

An aerial photograph of a lush green agricultural landscape, likely a rice paddy. The fields are divided into irregular shapes by narrow dirt paths and small clusters of trees. A white geometric outline, resembling a stylized 'A' or a triangle with a horizontal base, is drawn over a central area of the landscape, highlighting a specific region of interest. The overall scene is vibrant green, indicating healthy vegetation.

Integrating Small-Scale Farm Forestry into Australia's Supply Chains: Insights from Simulation and Cost Modelling

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Existing issue for current forestry industry with large supply chain for small-scale landholders

- Restricted product range and pricing flexibility
- Lack of personalised wood selection for customers
- Limited utilisation of secondary by-products or biomass
- Insufficient technical knowledge and service support

Example: small growers facing after 2010-12 ForestrySA forward-sell harvesting rights of Green Triangle plantation

Small-scale forester landholders in the big forestry industry

It's similar to comparing Woolworths supermarkets with small Deli shops



Tantanoola pulp mill closure confirmed

Company News

Fri 16 Sep 2011



Tantanoola pulp mill will close on November 18 (Tash Impey)

abc.net.au/news/tantanoola-pulp-mill-closure/2902276



Share article



Kimberly Clark Australia has now confirmed a south-east pulp mill will close,

Time Here



There are two key theories in supply chain we aim to discuss:

Market Power and Power Dependence Theory

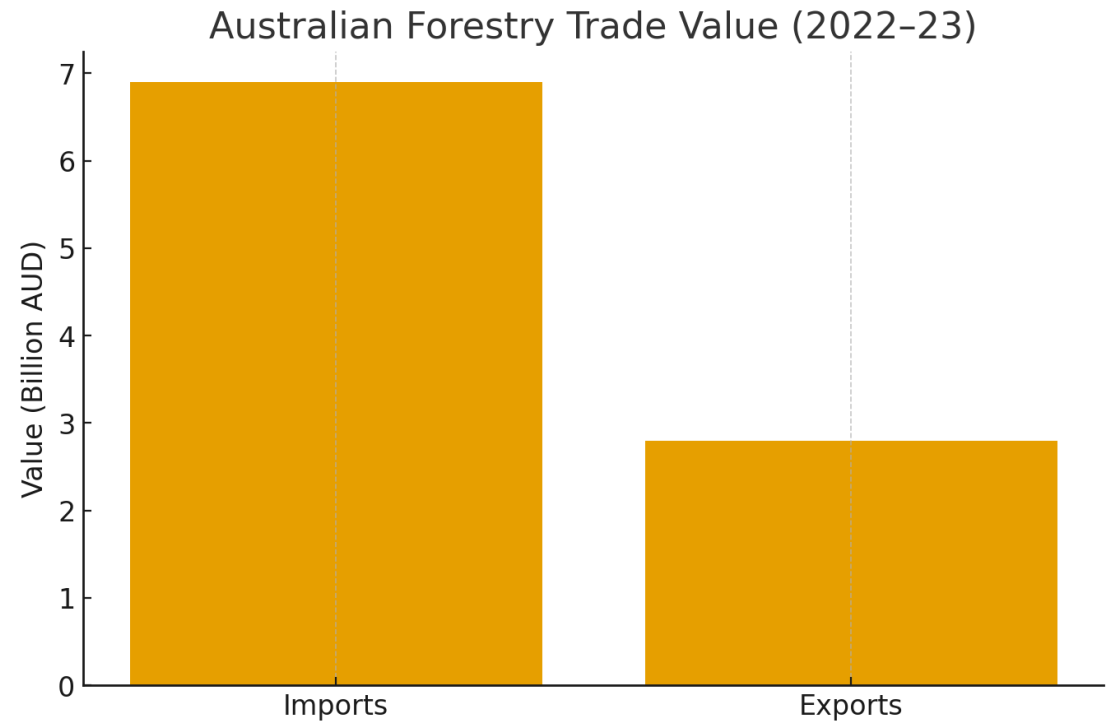
- Large forest-product companies and integrated processors often dominate forest markets. This dominance makes it difficult for smaller growers or new entrants to secure favourable contracts or terms, thereby constraining their autonomy in areas such as **pricing, production volume, and species selection**.

