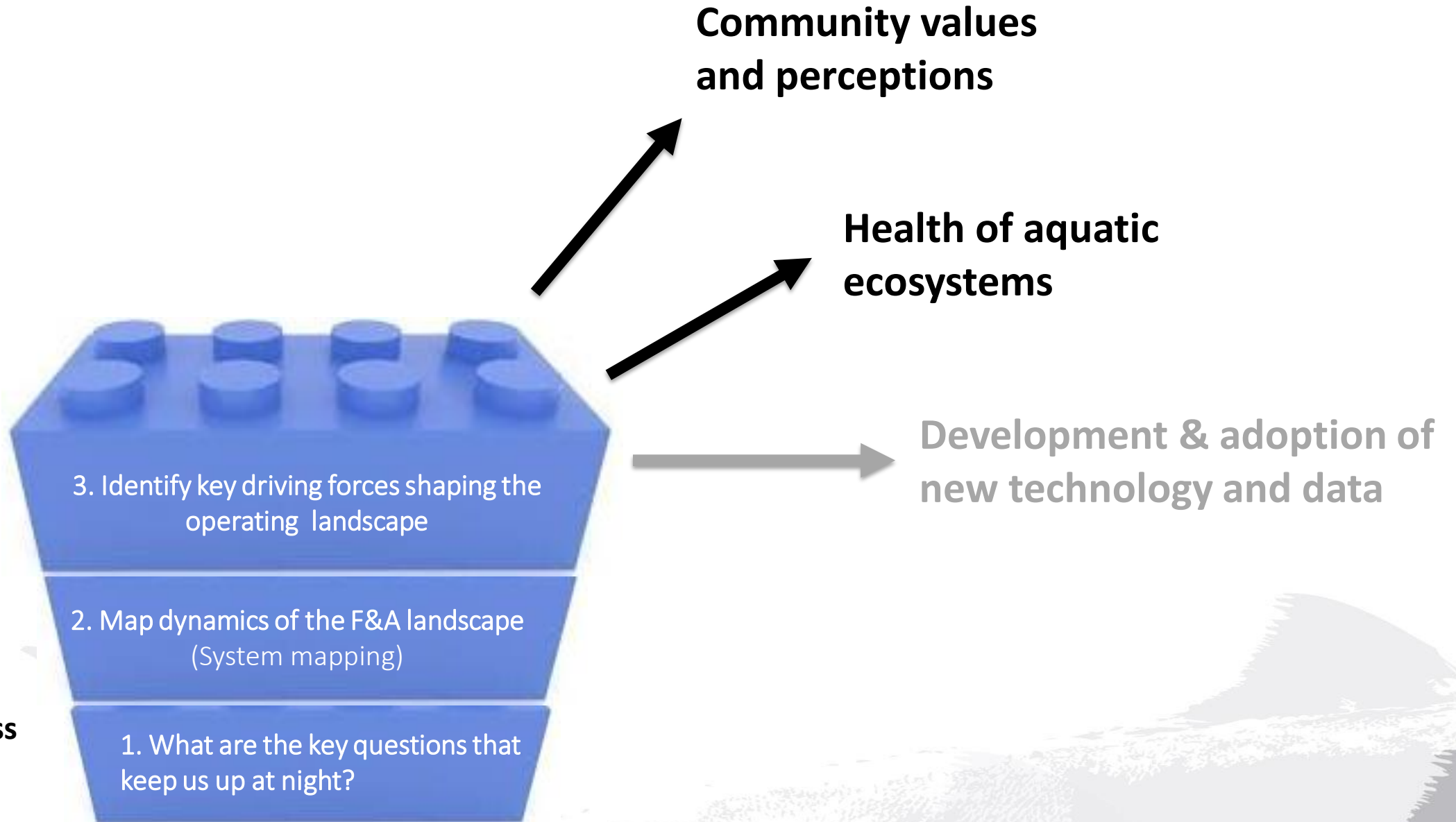


Driving forces that if changed, would redefine dynamics of operating landscape

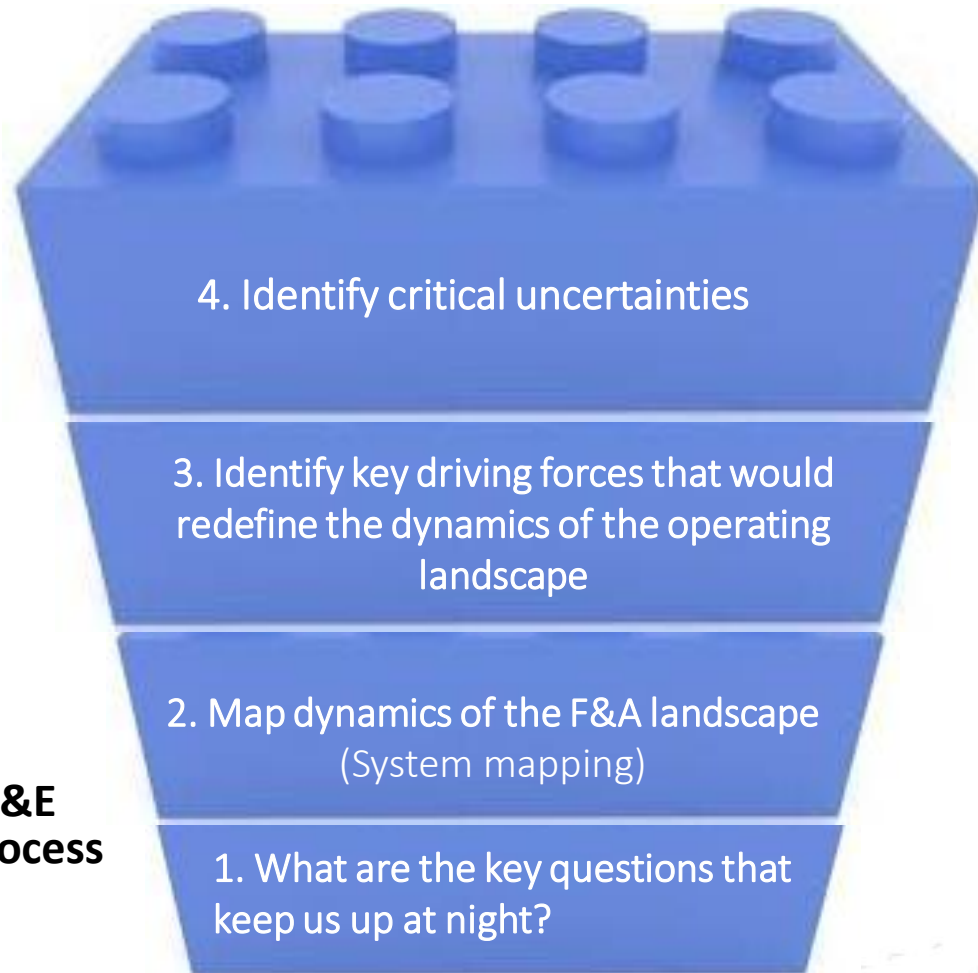


2020-25 RD&E Planning Process explained

Driving forces that if changed, would redefine dynamics of operating landscape



2020-25 RD&E Planning Process explained



**2020-25 RD&E
Planning Process
explained**

5. Develop 4 scenarios of the future

4. ID critical uncertainties for each driver, prioritise top 2, and use as axes to define alternative descriptions of the operating landscape

3. Identify key driving forces that would redefine the dynamics of the F&A system

2. Map dynamics of the F&A system
(System mapping)

1. What are the key questions that keep us up at night?

**2020-25 RD&E
Planning Process
explained**



Four scenarios selected by participants:

2. A future world wherein the dominant motivation is confidence, and influencers are unifying and inclusive
4. A future world wherein the dominant motivation is fear, and influencers are polarising and divisive
6. A future world wherein government policy is integrated and evidence-based, and key environmental impacts are known, measured & managed
8. A future world wherein government policy is populist, and key environmental impacts are largely unknown, unmeasured and unmanaged.

6. Develop insights from the future for today

5. Develop 4 scenarios of the future

4. ID critical uncertainties for each driver, prioritise top 2, and use as axes to define alternative descriptions of the operating landscape

3. Identify key driving forces that would redefine the dynamics of the F&A system

2. Map dynamics of the F&A system
(System mapping)

1. What are the key questions that keep us up at night?

**2020-25 RD&E
Planning Process
explained**

How did we use scenarios to generate insights?

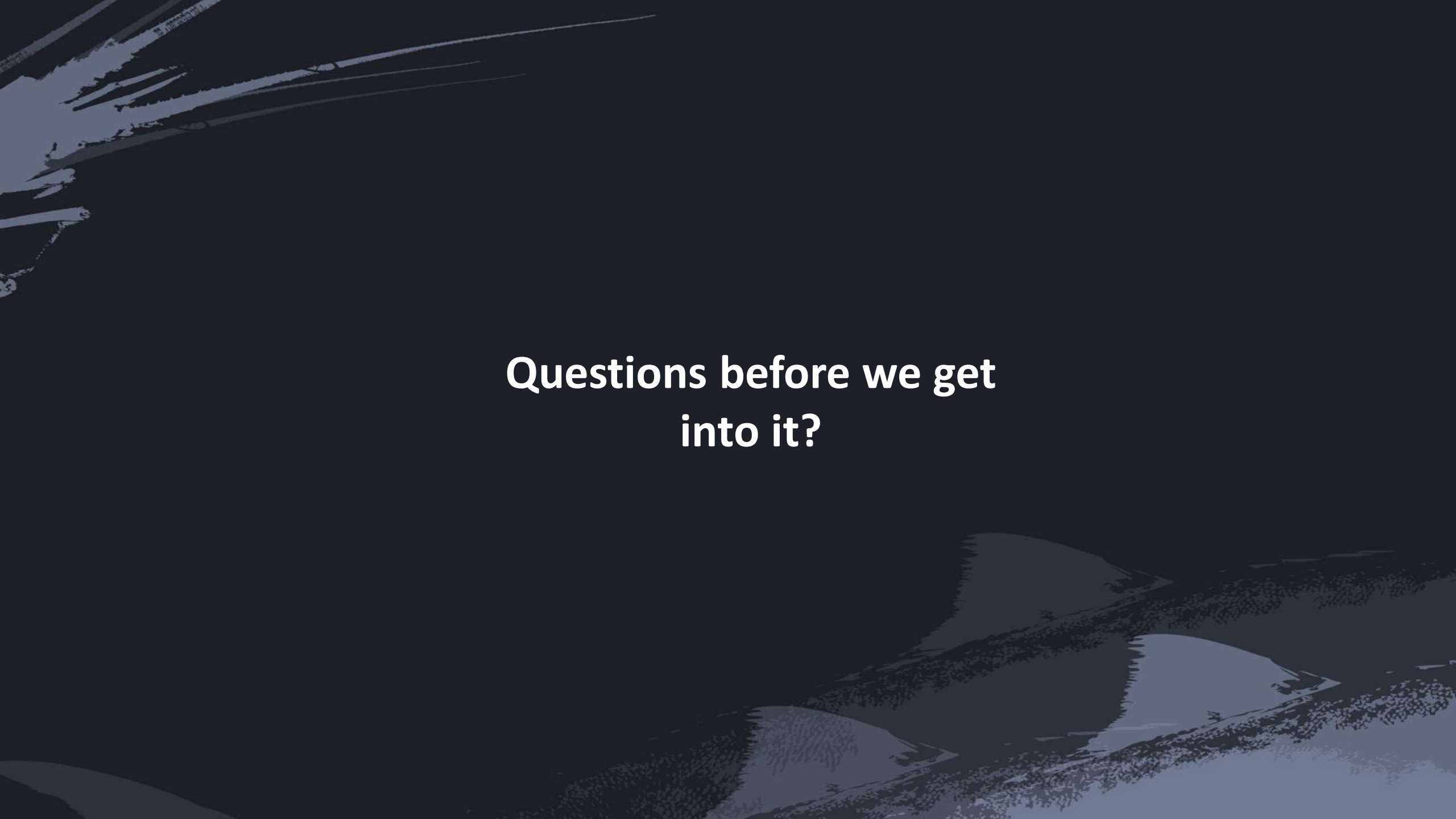


1. Get large representative group from across fishing and aquaculture community to 'step into' each scenario
2. Work together to answer questions identified in [step 1](#)
3. Look across answers for all scenarios to look for trends

What we hope to achieve today:

1. Familiarise ourselves with scenarios
2. Review insights identified
3. Look for gaps.
4. Discuss next steps





**Questions before we get
into it?**

A future world wherein the dominant
motivation is confidence, and influencers
are unifying and inclusive

RAINBOWS & LOLLYPOPS

Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive

- There is global collaboration, supported by legally binding agreements on issues including climate change.
- Optimising wellbeing is a focus, in addition to traditional economic motivators.
- Tax reform has closed loopholes. Taxes are high, but all pay their way. The system works, and the 'little guy' is no longer left behind.
- There has been a huge increase in regulation, monitoring and compliance to deliver real-time data and consistency, transparency and efficacy that the community desires and values.
- Crime is down due to strong social reinforcement.
- Science is flourishing, and embracing Traditional Indigenous Knowledge.
- Confidence in science is allowing movement away from heavy reliance on precautionary principle, to one wherein harvest is entirely science-based. Harvest strategies drive all management decisions.



Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive

- High costs of regulation etc mean that large companies with global outlook remain, with few co-operatives of smaller operators.
- There has been significant improvement in sustainability. Fishing & aquaculture industry has done away with non-renewable resources. World best practice now applied. Informed attitudes of consumers has driven practice change in producers.
- Wild harvest is the envy of the proteins due to small footprint and sustainable management.
- Focus on wellbeing has informed resource re-allocation and cost sharing to improve equity across all users, incl. rec, indigenous, commercial & environmental.
- Equal allocation has enabled collaborative arrangements incl. fishing, shipping, defence, mineral extraction, and tourism to identify common objectives.
- There is Constitutional recognition of Aboriginal and Torres Strait Islander peoples. Their rights as traditional harvesters are now tightly embedded in legislation, and they are capitalising on new industries incl. eco-cultural tourism.



Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive

- New agribusiness industries are emerging, and regional communities are flourishing.
- Work/life balance is recognised as key contributor to global wellbeing. A global ethical fish handling program is now in place, and recreational water-based activities are highly subscribed.
- Species substitution is now eradicated, as consumers use phone-based apps to tell tale of provenance, harvest methods, carbon footprint etc.
- There is high unity across all sectors, and an agreement in place to work together for mutual benefit.
- Has enabled unified approach towards healthy aquatic habitats. Fish abundance and biodiversity is now highest in decades.
- There has been significant technological advances, including in-home robo-chef to improve our quality of life.





Insights:

Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive



Things to pay attention to:

- Leaders are actually being leaders.
- Sense of unity and purpose
- Indigenous fishers have a defined space and respected role. All sectors have a defined space.
- A confident world, with unifying & inclusive influencers is not without challenges
 - This is a high-cost scenario.
 - Risk of over-regulation – role of industry to prevent this
 - Risk of group-think. Need a devil's advocate in this world.
 - Possible rise of mediocrity
 - Vulnerability to shocks
 - Eventual corruption of stability
 - Reduction of small operators.
- Need to constantly monitor data for new trends
- Need to invest in relationships: internal and external
- One of the tensions in this scenario is labour: how to maintain employment





Seeking additional Insights

Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive

Access:

- Flourishing science in this scenario. Access has gone to those who supply the data that will provide them with license to operate.
- Data and information has been critical to shaping decision-making.
- Highly regulated world. Only large corporations and highly collaborative groups persist.
- Equitable allocation released pressure in the system.
- Fishing & aquaculture community is no longer the poor cousin with respect to access. Shipping, defence etc have 'dropped away'

Benefits:

- Aquatic resources are highly prized and so strong regulatory regimes are in place to ensure that these resources do provide benefits sustainably.
- Multiple health benefits: human health, cultural health, community health, habitat health.
- Balanced harvest: have ability to harvest across ecosystem
- Reduction in small operators.
- Security of water through desalination.
- Fisheries is now a role model for other sectors.
- Reducing pollution impacts.



Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive



Trust:

- Strong legislative environment rich with data facilitates a narrative that is supported by research and presented for social benefit.
- Consumer driven, transparent, whole-of-chain, collaboration (not dissonance of voices)
- High cost of operation and regulation have forced collaboration
- Data flows along the value chain in this scenario
- Flourishing science in this scenario. Traceability of science (IDEA: blockchained science?)
- Rec fishing is thriving – reality of all sectors is now understood.

Capacity to adapt and/or mitigate in response to climate change

- The strong regulatory, science-based framework dictates a strong directive for the F&A community to respond to climate change.
- Likely better long-term setting of strategy.
- Possible government role incentivising/assisting change. Makes sense in this scenario.



Rainbows and Lollypops

Dominant motivation is confidence, Influencers are unifying and inclusive



Planned outcomes

- A regulatory regime that supports innovation and provides guidance for change.
- Consumers who have trust in and respect the fishing & aquaculture community. Affordable, accessible, trusted seafood & fishing experiences.
- An RD&E sector facilitated by data and information integrity, supporting sector-led projects.
- Optimising social and economic benefit as well as ecological, reflected through policy and regulation.
- A shared vision for F&A.

Moonshots

- No need for specific targets for individual sectors.
- All sectors have mutual respect.
- Carbon positive fishing & aquaculture community.



A future world wherein the dominant motivation is fear, and influencers are polarising and divisive

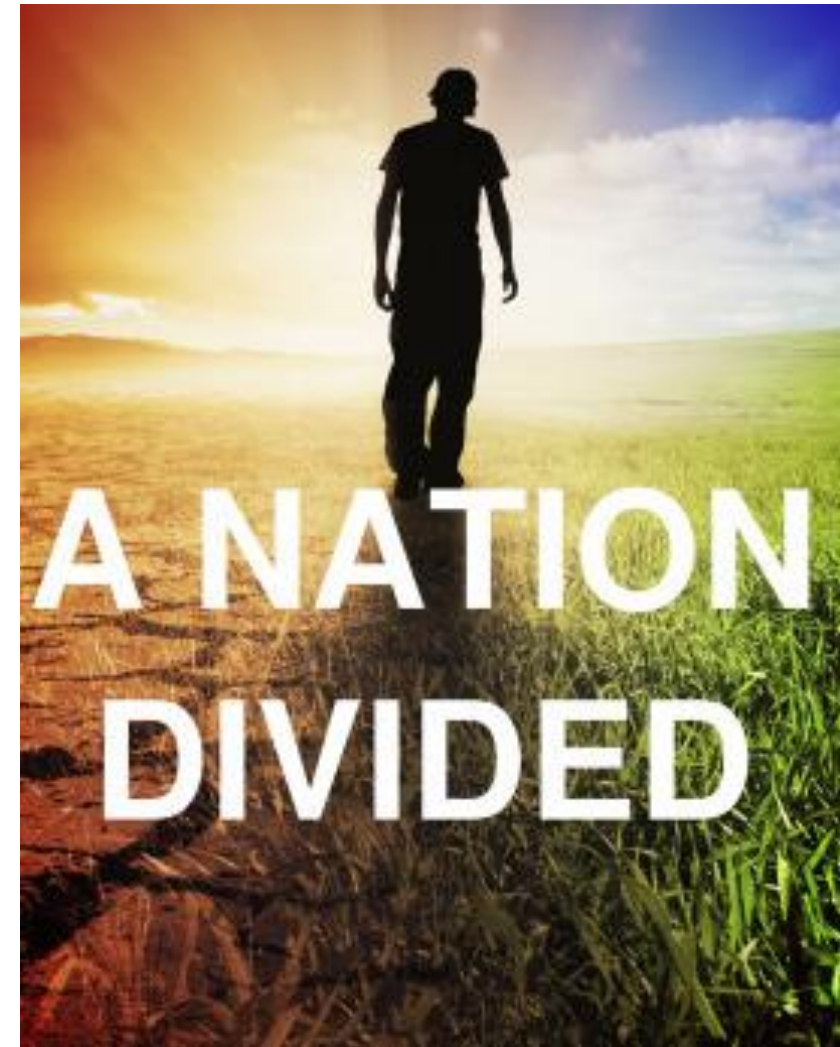
DIVIDED WE FALL

Divided we Stand



Dominant motivation is fear, Influencers are polarising and divisive

- Corruption is rife, driven by desire to optimise profits in deeply capitalist world.
- Mining multi-nationals and intensive ag firms are being granted access to huge areas of land and sea, and generating huge profits.
- Binding global free-trade agreements impede government resistance to corporate profit seeking.
- The climate crisis has deepened. Influencers continue to argue other causes, leading to inaction. ETS enacted in 2023 was compromised & ineffective. Climate refugee numbers continue to swell.
- Insurers no longer cover coastal properties buffeted by regular weather events, driving market uncertainty and fuelling a huge recession in the early 2020's.
- Ever more Australians are on knife-edge of subsistence. The under/unemployment epidemic spreads as AI and automation transforms industry.
 - On the positive, the digital revolution has enabled more remote working, revitalising regional areas as people leave expensive city life.
- Extreme politics drive the current narrative. Politicians characterise the wave of climate refugees as threatening our modest available natural resources.
- There is digital chaos. Deepfake tech, and state-sanctioned cyber interference results in voters not knowing what to believe.

