

An aerial photograph showing a large, multi-story building complex with a light-colored roof, surrounded by dense green forest. In the background, a body of water (Lake Rotorua) is visible, surrounded by more forest and some residential buildings. The text "Land use change opportunities and the future role of forestry in the Lake Rotorua catchment" is overlaid in white, bold, sans-serif font.

“Land use change opportunities and the future role of forestry in the Lake Rotorua catchment”

Warren Parker (CEO, Scion)

Overview

- Preparing for a different future
- Five big factors shaping forestry's future
- Ecosystem services & natural capital
- Future for forestry & forest products
- Practical things you can consider
- Concluding comments

New thinking required

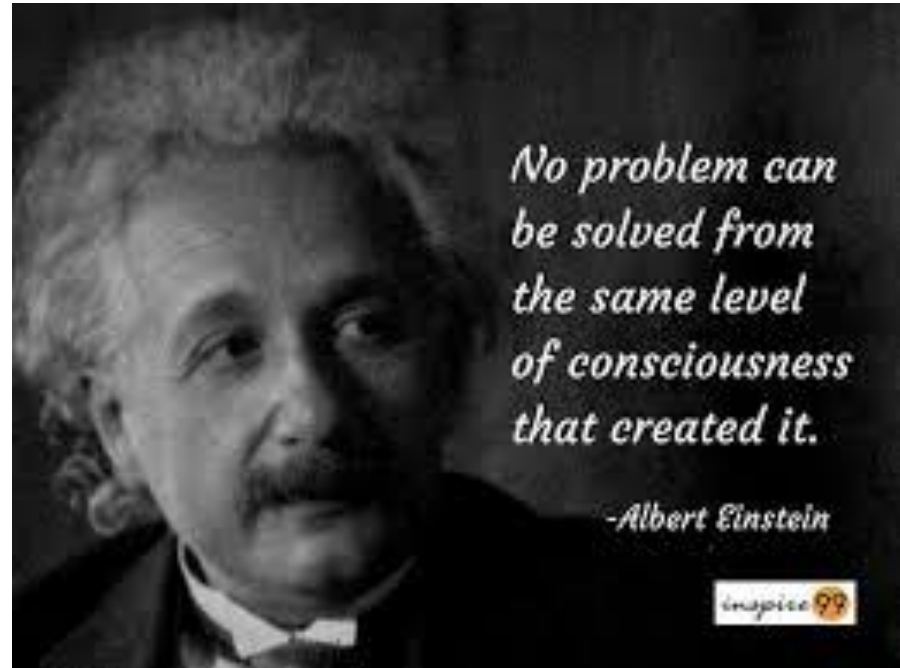


**Insanity: doing the same
thing over and over again
and expecting different results. ~Albert Einstein**



*No problem can
be solved from
the same level
of consciousness
that created it.*

-Albert Einstein



“Stand-in 20[??]”

*“We cannot work
to create a future
that we first do
not imagine”.*

P. Ellyard



... on current projections average temperatures could be 1.00 to 1.25 degrees C warmer by 2030/35 than now with a corollary increase in extreme weather events (based on NZ

Climate Change Centre assessment of the IPCC's Fifth Report)

A large-scale irrigation system, likely a center pivot system, is shown in operation over a vast forest plantation. The system consists of long metal wheels with multiple nozzles spraying water onto the dense green and yellowish-brown foliage. The background shows a hazy, green landscape under a clear sky.

Five big trends shaping New Zealand's forest industry

1. World population growth & demand

By 2050 the world will need 70% more food

AND

500 – 600% more wood

[off a smaller land area and with less water]

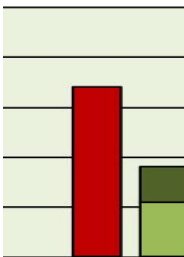
Planted forest supply shrinking, demand growing

YEARLY AFFORESTATION AND DEFORESTATION 2002-2011



Deforestation is September, 2011

China



2011

- Gap (Imports)
- Domestic natural forests
- Domestic plantations
- Demand

China set to snap up forest

By Abigail Hartevett
abigail.hartevett@citypost.co.nz

A Rotorua forest is set for foreign ownership.
The Overseas Investment Office has just approved the sale of more than 14,000ha of prime forestry land to the Chinese Government.



Oji Holdings Corporation

sale is in the Kaipara district. There are also six blocks in Coromandel and Waikato, a block each in Rotorua and Gisborne and Wairarapa covering more than 14,000ha.

The land was owned by the New Zealand Superannuation Fund — an investment to help pay for Kiwis' retirements.

Reporepa's Allan Crafar, whose farms were sold to a Chinese company after Government ministers ignored public disapproval and gave the sale the green light, said he was against the sale.

Prime Minister John Key "seems to want to sell the country out" he said.

"It's looking like a bunker



FOREIGN OWNERSHIP: The Overseas Investment Office has approved the sale of this 325ha property off Endeavour Rd.

PHOTO/GOOGLE MAPS

thing to me. That's Mr Key's background."

Mr Crafar couldn't understand why the New Zealand Government didn't hold on to its assets and sell the products.

"It's hard to fathom."

New Zealand First primary industries spokesman Richard Prosser said the sale was an appalling example of everything that is wrong with National's approach to the economy.

He said the sale would not create one single job in New Zealand, and would perpetuate the unsustainable practice of this country being an exporter of unprocessed bulk commodities.

"The purchase of New Zealand forests by the Chinese Government is not foreign investment; it's a transfer of wealth.

"They won't build any new sawmills, they won't build any

new particle board mills, they will simply continue to export bulk logs for processing in China.

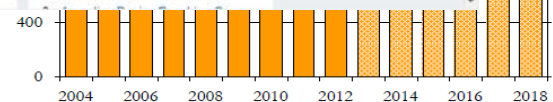
"The export of raw logs has increased under this Government by 10 per cent since 2009," he said.

"These are logs that should be processed in New Zealand, by New Zealand workers so that the wealth generated is kept in this country."

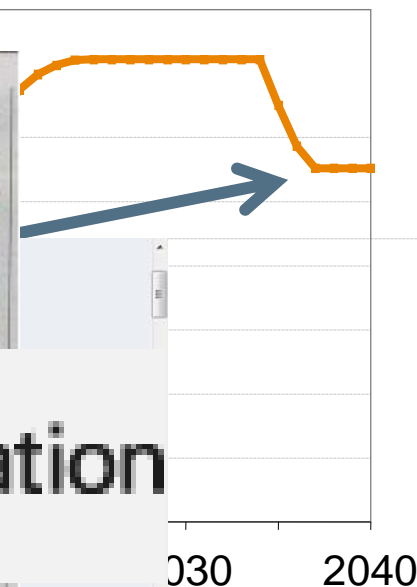
And yet it is happening, at least with commercially usable forests, environmental analysts say.

