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‘OUR MORAL RESPONSIBILITY’: AUSTRALIA’S BEEF INDUSTRY UNDER PRESSURE OVER DEFORESTATION AS ELECTION LOOMS

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‘OUR MORAL RESPONSIBILITY’: AUSTRALIA’S BEEF INDUSTRY UNDER PRESSURE OVER DEFORESTATION AS ELECTION LOOMS

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TABLE OF CONTENTS

01 Article Summary

02 Relevance

03 Brief Literature Review

04 Analytical Application of a Theoretical Model

05 Discussion: Social Desirability & Policy Implications

06 Conclusion

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SUMMARY

- By the **end of 2025**, exporters must prove their products sold in the EU **aren't from deforested land since December 2020**
- Scientists say **reforestation does not equate to old-growth loss.**
- **Conflict over definitions** of what counts as ‘deforestation’ versus regrowth.
- **Incentive-based regulation:** Supermarkets commit to deforestation-free sourcing, promoting sustainability through Corporate Social Responsibility, and taking accountability.



RELEVANCE

- **EXTERNALITIES**: Deforestation in beef farming creates **negative** environmental impacts not reflected in beef prices, leading to a trade-off between economic gains and environmental degradation.

- **COST-BENEFIT ANALYSIS**: Businesses weigh sustainable practice costs against benefits like compliance and consumer demand. Key deforestation drivers include cattle, timber, and cocoa.

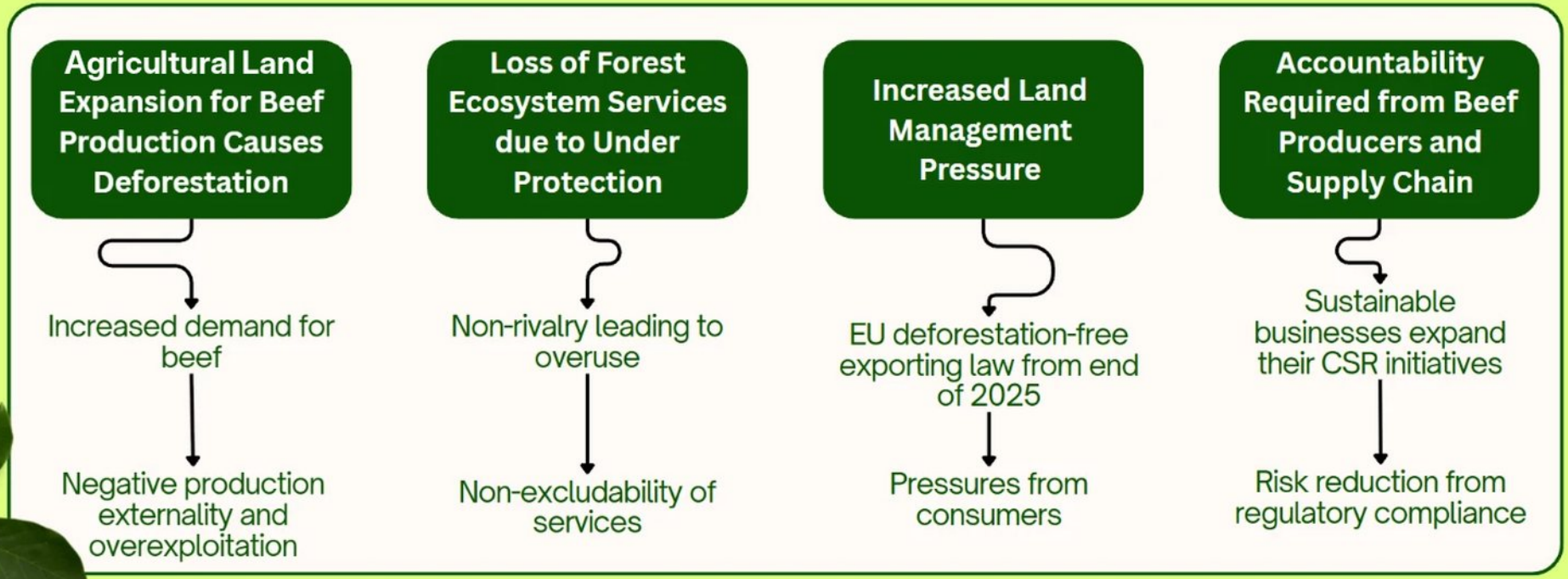
- **POLICY DESIGN & COMPLIANCE**: Government regulations, like the EU law, reflect efforts to balance environmental and economic impacts. The EU has 136 land management laws.

