Creating Futures: Tools for Integrated Planning

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Presentation to EPA Victoria, Melbourne, 7 December 2010

What we will cover today:

- **New Zealand's Governance structure**
- **Creating Futures project**
  - Regional Scenarios
  - ***WISE*** *(Waikato Integrated Scenario Explorer)* – Spatial Model
- **Case studies**
- **Lessons learnt & future directions**

Other regions

New Zealand

Victoria

Australia

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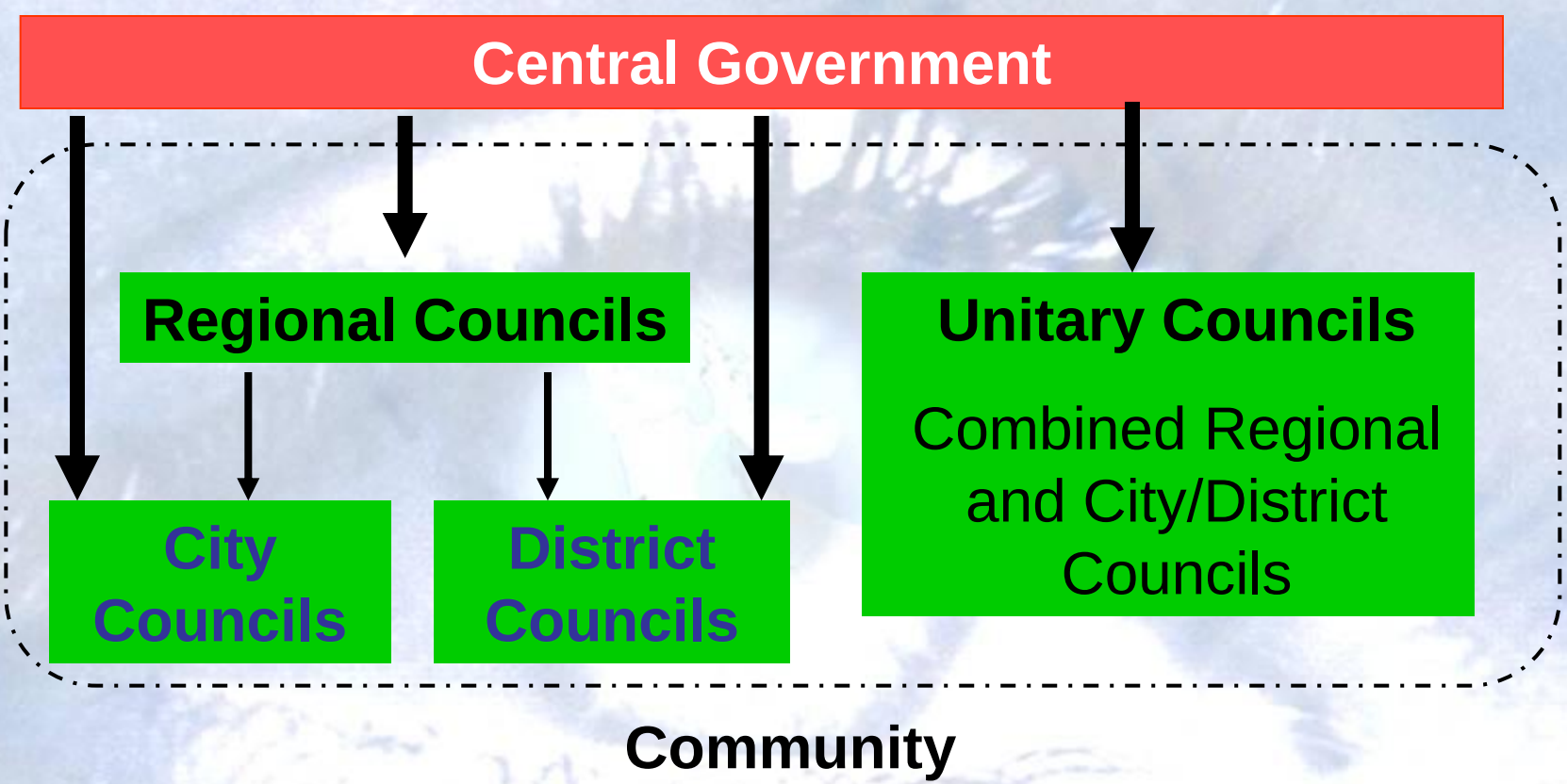
The Structure of Government



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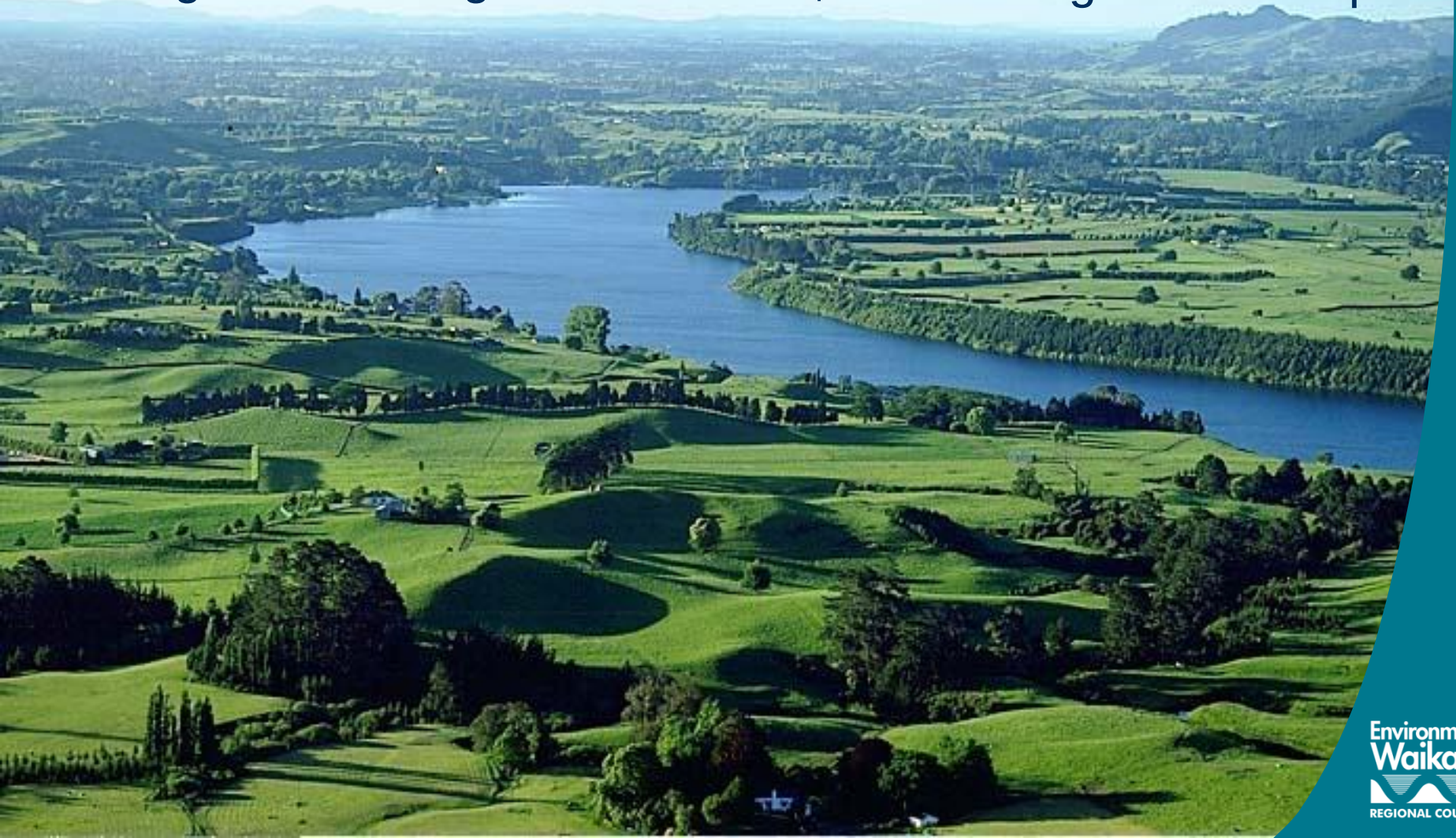
Tools for Integrated Planning

Waikato Region - what we manage

- 25,000 km^2 total area
- 1,150 km coastline
- Longest river, largest lake
- 400,000 people (10% of NZ)
- $10 Billion GDP (10% of NZ)
- $ 6 Billion Agriculture Export



Environment Waikato
REGIONAL COUNCIL

Why ‘New’ Planning Tools?