The Russian logging industry will face lack of harvestable timber in 10 to 20 years, a short time

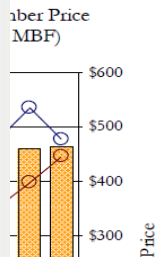
2. Chechnya Forced to Attend Rally on Putin's Birthday, Report Says



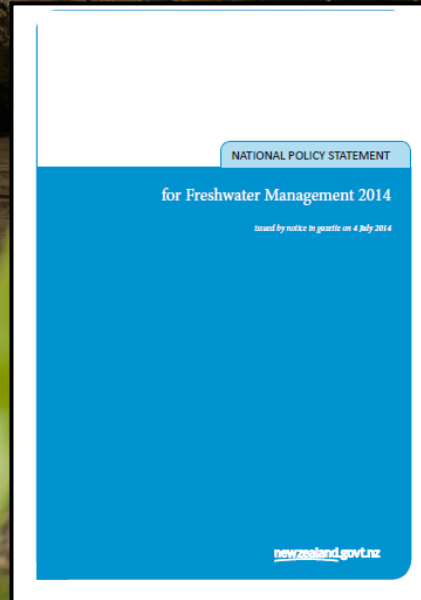
NZ radiata pine volume



Timber Prices



2. Resource limits – especially water



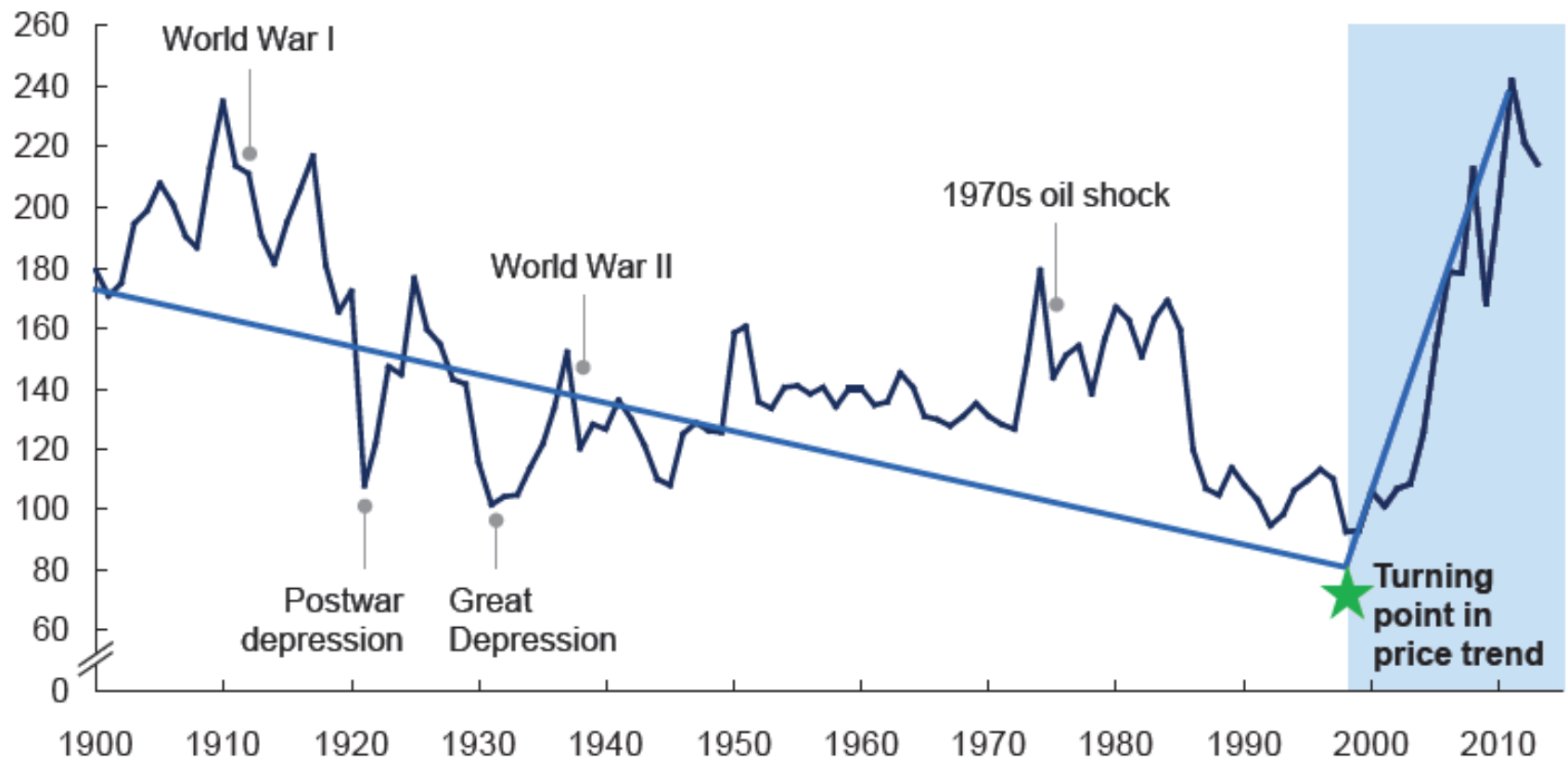
Freshwater Management Framework

Resource limits – trend to higher prices, increased volatility

Resource prices have increased significantly since the turn of the century

McKinsey Commodity Price Index¹

Real price index: 100 = years 1999–2001²



Farmers and landowners are not alone – Business is facing a new reality too!

Though companies face many global-scale challenges ... extreme weather caused by climate change and increasing limits on resources are both having an unprecedented impact, threatening corporate profits and global prosperity. These “mega challenges” require companies to fundamentally rethink their strategies and tactics ...

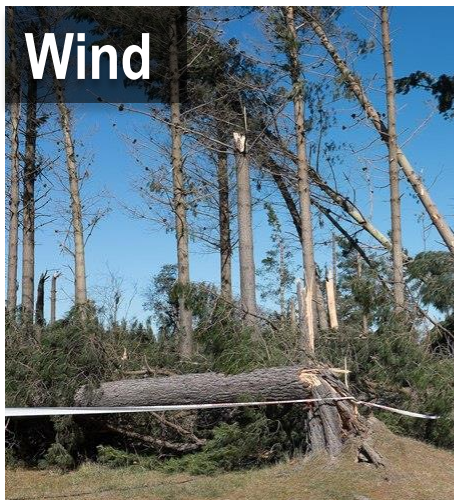
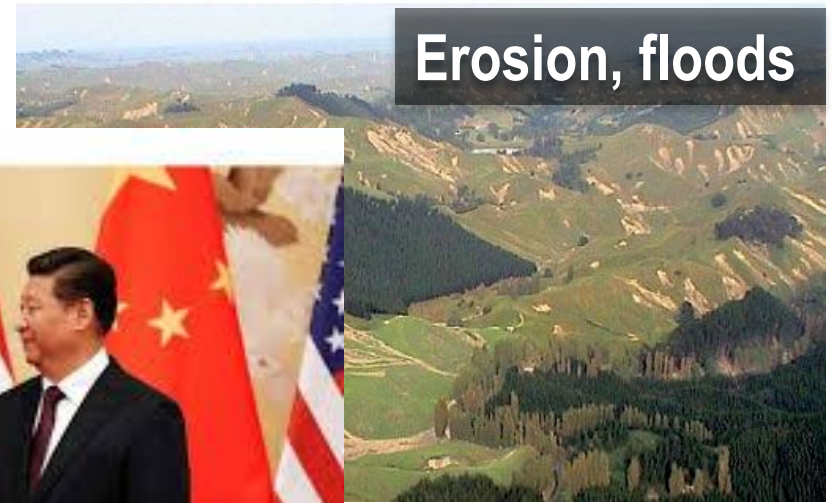
Farmers facing a new reality?

