

**SUSTAINABLE DEVELOPMENT GOALS, CLIMATE CHANGE
AND THE FUTURE OF FORESTS IN THE ASIA-PACIFIC**

24 May - 2 June 2016, Yogyakarta, Indonesia

The future direction of
innovations
and their impacts on
FORESTRY

Prof Neil Byron



The Innovation agenda

Where will national wealth and prosperity come from in future?

Primary Industries?

Manufacturing?


Service Industries?



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The answer seems to be that Australia will do all of these to some extent, but whatever we do, [whether, farming, mining, tourism, manufacturing, banking or medicine] it must be internationally competitive for global markets so we must be **innovative, creative and productive** at every step



some dramatic technological changes

- from NASA
- from US Defence Dept
- robotics
- wireless remote control
- virtual reality
- internet e-commerce
- e-health
- renewable energy
- consumer electronics/digital
- nano-technology



Innovations past

What do you think have been the greatest technical innovations in forestry (broadly defined) over the past 10-15 years, and why?



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Innovations future

What do you think will be the greatest technical innovations in forestry (broadly defined) over the NEXT 10-15 years, and why?



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Source of innovations?

Where do you think significant technical innovations in forestry (broadly defined) have come from over the past 10-15 years?

- someone (researchers, businesspeople?) was deliberately searching for a solution to a major problem, or
- were they just “out of the blue sky” - completely chance? Or
- were adapted from some other sector?



An example value chain innovation matrix.

Example Industry value chain	Examples categories of innovation				
	Information collection and analysis	Nano-technology	Automation	Material Alternatives	Energy
Provision of inputs					
Bulking, cleaning, grading					
Trade					
Processing, packaging					
Retail					



What Next?

- which parts of the Value Chain are most likely to be disrupted?
- How will disruptions due to technological innovations change the way we practice forestry



Science fiction? Or already here?

- In forest nurseries (eg inoculation with micro-symbionts like Rhizobium, mycorrhizae and Frankia,
- in genetic improvements for plantation species,
- in matching species/genotype to specific sites and soil types or custom fertilization matched to specific site-genotype combination;
- In management and assessment eg drones and/or satellites for remote sensing of growth rates, not just standing volumes of forests; or drones for assessing disease or insect attack and delivering treatment?



Science fiction? Or already here?

- improved harvesting and transport mechanisms/systems
- improved sawmilling technologies using robotics, lasers, computers, X-ray scanners etc to get optimised product recovery from every individual log that is cut
- making high-value and high-profit margin products from cheap abundant low-grade raw materials, (e.g. MDF, OSB) or using improved adhesives with finger-jointing and edge-gluing and reconstituted wood products like LVL.

