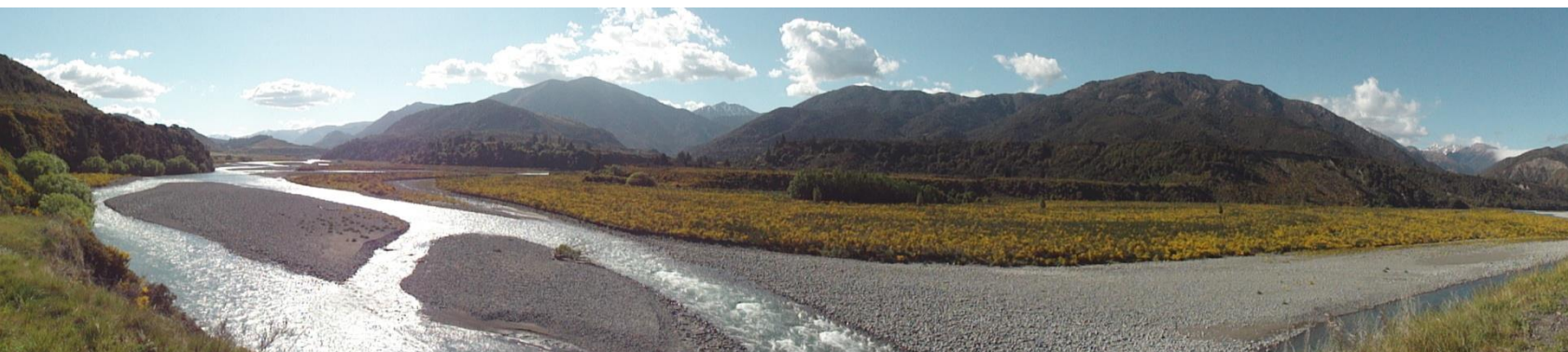




**Landcare Research**  
**Manaaki Whenua**

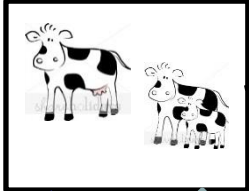
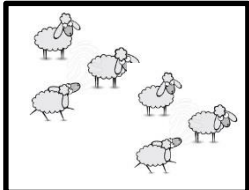
# Overview of Econ Modelling

