PLANTED FORESTS:
A SIMPLE IDEA,
A COMPLEX REALITY …

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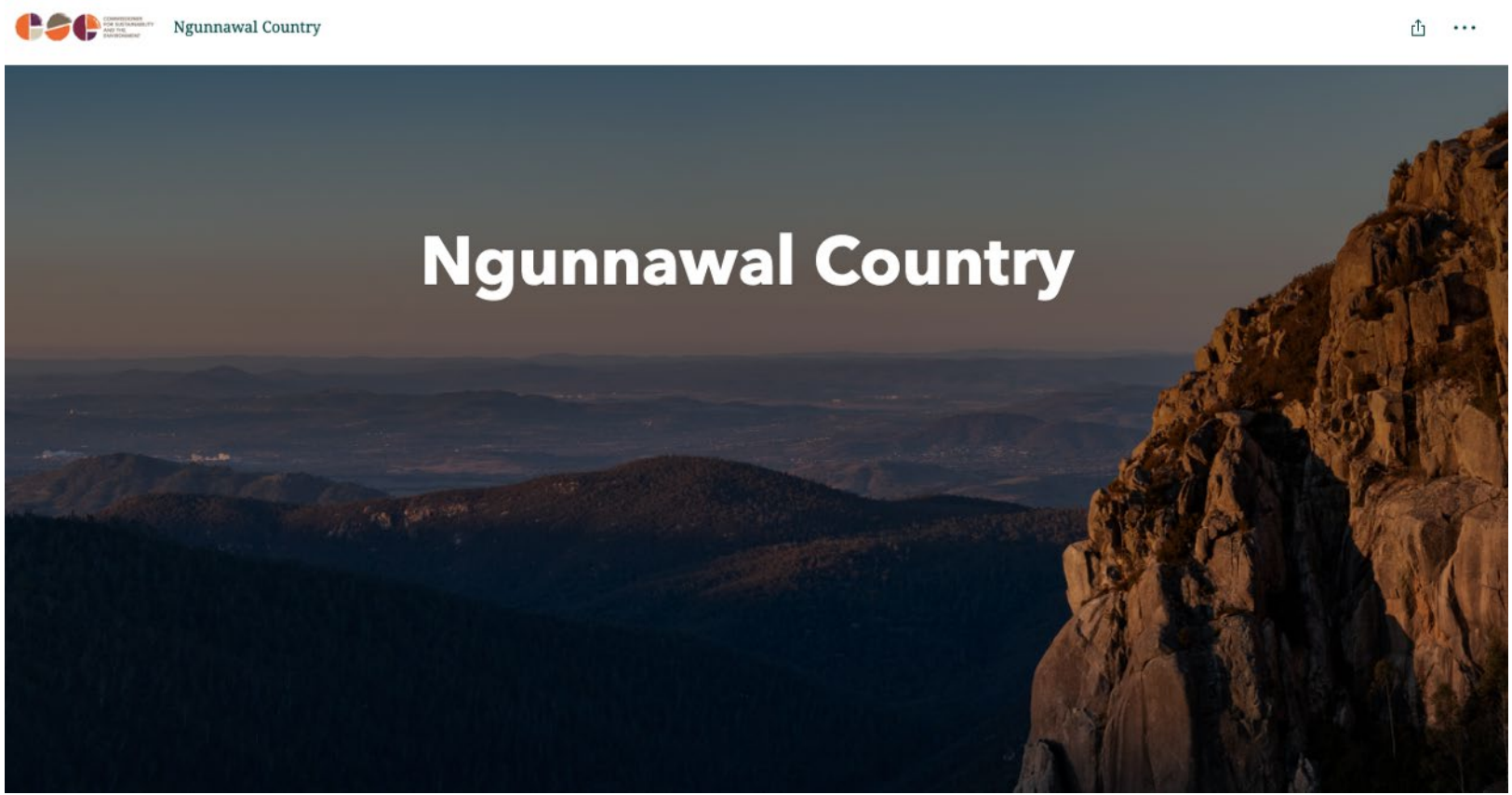
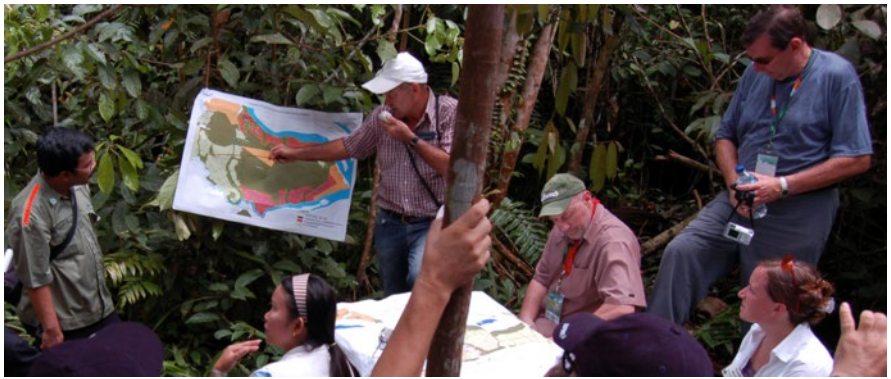
YALE FOREST FORUM
6 September 2022

