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Challenges for Sustainable Forest Management through Urbanization

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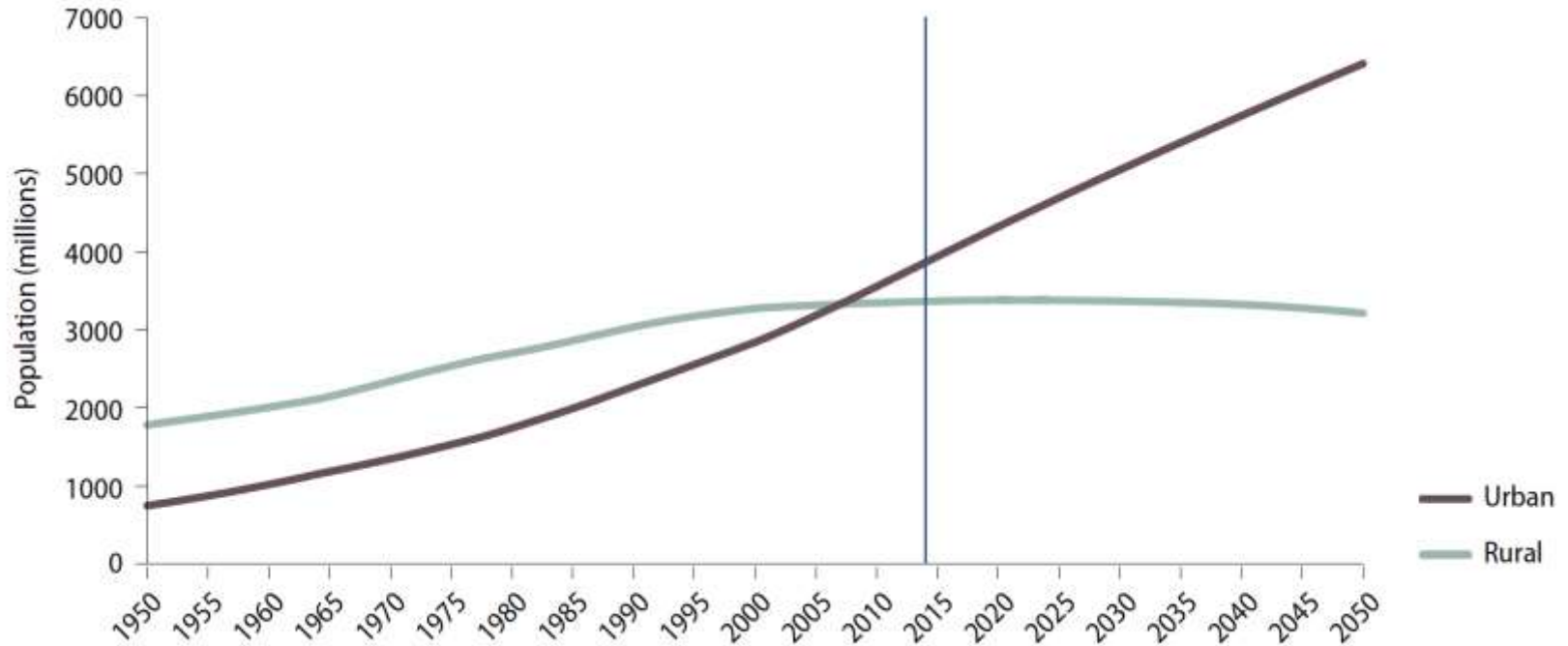


Sustainable Forest Management (SFM)

Global forest cover in 2014: 4,000 Mio ha

| Positive developments | Limits |
|---|--|
| 99% of global forests are covered by legislation promoting SFM <small>(MacDicken et al. 2015)</small> | No minimum standard |
| ‘Best practice’ of SFM on 1,100 Mio ha | No universal definition |
| Forest certification is increasing | No ‘operations manual’ |
| UN (FAO), ITTO, CDB, Montréal/Helsinki Process, NGO’s (e.g. WWF, FSC) provide guidance to realize SFM | Difficulties in documentation, evaluation (quality of data, partisanship, ideology, emotional disposition, etc.) |

