

# Climate change and decision-making

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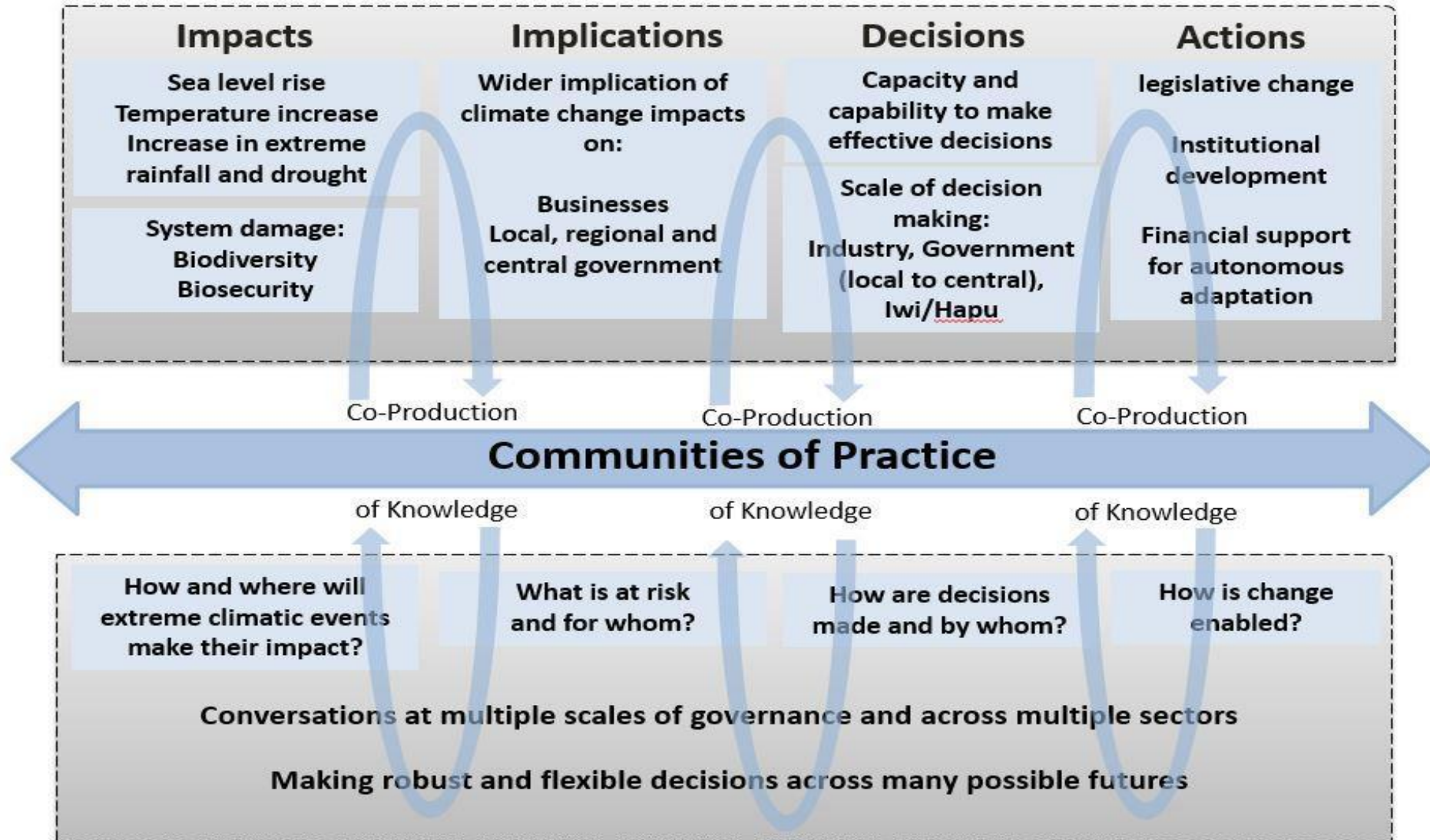
## **AIM**

Generating new knowledge about decision-making across communities of practice relevant for addressing climate risks, including how climate information is used and can be communicated

