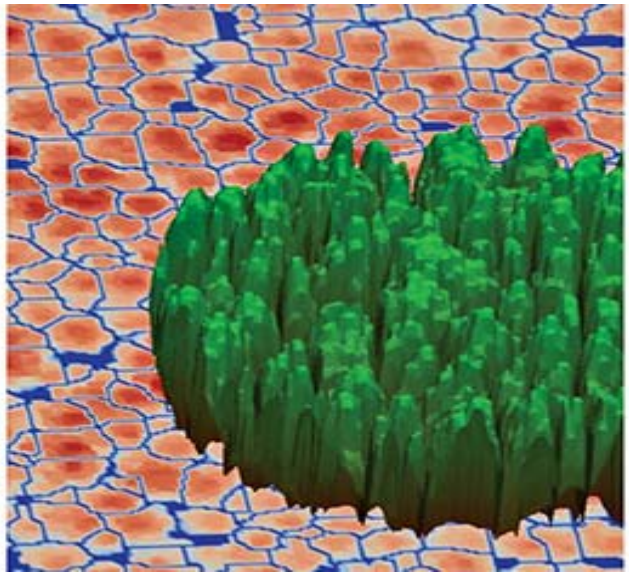
Growing confidence in forestry's future Research Programme

SCION FORESTS | PRODUCTS | INNOVATION

Right forests for the right purpose in the right place – supporting the new one billion trees initiative

Tim Payn



supported by forestgrowers commodity levy

FOREST GROWERS RESEARCH

Acknowledgements

- GCFF programme – Duncan Harrison[1], Barbara Hock[2], Dean Meason, Mike Watt, Richard Yao
- Our Land and Water National Science Challenge: Te Hiku programme - Les Dowling, Tanira Kingi, Juan Monge
- Sustainable Land Management and Climate Change programmes – Andrew Dunningham, Steve Wakelin, Graham West[3]
- Planted Indigenous Forestry slides – Greg Steward
- Climate Slides – Nathanael Melia

[1]Ministry for Primary Industries
[2]Candleford Ltd
[3]Graham West Land Use Solutions Ltd

