Green firebreaks

Presented by:

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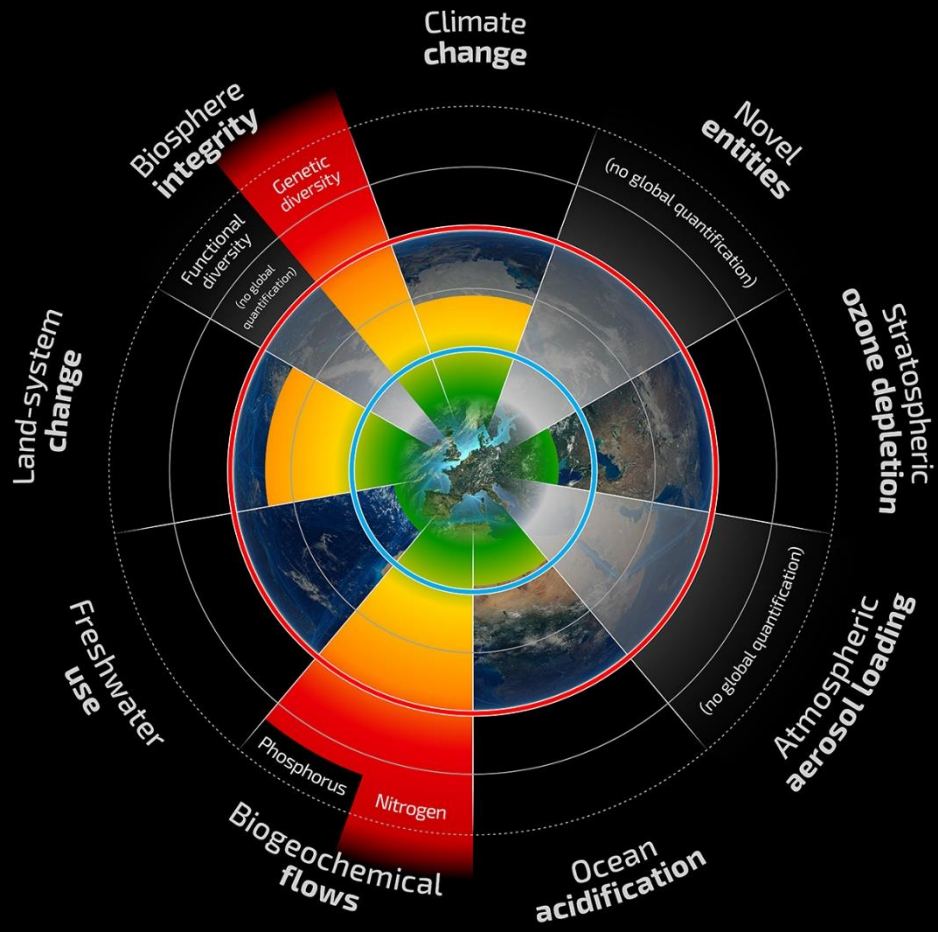
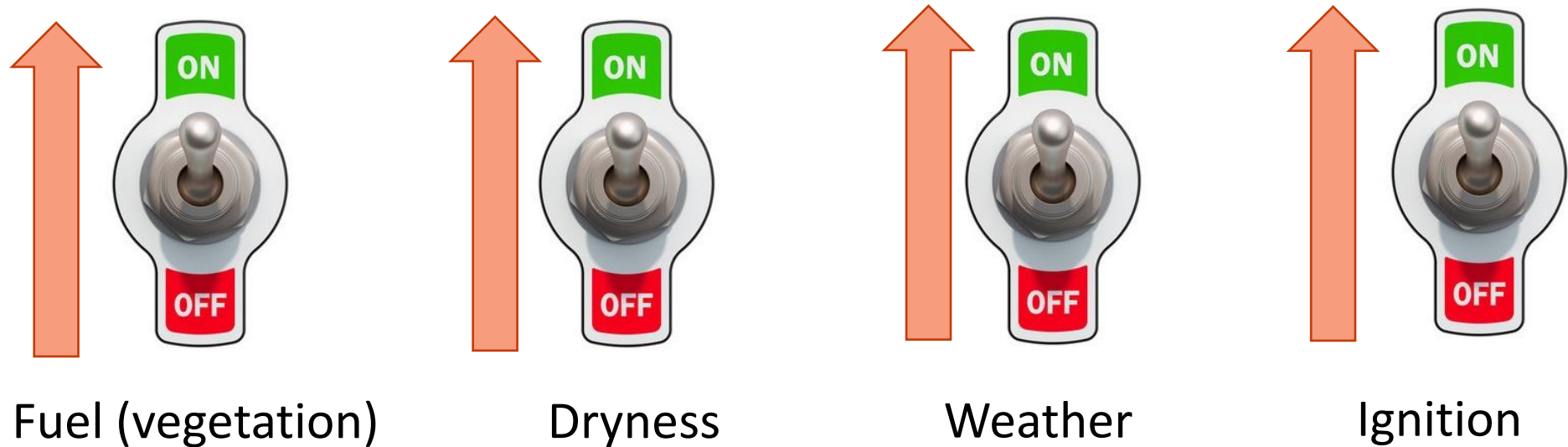**Planetary Boundaries**
A safe operating space for humanity