- **MARKET FAILURES**: Regulation corrects market failures when industries neglect environmental harm in production.



BRIEF LITERATURE REVIEW 1

Deforestation for cattle farming is a **negative** **production externality** imposing environmental and social costs that aren't reflected in beef prices (Goodstein and Polasky, 2020, p.29)

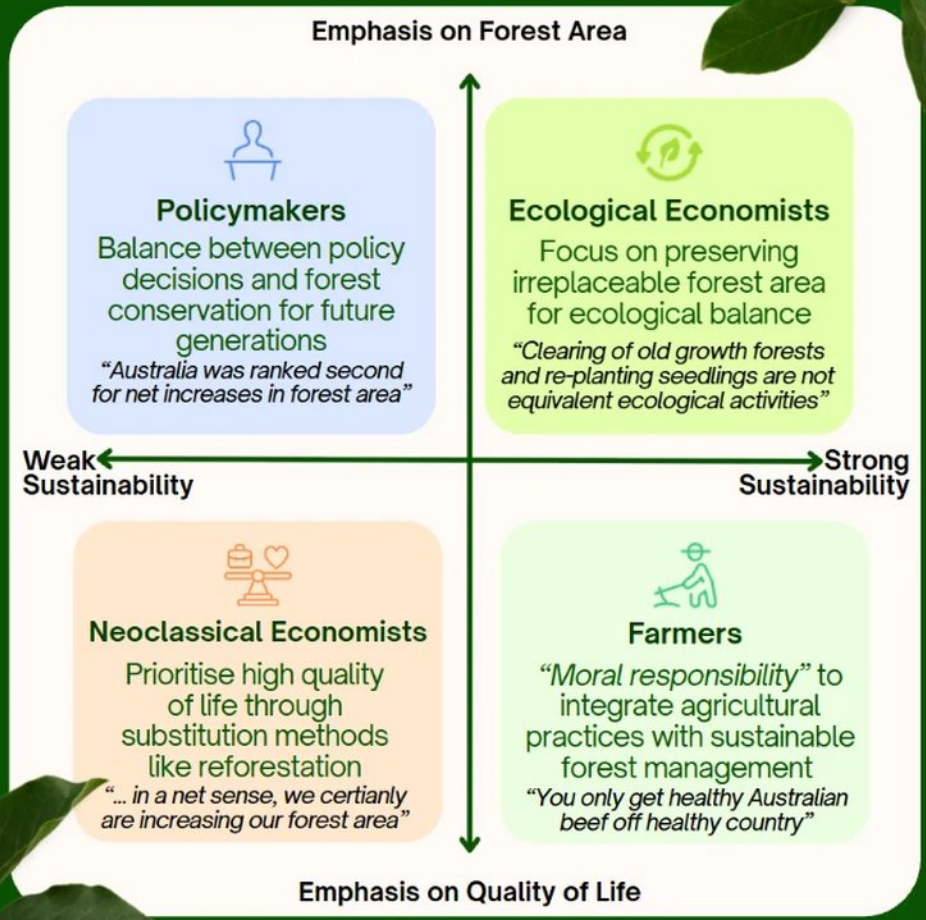


BRIEF LITERATURE REVIEW 2

The **sustainability standard** focuses on prioritising and nurturing natural ecosystems (Goodstein and Polasky, 2020, p.119).

Forests are **renewable resources** that can be replenished through reforestation, exploiting them strains their availability for future generations.

- Scientists favour **precautionary approach** as uncertainty looms over long-term impact of old-growth loss (Goodstein and Polasky, 2020, p.132).
- Under the sustainability standard government intervention is justified.