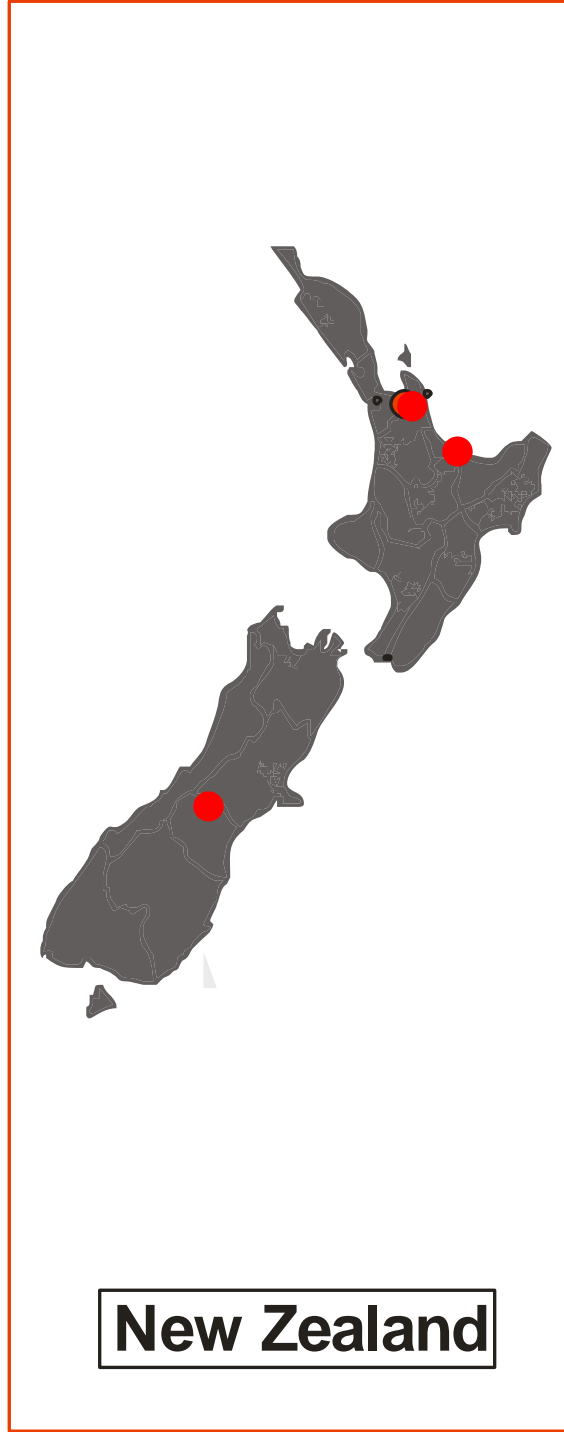
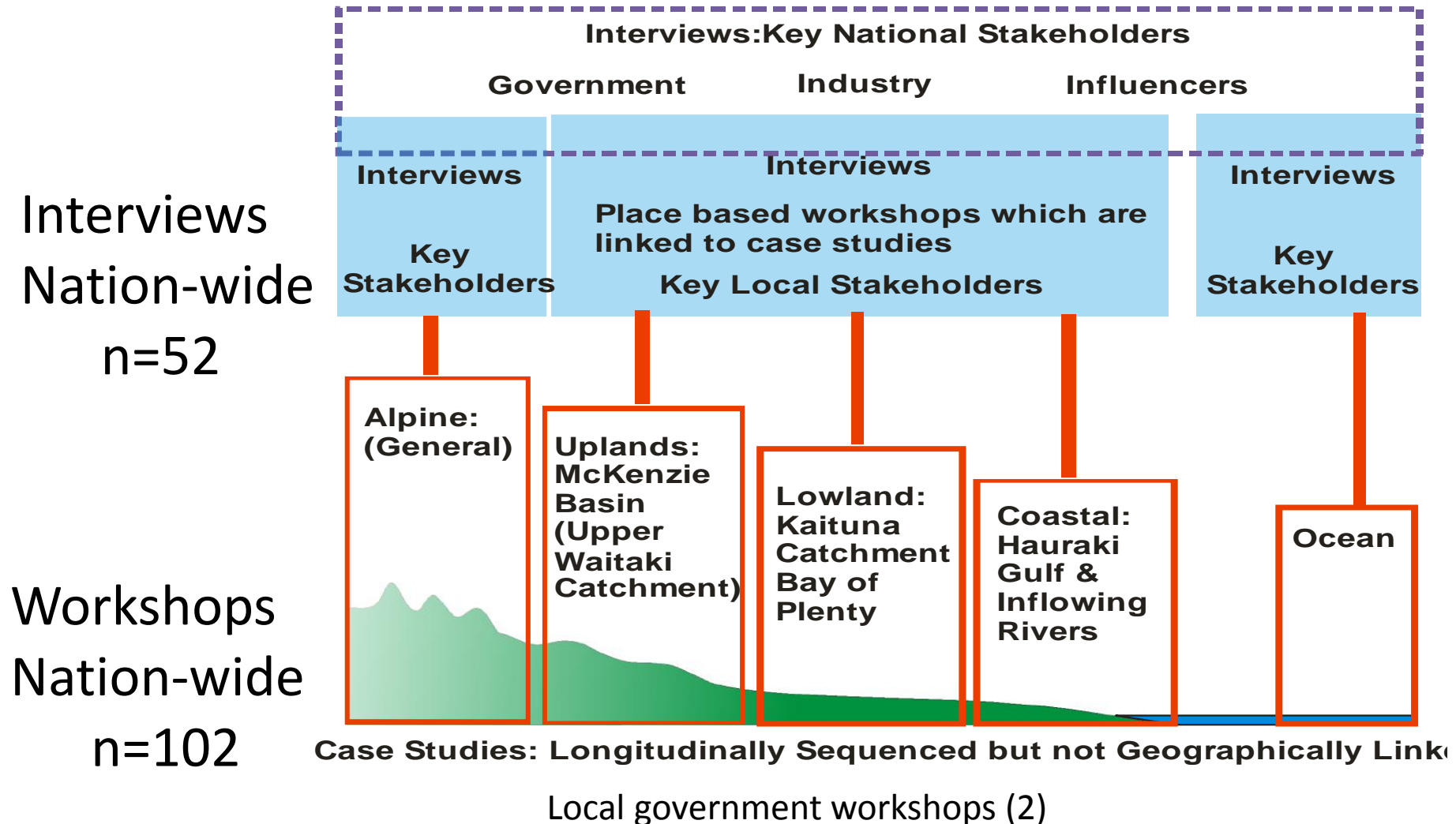
## **WHY?**