We are in a planetary emergency

What creates increased bushfire risk?

Fuel (vegetation)   Dryness   Weather   Ignition
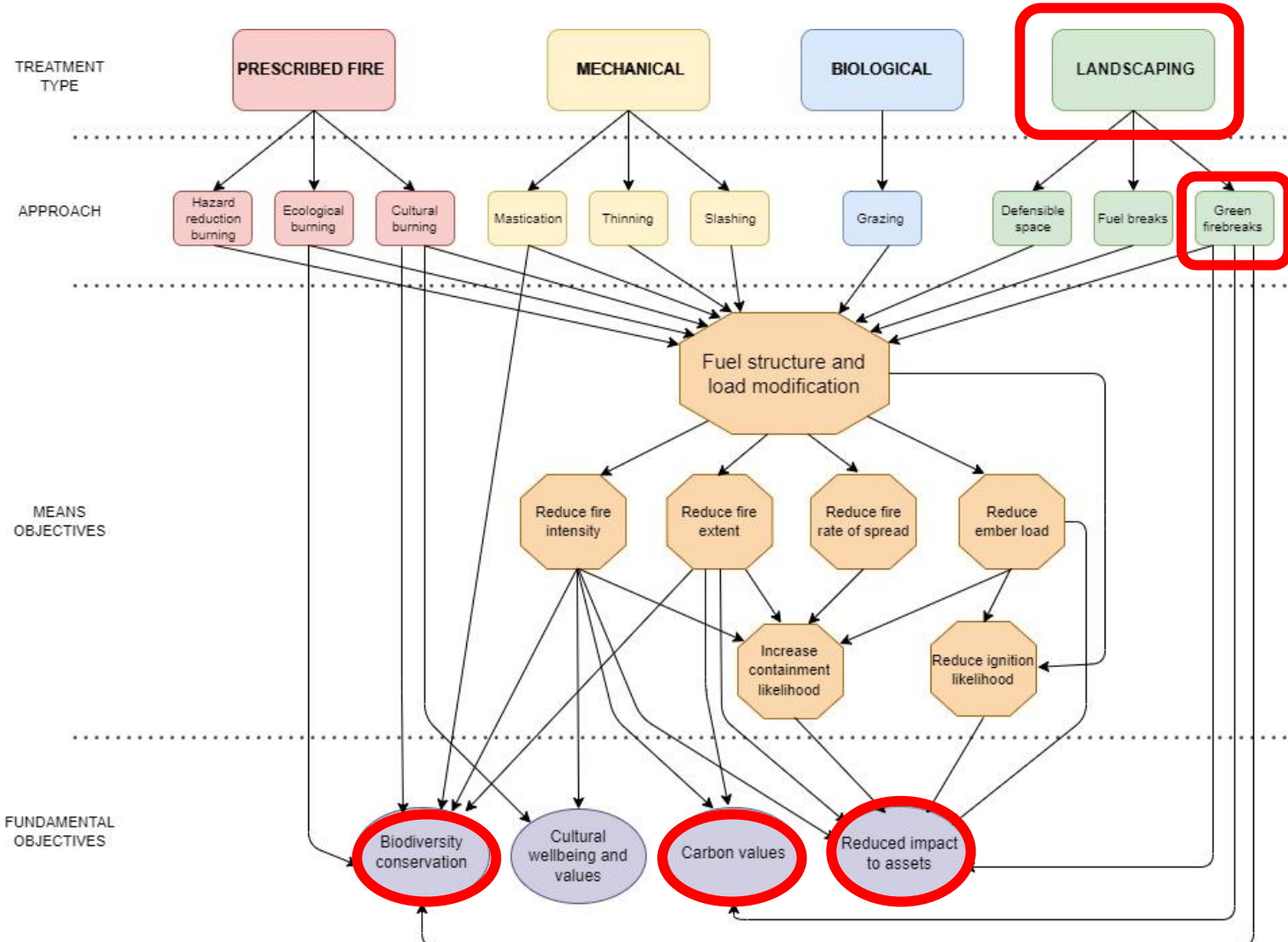
Management interventions

