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Delivering breakthroughs in bioproducts, wood processing and forestry research

A POLICY PROPOSAL FROM





A NEW VISION FOR AUSTRALIA'S FUTURE FOREST INDUSTRIES

As the world transitions to a more sustainable and lower emissions future, Australia's renewable forest, wood and paper product industries are uniquely placed to play a lead role in the national and global goal of net zero emissions.

Forest industries continue to break the boundaries of what is possible with timber in construction. Meanwhile, wood-based bioproducts are being deployed in a growing number of innovative ways to replace non-renewable fossil fuel-based chemicals and materials.

Australian forestry and our forest industries can lead this trend.

The global pandemic and the increased demand for locally produced timber, paper, personal protection equipment (PPE) and packaging solutions has underscored just how vital it is for Australia to be self-sufficient in making these essential products, all of which require sustainably sourced wood fibre.

However, over the past 20 years government investment in forest industries R&D has drastically declined.

Australia risks missing out on a once-in-a-generation opportunity to be at the forefront of the shift to renewable and sustainable industries, and ensuring we are self-sufficient as global demand for wood fibre triples over the next 30 years.

And, in the process, we could miss out on thousands of new jobs in advanced manufacturing and circular economy industries.

IN ORDER TO SEIZE THIS OPPORTUNITY, AUSTRALIA NEEDS A NATIONAL, PROPERLY RESOURCED AND COORDINATED R&D INSTITUTION TO DRIVE AUSTRALIA'S FOREST PRODUCT INDUSTRIES TO THE FRONT OF THE PACK.

That is why the Australian Forest Products Association and the University of Tasmania have partnered to develop an ambitious new national vision for forest industry R&D in Australia.

Our joint proposal for a national-scale National Institute for Forest Products Innovation (NIFPI), based in Launceston with professional networks all over Australia, will turbocharge innovation in Australia's forest industries to create the renewable industries of the 21st century.

To achieve this, we need the Australian Government to join with industry to back this vision.

Greg McCormack AFPA Chairman

A VITAL NATIONAL ENDEAVOUR

Wood products have a pivotal role to play in a net-zero emissions world and a sustainable economy. It is critical that Australia has the supply of timber, the technology to develop new products, and expertise to use timber effectively.

Today this is not the case. We have let our plantations shrink, we import more wood product than we produce and we have dramatically cut the funding Australia needs to research. Australia needs the knowledge to sustainably grow sufficient timber in local conditions and to transform the resource into the products we need.

In an era of global competition for essential primary materials, this is a question of sovereign capability. We are already seeing supply disruptions and rapidly rising prices for the timber we need. We need to act now.

But it is also a great opportunity for the Australian economy. We can grow a major sustainable industry for the domestic and global export markets to support the transition to a low-emissions global economy.

With that global industry will come a new generation of jobs. There will be production jobs and, as innovation transforms timber into new products, there will be new manufacturing jobs.

Our commitment is to provide the knowledge to support a timber industry that is a critical contributor to meeting the challenges of climate change, protecting biodiversity and multiple forest values, and growing a large and vital value-adding industry for Australia.

THE UNIVERSITY OF TASMANIA IS WELL PLACED TO HOST THE NATIONAL INSTITUTE FOR FOREST PRODUCTS INNOVATION (NIFPI) AND BRING TOGETHER THE NATIONAL COLLABORATION AUSTRALIA NEEDS FOR THE FUTURE.

We have demonstrated a strong commitment to the future of forestry with 25+ years in leading national centres in forestry research needs. As a result, we have broad capability in forest industry research across the value chain and an extensive collaboration network.

Above all, this is a critical national endeavour so the Institute will be overseen by an Industry Board drawn from across the nation, supporting collaborative research efforts across all institutions with expertise in the relevant fields.

As I look to the future, I am excited by what this National Institute can achieve for Australia.