Urbanization – a global trend

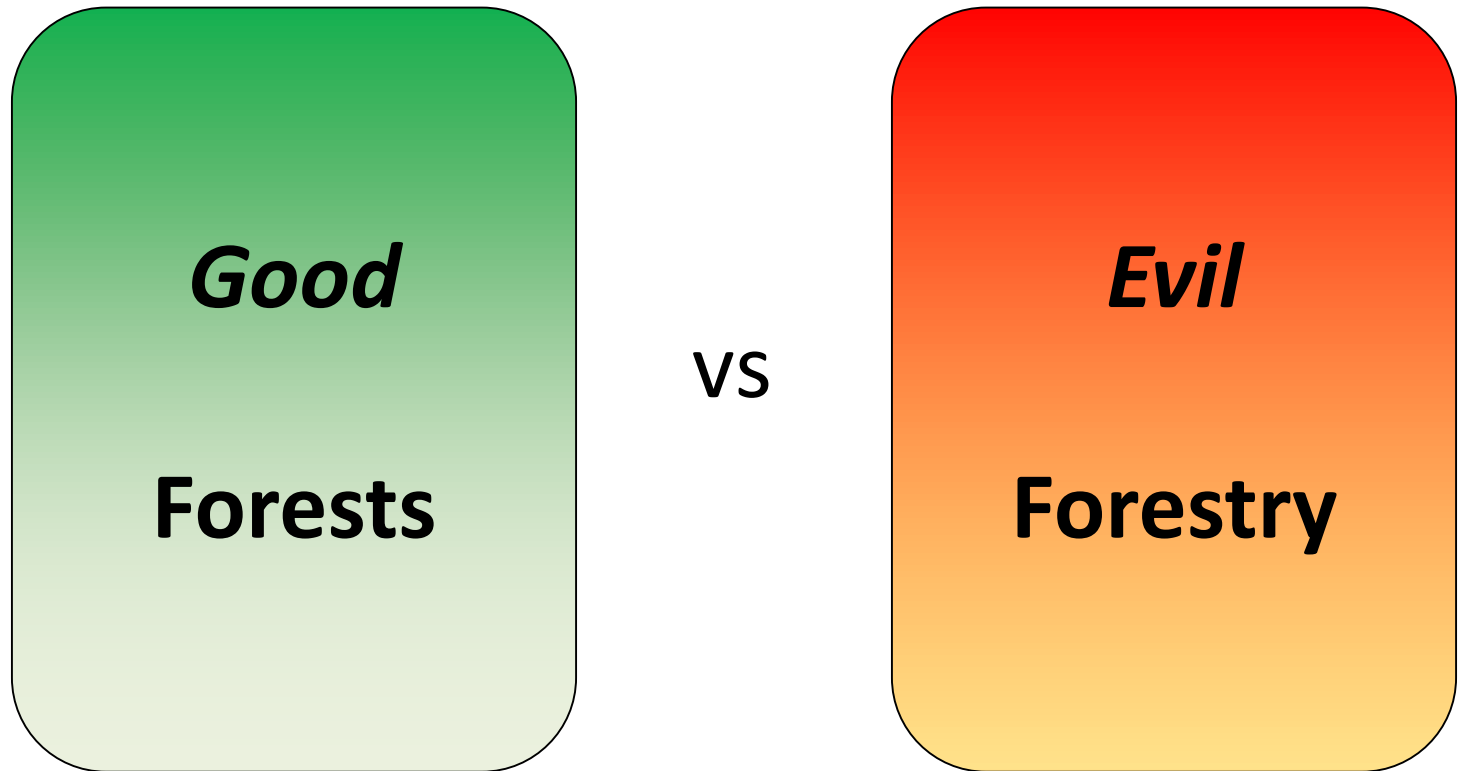


Urban and rural population of the world, 1950 – 2050 (Source: UN, 2014)

Does urbanization promote factual distance from SFM?