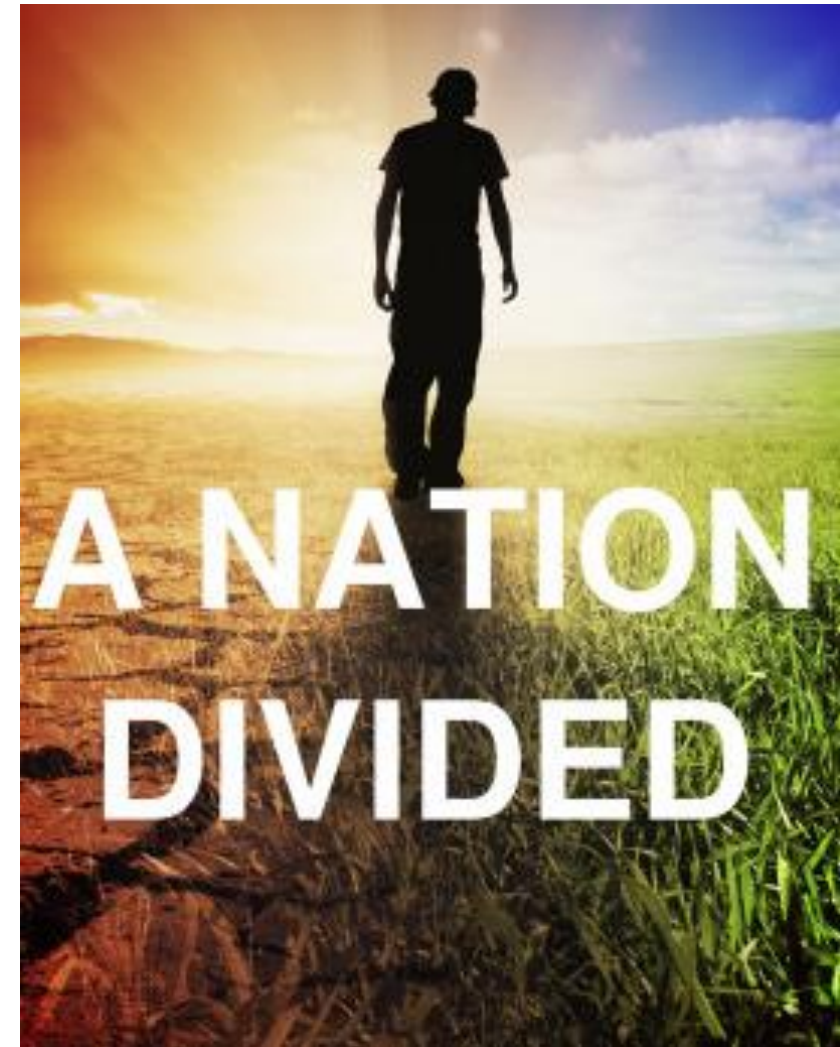


Divided we Stand

Dominant motivation is fear, Influencers are polarising and divisive



- Celebrity is entwined with politics, as people confuse popularity with leadership potential.
- There has been very little significant, progressive policy in recent years.
- Sweeping foreclosures implemented under strict austerity measures that were mandated as condition of bail-out by international superpower after 2022 financial crisis.
- Growing under-privileged are moving 'off the grid' out of necessity. Living in makeshift communities, worsening ecological problems. Expanding bartering and rec fishing for sustenance.
- The media landscape is now totally dominated by web-based curated content.
- People lead more isolated lives due to poor work/life balance, growing crime, traffic congestion and worsening climate. Tech solutions increasingly meet our needs for companionship.
- Worsening water security concerns led to huge investment in desalination, which has reduced reliance on natural streamflows but created follow-on problems (salt waste disposal)

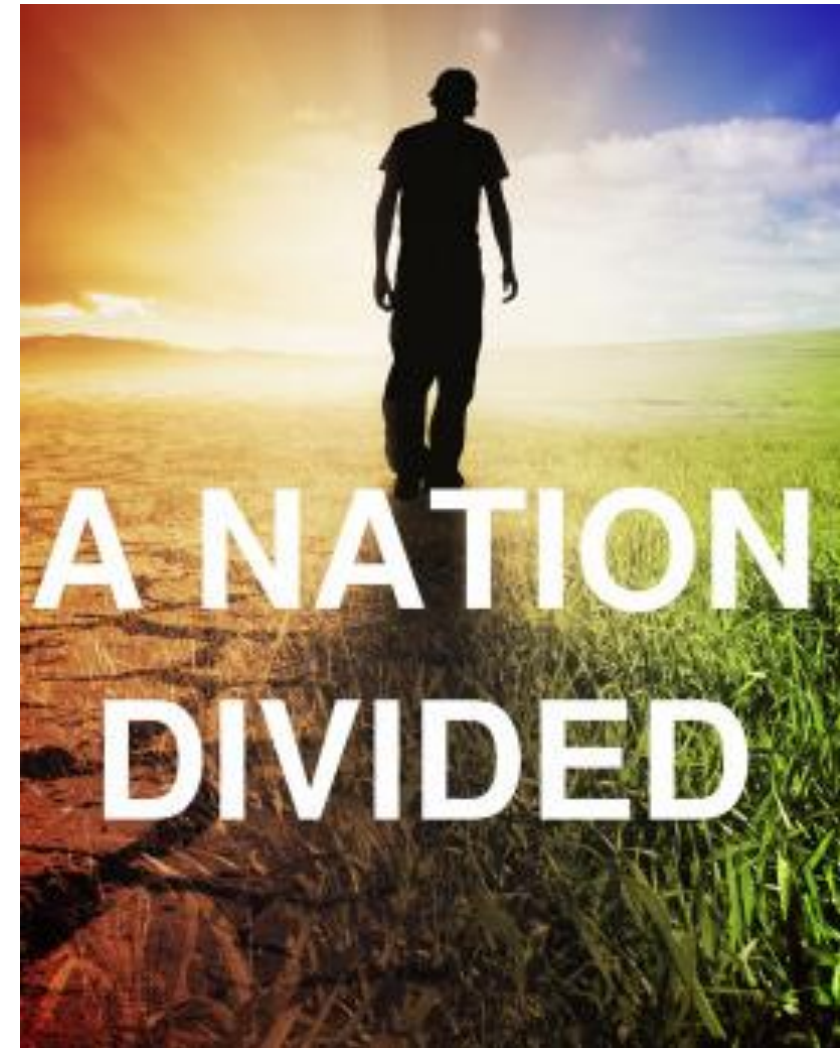


Divided we Stand



Dominant motivation is fear, Influencers are polarising and divisive

- Perceptions of fishing & aquaculture at all-time low. Devastating campaigns by extreme ENGOs has affected commercial, aquaculture and rec sectors.
- Increasing speed of innovation is squeezing out smaller operators, causing widespread consolidation across industries.
- Major corporate-owned fisheries use few boats and significant automation to reduce costs. This helps maintain huge premium in small volumes, targeting the high end food service industry, with elite paying \$3000-\$10,000 per head
- Indigenous sector was allocated fishing rights to numerous inshore fisheries in 2025, though without adequate policy & support to ensure capacity building & governance reform among beneficiaries to ensure success.
- Re-allocation fuelled increased campaigning by white nationalists, citing food security risks, using seafood shortage in 2022 that resulted from novel virus outbreak to stir community fears.
- Northern Indigenous communities challenged Aust. Govt. over predicted groundwater impacts to successful land claim in 2023. Out of court settlement enabled purchase of quote from high value fisheries. Now more affluent, affected communities experience spiritual crisis as they no longer live on country, have lost cultural practice and identity, making people unwell.

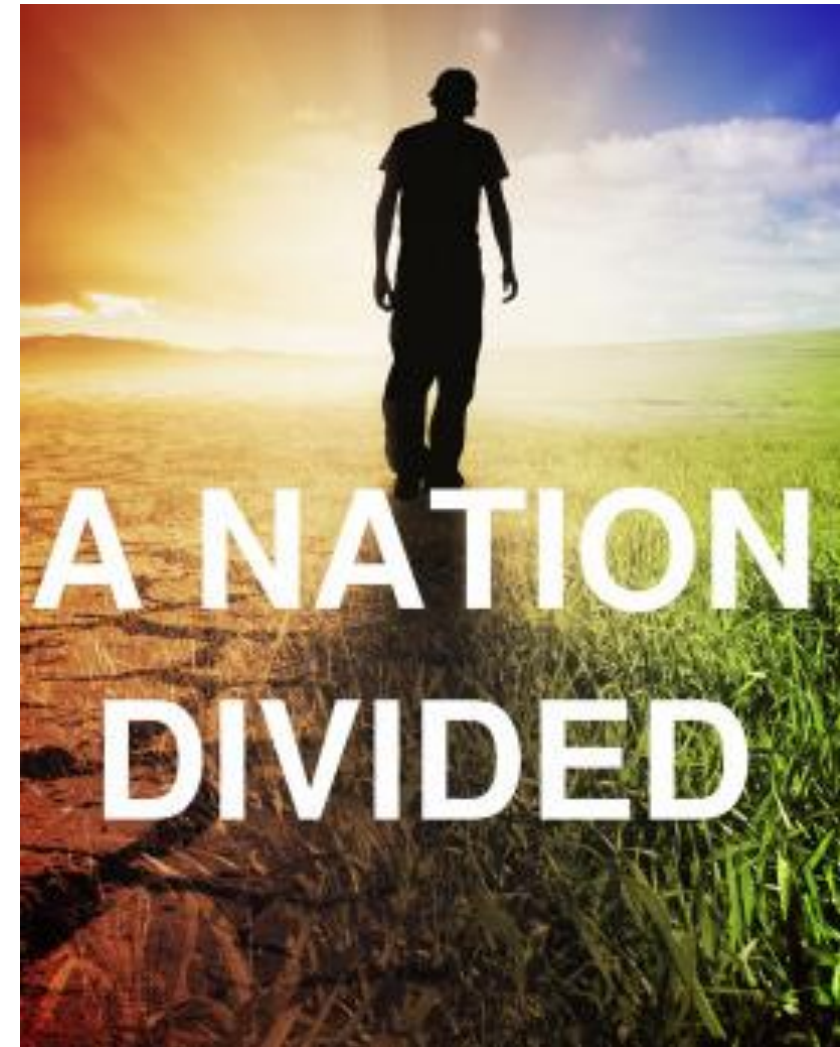


Divided we Stand

Dominant motivation is fear, Influencers are polarising and divisive



- Relationship btw food and class are stronger than ever, with ultra-rich focussed on sustainability, embracing 'isms' (veganism, pescatarianism etc) in huge numbers, while some favour supplements over conventional food to improve their productivity. In the middle class, many fetishize food as an escape, or favour 3d printed analogs. Lower class eat what they can.
- Loss of confidence in producers drove unprecedented adoption of cell-based protein ('meatless meat') in 2024-25. However popularity plateaued in coming years as influencers began to question environmental and social costs.
- Other Australian produce (red meat, cherries, blueberries, apples) still deliver price premium from wealthy Asian countries.
- Demand for nutraceuticals has exploded to offset poor lifestyle. This has been the largest growth area for the seafood industry since 2020.





Initial Insights:

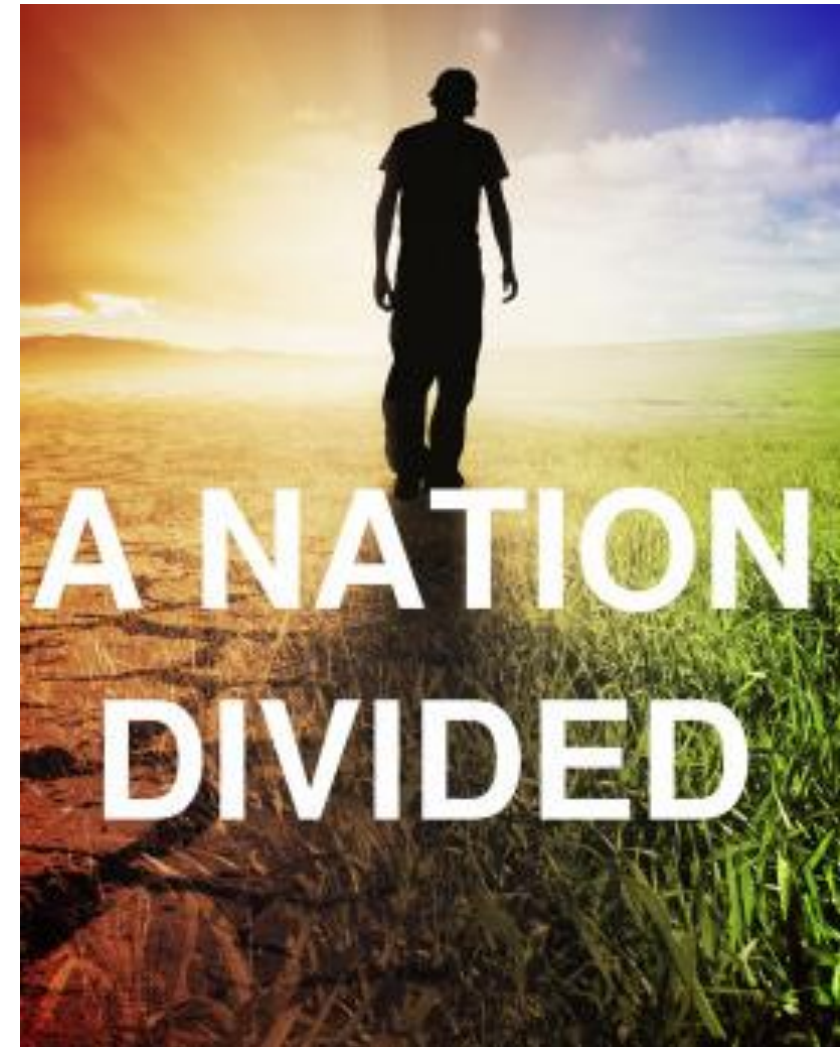
Divided we Stand

Dominant motivation is fear, Influencers are polarising and divisive



THINGS TO PAY ATTENTION TO:

- Fishing & aquaculture community would need to derive an industry-led role of science
- Using the science to develop narratives that are trusted by the community and government
- Would need to strive for unity and develop and nurture a range of relationships (e.g. ENGOs etc) to shape direction and consumer trust
- Critical to form alliances with influencers in this world.
- Possible new tensions between 'haves' and 'have nots' in some sectors.
- Assume a need to differentiate between wild product and lab grown in this scenarios.





Seeking additional Insights

Divided we Stand

Dominant motivation is fear, Influencers are polarising and divisive

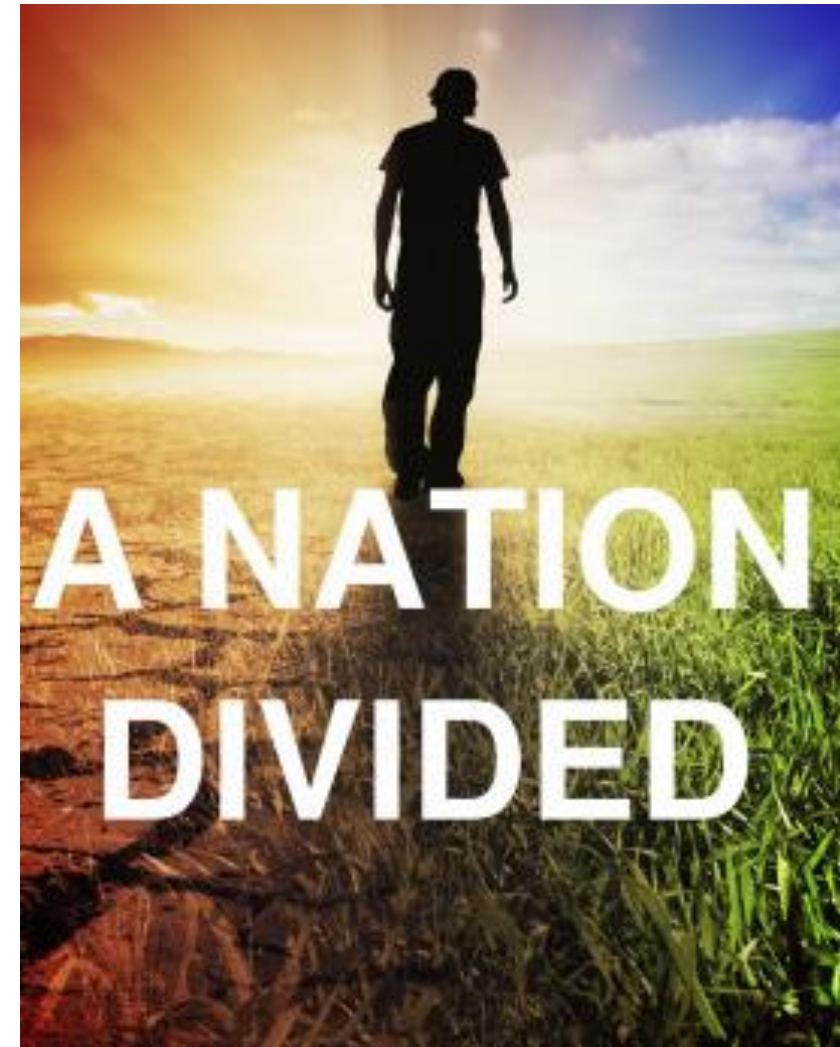


ACCESS:

- Access in this world is bought by those who have money, power and influence.
- Not equitable whatsoever.
- Loss of small, family operators.
- Indigenous sector has access, but not in the way they hoped.
- Energy sector has strategy to 'buy' access from Indigenous fishers.

BENEFITS:

- Profit focussed world. Benefits measured are largely economic.
- Aquatic resources as a source of protein and benefit is only enjoyed by those who have money.
- There is a level of survival/subsistence fishing.
- High end tourism continues to have a role.



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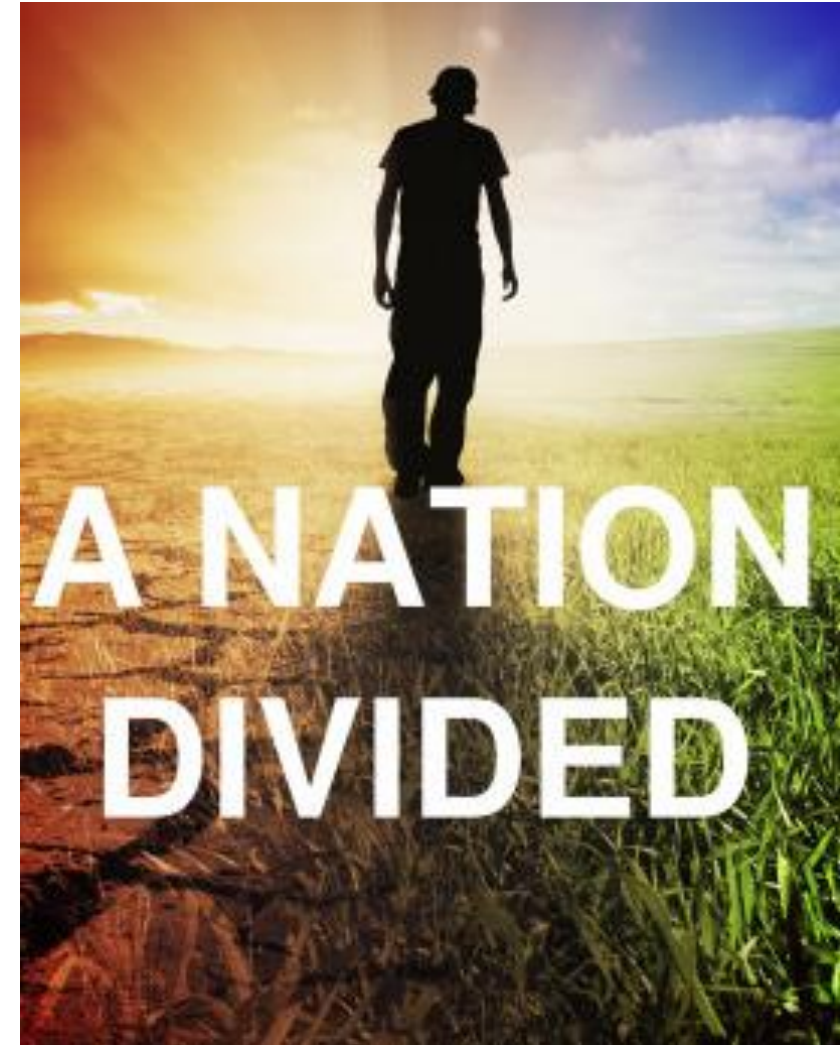


TRUST:

- The Australian public trust products derived from aquatic resources only by those stakeholders who have developed relationships with them.
- FRDC might be a talent agency in this world?

CAPACITY TO ADAPT TO/MITIGATE IMPACTS OF CLIMATE CHANGE

- Government does not believe in human-caused climate change in this scenario.
- The F&A industry responds to climate change only geographically only to ensure persistence of profits, as the lack of belief in climate change prevents development of any strategy to respond and/or manage it.



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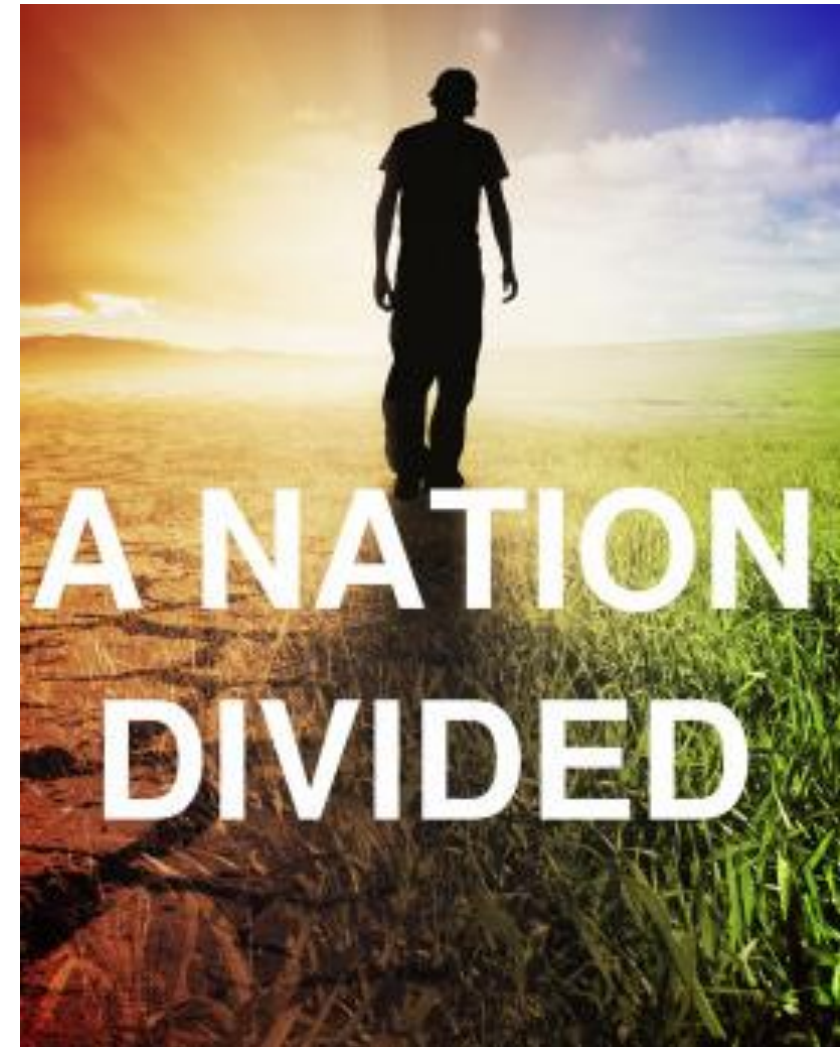


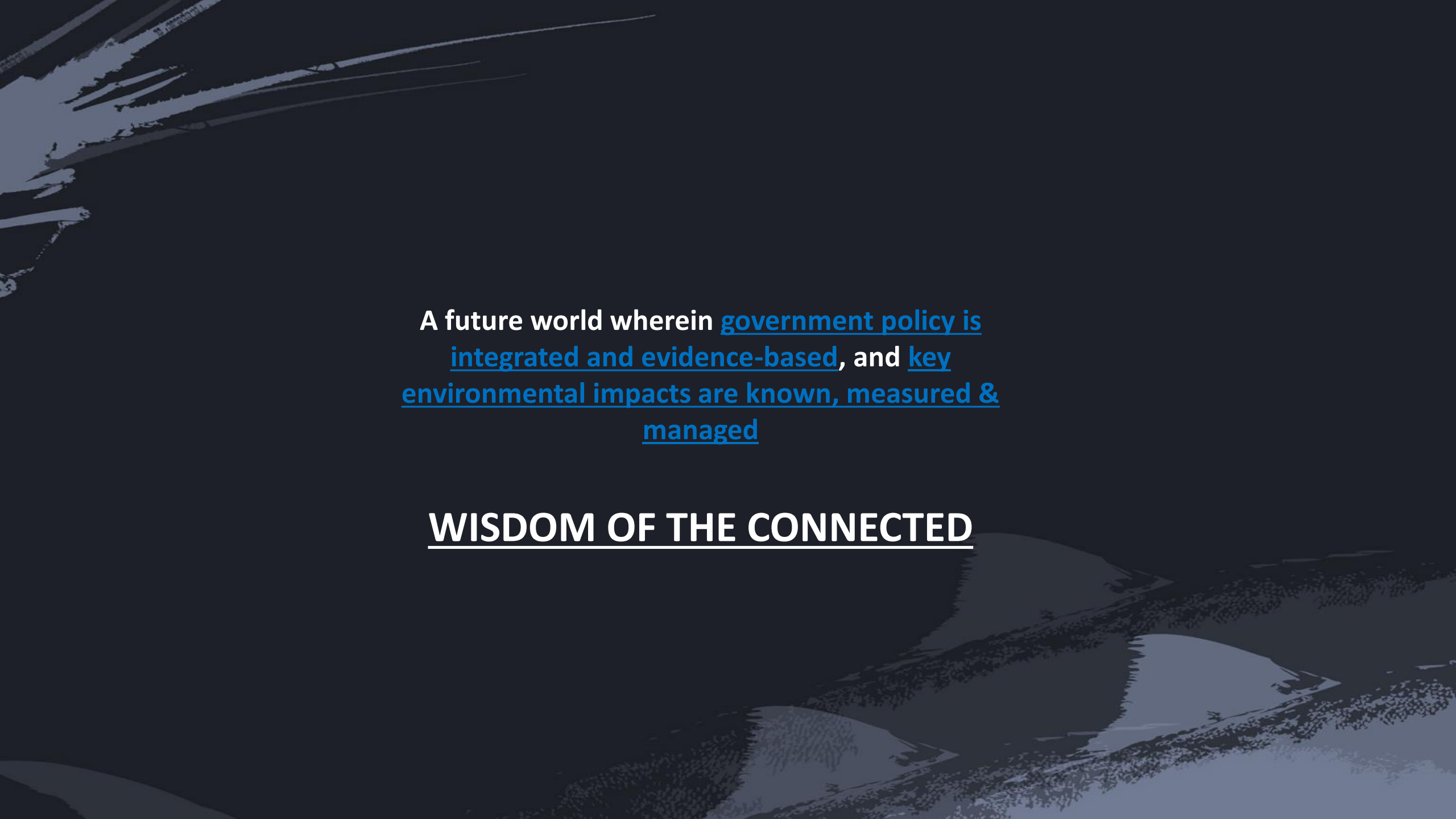
PLANNED OUTCOMES:

- Build sectoral capacity to refine identity, to respond and adapt in a world with diverse and contrasting market segments
 - Values and beliefs need to be reviewed – those that are no longer need to be replaced with a more contextually appropriate set (NOTE: this needs data)
- F&A community has a strong understanding of market segments, market needs and corresponding dynamics so as to focus attention on markets that will deliver preferred products and experiences to consumers
- Consumers are able to differentiate between product offerings provided by a variety of providers

MOONSHOTS:

- Small businesses collaborating across the supply chain to build critical mass
- Indigenous sector working together, building capacity alongside industry using the assets they have been allocated.