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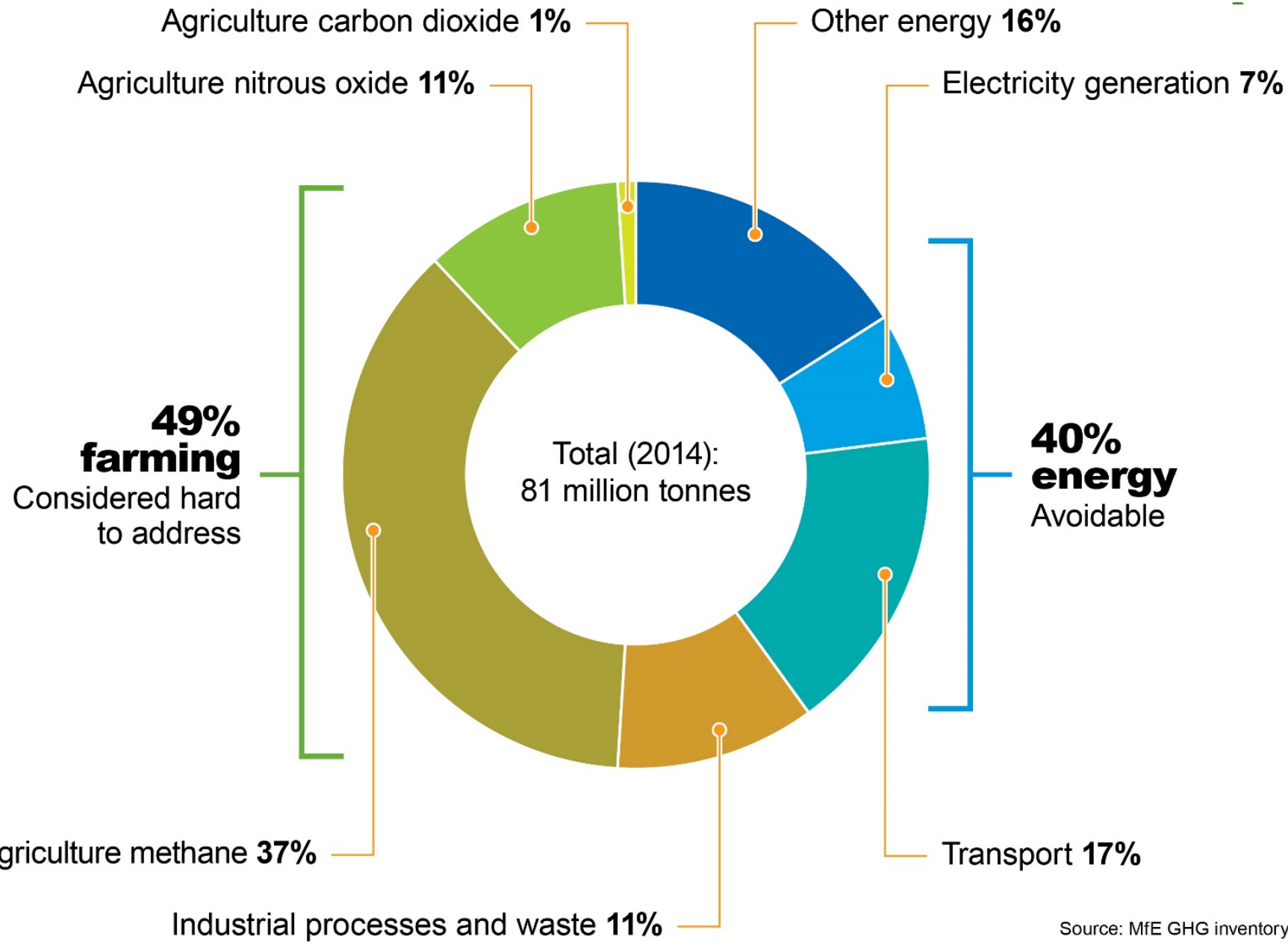
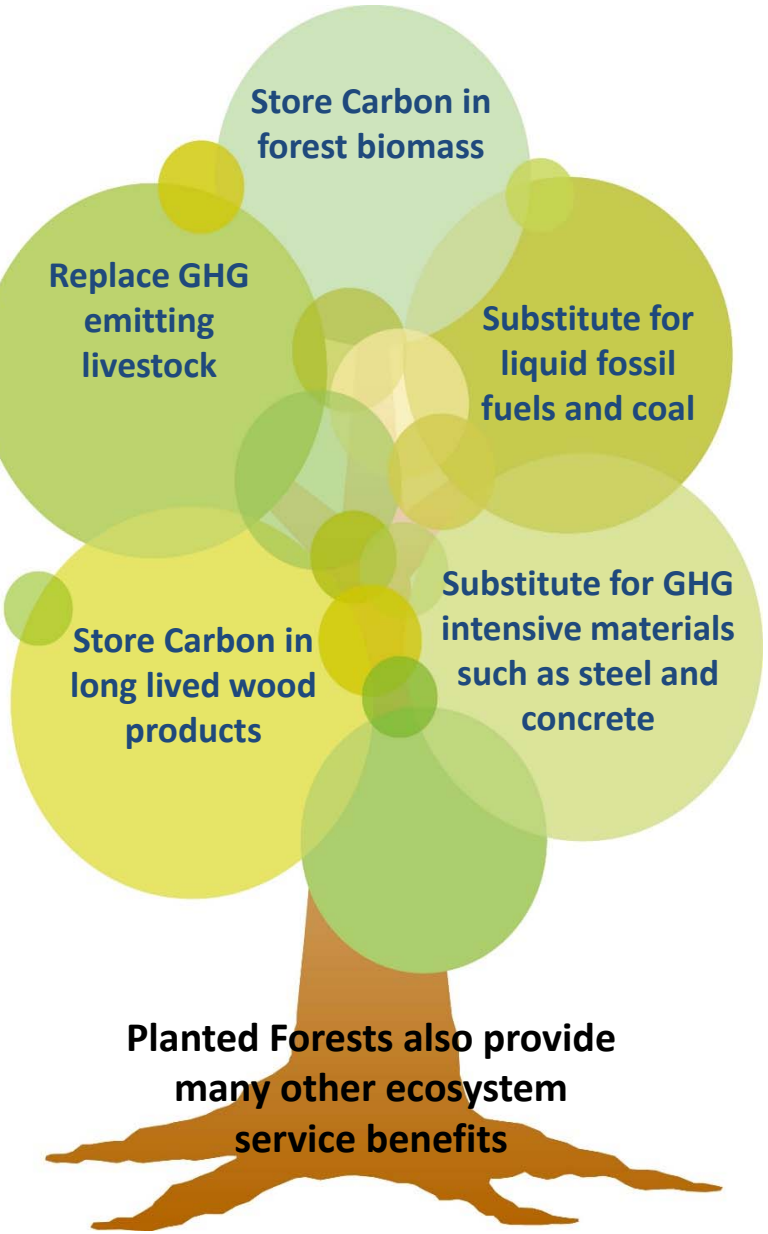