Australian National University

Acknowledging First Nations, and their land and forests



Acknowledging TFD IMPF, GMT & TPL participants, amongst others



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Intensively Managed Planted Forests

Professor Peter Kanowski - The Australian National University

June 2005

Note: In preparation for TFD's scoping dialogue on IMPF's, the Steering Committee of TFD asked Dr. Kanowski to write a brief report covering the current trends and major stakeholder perspectives on this important issue. The following is a result of his work. TFD is very grateful to Dr. Kanowski for his excellent contribution to this effort.

Introduction

Plantation forests - even-aged stands of a single tree species established primarily for wood production - are one of the defining features and, against many criteria, one of the successes of forestry in the past century. Plantation forest extent increased from negligible to c. 190 M ha; they currently contribute c. one third of world industrial wood supply, and are expected to contribute nearly half by 2040[1]. Other forms of planted forests - those established primarily for land restoration, fuelwood or amenity - are also important[2], but are not the focus of this paper.

An increasing proportion - currently c. 15% - of planted forests are "intensively managed", and these forests contribute disproportionately to industrial wood supply. "Intensively managed planted forests" (IMPF) are defined here as plantation forests[3] of relatively high productivity, in which the owner makes a sustained investment, over the life of the forest, to optimise returns from industrial wood supply.

As WWF[4] notes, "well managed and appropriately located plantations can play an important role in healthy, diverse and multi-functional landscapes", and can generate substantial economic benefits. WWF also notes that plantations can impose significant environmental and social costs: the potential disbenefits of IMPF have been articulated strongly in Carrere and Lohmann's critique of short-rotation pulpwood plantations: "the results, in country after country, have been impoverishment, environmental degradation, and rural strife"[5]. Critics of IMPF are concerned by the consequences of large-scale land use change and wood fibre-based industrialisation, especially for the rural poor and the environment, and argue that these costs often outweigh the associated benefits.

Intensively managed planted forests - concepts, locations, trends

Definitions of planted forests have been evolving to accommodate new forms of forestry and to clarify the blurred distinction with some forms of managed natural forest[6]. Both some proponents and many critics of IMPF prefer not to use of the term "forests" in describing them, favouring terms such as "tree farms" which they believe to better reflect the characteristics of these land use systems.

Contemporary forms of IMPF are distinguished from other forests by composition, scale, management and productivity. IMPF are typified by reliance on one or a few species or interspecific hybrids, established and managed as even-aged plantation stands. The

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Planted forests: a continuum of forms in landscapes

Black Forest, Germany. Photo: Juergen Bauhus

GREAT
GREEN
WALL
GROWING A
WORLD WONDER
A GROUNDBREAKING
VIRTUAL REALITY FILM

Planted forests: a continuum of forms

Pine plantation, Portugal; Smallholder teak, Laos; rural Victoria, Australia; Canberra, Australia