Professor Rufus Black

Vice-Chancellor, Univeristy of Tasmania



THE WORLD NEEDS MORE RENEWABLE FOREST, WOOD & PAPER PRODUCTS



GLOBAL DEMAND FOR RENEWABLE FOREST PRODUCTS IS FORECAST TO QUADRUPLE BY 2050



A CIRCULAR ECONOMY COULD BE WORTH **\$2 TRILLION** TO THE AUSTRALIAN ECONOMY OVER THE NEXT 20 YEARS



THE GLOBAL PLASTIC ALTERNATIVE PACKAGING MARKET COULD GROW BY 16% IN 2021



GLOBAL DEMAND FOR CROSS-LAMINATED TIMBER IS **GROWING AT 15%** ANNUALLY, REPLACING STEEL AND CONCRETE BUILDINGS



AUSTRALIA ALREADY IMPORTS **\$6 BILLION WORTH** OF FOREST PRODUCTS EVERY YEAR, **\$2 BILLION** MORE THAN WE EXPORT

INVESTMENT IN AUSTRALIAN FOREST INDUSTRIES R&D HAS DECLINED DRAMATICALLY

- OUR SOVEREIGN CAPABILITY IN ESSENTIAL WOOD PRODUCTS SUCH AS TIMBER FOR HOUSING IS AT RISK
- AUSTRALIA RISKS MISSING OUT ON THESE MODERN MANUFACTURING OPPORTUNITIES

In 2007-08, Australian Governments (across Federal and State) were investing around \$100 million a year on forest industry R&D. Today, this has fallen to less than \$20 million.

This has translated to a severe collapse in research capacity, with the number of forest industry researchers dropping from more than 730 to just 30 in the corresponding period.

This severe decline has been largely driven by downsizing and restructuring within many State and Federal Government research agencies, particularly the CSIRO.

The recent success of the Federal Government's pilot NIFPI programs in Launceston (TAS), Mt Gambier (SA) and Gippsland (VIC), matched by the State Governments and delivering industry co-contributions of up to \$3 for every dollar from government, demonstrates industry's willingness and capacity to co-invest in R&D.

However, transformative change and the development of world-leading innovations can only happen with a long-term, properly funded forest products R&D sector.

R&D FUNDING HAS DECREASED BY OVER 80%

IN THE PAST DECADE



THE NUMBER OF FOREST PRODUCT RESEARCHERS IS DOWN 95%



THE PROPOSAL: A NATIONAL-SCALE INSTITUTE FOR FOREST INDUSTRIES INNOVATION

The National Institute for Forest Products Innovation will turbocharge Australia's innovation capability in emerging technologies such as biomaterials, biochemicals and biofuels, as well as traditional fields such as forest science and timber processing.

The Federal Government has recognised the need to grow our forest industries R&D sector, committing \$1.3 million in the 2021-22 Budget for a feasibility study into an Australia-wide NIFPI that builds on our existing, fragmented R&D capacity.

An analysis by AFPA and UTAS of our existing R&D capacity, where it used to be, where it should be, and how world-leading countries fund and organise their forest industry R&D capability, has determined that to be globally competitive and deliver meaningful change we need:

COMMONWEALTH INVESTMENT OF \$100 MILLION OVER 4 YEARS, MATCHED BY INDUSTRY CONTRIBUTIONS, TO CREATE A WORLD-LEADING FOREST INDUSTRIES RESEARCH CENTRE TO UNLOCK THE FOREST INDUSTRY JOBS OF THE FUTURE

This will:

- Accelerate commercialisation of research pathways to fast-track breakthrough technologies and productivity improvements to create new advanced manufacturing industries and optimise existing ones
- Build the critical mass of researchers and facilities needed to deliver better R&D outcomes for the forest products industry, as well as providing researchers with attractive career paths, increased resources and a creative environment
- Strengthen the national coordination and planning of R&D capacity, investment and implementation of priority industry-focused research at the national level
- Encourage global networking to ensure the sector is well placed to take advantage of innovations created internationally

UNLOCKING THE FOREST INDUSTRY JOBS OF THE FUTURE

Australia's forest industries need to continue to innovate to meet the growing national and international fibre and wood demands, amid increased focus on reducing our carbon footprint and our reliance on non-renewable materials.

The NIFPI will underpin next-generation manufacturing, turning waste and residues into innovative new products, creating a circular economy and ensure we have the sovereign capability in our essential timber and forest fibre products. AFPA and UTAS estimate the NIFPI will support the creation of thousands of new forest industry jobs across the country.

