Te Kāhui Whaihanga New Zealand Institute of Architects

New Zealand's Second Emissions Reduction Plan ERP-2: Discussion Document Submission
24th August 2024

Introduction

Thank you for the opportunity to make a submission on the draft of the second Emissions Reduction Plan (ERP-2).

Te Kāhui Whaihanga New Zealand Institute of Architects is a 4000-strong, member-based professional organisation representing registered architects working in New Zealand, with the remainder of membership made up of New Zealand architects working overseas, architectural graduates, architecture students, teachers of architecture, retired architects, New Zealand's schools of architecture, and affiliated built environment professionals.

The Institute aims:

- To promote excellence in architecture, the acquisition and dissemination of knowledge relating to architecture, ethical conduct in the practice of architecture and the interests of the profession of architecture in New Zealand and overseas.
- To advance the study and practice of architecture.
- To improve and elevate the technical and general knowledge of persons engaged in, or about to engage in the practice of architecture.
- To bring before government authorities, public and other bodies any matters affecting architecture and architects.

As architectural practitioners in the construction industry, we applaud Parliament's bipartisan commitment to the Climate Change Response (Zero Carbon) Amendment Act. This commitment provides the continuity and confidence that is crucial to the commercial and industrial sectors as they build towards a resilient and sustainable future for New Zealand.

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Summary

We are urging a more comprehensive approach to reducing carbon emissions within the built environment as part of Aotearoa New Zealand's ERP-2. The construction and operation of buildings contribute 20 percent of our national emissions[1], and therefore deserve focussed and targeted strategies in the plan. The architectural sector is uniquely positioned to deliver impactful emissions reductions through thoughtful design, better regulations, and the adoption of sustainable practices. The sector is already developing strong capabilities in carbon accounting and reduction strategies in the design-and-build process.

Prioritising the Built Environment

The omission of a dedicated chapter on the built environment in ERP-2 is concerning. Without targeted policies and incentives, we risk falling short of our emissions reductions goals. Decisions made today will impact emissions for decades, due to the long lifespan of buildings. It is essential to ensure that new buildings are designed to be low-carbon, energy-efficient, climate-resilient, and healthy.

ERP-1 successfully included measures for reporting operational and embodied carbon in new buildings, which was widely supported. However, focusing solely on new buildings does not address emissions from existing structures.

Architectural practices and the construction industry have collectively been steadily moving towards developing the skills and IP to measure, understand and reduce the embodied carbon impact of our designs with the goal of achieving significant reductions in overall emissions as a positive action on climate change. A staged approach to carbon reductions is needed to avoid skill and expertise gaps and manage the transition smoothly.

When we look at Australia and elsewhere in the world, embodied carbon measurement is an increasingly important method of reporting action on climate change in the construction industry. For our design and construction industry to retain skills, remain productive and globally competitive there needs to be a continued emphasis on decarbonising construction through environmental reduction plans.

Five-yearly emissions reduction plans should balance flexibility for new methods with a consistent overall goal. The Intergovernmental Panel on Climate Change's (IPCC) April 2022 report calls for a 48 percent reduction in net CO2 and a 43 percent reduction in overall GHG emissions from 2019 levels by 2030. Current proposals in ERP-2 and ERP-3 fall short, with policies expected to miss our Nationally Determined Contribution (NDC) by approximately ninety-three million tonnes of CO2. We urge the Government to strengthen these proposals to create a clear, achievable path to net zero emissions, using proven technologies and focusing on measurable reductions.

[1] Through both embodied emissions in construction materials and building, combined with operational emissions from heating, lighting, and other activities.

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It is worth noting that when comparing ERP-1 and ERP-2, there is a significant drop in ambition and focus. ERP-1 included 138 action points across fourteen focus areas, whereas ERP-2's consultation document barely addresses or omits crucial areas such as:

- Industry
- Building and construction
- Planning and infrastructure
- Fluorinated gases
- Circular economy and bioeconomy
- Research, science, innovation, and technology
- Equitable transition
- Working with nature

This reduction in scope could lead to an ineffective response, costs are poorly managed, and risks fall on taxpayers. We advocate for a comprehensive approach to address these challenges, encouraging the Emissions Reduction Plan to seize this opportunity for New Zealand, to grow inclusively, while remaining within planetary boundaries and meeting the Paris Agreement and other NDC targets.