A future world wherein government policy is integrated and evidence-based, and key environmental impacts are known, measured & managed

WISDOM OF THE CONNECTED

Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



- There was a deep recession in early 2020's fuelled by trade wars.
- Community outrage at short-sighted, populist politics fuelled by corporate self-interest gave rise to uprising and economic activism: consumers voting with their wallet.
- An aggressive stimulus package, coupled with fiscal policy reform began to slowly drive recovery.
- There has also been government and parliamentary reform: Australia is now a republic, and elements of Scandinavian parliamentary system adopted. Political discourse is now evidence based, respectful and progressive.
- Growing forced migration in response to climate change has placed environmentalism and social responsibility mainstream, matching shifting global consciousness. Carbon tax implemented in 2025 catalysed renewable revolution.
- Australia became signatory to a G20 agreement requiring full accounting of costs of manufacturing and production. This has dramatically changed pricing, and international trade. Imports are very expensive. However this has reinvigorated local manufacturing and production, which has re-connected Australian consumers with producers.
- There has been broad structural governmental reform. Now an 'Environment & Humanities' mega-department. All uses of ecological systems are secondary to health, connectivity and functionality.
- Environment is now recognised as dominant force behind social and economic wellbeing. All forms of investment is now evaluation against triple bottom line.



Wisdom of the Connected



Government policy is integrated, environmental impacts are known, measured & managed

- Progressive legislation and taxation system is now in place to improve accessibility to education, healthcare, housing, strengthening safety net for vulnerable.
- Overall people pay more taxes, but the system works, improving harmonious nature of society, common understanding, and ability to address issues as a society.
- *National Holistic Accounting Framework* now in place accounts for all aspects of natural environment, and human interventions on it. Includes economic variables, as well as social wellbeing aspects (under-employment, trust, cohesion), as well as soil carbon, water quality, temperature, sea-level, contaminants etc, and cumulative impacts.
- Diverse data streams are not just being collected, but *shared* and *used*, and dramatically affected decision-making.
- There has been a breakdown of scientific 'fiefdoms' – data is now open source, and this has paved the way for social understanding in previously unimaginable ways.
- New open source data environment is not dramatically more expensive – it turns out a lot of the data required was already being collected, just not shared.
- Everything is now blockchained, tracked and traced. Mislabelling has been eradicated. People now eat locally and seasonally, preferentially choosing products with lesser impact, which are cheaper, and align better with values. This has supercharged R&D into modifying production systems to eliminate impacts (bycatch etc), and has also reinvigorated smaller, artisanal, family-driven production systems.



Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



- Consumer economic activism has transformed media, which now offers balanced, evidence-based reportage. This has helped to heal societal cohesiveness, as demonstrated by trends in societal trust within *National Holistic Accounting Framework*.
- Massive tech adoption (automation, AI etc) has been carefully regulated to ensure employment and quality of life metrics in the *National Holistic Accounting Framework* do not fall below agreed targets.
- Food production has evolved away from beef, with massive growth in aquaculture. Due to holistic accounting red meat is now ultra-premium, and aquacultured product is now centre-of-plate.
- Lab-grown meat is also enjoying strong growth due to modest footprint.
- Conventional plastics have been replaced with keratin-based alternatives. Plastic now has high value which has supercharged collection for recycling.
- The holistic accounting framework has significant burden for industry and end users. However costs are offset by rationalisation of management under E&H mega-department.
- There has been broad re-allocation of natural resources to recognise historical use. Indigenous communities and recreational fishers are now acknowledged through formal allocation and entitlements.



Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



- Under holistic accounting system Oyster farmers receive revenue for their ecosystem services (water purifying, habitat). This has fuelled rush of investment and seen widespread propagation of oyster farming and similar production systems.
- Aquatic habitat stewardship program, which is championed by recreational fishers, uses levies from impacting industries to underpin massive growth in restoration activities. Consequent widespread re-establishment of kelp forests, seagrass, shellfish reefs and wetlands.
- Triple bottom line and Ecosystem-Based Fisheries Management is now business as usual, forcing systems thinking, integration, and evidence-based adjustment of policy settings.
- Harvest strategies are now multi-species, highly interconnected, and include Traditional Ecological Knowledge. All fisheries are now managed according to biological stocks and not jurisdictional boundaries.
- Australian fisheries management now independently recognised as world leading. Australia is sharing what it has learned with global audience to encourage adoption of best practice. Not altogether altruistic: better global performance makes imports cheaper, and so increases diversity of choice. Outcome is global collaboration and shared learning.





Initial Insights:

Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



THINGS TO PAY ATTENTION TO

- The process for governance has drastically shifted in this world.
- This improved governance would come at a cost: speed and \$.
- The fishing & aquaculture community will need to pay attention to monitoring how the different sectors are operating and responding to a range of challenges
- There will be a need for strong monitoring and evaluation across the value chain to ensure that the system is synergised and that businesses are constantly adapting
- There will still be tension in the system. People will still seek to 'game' the system. Trusted authorities will be critical in this scenario.
- Need a way to maintain quality assurance of science in this scenario.
- Will need a way to reduce costs in this world.





Seeking additional Insights

Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



ACCESS

- Security has been resolved and de-politicised, de-stressing the system.
- Access is based on evidence-based research that is accepted by all members of the fishing & aquaculture community, and other users.
- Access based on data comes at a cost (speed and \$)
- Needs to be a strong relationship between custodians of data (research, monitoring & compliance) & government at all levels, to ensure data informs decision-making for policy development and implementation. Need for integration of datasets.
- Accountability is king. Need for very good working relationships between data custodians and sectors to enable that all members of the F&A community remain accountable.

BENEFITS

- Access to diverse resources is possible because of data generated from research, monitoring and compliance activities that is available. This de-stresses the system.
- Social and ecological benefit is valued as well as economic. First time we have measured ecosystem services.



Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



TRUST

- The public can trust the resources because of data generated from research, monitoring and compliance activities that is available. The partnering of different groups provides the checks and balances to ensure the narrative can be trusted.
- Evidence based approach allows use of under-utilised species etc. De-stresses the system.
- Social and ecological benefit is valued as well as economic. First time we have measured ecosystem services.
- Social media might be less powerful in this world, being more regulated by well informed community?
- “the rising tide lifts all boats”

CAPACITY TO ADAPT TO/MITIGATE IMPACTS OF CLIMATE CHANGE

- Due to strong leadership, data and systemic perspective on the world, there is a conscious response to mitigate against climate change.
- Sectors of F&A community are minimising carbon footprint and being transparent about it in this scenario.
- In this scenario we can act strategically. Can plan and act.
- The response to climate change will reflect the dynamic tension between leadership and the regulatory frameworks.



Wisdom of the Connected

Government policy is integrated, environmental impacts are known, measured & managed



PLANNED OUTCOMES

- The F&A community's capacity to refine its identity to respond and adapt in world with high degree of connectivity and information flows.
 - Values and beliefs need to be understood, and reviewed, to enable that are no longer useful to be replaced with a more contextually appropriate set that reflect the contemporary landscape
- The consumer and community having a very good understanding, respect and trust of the fishing & aquaculture community
- The fishing & aquaculture community having a strong network of connected stakeholders supporting the systematic capture and dissemination of data and information.

MOONSHOTS

- Reduce incidence of death in fishing & aquaculture to pre-determined target
- All fish stocks are fished at sustainable levels
- No species are PETs
- TO be a step ahead of consumer and community expectations/aspirations
- Fully integrated Traditional Ecological Knowledge in modern ecosystem management.



A future world wherein government policy is populist, and key environmental impacts are largely unknown, unmeasured and unmanaged.

LIVING FOR TODAY

Living for Today



Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged

- Australia has been in a decade-long recession. Wealth disparity is at its highest in 50 years, leading to decline in economic growth and compounding stress on the budget. Emotionally charged mob mentality commonly prevails.
- Shale oil export growth continues, underpinning fragile national budget, limiting ability to meaningfully regulate the mining sector. The economic benefits of renewables did not play out as expected, with giant energy corporations holding consumers and government to ransom.
- Tax receipts are down due to decline in workers. Gen X'ers are retiring with inadequate super balances to self fund. Coupled with rising housing costs this has created the perfect storm.
- More and more, the elite are seeking to separate themselves from the growing population, and the troubles they endure.
- Australian politics lurches forward with regular leadership coups.
- Charismatic individuals with sweeping claims quickly gain an audience. Nationalism rhetoric proliferates. True leaders are drowned out by overpromising charlatans.



Living for Today



Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged

- Smartphones and social media are everywhere. The government is ineffective trying to regulate tech titans (Facebook, Twitter etc), and fake news proliferates.
- Top-down management by government is being rejected by the Australian public and seen as corrupt institutions hiding truth from the masses. Facts are considered a luxury enjoyed by the wealthy.
- Policy is developed largely via rapid response referendums. Political outcomes are strongly influenced via social media.
- There has been a collapse in STEM graduates, and building science illiteracy. Science and philosophy have been rejected as bourgeois by the everyday Australian, who instead rely on sources they understand, and digestible soundbites.
- Fears about declining ecosystem health have created powerful ENGOs who are ruling the populist party in Canberra, using alarmism rather than science. Science groups are underfunded. Politicians are no longer listening.
- Massive inland and inshore reserves and parks have been formed, displacing commercial fishers and farmers offshore. Indigenous groups have formed effective alliances with ENGOs.



Living for Today



Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged

- Large corporates are employing sophisticated PR to manage activist-driven frenzy on social media.
- Small family run businesses have been largely squeezed out by uncoordinated regulations driven in response to activist pressure.
- The wealthy continue to prefer ethically sound food and products, and demand for premium seafood keeps Australian seafood industry afloat.
- Food sectors are gripped by volatility, as the everyday Australian continues to scare easily from fact-less scare campaigns. Retail is dominated by generic products and fish protein from under-utilised lower trophic levels (krill, lantern fish)
- Multi-nationals focus on large scale food production, including offshore growout and harvest of fish, where they are operating out of sight, out of mind.
- Biosecurity threats are rampant, and unabated, fuelling creation of ever-more parks and reserves. A blunt tool to manage this threat.
- The largest aquaculture operator has been devastated by disease for the third time since production began. Forced to chemically treat all water – costs are massive.
- Out of desperation, oyster farms are being used as sentinels for contaminants on aquaculture farms.



Living for Today

Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged



- Weak laws and poor compliance means that fish substitution is rife. There is little confidence in product provenance. The Australian public is against corporates, who they largely suspect of corruption. The expectations on seafood producers is overwhelming.
- Recreational fishing is now largely extinct due to diminishing access, growing animal welfare concerns, high cost and regulatory complexity. As their numbers dwindled, so too did their influence, speeding up their demise. Digital fishing tournaments are doing well, however.
- ENGOs have successfully framed commercial fishers for overfishing, while the true cause – climate change – goes unrecognised.
- Industry's attempts to rebuild social licence using third party accreditation is unsuccessful, with accreditation programs falling to effective social license campaigns challenging their rigor and independence.
- The last trawl fisher retired in 2030, overcome by building costs of operation, combined with ever-increasing regulatory burden.





Insights:

Living for Today

Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged



THINGS TO PAY ATTENTION TO:

- Society has lost all interest in wisdom.
- Charming sociopaths are running amok. Where are the educated altruists?
- Science is not as important as social media data and marketing in this scenario.
- There is a significant capacity building requirement in this future world (e.g. comms)
- The F&A community will need to pay attention to partnerships with key influencers in this hyper-competitive, spin-centric world. Let them run the social media narrative.
- The shift to subsistence rec fishing will bring ecological consequences.
- No central repository for wisdom that we can all work from in this scenario. We have lost objectivity in science, and public good.
- Use of AI: need to understand the potential and implications for labour.





Seeking additional Insights

Living for Today

Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged



ACCESS:

- Access is for the power players who have money to influence. Severely reduced wild catch and recreational sectors in this scenario.
- Indigenous sector and non-extractive (ENGOs) have power and access. For the Indigenous sector this was driven through clean, green brand, and consistent story throughout.
- Massive conservation areas now in place, yet still degraded systems.
- Energy and defence are also big winners in terms of access.
- Strong inshore/offshore divide in this world.
- Scientific community needs to play the game a lot better in this world (social media etc), and focus energy on drafting and selling messages across various information channels.
- Research providers/funders would need strong partnerships with power players so as to guide their behaviours to support F&A community outcomes. Includes ENGOs, Indigenous groups, and recreational groups.
- Science would be funded by corporates for their needs, and conducted in the background in this scenario. If it did exist, FRDC would need to work hard to understand the dynamics of the power players, what their needs are and how they are/will be influencing government.



Living for Today

Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged



BENEFITS:

- The loss of marine habitats drives the focus onto aquaculture for sustainable fish protein.
- R&D would have a critical role in supporting aquaculture and rejuvenating natural aquatic areas that have been degraded (Investment into 'designer ecosystems' will be critical in this scenario).
- Wild catch and aquaculture needs to focus on servicing needs of the elite in this scenario.
- Have lost most of wildcatch, and family operators. Benefit lost is social fabric of coastal communities.
 - Opportunity: perhaps easier to achieve unity/innovation/adoption because F&A community is now highly corporatized and profitable.



Living for Today



Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged

TRUST:

- The dominance of profit and power does not support a coherent nor truthful narrative about products derived from aquatic resources.
- Most F&A sectors have been ineffective in telling their story and have lost.
- Indigenous sector has had a consistent story throughout. This was critical in gaining trust.
- If F&A sectors are to re-build trust it will need to be done with very credible partners. It will have to be built over time using a narrative that is authentic, not spin, so that it can differentiate itself.
- The data will have to be developed to construct a narrative that will be accepted.
- The trust can only be developed for certain products because of the poor state of the resources.

CAPACITY TO ADAPT AND RESPOND TO CLIMATE CHANGE:

- F&A community only responds where necessary to minimise costs and maximise profits. The intent is not to stop, reduce or slow climate change, but merely to minimise impacts of it.
- Assume adoption of renewables on boats, efficient gear will simply be about profit optimisation.



Living for Today

Government policy is populist, environmental impacts are unknown, unmeasured & unmanaged



PLANNED OUTCOMES:

- The fishing & aquaculture community must have capacity to be adaptive and hence resilient through strong knowledge systems and organisational structures.
- F&A community has a new identity to be able to respond to power structures and different emerging identities in the community and with consumers.
 - Build strong partnerships with effective influencers
 - Build capacity to innovate in communicating messages (social media etc)

MOONSHOTS:

- Leadership, unity and voice.
- Consumers and other stakeholders understand, respect and trust the science.



Observations across all scenarios

- Fishing & aquaculture community needs greater influence on consumers, politicians, businesses.
 - Influencers will be important.
 - Requires more structure and effectiveness in our communication and extension activities.
- A truly systemic approach is needed in how aquatic resources are managed.
- We run risk of losing smaller fishing businesses in almost all scenarios.
 - The systems and structures are driving consolidation and growth of larger corporates.
- There must be a stronger and more effective focus on maintaining social license to operate. Requires closer connection between producers and community.
- Critical nature of data and information to support systemic approaches.
 - Requires data and information gathering that is based on strategic intent.
- Unification across sectors is critical in most scenarios.

How will Australia's aquatic resources (marine and fresh) be accessed in 30 years?



Conclusions across all scenarios:

- Access issues could fall into two categories. Access is gained:
 - by those who have the power and influence; or
 - by data and information supported research-based evidence that supports strong decision-making
- FRDC might do well to position itself as a custodian of catch, effort and benefit data to inform access decisions matter which future unfolds.
- Other conclusions?

What benefits will be derived from aquatic resources, domestically and internationally?



Conclusions across all scenarios:

- The balance of power between strong, powerful stakeholders with vested interests, and the strength of Government resolve to protect aquatic resources to provide benefits to all will shape the diversity of the resources available and to whom they benefit
- The provision of data, research and evidence as well as the ability to shape the narrative will be critical
- Other conclusions?

Why should the Australian public should trust products derived from aquatic resources



Conclusions:

- The Australian public can trust products derived from aquatic resource when credible partnerships are established, a consistent story is told, and the product is supported by robust data and research.
- Strong legislative structures and accountabilities also facilitate trust with consumers.
- Other conclusions?

What will be the capacity of the fishing & aquaculture community to adapt and respond to climate change?

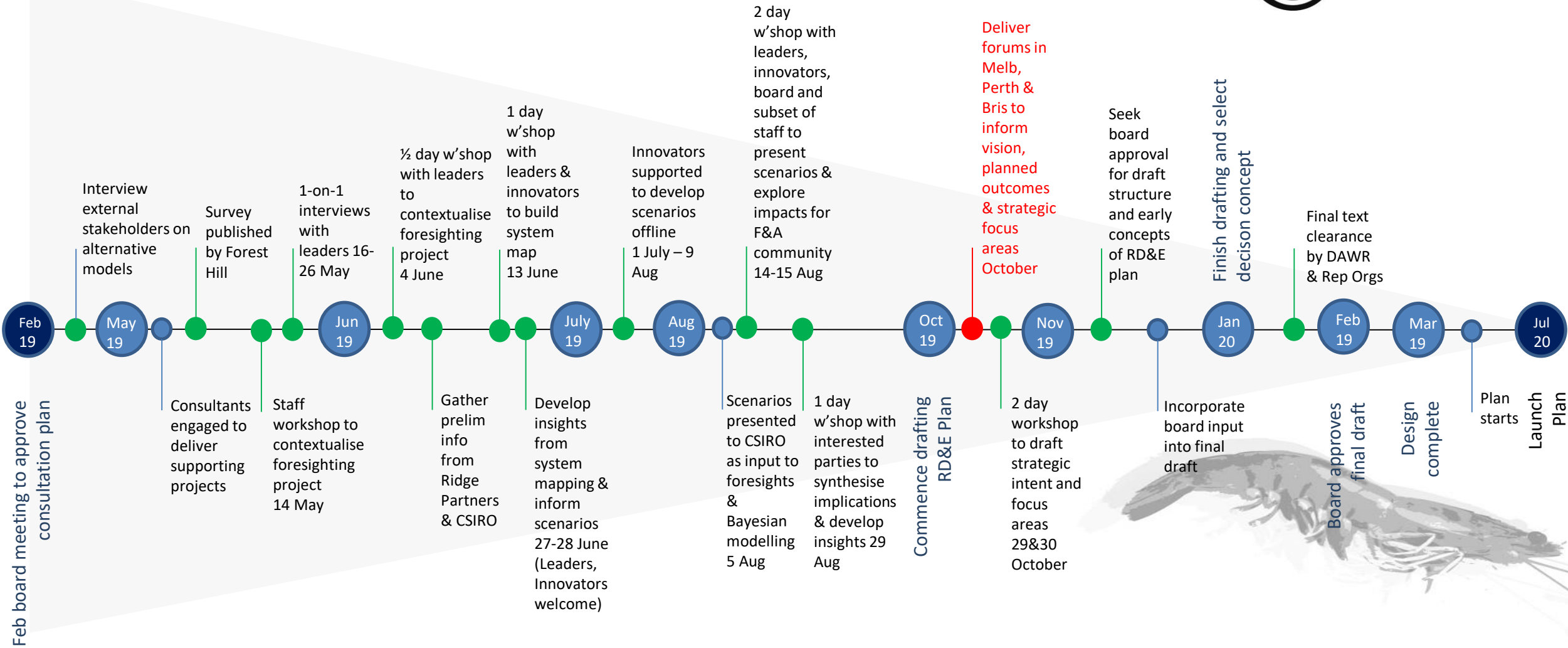


Conclusions:

- Capacity of the fishing & aquaculture community to respond and adapt to climate change will depend on the prevailing beliefs systems of decision-makers at an industry and regulatory level.
- If regulatory frameworks are weak and industry beliefs are focussed on reactive responses, then there will probably be a higher percentage of businesses just reacting independently and so their capacity to respond and adapt will be minimal.
- Unless there is a strong push from industry leadership for change, the only way that industry will improve its capacity to respond to climate change will be a strong regulatory regime.
- Other conclusions?

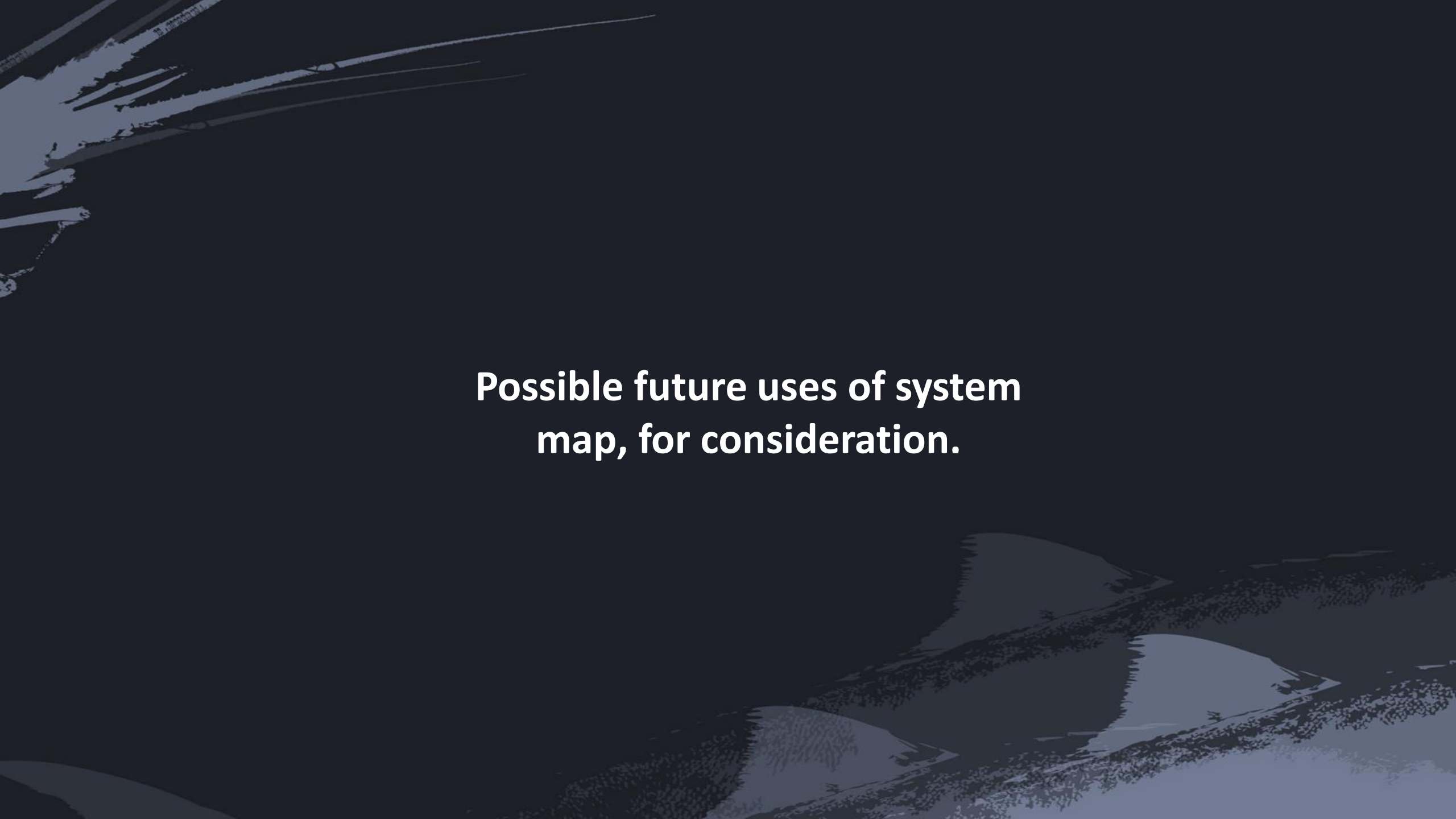
- Key planned outcomes for the fishing & aquaculture community include:
 - capacity to clearly articulate the Nature and Direction of the fishing & aquaculture community so that it knows how to ensure it has business models that are relevant
 - capacity to understand the power dynamics that appear and how to manage those dynamics that enable the F&A sector to be sustainable
 - consumers who have trust in and respect for the industry and the products that it delivers
 - Other conclusions?