Global Value Chain Governance

- Large processors act as lead firms that **control standards, forestry specifications**, and logistics. Smaller forestry growers often operate under a “captive” governance structure, **characterised by high buyer control**. As a result, value-added activities—such as land planning—are largely concentrated among these dominant firms

Supply Chain Theories

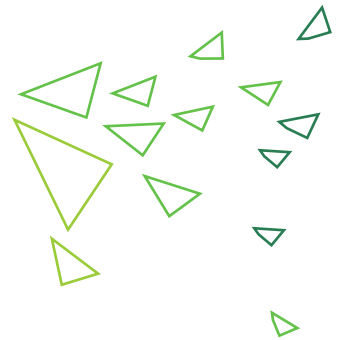
Informing stakeholders for different strategies in the Supply Chain



- **American Oak, American Walnut, American Hard Maple, American Cherry** — used in flooring, joinery, furniture.
- **Western Red Cedar** — often used for cladding, doors or fine joinery.
- **Radiata Pine, Baltic Pine** (softwoods) — used for general construction, framing or building timber.
- **Merbau (also called “Kwila”), Surian/Kalantas**, other tropical hardwoods — used for decking, outdoor joinery.



Mount Gambier in South Australia



The Mount Gambier Forest Reserve, one of South Australia's most vast forested areas, is located in Mount Gambier and is considered a major tourist attraction in the region.

Green Triangle

The "Green Triangle" is one of Australia's major forest regions. It has extensive plantation of softwood and hardwood resources. This triangular area consist of regions in South Australia and Victoria.

The proximity of the forest reserve to Mount Gambier has led to the town thriving in forestry, transportation and agriculture. Hence it is home to many farmers and people engaged in agriculture business

Problems faced by Small Scale Farmers

- What should we grow?
- How much should we grow?
- When should we grow it?
- What profit can we make?
- Where should we sell?