The NIFPI will achieve this by focusing on five priority areas:

FIBRE AND BIOPRODUCTS

Turning forest and timber residues into next generation bioproducts, creating new industries and playing a vital role in the circular economy.



SOLID ENGINEERED WOOD, DESIGN AND CONSTRUCTION

Wood as a sustainable, renewable, low intensity carbon building material in a healthy built environment.



SUSTAINABLE FORESTS

Innovation in tree breeding and genetics, forest management, bushfire mitigation, biodiversity and natural capital accounting will ensure Australia's forest management continues to be world best practice and a selling point for our forest products.



CLIMATE SOLUTIONS

The forest and wood products industries are a solution to reducing Australia's emissions and can play a key role in sequestering carbon as we move towards a net zero emissions economy.



INNOVATIVE SUPPLY CHAINS

Innovating the supply chain to maximise value-adding will help ensure we get the most value and products out of our forest resources and remain globally competitive.

These priority areas will be underpinned by economic and policy analysis to ensure the research focuses on the critical issues to secure Australia's competitiveness and industry growth.

GLOBAL ADVANCEMENTS IN THE USE OF RENEWABLE WOOD FIBRE ARE EVERYWHERE



SUSTAINABLE WOOD-BASED SOLUTIONS FOR THE 21ST CENTURY

ATLASSIAN TO BUILD MASS TIMBER SKYSCRAPER IN SYDNEY

Aussie tech giant Atlassian is building its new 40 storey headquarters in Sydney out of mass timber. The building will target a 50 per cent reduction in embodied carbon and energy, compared with conventional construction.

WOOD-BASED SOLVENT TO REPLACE FOSSIL FUEL-BASED CHEMICALS

Developed in Boyer, Tasmania, Cyrene[™] is a non-toxic, woodbased solvent developed through the chemical conversion of wood residues. It was developed by the Circa Group which worked with pulp and paper company Norske Skog on a plant to create Cyrene[™] in Tasmania, and has the potential to replace fossil fuel-based chemicals in pharmaceuticals, agrichemicals and a range of other applications.

RENEWABLE PACKAGING SOLUTIONS

Finnish forestry scientists have developed wood-based "foam" that can replace styrofoam, bubble wrap and plastic-based commercial packaging products. The cellulose-based material is 100% renewable and it can be recycled in the same way as cardboard, significantly reducing plastic waste and microplastic pollution.

WOOD 'PLASTIC' CAR COMPONENTS

Car makers such as Porsche are using wood fibre-based components in its new car lines that replace metal and plastic in the production process. Plant-based biocomposites are renewable, have lower embodied energy and are just as strong as metal and plastic components.





THE IDEAL HOST THE UNIVERSITY OF TASMANIA

The University of Tasmania's (UTAS) Newnham campus in Launceston is the ideal location for the National Institute for Forest Products Innovation.

UTAS has extensive existing capacity in forest industry research across the full value chain, including more than 25 years of leading national forestry Cooperative Research Centres (CRCs), a National Centre for Future Forest Industries (NCFFI) and leading the current Australian Research Council (ARC) Training Centre for Forest Value.

Over the past two decades, UTAS has attracted over \$58 million in research funding and its researchers have published over 650 papers relevant to the sector.

With support from Federal, State and Local Governments, UTAS is building a new \$344 million campus at Inveresk in the heart of Launceston.

The significant investment in the Inveresk Precinct is attracting additional funding for UTAS developments for the existing campus at Newnham in Launceston's northern suburbs.

A masterplan for the Newnham campus which supports the future of key Tasmanian industries and regions has been released and includes ample opportunity for new and upgraded research facilities.





THE RIGHT MODEL TO DELIVER INDUSTRY-LED RESEARCH

The National Institute for Forest Products Innovation will build the critical mass of researchers and facilities to better deliver innovative R&D outcomes for the forest, wood and paper products industry.

It will also train the next generation of forest industries professionals around Australia and provide attractive career paths into the sector.

As the Federal Government has identified, research collaboration between universities and industry is key to driving innovation, new product development and commercialisation.

The NIFPI will enable researchers and industry to develop innovative new products and decrease our reliance on products sourced offshore while growing jobs, building a carbon neutral economy and fostering a collaborative university and industry research culture.