Mike Barton, Taupo farmer (NZSAP 2014 14: 254-259)

- “There is little else I can do to reduce my nitrogen leaching profile short of reducing stocking rates
- Our farm is in top quartile .. there is little else I can do to increase per animal performance
- There are very few solutions on the immediate science horizon
- I am capped at 2004 stocking levels .. My costs have increased 45%.”

1. Increase value & margin of product sold
2. Change mix of products sold

3. Climate change



BIG NEWS: THE UNITED STATES AND CHINA JUST ANNOUNCED NEW TARGETS TO REDUCE CARBON POLLUTION

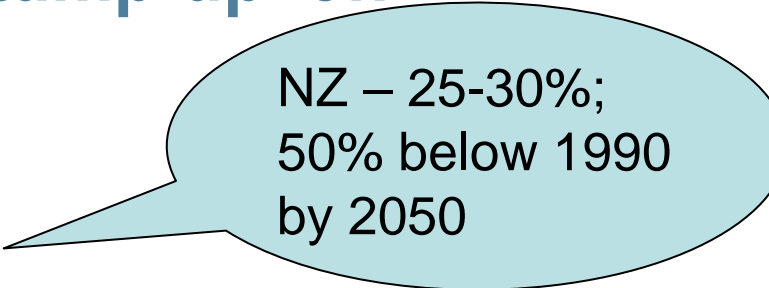
- President Obama is setting a new target to cut U.S. carbon pollution by 26-28% below 2005 levels by 2025.
- China is committing to peak its CO2 emissions around 2030 while striving to peak early, and boost its share of non-fossil fuel energy to around 20%.

WH.GOV/CLIMATE-CHANGE #ActOnClimate



The Insurance Council says if New Zealand does not adapt to changing climate conditions, insurance premiums could go up or cover could be withdrawn in some areas.

Developed countries need to 'stump-up' on climate change.....



NZ – 25-30%;
50% below 1990
by 2050

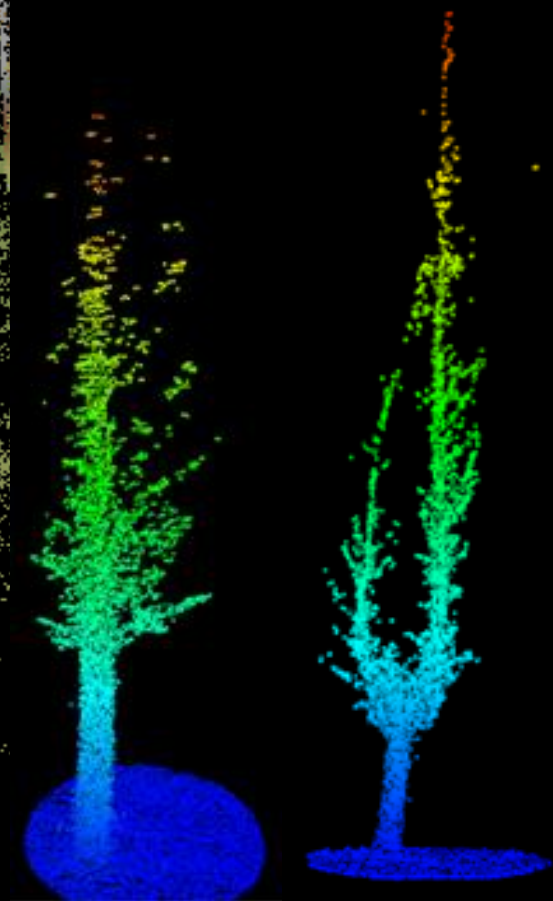
The United States, United Kingdom, and Brazil led detailed questioning as to whether the Government's main policy instrument, the A\$2.55 billion Emissions Reduction Fund, would be adequate to deliver the required emission reductions Australia's emissions-reduction targets, both for 2020 and beyond, have been put squarely in the international spotlight by its major trading partners.

<https://theconversation.com/australia-in-the-spotlight-at-climate-talks-for-all-the-wrong-reasons-42882>

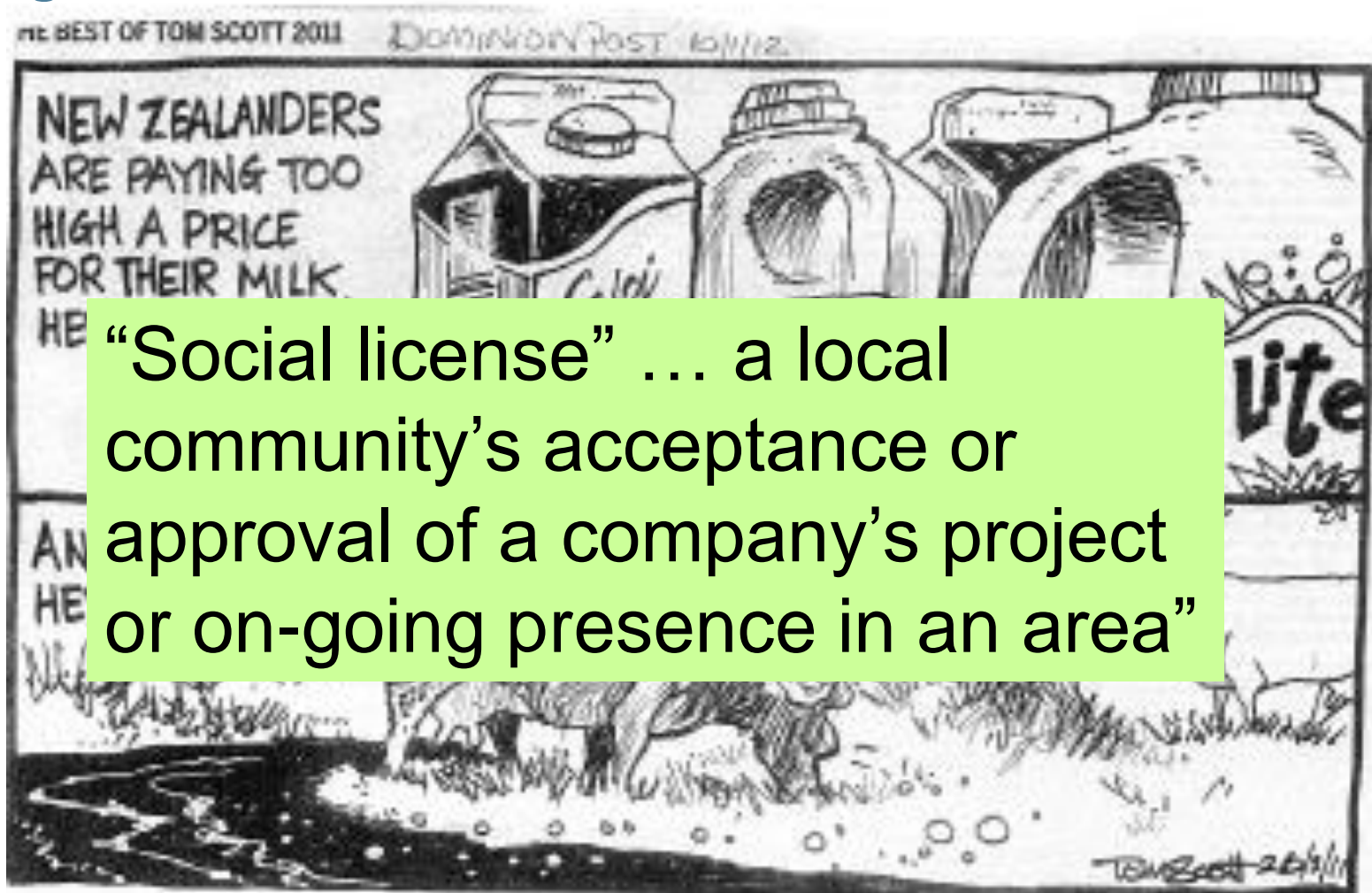
4. The internet – ‘big data’, smart products, precision



