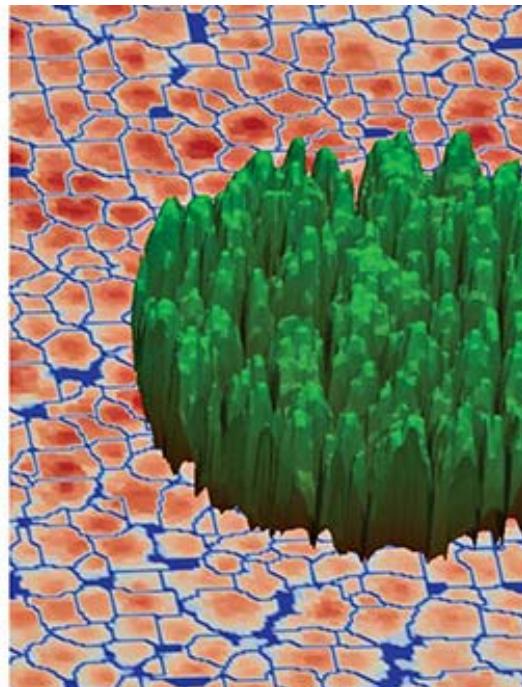
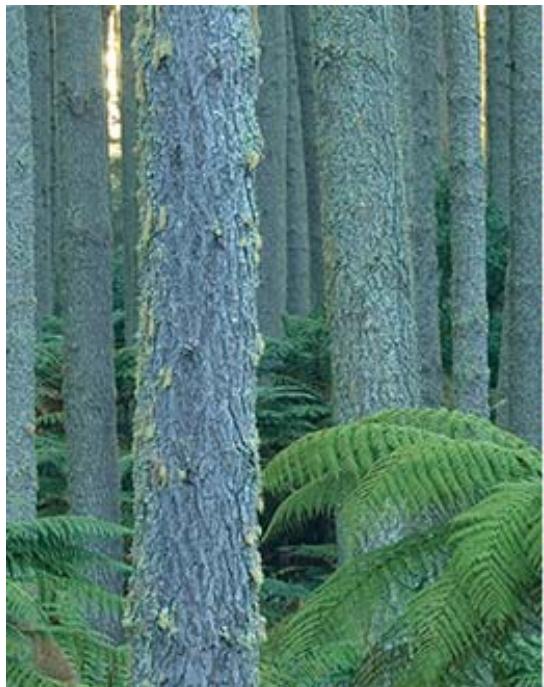