Source: MfE GHG inventory

[2]Simon Up
for New Ze

[3]MfE. *New*

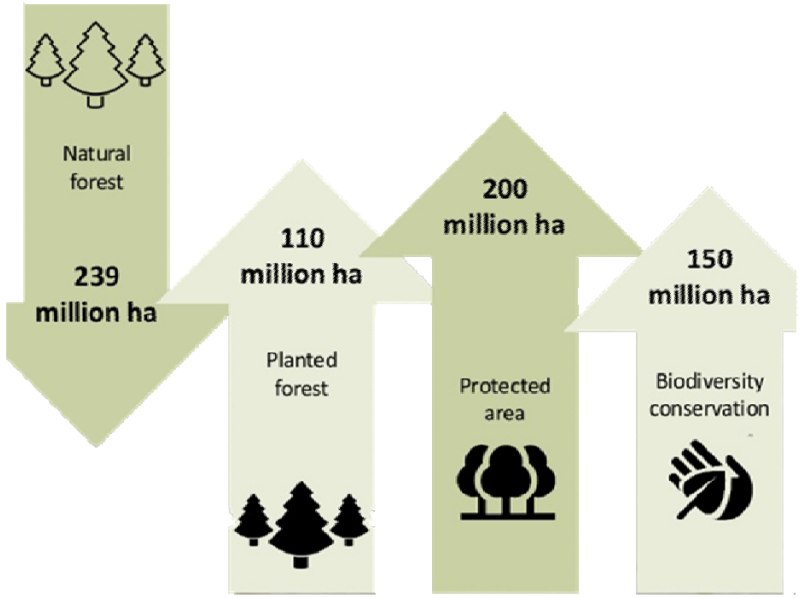
The role of trees and forests in climate mitigation



Planted forest expansion or intensification is a major global climate mitigation opportunity

Pathways to 1.5 °C – "*1 Billion Trees*"