The Government has expressed support for the following priorities:

- Adopting cost-effective carbon reduction methods
- Partnering with industry-led initiatives
- Boosting business confidence
- Facilitating the delivery of low-carbon buildings and infrastructure
- Exploring green building practices in New Zealand and working to establish a clearer picture of this as part of ERP-2.

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Key Recommended Actions and Opportunities for ERP-2

Our submission highlights several key actions and opportunities aligned with the above priorities:

- The Emissions Reduction Plan must include buildings and construction
- Promote inclusivity and protect mana whenua interests as a Te Tiriti partner
- Ensure we protect Māori Atua and advocate for ethical practices
- Address limitations of Life Cycle Assessments and ensure an intergenerational perspective, and assess long-term inter-generational impacts
- Address the recent uplift and retain the building insulation requirements within the NZ Building Code H1 (Energy Efficiency)
- Enhance the Building Code and signal intent to regulate and provide a consistent pathway for the building industry
- Treat the Building Code as bare minimum in building practice, rather than the standard
- Measure and reduce embodied carbon in construction and include regulation of embodied carbon and operational efficiency in ERP-2
- Encourage and implement low-emission architectural design and sustainable practices
- Promote densification of our cities and discourage urban sprawl as this is critical to achieve a low carbon future
- Facilitate a deep-retrofit programme and the adaptive re-use of buildings
- Phase out fossil fuels and implement the electrification of buildings
- Implement energy labelling of buildings for increased transparency across the building sector
- Utilise Environmental Product Declarations and certification schemes
- Provide regulatory and economic support to develop a circular economy database, implement circular economy principles, and develop standards to facilitate the reuse of materials
- Support market mechanisms through strategic investment in the building industry particularly in manufacturing and material supply e.g. low carbon structural steel and concrete, timber, and other biobased low carbon materials
- Support existing low carbon industry efforts and encourage and reward manufacturers engaging in low carbon technologies and materials
- Strategic investment in forestry and wood processing and products
- Address regulatory and educational barriers for engineered timber construction
- Emphasise and align with international trade and standards to de-risk future penalties and sanctions
- Improve economic prosperity and maintain New Zealand's competitive advantage

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Recommended Actions for ERP-2

There are numerous low-cost policies that will support architects and our industry to rapidly decarbonise, improve efficiency, and support New Zealanders to cut costs and emissions.

Our recommendations in detail for the ERP-2 are as follows:

The Emissions Reduction Plan must include buildings and construction

Including the building and construction sector in ERP-2 will derisk it. Currently, the plan relies heavily on ambitious forestry planting[2], which is difficult to achieve, and many emissions savings from Carbon Capture, Utilisation, and Storage (CCUS) remain unfunded and speculative.

The building industry has the potential to cut carbon emissions significantly during the early design phase, potentially eliminating the need for CCUS altogether. The goal should be to reduce carbon emissions so that capturing them is unnecessary. Proven technologies are available today to significantly cut emissions in construction. Implementing simple, cost-free policy changes can support this effort.

By improving the energy efficiency of buildings and homes, we can also address New Zealand's energy crisis and help meet the emissions budget.

Promote Inclusivity and Protect Mana Whenua Interests

To ensure that our materials, infrastructure, and energy systems align with ethical standards and protect future generations, we must:

1. **Protect Māori Atua:** Ensure that all materials and systems do not harm the life-giving capacity of Māori atua, such as Papatūānuku, Tawhirimātea, Tane Mahuta, Tangaroa/Hinemoana, and Ruaumoko/Mataoho. If a material or system causes harm, include costs for offsetting this damage, repairing it, removing pollutants, or revitalizing ecosystems to avoid passing on harm to future generations.
2. **Advocate for Ethical Practices:** Advocate for ethical, non-polluting practices despite current government policies. The protection of our environment and the well-being of Māori and Indigenous communities should be prioritised.
3. **Link to Standards and Data:** Connect materials to national or global standards and integrate data from Life Cycle Assessments (LCA), Building Information Modelling (BI), Geographic Information Systems (GIS), and Digital Twin platforms. This data should:

[2] Noting that forestry planted for offset purposes often utilises Māori land or land that could be used for agricultural purposes.