CCII outputs succeed if they can address decision makers needs

# Our conceptual framework and methodology



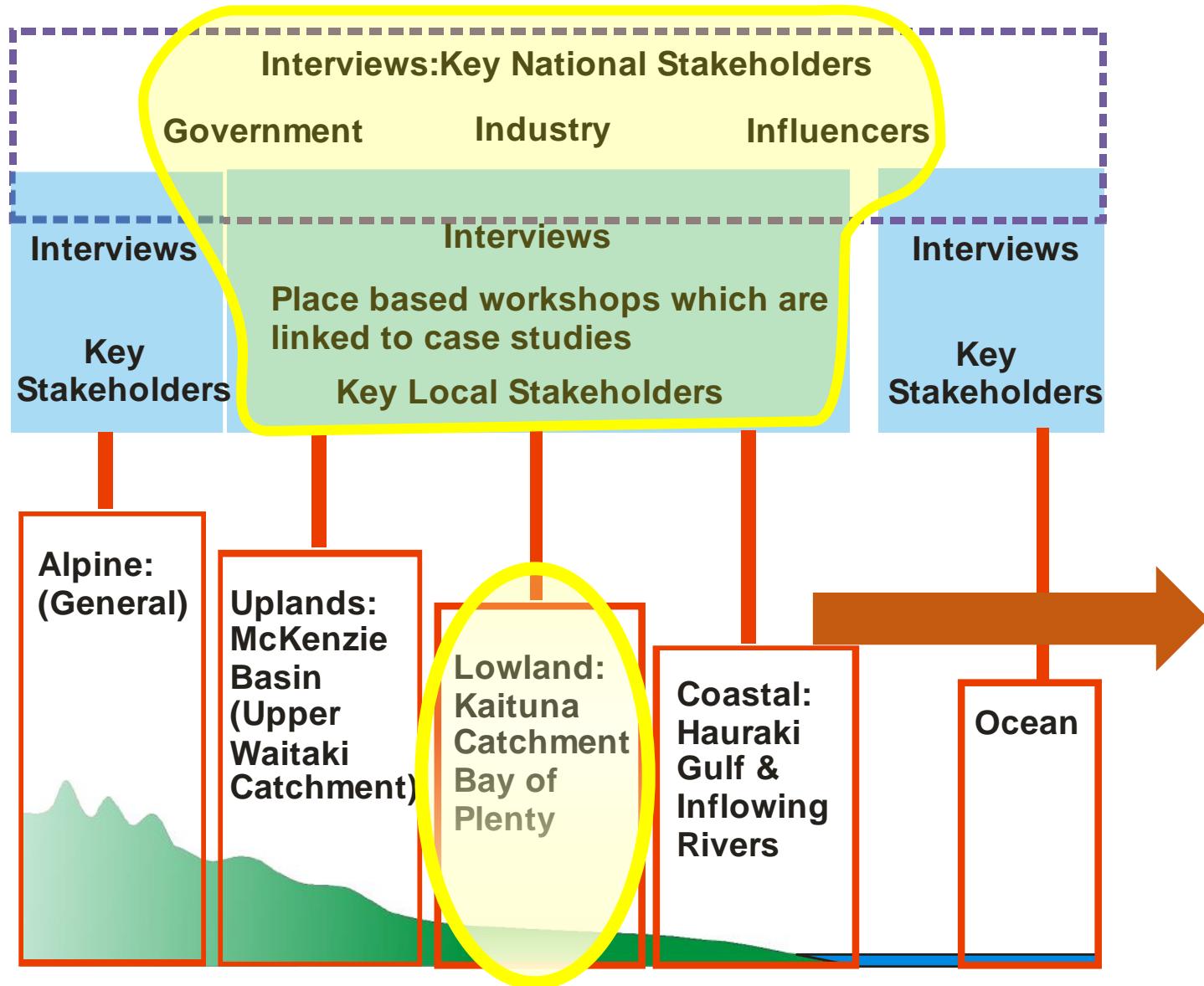
# Structure and scope of research



A survey of users about visual communication of climate information and changing climate risk profiles