Photos: ACIAR, Australian & ACT Governments

Planted forests: a continuum of forms

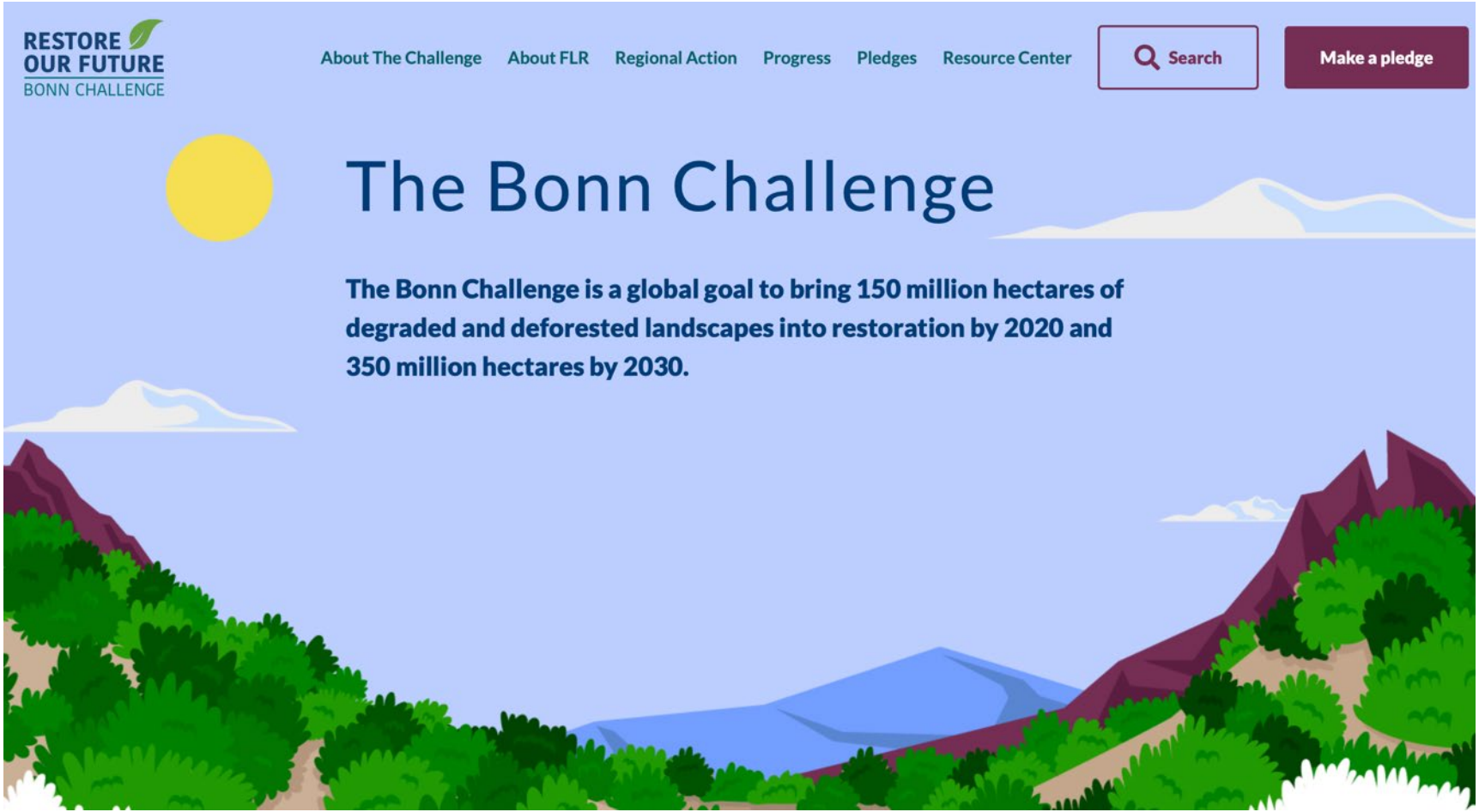
Figure 1. — Scope and concept of planted forests.

Continuum of Forest Characteristics						Non-forest
Primary	Modified natural	Semi-natural		Plantation		Trees outside forests
		Assisted natural regeneration	Planted	Productive	Protective	
Forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed	Forest of naturally regenerated native species where there are clearly visible indications of human activities	Silvicultural practices for intensive management (weeding, fertilizing, thinning, selective logging)	Forest of native species, established through planting, seeding or coppice of planted trees	Forest of introduced species and in some cases native species, established through planting or seeding mainly for *production of wood or non-wood goods*	Forest of native or introduced species, established through planting or seeding mainly for *provision of services*	Stands smaller than 0.5 ha; trees in agricultural land (agroforestry systems, home gardens, orchards); trees in urban environments; and scattered along roads and in landscapes
			← Planted Forests →			

Carle & Holmgren. 2008. *Forest Products J* 58(12): 6-18

Planted forests: a range of purposes

Nepal. Photo: Tony Bartlett



www.bonnchallenge.org

Planted forests: a range of purposes

Pine plantation, Portugal; Farmer teak agroforestry, Java. Photos: Peter Kanowski, Tony Bartlett

Planted forests for wood production > Tree plantations

Eucalypt plantations, Brazil. Photo : FAO 2010 *Planted forests in sustainable forest management;* Farmer balsa grower, PNG

Planted forests: a continuum of forms

FIGURE 10. Components of planted forest

PLANTED FOREST

Forest predominantly composed of trees established through planting and/or deliberate seeding.

PLANTATION FOREST

Planted forest which is intensively managed and meets all the following criteria at planting and stand maturity: **one or two species, even age class, and regular spacing**. Plantation forests are established for the production of timber, fibre, energy and non-wood forest products. Plantation forests mainly composed of introduced species represent a subcategory of plantation forests

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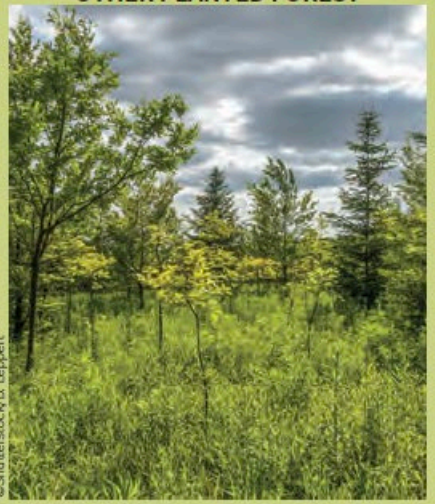
OTHER PLANTED FOREST