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- Track the extraction of materials and its impact on mana whenua and Indigenous communities, including issues such as exploitation, land loss, biodiversity reduction, and associated socio-economic impacts.
- Measure the extent of carbon and other emissions from extraction or manufacturing and monitor efforts to reduce or offset these pollutants.
- Include nature-based solutions that benefit affected mana whenua or Indigenous peoples.

4. **Address Limitations of LCA:** Recognise that Life Cycle Assessment (LCA) has limitations, as it often lacks an inter-generational perspective and does not fully account for historical costs to mana whenua or Indigenous peoples displaced by material extraction.
5. **Assess Long-Term Inter-generational Impacts:** Architects need tools beyond LCA to evaluate the intergenerational impact of their decisions on mana whenua and Indigenous peoples, as well as to measure mutual benefits and support for future generations.

In summary, it is crucial to push for practices that respect and benefit Māori and Indigenous communities while mitigating long-term harm. This approach will help ensure sustainable and equitable outcomes for all in Aotearoa.

Enhance the Building Code and signal intent to regulate and provide a consistent pathway for the building industry

Update the Building Code to align with the Zero Carbon Act which will reduce emissions significantly by 2030, with no direct cost to the Government. One of the most effective ways to reduce emissions in the built environment is by strengthening building codes. Currently, our standards do not adequately reflect the urgency of the climate crisis. Modernising these codes to mandate higher levels of energy efficiency, better insulation, and the use of low-carbon materials is essential. This would not only reduce operational emissions but also improve the overall quality and comfort of our living and working environments.

In other leading countries, such as Denmark and the EU, stringent energy efficiency requirements are already embedded in building regulations, driving considerable progress towards net-zero emissions. Aotearoa New Zealand should take similar steps, ensuring that both new constructions and major renovations meet the highest possible standards for sustainability. By setting these benchmarks, we can ensure that the architectural sector contributes fully to our national emissions reduction targets.

To drive this necessary shift, the ERP-2 must consider the following actions, ranked by their potential effectiveness:

1. **Signal Intent to Regulate and Provide a Consistent Reduction Pathway**: To achieve the significant emissions reductions required in the building and construction sector by 2050, it is crucial to provide consistent regulatory signals. This will guide market behaviour and investment decisions, ensuring ongoing progress.

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2. **Measure and Reduce Embodied Carbon in Construction**: As the building and construction industry faces future emissions reduction requirements beyond ERP2, early preparation is vital. ERP1 proposed mandatory reporting and incremental caps on embodied and operational emissions at the building level through existing regulations (e.g. Building Code and Building Consent). This approach has garnered broad industry support and international evidence suggests it is an effective first step. Maintaining this momentum requires continued certainty about long-term goals for reducing embodied carbon and improving operational efficiency. Therefore, we recommend the following:
    - **Include Regulation of Embodied Carbon and Operational Efficiency in ERP-2**: Regulation has historically been a powerful tool in driving change in the building sector and serves to create demand for change with commercial providers.
    - **Support Existing Industry Efforts**: Architects and industry players have already committed to reducing embodied and operational carbon emissions. It is crucial to sustain this momentum rather than risking it with a shift in approach.
    - **Encourage and Reward Manufacturers**: Many manufacturers are already working to reduce carbon intensity based on ERP-1 guidelines. However, without mechanisms for life cycle analysis, these efforts lack recognition. Introducing incentives to reward manufacturers for lowering carbon intensity would support continued progress.
    - **Signal Future Regulatory Intent**: If current Government terms are not conducive to regulatory change, signalling a future intent to regulate can significantly motivate ongoing industry efforts. This includes advancements in waste sorting, recycling, low-carbon material supply, and enhanced energy efficiency technologies, and improved hygrothermal performance technology.
    - **Quantify Carbon Emissions in the Building Sector**: Effective management of carbon emissions requires accurate measurement. Making carbon metrics reporting mandatory as part of the Building Consent and Code of Compliance Certification processes could guide future policy decisions to introduce carbon caps. If mandatory reporting is deferred, alternative short-term measures could include publishing reporting requirements, establishing a national database, and offering incentives for voluntary carbon reporting (e.g., access to carbon credit funds, tax rebates or subsidised consenting costs).
    - **Building practice tends to treat the Building Code as the standard:** Experience has shown that improving the Building Code is the best way to drive change in how buildings are constructed. The Building Code can be modernised to require both low-embodied emissions and low operational emissions. MBIE's Building for Climate Change programme envisages moving towards a near zero emissions standard for new homes in three steps.
3. **Emphasise International Standards**: As embodied carbon measurement becomes increasingly important globally, maintaining New Zealand's competitiveness in design and construction requires continued emphasis on decarbonising the sector through our emissions reduction plan.