*Understanding land use change & policy implications*



## Farm-level

Inputs  
Production  
Profits  
Leaching -  
emissions

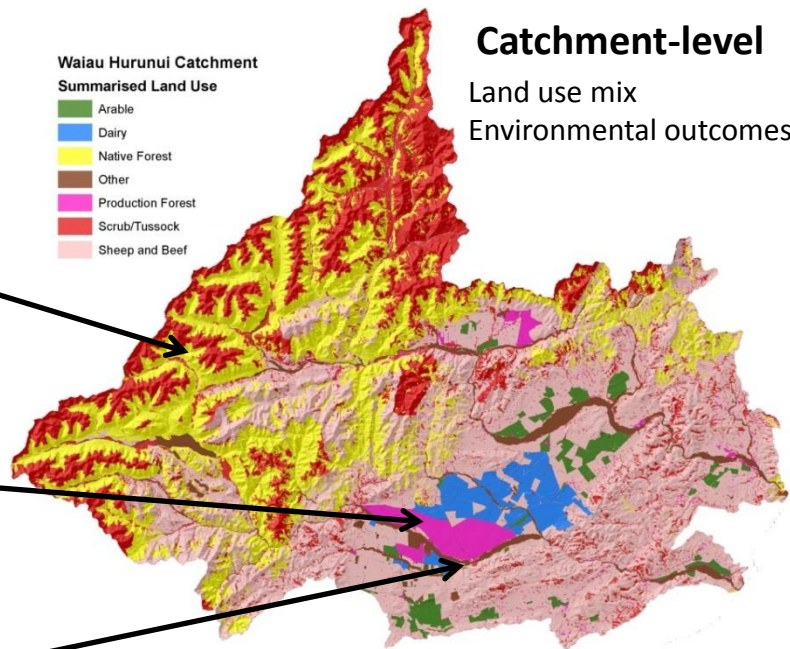


## Catchment-level

Land use mix  
Environmental outcomes

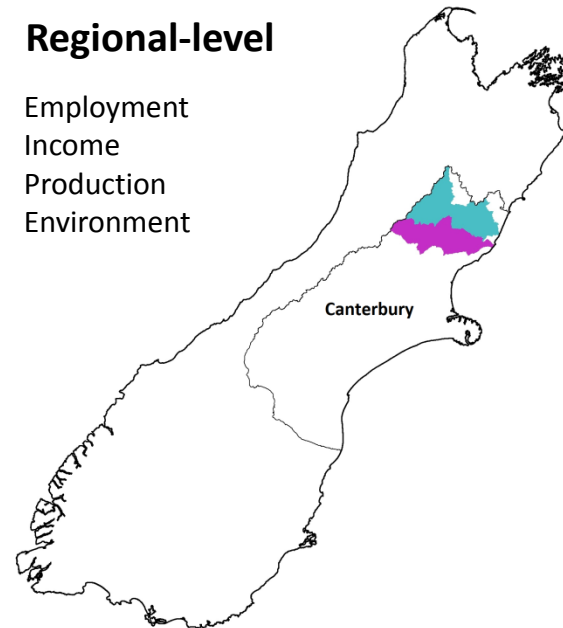
Waiau Hurunui Catchment  
Summarised Land Use

Arable  
Dairy  
Native Forest  
Other  
Production Forest  
Scrub/Tussock  
Sheep and Beef