n= 61

# Your Involvement

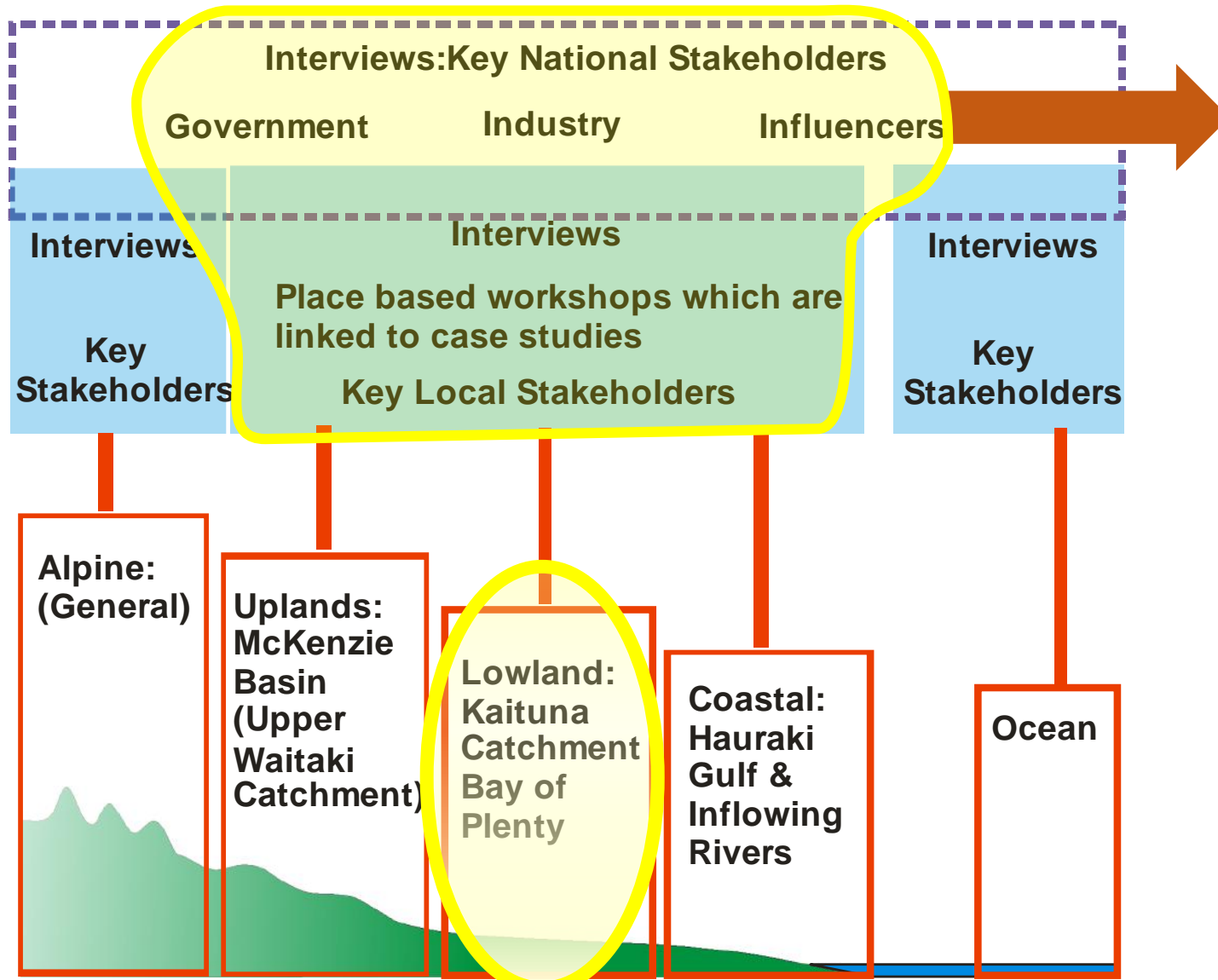


Case Studies: Longitudinally Sequenced but not Geographically Link

Involved diverse groups of participants

- What is CCII & Research plans
- Alignment with your interests
- Locate local impacts and implications on Aerial photos

# Your Involvement



Case Studies: Longitudinally Sequenced but not Geographically Link

## Current practice

- What climate parameters are crucial to your activities?
- How does climate affect your activities?
- What drives your decision making?
- What climate information do you need and in what form?

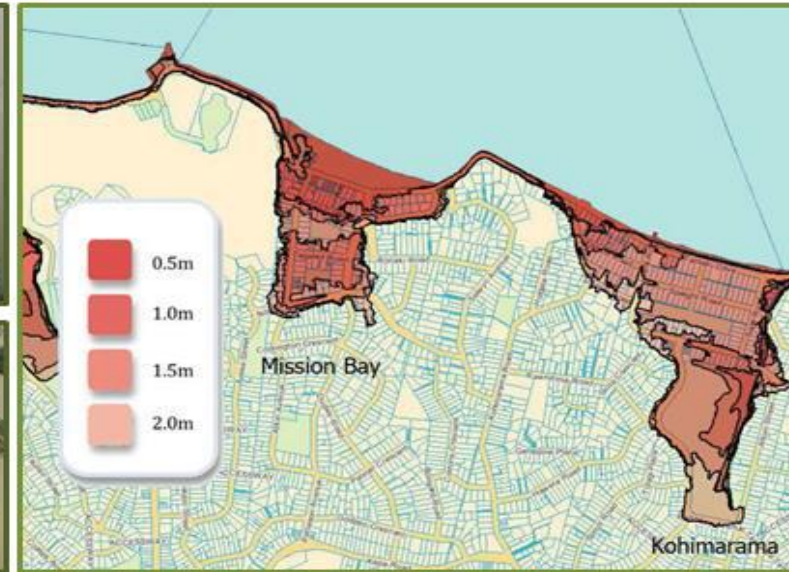
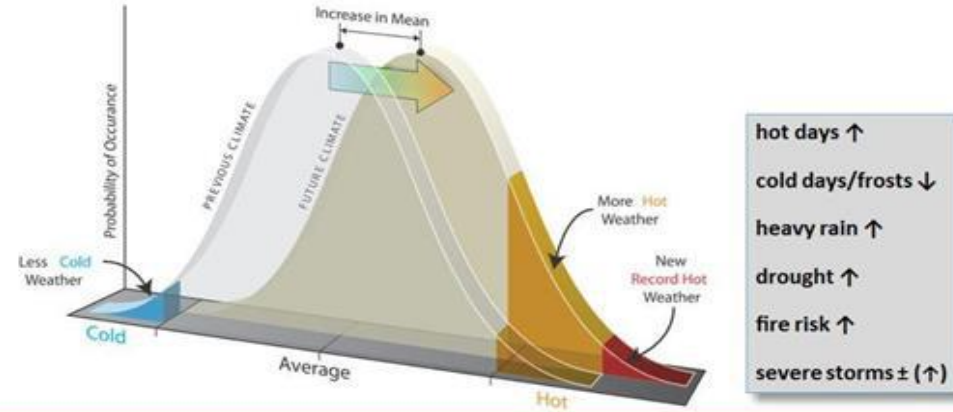
## Future focus

- How is risk addressed?
- What is your capability?
- What would you do differently under changing climate conditions?
- What decisions will be affected by changing climate?