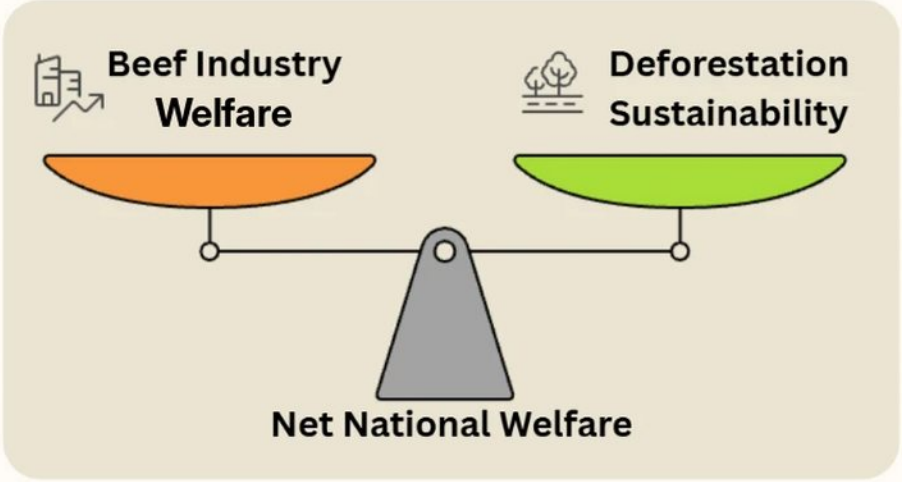
BRIEF LITERATURE REVIEW 3

Weak sustainability prevails in Australia and accountability differs among economic agents (Goodstein and Polasky, 2020, p.121).

- Balancing the demand for cattle rearing with the need to preserve forests.
- Government officials suggest Australia is a *"low deforestation risk country"* and conservationists argue figures are *"misleading"*.

The **Net National Welfare (NNW)** function connects to this article (Goodstein and Polasky, 2020, p.150).

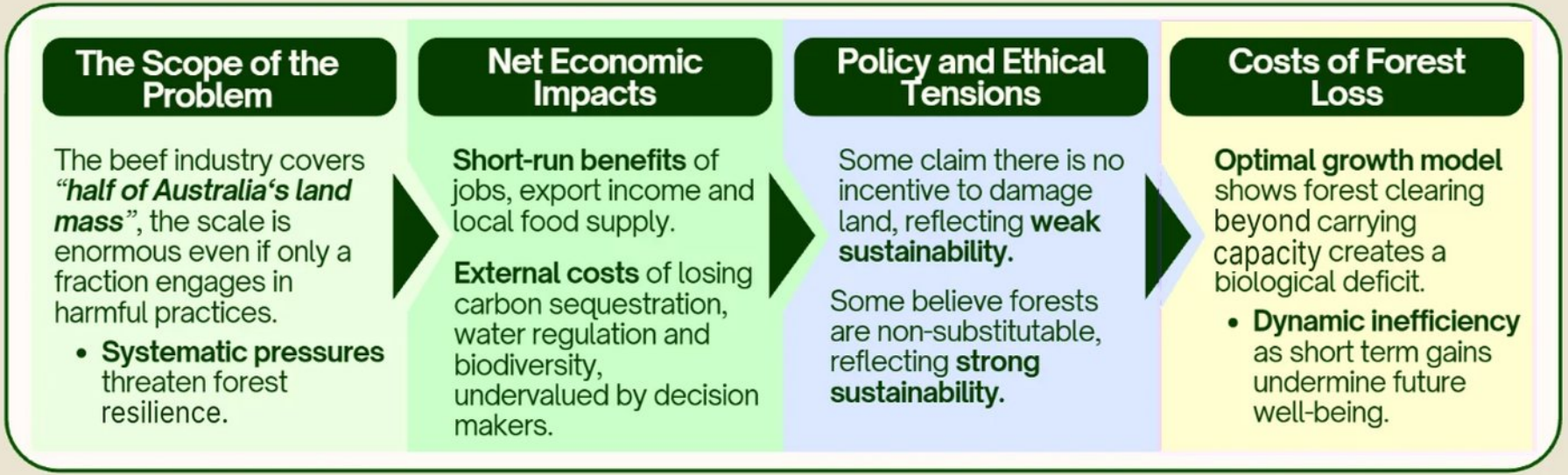
- Tensions arise between economic welfare and long-term depletion of natural resources.
- Need for natural capital inclusion in national accounts to reflect the true costs of forest exploitation and to determine the true level of welfare.



BRIEF LITERATURE REVIEW 4

Forests follow a **logistic growth model,** where their ability to regenerate slows as they approach carrying capacity (Goodstein and Polasky, 2020, p.178).