Overall timeline – where are we now?





Thank you.



**Possible future uses of system
map, for consideration.**

Feedback from 14 & 15 August Workshop

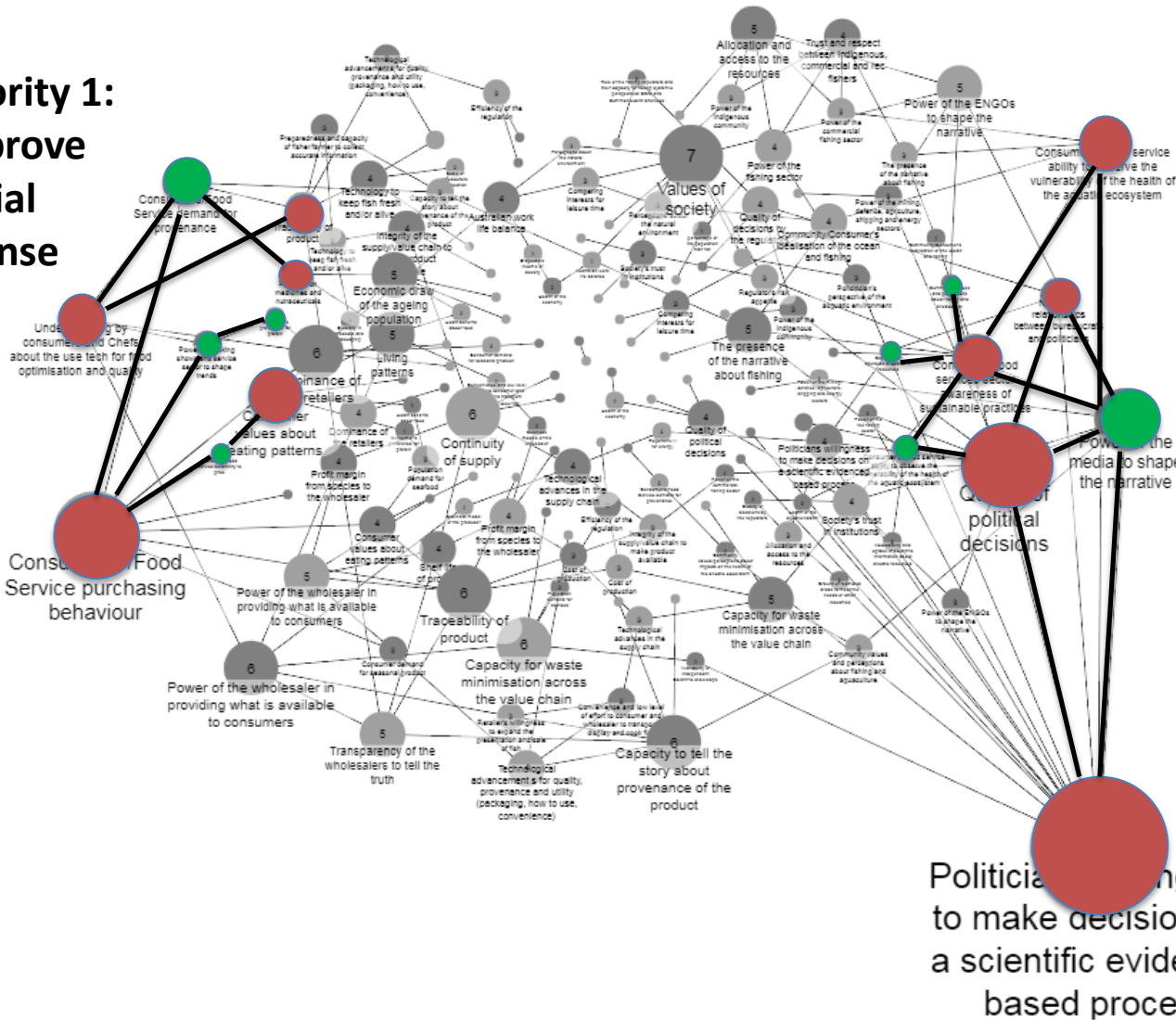
- First time we have developed a shared map of the fishing & aquaculture landscape
- Please don't lose the map and 'loops'
- How can we continue to use systemic approach moving forward?
- We have some ideas...



How we communicate our planned priority areas



**Priority 1:
Improve
social
license**



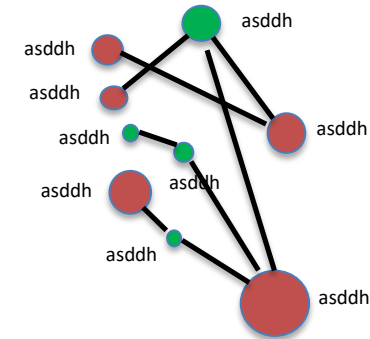
**Priority 2:
Increase
unity**

Political willingness to make decisions on a scientific evidenced based process

How we evaluate applications?

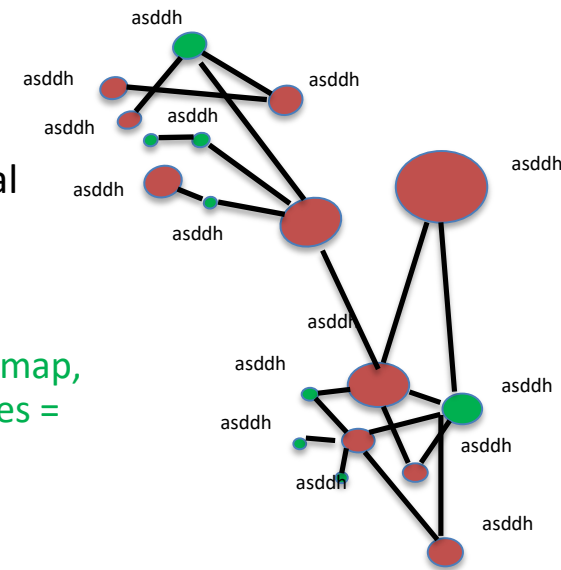
- Project 2020/197 “Driving unity across sectors in the fishing community”

Principal Investigator: Dr Joe Bloggs



- Project 2020/430 “Improving social license through certification”

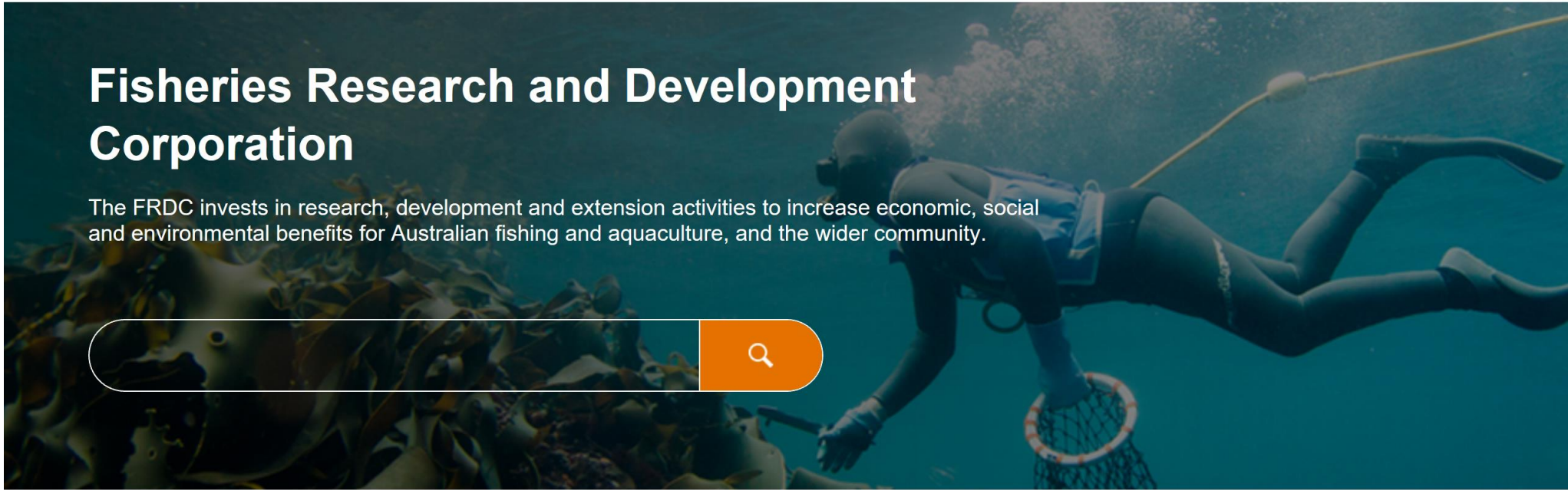
Principal Investigator: Dr Sally Scientist



More spread across the map,
and affecting larger nodes =
more impact

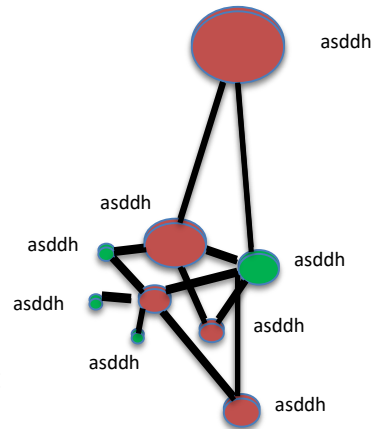
Fisheries Research and Development Corporation

The FRDC invests in research, development and extension activities to increase economic, social and environmental benefits for Australian fishing and aquaculture, and the wider community.

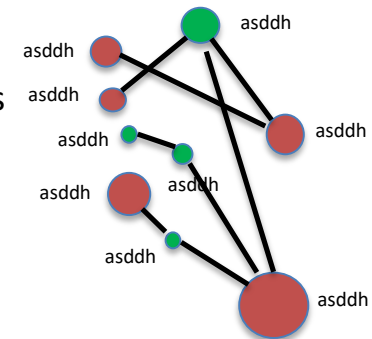


New projects funded in 2020

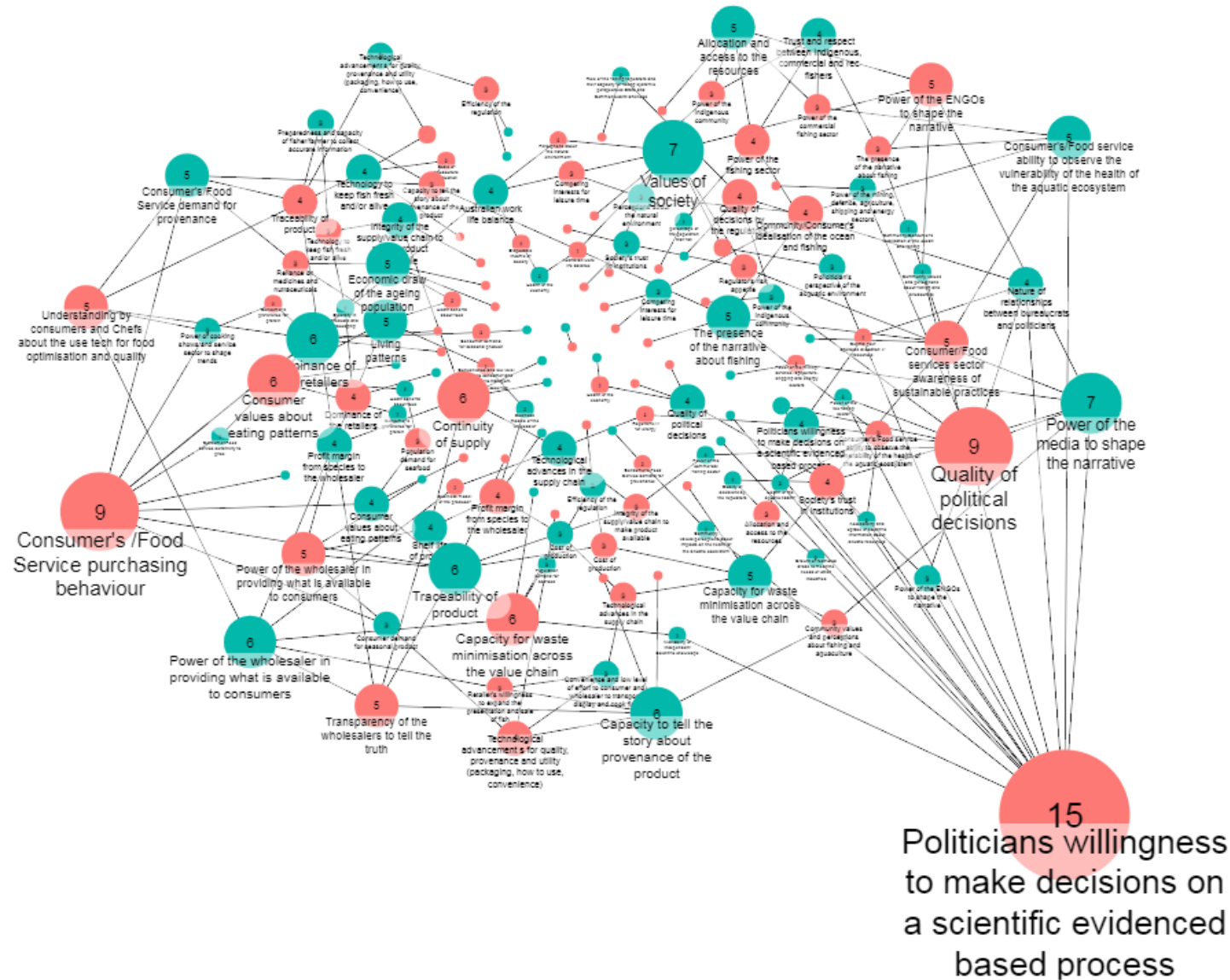
- Project 2020/430 “Improving social license through certification”**
 Principal Investigator: Dr Sally Scientist



- Project 2020/197 “Driving unity across sectors in the fishing community”**
 Principal Investigator: Dr Joe Bloggs



Maintaining situational awareness



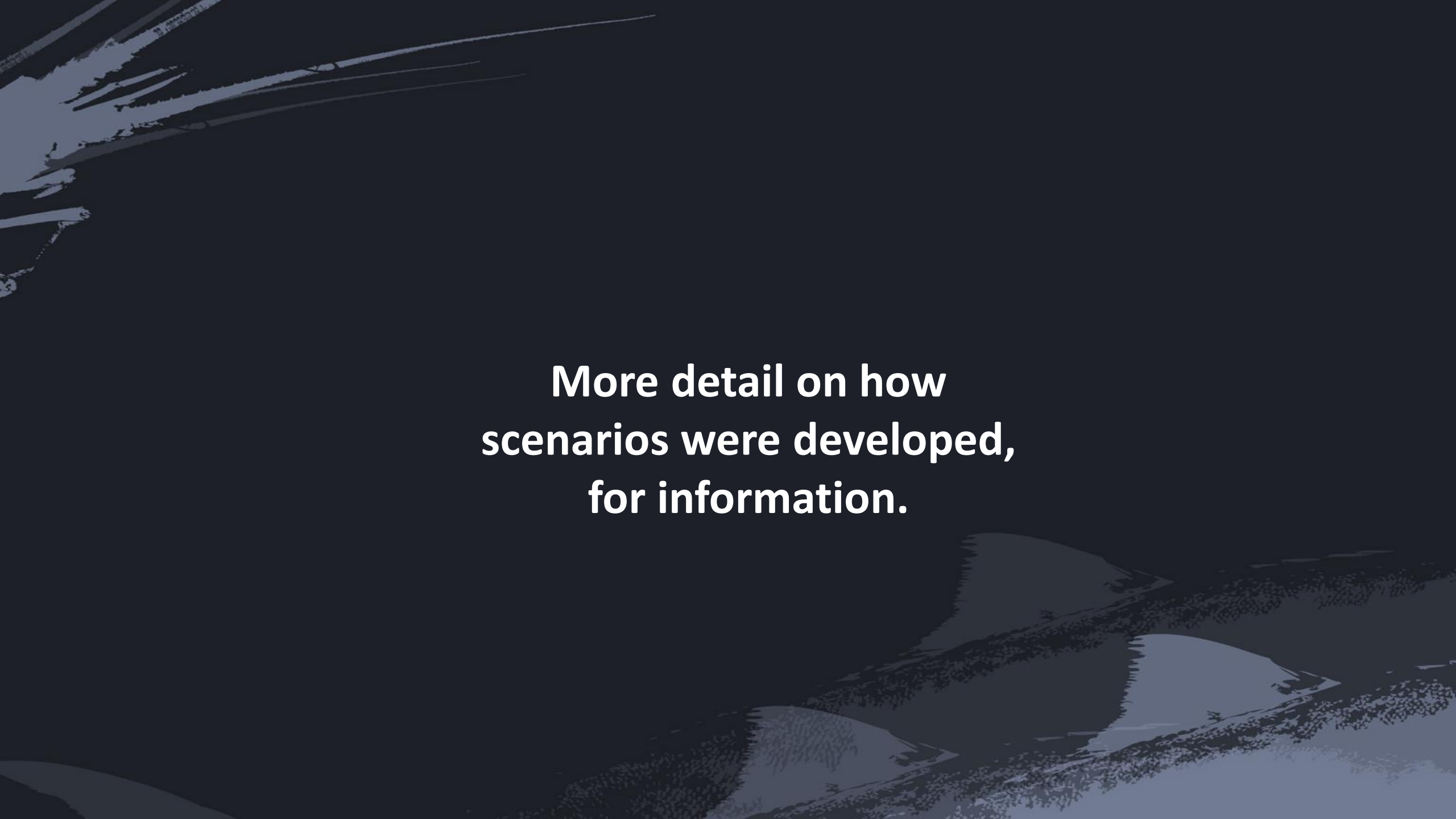
Summary

- Map provides platform for discussions about impact.
- Aim is for system map, once complete, to be foundation for plan. Can be visible, or invisible.
- Potential use in future consultation, communication, and plan implementation.



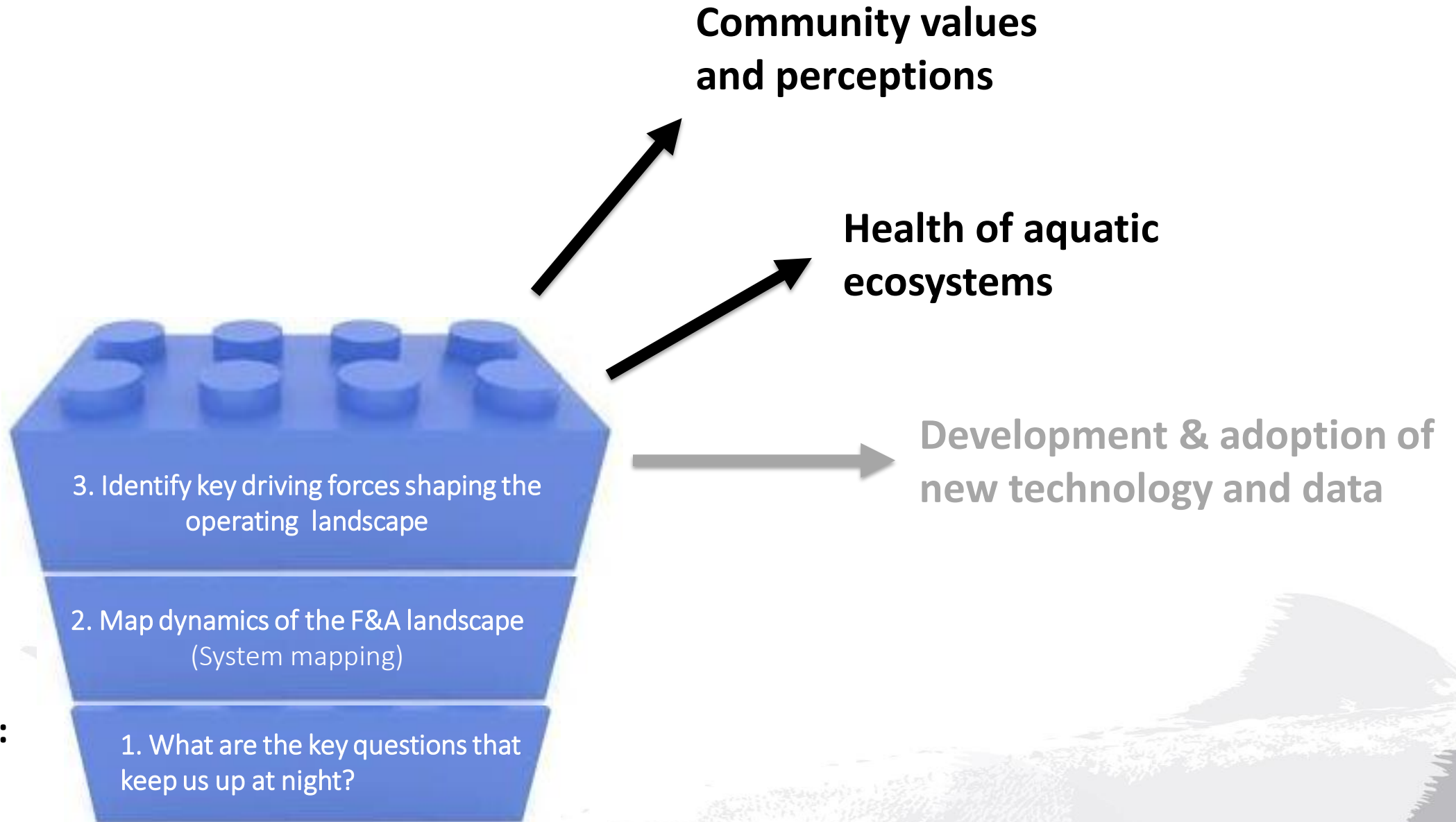


Thank you.