What to grow

- Specialty crops
- Market demand

When to grow

- Seasonal timing
- Crop needs

How much to grow

- Resource limits
- Market balance

Profit potential

- Variable returns
- Niche profits

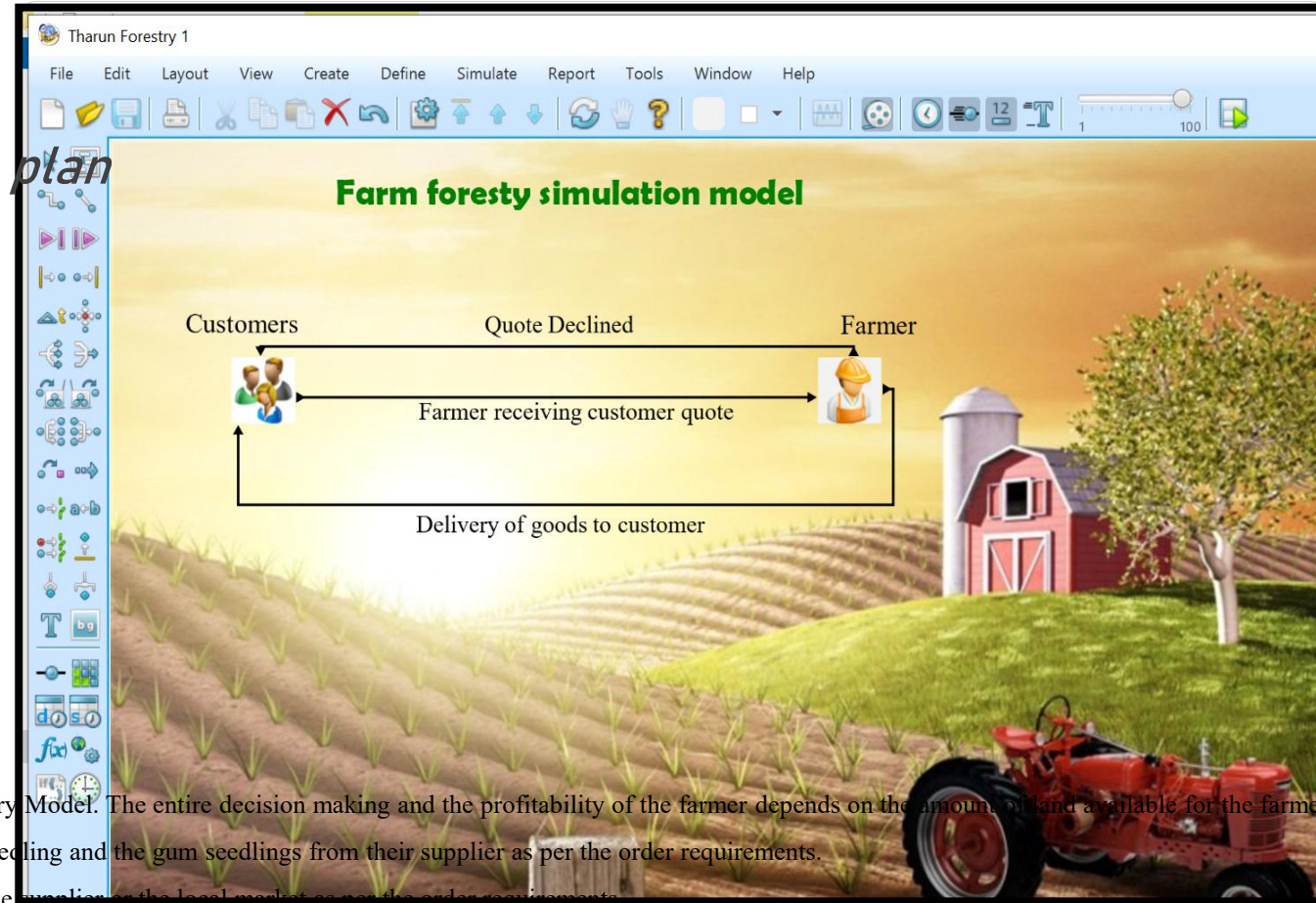
Where to sell

- Direct sales
- Local markets
- Group sales

The Solution:

Developed a Farmer's Model by using Simprocess Software

Farm Forestry Simulation Model for farming activity management plan and cost/profit estimation



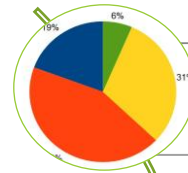
- **Land:** Land is the most important resource present in this Farm Forestry Model. The entire decision making and the profitability of the farmer depends on the amount of land available for the farmer.
- **Pine Seedlings and Gum Seedling:** The farmer purchases the pine seedling and the gum seedlings from their supplier as per the order requirements.
- **Lamb and Young Cattle:** The farmer purchases the livestock from the supplier or the local market as per the order requirements.
- **Thinning and Pruning Process:** These 2 processes represent the labor cost associated with thinning and pruning of the trees.
- **Slaughtering:** This resource is defined to consume the labour cost associated with Slaughtering of the livestock.
- **Fertilizers and Livestock feed:** The fertilizers and livestock feed are required for the healthy growth of trees and livestock. The farmer needs to spent money of this and hence considered as a resource.
- **Tree Felling and Cutting:** The labour cost associated with cutting and felling down of trees is represented using this resource.

Your Logo or Name Here



The simulation process only takes a minute to complete but provide valuable results which is useful for a lifetime..