## Regional-level

Employment  
Income  
Production  
Environment



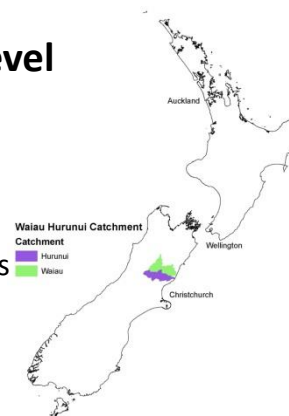
## Global-level

Commodity Prices  
Climate  
Trade



## National-level

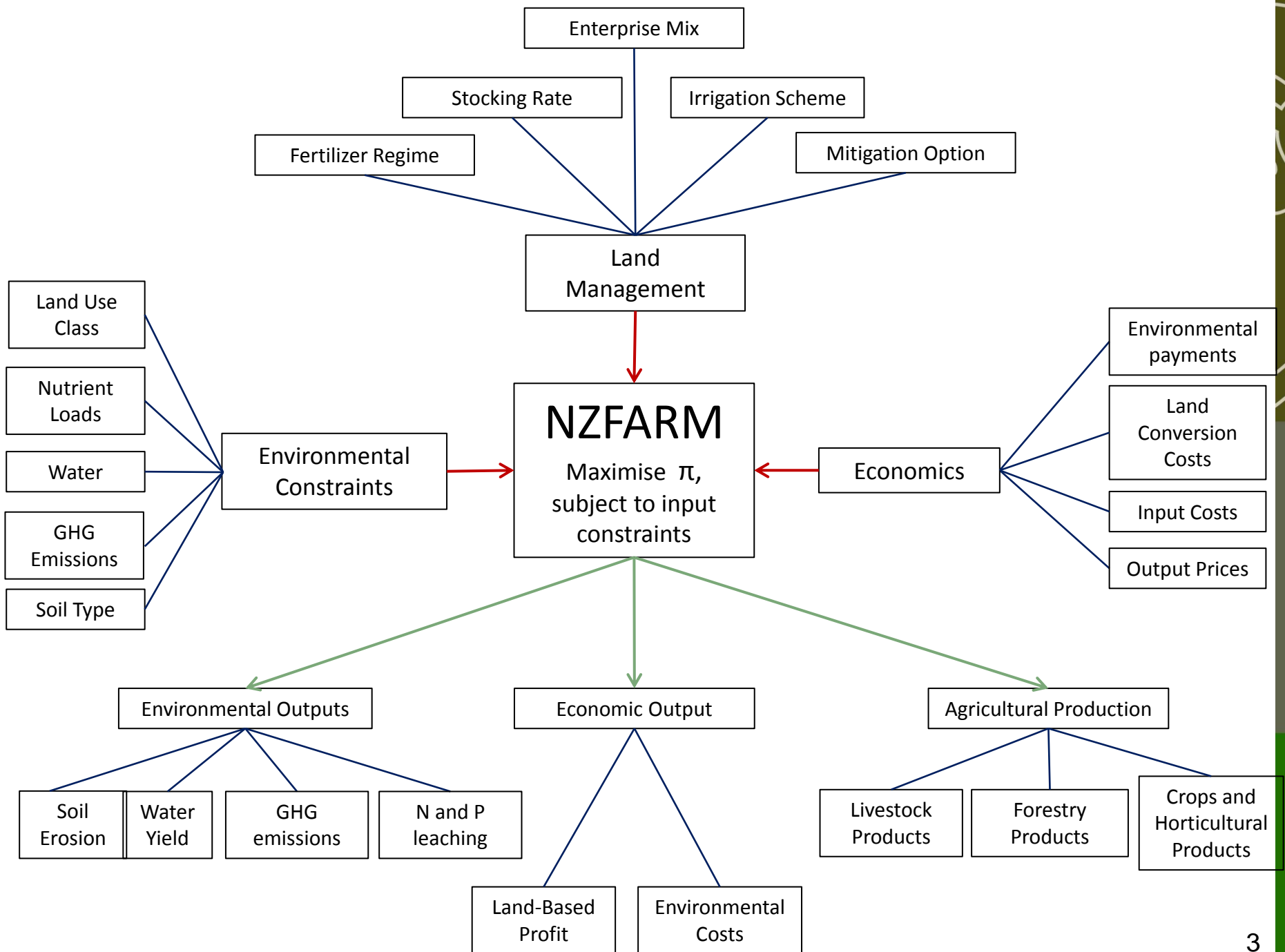
Employment  
Income  
GDP  
Production  
GHG Emissions



## National and Regional Policies

RMA      ETS  
Education  
Nutrient trading





# NZ-FARM – Key Components

- Land-use/enterprises, e.g.:
  - Pastoral: dairy, sheep, beef, deer
  - Arable: e.g. wheat, barley, maize
  - Horticultural: e.g. potatoes, grapes, berryfruit
  - Forestry: e.g. pine, eucalyptus, native
  - Other: scrub and DOC land
- Environmental outputs, e.g.:
  - Nutrients: nitrogen and phosphorous
  - GHGs for farm and forest activities
  - Water use: irrigation area and type
  - E.Coli & sediment
- Farm Management Options, e.g.:
  - Keep status quo and pay regulatory tax
  - Change enterprise or land use
  - Adjust fertilizer and stocking rates
  - Add dairy feed pad or apply DCDs
  - Enter forest carbon sequestration programme





# Agro-economic model



- Designed to assessment of environmental/ agricultural/ resource policy options for land based decisions
- Enables the consistent comparison of economic & environmental impacts of a range of policy scenarios
- Enables central government policy (e.g. GHG policy) implications to be incorporated into regional council policy decisions



# New Zealand Forest And Agriculture Regional Model (NZ-FARM)

- Catchments model is operational for
  - Horizons: Manawatu
  - Canterbury: Hurunui/Waiaua, Hinds ,Selwyn/Waihora
  - Northland: Whangarei + Hikurangi (in development)
  - Greater Wellington: Ruamahunga + other catchments likely
- National model is operational
- Version also being used by Maori trusts to assess land utilisation options