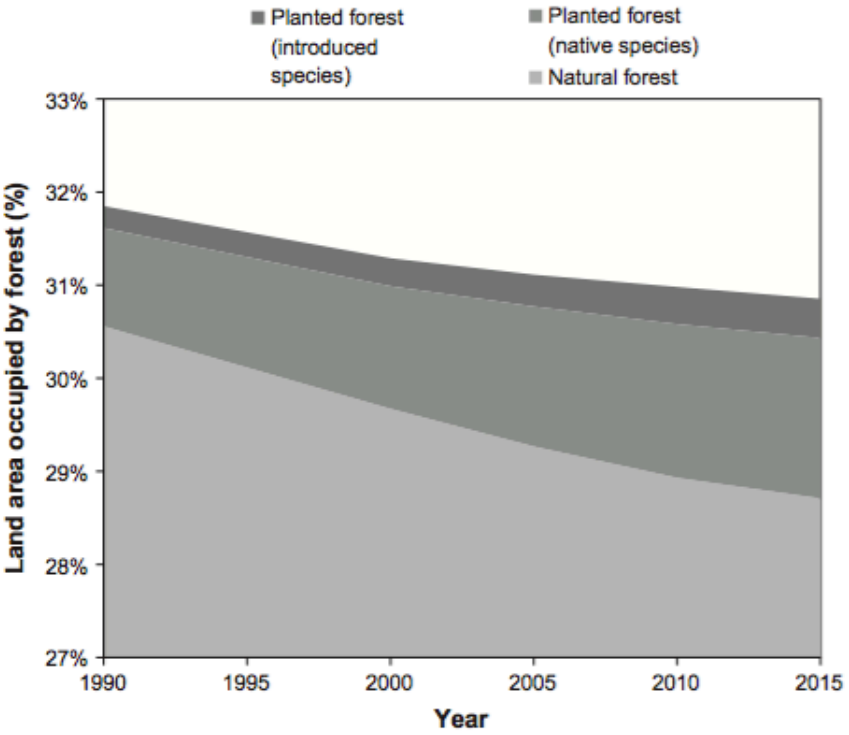


©Shutterstock/D. Leppert

Planted forest that **does not meet the criteria of a plantation forest** and may even resemble natural forests at stand maturity. Other planted forests may be established for purposes such as ecosystem restoration and the protection of soil and water