Features



Land Utilization chart



Profitability Calculation



Different Scenarios

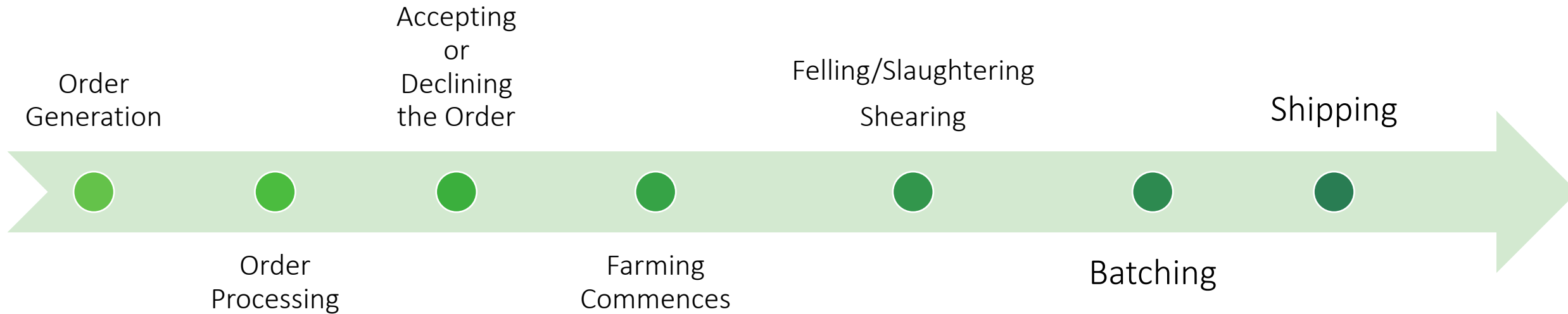


Highly customizable



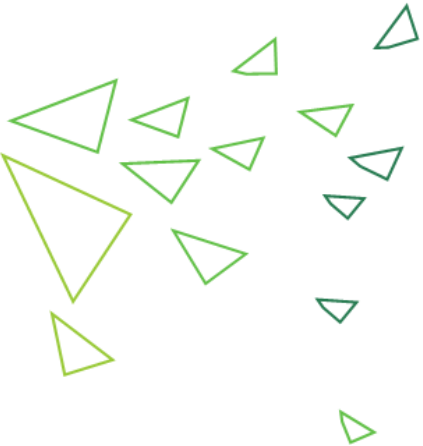
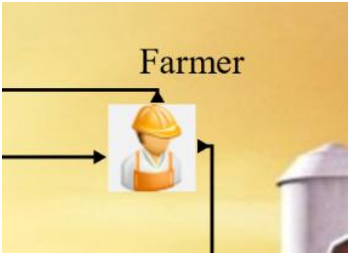
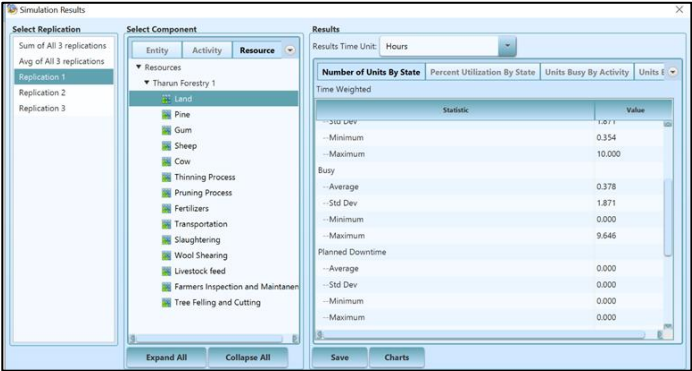
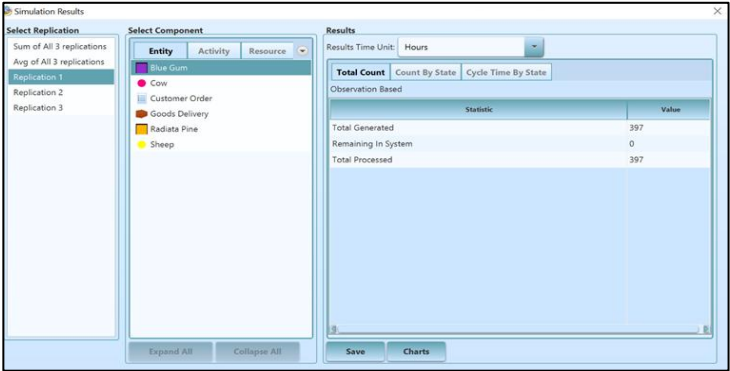
Report for long term planning