**More detail on how
scenarios were developed,
for information.**

Driving forces that if changed, would redefine dynamics of operating landscape



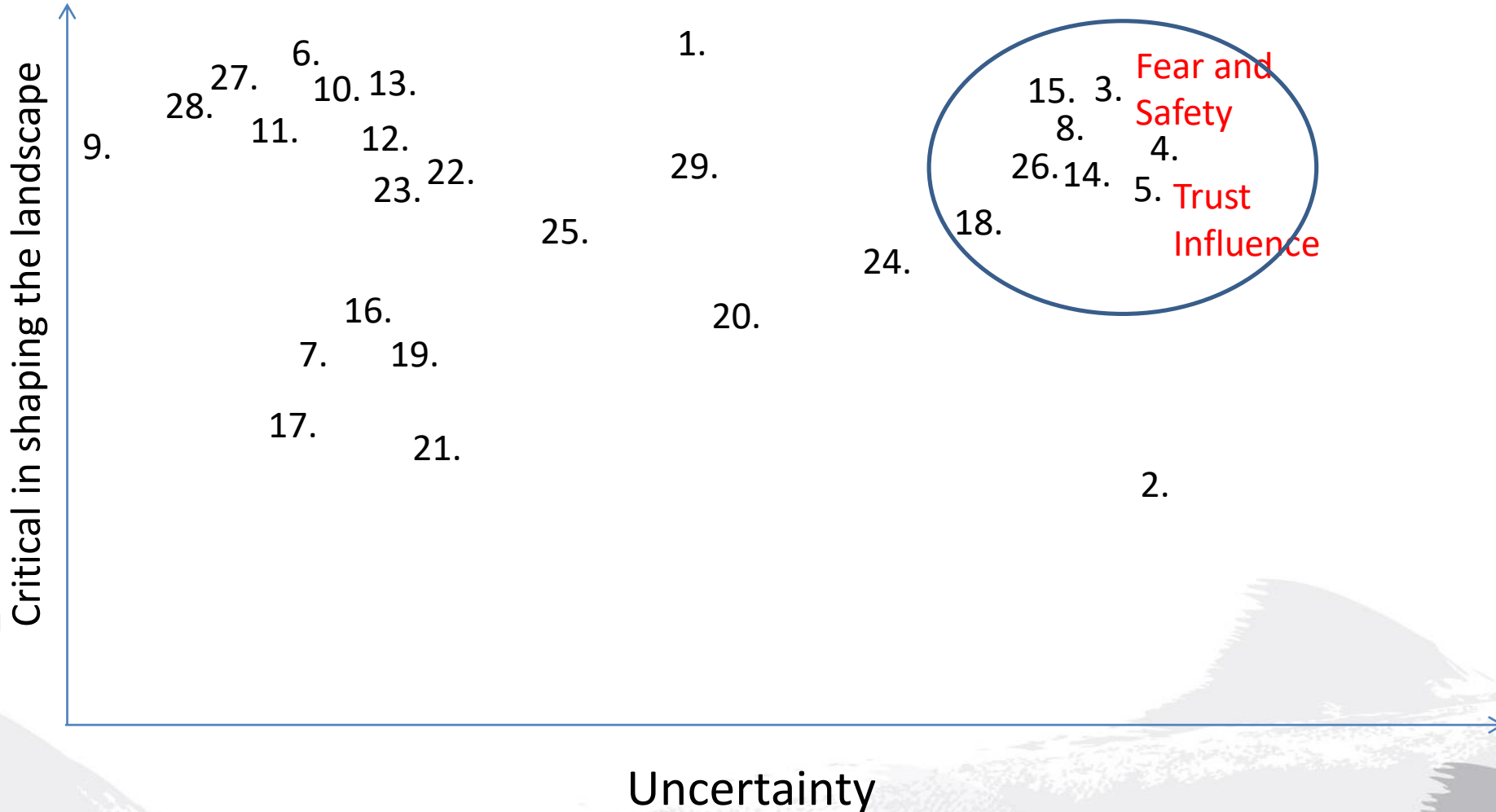
**Consultation:
Process**

Critical Uncertainties

Community values and beliefs



1. Impactful education (youth/meeting/school based)
2. Tourism
3. Influencers
4. Global/domestic stability (political/economic)
5. Major pandemic
6. Water security
7. Flow on effect of extinction
8. Fear/terrorism/security
9. Religious /cultural beliefs
10. Lobby groups
11. Negative campaigns
12. Fundamentalist ENGOs
13. Poor data & misinformation
14. Trust
15. Social media
16. Lack of STEM
17. University politics
18. Family and friends (peer pressure/affirmation)
19. Family structure
20. Changing culture of Aust community
21. Multi-lingual communications
22. Disconnection with the environment & food
23. Health concerns/dietary changes
24. Vegans/plant based protein alternatives
25. Media campaigns
26. Trusted communication I
27. Cost of living
28. Socioeconomics
29. Pro-active communications strategy



Community values and beliefs

- Reactive
- **Fear**
- Follow/copy
- Status quo
- Protectors
- Risk averse
- Static
- Victim
- Knowing
- Change fearing
- Closed minded
- Disrupted
- Pessimist

1

**Fear/
Unifying &
inclusive**

INFLUENCERS

MOTIVE

- **Unifying/Inclusive**
- Considered
- Protector
- Conciliatory
- Selfless
- Leader
- Inspire
- Visionary
- Independent
- Educating
- Catalyst

2

**Confident/
unifying &
inclusive**

- Proactive
- **Confidence**
- Lead
- Innovate
- Explorers
- Risk management
- Transform
- Hero
- Learning
- Change embracing
- Champion
- Open minded
- Disruptor
- Optimist

4

**Fear/
Polarizing &
divisive**

- **Polarising/divisive**
- Uninformed / obtrusive
- Bully
- Inflammatory
- Self interest
- Fear driven
- Myopic
- Unpaid
- Conflicted
- Dictating
- Inert

3

**Confidence/
polarizing &
divisive**

Community values and beliefs

Fear/Unifying & inclusive

1

Unifying & inclusive

Confident/Unifying & inclusive

INFLUENCERS

2

Rainbows and Lollypops

MOTIVE of society

Fear

Confident

Divided we fall

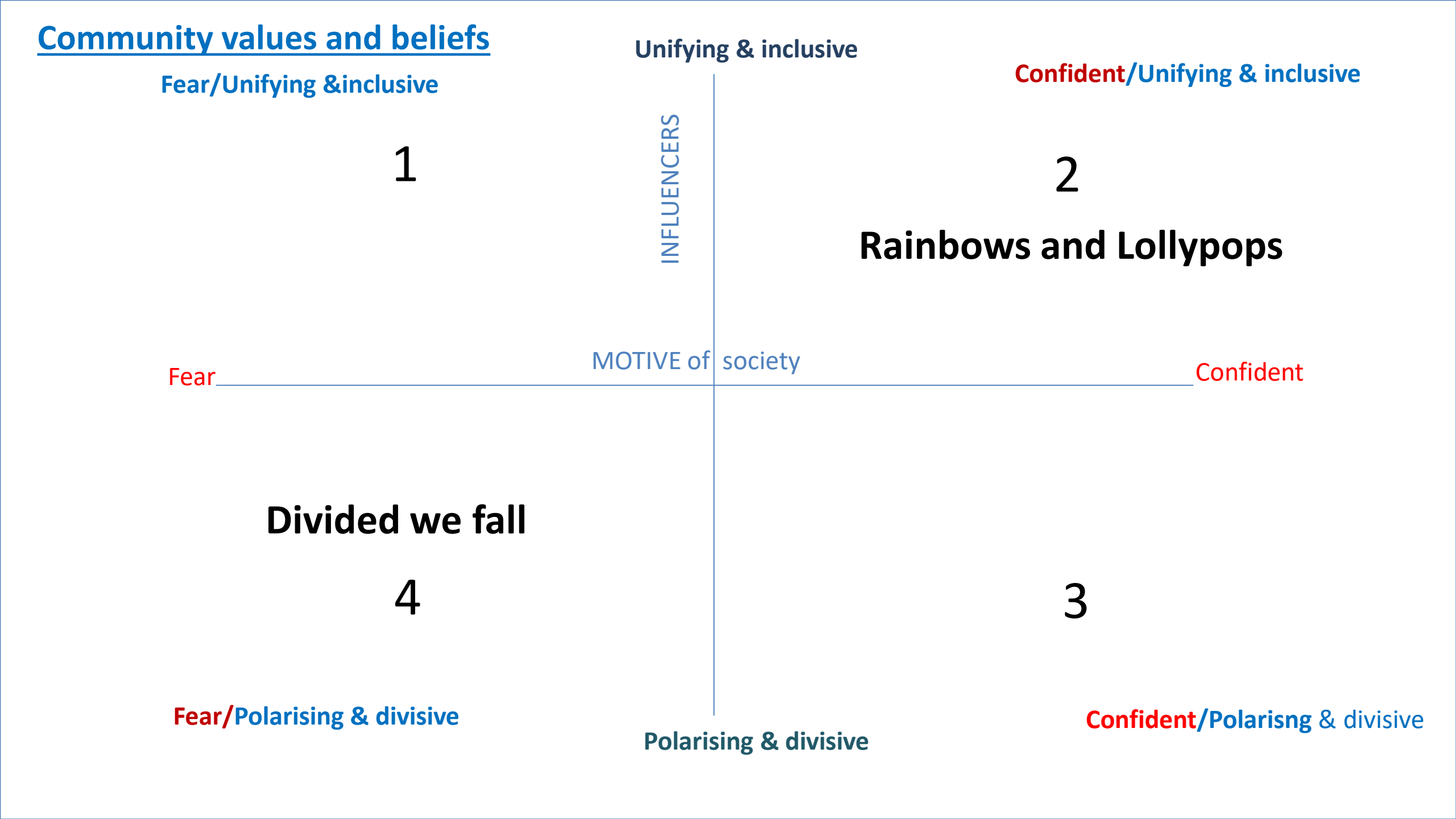
4

Fear/Polarising & divisive

Polarising & divisive

3

Confident/Polarising & divisive

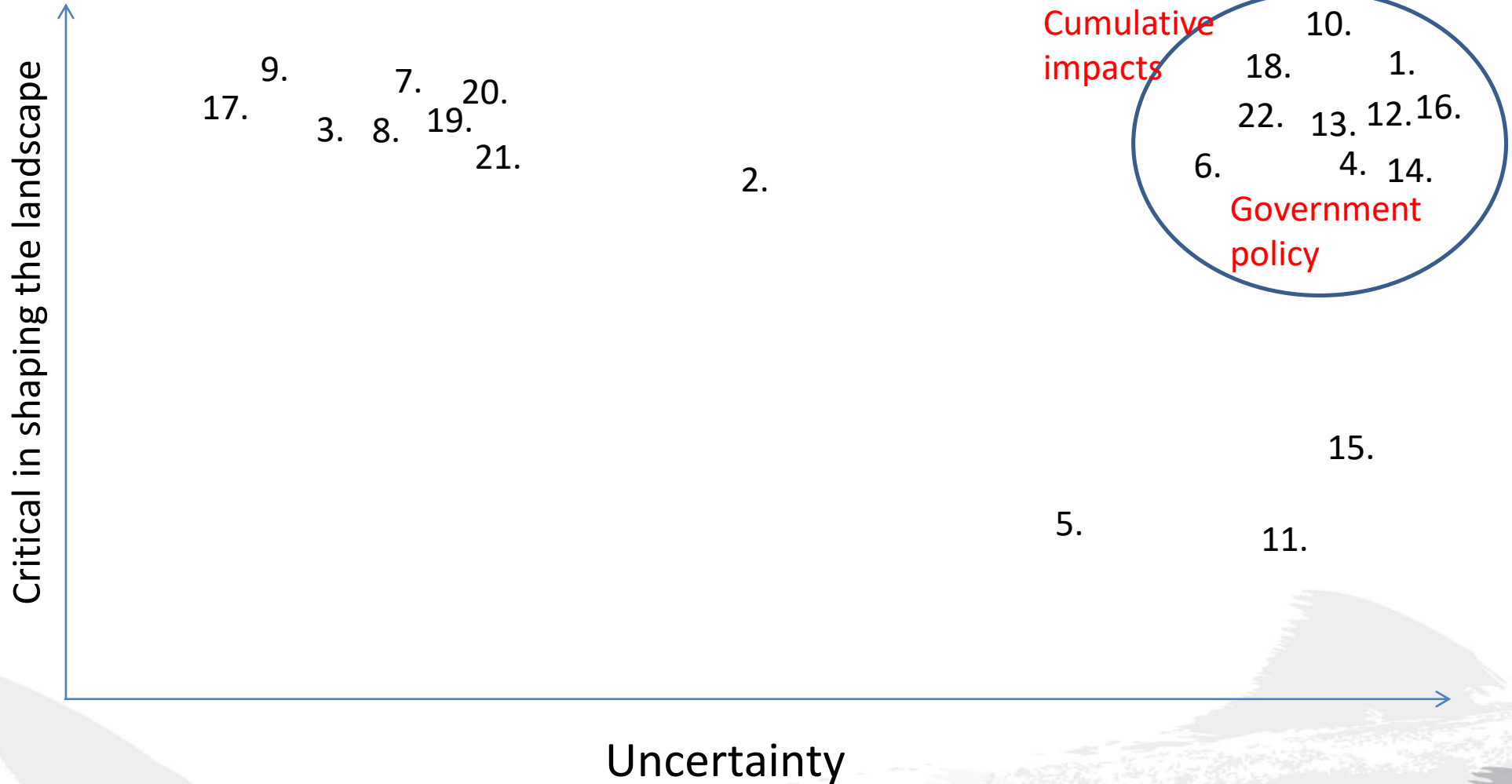


Critical Uncertainties

Health of aquatic environments



1. Impacts
2. Fishing & aquaculture impacts
3. Land-based impacts
4. "Acceptable" impacts
5. No national governance
6. Government policy
7. Community waste and rubbish
8. Oil and gas, mining and construction
9. Greed and exploitation
10. Technological improvements
11. Role of indigenous communities
12. Invasive pests and diseases
13. Natural disasters
14. Human induced disasters
15. System Evolution
16. Extinctions
17. Poor science
18. Plastics and marine pollution
19. Waste management
20. Poor water management
21. Intensive production systems
22. Hormones & chemicals



Health of aquatic environments

Impacts

5

Populist/
Impacts Known,
Measurable
& managed

Govt Policy

6

Sustainably Integrated/
Impacts known &
measured & managed

7

Sustainably
Integrated/
Impacts unknown,
unmeasurable &
Unmanaged

8

Populist/Impacts
Unknown &
unmeasurable &
Unmanaged

- Trade offs known
- Insignificant
- Invisible
- External
- Complex dynamics
- Local
- **Known & measurable & managed**
- **Sustainably managed**
- Objective
- Perceived

- Trade offs unknown
- Significant
- Visible
- Internal
- Component dynamics
- Bioregional
- **Unknown & unmeasurable & unmanaged**
- **Unsustainably managed**
- Subjective
- Real

- Multi sector
- Multi portfolio
- Multi jurisdictional
- **Evidence based**
- Long term
- Community driven
- Issue driven
- Leadership
- 4x bottom line
- Sustainable
- **Integrated & evidence based action**

- Single sector
- Single portfolio
- Single jurisdiction
- **Populist**
- Quick
- Election driven
- Party driven
- Fear-driven
- Vested interest
- Unsustainable

Health of aquatic environments

Populist/Impacts Known, Measurable & managed

Known, measurable & managed

Sustainably integrated/
Impacts known,
measured & managed

5

Impacts

6

Wisdom of the connected

Populist

Govt Policy

Sustainably integrated

Living for today

8

7

Populist/Impacts Unknown, unmeasurable &
Unmanaged

Unknown, unmeasurable &
unmanaged

Sustainably integrated/Impacts
unknown, unmeasurable &
Unmanaged



Fin.



FRDC

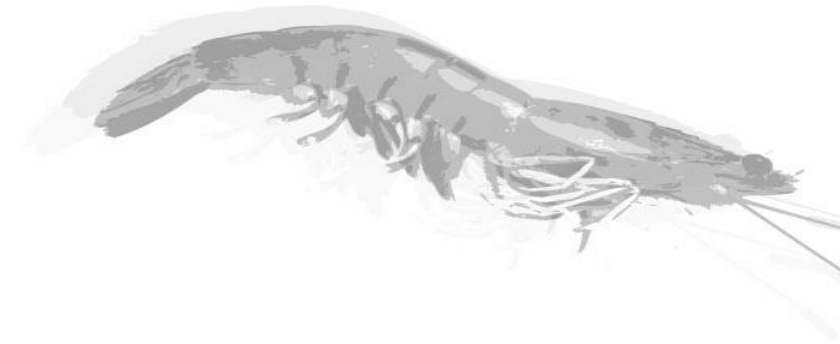
NATIONAL OVERVIEW

SEPTEMBER 2019

Acknowledgement of Country



'I would like to acknowledge the people who are the Traditional Custodians of the Land. I would also like to pay respect to their Elders both past and present and extend that respect to other Indigenous Australians who are present.'



An aerial photograph of a wetland landscape, showing a series of interconnected water bodies and vegetated areas. The water is a light blue-grey color, and the surrounding land is a darker, textured green. The overall scene is a natural, undisturbed environment.

FRDC Operating Environment

FRDC Chair and Board

- The Hon. Ron Boswell appointed for a further 3 years
- New Board appointed 2019

The FRDC's operating environment



These are some of the key activities over the next 12 months.

- EY report has proposed a new System Leader
- Review “Modernising the RDC system”
 1. New structural options for RDCs
 2. The Commonwealth Government wants to see more cross-sectoral RD&E investment
 3. Improvement of extension and Adoption
 4. Advocacy
- New Advisory Panel to advise the government on options for RDC Reform
- Ag 2030 Taskforce
 - New Food and Fibre plan
 - \$100billion GVP target – inquiry
- Election Commitment – National Fishing Plan
- Proposed review of the EPBC Act
- UN Reviewing the Biosecurity Targets
- UN FAO Declaration for the 25th Anniversary of the Code of Conduct for Responsible Fishing
- FRDC developing a new 5+5 Funding Agreement with Dept of Agriculture
- Sunsetting of the FRDC legal instruments – 2023
- Senate Inquiry into Seismic Testing
- Change is coming new FRDC RD&E Plan 2020-25

External Operating Environment “Atmospherics”



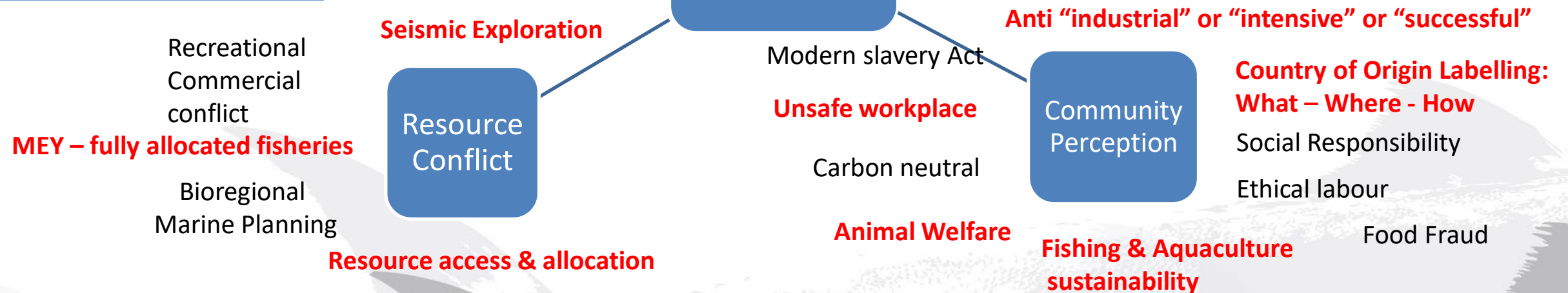
- Status (where known) of majority of fishing and aquaculture activities is environmentally sustainable– though some important outliers ...
- Community perception of fishing and aquaculture community environmental performance has improved slightly from 24% to 32% - but more to be done – Social License still perceived as an issue
- Appetite for jurisdictional reform low – Productivity Commission report appears to have made no impact
- Business structures continues to change – more companies merging
- Industry has exceeded \$3 billion in commercial value – very large capital investment occurring
- Majority of high profile recreational fisheries are performing well – except for snapper
- Indigenous sector is starting to realise its potential
- New National commercial peak body (Seafood Industry Australia)
- National recreational peak body not yet finalised– structure continues to change evolve – Recfish Australia/ARRF/AFTA/GFFA
- Threats to resource access – both external and internal – still highly contestable space – eg. Proposed commonwealth resource sharing policy
- MPA certainty – opportunity to build effective partnership with Parks Australia based on agreed habitat objectives
- Increasing shifts in some species as well as “absence” from fishing grounds – managing for climate change and variability
- Increasing risk of disease and pest introductions – biosecurity and fish health
- Recreational Fishing Survey (Catch, Social and Economic Impact) – lack of data is critical to fisheries science?

Major operating environment issues for fishing and aquaculture



operating environment

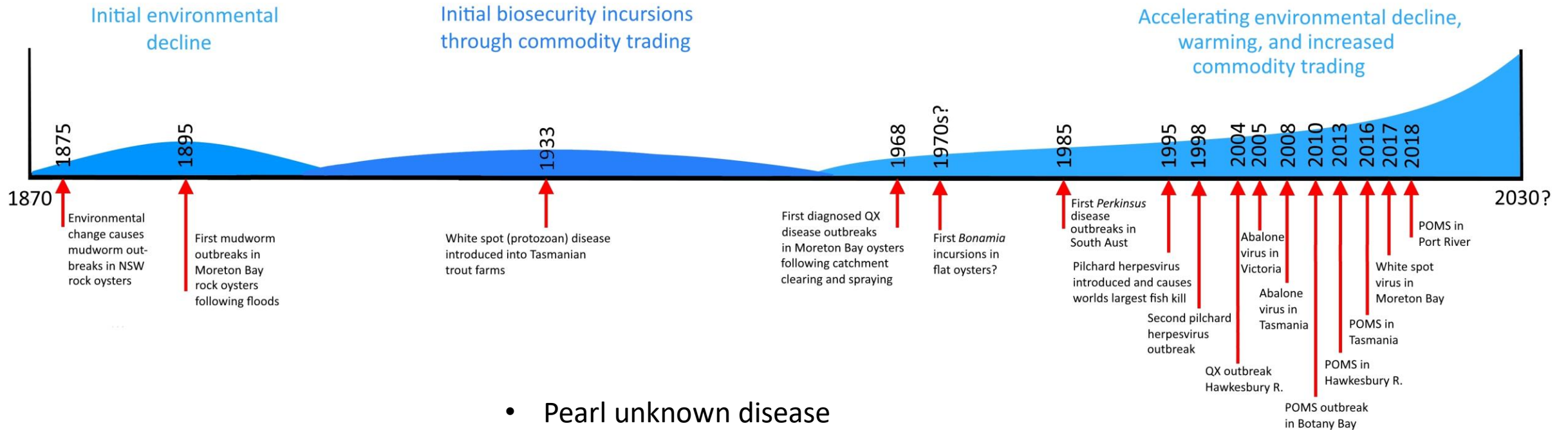
- Strong financial growth in the Australian fishing & aquaculture industry – GVP rose to over \$3 billion
- Aquaculture is in best position for growth
- Iconic recreational species are in good condition – but tackle sales weak due to growing online competition
- Indigenous Reference Group has high profile – but we lack an Indigenous representative body



Biosecurity – continues grow as an issue

Timeline of major aquatic animal disease outbreaks in Australia

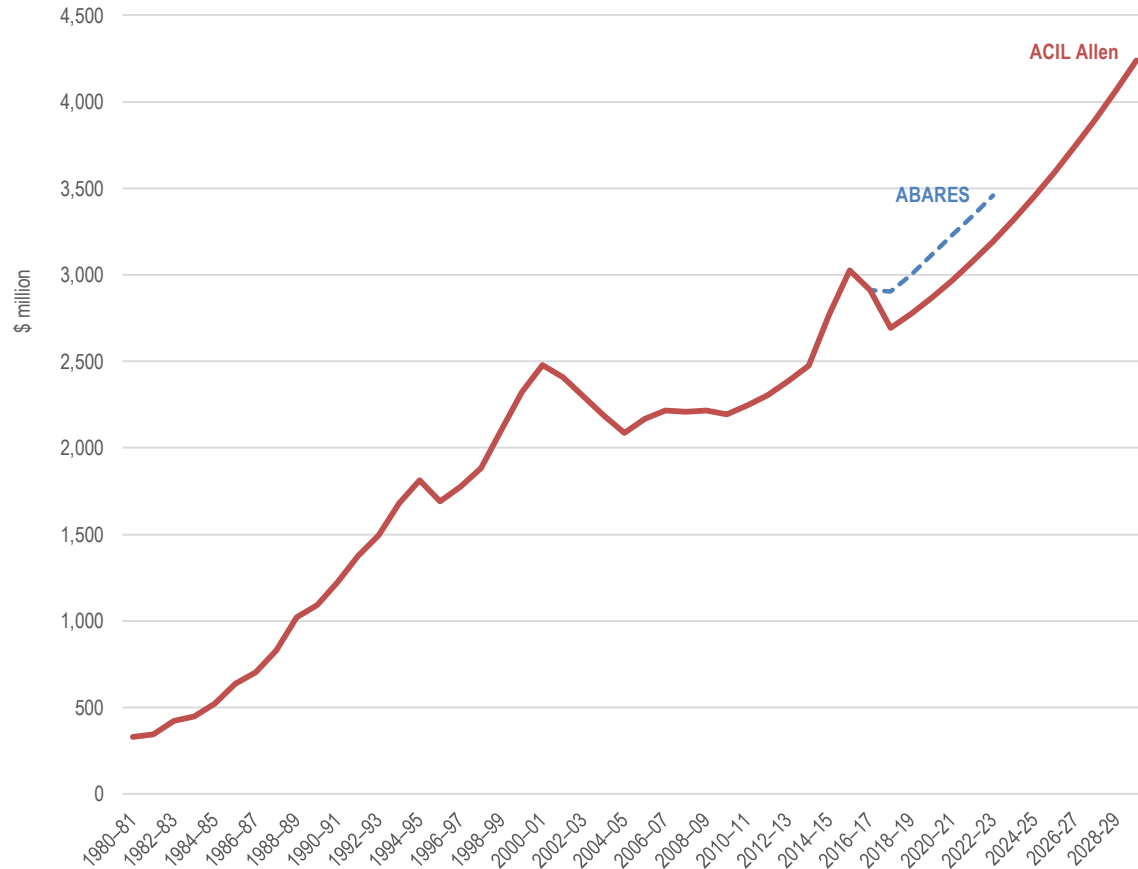
(By B. K. Diggles)



- Pearl unknown disease
- AGD
- Emerging Salmonid diseases – Pilchard Orthomyxo-like virus
- ?