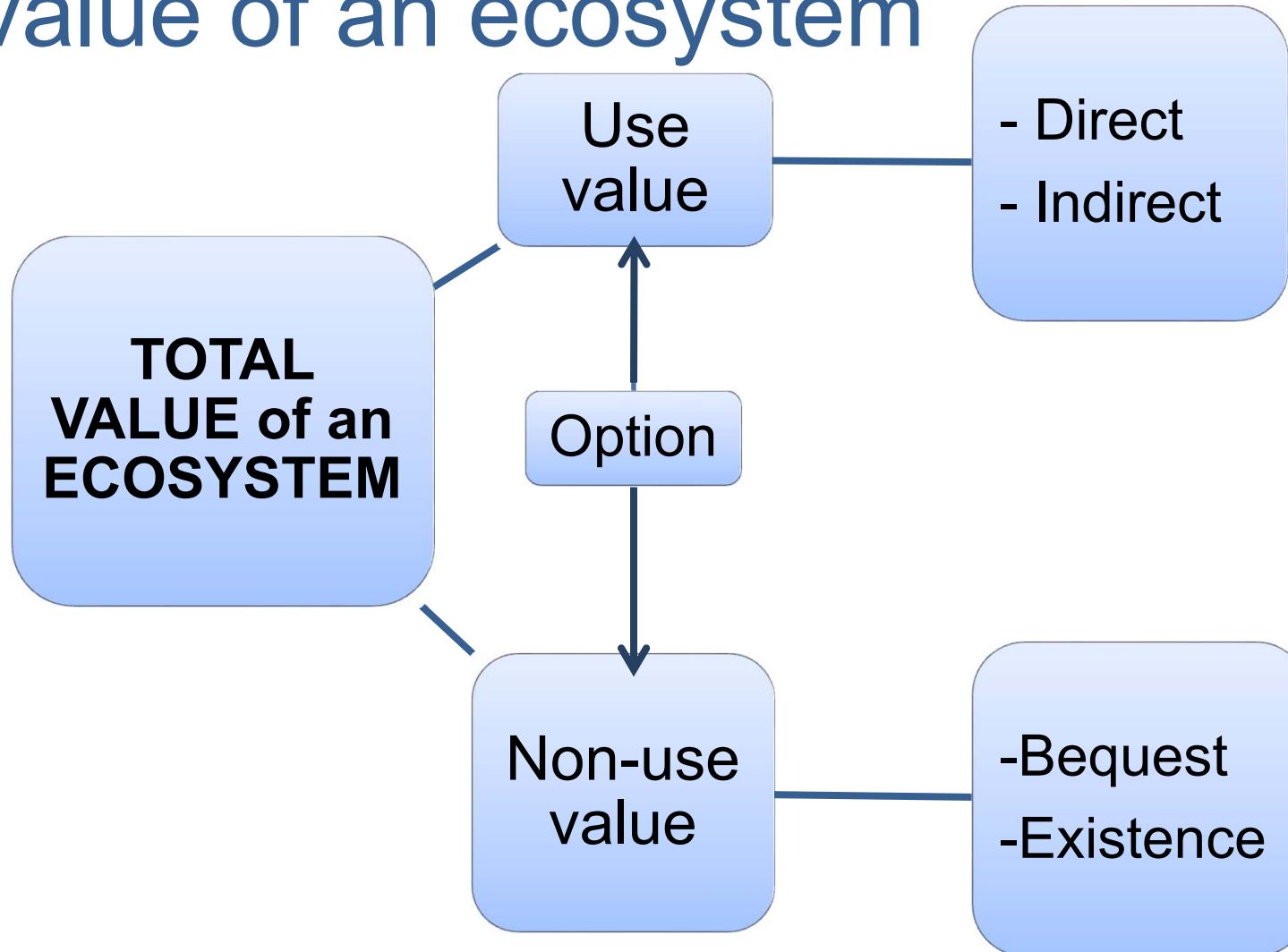
What is the full value of planted forests in New Zealand? The case of Ōhiwa catchment

Sandra J. Velarde & Richard Yao



NOTE: This project was funded by the Bay of Plenty Regional Council, not GCFF.

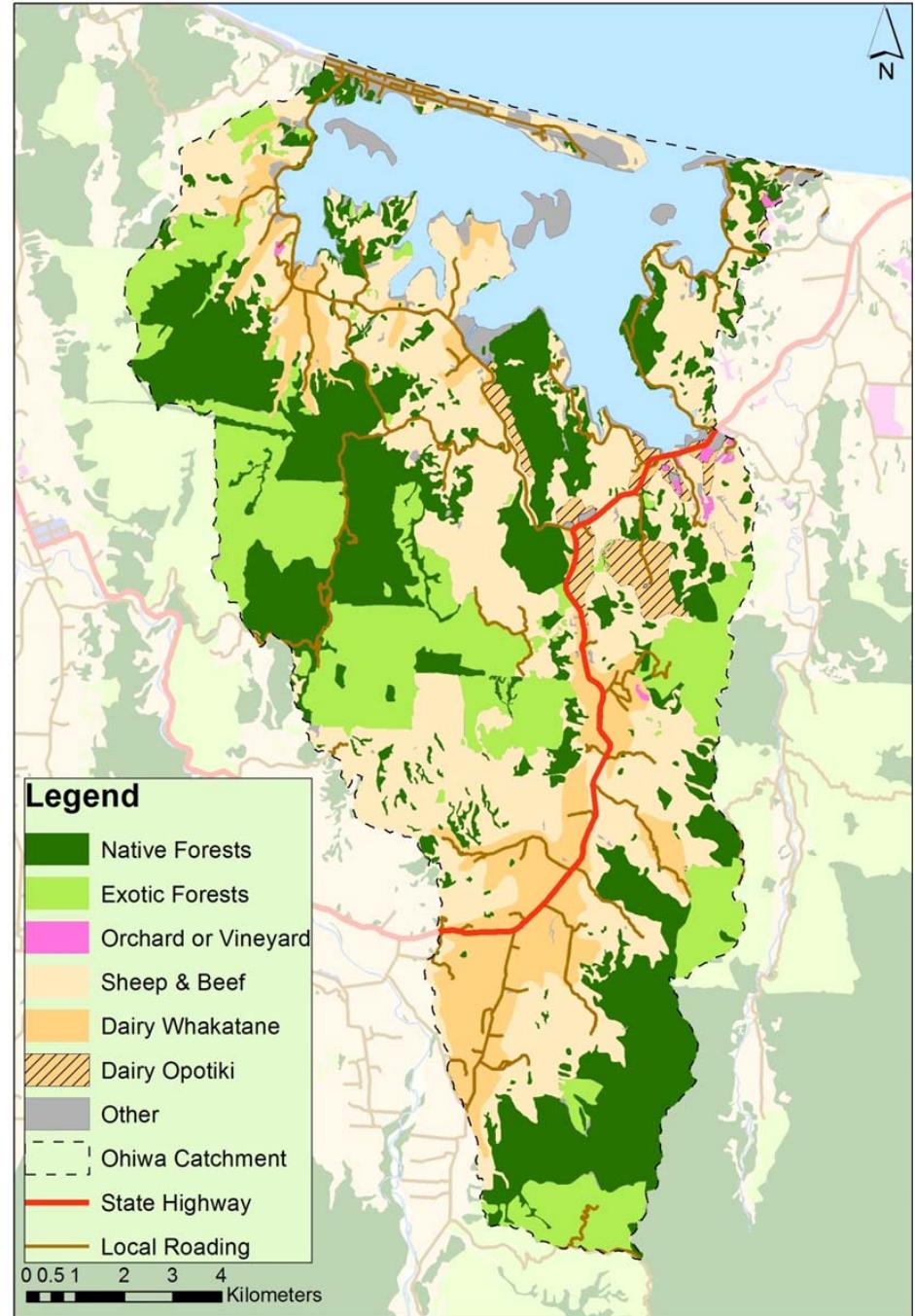
Introduction: The total economic value of an ecosystem