What is a green firebreak

Firebrands and radiant heat will be blocked.

The direction of green firebreaks should be perpendicular to the prevailing wind.

A multi-layered green firebreak can stop or slow both crown fire and ground fire spread. The structure of multi-layered green firebreaks includes trees, shrubs, herbaceous plants and fungi. Fungi will help decompose leaf litter more quickly to reduce leaf litter loads.

The microclimate in green firebreaks is cooler, wetter and shady.

Trees

Shrubs

Herbaceous plants

Fungi

Xinglei Cui, Md Azharul Alam, George LW. Perry, Adrian M. Paterson, Sarah V. Wyse, Timothy J. Curran. Green firebreaks as a management tool for wildfires: Lessons from China (2019)

What do green firebreaks look like?

Traditional fire breaks

Green firebreaks

Aims

This project has the following key objectives:

- Explore and develop planting designs that can reduce bushfire risk under climate change while maintaining or enhancing biodiversity values and carbon sequestration.

- Develop specific planting designs for three locations by June 2022

- Stress test a range of planting designs

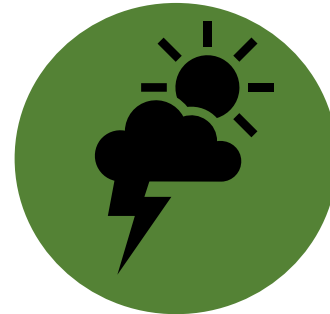- Validate these outcomes and scale up nature-based management scenarios

What we're doing

Phase 1
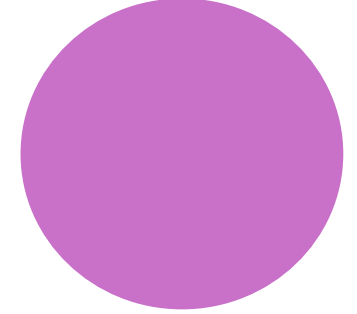
Model development and planting designs