FAO. 2020. Global forest resources assessment

Global changes in forests & wood production



Payn, T et al. 2015. *For. Ecol. Mgt* 352: 57-67 – Figure 4

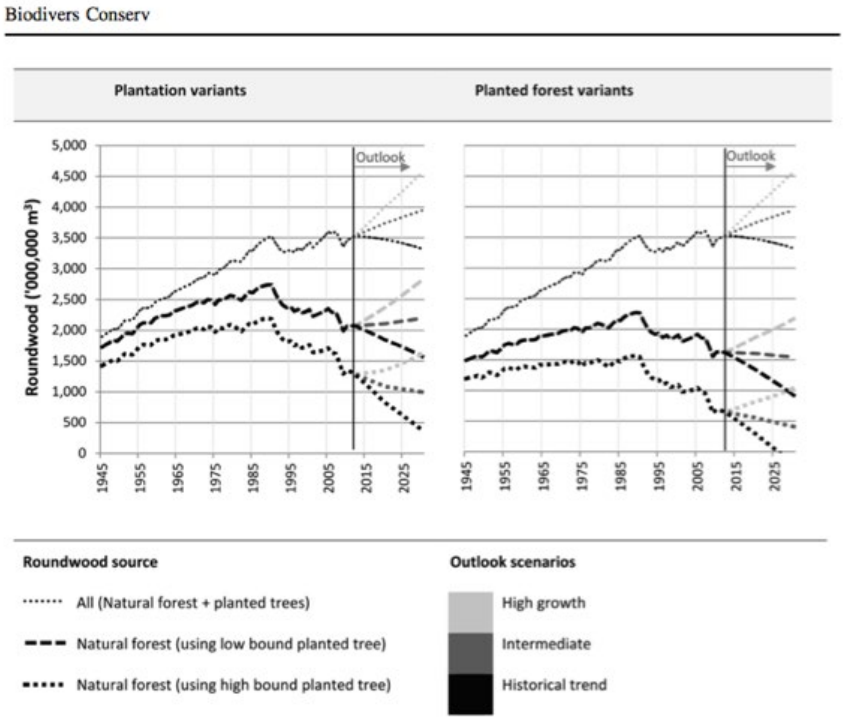
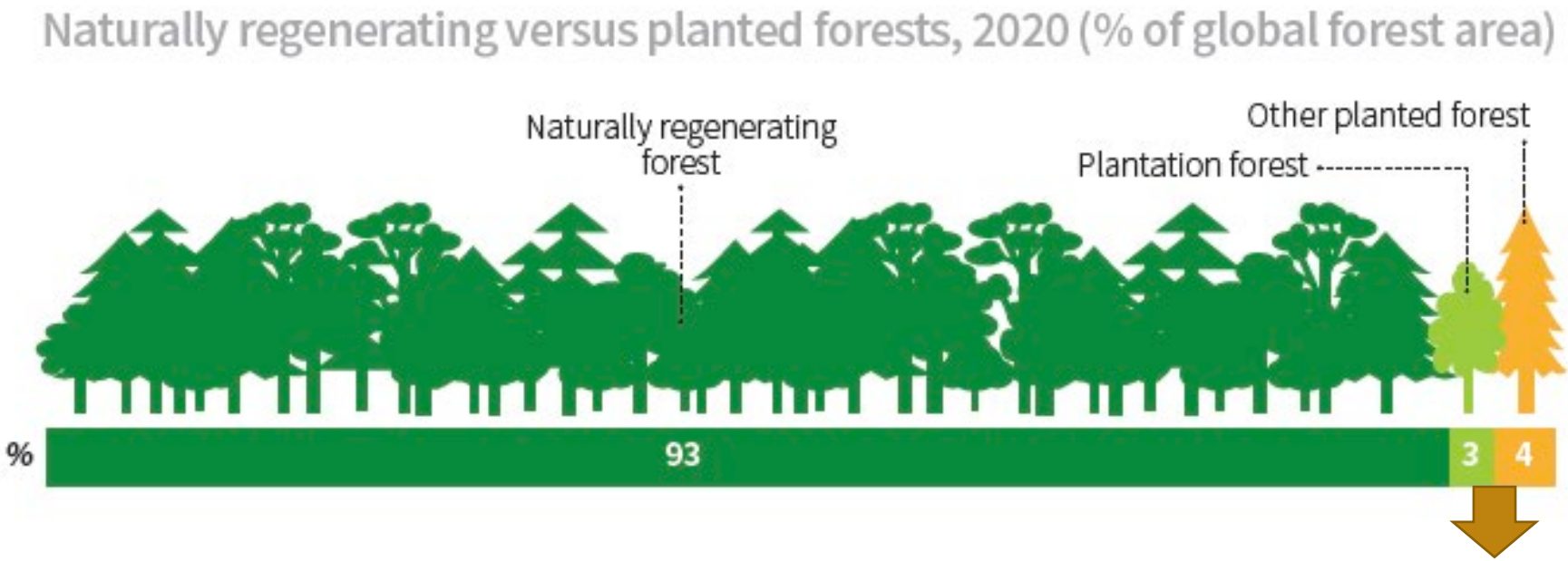


Fig. 6 Estimates of global natural forest roundwood production 1945–2030

Warman, R. 2014. *Biodiversity & Conservation* 23: 1063-1078

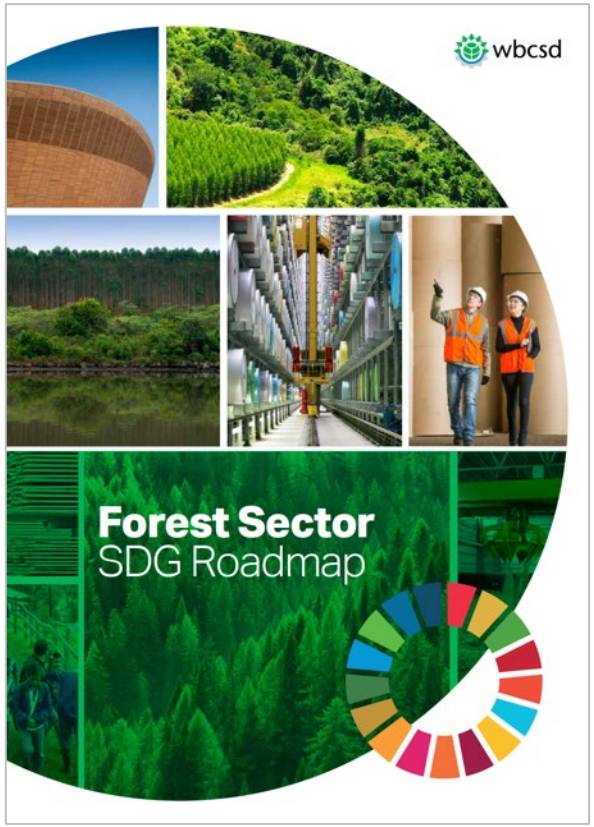
Planted forests & tree plantations:
relatively small extent, increasing role in wood supply