What is the consequence of this development?

Dichotomy in western urban societies

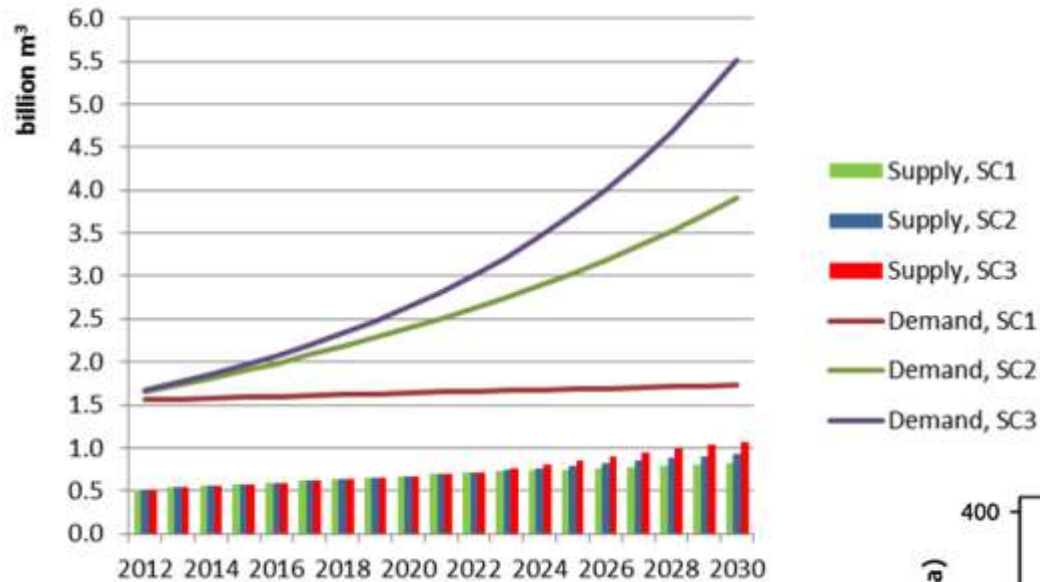


Representative study of urban society in Germany by Suda (1998):
24% unable to generate any association with the topic “forestry”

Demand – Supply – Protection

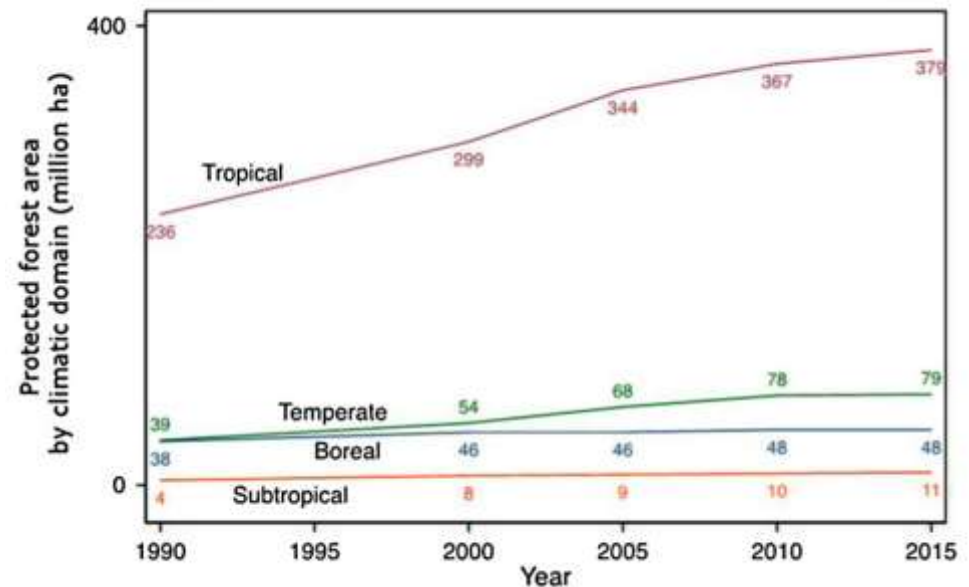
Global supply and demand scenarios (ind. RW)

