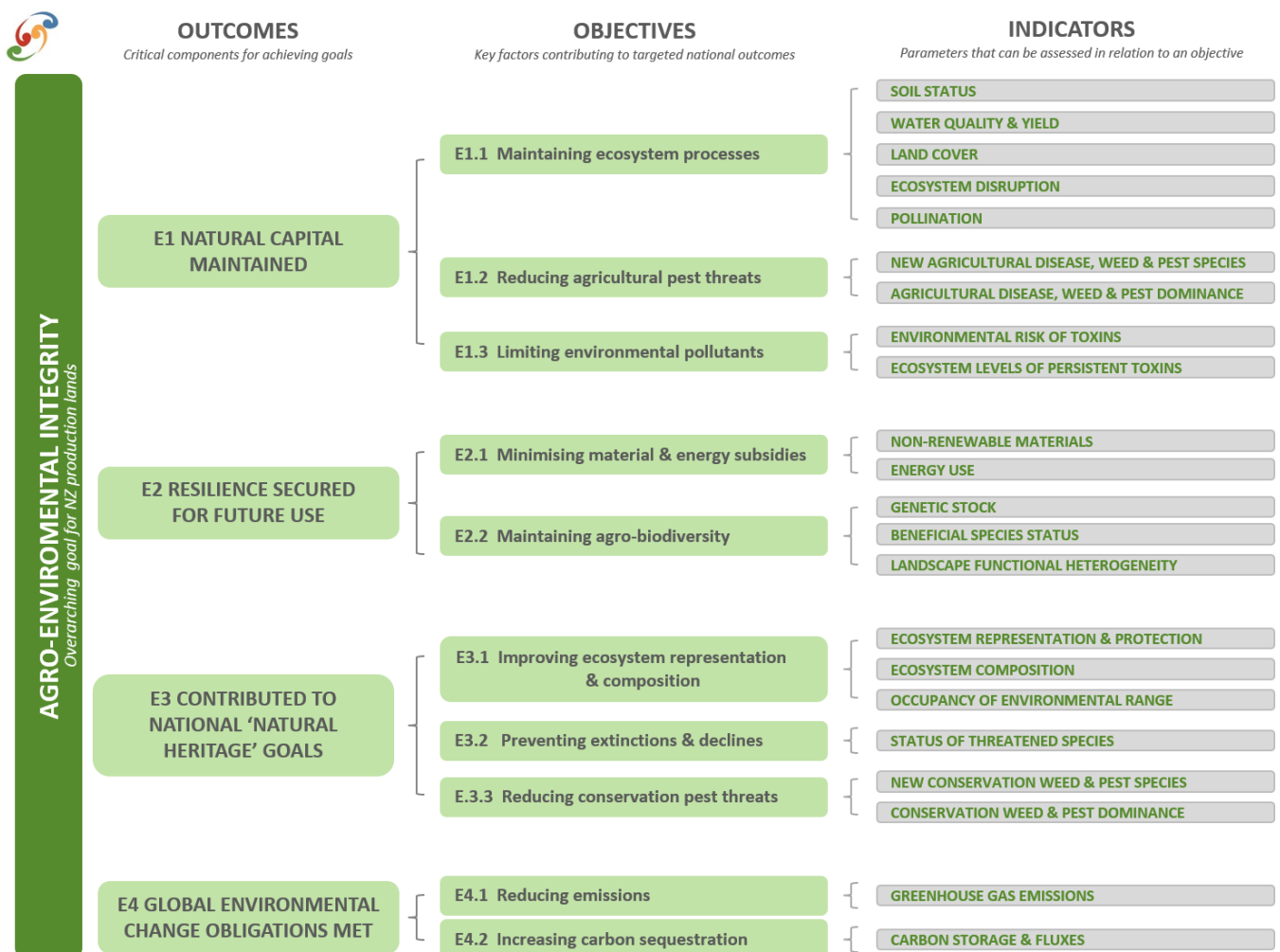


## ENVIRONMENTAL MONITORING FRAMEWORK FOR NZ PRODUCTION LANDS

The *New Zealand Sustainability Dashboard* is a sustainability assessment and reporting tool being developed for the country's primary industry sectors. The environmental framework proposed here for monitoring sustainable management of New Zealand's production landscapes can readily be integrated with other NZSD frameworks focusing on the social well-being, good governance and economic resilience dimensions of sustainability.