Terrestrial LiDAR using a
hand-held stem scanner



5. Social license More difficult to keep-earn in a digital world and social media



“Social license” ... a local community’s acceptance or approval of a company’s project or on-going presence in an area”

When this clear cutting of the Californian-native *Pinus Radiata* occurs, aside from making the landscape look like a desolate war zone, there can be many other problems that come from this industry that claims to be "saving the world one tree at a time" through their signage.

If you have done much diving around our shores, then you will be aware that after rain, it is usually impossible because the visibility is too bad. This is because sediment is washing down our waterways each time it rains and humans cause nearly all of it.

its have been

ur waterways.



ECOSYSTEM SERVICES & NATURAL CAPITAL

Natural capital (one of six capitals – financial, social....)

Natural resources – *soil, water, microbes* -
and ecosystem processes – *pollination, filtration* – that underpin an economy or business

1. Ecosystem processes frequently do not have substitutes – nature can't always be copied
2. NZ farming, forestry & many businesses depend heavily on natural ecosystems for biological & chemical processes

Ecosystem Services

- Pollution, waste, depletion costs are usually borne by society – current and future generations
- As we intensify (e.g. feed, irrigate) we are asking more and more of natural ecosystems even as we reduce their capacity to meet our needs
- Services are mostly ‘free-of-charge’ as a ‘gift of nature’ BUT they are a capital asset and becoming scarce

Why a market approach to ecosystem services?

Why 'yes'?

- Establish price (reduce waste)
- Attract new capital (\$, ideas)
- Encourage private sector innovation
- Reduce 'free-riders'
- Provide positive incentive-reward

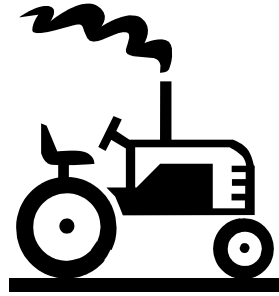
Why no?

- Moral/cultural
- Unfair/even access
- May erode property rights for landholders or public
- May not stop local problem

“If you look after nature, nature will look after you”

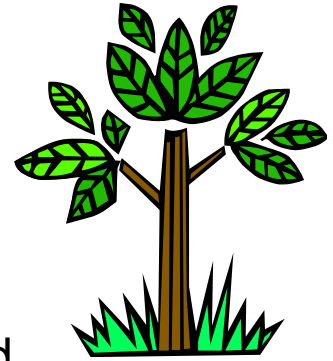
Managing your natural capital – ‘more’ actively

Fixed assets



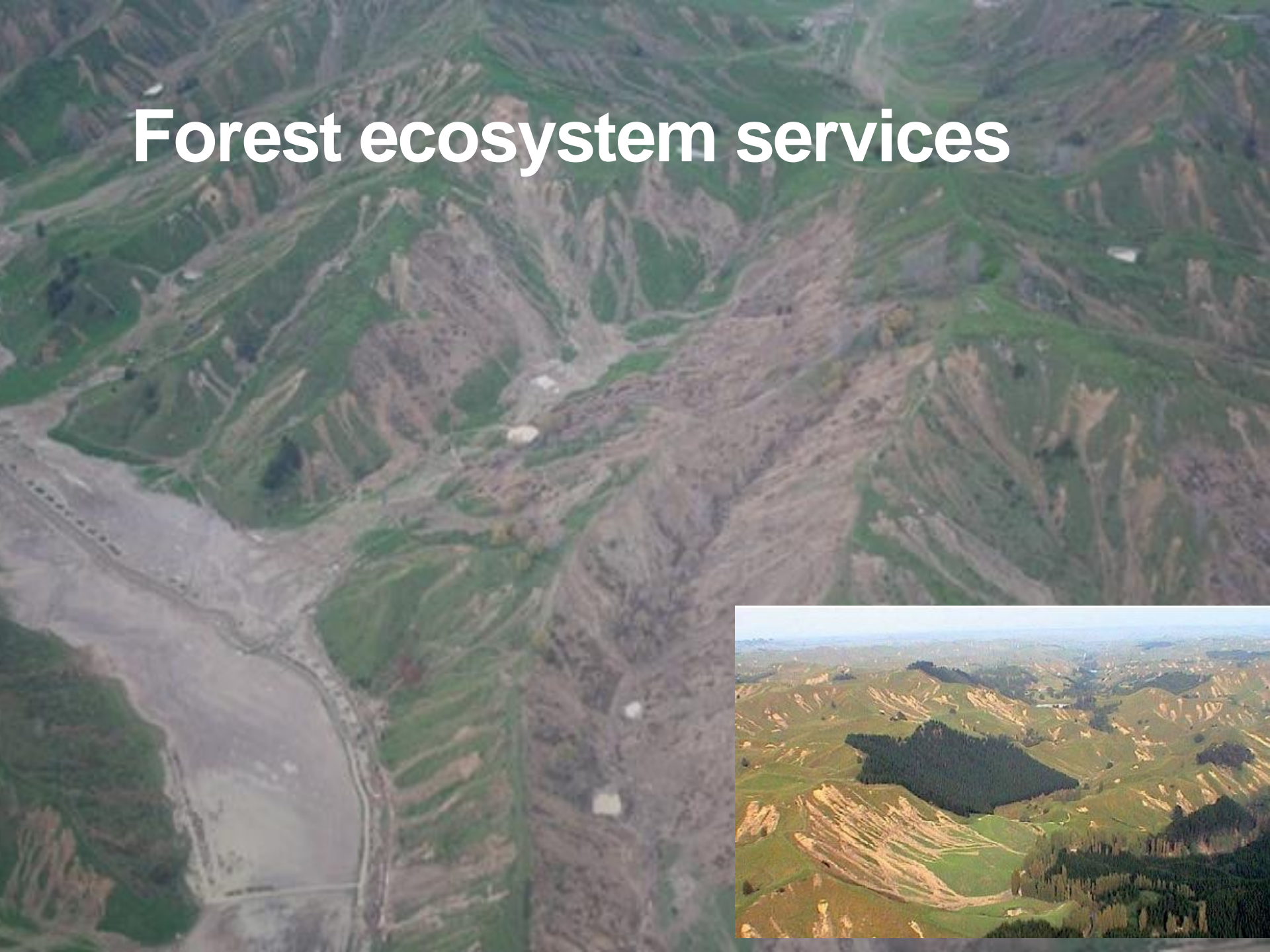
- R&M
 - Quality & performance
- Depreciation
 - Replacement/renewal
- New capital
 - Upgrade/expand
- Measure
 - Return on assets
 - e.g. Litres fuel/ha