Fisheries

Value of production - Total Fisheries



Key assumptions

Trend analysis of value of production by components

Key challenges

Biosecurity, sustainability, overfishing, investment, imports, the impact of climate variability and change in fish stocks

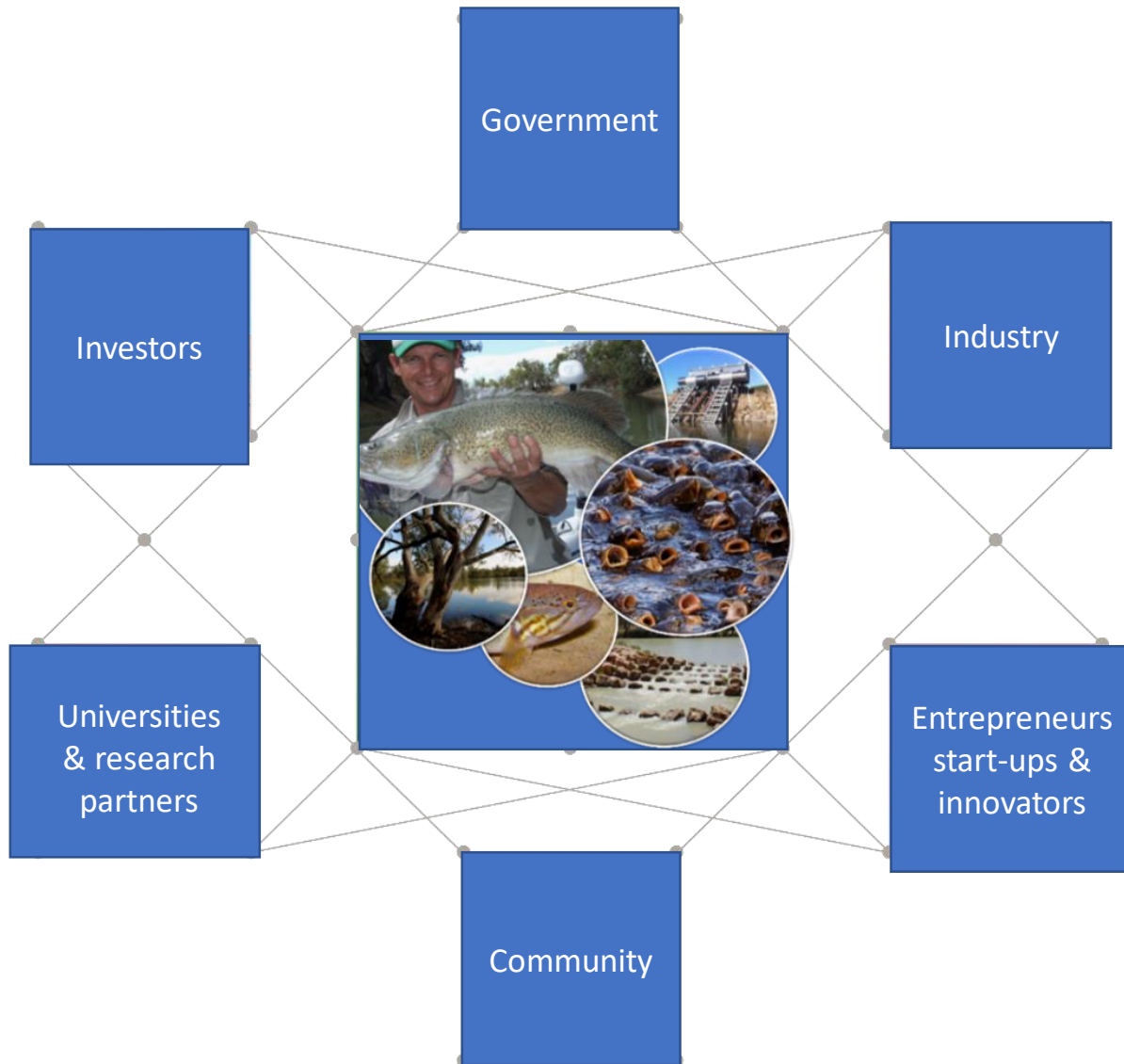
ACIL Allen estimates that

- currently, fisheries contributes 4.3% of total value of agriculture, forestry and fisheries production.
- the gross value of production would reach to \$4,238 million by 2030 from current level of \$2,910 million, at annual average increase of 2.0%. The forecast value is lower than the ABARES recent outlook.

FRDC New GVP Forecast tool

<https://www.frdc.com.au/en/Services/Seafood-Trade-Data/Forecast-seafood-production>

There is a new, more complex role for RDCs



- Who is important in the system?
- What role do they need to play?
- Are there key players/capabilities missing?
- Are all parts of the system working well together?
- What interventions are required to fill the gaps?



PRINCIPLES

1. Ability to operate across or even outside of the individual industry focus of RDCs
2. Authority to act underpinning agile mgt
3. Capacity to manage uncertainty through adaptation
4. Ability to deliver enduring arrangements (10-20+)
5. Capacity to attract non traditional investors and partners



Our challenge 2020-2025

- Clarify what we do, and how we do it.
- Simplify infrastructure and partnership arrangements.
 - Whilst embracing the complexity of the space we are in.
- Improve our description of what success looks like.
- Improve our monitoring of progress.
- Clearer plan structure. Stronger program logic.
- *Need to work on our culture as we work on our plan.*





Questions?

Review of investment partnership structure

Stakeholder workshop

Scott Williams & Russell Pattinson

26 September 2019



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This discussion



- Background
- Approach to the review
- Findings
- Models of other RDCs
- Key 'variables'
- Example models
- Other considerations

Background



- Recommendation 3 of the performance review:

During the development of the next RD&E plan, FRDC should review the way it organises and manages its RD&E program (its investment and evaluation framework) with the aim of simplifying it so that it is easily understood by the average stakeholder.

Approach to the review



- Desktop review
- Online survey
 - 141 responses
- Interviews
 - 27 stakeholders – from RACs, IPAs and others
- Meetings with management
- Discussion of draft with FRDC Board

Main interview / survey findings



- Partnership model is too complex
 - Participants 'navigate their own domain' and ignore the rest
 - Collaboration often does not work well and can be frustrating
- FRDC management is generally well respected
 - But, managers are over-stretched
- RACs and IPAs generally work well
 - Changes to RAC management have been successful
 - Mixed views on rationalisation

Main interview / survey findings (cont'd)



- There are mixed views on subprograms
 - Main concerns about scope
 - But generally cover areas of market failure or cross collaborations
- Chairs play a critical role
- Extension and adoption is seen as piecemeal and not well-structured
 - FRDC is best placed to manage this function

Models of other RDCs



1. Australian Pork Limited
2. Horticulture Innovation Limited
3. Meat & Livestock Australia
4. Australian Wool Research & Promotion Organisation (1990s)

- Single industry with relatively diverse geographical spread but large enterprise size differences
- Four Specialist Groups (SG) advise on key themes in the strategic plan:
 1. Market Development
 2. Production and Welfare
 3. Environmental Management
 4. Biosecurity and Product Integrity
- Each SG has 15 members including research, industry, gov't, management
- SGs prepare a business plan for approval by an R&D Advisory Committee
- RDAC is committee of the Board and includes SG chairs

Horticulture Innovation Australia



- Multiple industries with unique and common RD&E priorities
- Industry-linked and additional funds
- Strategic plan has 3 'strategic pillars':
 1. Drive knowledge and innovation into horticulture industries
 2. Deliver the highest value R&D, marketing and trade investments across industries
 3. Enable activities that drive all strategic imperatives
- Strategic Investment Plan for each industry plus collaborative 'Frontier funds' (e.g. 'Fruit fly')

Meat & Livestock Australia



- Beef, sheepmeat and goat meat industries, strong regional differences
- 18 regional producer-driven committees identify priorities and submit to three main bodies:
 - North Australia Beef Research Council (NABRC)
 - Southern Australia Meat Research Council (SAMRC)
 - Western Australia Livestock Research Council (WALRC)
- Priorities from NABRC, SAMRC and WALRC are submitted to Red Meat Panel for review and form basis for project call
- Red Meat Panel recommends projects for funding (not MLA staff)

AWRAP – wool (1990s)



- Single product industry, geographically diverse
- Two main structures:
 - Zone Advisory Committees (High Rainfall, Sheep Cereal, Pastoral) – 6 growers plus 1 consultant
 - Program Advisory Groups (Genetics, Pastures etc) – one from each ZAC plus experts
- ZACs – strategic input and communications role
- PAGs – procurement, proposal review, project monitoring

Observations

- Structures should be dictated by desired industry outcomes / principles
- Not clear that current five-program structure adds value
- IPA and RAC models are generally well supported
- Simplest areas for improvement lie with programs, subprograms, and national priorities etc
- Considerations:
 - Structures vs reporting
 - ‘Location’ and number of advisory groups and plans
 - Balance of top-down vs bottom-up prioritisation

Key variables / levers for investment consideration



1. Scope and role of 'programs'
2. Centralisation of advisory expertise
3. Number of (geographically-based) RACs

(NB: we have assumed that IPAs continue as do regional RACs in some form)

How important are 'programs'?

- Could increase importance of programs
- Options:
 - Eliminate programs
 - Maintain current program architecture
 - Maintain current program architecture, rationalise subprograms etc
 - Re-do the program architecture

Advantages

- Opportunity to engage industry
- Streamlined collaboration
- Maximised alignment between programs and priorities

Disadvantages

- Radical change

Centralisation of advisory expertise

- Could shift decision-making more towards programs
 - Establish Programs
 - FRDC management +/- program advisory groups (PAG's)
- PAGs could guide R&D calls based on RAC and IPA priorities

Advantages

- Greater alignment of expertise with range of FRDC activities
- Streamlined collaboration

Disadvantages

- Perceived shift of influence from RACs and IPAs
- Additional layer?
- Radical change

Number of RACs

- Could consolidate the RACs from 8 to 4:
 - Northern (NT, Qld, Nthn NSW)
 - Southern (Sthn NSW, Vic, Tas, SA)
 - Western (WA)
 - Commonwealth

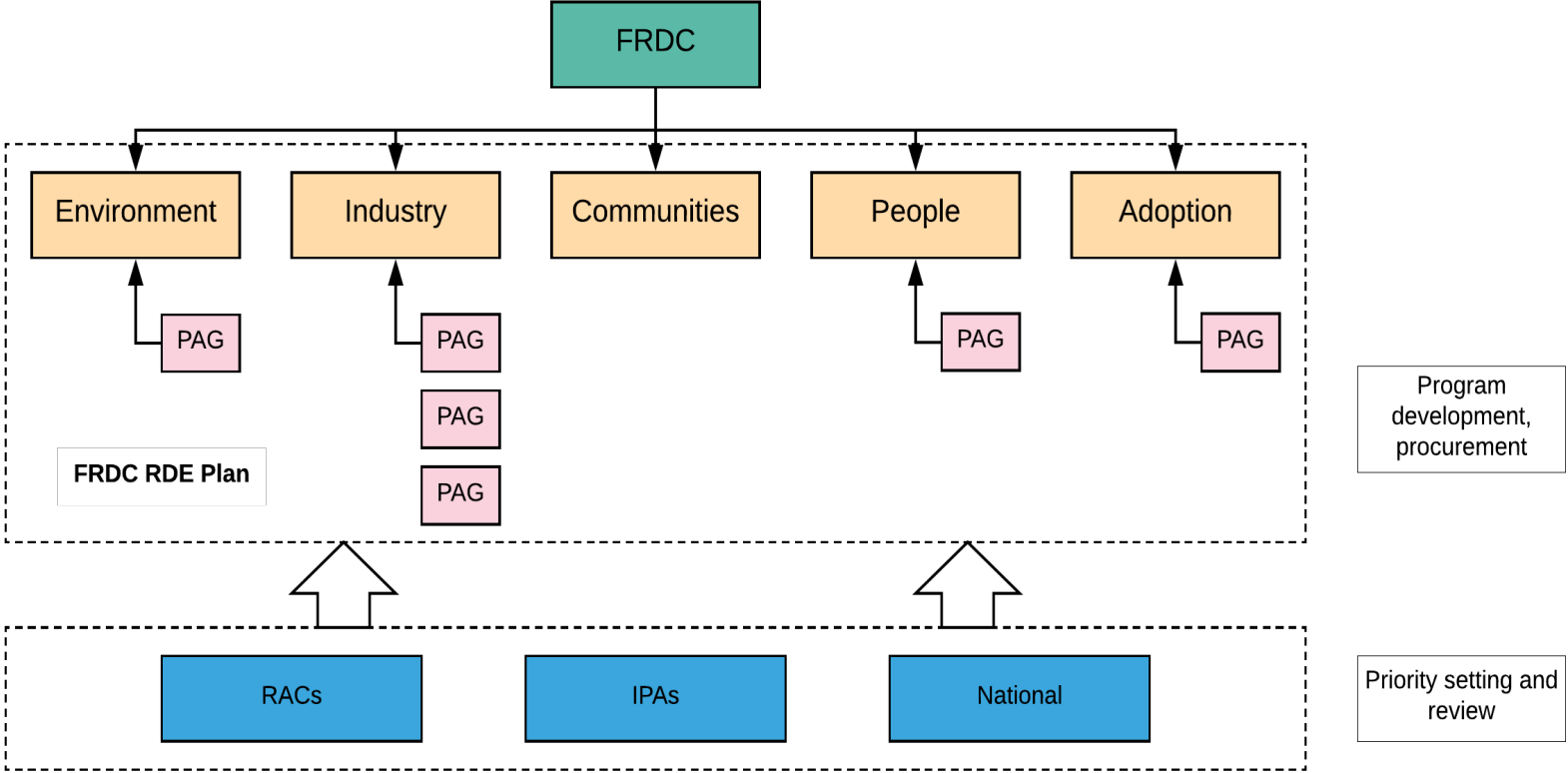
Advantages

- Greater simplicity, fewer plans
- Reduced overhead
- Streamlined collaboration

Disadvantages

- Negative impact on jurisdictional relationships
- Dilution of local input
- Increased burden on members

Example 1 – Focus on programs (Act)

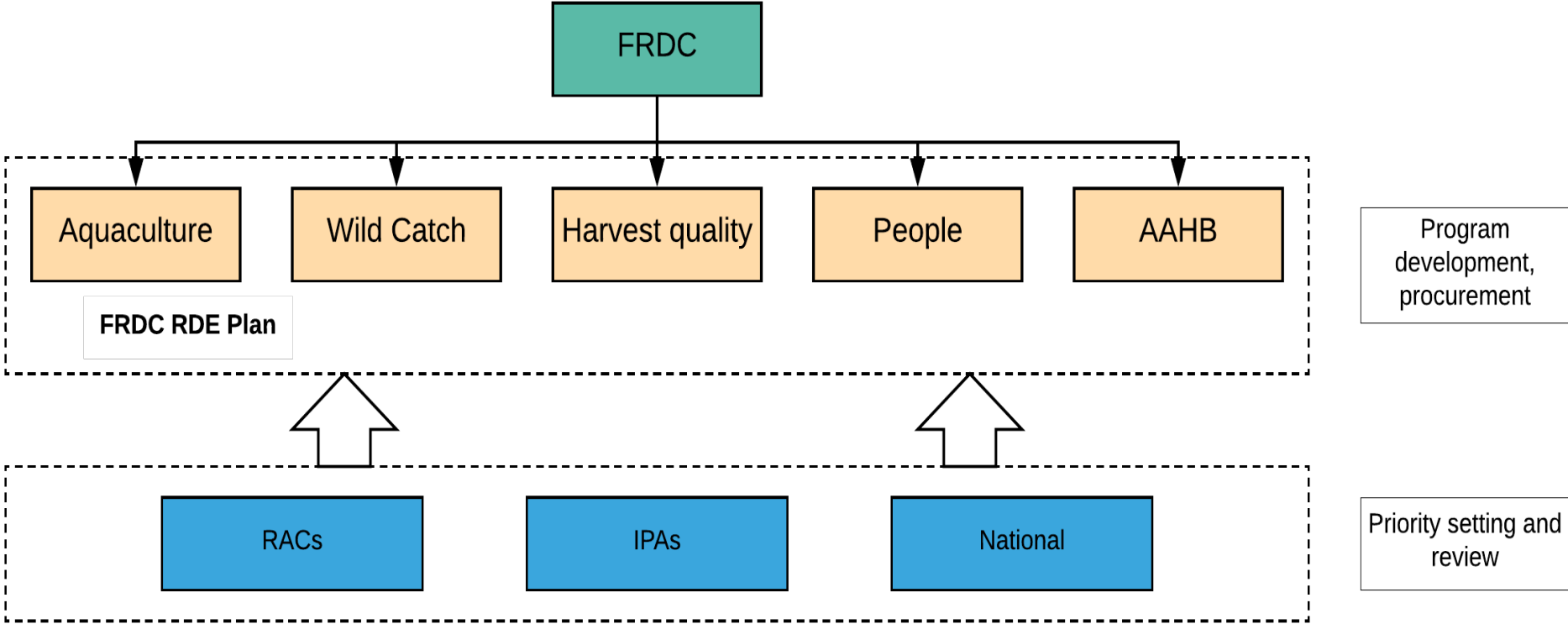


Example 2 – Industry and national priorities

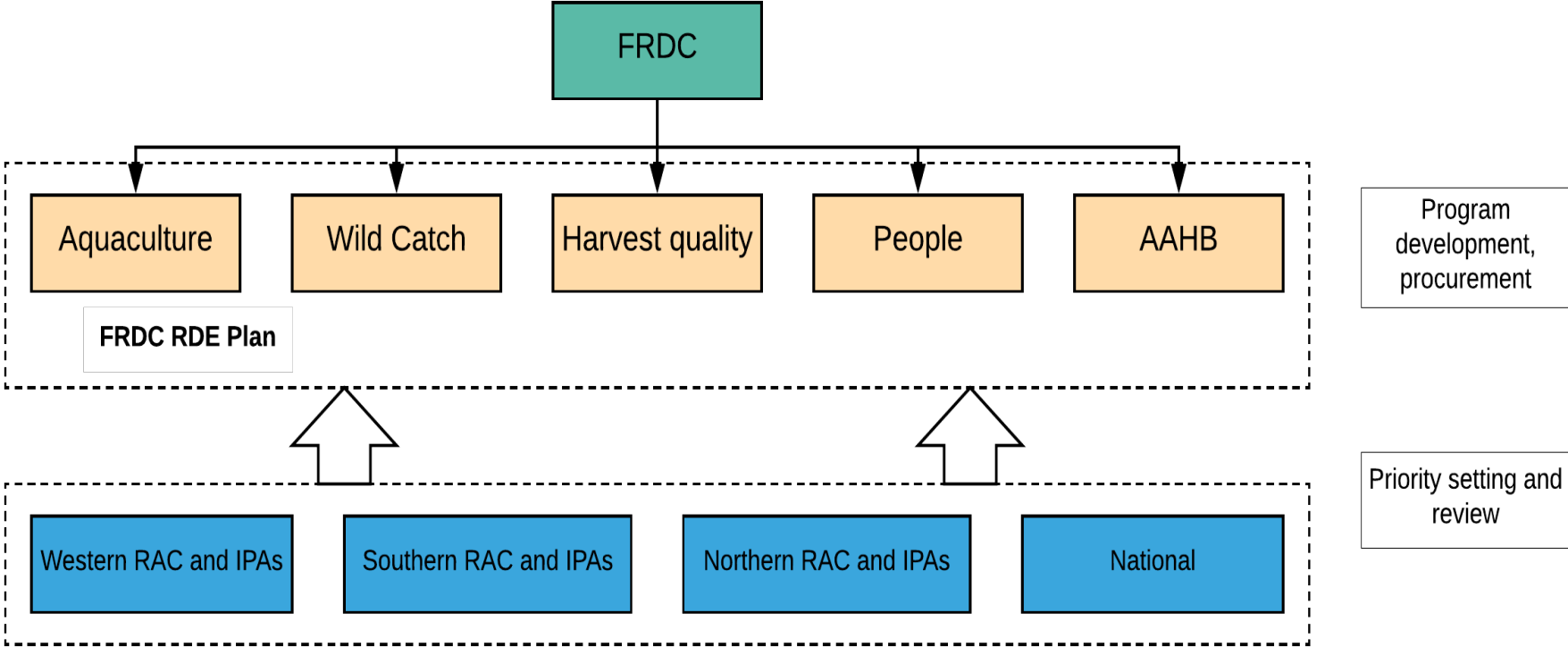


	National (FRDC)		Industries (IPAs)		Jurisdictions (RACs)	
National investment fund 1		X		X		X
National investment fund 2		X				X
National investment fund 3				X		
National investment fund 4		X		X		
National investment fund 5				X		X
'Own' priorities		X				
'Own' priorities				X		
'Own' priorities						X

Example 3 – Custom programs



Example 4 – RAC consolidation



Other considerations



- Reduction in the number of plans
- Improved governance of committees
- Payment for committee members
- Improved internal communication

Questions / discussion



Contact Us

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FRDC

EXTENSION

WHERE TO NEXT??

Peter Horvat
Annabel Boyer

Your task...