Phase 2

Fire behaviour and Green Firebreaks
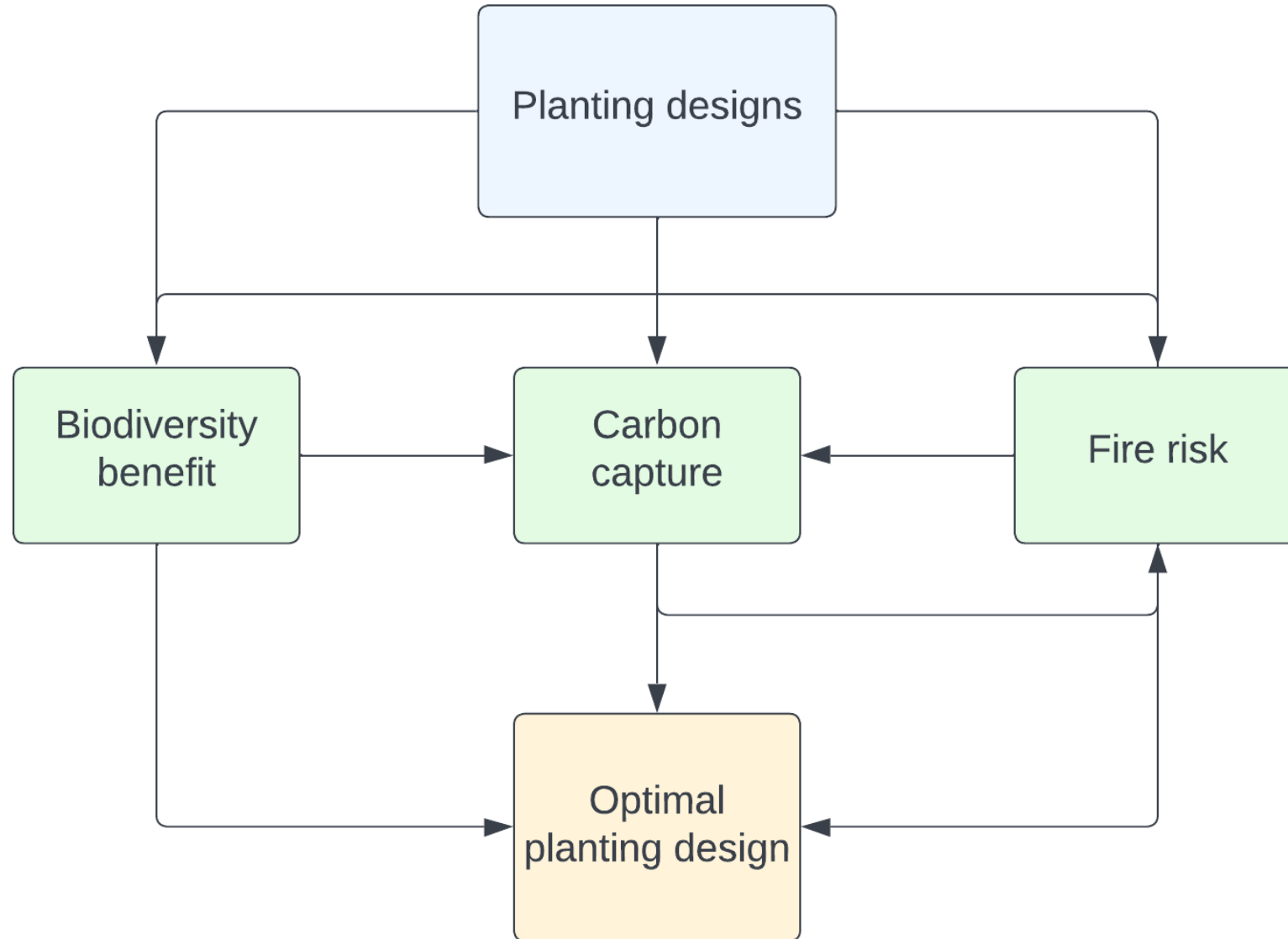
Phase 3

