Bioeconomy Science Institute™

Economics and value chain work examples

Karen Bayne
Oscar Montes de Oca
Julio Botero
Melissa Welsh

FICA - Costing Workshop

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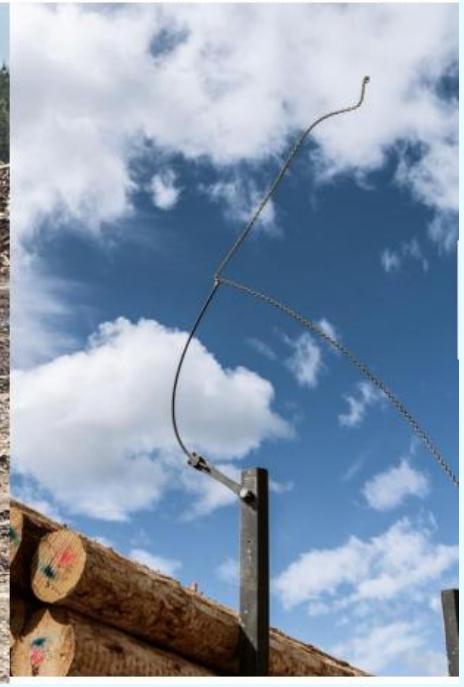
“the harvesting of forest in a number of parts of the country is not actually sustainable unless there is either a reduction in cost, an increase in productivity and/or an increase in the value of logs”.

Techno-economic analysis

Examples of new automated technology developed in the FGR Harvesting Automation programme

Remote Felling Wedges	Automatic Quick Coupler	In Field Mobile Debarker	Automated Log ID	Automated Log Load Securing
				

Staunchfella

- **Smaller Harvesting Machine**
  - Less damaging to soil
  - Needs less open space to operate
  - Less Slash

- **Developing Economic Model**
  - Assuming running costs similar to the Neuson Forest Tracked harvester.
  - Winch assist needed most of the time
  - Not much slower than a typical fixed wrist machine
  - Extra time may be needed for bunching

Automated Quick Coupler

- **Sumitomo 300 base machine**
  - Waratah 624 harvester
  - Ensign 1770 log loading grapple
  - Earthmoving bucket

- **Economic Model showed:**
  - **You don’t aways need a high TRV to be profitable, with the right system.**
  - A QC means less machines, better utilisation and fewer operators and overall reduced costs.
  - The versatility of a QC can make a traditional crew more financially resilient, specially under constrained production environments.

Alternative harvesting

- **Erosion protection driver**
  - Two workshops held with harvesting managers in Nelson and Hawkes Bay
  - investigate radiata small coupe and staged harvesting options

- **Continuous cover forestry transition and ongoing harvest**
  - Doesn't work well with radiata
  - Continuous cover will increase log value with other species, also carbon

  - Tactical plan for redwoods looks promising/ economically feasible

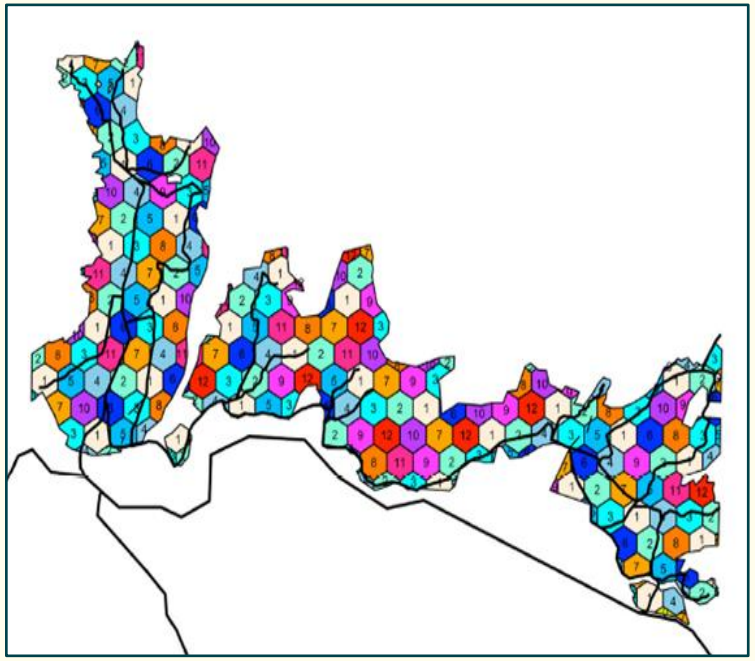

forests

Article

Spatially Explicit Tactical Planning for Redwood Harvest Optimization Under Continuous Cover Forestry in New Zealand's North Island