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- In the European Union, building to a near zero energy standard has been mandatory since 2021, with a proposal now being discussed to enhance this to a near zero emissions standard by 2030.

By implementing these recommendations, the Government can foster a supportive environment for the building industry to advance in its efforts to reduce carbon emissions, improve sustainability, and be on a level playing field with international partners and competitors.

In many cases, while the technology for adopting lower-carbon materials and processes is available and there is genuine interest in transitioning to lower-emissions solutions, large-scale change is hindered by the business case. Often, low-carbon options are considered cost-neutral, yet concerns such as lack of industry knowledge, potential regulatory hurdles, and associated risks can deter widespread adoption.

Implement low-emission Architectural Design and Sustainable Practices

Architectural design plays a crucial role in achieving low-emissions buildings. Passive design principles, such as optimising natural sunlight and daylight, improving ventilation, and integrating renewable energy systems, are proven methods for reducing a building's energy consumption. These strategies should be at the core of all new developments and major refurbishments.

Moreover, innovations in sustainable building materials and construction methods, such as using low-carbon concrete, sustainably sourced timber, and modular construction, offer significant opportunities to reduce the embodied carbon in our buildings. These solutions need to be supported by Government incentives and integrated into mainstream architectural practices. Such an approach would not only lead to lower emissions but also foster a culture of innovation within our construction sector.

Facilitate a Deep-Retrofit Programme and the Adaptive Re-use of Buildings

A sizeable portion of New Zealand's building stock is outdated, energy-inefficient, and unhealthy. Retrofitting these buildings is essential for reducing emissions and improving living standards. Expanding retrofit programs that focus on better insulation and energy-efficient heating can reduce emissions from older homes and commercial buildings. These retrofits should address core design and operational issues, not just surface improvements, to tackle high energy use and unhealthy living conditions, especially for vulnerable populations.

Upgrading to energy-efficient technologies, modern heating systems, and improved ventilation will create healthier indoor environments and lower carbon emissions. Retrofitting also helps combat energy poverty, ensuring that all New Zealanders live in warm, comfortable homes.

With New Zealand aiming for net zero emissions by 2050, addressing the existing building stock is crucial since most buildings in 2050 will already be in use. Focusing only on new buildings will not

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achieve the necessary emissions reductions. Improving the efficiency and utilization of existing buildings is key to reducing sector-wide emissions.

Deep retrofits not only offer climate benefits but also improve residents' health, potentially lowering health care costs. European countries have successfully implemented similar programs. ***The Homes We Deserve*** campaign in New Zealand advocates for a fully funded plan to retrofit at least 200,000 homes within nine years, aiming to:

- Reduce carbon emissions and household expenses
- Improve the health of thousands of New Zealanders
- Create tens of thousands of jobs

Supported by 170 organizations, including many of our member practices, this campaign underscores deep retrofitting as vital for transitioning to a low-emissions economy.

Deep retrofits involve upgrading homes to near-zero emissions standards by enhancing thermal envelopes (e.g., insulation, double glazing) and replacing inefficient heating systems with efficient heat pumps. Although these retrofits require a substantial initial investment, they offer long-term savings by reducing emissions and energy consumption, extending the life of homes, and easing electricity demand as the grid shifts to 100% renewable energy.