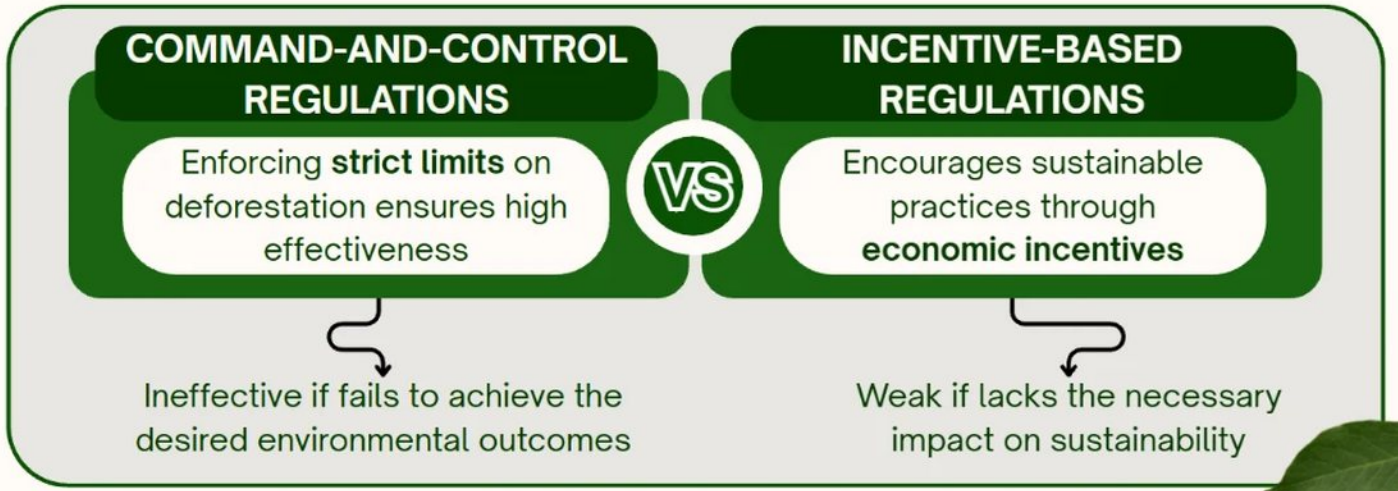
- If clearing occurs faster than regrowth, forests cannot return to their natural state.
- Regeneration is slower with old-growth forests, losing irreplaceable ecosystem services.



BRIEF LITERATURE REVIEW 5

Current policies vary between **Command-and-Control** and **Incentive-Based**, both sought out by different economic agents (Goodstein and Polasky, 2020, p.178).

- The EU's exporting law pressures Australian exporters to comply, consumer expectations influence supermarkets to set out sustainability targets, driving more sustainable behaviour.
- Farmers claim ongoing adherence to 136 vegetation management laws, however, the definition of deforestation in Australia is different to global standards.



ANALYTICAL APPLICATION OF A THEORETICAL MODEL 1

OPTIMAL GROWTH MODEL

The model that we used is the **Optimal Growth Model** to address the **conflict** between economic growth from the beef industry and the environmental impact of deforestation in Australia.

- By applying the OGM, we can **maximise sustainable beef production while minimising the negative effects of deforestation** and promoting reforestation efforts.
- This model allows us to balance the need for economic growth with environmental preservation.

ANALYTICAL APPLICATION OF A THEORETICAL MODEL 2

RATE OF LAND LOSS (DEFORESTATION SPEED)

$$F_{t+1} = F_t + gF_t\left(1 - \frac{F_t}{K}\right) - D_t = 0.244 Million Hectares$$

Where:

- Ft+1 = Forest area
- Ft = Forest area at time (0.59 million hectares)
- g = Growth in forest (0.75 million hectares)
- K = Carrying capacity of the forest (40 million hectares)
- D(t) (deforestation) (0.782 million hectares)

While deforestation in the **short-term creates economic gains** by expanding land availability and generating employment in agriculture, if deforestation continues at the current rate, the forest area is not allowed to regenerate. The forest area will collapse, resulting in environmental costs outweighing the economic benefits, making the land unsustainable for **long-term exploitation and leading to a decline in overall financial welfare.**

ANALYTICAL APPLICATION OF A THEORETICAL MODEL 3

FOREST CAPITAL AFTER DEFORESTATION & REFORESTATION

$$K_{t+1} = K_t - D_t + R_t$$

$$K_{t+1} = 340,000_t - 782,000_t + 446,000_t = 4,000 hectares$$

Where:

- K(t) is the initial capital (340,000 hectares).
- D(t) is the deforestation (782,000 hectares). - (230%)
- R(t) is the reforestation rate (446,000 hectares). (131.2%)
- K(t+1)=340,000(t) -782,000(t)+446,000(t) = 4,000 hectares (1.18%)

At the end of the period, the remaining **forest capital is 1.18% of the original forest.** This highlights how unsustainable the current trend is—deforestation is occurring at nearly twice the reforestation rate, leading to an almost complete loss of forest resources.