Natural assets



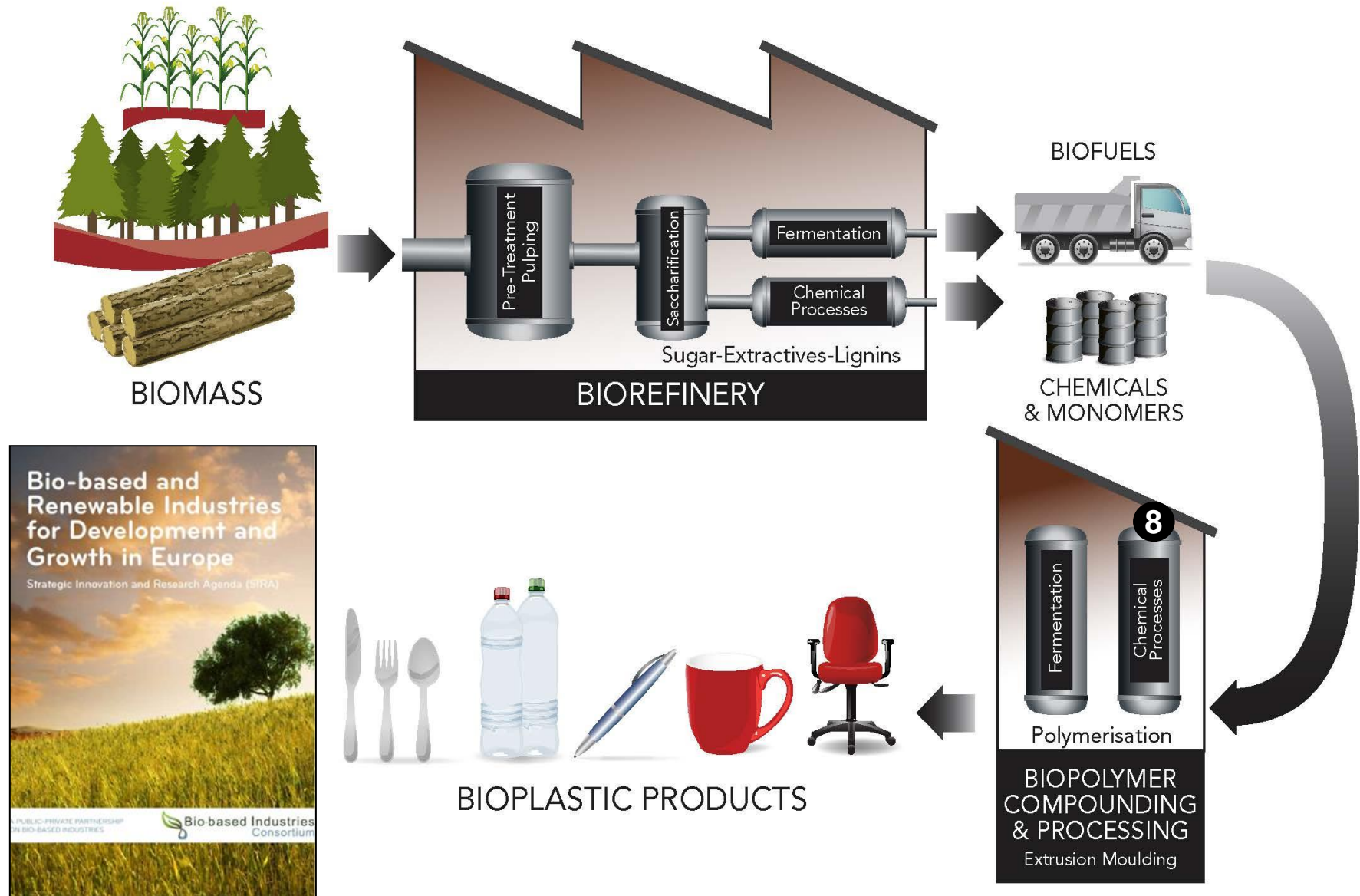
- R&M
 - Clean effluent pond
 - Control weeds/pests
- Depreciation
 - Riparian fence, plantings
- New capital
 - Install wetland
- Measure
 - Health of natural resources
 - e.g. MS/Litres water, soil density

Forest ecosystem services



FORESTS & FOREST PRODUCTS OF THE FUTURE

Forests enable a renewable future bioeconomy



Wood fibre reinforced plastics

 <p>15% Talc</p>	 <p>20% Black WoodForce</p>	<p>We see a world of opportunities. Do you?</p> 
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(Bio)plastic products & manufacturing trials



Composite products from lignin



Exactly your chemistry.



StoroEnso - Migration to a new business model

We started soulsearching- finding a new context for our business

We believe that the world will win with solutions based on renewable materials. This is why Stora Enso as a company is rethinking its business.

- rethi
- rethi
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way is

Here
What
What

From a solid wood & pulp &
paper company to a
renewable materials company

What kind of products our customers need?

Are making them in the right way?

How are we using our raw materials? How are we treating the planet?

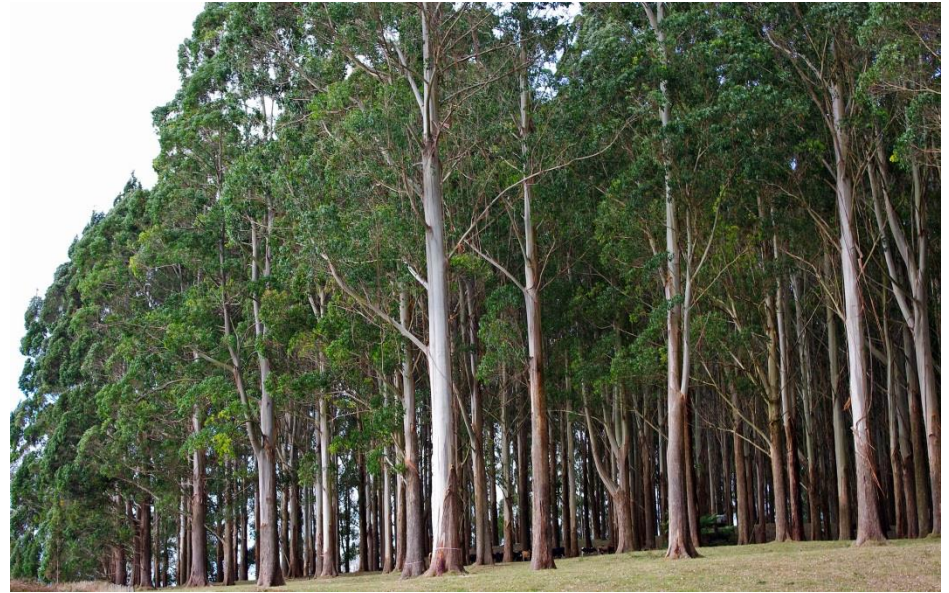
And what is our vision for the future?