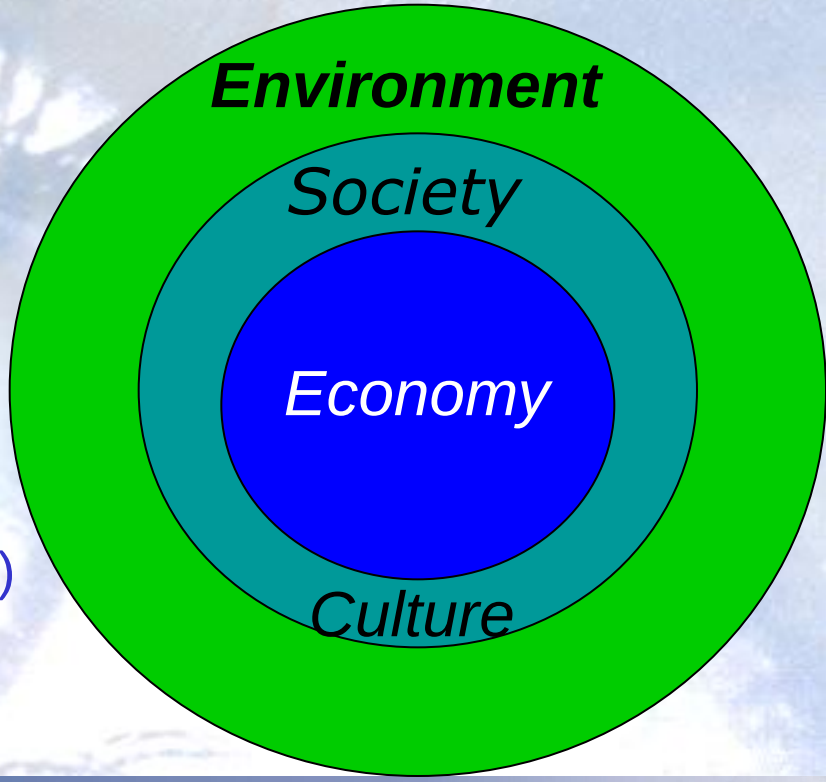
LINKING science and policy

- Informed decision-making
- Evidence-based policies

LONG TERM planning and enhanced strategic focus

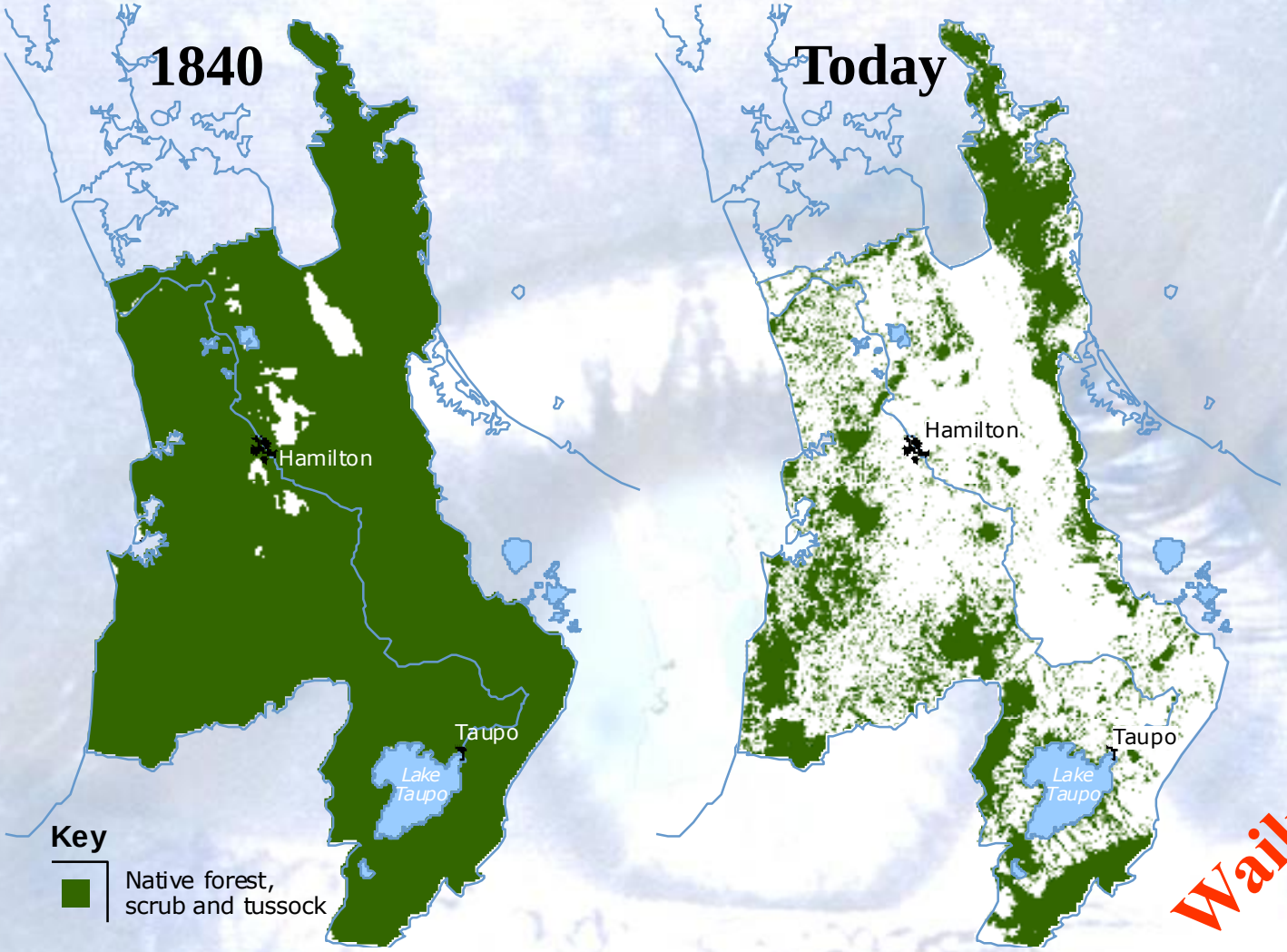
INTEGRATION

- Strategic partnerships (multi-disciplinary)
- Linking the four well-beings



Cultural
Social
WELL-BEINGS
Economic
Environmental
Social
Economic

Land Use / Cover



Waikato in 2050?