ES for the Ōhiwa Catchment

- ES from key land uses
 - Dairy, S&B, Horticulture
 - **Planted and native forests**
 - Wetlands, indigenous scrub
- Provide indicative ES values for policy discussion.

- Map: Yao, R. T., Velarde, S. J. 2014. Ecosystem services in the Ōhiwa Catchment. Scion: Rotorua. p.7.
<http://www.boprc.govt.nz/knowledge-centre/our-library/consultant-publications/>



Ecosystem services values in the Ōhiwa catchment

| Service group | Items | Productive | | | | Natural | | |
|-------------------------|-------------------------------|------------|----------|-------|------|-------------------|-------|---------------------|
| | | Dry stock | Forestry | Dairy | Hort | Indigenous forest | Scrub | Wetlands/ Mangroves |
| Provisioning | Food, wool, wood, pulp | + | + | + | + | | | |
| Social | Recreation and tourism | | + | | | + | + | + |
| | Species conservation | | + | | | + | + | + |
| Regulating & supporting | Carbon sequestration | - | + | - | | | | |
| | Avoided erosion/sedimentation | | + | | | + | + | + |
| | Nutrient regulation | - | + | - | - | + | + | |
| | Pollination | + | + | + | + | + | + | |
| | Water regulation | + | + | + | | + | + | + |
| | Waste treatment | | + | | | + | + | + |
| | Pest and disease regulation | + | + | + | + | + | + | |
| | Nutrient cycling | | + | | | + | + | |
| | Soil formation | + | + | + | + | + | + | |

Adapted from Yao and Velarde (2014), page 11.

Yao, R. T., Velarde, S. J. 2014. Ecosystem services in the Ōhiwa Catchment. Scion: Rotorua. 38p.