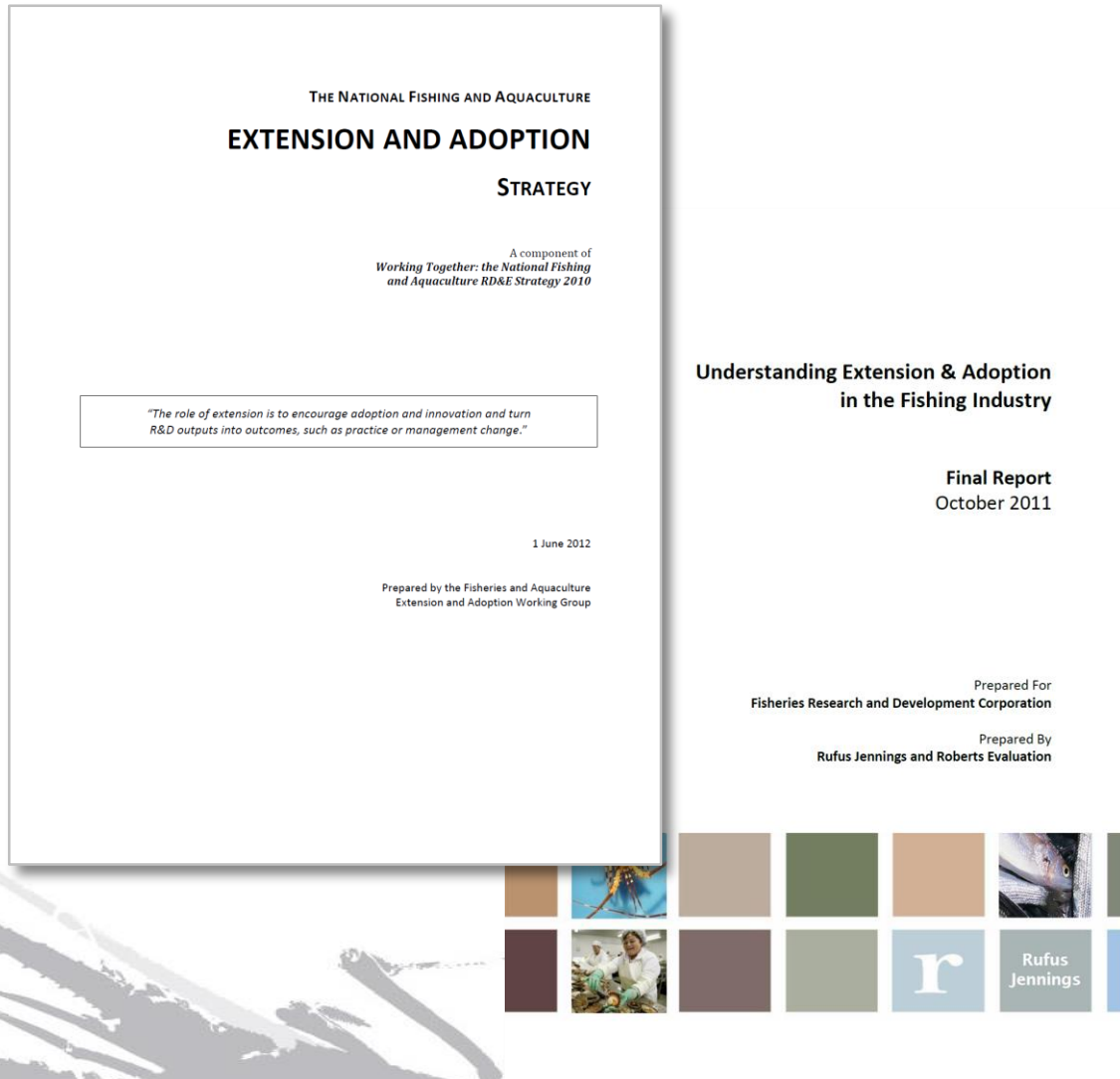


You have 10 minutes to identify...

- What is it? What does it do?
- What would you do to extend this research and to whom?
- Is the user the same as the adoptee?
- How will you know if you have succeeded? Is extension and adoption measurable in this case?

What is it?	Extension activities	Research user	Extension doer	Measurable?
Project 2000-145: National ESD Reporting Framework for Australian Fisheries – guide to implementing ESD in Australia’s wild-catch fisheries	Reports, presentation, How to guide, Web resource	Research agencies, Government, Fisheries managers	Researcher	Long-term survey?
Project 1998-201: Bycatch solutions: A handbook for fishers in non-trawl fisheries	How to guide, Meetings/ Group facilitation or face to face	Fishers, Fisheries management, researchers	Person with both technical understanding and industry trust	Uptake of technology measurement, Surveys with commercial fishers
Project 2004-070: Gently does it: A guide for releasing fish to survive	How to guide in various mediums, Dissemination through grassroots fisher groups, group facilitation, tackle shops	Recreational fishers, Animal welfare groups, rec fishing groups and gov agencies	FRDC recfishing subprogram Executive Officer	Difficult to measure as diffuse user group

What is it?	Extension activities	Research user	Extension doer	Measurable?
Project 2017-179: Sensory testing of seafood – fresh versus frozen	Stories in mainstream media, FISH mag, social media, cookbook	Consumers, chefs, food service	FRDC comms, Influencers in food sector	Long-term surveys of attitude change amongst consumers
Project 2012-217: Trial of a stock protection system for flexible oceanic fish pens	How to guide, Group facilitation, presentations with industry	Salmon aquaculture practitioners	Researcher, Salmon aquaculture	Short survey of Australia's Salmon aquaculture companies
Project 2013-218: Building the capacity and performance of Indigenous Fisheries	Group facilitation with Indigenous corporations and groups	Future or current Indigenous enterprise in fishing or aquaculture	Important to utilise someone who has both community trust and technical understanding of project	Long-term surveys



PRIMARY INDUSTRIES AND ENERGY RESEARCH AND DEVELOPMENT BILL 1989 - SECOND READING SPEECH

MINISTER REPRESENTING THE MINISTER FOR PRIMARY INDUSTRIES AND ENERGY

The *corporations are also charged with facilitating the dissemination, adoption and commercialisation of research results*. This is a very important part of their function: it is through technology transfer that research results can be put into practice, and progress can be made towards greater innovation and commercialisation in industry. The government expects these new arrangements to maximise the returns on the money spent.

Research and development is vital to the profitability of the primary and energy industries and *increased concentration is needed to ensure that research results are not wasted*.

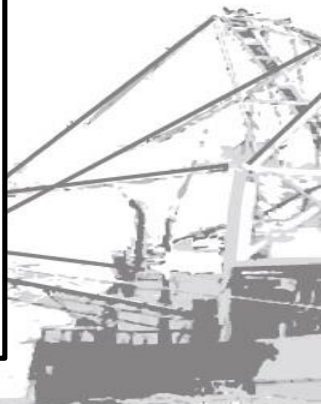
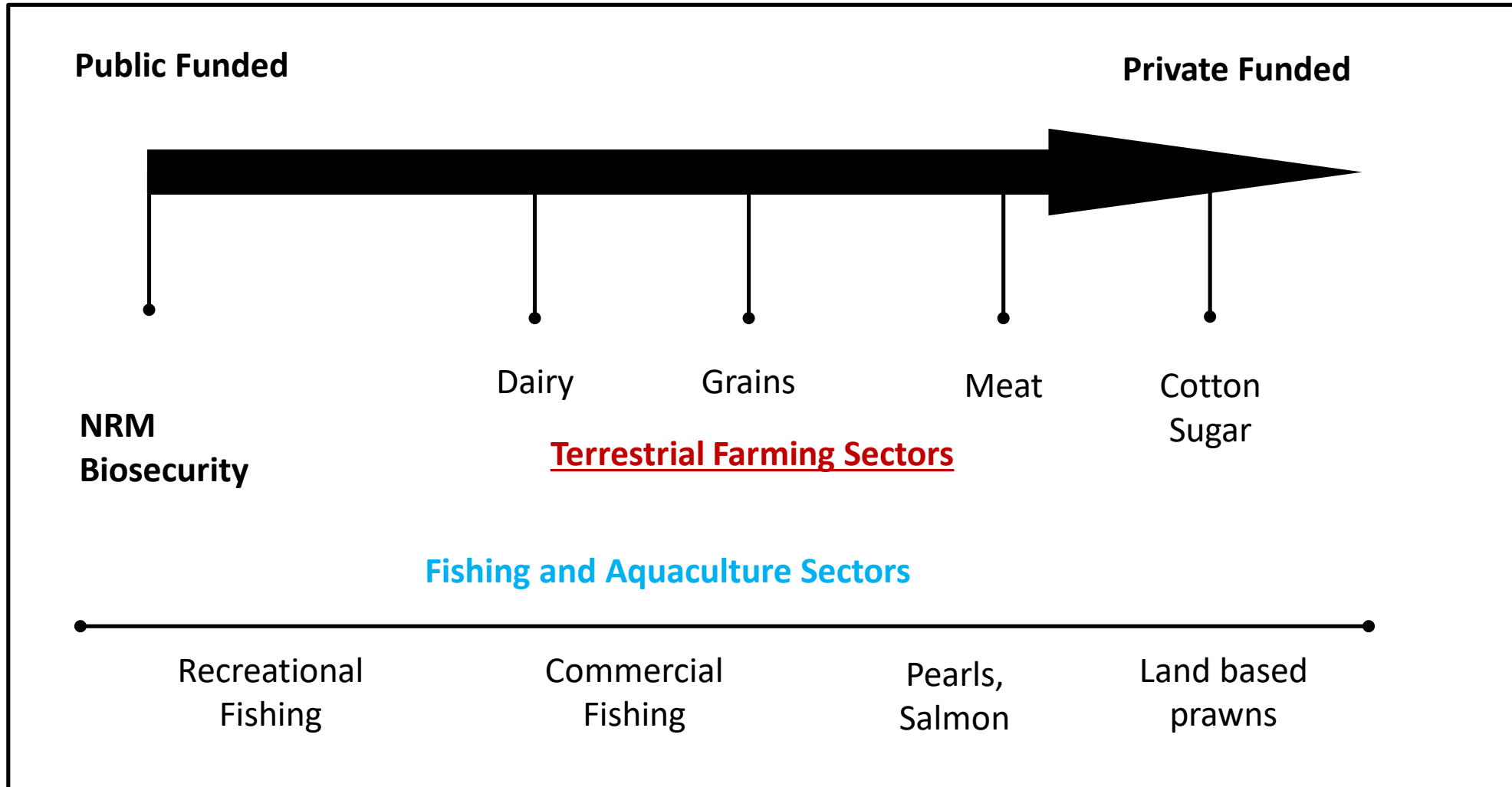
The effective use of networking will play a major role in assisting R&D corporations to increase their effectiveness and to encourage greater investment.

Thoughts on extension



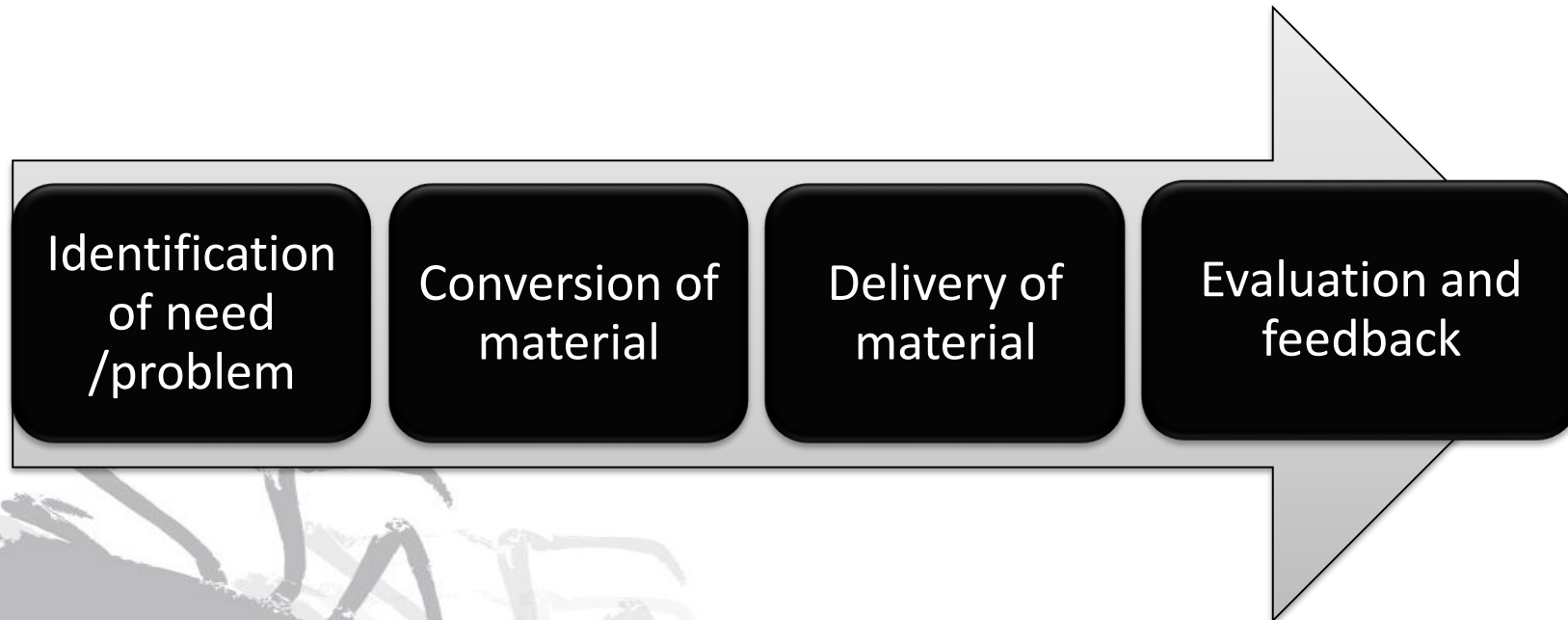
- *Getting the right information to the right people at the right time.*
- *The process of enabling change in individuals, communities and industries involved in the primary industry sector and with natural resource management.*
- *Ultimately extension and adoption is about change – people, practices, policy, places.*
- *Multiple stakeholders may be or need to be involved in extension to achieve adoption.*
- *Extension does not equal adoption although they are closely interrelated.*
- *Not everything needs to be extended or adopted.*

Who is responsible for extension?

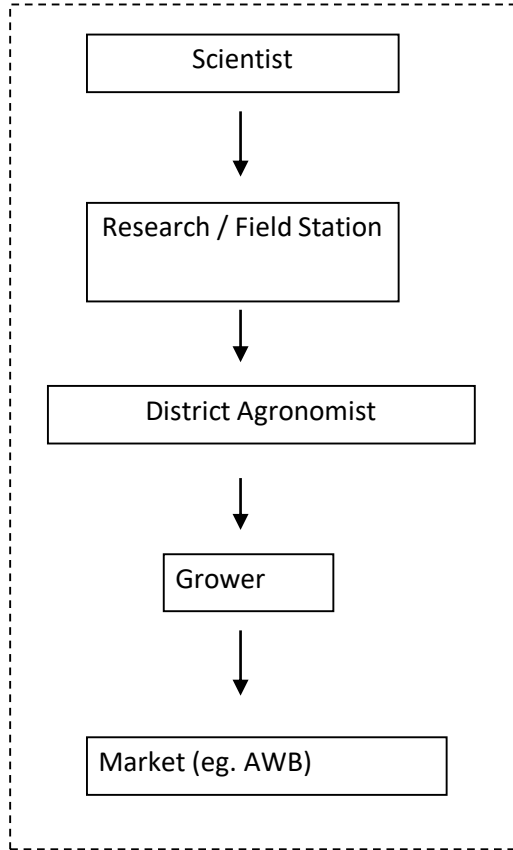


Extension approaches

- Basic Linear (problem-research-solution-implementation)
- Classic approach started 1920's
- Simplistic does not factor in externalities

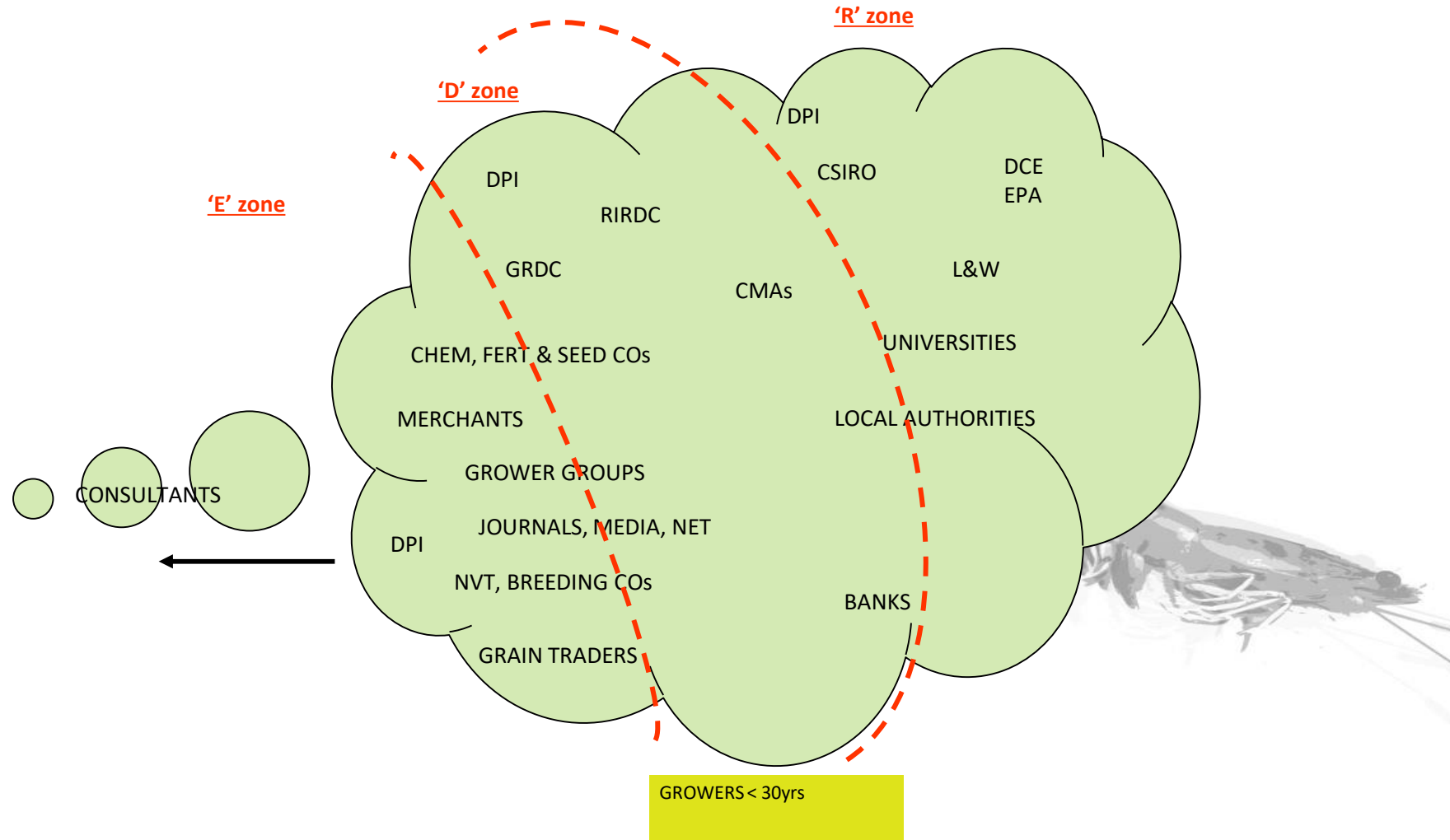


LINEAR, RELATIVELY REGULATED CONTINUUM



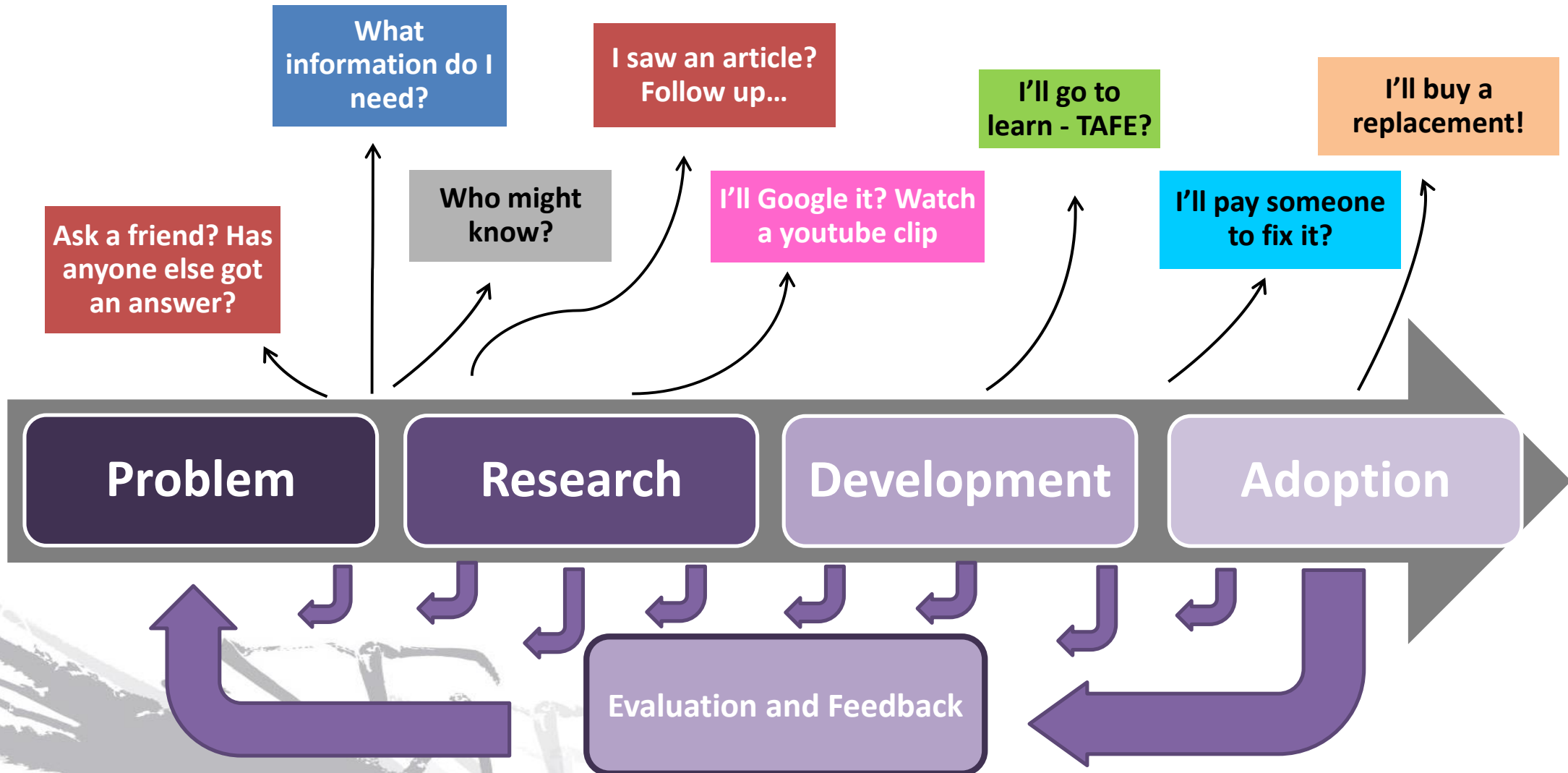
GROWERS > 55yrs

MULTI-DIMENSIONAL, DEREGULATED, MATRIX



Source: Adapted from Fellowes, 2009

Modern cyclical approach – always testing and feeding back



Since last year we have ...