Global Forest Trends



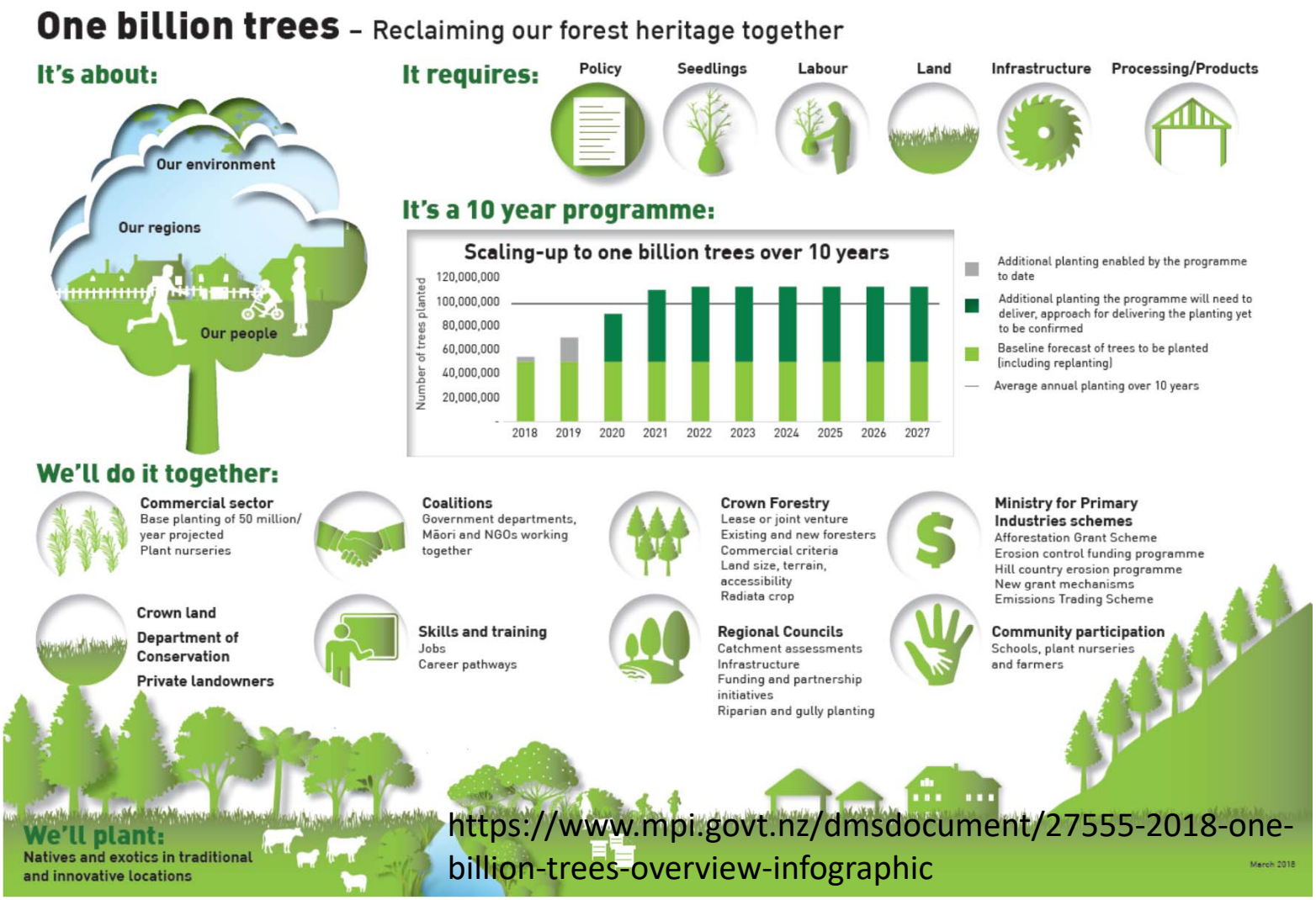
| Afforestation Requirements

- Global forests currently cover ~4,000 Mha. 1.5 °C afforestation[1]:
  - 2050 increase of ~ 5 – 20% required.
  - 2100 increase of ~ 5 – 30% required.
- In 2013, CO_2-e removals by New Zealand's land use and forestry sector reduced total emissions by 33%.[2]
- Planting 'permanent' forest can offset long-lived gases, because the carbon is locked up permanently.[2] The primary reason for 1 billion trees.

[1]Rogelj et al. 2018, Scenarios towards limiting global mean temperature increase below 1.5 ° C. *Nature Climate Change*.

[2]Mfe. *New Zealand's Greenhouse Gas Inventory 1990– 2013*, (April 2015).

1 billion trees will go a long way to meeting our Paris targets



https://www.mpi.govt.nz/dmsdocument/27555-2018-one-billion-trees-overview-infographic

New carbon forests will have many other benefits

INPUTS

Land
People
Values
Plants
Energy
Sunshine
Soil
Water

FOREST

OUTPUTS

Producing
- Timber
- Pulp and Paper
- Energy
- Food
- Water supply
- Biodiversity

Regulating
- **GHG mitigation**
- Water quality
- Erosion control
- Flood mitigation
- Pollution control

Cultural
- Aesthetics
- Wellbeing
- Recreation

$5-6bn/yr

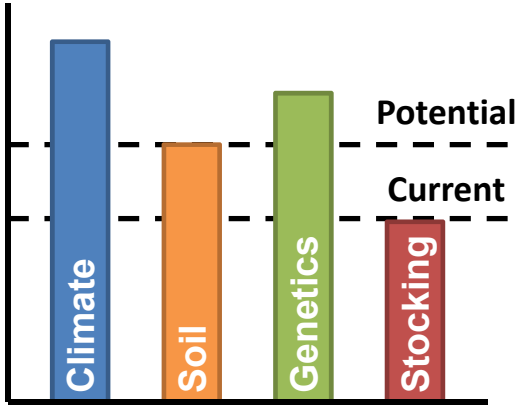
New products, markets, income

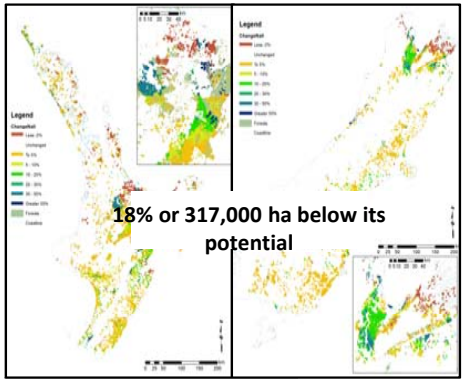
Up to 5 x the timber value

Using our research we can:

Increase the carbon in our existing forests

GCFF programme





Δ Carbon?