Processes in Farm Forestry Simulation Model



- The customer initiates **the farm activities** by sending the order requirements to the farmer
- The order requirement will be processed according the **activities delay time, price and its growing characteristics**
- The order requirements are processed according to **land constraints and other risks accompanied** with the businesses.

Farmer Activities:



For this model, one cycle corresponds to a **period of 25 years**. This means that the number of each product generated during this 25-year period is indicated. Since each cycle spans 25 years, the results are presented in multiples of 25 (e.g., 25, 50, 75, and so on) under four different types of demand.

Base Model	Scenario	Current Price	Pine Tree		Gum Tree		Sheep		Cow	
			Land Occupied	Profit	Land Occupied	Profit	Land Occupied	Profit	Land Occupied	Profit
To be Model 1		1.0.7 x normal price	1.24 hectares	\$ 211,052.00	1.6 hectares	\$ 274,057.00	10.92 hectares	\$ 04,126.00	11.18 hectares	\$ 241,571.40

Farmers can work together to rotate the plantation schedule for annual seedling, pruning, and harvesting.

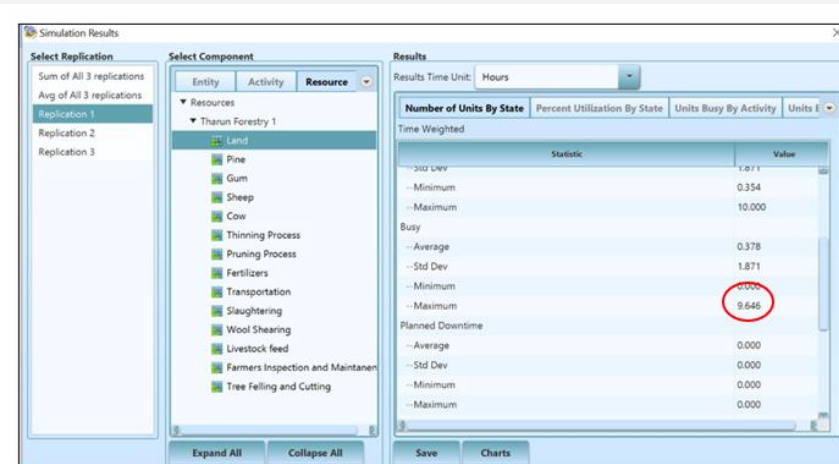
Each of these tasks can enable a small forest service business to operate continuously throughout the year.

Entity : Number Created : Scenario1

Name	Avg	St Dev	Min	Max
Replication 1				
Blue Gum	325.00	187.35	1.00	649.00
Cow	54.50	31.18	1.00	108.00
Customer Order	6.00	3.16	1.00	11.00
Goods Delivery	1.50	0.50	1.00	2.00
Radiata Pine	409.00	235.85	1.00	817.00
Sheep	72.50	41.57	1.00	144.00
Replication 2				
Blue Gum	373.00	215.06	1.00	745.00
Cow	44.00	25.11	1.00	87.00
Customer Order	6.00	3.16	1.00	11.00
Goods Delivery	1.50	0.50	1.00	2.00
Radiata Pine	433.00	249.70	1.00	865.00
Sheep	65.50	37.53	1.00	130.00

Collaboration

You can run a business solely focused on harvesting.