<http://www.boprc.govt.nz/knowledge-centre/our-library/consultant-publications/>

Profit from planted forests

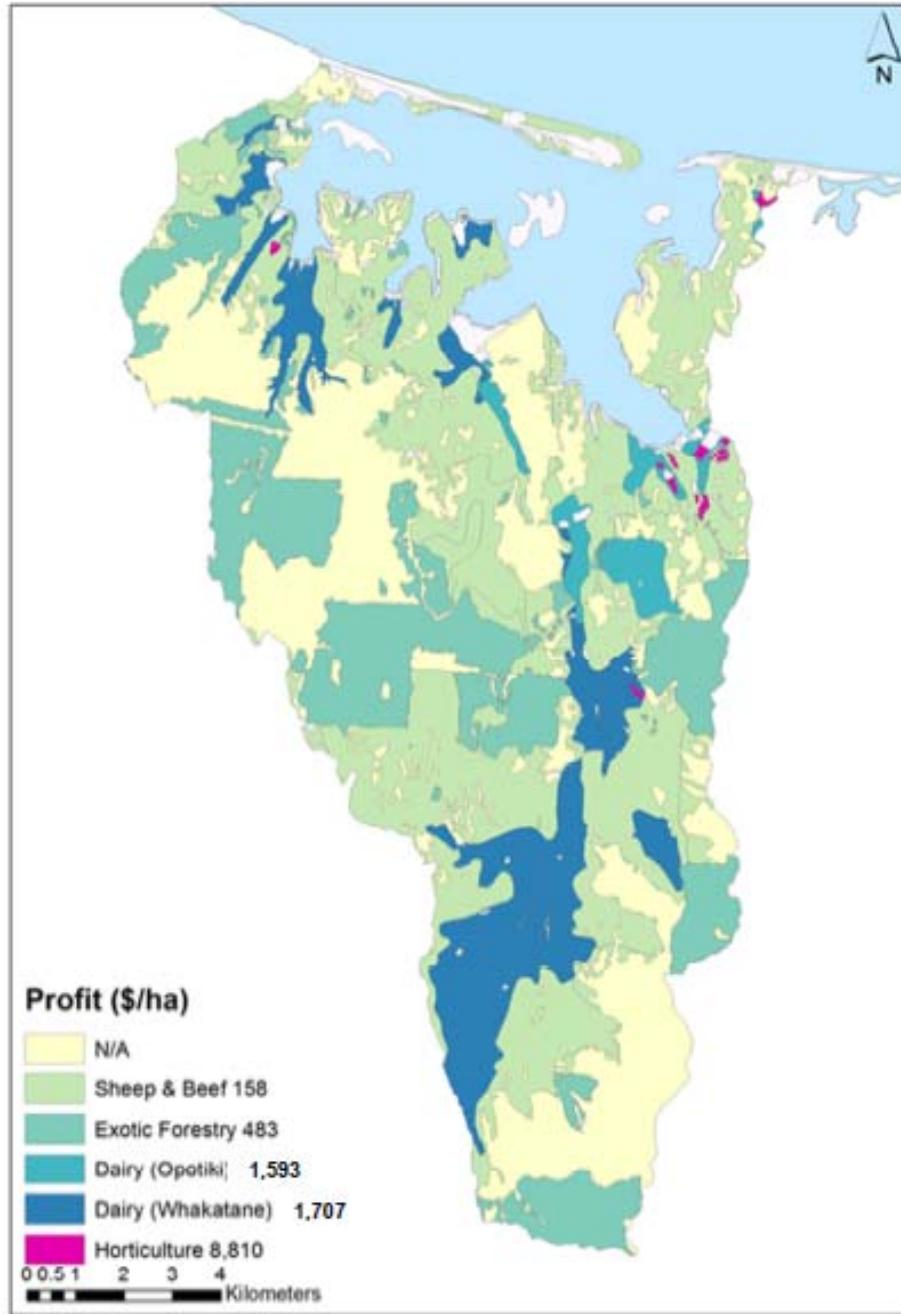
- Forest Investment Finder – spatial economic model
- 28 y rotation
- Profit based on log yields, MPI 12Q average log prices and cost data
- Net present value (NPV) \$/ha

Map showing spatial representation of NPV values (\$/ha) from planted forests in the Ōhiwa catchment which is currently in preparation for publication.

Profit/ha of key land uses

- Median profit per hectare per year
 - Dairy, sheep and beef, horticulture
 - Native forests
 - **Planted forests**
 - Operating profit in 2012\$/ha/year

Map: Yao, R. T., Velarde, S. J. 2014. Ecosystem services in the Ōhiwa Catchment. Scion: Rotorua. p.24. <http://www.boprc.govt.nz/knowledge-centre/our-library/consultant-publications/>



Carbon (C)

- Avg. C emissions & sequestration
 - Dairy = - 9.35 t/ha
 - S&B = - 3.57 t/ha
 - Planted F = +11 t/ha
 - Native F = 0 t/ha
- C price = \$4.40/tonne of CO₂ equivalent

Map showing spatial representation of Carbon values (\$/ha) which is currently in preparation for publication.