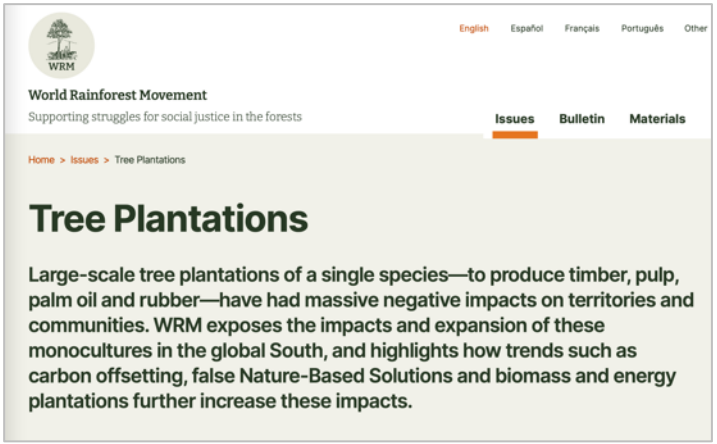


c. 50% global industrial roundwood

Graphic: FAO. 2020. Global forest resources assessment. Wood trade data: Payn et al 2015.

Tree plantations: contested, competing discourses

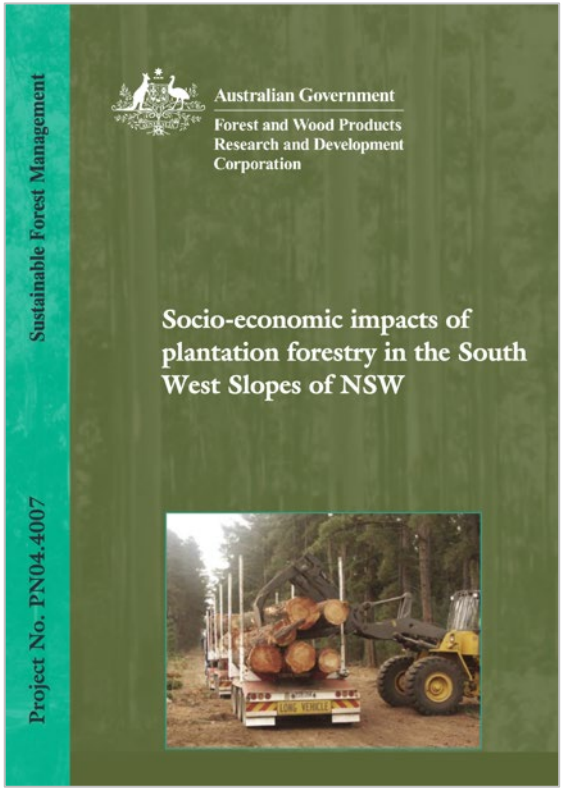


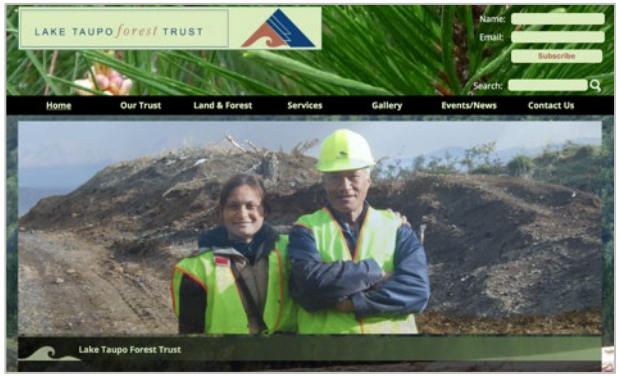


www.wbcsd.org/Sector-Projects/Forest-Solutions-Group

wrm.org.uy/subjects/tree-plantations

Tree plantations & planted forests > 'wood' value chains





Sources: fwpa.com.au, ltft.co.nz, upmbiofuels.com/upm-biofuels/biorefinery; Da Nang, Vietnam

A diverse coalition in favour of plantations …

land

MDPI

Article

Diversifying Forest Landscape Management—A Case Study of a Shift from Native Forest Logging to Plantations in Australian Wet Forests

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Abstract: Natural forests have many ecological, economic and other values, and sustaining them is a challenge for policy makers and forest managers. Conventional approaches to forest management such as those based on maximum sustained yield principles disregard fundamental tenets of ecological sustainability and often fail. Here we describe the failure of a highly regulated approach to forest management focused on intensive wood production in the mountain ash forests of Victoria, Australia. Poor past management led to overcutting with timber yields too high to be sustainable and failing to account for uncertainties. Ongoing logging will have negative impacts on biodiversity and water production, alter fire regimes, and generate economic losses. This means there are few options to diversify forest management. The only ecologically and economically viable option is to cease logging mountain ash forests altogether and transition wood production to plantations located elsewhere in the state of Victoria. We outline general lessons for diversifying land management from our case study.