The indicators are practical, locally grounded and universally accepted. They are closely matched to systems being designed and tested by the United Nations' Food and Agricultural Organisation (*Sustainability Assessment of Food and Agriculture Systems*) and by New Zealand's Department of Conservation and regional councils (a coordinated biodiversity monitoring and reporting system).



### Overarching goal – 'Agro-environmental integrity'

The *New Zealand Sustainability Dashboard's* environmental framework has an overarching goal to protect, and where necessary restore, 'agro-environmental integrity'. It recognises the need for an integrated management approach. This must be implemented across multiple spatial scales and governance jurisdictions to maintain livelihoods, social well-being and restore ecological integrity in New Zealand.

*Agro-environmental integrity is the state which sustains the full potential of land and its natural capital, ecosystem processes and services to efficiently and indefinitely produce healthy, high quality food and fibre; while enhancing natural heritage values and meeting global environmental change obligations.*



## Guiding and monitoring progress towards the ‘agro-environmental integrity’ goal

The environmental framework is designed to help guide farmers, their communities, industry bodies, local and national policymakers, and the New Zealand public towards achieving ‘agro-environmental integrity’. It identifies four critical components that need to be targeted, each informed by a specific set of objectives and indicators:

### 1. Natural capital of production landscapes is maintained

Natural capital underpins biological production and sustainability of intensive farming in New Zealand. To help secure or build these capital stocks, and maintain flows of ecosystem services, three objectives are addressed:

- *Maintaining ecosystem processes*: focusing on soil, water, land cover, ecosystem disruption and pollination
- *Reducing agricultural pest threats*: considering new and established agricultural diseases, weeds and pests
- *Limiting environmental pollutants*: assessing risk and persistence of toxins

**Natural capital stocks** include soil quality, availability of nitrogen fixers, intact vegetation to keep the land intact and soils moist.

**Ecosystem services** are the flows of materials (like food and fibre itself), energy, regulation benefits (like biological pest controls that allow farmers to use fewer pesticides) and information (stored in species and ecosystems) from natural capital stocks.

### 2. Resilience of New Zealand agriculture is secured for future productive use

**Resilience** is about learning how to deal with uncertainty and adapt to changing conditions.

To support New Zealand’s farmers, rural communities, industry, and agricultural economy to build resilient systems for coping with significant challenges posed by new threats (e.g. new diseases), shocks (e.g. fuel price increases) and drivers (e.g. changing market demands) in the future, two key objectives are addressed:

- *Minimising material and energy subsidies*: considering renewable versus non-renewable resource use
- *Maintaining agro-biodiversity*: assessing genetic stocks, beneficial species and landscape functional heterogeneity

### 3. Production landscapes contribute to national ‘natural heritage’ goals

New Zealand production landscapes occur in lowland, fertile and warm areas, which can support high abundance and diversity of indigenous biota. There is limited information available to demonstrate whether biodiversity representation and persistence is improving or not. Three key objectives are addressed to support national ‘natural heritage’ goals:

- *Improving ecosystem representation and composition*
- *Preventing extinctions and declines*
- *Reducing conservation pest threats*

A high proportion of New Zealand’s species are endemic (found nowhere else in the world) – making these species both valuable and highly vulnerable.

**Natural ecosystems in production landscapes**, in particular, are highly fragmented and potentially vulnerable.

### 4. New Zealand meets global environmental change obligations

**The United Nations Framework Convention on Climate Change** established an international policy context for the reduction of greenhouse gas emissions and increases in carbon sinks to address the global challenge of anthropogenic interference with the climate system.

Agriculture, which releases significant amounts of greenhouse gases to the atmosphere, will likely be adversely affected by global warming. Two key objectives are addressed to meet New Zealand’s global obligations:

- *Reducing greenhouse gas emissions*
- *Increasing carbon sequestration*

## Priorities for development, road-testing and refinement

Next steps for developing the NZSD environmental framework include working with key stakeholder groups to:

- Facilitate integration of frameworks and information sharing to maximise opportunities for cross-scale linkages;
- Prioritise indicator selection transparently and co-design tightly prescribed metrics;
- Rigorously field test and audit prototype NZSD measurements;
- Learn how to monitor effectively by doing it.

The full report is available in the [Research Report 13/10](#).