Green Firebreaks under a changing climate

Ongoing

Product development

Phase 4

Demonstration sites

Conceptual framework

Building the model

Influence diagram
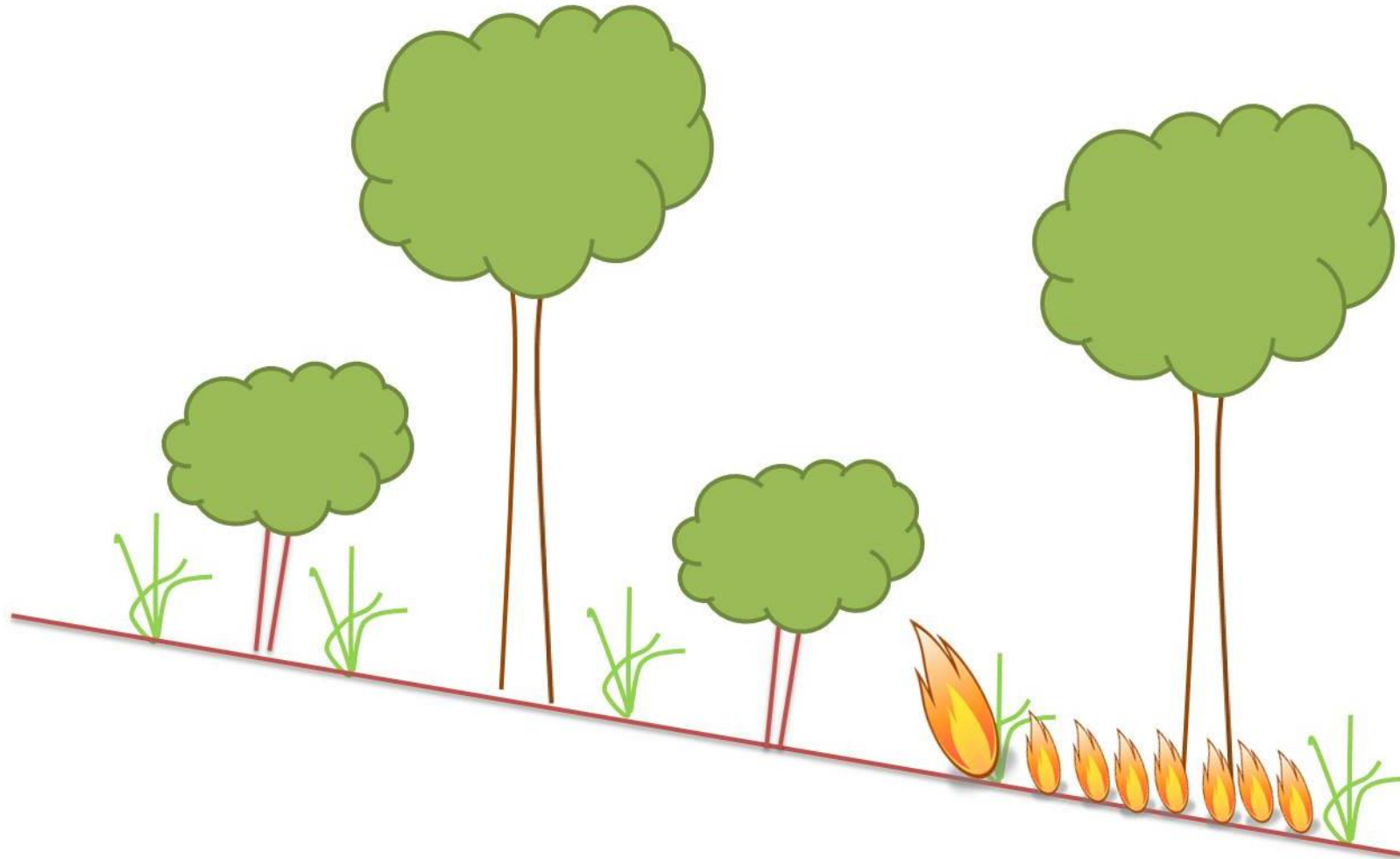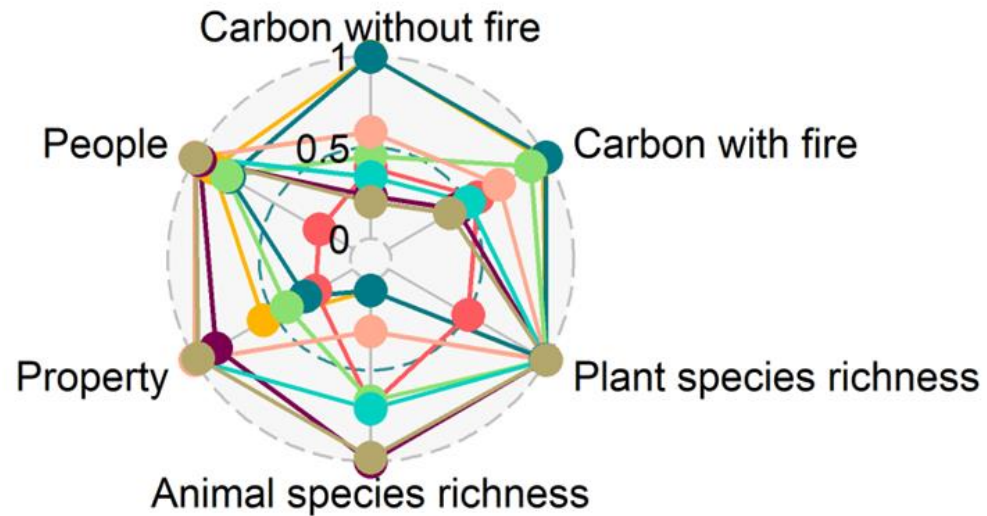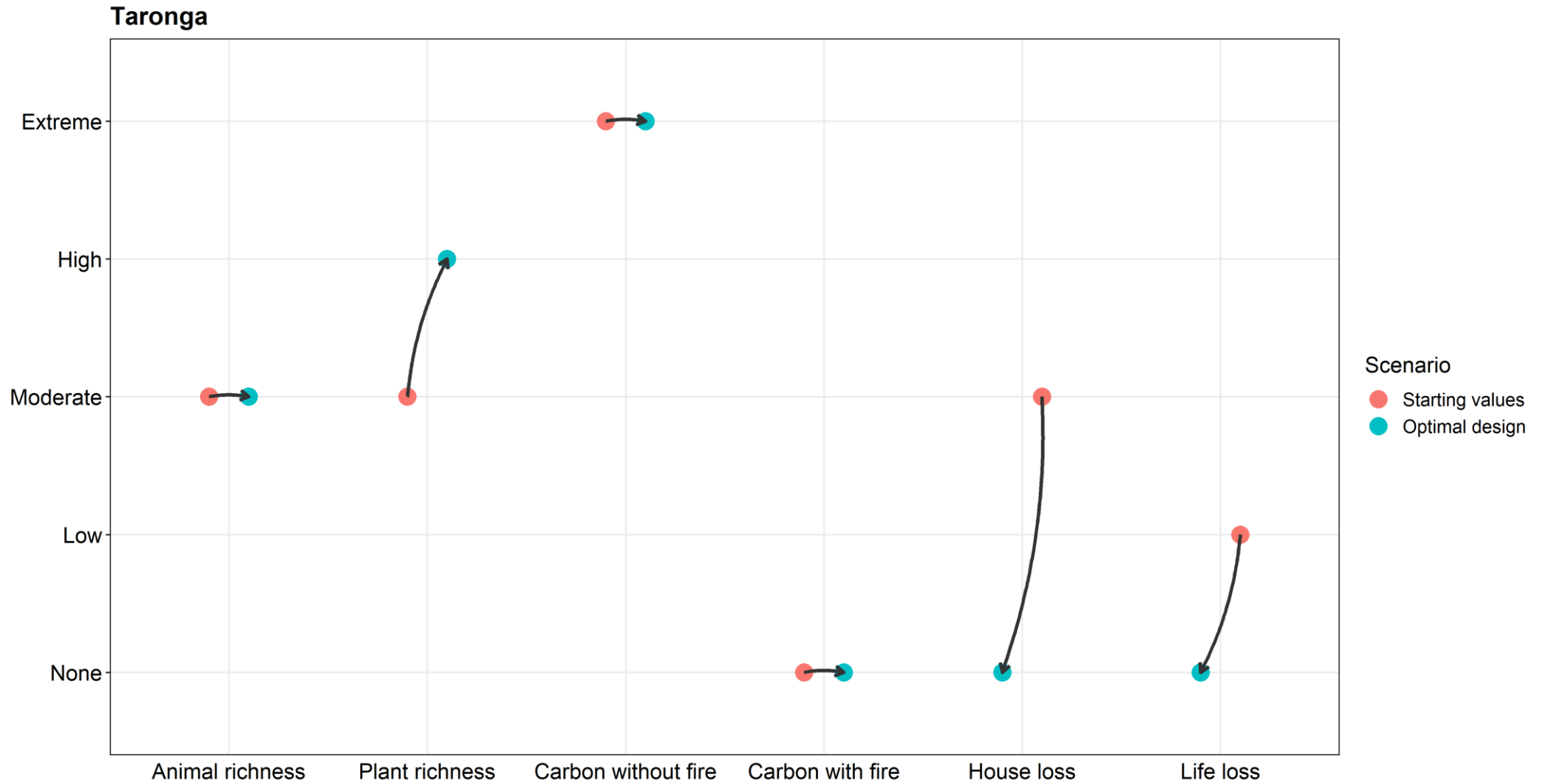
Revegeation ideas