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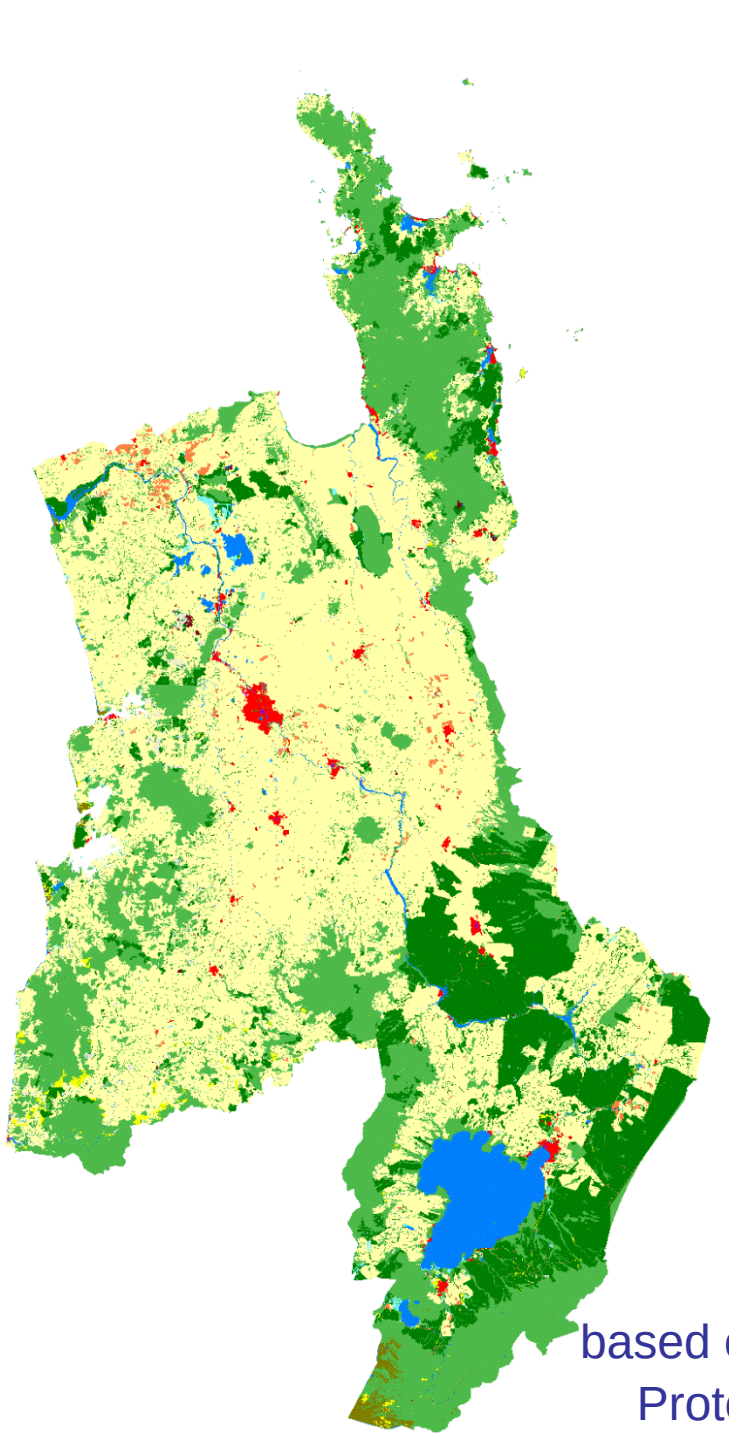
Waikato in 2050

what/if ?

Land for dairy farming increases ~4% annually

Land Use

- Abandoned
- Bare Ground
- Broad-Acre
- Forestry
- Infrastructure
- Mine
- Indigenous Vegetation
- Pastoral - Dairy
- Pastoral - Other
- Other Primary
- Residential
- Water
- Wetland
- Utilities
- Services
- Manufacturing
- Construction



based on WISE Prototype

Source: Landcare Research & RIKS

Project Aim

Develop and apply

planning and communication tools

to make informed choices for the future

Tools

Scenarios

Deliberation Process

Spatial Model (WISE)

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Objective 1 - Qualitative Tools

- Scenario planning
- Deliberation processes

We can't predict the future ….

The 'futures landscape' is one of shifting sands

Source: MSD

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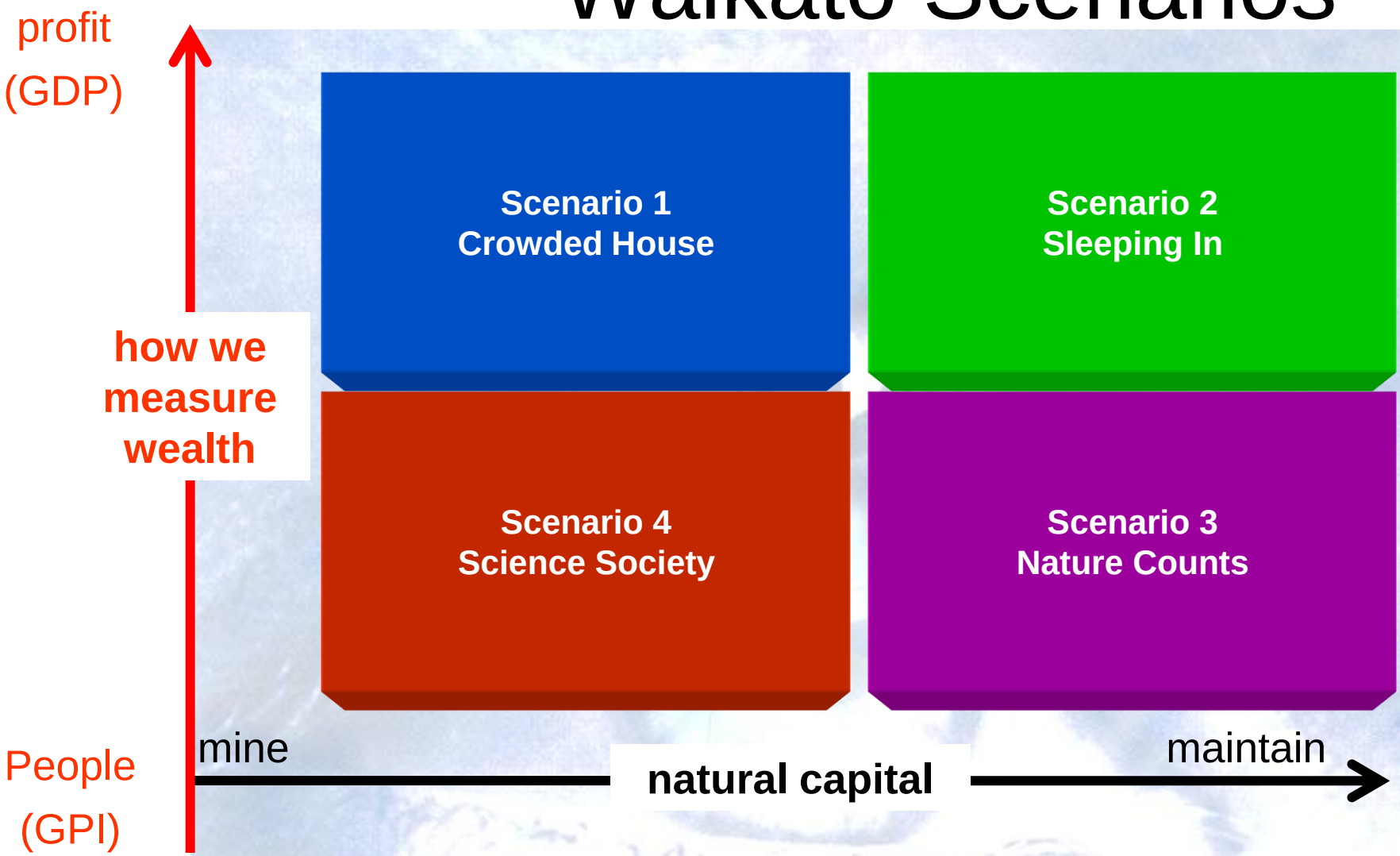
Horizon Scanning and Scenario planning

… spotting change early

… thinking strategically

- **Stories of what the future might look like**
- **Built by assessing how trends and drivers might influence the present to create the future.**