Horacio E. Bown [1], Francesco Latterini [2], Rodolfo Picchio [3] and Michael S. Watt [4,*]

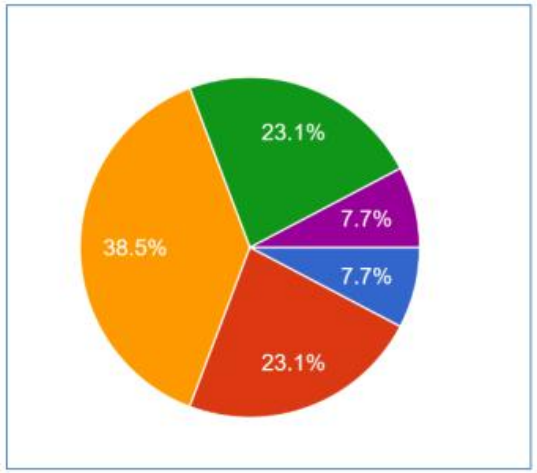
  - Planned work 2026 - establish *more refined* harvest cost assessment and *practical plan* with crews



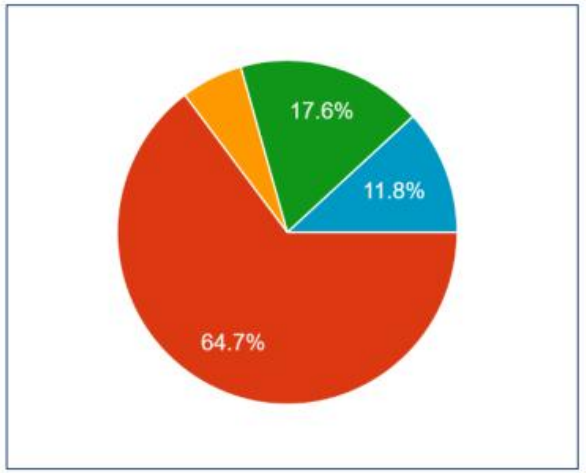
Risk and Benefit Sharing

Work with FICA – Tech Adoption

- **Survey for contractors and industry**
  - What makes it difficult for harvesting contractors to adopt new technology?
    - Hard to finance
    - Existing gear still competitive
    - Contractual arrangements
    - Compatibility with other gear
  - How adequate are day rates as the main driver for contracts in the industry?