(Source: Indufor Plantation Databank 2012)



Trends in protected native forest area

(Source: Morales-Hidalgo et al. 2015)

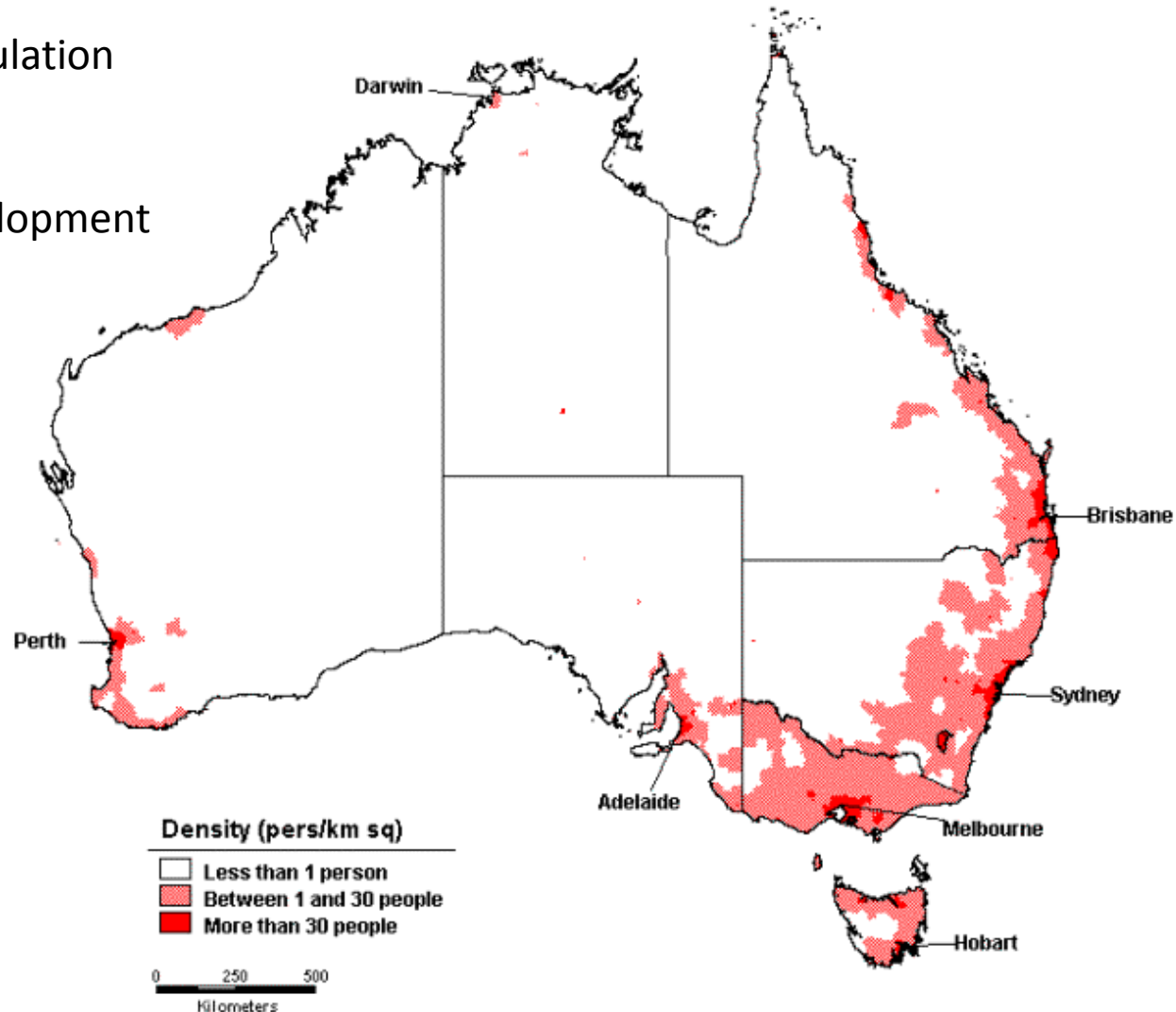


Australia – urban continent

80% of population in 5 cities

Societal ideas of urban population
are reinforced via elections

Ideology affects policy development
of governments



Forest Facts Australia

Total native forest area = 125 Mio ha native

36.6 Mio ha (30%) native forests available for wood production

39.2 Mio ha (32%) native forests protected for conservation of biodiversity

nearly double of the Aichi Biodiversity Target (17%)

Net harvestable area in native forests:

1996 = 10.1 Mio ha 2014/15 = 3.9 Mio ha (-62%)

Annual net-harvested area in Australia is 54,600 ha (1.4%)

Australia's trade deficit in wood and wood products is AU\$2 Billion/yr