Waikato Scenarios



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www.creatingfutures.org.nz

The Waikato Scenarios

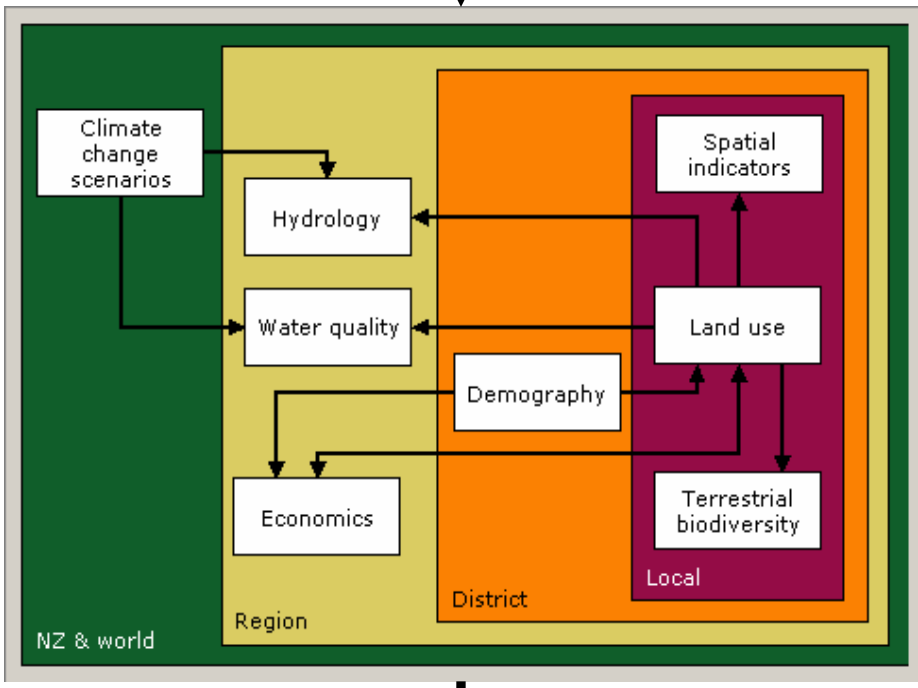
- **Crowded House**
  - Massive international movement of people and changes in agriculture and energy production
- **Sleeping In**
  - Keep on talking about climate change until it really hits home
- **Nature Counts**
  - A bio-economy where we value land much differently using resource productivity as a key economic indicator
- **Science Society**
  - A society where science takes off and supports a knowledge-based and technology-driven society

Linking Qualitative and Quantitative Tools

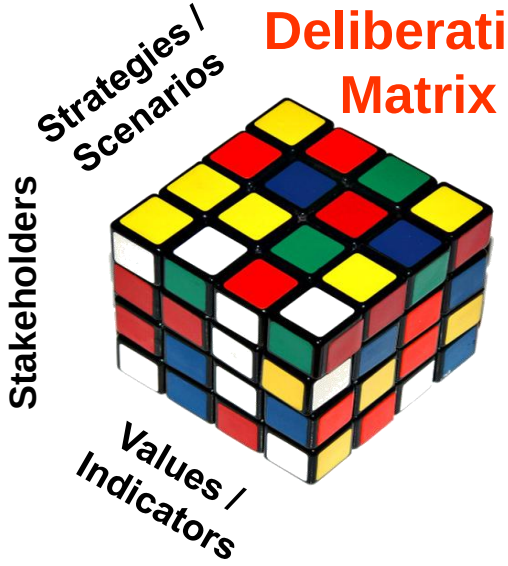
Waikato Scenarios

Inform design of WISE and develop and evaluate policies

WISE



Deliberation Matrix



Inform issues and debate

Objective 2

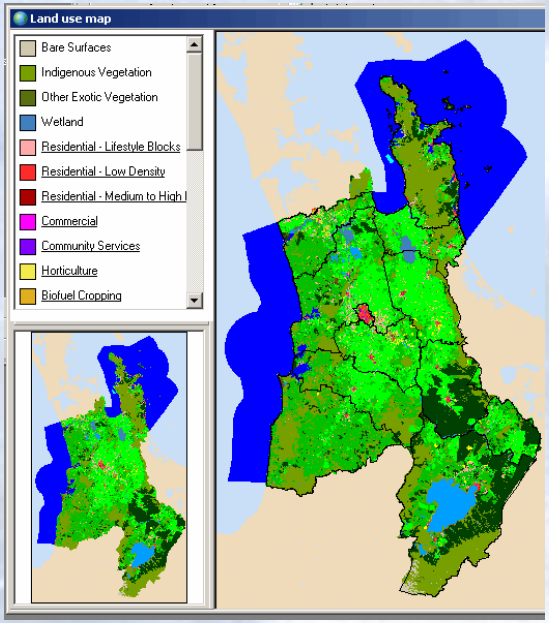
Development of an

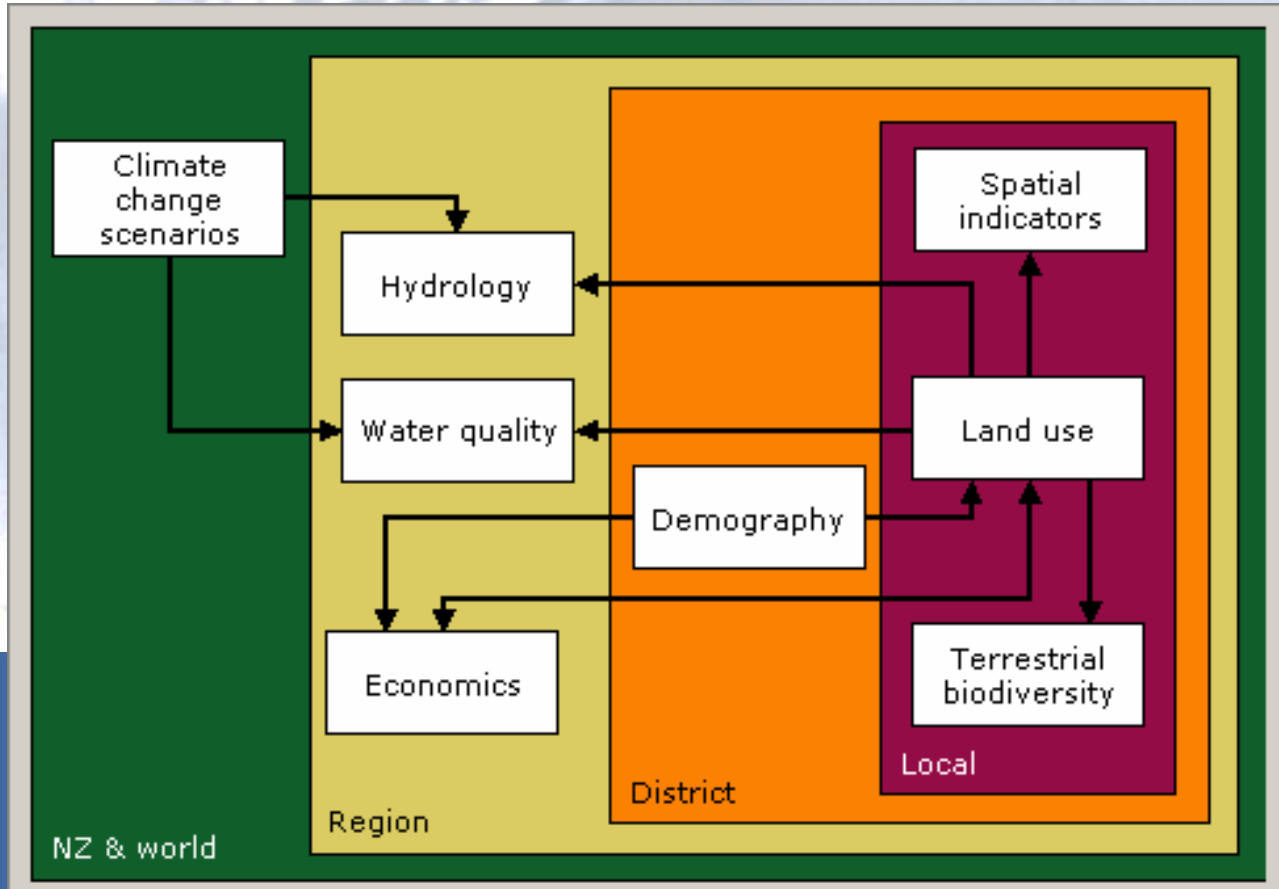
- **Integrated, dynamic and spatial Decision Support System (WISE)**

to support long-term planning.

What is WISE?