Keywords: sustainable forest management; forest history; pattern and process; fire regimes; biodiversity; ecosystem values

check for updates

Citation: Lindenmayer, D.; Taylor, C. Diversifying Forest Landscape Management—A Case Study of a Shift from Native Forest Logging to Plantations in Australian Wet Forests. *Land* **2022**, *11*, 407. https://doi.org/10.3390/land11030407

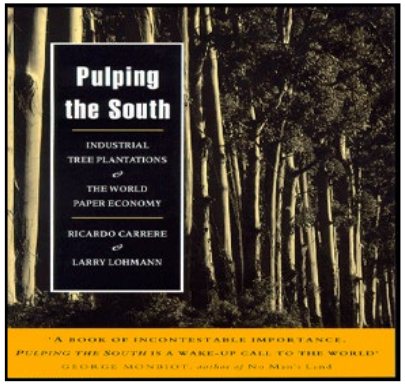
Academic Editor: Thomas

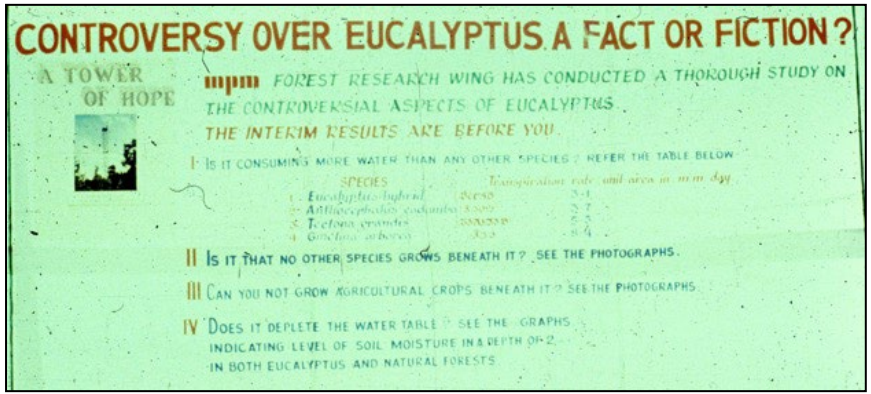
1. Introduction

The world's forests play critical roles in water cycles, carbon storage, wood production, and biodiversity conservation [1–3]. How forests are managed can have profound impacts

Tasmanian Wilderness Society c 1990

A counter discourse – costs outweigh benefits





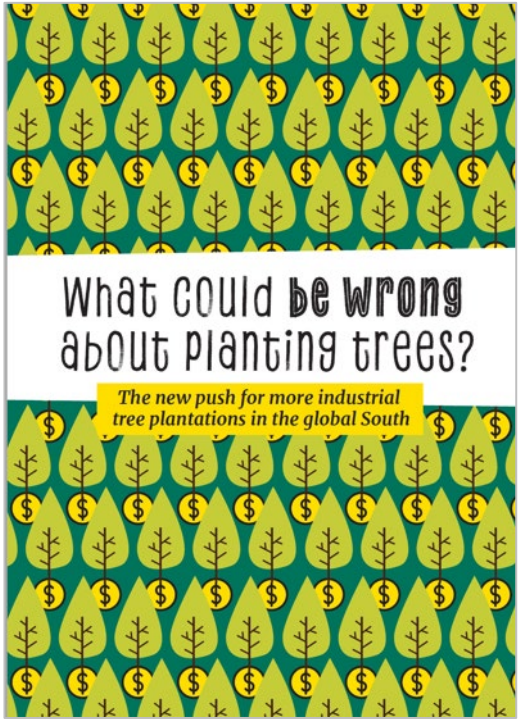
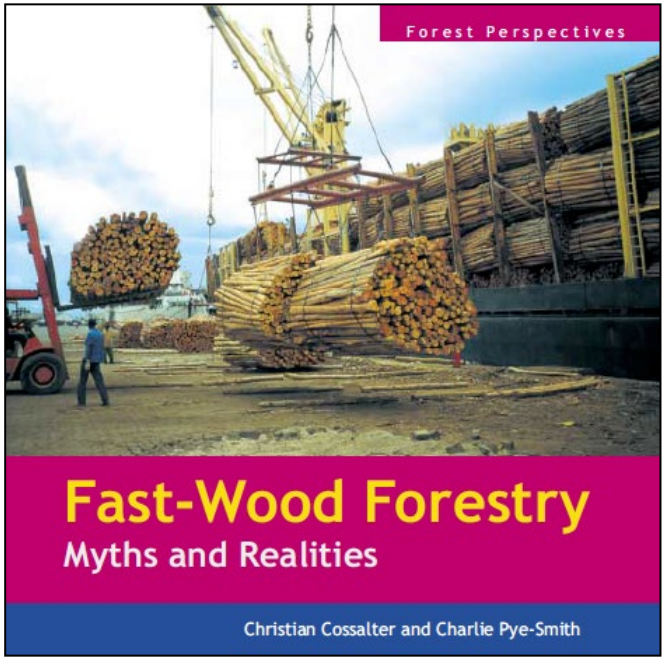


Photo credits: Philip Adlard; stopgetrees.org/; EJOLT - Vanessa Vilarinho.