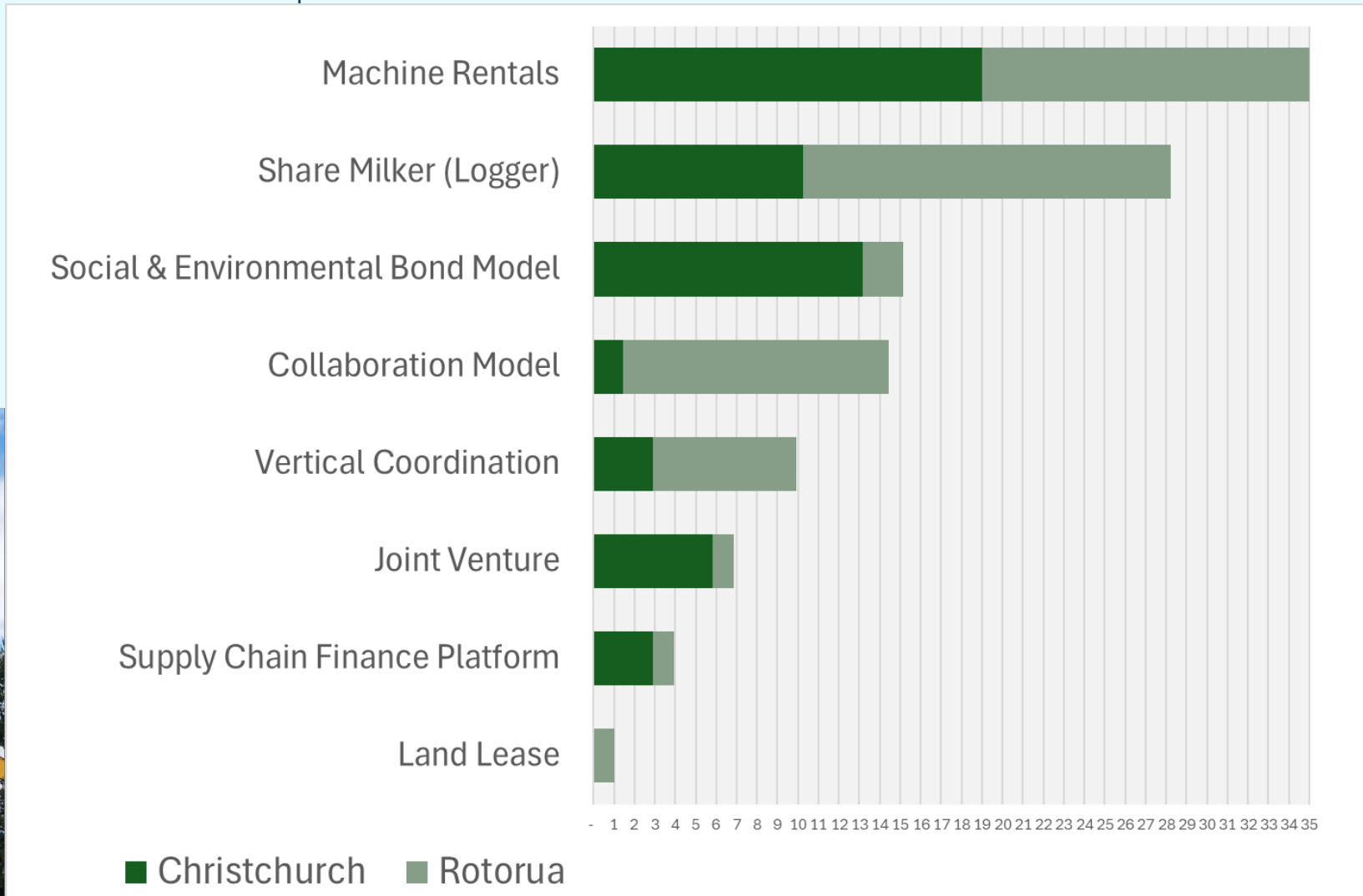
Contractors



Industry

The findings highlight a paradox: contractors are both the primary agents of technological adoption and the most financially vulnerable actors in the value chain.

Alternative Business Models



Workshops findings

- Workshops revealed an industry willing to explore new models.

- There is a lack of clear leadership to drive change.
  - Intermediary organisations—such as industry associations, government agencies, or financial institutions—need to play a bigger role.

- The models presented are intended to:
  - serve as a starting point for contractual discussions between forest companies and contractors.
  - encourage exploration of new approaches to risk-sharing.

Alternative Business Models

- **Machinery Rental**
- Enables access to advanced equipment without requiring full capital outlay.
- Lowers the barrier to entry for smaller contractors
- Supports more agile responses to market and regulatory shifts.
- Requires strong institutional support and long-term contractual frameworks.

- **Sharelogging**
- A more radical reconfiguration of contractor–forest owner relationships.
- Embeds equity-sharing into operational arrangements
- Aligns incentives and fosters longer-term commitment.
- Requires changes in governance
- Requires valuation of non-cash contributions such as standing timber or infrastructure.

- **Alliance Partnership Bonds**
- Sector-wide innovation ecosystems.
- Integrates public finance, private investment, and new types of governance.
- Finances high-risk, high-reward forestry interventions.
- Good model for environmental and social outcomes.
- It requires high coordination and a willingness of government to engage.

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Thank you