- WISE = Waikato Integrated Scenario Explorer
  - **Stand-alone software application**
  - **System of interacting models**





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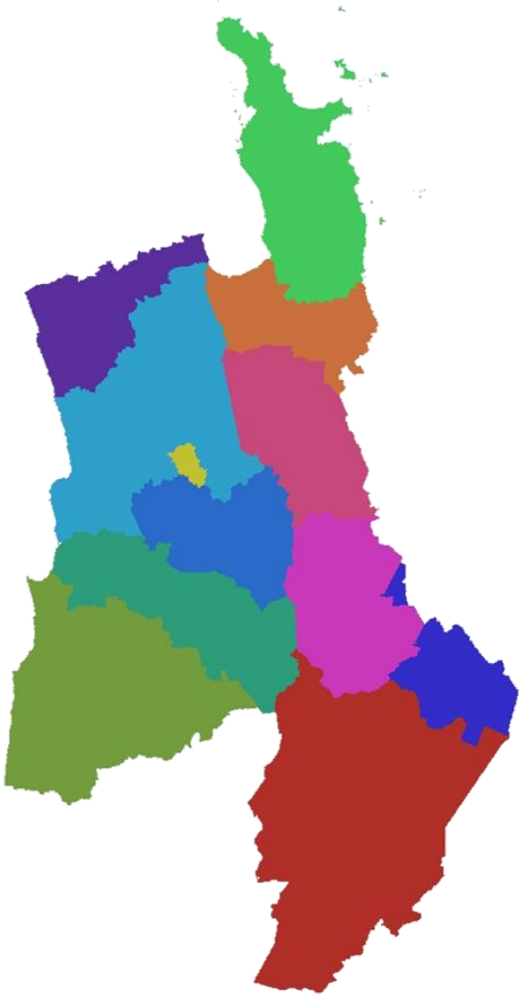
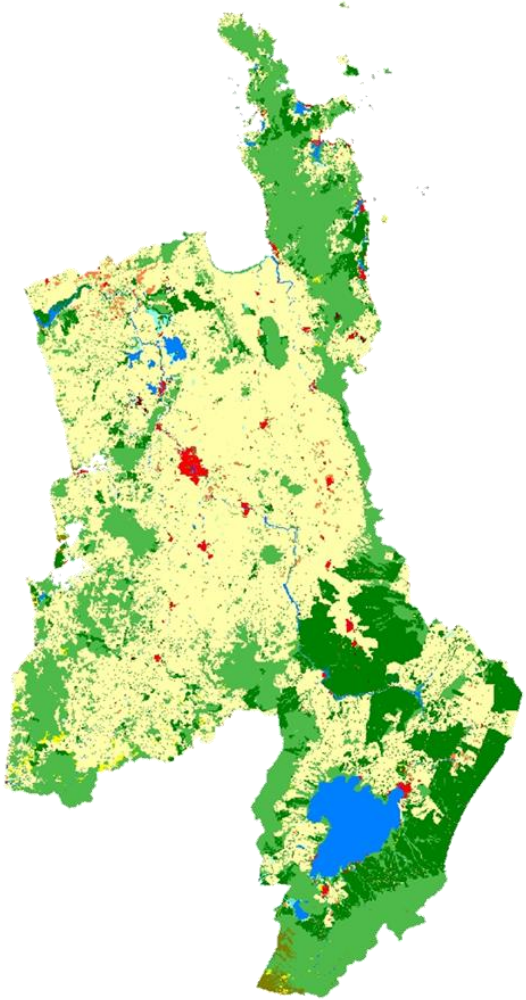
Multi-scale

Region



District

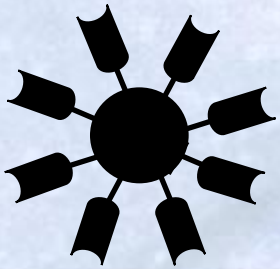


Local
(200 x 200 m cells)

Dynamic and Spatial Modelling

Source: RIKS 2006

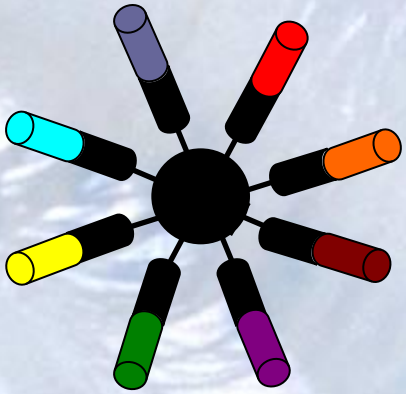
Basic Framework



Geonamica

Model library:

- Land use local level
- Regional interaction
- Transport
- Population (Age cohort)
- Plant growth
- Climate
- Hydrology
- Input – Output (Economy-Environment)



Product

WISE

RIKS
research institute for knowledge systems

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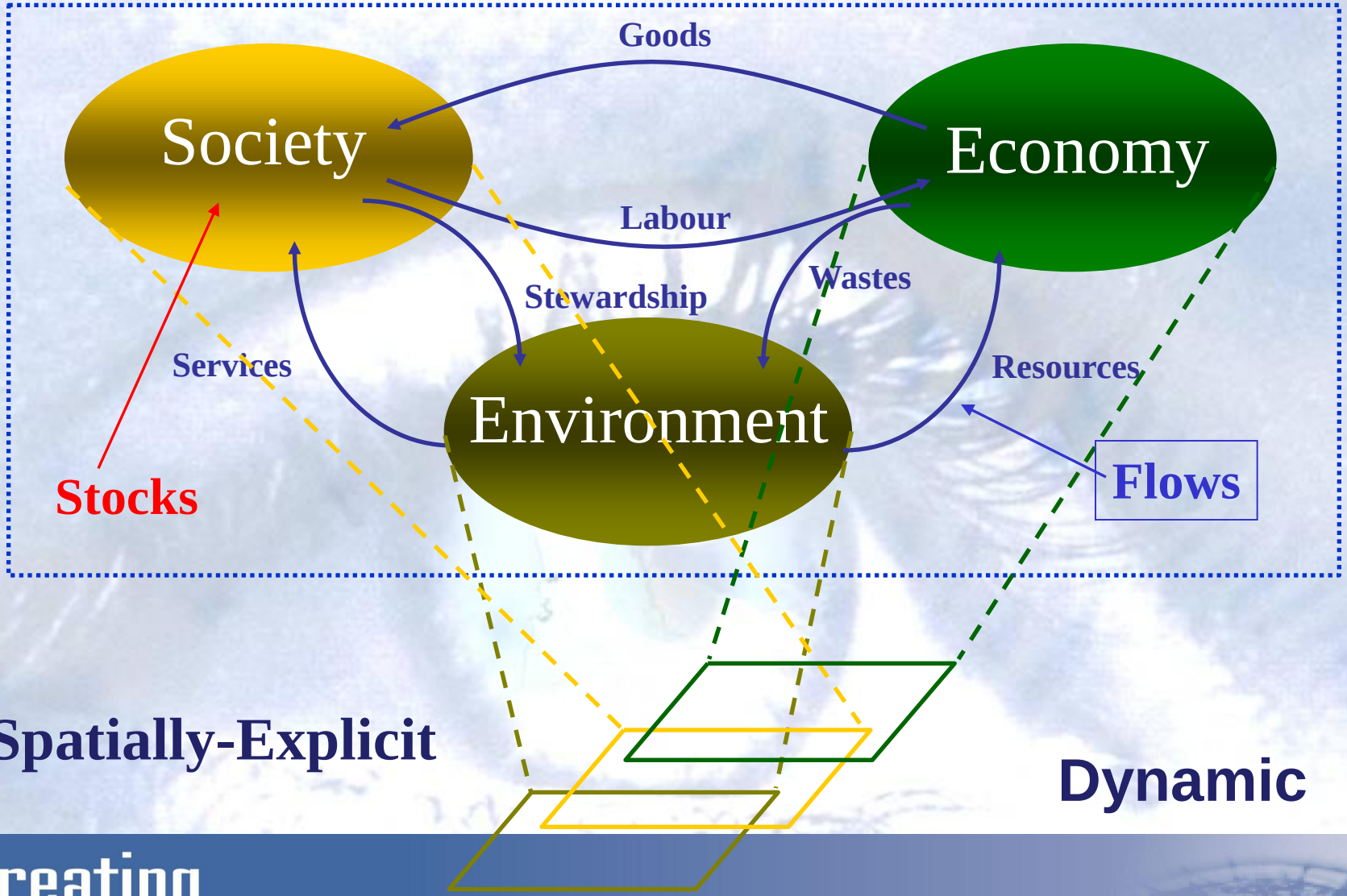
Systems Approach