Not just radiata - Eucalypts



Third generation eucalypts – up to 9 m tall at 2.5 yrs



Totara



Kauri



Manuka



Land use and land use changes – what we can do?

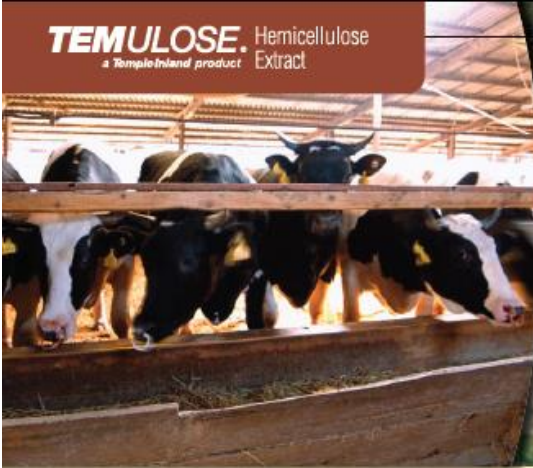
THE STRATEGY

Firms must embrace a new vision by fighting short-termism, basing goals on science, and pursuing radical innovation: they must place a value on natural capital and redefine how they measure **ROI**; and they must engage in a **new form of collaboration**



1. Value ecosystem services and internalise externalities
2. Redesign farm systems – increase “precision”; integrate trees for multi-functional use (C, P, limited N)
3. Achieve Catchment scale collaboration (Freshwater framework)
4. Increase product value cf volume (Tatua+++)

Sector complementarity - Forest biomass for energy & 'green' chemicals

- Animal feed
- 'Stump to pump' biofuels



TEMULOSE. Hemicellulose
a Temple-Inland product Extract

Temulose hemicellulose extract: an economical, environmentally friendly solution for agriculture and manufacturing.

Temulose hemicellulose extract is a natural by-product of the forest products industry. Often used as a substitute for cane molasses in livestock feed, this economical product contains pentose and hexose sugars, and has a total carbohydrate content of not less than 55%. Temulose is also finding uses in other manufacturing industries such as resin formulation, soil conditioning, road surfacing, pharmaceutical research and metal forging. Temple-Inland Temulose is captured and refined using the latest industry technologies and is available for shipment nationwide.

LIVESTOCK FEED SUPPLEMENT
For three decades hemicellulose extracts have been used as a cost-efficient supplement in livestock feed, offering improved palatability and product uniformity when compared to cane molasses.

SOIL CONDITIONING AND ROAD SURFACING
Extending and improving soil treatments to better condition roadbeds and providing enhanced application and durability for road surfaces is also an important application for Temulose.

PHARMACEUTICAL RESEARCH
Laboratory research is ongoing using Temulose as a component of several promising pharmaceutical developments.

PHENOL FORMALDEHYDE RESIN FILLER AND EXTENDER
Resin manufacturers use Temulose as a phenol replacement in PF resins to improve product performance and lower manufacturing costs.

LUBRICANT IN FORGING OPERATIONS
Temulose has been successfully used as an environmentally responsible, sacrificial lubricant in the metal forging industry to improve mold release characteristics.

TEMULOSE HEMICELLULOSE EXTRACT	
Guaranteed Analysis	
Crude Protein, not less than (This includes not more than 1% of alcohol-soluble protein from non-protein nitrogen and not more than 0.2% from natural sources.)	8.3%
Crude Fat, not less than	0.1%
Crude Fiber, not more than	8.5%
Ash, not more than	6.0%
Moisture, not more than	59%
Total Carbohydrates, not less than	55%

Consult Temple-Inland for complete analysis and expanded interpretation data not covered in this publication.

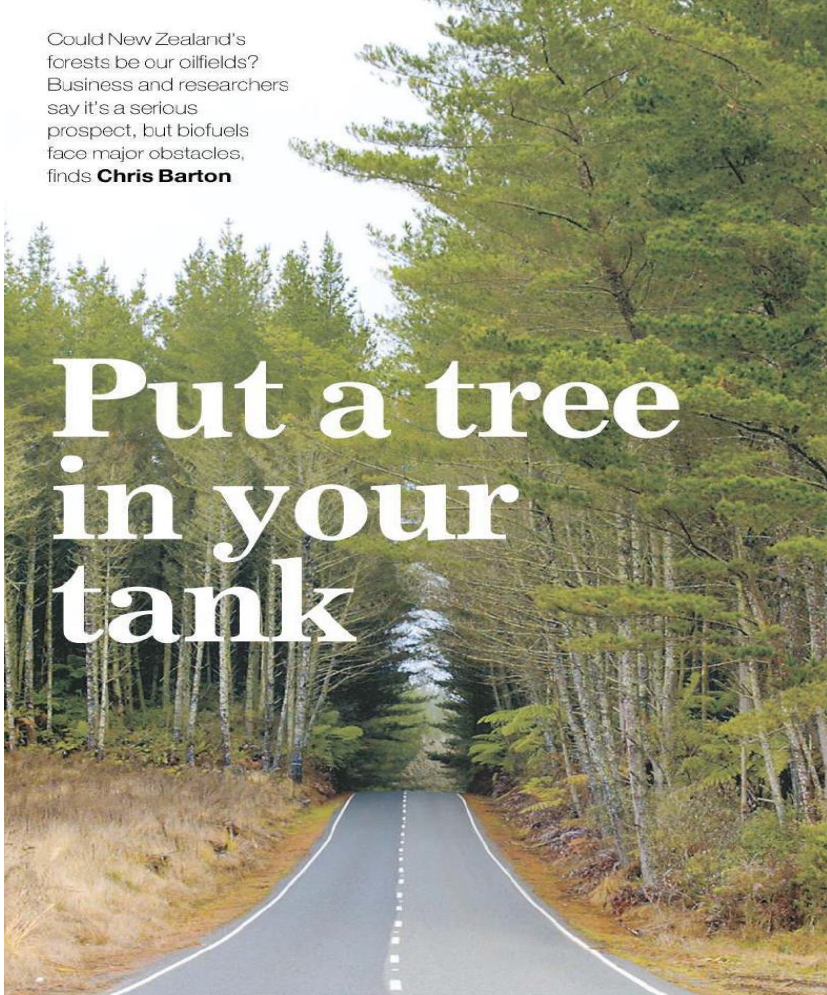
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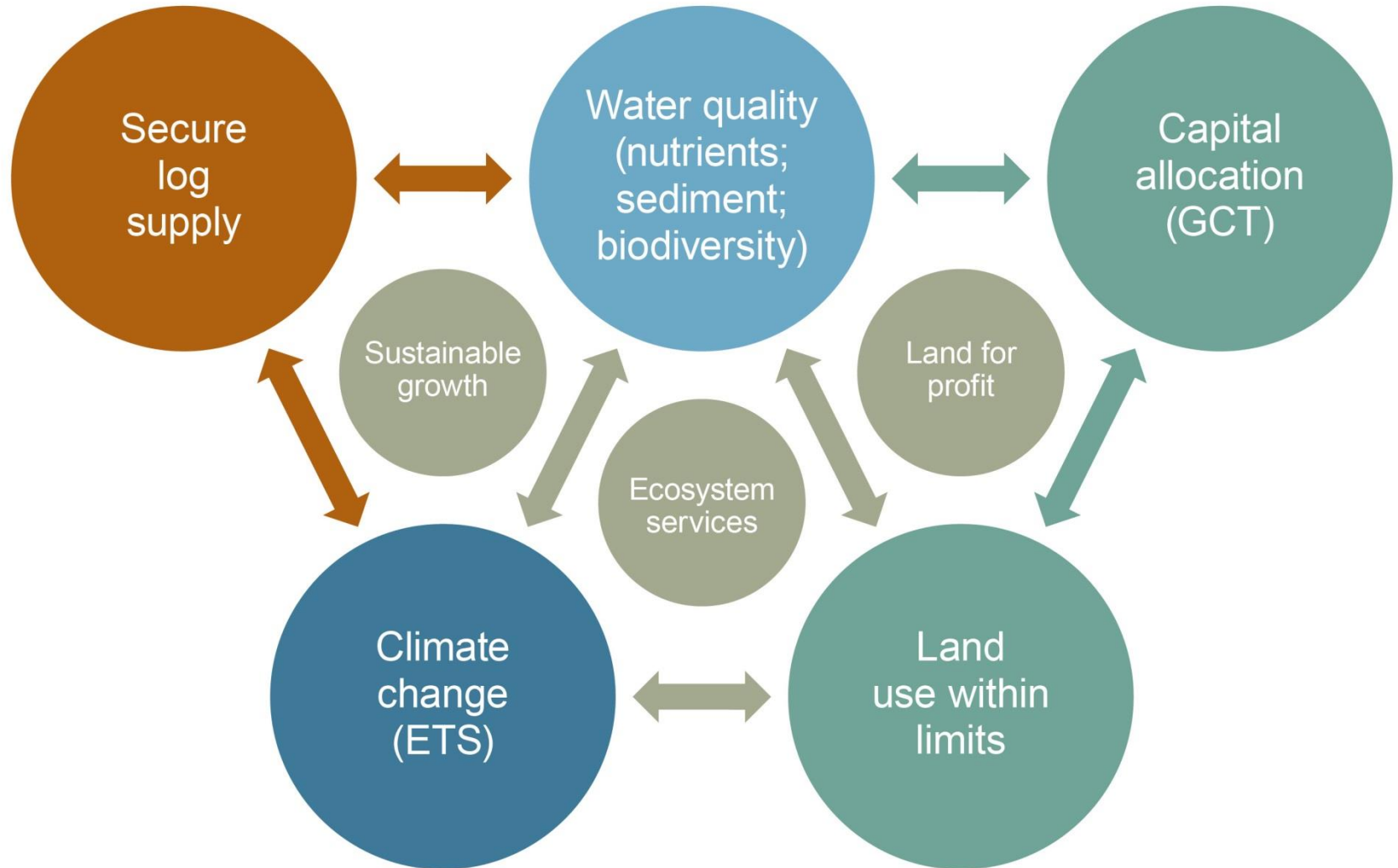
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Could New Zealand's forests be our oilfields? Business and researchers say it's a serious prospect, but biofuels face major obstacles, finds **Chris Barton**