ANALYTICAL APPLICATION OF A THEORETICAL MODEL 4

NET NATIONAL WELFARE (NNW)

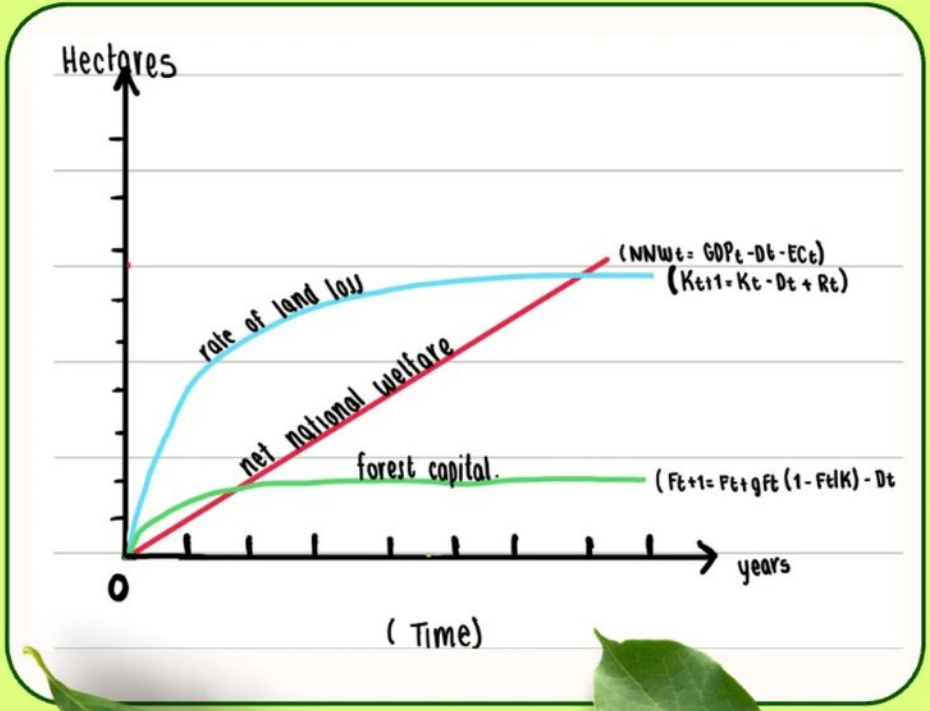
$$NNW_t = GDP_t - D_t - EC_t = 879.9 billion AUD$$

Where:

- D_t = Deforestation Cost (12billion)
- EC_t= Environmental degradation cost ($1 billion)
- GDP_t = AUD 892.9 billion

In the **short term**, economic growth leads to a positive NNW. This shows the immediate economic benefits of deforestation (but is slightly affected by it).

But in the **long run**, the environmental costs increase, which will vanish the short run economic profit and make the NNW negative in the **long run.**



ANALYTICAL APPLICATION OF A THEORETICAL MODEL 5

ASSUMPTIONS & POLICY

SHORT- RUN

Economic growth is driven by deforestation, which increases available land for agriculture, livestock, and other industries. **This leads** to high profits and employment. The environmental costs and deforestation expenses are relatively low compared to the economic **gains,** resulting in a positive **NNW.**

LONG - RUN

Deforestation rates outpace reforestation efforts, depleting forest resources. As natural resources are exhausted and environmental degradation becomes **more severe**, the economic benefits diminish, and the long-term costs of **environmental damage outweigh the short-term gains. This will decrease the NNW**, and the country will face challenges in sustaining economic growth.

- We need to prioritize **sustainable land-use management**, **boost reforestation efforts**, and **promote climate-adaptation strategies**. These measures will help reverse environmental degradation, increase agricultural productivity, and safeguard the well-being of future generations.