Paradigms

- Best outcomes for people, property and biodiversity tend to be less favourable for carbon and vice versa
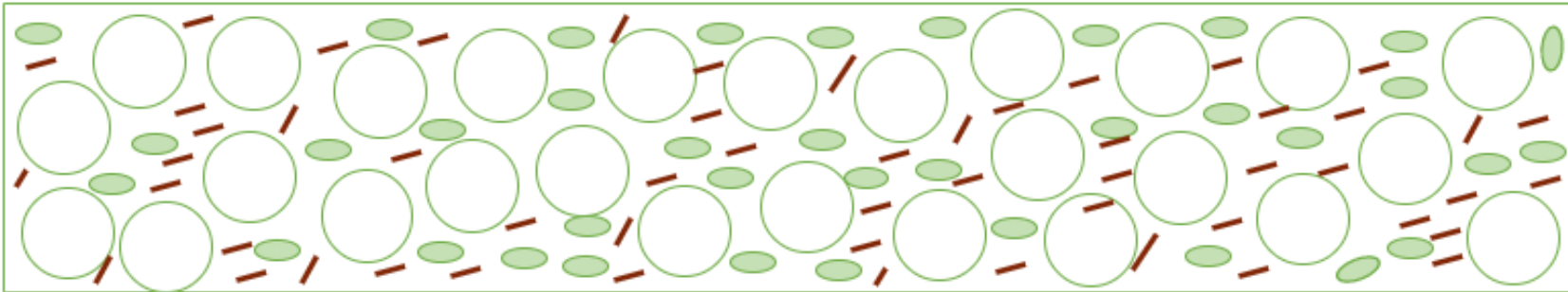- Can prioritise planting designs based on objectives of land managers

Results

Taronga

Planting design for house and life loss

Trees

Shrubs

Ground cover

Attributes of planting design:
- House proximity = 225 m on average
- Linear planting design
- Basal area – 27.5 m squared per ha
- Overstorey cover – 55.2%
- Scattered shrub design
- Shrub cover – 19.8%
- Ground cover – 15 %
- Optimal age – 29 years
- Shrub species richness – Moderate
- Invasive fauna richness – Moderate to Low
- 9.5 hollows per ha

Outcomes

- Changes within the BN after different planting designs are implemented

  - Need to do credible intervals

- We are able to increase benefits to carbon and biodiversity sub-models without increasing risk to people and property

- With refinement private landowners could use this:

  - to revegetate their property,

  - identify attributes which reduce the risk to people and property introduced by revegetation

- Some large points of uncertainty in the conditional probability tables – lack of data resulting in little variation between planting designs

Where to from here?