Investment should focus on research and pilot projects for improving operational efficiency, particularly in hygrothermal performance and winter heating. We advocate for regulations that gradually cap embodied carbon in new buildings to incentivize adaptive reuse and reduce demolition waste.

Additionally, enhancing the seismic resilience of existing buildings can lower their life-cycle carbon emissions. Raising standards for new builds will set higher benchmarks for older homes and make advanced insulation more affordable, encouraging widespread retrofits.

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Phase Out Fossil Fuels and the Electrification of Buildings

Phase out fossil gas in homes and commercial buildings, with an estimated cost of $75 million annually and substantial emissions reductions.

Aotearoa New Zealand needs a clear strategy to phase out fossil fuels in buildings, particularly natural gas used for heating and cooking. Transitioning to fully electric solutions, such as heat pumps and induction cooktops, is essential for reducing building-related emissions. Architectural designs should anticipate this transition, with new builds being designed to accommodate renewable energy sources and retrofit projects focused on replacing gas infrastructure.

We support the expansion of the ***Warmer Kiwi Homes*** programme to subsidise electrification of home heating and cooking from 2027, converting 25,000 homes a year. A concerted programme, building on the successful replacement of coal boilers in schools and hospitals, to subsidise 10 percent of commercial buildings per year from 2026 to electrify space and water heating.

We encourage the Emissions Reduction Plan to target (and consider subsidising) a decentralised solar network installed on houses and businesses, by enforcing higher electrical buy-back prices. This will dramatically improve the payback period and drive increased installation. It is expected that this is a more cost-efficient solution than investing in new generation facilities.

Implement Energy Labelling of Buildings for Increased Transparency

Introducing mandatory energy performance labelling for both residential and commercial properties is a straightforward yet powerful tool for reducing emissions. By providing clear information about a building's energy use and carbon footprint, these labels empower consumers and businesses to make informed decisions. Energy labelling can drive demand for better-designed buildings and encourage developers to prioritise energy efficiency. Furthermore, it aligns with international best practices, where energy performance certifications are used to promote exacting standards of sustainability in the built environment.

We recommend that all homes put up for sale or rent are required to have an Energy Performance Certificate (EPC) by 2028. This will also increase employment opportunities and create skilled labour.

In addition, we recommend that the ERP-2 ensures government departments continue to lead by certifying to 5 Star Green Star when commissioning buildings and require all office buildings over 1,000m2 put up for sale or lease to have a NABERSNZ certificate.

Furthermore, we recommend increasing awareness of Living Building certifications and how they are implemented in practice, as this certification scheme provides a methodology to leave a positive handprint on our built environment.

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Regulatory and Economic Support

1. **Develop a circular economy database and implement circular economy principles:** Promote building designs that prioritise longevity, adaptability, and recyclability. This will reduce waste and lower embodied carbon.
    - The availability of quality data is an important initial step in the transition to a circular economy, especially in the construction sector (buildings and infrastructure). For example, building passports can track the journeys of products, components, and materials in the urban environment. Initiatives by the Government to address data infrastructure, like the data repository infrastructure being piloted in Europe/UK, are needed sooner rather than later.
    - As a starting point, all publicly funded projects should have consistent and publicly accessible data sets containing information relevant to the circular economy (e.g. building passport information, asset product and materials composition, and asset condition). This data management system could be connected to the database of embodied carbon (Life-Cycle Assessment) and operational efficiency metrics that are collected as part of the building approval process.