THE NIFPI WILL HAVE A GOVERNING BOARD DRAWN FROM ACROSS AUSTRALIA TO SUPPORT COLLABORATIVE RESEARCH ACROSS INSTITUTIONS AND COORDINATE FUNDING TO SUPPORT RESEARCH OUTCOMES ACROSS THE FULL VALUE CHAIN.



ALIGNING WITH AUSTRALIA'S ECONOMIC RECOVERY PLAN

The National Institute for Forest Products Innovation and our vision to drive the next generation of forest industries in Australia can play a vital role in Australia's economic recovery agenda and national priorities:

UNIVERSITY RESEARCH COMMERCIALISATION: The NIFPI is consistent with the Federal Government's plan to maximise the social and economic benefits of Australia's multi-billion-dollar university research sector. It will increase collaboration between forest industry businesses and universities around Australia, building on the success of the NIFPI pilot sites.

SOVEREIGN CAPABILITY: The pandemic-driven demand for fibre-based essential products as well as the record global demand for timber products in the building industry, has highlighted the importance of being self-sufficient in our forest product needs.

MODERN MANUFACTURING: Australia's forest industries are modern, innovative operations that strive to find the highest value, most efficient use of our renewable forest resource, consistent with the Federal Government's Modern Manufacturing Strategy.





CIRCULAR ECONOMY: Wood is the sustainable, renewable material of choice for the circular economy. Wood-based bioproducts are being deployed in a growing number of innovative ways to replace non-renewable fossil fuel-based chemicals and materials, with applications in pharmaceuticals, cosmetics, electronics, textiles, car manufacturing, and plastic replacement solutions.

DELIVERING AG2030: The Federal Government's ambitious plan to grow the agriculture sector to \$100 billion must be driven by innovation. A *2019 ACIL Allen report*, Agriculture a \$100B sector by 2030?, identified one of the keys will be investing in off-farm R&D.

TOWARDS NET ZERO: Australia's renewable forest, wood and paper product industries are uniquely placed to support the Federal Government's technologyled trajectory towards net zero emissions. This has been recognised by the world's leading scientific community on climate change, the Intergovernmental Panel on Climate Change (IPCC), in its 4th assessment that said:

"A SUSTAINABLE FOREST MANAGEMENT STRATEGY AIMED AT MAINTAINING OR INCREASING FOREST CARBON STOCKS, WHILE PRODUCING AN ANNUAL SUSTAINED YIELD OF TIMBER, FIBRE OR ENERGY FROM THE FOREST, WILL GENERATE THE LARGEST SUSTAINED MITIGATION BENEFIT."

GLOBAL COMPARISON

FPINNOVATIONS

Location: Vancouver, Canada People: 430 Budget: \$79.7 million per year (50% government / 45% industry)

FPInnovations was created in 2007 through the merger of Canada's four major forest research institutes. It concentrates Canada's forest research and brings together the three essential strengths for the sector's future development and market alignment, namely: industry initiative and capital, innovative R&D and engineering resources, and financial support from government partners.

FPInnovations is actively working on a number of R&D projects aimed at transforming the forest industry and creating jobs:

- Development of biosourced and biodegradable wood fibre-based plastics
- Development of wood-fibre-based biofuels
- Increased use of sustainable wood products in structures and building materials
- Increased share of wood fibre-based packaging markets
- Integration of megadata and high technology in forestry operations



SCION

Location: Rotorua, New Zealand People: 321 Budget: \$63.8 million per year (63% government / 36% industry)

Scion was launched in 2005. It brings together the bulk of forest research in New Zealand and is delivering breakthroughs in forestry, wood products and wood-derived materials and other biomaterial sectors. Scion drives innovation and growth, building the industry's economic value and contributing to environmental and social outcomes for New Zealand.

Recent achievements which have grown the industry and created jobs include:

- Growing forest productivity using data science •
- Improved biosecurity tools
- Improvements in tree DNA analysis to increase efficiency of tree breeding programs
- New treatments to increase timber durability
- Development of bioproducts, creating new markets



For more information about our proposal, including references for the statistics and facts in this document, visit www.ausfpa.com.au/NIFPI