Source: Dr Daniel Rutledge, LCR 2008

Step 2:
Understand
the past

Step 1:
Characterize
the present

Step 5:
Explore
possible futures

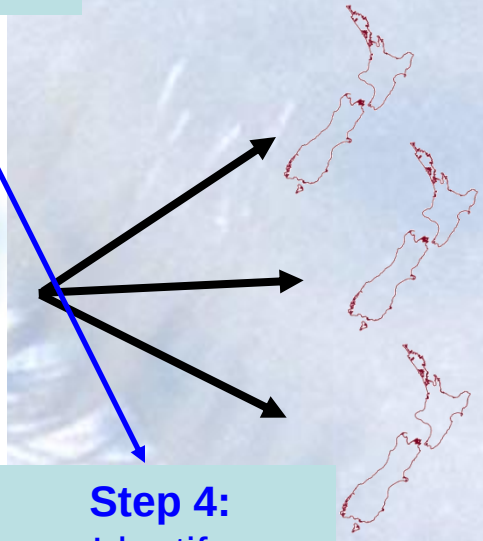
Scenarios

New Zealand Land Cover Pre-human Estimate (LENZ)

Step 3:
Understand

past changes
& trends

New Zealand Land Cover LCDB2 (2001/2)



Step 4:
Identify
key drivers &
trends and
"model"
possible
future
scenarios

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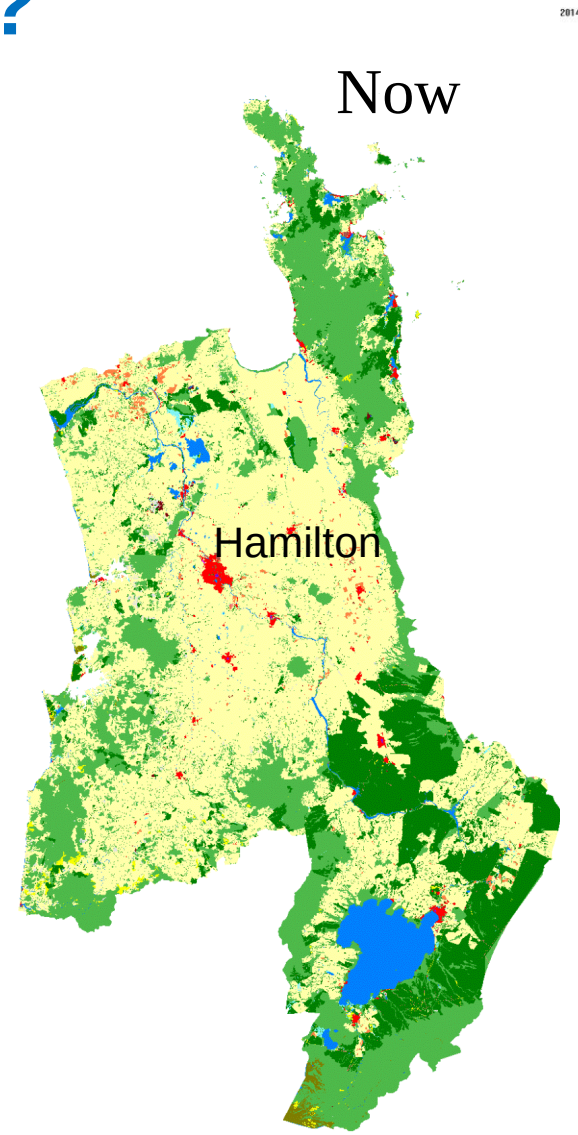
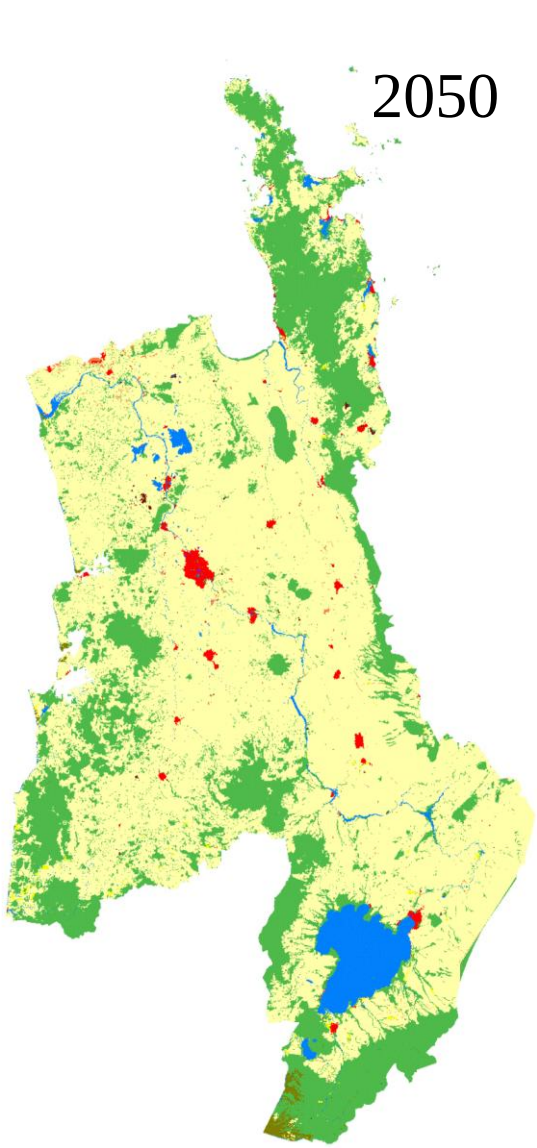




based on WISE Prototype

Source: Landcare Research & RIKS

Waikato in 2050 – Three Different Futures *(what/ifs?)*

(based on WISE Prototype)

1-Dairy Expansion

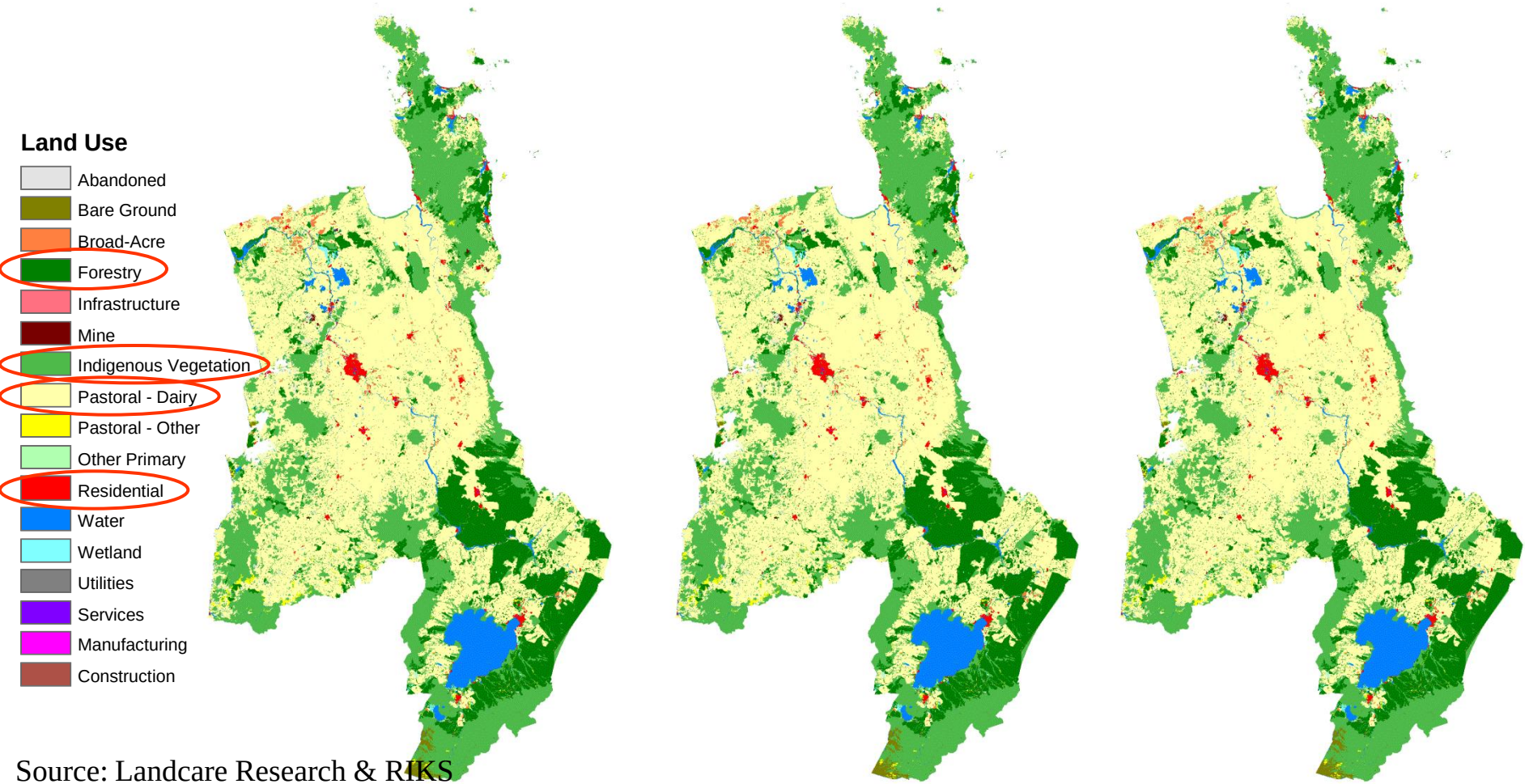
Land for dairying increases ~4% annually