Forest Facts Australia

Australia is a signee of the Montréal Protocol

Montréal Process Implementation Group (Australia) reports 7 Criteria using 44 Indicators

Criteria that make up Australia's Framework for SFM:

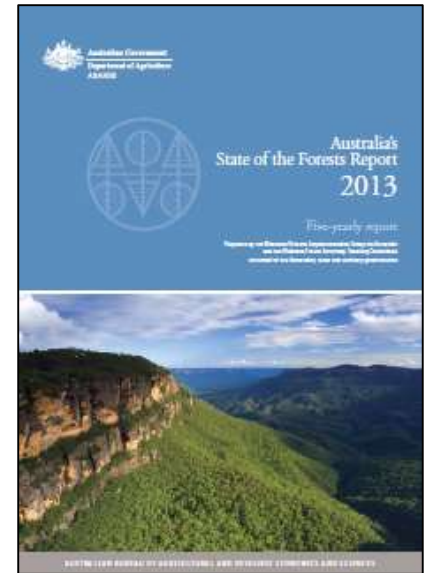
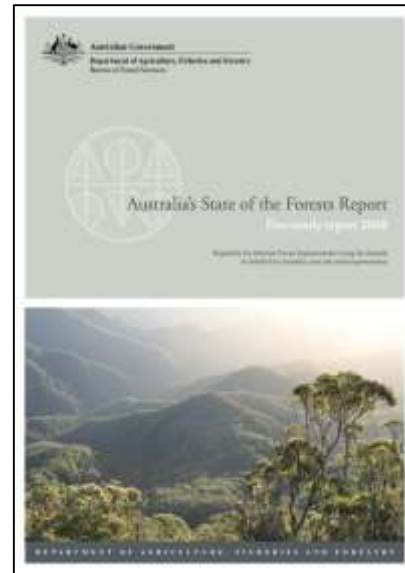
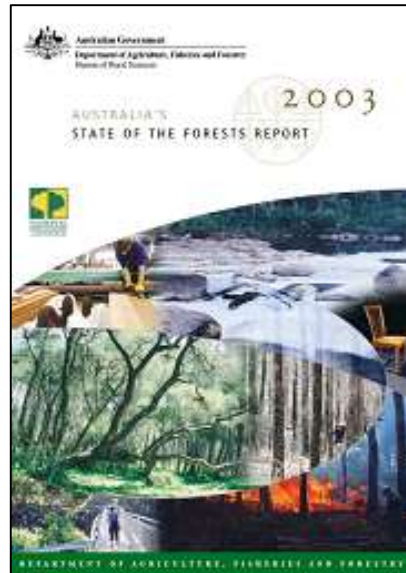
1. *Conservation of Biological Diversity*
2. *Maintenance of productive capacity of forest ecosystems*
3. *Maintenance of ecosystem health and vitality*
4. *Conservation and maintenance of soil and water resources*
5. *Maintenance of forest contribution to global carbon cycles*
6. *Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies*
7. *Legal, institutional and economic frameworks for forest conservation and sustainable management*