# Visualising climate risk



Changes in extremes as a result of changes in mean climate



**Lowlands Workshop May 2014**



# Key Issues and Concerns

## Sea Level Rise and Coastal



## Kiwi Fruit and Horticulture

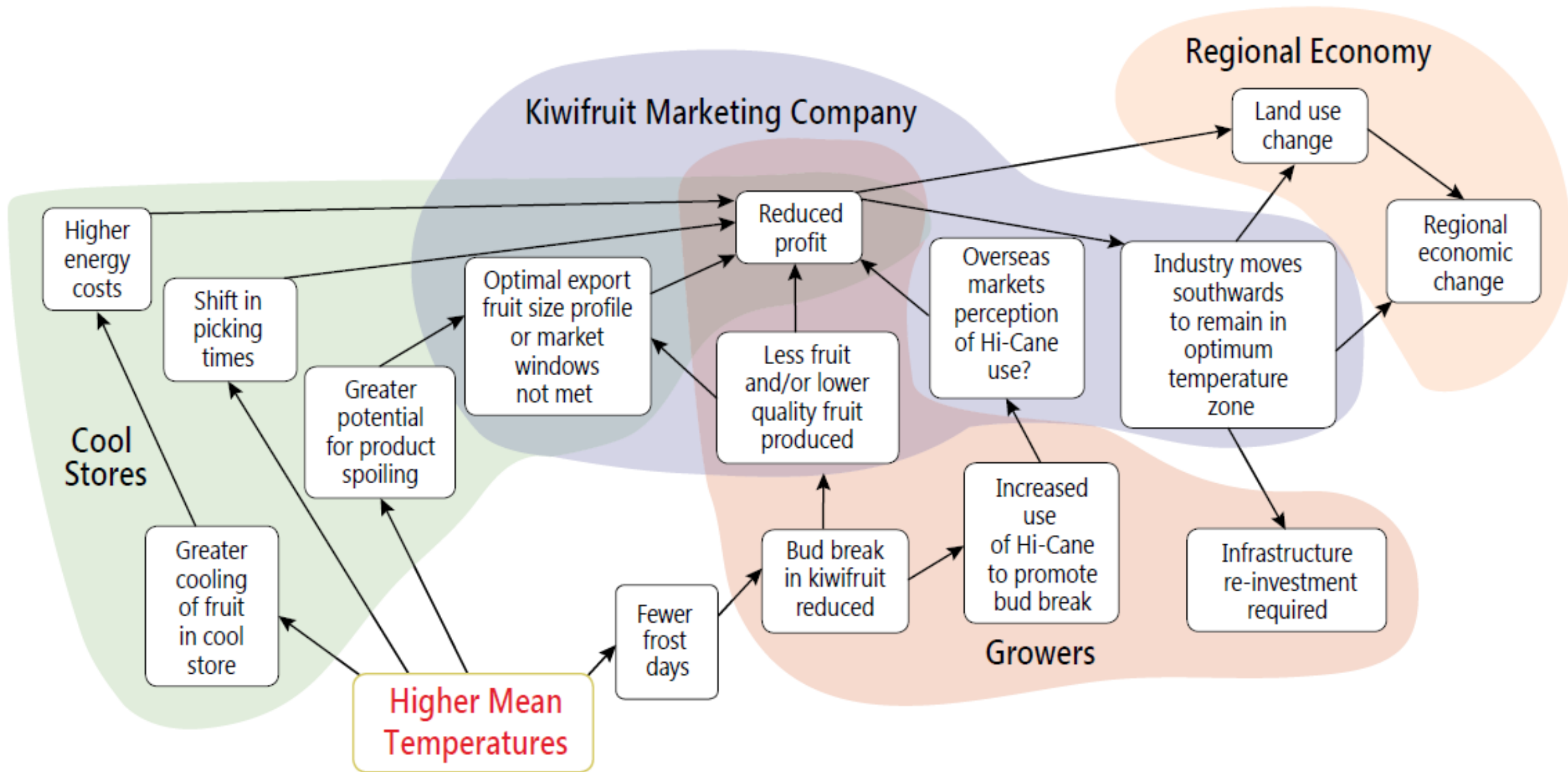


## Rivers and Estuaries

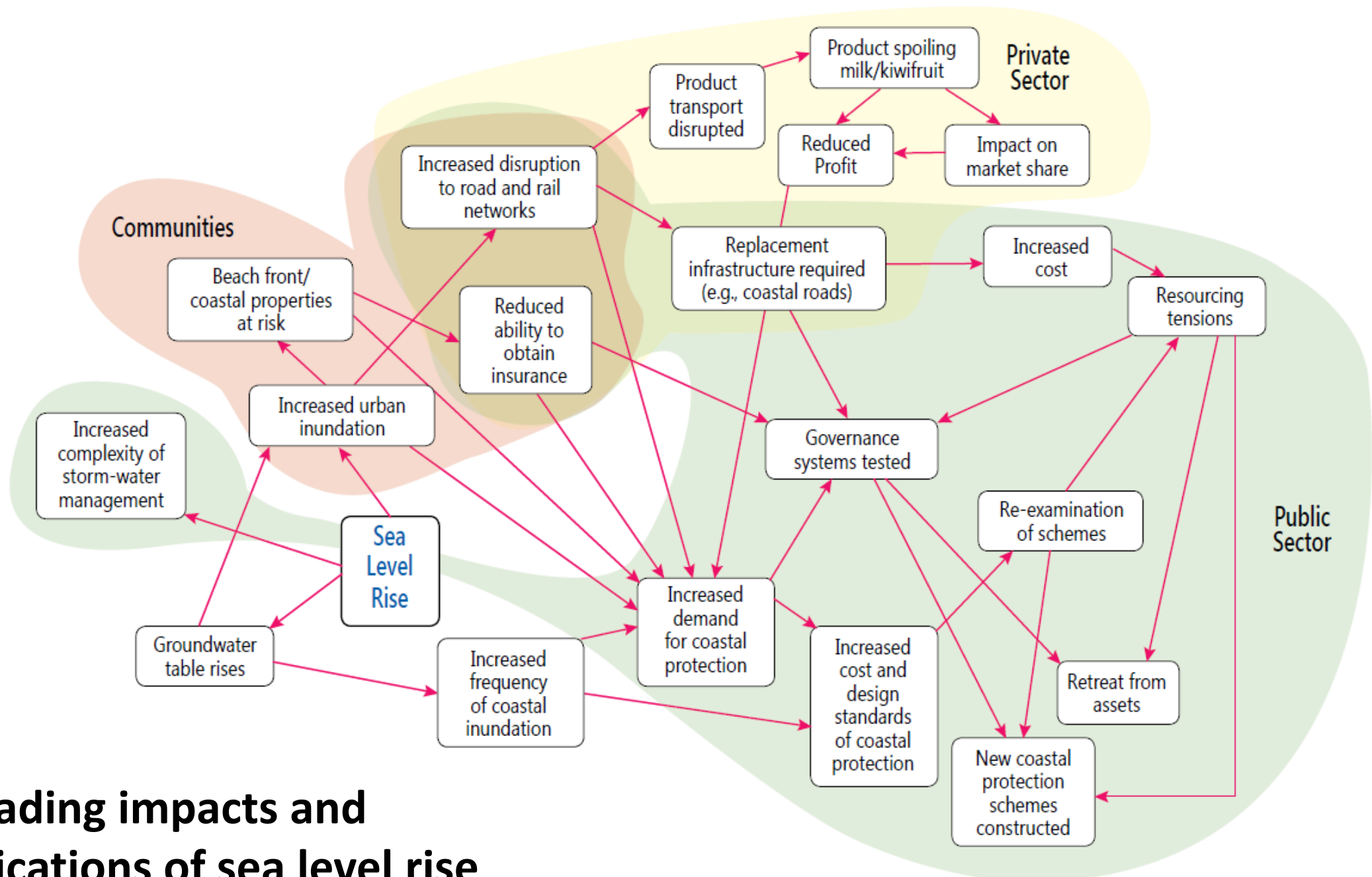


## Land Use Change





**Cascading impacts and implications of higher mean temperatures**



## Cascading impacts and implications of sea level rise

## For all the case studies

### **Possible impacts on and implications for :**

- Infrastructure - roads, dams, stop banks, sewerage
- Settlements -schools, roads, retirement homes, hospitals
- Existing protection (coastal or flood)
- Businesses -access to resources (water), risk factors (wind), inundation (river & coastal)
- Livelihoods - kiwifruit, merino wool, pests

# Interviews 2013-2015

# Key findings at the national scale

## **Perceptions of climate change**

- Distant threat
- Embedded in business risk but not dominant
- Reactive responses to climate events (except merino , kiwifruit and ski industries and local government)
- Systems thinking an enabler

## **Implications of climate change**

- Governance and institutions
- Decision making
- Climate change information
- Capacity and capability

## **Barriers to decisions making**

## **Critical leverage points**

# Governance (rules and organisations)

Fragmented - between organisations and within organisations

Will make it difficult to response to multiple impacts & implications of climate change

Policy settings keep changing

The rules of the game change, its hard to know how to play and difficult to plan long term

Economics (and present cost) dominates

Long term investments are passed over in favour of short term ones

# Decision making

Different types of decisions and different drivers

## Public Sector:

Regulation & Functions

Timeframe of decision

Longer timeframes

Coping with uncertainty

Issue focused, static

## Private Sector

Production focus  
Economic incentives

2-5 years

Issue focused, static

## Influencers

Issue or Sector based

1-5 years

Often not considered

Changes to decision making are occurring



# Information

## Understanding future climate change risk

**Long term trends , interactions and interdependencies, bio-diversity and bio-securtiy challenges, pollinators, plant hydridisation, mangroves ecosystem change, hydrology changes to pathogens and disease water quality ..... Known unknowns, unknown unknowns**