2. **Develop standards to facilitate the reuse of materials:** There is an opportunity to proactively invest in the development of materials standards and design standards that will control and regulate the way that recycled building materials are used, including quality assurance processes, strength grading for structural materials, and acceptable solutions governing durability.
    - Currently a lack of standards can function as a barrier to the specification of recycled materials in new construction. Appropriate design standards and acceptable solutions need to be developed to govern the use of recycled materials, and rapidly incorporated into the Building Code. This will give building designers, owners, and constructors the confidence to specify and use these products, leading to an increase in demand, with resulting financial incentives for the companies who recycle building and construction materials.
    - The continued investment into resource recovery and waste minimisation is imperative to reach our net zero target, we know that 60% of our landfill waste is from the building and construction industry and there is already a large amount of work being undertaken to reduce waste to landfill from construction, but more could be done to show the benefit in reducing carbon emissions. Specifically waste reduction results in a reduction of embodied carbon emissions. Including the actions from ERP-1 in ERP-2 would amplify the potential of this initiative.
    - Increasing levies on waste to landfill is a proven approach in the EU to incentivise material reuse and upcycling of materials and the diversion of construction waste from landfills.

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3. **Support Market Mechanisms**: While the Emissions Trading Scheme (ETS) plays a role, it is not enough on its own. Clear regulations and incentives for low-carbon technologies are necessary to drive meaningful change and support sustainable architecture.
    - **Targeted investment** - making contestable funds available for the most cost-effective emissions reduction initiatives. These could include capital investment in plant, or research and development.
    - **Use procurement to support industry -** to generate a pipeline of low-carbon projects with bipartisan support. Reference best practice here and overseas when specifying carbon management and performance requirements.
    - **Support industry-led initiatives** - including Environmental Product Declarations, certification schemes, and professional development for industry practitioners.
    - **Bolster government capacity** - to support the urgency and pace of change in the buildings and construction sector over the next 25 years.

Importance of Strategic Investment in the Building Industry

Strategic investment in Aotearoa New Zealand's building industry, particularly in manufacturing and material supply, is crucial for enhancing emissions reduction efforts. The choice of structural materials in building design offers significant opportunities for reducing carbon emissions, particularly when considered in the early phases of the design process, where architects and the design team have a major influence.

We recommend a focus on investment. Emphasising investments in both plant and capital, and research and development, prioritising cost-effective emissions reductions through:

1. **Increasing engineered timber supply:** Architects are increasingly specifying the use of engineered timber products in the buildings they design and build. With this increase in demand, it is critical to ensure a steady supply of engineered timber products in the New Zealand supply chain. During the COVID-19 lockdown periods the building industry saw costs increase dramatically as supply chains were inconsistent. After the closure of the local Cross-Laminated Timber (CLT) supplier XLam, Red Stag timber invested in a new CLT facility and began supplying to the local market. A report produced for Te Uru Rākau, New Zealand Forest Service, Ministry for Primary Industries (MPI) suggests using local timber could significantly reduce exports and recommends increasing processing capacity to meet demand, which would benefit the economy. The report concluded that it would be feasible to use 1,300,000 cubic metres of logs (producing 650,000m^3 timber at a 50 percent conversion rate) within the local building industry. This represents only 6 percent diversion of timber exports but would require 10 more Red Stag factories to provide sufficient processing capacity. We support the Government's intention to make strategic investments to remove this bottleneck in our timber processing industry, which will also provide wider economic benefit[3].

[3] (Reference: https://www.mpi.govt.nz/dmsdocument/52834-Carbon-footprint-of-New-Zealand-buildings-)

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2. **Investing in low carbon structural steel:** The Government Investment in Decarbonising Industry (GIDI) Fund supported an electric arc furnace at Bluescope Steel, cutting our carbon emissions by 800,000 tonnes annually, aiding the adoption of low-carbon materials. This is a recent example of the type of capital investment that can be made now, which will make it cheaper and easier for the building and construction industry to adopt low-carbon materials and processes in the coming years.
3. **Investing in low-carbon concrete:** The "Roadmap to Net-Zero Carbon" by Concrete New Zealand highlights opportunities to reduce emissions by using supplementary cementitious materials (SCMs). Cement is the most carbon-intensive component of concrete and the roadmap identified the largest potential reductions in carbon emissions as coming from SCMs, which can partially replace cement in concrete mix. Fly ash and blast furnace slag are the most widely known, standardised and used SCMs, but both are obtained from high-temperature, coal burning processes (coal power stations and steel manufacturing respectively). These are imported and suffer from intermittent availability, and both are associated with sunset industries from a carbon emissions perspective. Volcanic ash and pumice are proposed as local alternatives to conventional SCMs, though they require further research and environmental assessment. Innovative technology for concrete recycling is also available and will make a significant difference to the carbon footprint of concrete.[4]

Overall, this underscores the importance of strategic investments in building industry sectors to achieve emissions reduction and enhance competitive advantage.