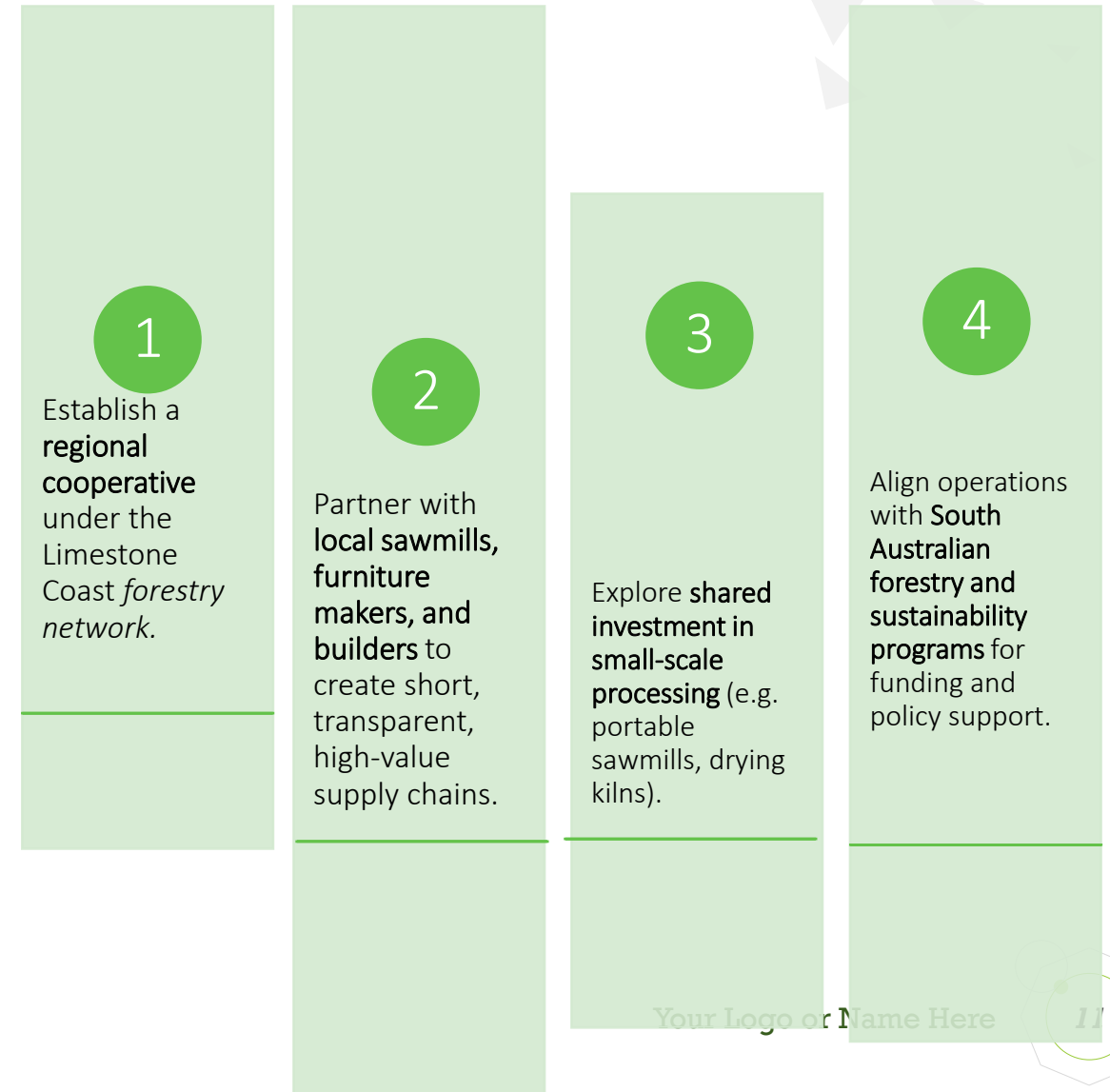
or Name Here

Recommendations

Collaborative Business Model

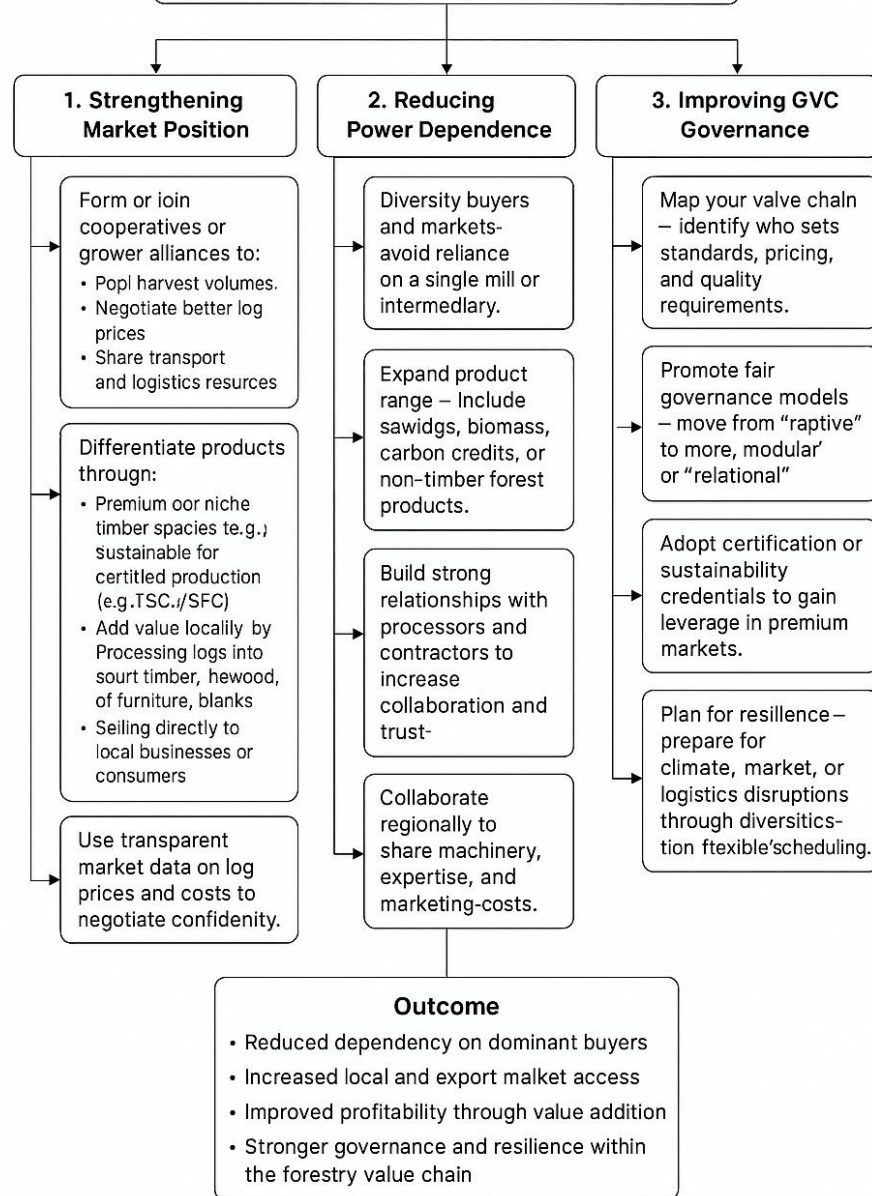
- Diversity income stream
- Integrated farm system
- Collaborative with other farmers
- Niche or High Value crop production
- Value added processing
- Educational framing

Mount Gambier–Specific Actions



Strategic Recommendations for Small-Scale Foresters In Mount Gambier

Addressing Market Power, Power Dependence, and Global Value Chain (GVC) Governance



Suggested Framework for Small Scale Foresters