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Forest Ecology and Management

journal homepage: www.elsevier.com/locate/foreco

The economic impact of optimising final stand density for structural saw log production on the value of the New Zealand plantation estate

Michael S. Watt[a,*], Mark O. Kimberley[b], Jonathan P. Dash[b], Duncan Harrison[b], Juan J. Monge[b], Les Dowling[b]

[a] Scion, P.O. Box 29237, Christchurch, New Zealand
[b] Scion, Private Bag 3020, Rotorua, New Zealand

Develop new forest types that are quite different to our existing estate

Plantations of indigenous species

Riparians, small woodlots, or wind breaks

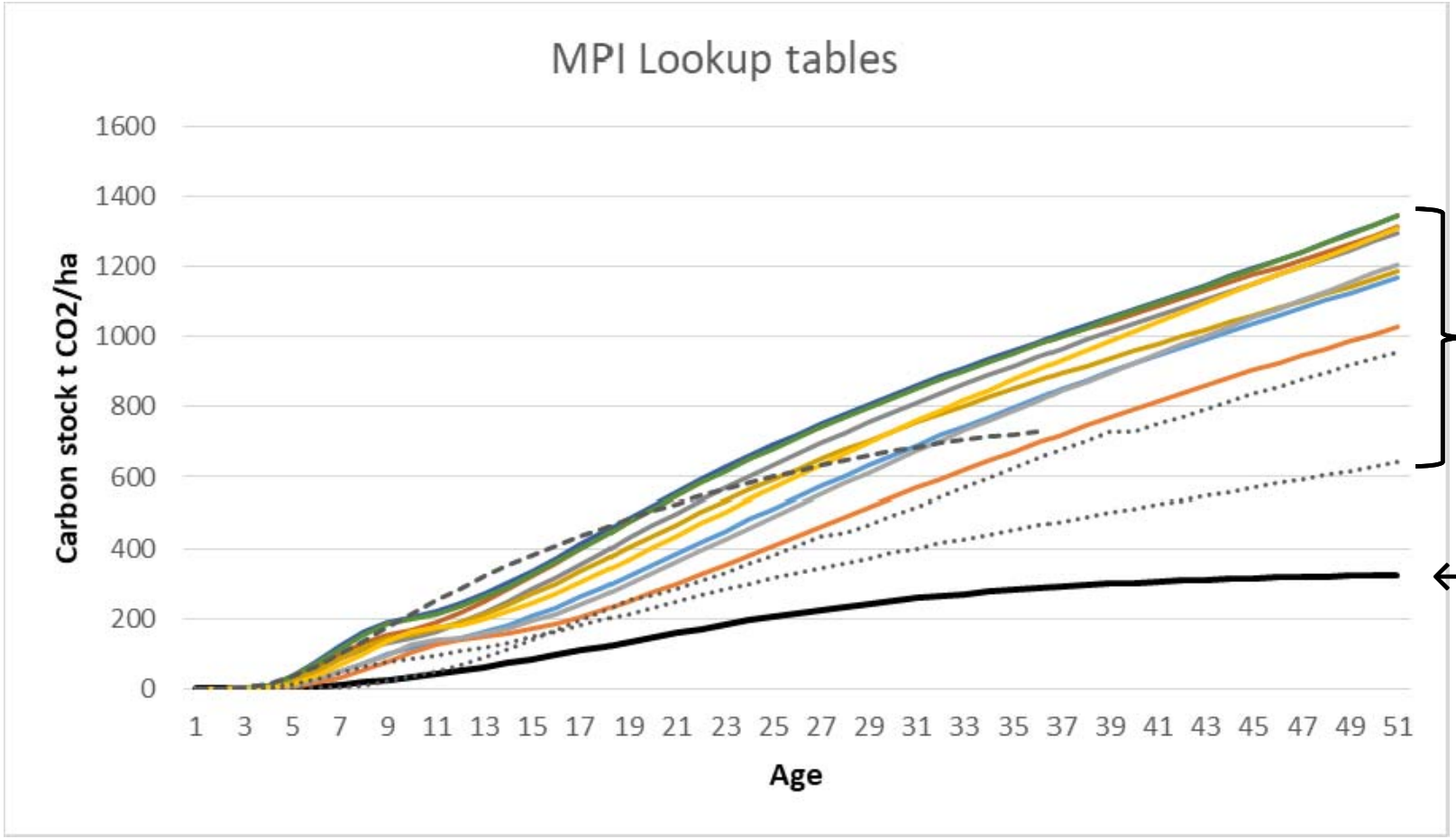
Infill forests

Transition from pine to permanent cover

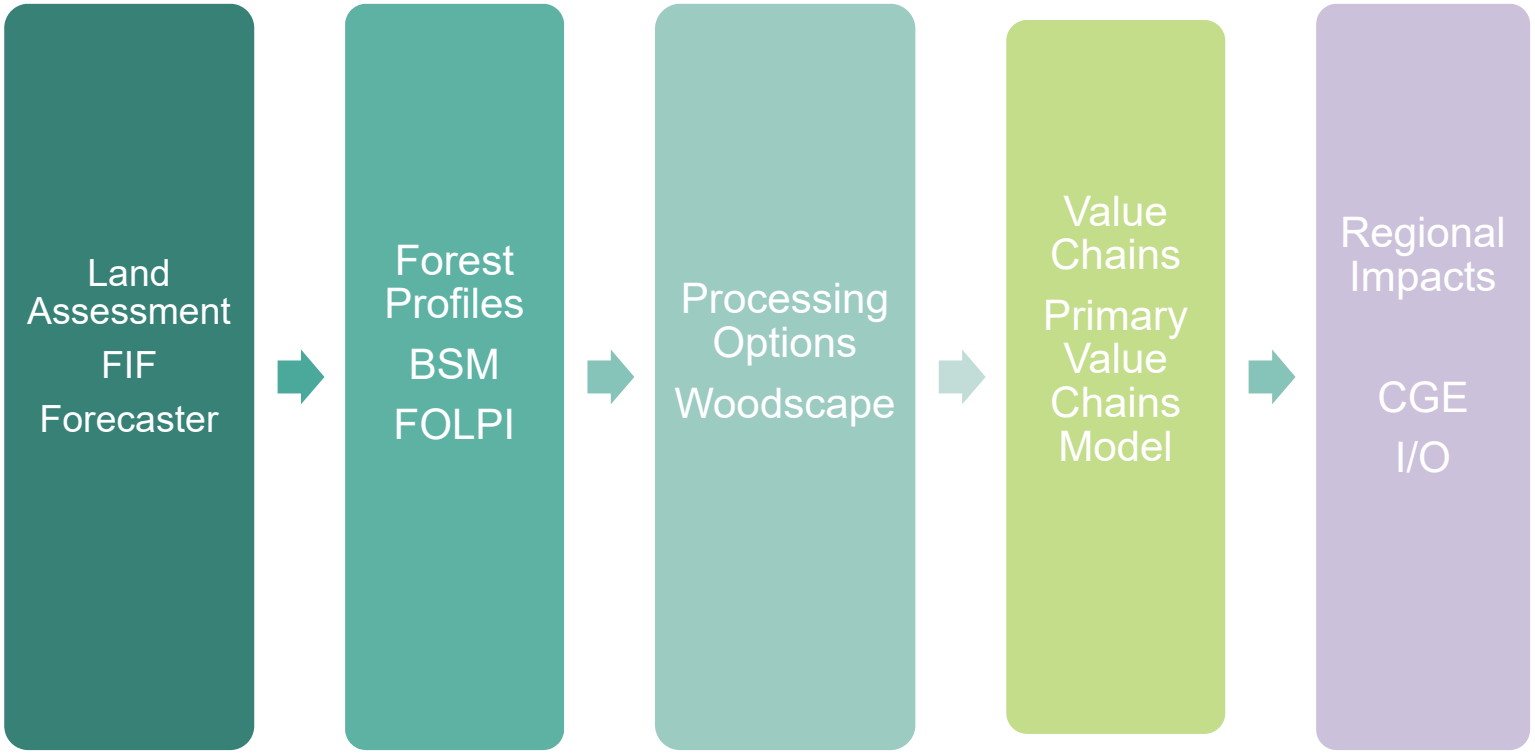
Energy forests

Urban forests