Strategic investment in forestry and wood processing and products

We strongly support expanding Aotearoa New Zealand's timber processing capacity to boost regional jobs and produce high-value timber products for the building industry. We also back the Government's commitment to addressing regulatory barriers that limit demand for engineered wood products.

We believe wood products should play a more prominent role in our climate strategy. However, we need to clarify several points:

1. **End-of-Life for Harvested Wood Products**: To maximise climate benefits, it is crucial to prolong the life of timber structures, reuse timber components, and recycle timber into new materials. We recommend the development of strategies for managing timber at the end of its life, including design standards for durability, recycling standards, and support for industries that convert timber waste into products like fuel or insulation. According to international life-cycle assessment standards (e.g., BS EN 15978), timber is initially reported as a carbon removal during the "raw material supply" stage. However, this stored biogenic carbon can be released at the end of the product's life. Thus, building life-cycle assessments give limited value to carbon sequestration in timber structures.

[4] Refer https://www.holcim.com/who-we-are/our-stories/advanced-crushing-processing-system-france

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2. **Prioritising Cost-Effectiveness**: Emissions reductions should be achieved in the most efficient and cost-effective manner across all building materials. As Aotearoa New Zealand increases its forestry land to meet climate commitments, sustainable management and use of this resource are essential. Timber construction will play a significant role in the future, and rapidly scaling up domestic production capacity is valuable. However, this should not overshadow decarbonization efforts involving other materials, which are also crucial for the construction industry.
3. **Native Forests**: Native forests are vital for carbon sequestration and offer resilience against carbon releases due to fire and disease, while also supporting biodiversity with economic and ecological benefits. Determining the optimal mix of native and exotic forests for our future economy, biodiversity, and emissions goals is complex.

Supporting Scion and BRANZ in leading a science-based evaluation to further explore this topic would be benefical. This research should inform Government, industry, and public decision-making and policy development.

Addressing regulatory and educational barriers for engineered timber construction

We urge the Government to address several regulatory barriers that hinder the demand for engineered wood products:

1. **Verification Methods:** There is no clear compliance pathway for timber products, such as CLT design and NZS AS 1720, which remains in draft form. Additionally, incorporating European Technical Assessments (ETAs) for proprietary products like fasteners is challenging.

2. **Fire Engineering Design:** Nationwide consistency is needed in fire engineering design, including reviews by Territorial Authorities and Fire and Emergency New Zealand (FENZ).

3. **International Products:** Regulatory obstacles exist for using internationally sourced products, such as untreated CLT.

The lack of regulation is stifling the use of engineered wood products. Current regulations complicate compliance with the NZ Building Code, increasing risk for architects and builders considering timber construction.

To enhance the capability of New Zealand's architects and design teams in engineered timber construction, we recommend supporting the development and delivery of educational and training resources. This will help the sector efficiently and safely implement these carbon-saving technologies.

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Using Procurement to Support Industry and Industry-Led Initiatives

- **Environmental Product Declarations (EPDs):** The Government could assist material suppliers in creating EPDs to support carbon measurement efforts.

- **Certification Schemes:** There is an opportunity for the Government to back industry initiatives that promote the adoption of international certification schemes by Aotearoa New Zealand contractors and suppliers. Examples include PAS 2080 for contractors and Responsible Steel certification for importers and suppliers.

- **Building Sector:** Inconsistent demand hinders capital investment in the local construction industry. Modular housing, which could achieve significant productivity gains and emission reductions, has faced challenges due to business failures and a lack of regulatory support for innovation. We recommend using Government procurement policies to encourage investment in low-carbon materials and construction processes. Bipartisan agreement on this approach is crucial for providing industry certainty. The Ministry of Education has successfully applied low-carbon design principles on certain projects, and this approach could be expanded to other Government departments.