Carbon sequestration/ emission and GHG regulation

Dairy = - 16 \$/ha/year

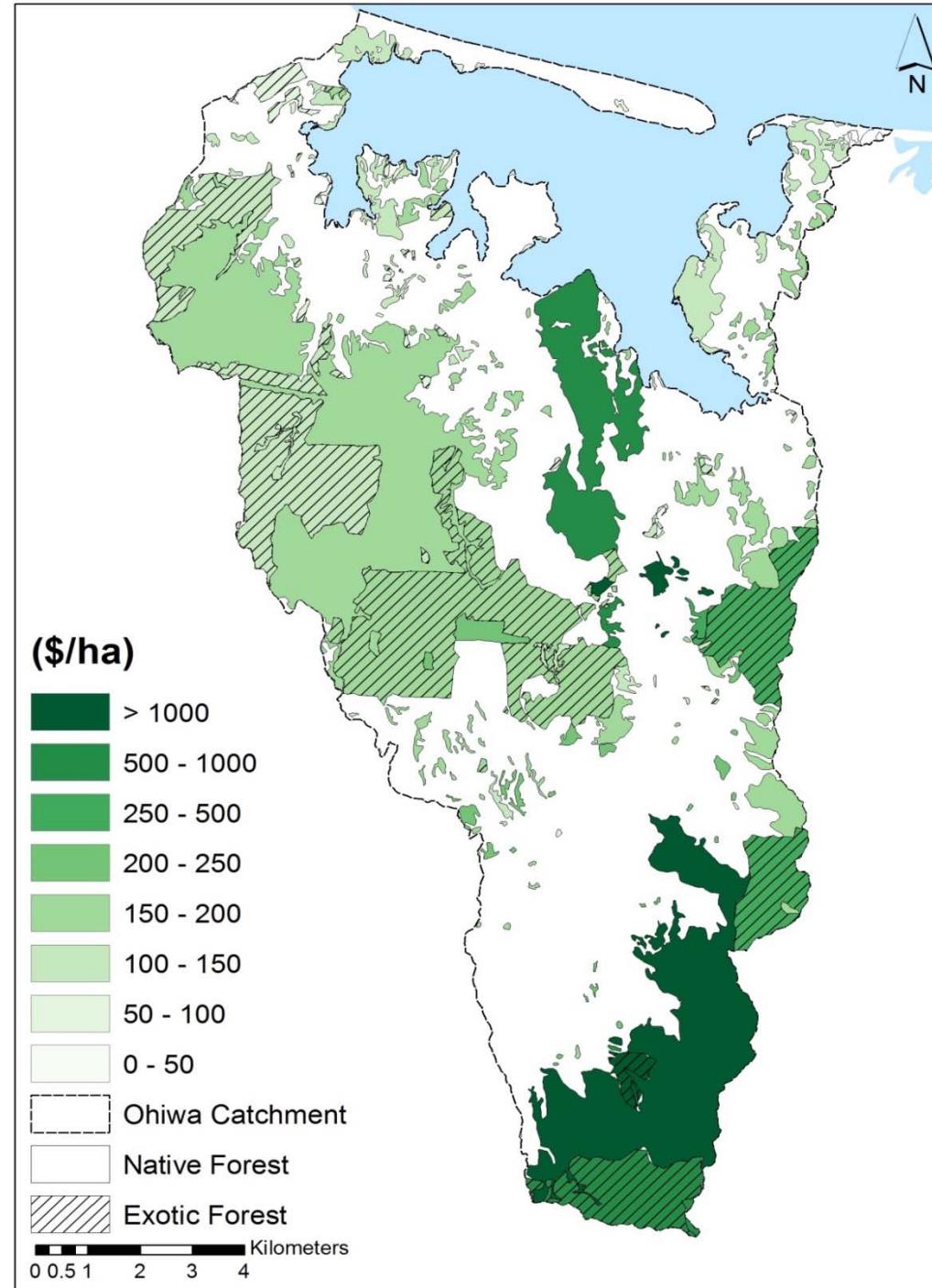
S&B = - 41 \$/ha/year

Planted F = +48 \$/ha/year

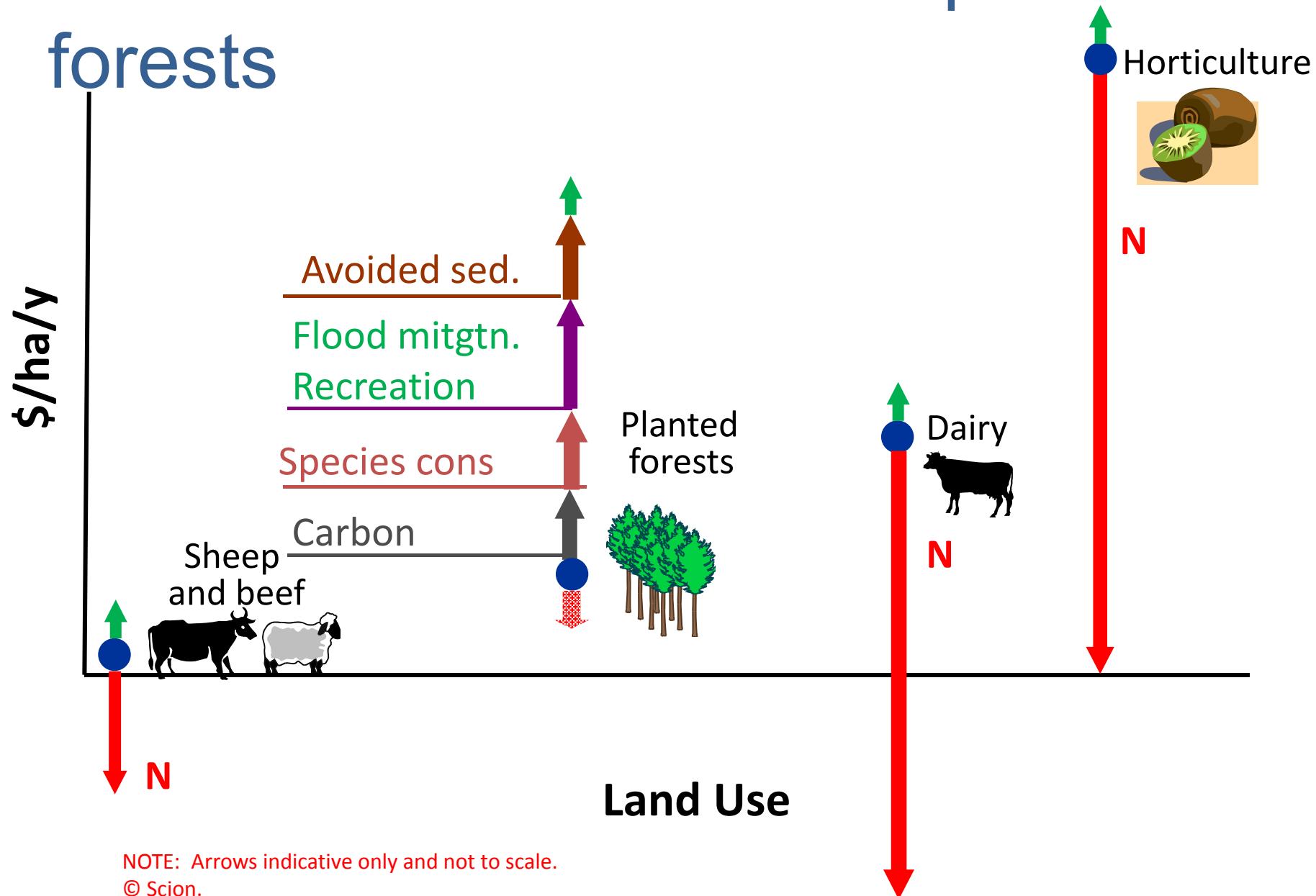
Avoided sedimentation

- Erosion rate
 - Forests < Bare land
 - Native F < Planted F
- Erosion rates estimated using NZEEM
- \$6.40 for every tonne of sediment reduced

Map: Yao, R. T., Velarde, S. J. 2014. Ecosystem services in the Ōhiwa Catchment. Scion: Rotorua. p.30.
<http://www.boprc.govt.nz/knowledge-centre/our-library/consultant-publications/>



Conclusion: Total value of planted forests



NOTE: Arrows indicative only and not to scale.

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