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Substantial indirect impact of Montréal Protocol on forestry operations through legislation and resulting planning of operations that follow the principles of SFM



Effects in Australia

Multiple direct and indirect effects on forests

Operation scale

Coupe size

Return time to adjacent coupes

Minimum period to full harvest

Tree retention clumps

Basal area retention

Hollow-bearing trees

Giant trees

Koala habitat

Rocky outcrops

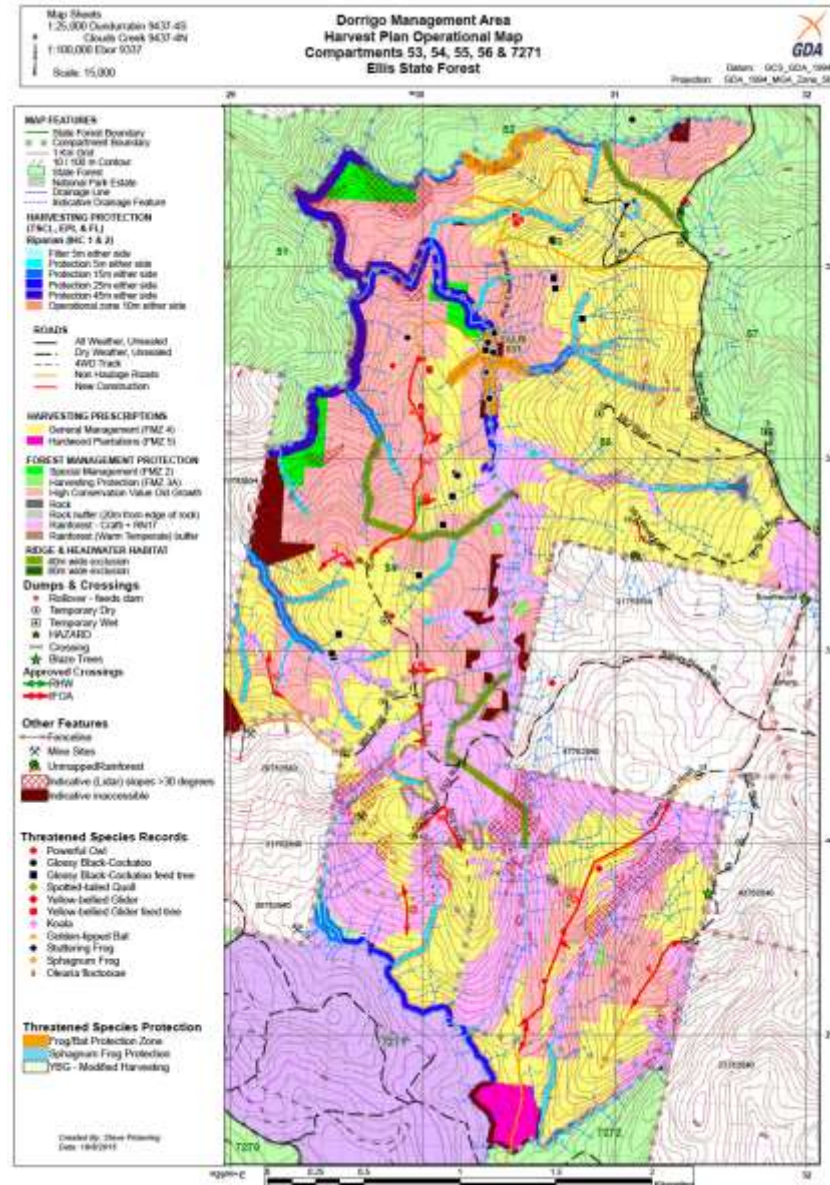
Seed trees

Riparian zones

Threatened species exclusion zones

Roads and bridges

etc.