- **Infrastructure:** PAS 2080 is a standard for managing carbon in infrastructure projects, recently expanded to include buildings. It focuses on reducing carbon and cost through smart design, construction, and use, with contractors setting and monitoring emissions reduction goals. This standard is gaining traction in the UK and Australia. We recommend that the Government consider specifying PAS 2080 for major infrastructure projects (e.g. those over $100 million). This would require contractors to comply with the standard and prepare a carbon management plan for each project, supporting an industry-led approach to emissions reduction.

International Implications and Trade

- As global markets increasingly value sustainability, it is vital that New Zealand aligns its building practices with international environmental standards. Failure to do so could lead to trade penalties or reduced competitiveness in key sectors. Conversely, by becoming a leader in sustainable architecture, New Zealand could enhance its international reputation, attract investment, and secure advantageous trade relationships.

- To achieve this, it is essential that New Zealand invests in developing the skills and knowledge needed to lead in low-carbon building practices. Educational institutions and industry stakeholders must collaborate to train the next generation of architects, builders, and engineers in the principles of sustainable design and construction.

- **Consider carbon price adjustment for imported materials -** aligning a future scheme with international best practice, potentially focussing on key commodities where implementation would be straightforward (e.g. steel, cement, engineered timber, aluminium).

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Promote Densification in the Built Environment and Connection to Transport

The proposal highlights improved public transport to reduce emissions, which is commendable. However, compared to the draft Government Policy Statement for Land Transport (GPS), the ambition appears limited. The GPS plans for numerous costly, carbon-intensive roads, while funding for public transport, walking, and cycling has decreased. This discrepancy between ERP-2 and the GPS is concerning.

Cars and other passenger vehicles were responsible for 27 percent of gross carbon emissions in 2018[5]. New Zealanders' preference for larger vehicles meant that despite the introduction of increasingly low and zero emission vehicles, transport emissions are not reducing.

To make a meaningful impact on emissions reduction in transport, the Government must consider how to support people to us public transport, cycling and walking. Increased and sustained investment in public transport and cycling and walking infrastructure with a published pipeline of these projects would send a strong signal about the importance of mode shift as a key strategy to achieve our carbon reduction goals.

Public transport infrastructure investment is currently focused only on Auckland and the lower North Island, with no plans for regional rapid rail in the Auckland-Hamilton-Tauranga triangle or commuter rail in Christchurch and Dunedin metro areas.

To create vibrant, high-density cities, prioritizing low-cost public transport in existing areas over new road projects and suburban expansion is essential. This approach would reduce transport emissions, ensure equitable access, and improve urban quality. New housing developments on city peripheries should be discouraged. These often use productive land inefficiently and foster car dependency without necessary infrastructure like schools and shops. Instead, we advocate for high-quality, high-density infill housing and redevelopment within existing urban areas. While the National Policy Statement on Urban Development supports this, growth should be discouraged on city peripheries.

Conclusion

Aotearoa New Zealand's ERP-2 offers a crucial chance to address one of our biggest sources of emissions—our built environment. By strengthening and enhancing building codes, promoting sustainable architecture, facilitating building retrofits and adaptive reuse, and providing consistent regulatory guidance, we can lead the transition to a low-carbon future.

We must also uphold Te Tiriti and adopt a long-term, intergenerational approach in implementing ERP-2. Improving building standards will bring significant social and economic benefits. Healthier, more comfortable living and working spaces will reduce public health costs linked to poor housing,

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while increased energy efficiency will cut running costs for households and businesses, resulting in long-term savings.

Supporting both established and emerging low-carbon industries will help us meet emission reduction targets and maintain our global competitive edge. Transitioning to sustainable building practices will also boost the green economy, creating jobs and spurring growth. Opportunities for employment and innovation will arise in areas such as manufacturing low-carbon materials and executing retrofit projects.

Immediate action is critical to avoid high emissions from poorly designed and inefficient buildings. By making sustainability central to the ERP-2, we can meet our climate goals and build healthier, more resilient communities for all New Zealanders.

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