- Undertaken review and surveys on extension
 - FRDC assessment
 - Researcher survey (82 respondents)
 - RAC/IPA survey (25 respondents)
- New position of Communication Extension Coordinator
- Started developing synthesis program

FRDC self assessment – mixed bag of success



National Priorities	Target Audience	Extension Rating
Priority 1. Ensuring that Australian fishing and aquaculture products are sustainable and acknowledged to be so	Diffuse Managers, Industry Community, Consumers	LOW Primarily project based. Work being done to collaborate on messaging SIA, AFMF. Focus has been on SAFS and engaging to media FRDC remit very narrow
Priority 2. Improving productivity and profitability of fishing and aquaculture	Moderate Managers, Industry, retailers and hospitality	MEDIUM Primarily project based. Adoption rate depends on project Focus getting end users on projects – industry/managers
Priority 3. Developing new and emerging aquaculture growth opportunities	Very narrow Aquaculture companies	HIGH Primarily project and summary packages Industry embedded in projects from creation to completion
National RD&E Infrastructure		
People development	Medium Open to all stakeholders	HIGH Primarily project based, bursaries and conferences. Stakeholder embedded and personal rewards
Recfishing Research	Diffuse – Australia wide Recreational fishers and Managers	LOW Primarily project based. Some engagement with Recreation bodies Focus has been key issues/engaging to media Limited investment in extension by Subprogram
Human Dimensions	Medium-Diffuse Managers, Industry Community, Consumers	LOW Primarily project based. Trying to collaborate on messaging SIA, AFMF. Focus is broad but FRDC role is fairly narrow Little investment in extension by Subprogram
Aquatic Animal Health and Biosecurity Subprogram (AAHBS)	Medium fishing and aquaculture, researchers and managers	HIGH Primarily project based, Industry embedded in projects from creation to completion
Indigenous Reference Group	Medium Indigenous fishing and aquaculture, researchers and managers	Medium Primarily project based, Indigenous embedded in projects from creation to completion Have investment in extension and summaries
Industry Partnerships		
Australian Abalone Growers Association (AAGA)	Very Small > 20 Aquaculture companies and managers	HIGH Primarily project and summary packages Industry embedded in projects from start to finish.
Australian Barramundi Farmers Association (ABFA)	Very Small > 20 Aquaculture companies and managers	HIGH Primarily project and summary packages Industry embedded in projects from start to finish.
Abalone Council Australia (ACA)	Small – disperse five states Licenced fishers and managers, some recreational	HIGH Primarily project based. Industry embedded in projects. Industry driven priorities
Australian Council of Prawn Fisheries (ACPF)	Medium most states Licenced fishers and managers	HIGH Primarily project based. Industry embedded in projects. Industry driven priorities
Australian Prawn Farmers Association (APFA)	Very Small > 20 Aquaculture companies and managers	HIGH Primarily project and summary packages Industry embedded in projects from start to finish.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Very Small > 30 Aquaculture companies and managers	HIGH Primarily project focused. Some broader extension undertaken. Industry embedded in projects from creation to completion

Oysters Australia (OA)	Small Aquaculture companies and managers	HIGH Primarily project based – some collation for disease Industry embedded in projects. Industry driven priorities
Pearl Consortium (Pearls)	Minute Primarily 1 Aquaculture company	VERY HIGH Primarily project based Industry owned priorities
Southern Rock Lobster Limited (SRL)	Small – disperse three states Licenced fishers and managers, some recreational	HIGH Primarily project based. Industry embedded in projects Invest in Clean and Green – summary and extension
Tasmanian Salmonid Growers Association (TSGA)	Very Small > 10 Aquaculture companies but 3 produce most volume	VERY HIGH Primarily project based – some investment in community Industry embedded in projects and drive priorities. Addressing social issues remains difficult
Western Rocklobster Council (WRLC)	Small Licenced fishers and managers, some recreational	HIGH Primarily project based. Industry embedded in projects. Industry driven priorities
Research Advisory Committees		
RAC-COM	Medium > 300 boats and licenced fishers and managers, some recreational (game fishers)	MEDIUM Pockets of good extension. Primarily project based. Industry embedded in projects. AFMA (CSIRO) have historically set priorities
RAC-NSW	Medium-Diffuse Multiple fisheries - licenced fishers and managers, lots of recreational	MEDIUM Pockets of good extension. Primarily project based. Industry embedded in projects. Industry driven priorities
RAC-NT	Small Licenced fishers and managers, Indigenous owners and recreational	MEDIUM-HIGH Primarily project based. Small discrete industry sector has resulted in higher rates of adoption – close to action. Industry embedded in projects. Industry driven priorities
RAC-QLD	Medium-Diffuse Multiple fisheries - licenced fishers and managers, lots of recreational	LOW-MEDIUM Primarily project based. Has been some pockets of good extension, based on issues rather than cross the board. Industry embedded in projects. Industry driven priorities
RAC-SA	Small Multiple fisheries - licenced fishers and managers, some recreational	MEDIUM-HIGH Pockets of good extension. Primarily project based. Industry embedded in projects. Stakeholder driven priorities and management well engaged.
RAC-TAS	Small Limited number of fisheries, licenced fishers and managers, some recreational	MEDIUM Pockets of good extension. Primarily project based. Most extension has been around key species. Industry embedded in projects. Industry driven priorities
RAC-VIC	Small Limited number of fisheries, licenced fishers and managers, growing recreational fishers	MEDIUM Pockets of good extension. Primarily project based. Industry embedded in projects. Mostly driven priorities. Some difficulty around management adoption.
RAC-WA	Small Licenced fishers and managers, some recreational	MEDIUM Primarily project based. Industry embedded in projects. Industry driven priorities
Policy Change	Small – driven by managers	VERY LOW Difficult to push agenda (lobbying) and quite often politically driven.
Societal	Very-Diffuse Australian community and consumers	VERY LOW Diversity and size of broad community make it difficult. FRDC role limited to part of story – coordination difficult

Scale

- Green Good
- Red not so good...

Generally speaking...

- IPAs – tend to do quite well
- RACS range from low to medium
- Priority 1, HDR, recfishing research low

Why are IPAs better?

- Generally smaller, more focused end users
- Projects very targeted = extension success

Principle Investigators Survey



PI's indicate 'high' levels of success with managers and industry

Effectiveness	1	2	3	4	5	6	7	8	9	10	N/A	SUCCESS
Overall	0.00% 0	0.00% 0	1.37% 1	2.74% 2	8.22% 6	13.70% 10	23.29% 17	28.77% 21	12.33% 9	8.22% 6	1.37% 1	72%
Adoption by Managers	1.23% 1	0.00% 0	4.94% 4	6.17% 5	11.11% 9	13.58% 11	14.81% 12	20.99% 17	14.81% 12	9.88% 8	2.47% 2	67%
Adoption by Industry	1.22% 1	0.00% 0	3.66% 3	4.88% 4	10.98% 9	9.76% 8	15.85% 13	20.73% 17	19.51% 16	9.76% 8	3.66% 3	87%
Adoption by Recreational fishers	5.19% 4	3.90% 3	3.90% 3	1.30% 1	12.99% 10	3.90% 3	6.49% 5	5.19% 4	0.00% 0	0.00% 0	57.14% 44	12%
Adoption by Community	3.85% 3	2.56% 2	1.28% 1	2.56% 2	19.23% 15	6.41% 5	8.97% 7	5.13% 4	5.13% 4	3.85% 3	41.03% 32	18%
Adoption by Consumers (chefs, retail home)	5.13% 4	1.28% 1	3.85% 3	3.85% 3	6.41% 5	3.85% 3	5.13% 4	3.85% 3	1.28% 1	1.28% 1	64.10% 50	12%

Principle Investigators Survey

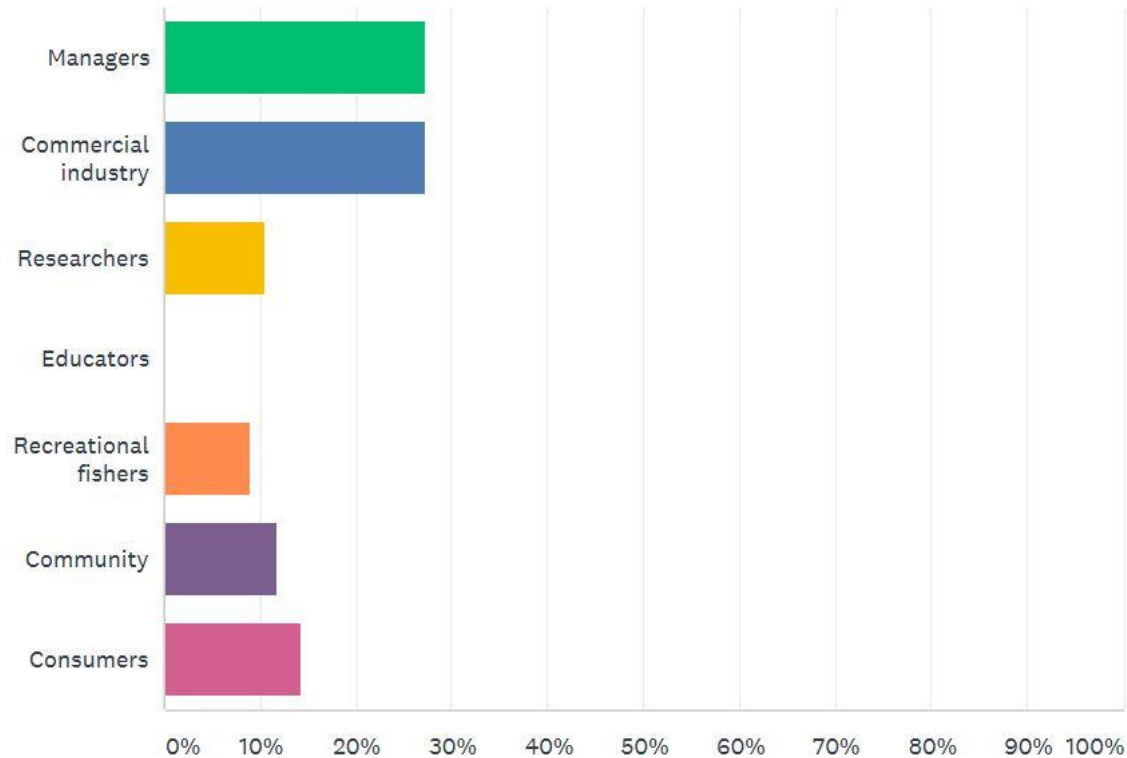


Q6

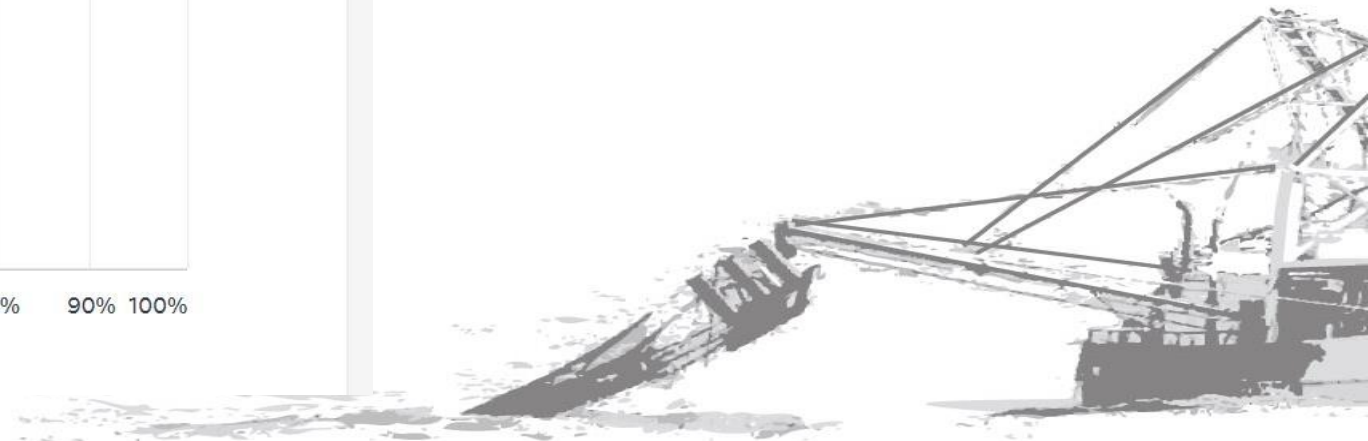


Which stakeholder group do you find most difficult to get to undertake extension and get adoption? [Choose one]

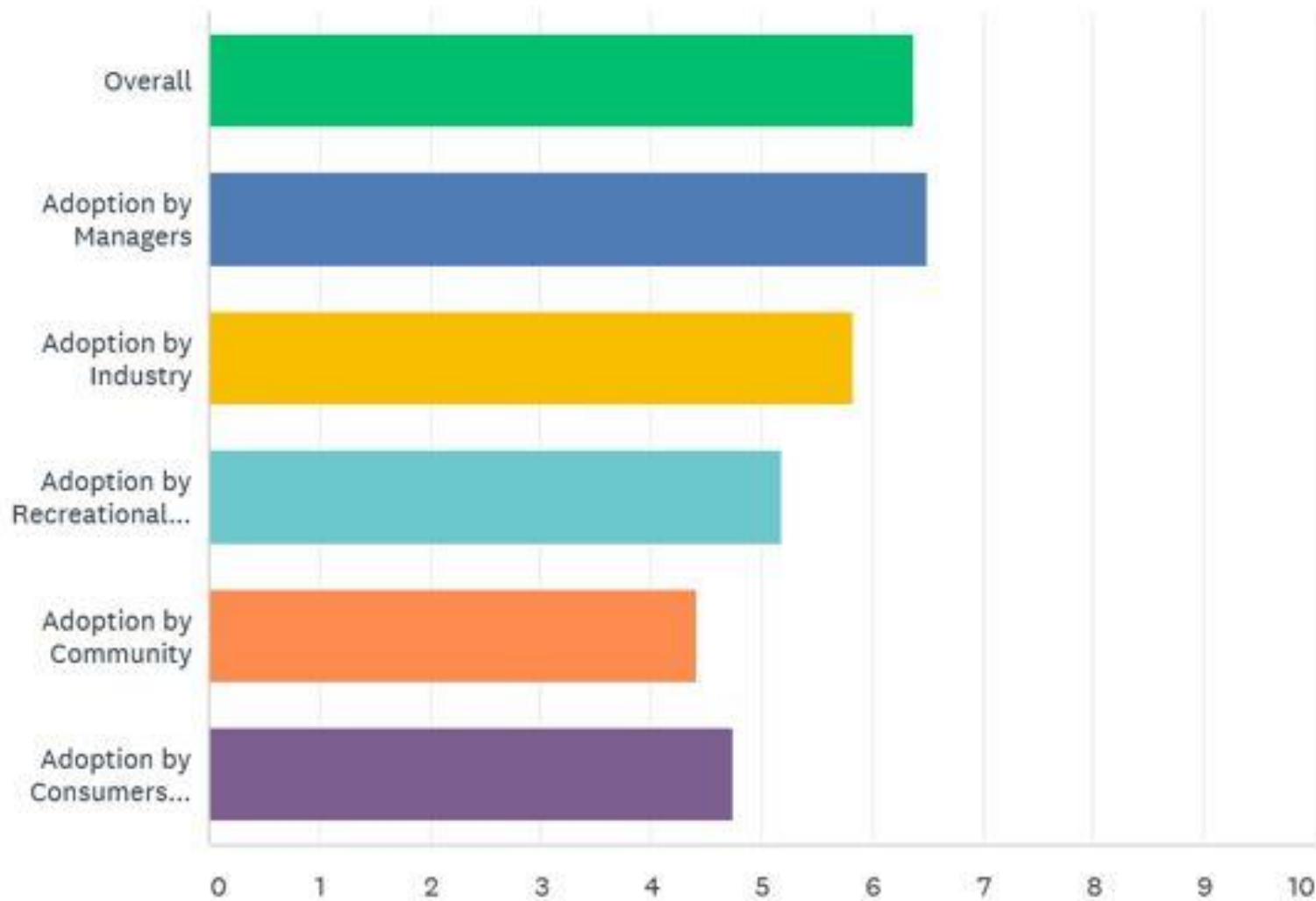
Answered: 77 Skipped: 5



Industry and managers were (by number) identified as the most difficult groups to do extension with and get adoption by.



1. How would you rate adoption for the projects your RAC/IPA oversee?



The survey's asked both groups about 'extension' projects

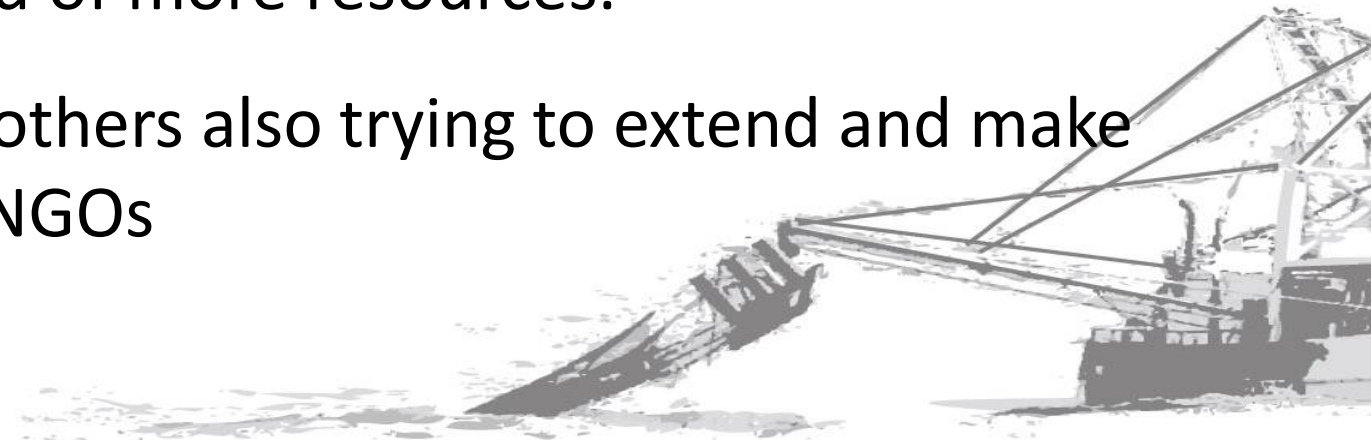


- Amongst RAC/IPA's there is a perception that FRDC is not really supportive of 'extension' exclusive projects and that very few are funded.
 - This is false. Extension is part of our balanced portfolio (10% target)
 - FRDC does not drive all priorities
- Amongst PI's, the majority (more than 65%) indicated that they have never applied for funding to extend their projects.
 - Reality most priority setting (funding) focuses on tactical problem solving
 - Cannot approve what has not been applied for...

Who is responsible for extension?

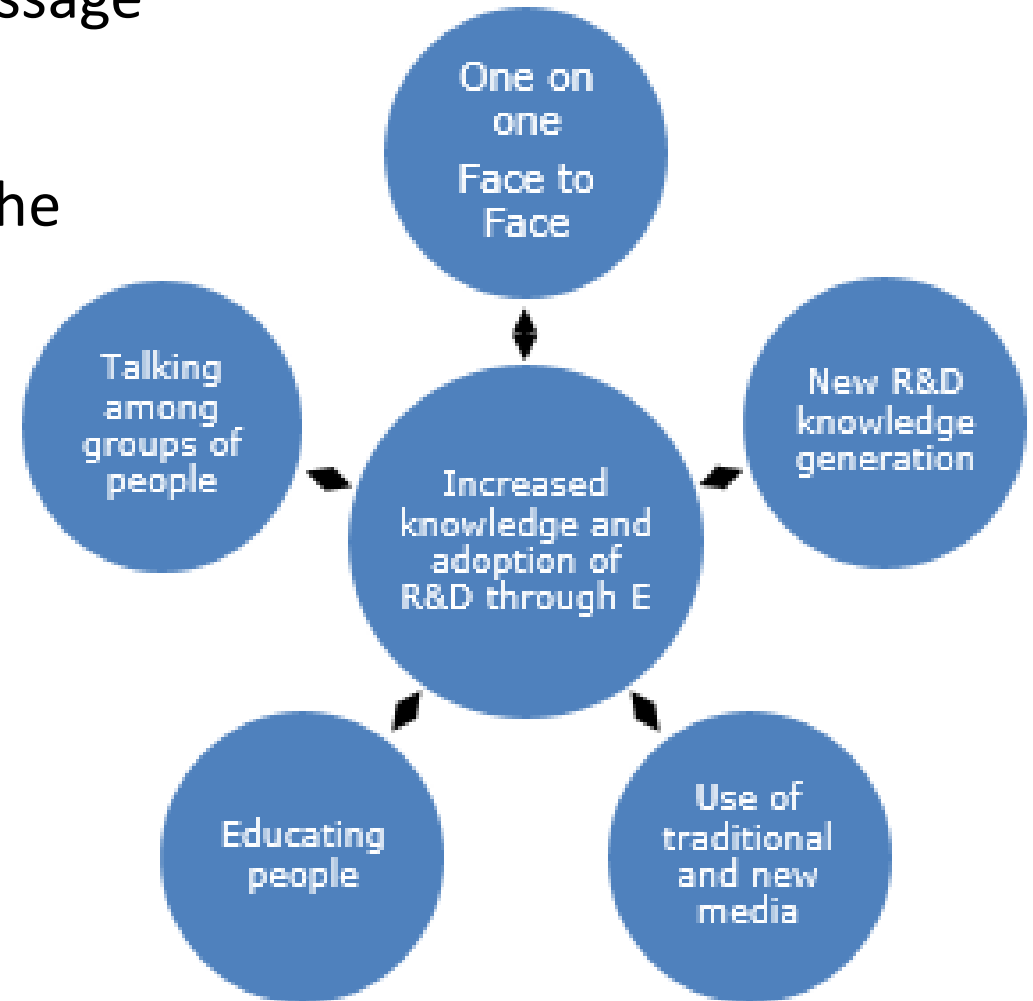


- Everyone
- Key stakeholders who ask for or require the knowledge
 - it should be pull not push
- However, reality is majority of extension is embedded within projects.
- FRDC does assist with extension for projects – \$, media, fish, publications
 - worth noting PI's when surveyed rated extension as successful, and largely (65%) not in need of more resources.
- FRDC projects not only player – others also trying to extend and make change – managers, educators, NGOs

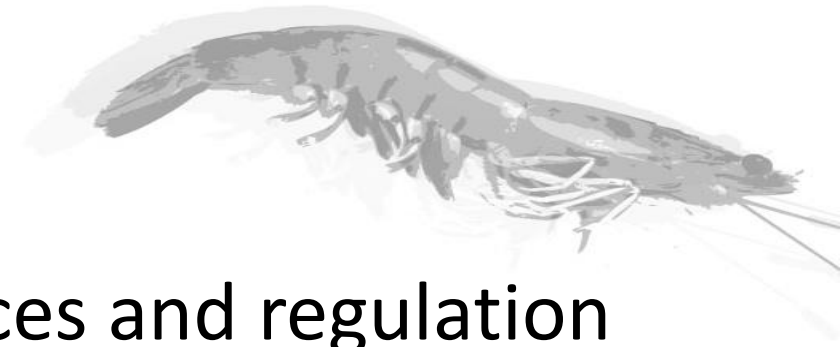


What we do know

- Stakeholders are bombarded daily with message and information - not just by us...
- The best way to do extension depends on the project – subject and audiences
- There is no “silver bullet” for extension
- Planning and engagement early helps
- Extension can require resourcing
- The target is NOT always industry
- Not every project can be extended



- Surveys and evaluations indicate a mixed bag of extension success
- Disconnect between perception of extension success amongst different survey groups
- False perception that FRDC is not supportive of 'extension' and extension type projects
- No silver bullet – each project is different
- Key barriers to extension are diffuse audiences and regulation
- Plan early, focus on end need and deliver through out project



The Road Forward – what FRDC will do next



1. New process for application and project management

2. Status Quo to current approach – but...

- a. look at providing additional resources where needed
- b. assist with more publication/communication activity

3. Synthesis – issue specific





Questions?