## Implications of climate change

**Lack a systems perspective – fragmented focused on primary sector, lacks social and economic aspects  
Freshwater, storm-water wastewater implications?**

## Adaptation decision-making

**Making adaptation decisions – few participants had got this far—DAPP emerging as a “gold standard” globally and now emerging in practice in New Zealand (Rivers and Coast)**

# Capacity and capability

- Processes in place to manage risk (formal, semi-formal experienced based
- Confidence to respond to issues – confident in ability to deal with most known issues, not the less known. Not equipped to deal with changing risk
- Ability to access resources in-house, in-house/contractors, practical skills

## Challenges

- **Changing personal networks (people move)**
- **Rely on external knowledge/skills**
- **Low priority**
- **Lacking critical skills (hydrology, integrated catchment management)**
- **Fragmented groups**
- **Issues in translation (science to practice)**

# Barriers are leverage points

## **Five kinds of barriers emerged as influencing decision-making;**

- Governance (leadership)
- Policy (expertise and experience)
- Uncertainty (lack of local level data)
- Resources (completion for resources)
- Psycho-social factors (e.g, contested nature of climate change)
- Political commitment and policy persistence (short-termism)

***Governance and psycho-social barriers are the biggest impediments to effective decision-making on climate change impacts and implications***

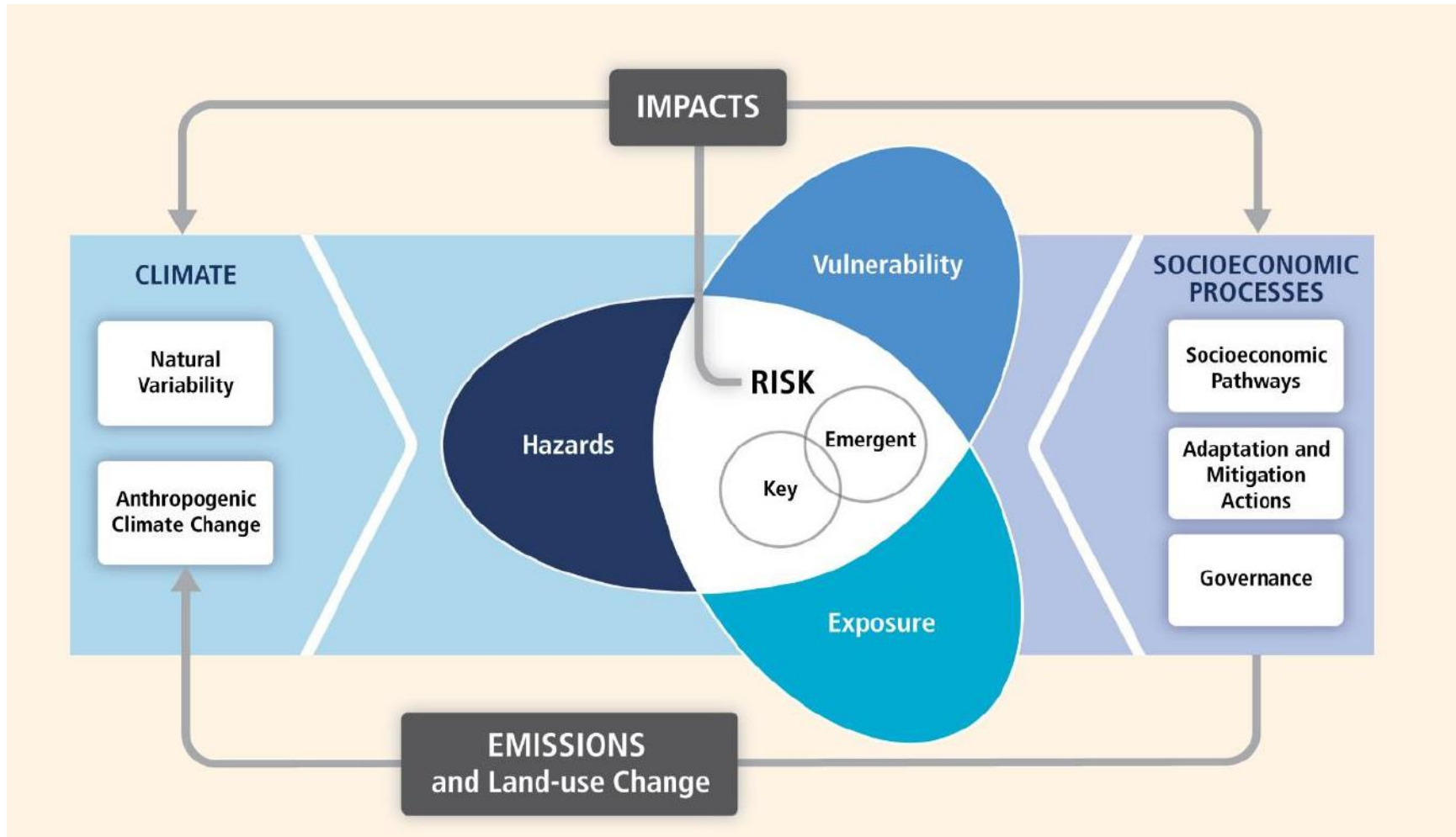
# Opportunities

- More joined up thinking - councils, business, influencers
- Consequence thinking across scales and generations
- Information sharing – facilitators/brokers, influencers
- Innovative solutions – new land uses
- Smart tool for anticipatory adaptation (DAPP)
- Greater attention to local impacts and values
- Working with financial institutions for long term planning
- Legislative alignment and integration
- Infrastructure planning
- Funding of adaptation