ANALYTICAL APPLICATION OF A THEORETICAL MODEL 6

PREDICTED OUTCOMES

Sustainability

We need to stop the rate of deforestation.

- If they continue at this rate, forest depletion will lead to **long-term** economic decline.
- Sustainable land use and reforestation are essential for protecting ecosystems and maintaining future economic growth.

Government Support

Stricter regulations to slow deforestation.

- Give incentives to boost reforestation.
- Put a taxes on deforestation limit

Limitations

The main limitation is that **individuals prioritize the short-term benefits** rather than long-term environmental cost.

Long-Term Stability

A transition from deforestation to **sustainable land-use practices** is essential.

- Without this shift, long-term economic stability will be compromised, and environmental damage will continue to escalate, making the current development model unsustainable.

DISCUSSION: SOCIAL DESIRABILITY & POLICY IMPLICATIONS

SOCIALLY DESIRABLE?

KEEPING IT WITHIN REASON...

- **136 legislations** in place already for farmers
- how can we keep all parties involved content?
- Some australians conduct activities that are defined as deforestation by EU.
- Arguing this definition just causes back and forth arguments, delaying any definitive action.

STRONG SUSTAINABILITY

With $Deforestation \neq Replanting$:

- the most efficient way is to **grow** more forests than they take down.
- Apart from increasing replanting... we can find ways to discourage deforestation

DISCUSSION: SOCIAL DESIRABILITY & POLICY IMPLICATIONS

WHAT DOES IT LOOK LIKE?

REDUCE THE NEED FOR DEFORESTATION

Education:

- Increasing Awareness of the positive effects of being resourceful.
- Proper planning of required area for herds
- Integrating **richer** ecosystems to support healthier produce.



"You only get healthy Australian beef off healthy country."

Incentive-Based Regulation

Subsidising improving technology that find methods that lower deforestation in the long run. Finding these innovations along the way reduces the need for deforestation whilst increasing long-run profits.

Strategy	Annual Profit	10 Year Net Profit	Future Cost (Land Degradation)	Total Gain
Short-Term Profit (Deforestation)	$500,000	$5 million	(-$5 million) lost due to future costs outweighing short-term profits	$0
Sustainable Farming	$400,000	$4 million	$6 million (future benefit of adapting to farming practices	$10 million

DISCUSSION: SOCIAL DESIRABILITY & POLICY IMPLICATIONS

PRACTICAL FEASIBILITY

WHAT'S STOPPING US?

International Trade:

- EU setting trade barriers for beef sourced from deforestation since December 2020,
- Australia might instead opt to prioritise other trading partners with less barriers for beef exports.
- Could lead to them instead avoiding EU trades and maintaining their status quo in farming practices.

Lack of Information:

- The reality is that they may have to be re-educated on the benefits of sustainable farming to truly have an industry-wide effect.
- This education may have to be subsidised by the government to incentivise farmers. (Extra cost!)

DISCUSSION: SOCIAL DESIRABILITY & POLICY IMPLICATIONS

PRACTICAL FEASIBILITY

WHAT'S STOPPING US?

Current Confusion Amongst Parties:

- Australia has standards for deforestation that rivals the standards of trading partners such as the EU.
- They also try to defend their actions with replanting
- However, the present monetary values of the damages were not properly accounted for: a term used in the article as an accounting sleight-of-hand.

Although this won't completely stop the adaptation of sustainable practices, it may pose as a roadblock that may delay the outcome.

KEY TAKEAWAYS



KEY TAKEAWAY 1:

Sustainable Farming is more profitable in the **long-run**. With the help of the Government:

- farmers may see the long-term benefits of sustainable practices
- they will also minimise negative externalities of farming.
- Resulting in an efficient and sustainable scenario which would be socially desirable.

KEY TAKEAWAY 2:

If the status quo continues, overexploitation will lead to loss of national capital that would decrease the net benefits in both private and social cases.

CONCLUSION

NEXT STEPS 1:

COP29 Discussion: Putting more weight on deforestation.

- Come up with a universal definition that nations can adhere to and impose upon their industries.

NEXT STEPS 2:

Consumer-consciousness change: Putting more weight on promoting and marketing beef sourced from sustainable farming.

- May convince farmers to begin early by taking accountability.




THANK YOU!
GROUP M

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