2-Diversification

Demand for non-dairy primary production land increases

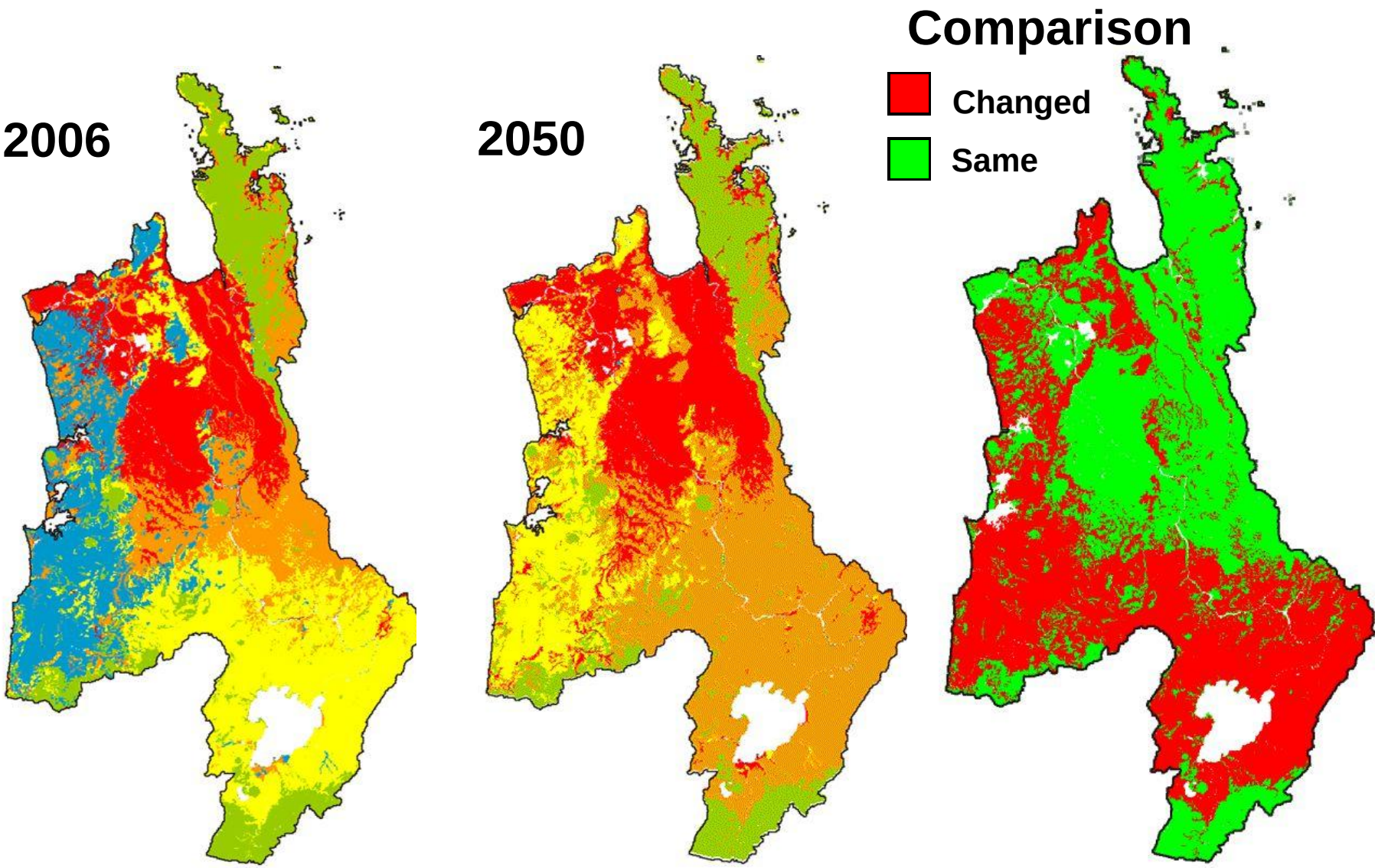
3-Village Life

Residential land increases 7-fold

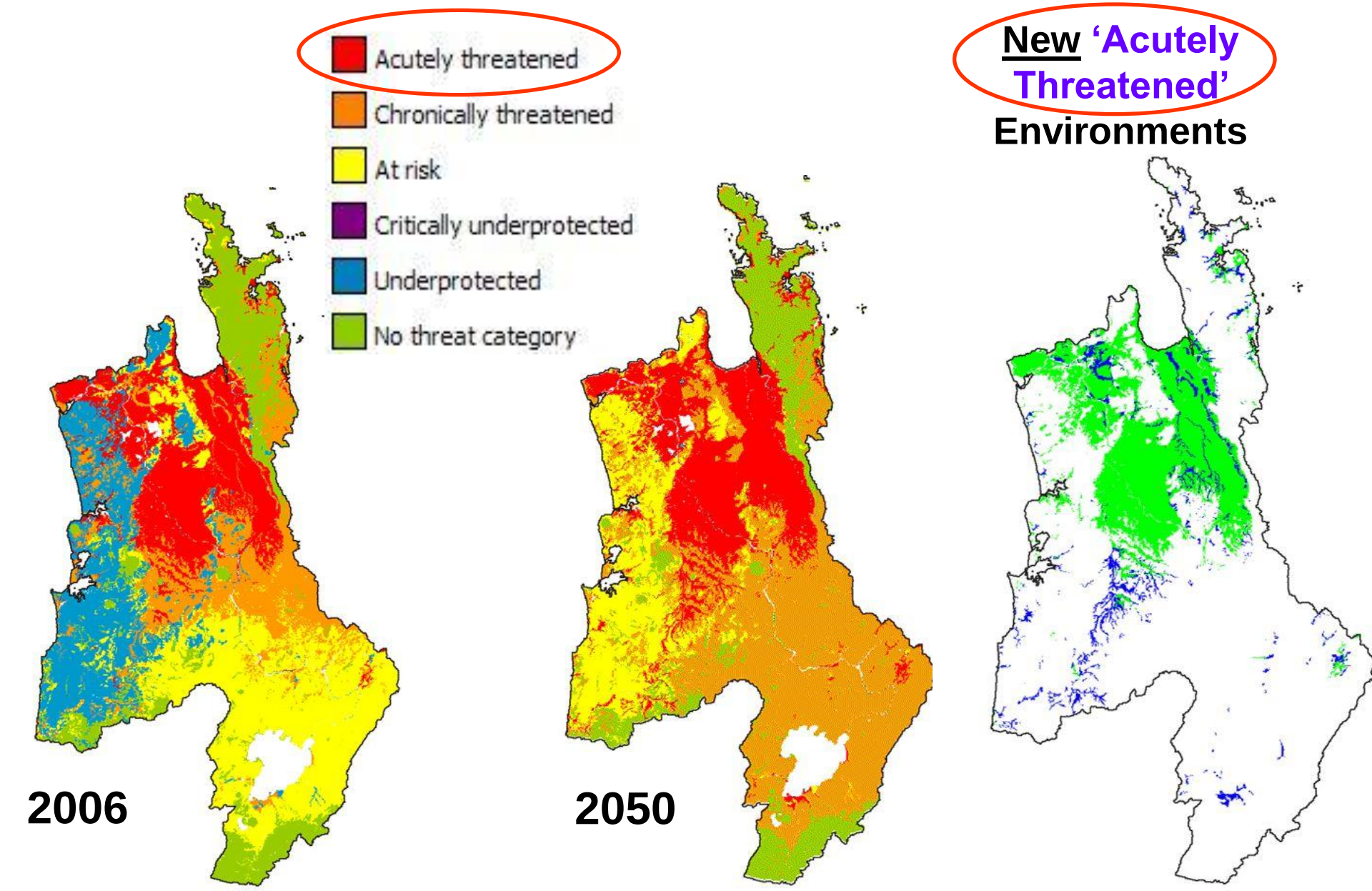


Source: Landcare Research & RIKS

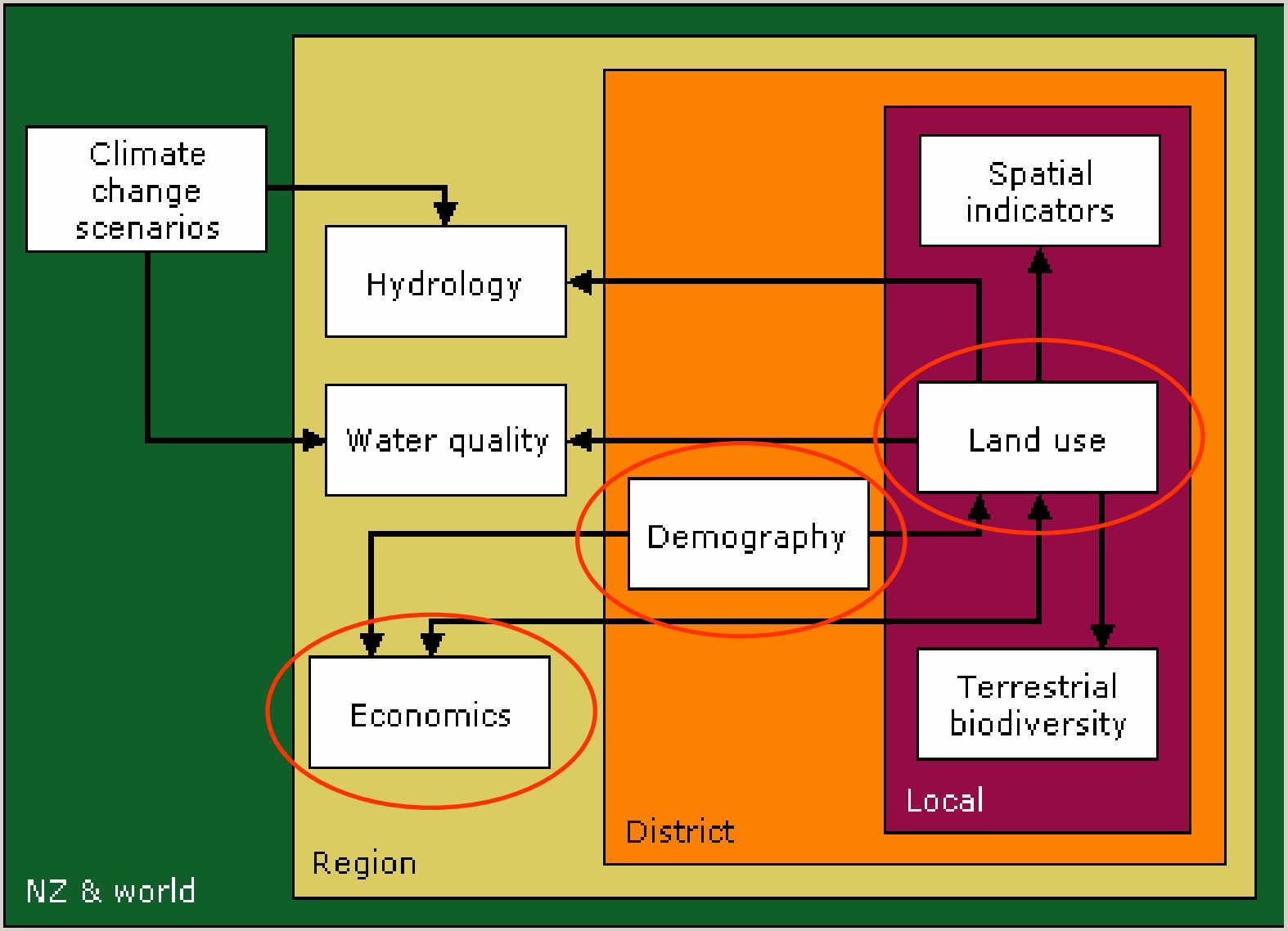
Threatened Environments for Baseline ('BAU') Scenario



Threatened Environments – by Risk Categories for Baseline ('BAU') Scenario



WISE



Creating Futures

How Environment Waikato Uses WISE

- **Linking science to policy** (evidence-based decision-making)
- Explore alternative policy options for regional planning, assess **trade-offs** and prioritise issues
- **Regional** development and **sub-regional** strategies (non-statutory) – e.g. Future Proof case study
- **Cumulative** effects of policy and permits (over space/time)

WISE also provides:

- Up-to-date data and information
- Access to expert knowledge from all disciplines

Some Lessons Learnt

- for interdisciplinary multi-agency science/policy collaboration

- **Allow time at the start to develop shared understanding**
- **User interaction crucial during the development (champions)**
  - ✓ Ownership by user organisation (Environment Waikato)
  - ✓ Must add value (be useful) and accessible (user-friendly)
  - ✓ Understanding how models work and how they are linked
- **Time and effort for individual model components vs integration**
- **Develop implementation strategy to optimize end users buy-in**
  - ✓ Improving and understanding
  - ✓ Making WISE relevant (case studies), build credibility
  - ✓ Provide support: data management, training, set-up of scenarios
  - ✓ Collaboratively identify, prioritise and implement improvements

Future Directions

- **We are only just beginning…**
- **Strategic Scanning Team**
- **WISE User Group (policy, science, GIS/IT)**
  - External support and advise (WISE partners and others)
  - Data management, updating and maintenance of models, licences
  - Training – building capability and capacity in spatial planning
  - Integration into council planning and decision-making processes
- **WISE** development is ongoing