Predict carbon fixation for different species

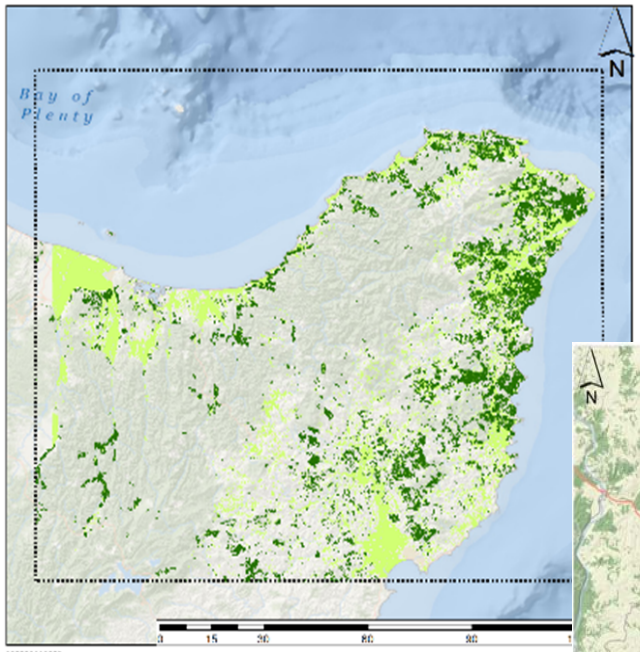


Use frameworks and tools to put the forests in the right place:



SCION

Forest Investment Framework (FIF)



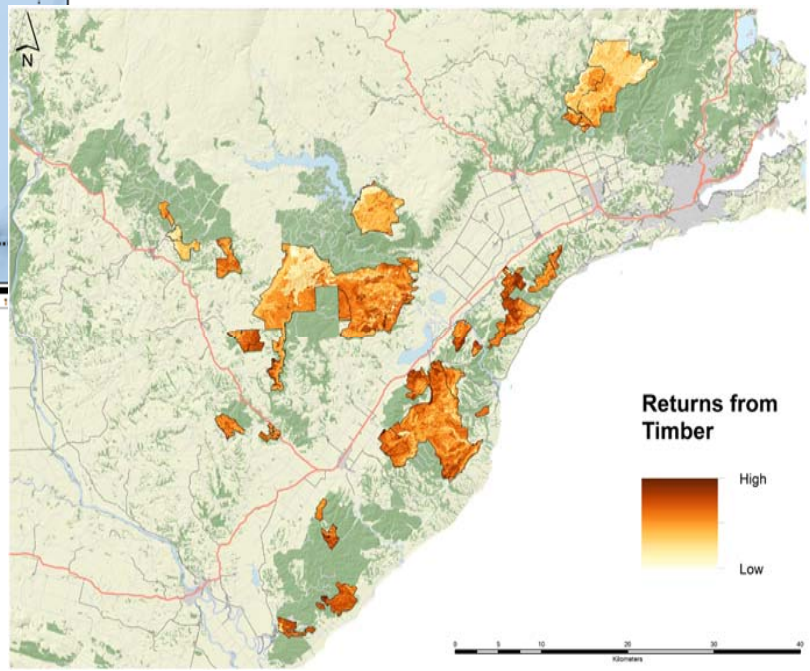
Area of Analysis

Areas Suitable for Intensive Manuka oil

Areas of 'Wild' Manuka/Kanuka

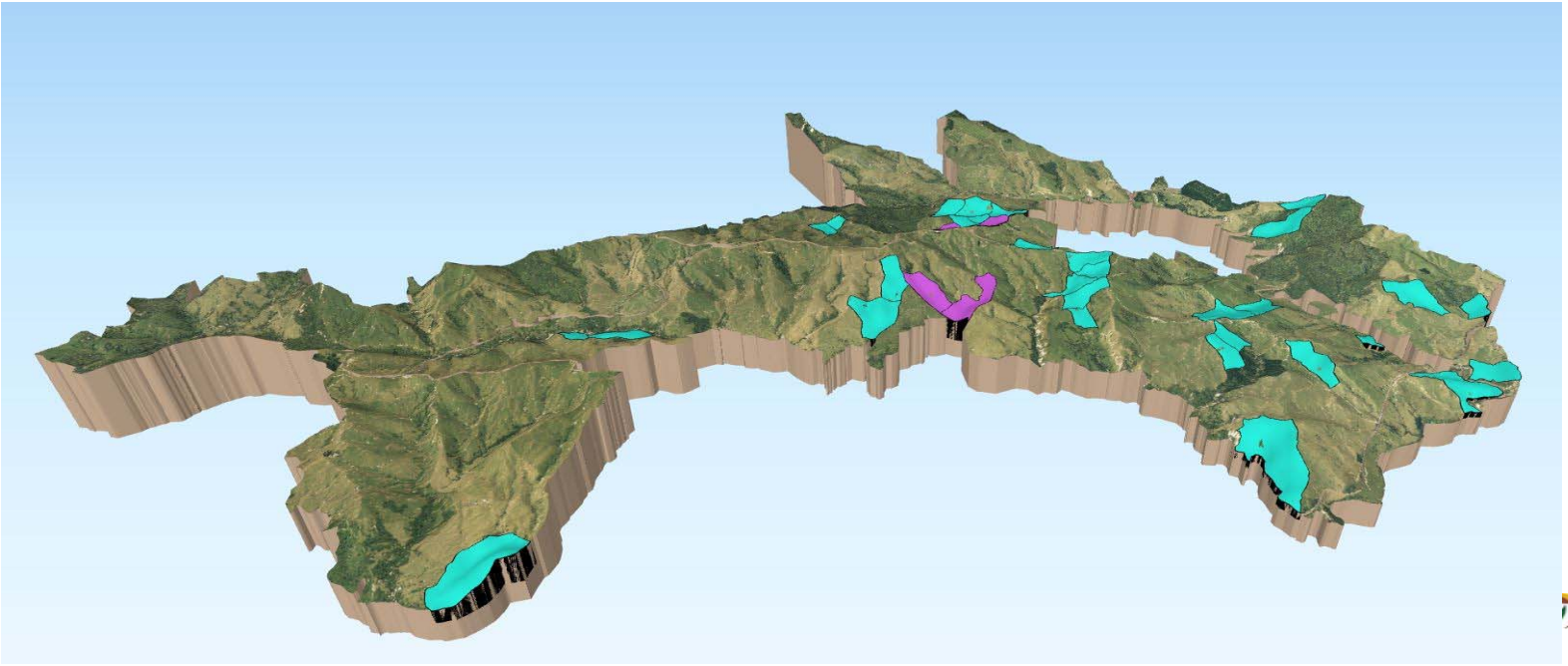
Total Area Suitable for Intensive Manuka Oil:
Approx. 175,000 ha