World Rainforest Movement: wrm.org.uy/subjects/tree-plantations

Most criticism focused on large-scale, short-rotation plantations



Friends of the Earth International

plantations are not forests

position paper
july 2010

Tree plantations are not forests. They are a monoculture which causes huge impacts throughout the world. Plantations are a huge number of very rapidly growing single species of trees of the same age that are sawn to occupy considerable land areas, with very high consumption of soil nutrients and water. When they reach their reproductive cycle, they are all cut down to the ground. Plantations are uniform agricultural systems which replace in many cases natural ecosystems or agro-ecological systems which are richer in terms of biological and cultural diversity, and where many peasant and indigenous communities live.

www.foei.org/wp-content/uploads/2014/01/plantaciones-final-ingles.pdf

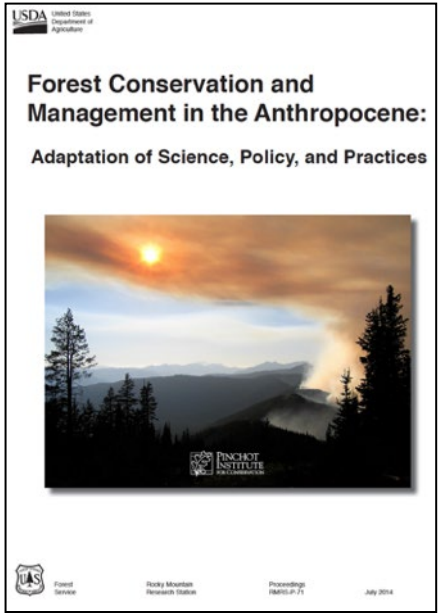
Planted forests: various realities #1 (of many)

A resident sprays water on a peatland fire in Pekanbaru district in Riau, on February 16, 2014. Indonesia has pledged $20 million to help minimize the impact of climate change on the Pacific. (AFP Photo)

thejakartaglobe.com/business/better-manage-forests-farms-start-talking/; ActionAid

Planted forests: various realities #2

Planted forests: various realities #3 (etc ...)



Images: EFI; USDA; Harz Mountains, Germany – photo Juergen Bauhus

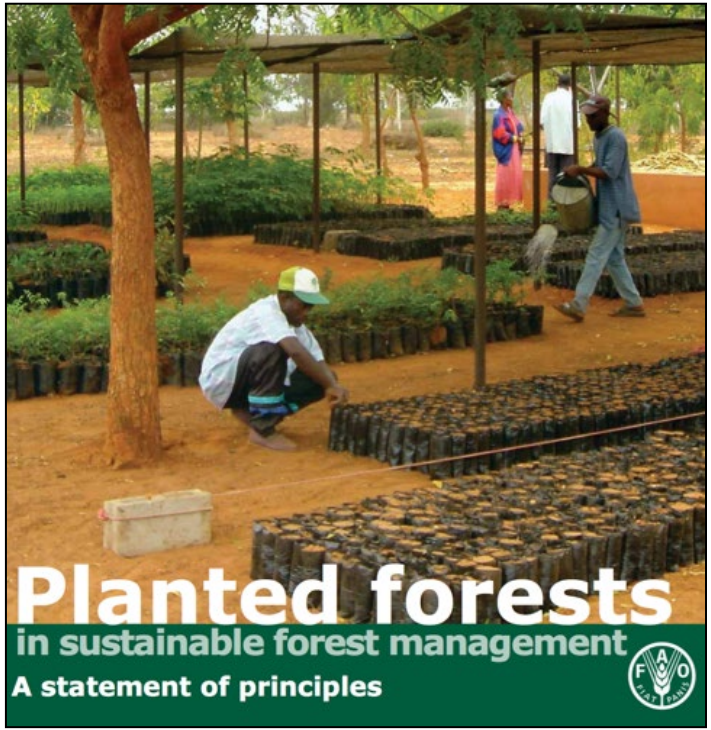
Planted forests:
various realities & possibilities …

Most likely that planted forests
- in a variety of forms
& for a range of values -

will continue to become more significant …

How to ensure planted forests are ‘good’;
and how to strike/ calibrate tradeoffs?

Planted forests: principles for the future



Planted forests: principles for the future

- Good governance
- Corporate responsibility
- Equitable sharing of benefits & costs
- A landscape approach
- Sustainability across scales & over time

Planted forests: in conclusion ...

Principles for good practice are evident;

principled implementation,
in the diversity of contexts, is a core challenge.

Eucaliptos:
"On a moonlight night, our love was blessed;
the aroma of two bodies,
and the smell of the eucalyptus ..."

which might be generalised to:
- social dimensions (& emotions) matter,
in relation to planted forests, as for all else ...