Put a tree in your tank



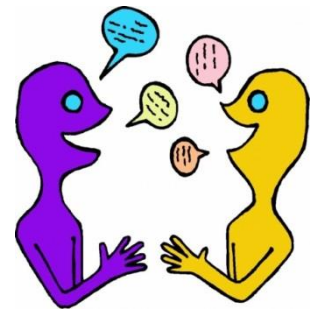
Public policy and strategy connections



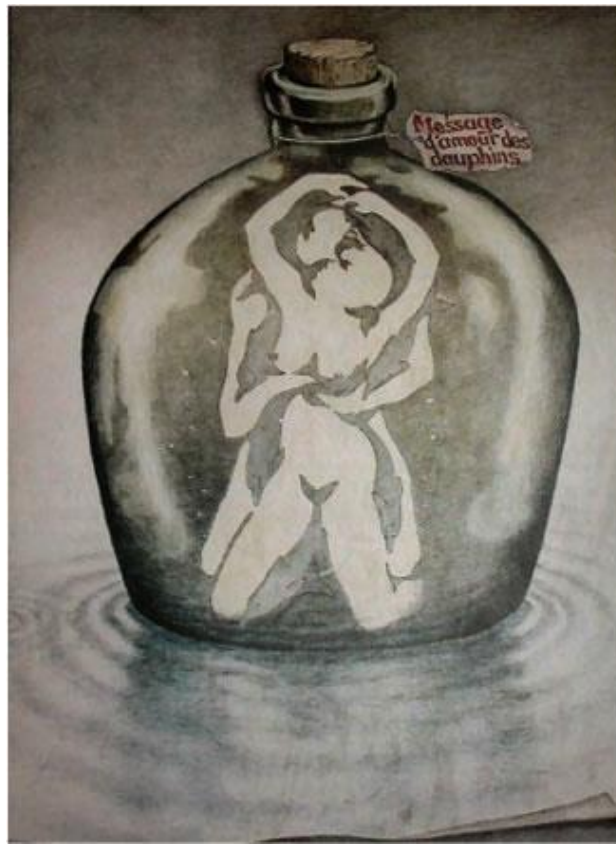
A person wearing a red long-sleeved shirt, dark waders, and a black cap is bent over a shallow stream, using a long-handled net to catch something. The stream is surrounded by lush greenery, including large ferns and a large, moss-covered tree trunk that has fallen into the water. The water is calm, reflecting the surrounding foliage. The text "Practical things to consider (Change = Opportunity)" is overlaid in white, bold font across the center of the image.