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etc.

Landscape scale

Rising temperatures
Rising [CO₂]
Shifting rainfall patterns

Drought mortality
Pathogen outbreaks
Bushfires

Political sphere

‘Deep Decarbonisation’

Societal sphere

Support for forest operations

Lack of long-term ecological information (BIG DATA)

=

Restrictions for evidence-based decision making

Effects in Australia (SoF Report 2013)

Indicator 6.2b - R&D Investment

- \$122 Mio/yr in mid-1980s \$48 Mio/yr in 2013

Indicator 7.1b - Education

- Since 2007, two universities closed forest-related undergraduate programs
- Only one university provides a dedicated forestry degree
- Number of university graduates with a forestry qualification continues to decline
- Industry suffers shortages in qualified personnel

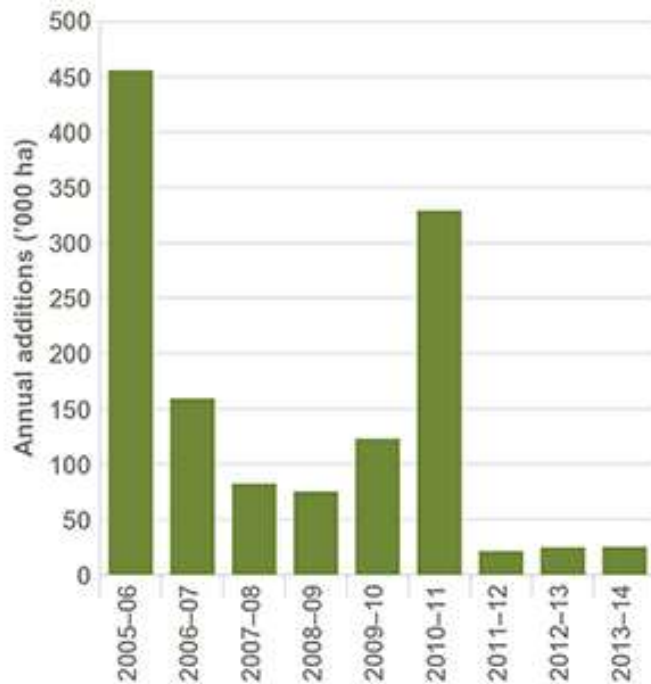
Indicator 7.1e - Employment

- 2006 – 2011: 12,000 jobs lost
- Government agencies, academic institutions, private sector
- Capacity for R&D declines

Effects in Australia (e.g. State of New South Wales)

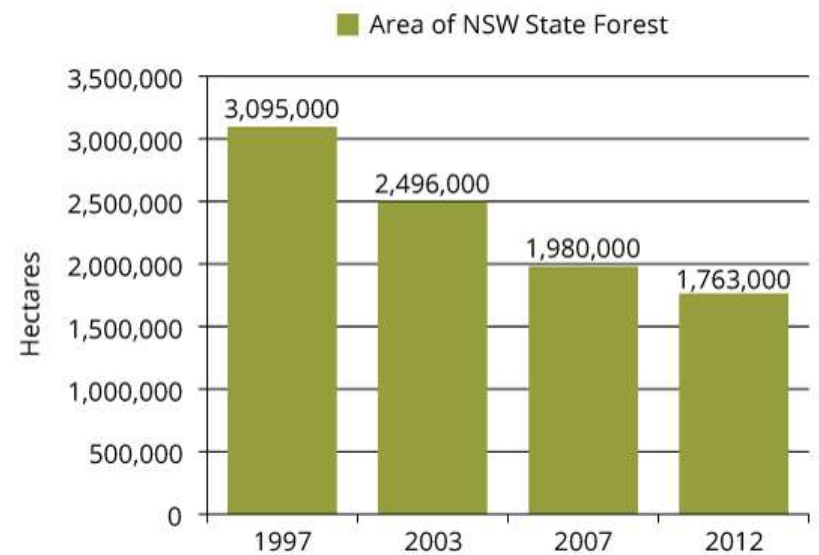
New formal conservation areas since 2005