Total Area of "Wild" Manuka:
Approx. 91,000 ha



Forecaster & FIF

- Match forestry options to land characteristics and geospatial limits (e.g. distance to mills, ports etc.)
- Produce carbon, farm economics and emissions profiles for status quo and proposed land use change
- Integrate into a whole farm assesment – complementary land use



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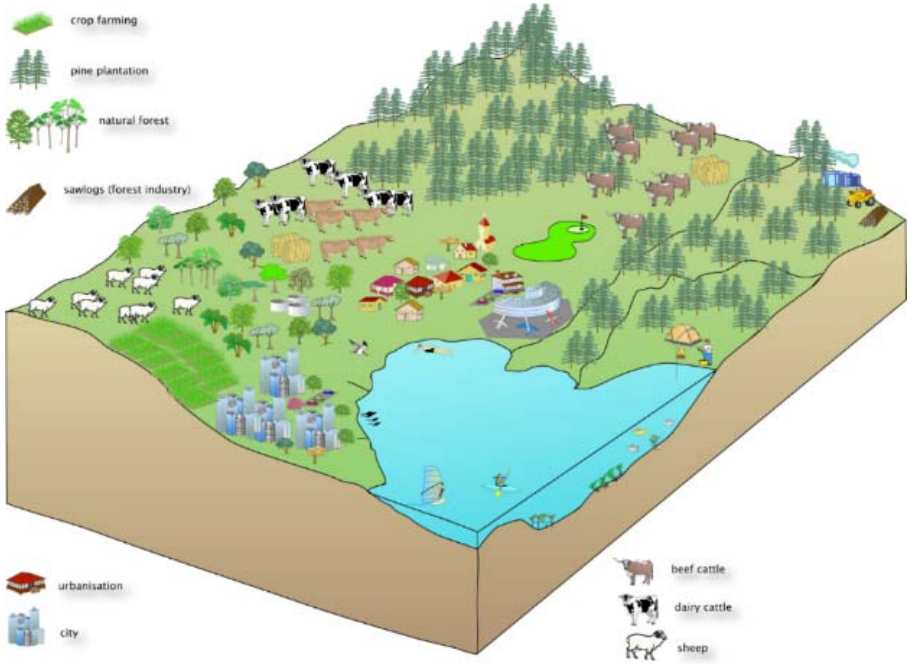

THINGS TO CONSIDER WITH THE BILLION TREES – AVOID TENSIONS, UNINTENDED CONSEQUENCES!

Scientific and Policy Challenges

- Designing new forest types for new lands
- ETS settings to capture maximum carbon
- Integrated land use modelling
  - Multi criteria analysis
    - Spatial and temporal
  - Systems approaches to avoid unintended consequences
    - Application of sustainability frameworks
  - ‘Apples with apples’ economics
  - Complementary land uses
- Forest : Community interface – the human dimension
  - Perceptions
  - Fears and concerns
  - Social License

Thank You!

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