**Practical things to consider
(Change = Opportunity)**

Practical things you can consider

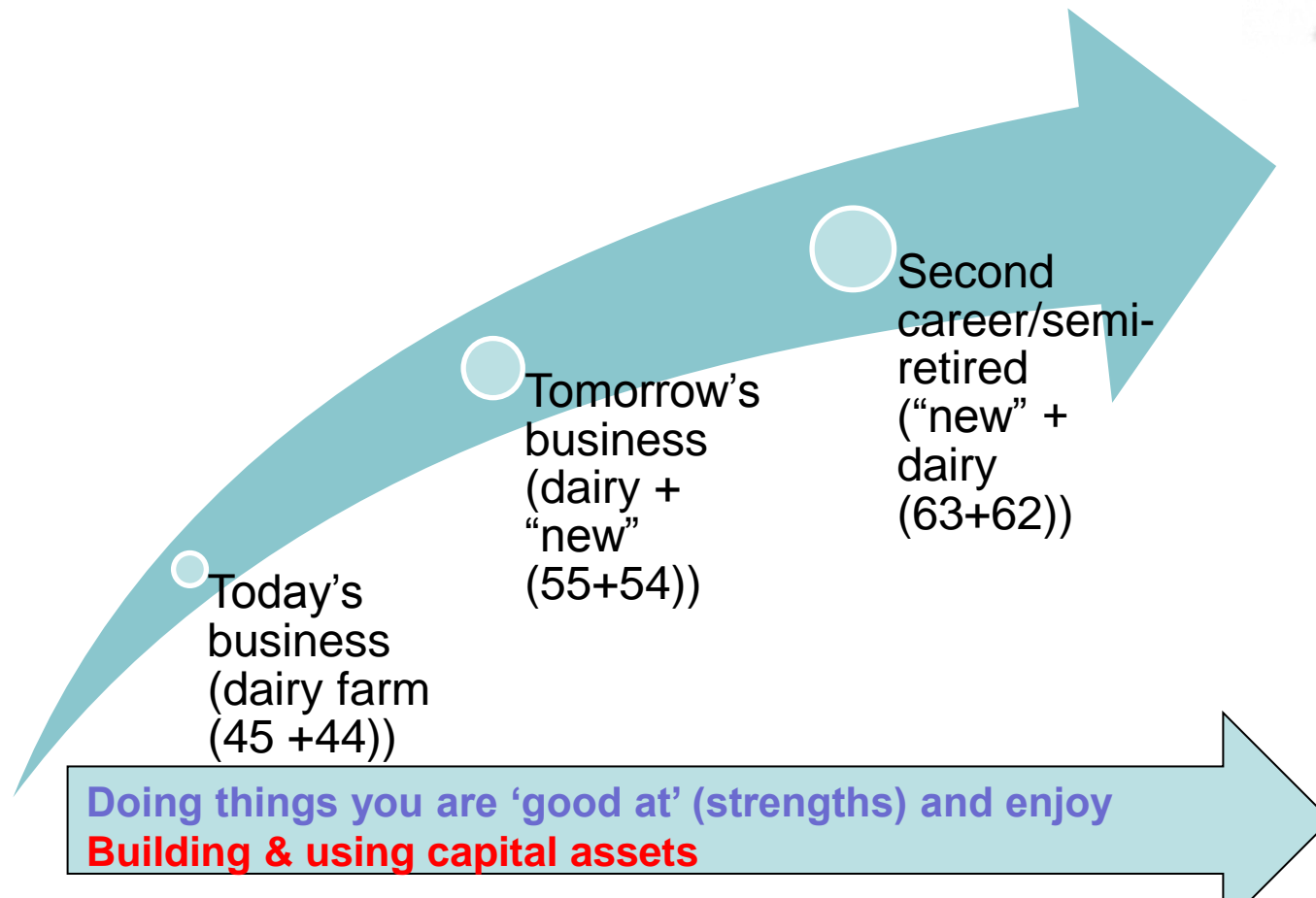


1. Get a different perspective –
 - a. “if you keep talking to people who say you can’t then you likely won’t”
 - b. Look outside your sector – read, visit



Practical things you can consider

3. There's time to transition – don't rush to a solution; explore options then develop transition/migration from “current” to “new”



Doing things you are 'good at' (strengths) and enjoy
Building & using capital assets

Practical things - Financial planning & monitoring

1. Scenarios – 3, 10+year view

- a) Break-even (production, price)
- b) Most likely, low – high (sensitivity to change in key variables)
- c) Contingencies – ‘If ‘A’ happened what would you do?’

1. Balance sheet

- a) Capital asset plan – 10 year view
- b) Debt/asset – liquidity



Change to farmer - land owner balance sheet

Asset	2025
Land & improvements	↓ ?
Plant & Equipment	=
Livestock	Customised IP
Chain shares (value add margin)	++
Environment & landscape	C, N, water, biodiversity

Who? AirNZ,
Mainfreight;
power cos;
Offshore
manufacturer

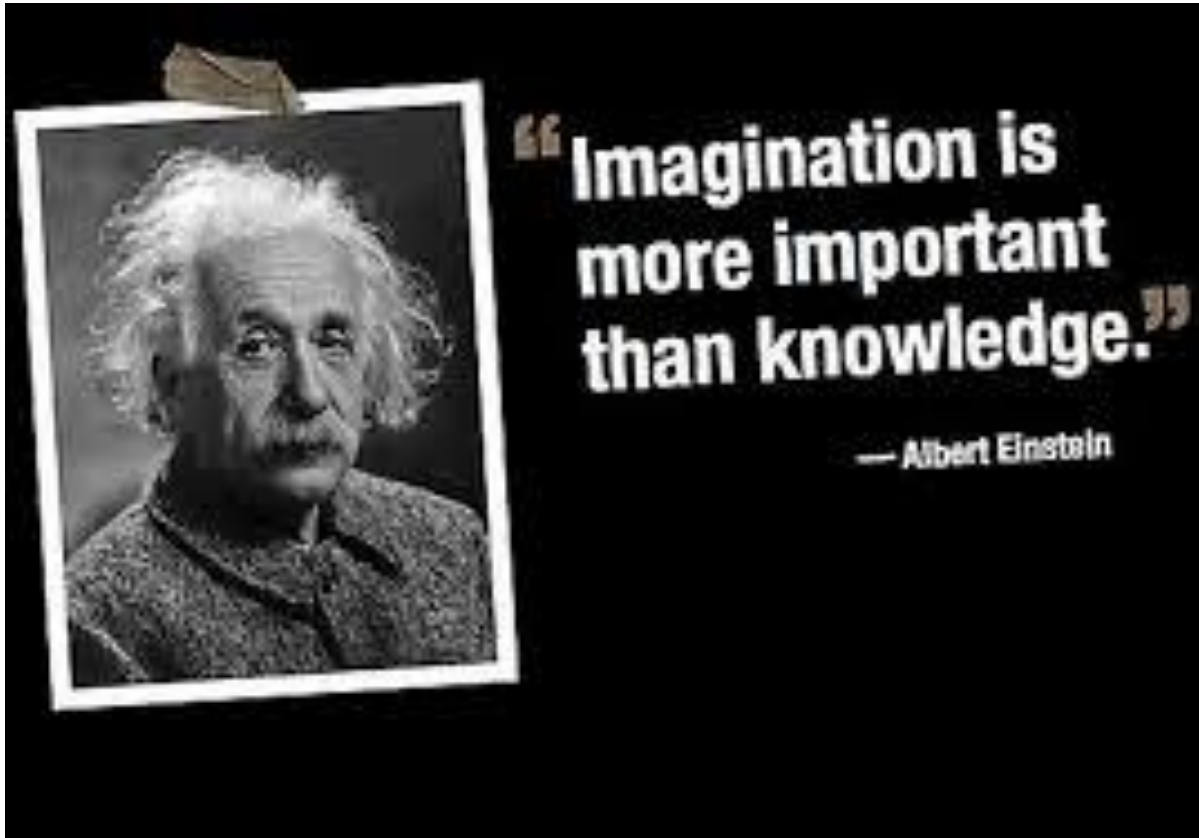
**Banks now value/lend on 'water rights';
pre-purchase compliance WoF**



Concluding remarks

- Stand in the future and imagine what your sustainable farm-land looks like
- Natural resources-ecosystems have/are reaching biophysical limits with present technology & practice – establish new frontier new business models & technology??
- Value and invest in social license – *can I swim, fish, drink, hike?*

- Natural capital, like any other asset, needs to be actively managed and can provide a new revenue streams as well as improve environmental performance (Carbon at \$50/t in 2030?)
- Focus more on complementarity/integration of sectors & value chains - farming and forestry
- Support R&D that adds more value (& jobs) onshore - value vs volume



Thank you