(Source: NSW NPWS 2015)



Declining area of NSW State Forest

(Source: McIntosh 2013)



Effects in Australia

Full-time employees in forest-related R&D

| | 1985 | 2008 | 2013 |
|------------------------|------|------|------|
| CSIRO | 325 | 173 | 64 |
| State Governments | 432 | 247 | 82 |
| Total (non-University) | 767 | 549 | 160 |
| University | 27 | 183 | 92 |

AFPA 2013

Total employment in the wood and wood-product sectors

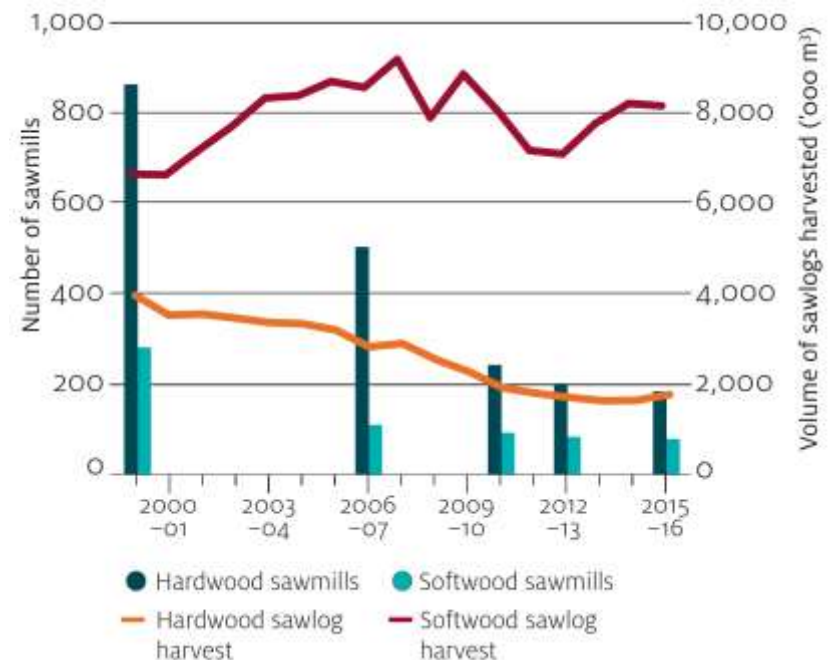
2006: 85,254
2011: 73,267
2016: 64,300

-25%

(Source: SoF Australia 2013 and ABARES, Australia's Forests at a Glance 2017)

Number of saw mills and volume of saw logs harvested between 2000 and 2013

(Source: ABARES, Australia's Forests at a Glance 2017)



A plea for forests and forestry

- A renaissance in (urban) public education about forests is necessary
- Effect of SFM is monitored, effectivity of conservation is not – why?
- Facts over emotions
- Work against widening of the rural-urban divide
- Promote urban forestry
- Increase participation through citizen science
- Revoke dichotomy “forest vs forestry”



Summary

- SFM is only realized when **all Montréal indicators and criteria are addressed**
- **Urbanized societies are increasingly distant** from the source of materials and products they consume
- **Limited political will** to tackle unpopular issues like utilization of forest resources
- **Dichotomy of forests vs forestry** is counterproductive
- Protecting your forests at home will cause **forest destruction elsewhere** (where standards for SFM are possibly low)
- Improved capacity for **education and R&D is paramount** to achieve SFM
- Promote ***Systems Thinking*** and ***Transdisciplinary Research***