  - additional model components, functionality, new knowledge/methods
- **Other regions / NZ**
  - SP2 (Auckland and Wellington councils) – urban focus
  - National Advisory Group for spatial planning tools

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About the Project

Creating Futures is a new and innovative 4-year research project aimed at creating tools for improving decision making. The research will develop and implement designed to inform communities about the long-term effects of current development patterns and trends. It also aims to enhance community involvement in choosing and planning for desired futures. >>

Project Outputs

The Creating Futures project is now two years into a four year research project. Progress in developing tools is provided in this section. Some additional information on the tools, their use, and ...ent process is also given. The three output areas are: >>

What's New

15 Jul **Waikato Futures Symposium**

New Zealand Trade and Enterprise in conjunction with Environment Waikato and partners are convening this Symposium to present and review work completed to date on developing future scenarios for the Waikato region. Symposium Flyer... >>

13 Jul **Deliberation Workshops**

In March 2008 the first of two deliberation workshops with Waikato stakeholders was held to develop deliberation methodologies. See Deliberation Workshop 1 Report [deliberation-tools/]... >>

11 Jul **Narrative Stories**

Stories to help you imagine life in each of the Waikato (just completing draft stories - will link in before go live)... >>

10 Jul **Spatial Waikato Model**

Final specifications (report not quite complete)... >>

Further Resources

Project Team

Structure

Roles

Contacts

Scenarios

Scenarios are plausible stories about the future. They are stories that are ...e that is, sufficiently based on the trends and changes that we ...mean that they not only could possibly happen, but

Waikato Scenarios

Scenario Development

www.creatingfutures.org.nz

Internet

Thanks

- ✓ **FRST** – Foundation of Research Science & Technology
- ✓ **Environment Waikato**
- ✓ Creating Futures **partner organisations**

www.creatingfutures.org.nz