# An adaptive decision process

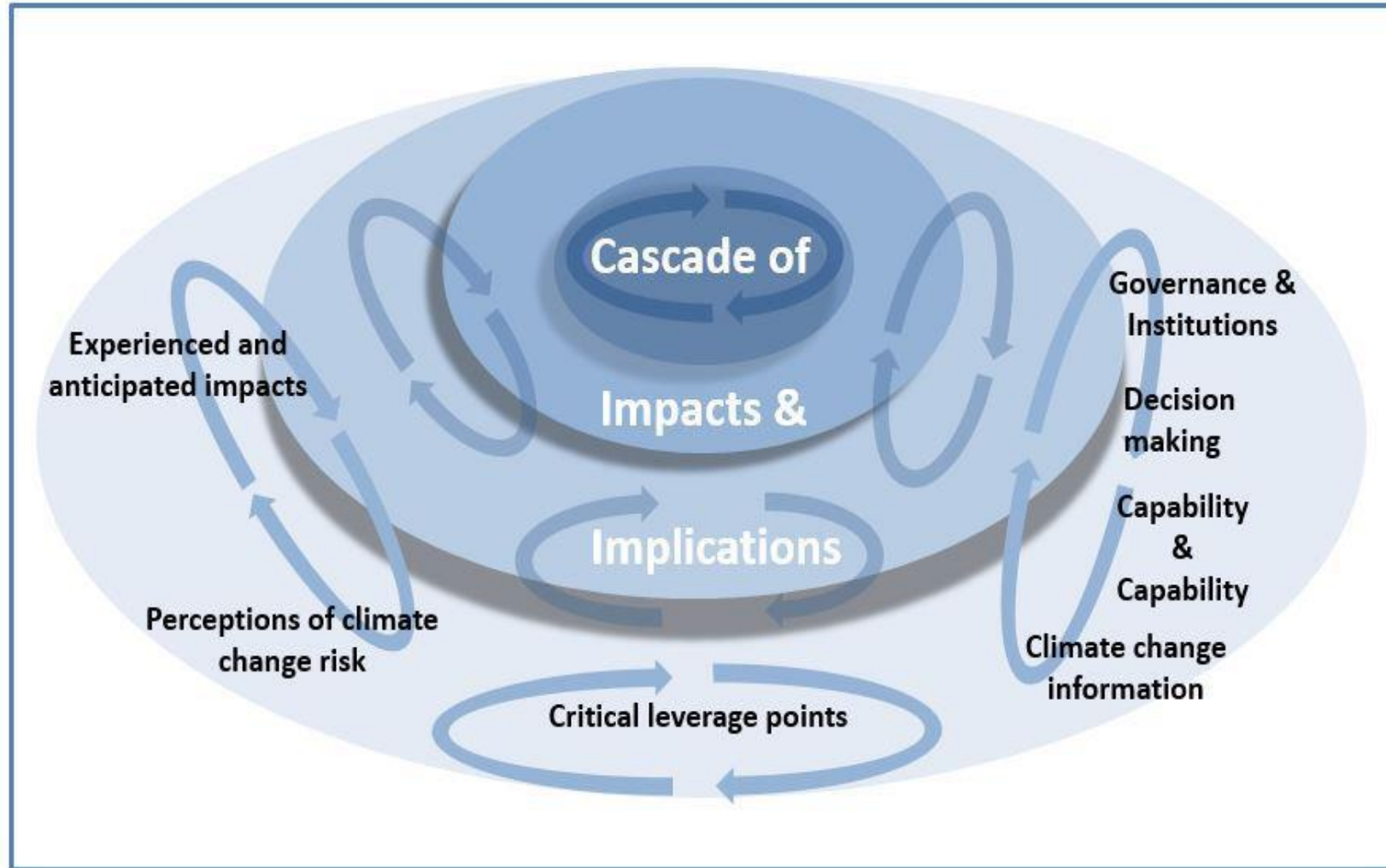
- What are the first issues that we will face as a result of climate change?
- Under what conditions will current strategies be ineffective? (triggers)
- What are the alternative options?
- What are the different decision pathways that can be taken to achieve the same objectives?
- How robust are they over a range of future climate scenarios?
- Are they flexible enough to enable a change of path with minimum disruption and cost?

# A risk-based framework that is adaptive



IPCC WGII AR5

# Report to come



# What you told us

*Some people might still resent expectations laid upon them but they do generally accept that it's the way the world's moved. And if you want to continue to be involved you have to adapt and take recognition of those things* [Farmer representative]

*Shareholders in the retail companies are starting to ask questions of CEOs we're starting to see a push down the chain seeking greater transparency of the level of exposure to extreme events.* [Kiwifruit industry respondent]

*Managed retreat is definitely on the table yes to all of those we've got structural and non- structural ideas you know planting the whole upper catchment in forestry yep those sort of things. We will have a bit of a look at those and maybe shortlist a few we'll have a workshop and we'll probably come down to about 3 or 5 combinations of solutions that they will then investigate further* [Regional council respondent]

***Today's policies influence adaptability in the future [ unitary council respondent]***