Landscape testing planting designs
How much is too much or not enough?
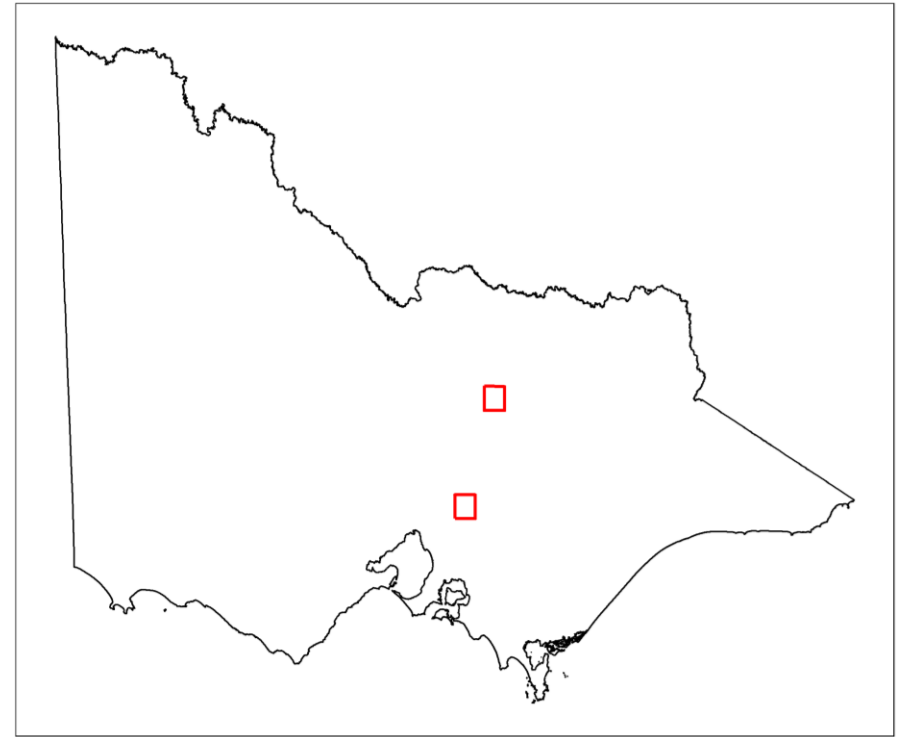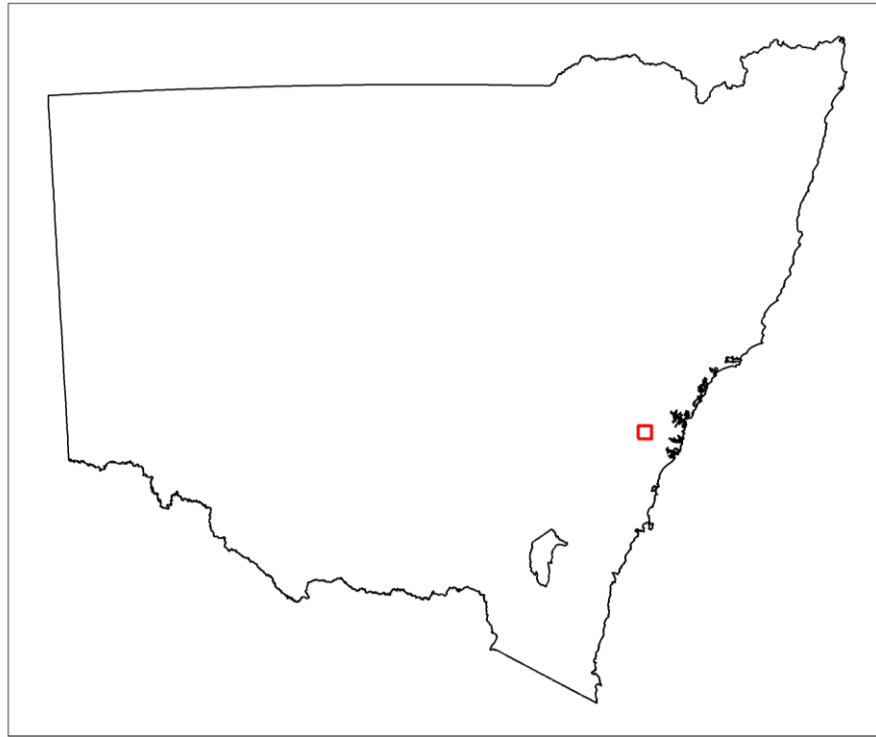
Thank you for listening

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