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26/11/2021

Ministry for the Environment

Environment House
23 Kate Sheppard Place,
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Wellington 6011

PO Box 10362
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RE: Submission on Te hau mārohi ki anamata Transitioning to a low-emissions and climate-resilient future.

Dear Sir/Madam,

While there was much to celebrate arising from COP26, it also highlighted the significant gap between global goals and climate action. Effective leadership is not about making speeches and setting goals. It is about delivering results against those goals. The emissions reduction plan is Aotearoa New Zealand's opportunity to make a leadership statement through action rather than rhetoric by delivering rapid reductions in Aotearoa New Zealand's extremely high per capita emissions.

We support and commend the Ministry for the Environment and related departments and agencies for their hard work in establishing the emission reduction plan. The *Transitioning to a low-emissions and climate-resilient future* report sets out a comprehensive set of policies and strategies for achieving the proposed emissions budgets.

ABOUT BRANZ

BRANZ, established in 1969, is a multi-faceted, science led organisation that uses independent research, systems knowledge, and its broad networks to identify practical solutions that improve the performance of New Zealand's building system.

BRANZ has been at the forefront of research addressing the built environment's contribution to climate change and has been helping to drive evidence-based policy by providing expert advice. BRANZ has a history of engaging in climate change research since the year 2000 when it released the seminal *Implications of Climate Change for the Construction Sector* report.

Today BRANZ is continuing that legacy of climate change research. It is creating new research pathways to help support the building and construction industry to address climate change. For example, as BRANZ CEO I led the Environment Workstream of the Construction Sector Accord, which created the *Construction Sector Environment Roadmap for Action*. This work seeks to set out the built environment's contribution to New Zealand's environmental, sustainability, and net-zero-carbon aspirations.

BRANZ has outlined its response to the Government's climate change policies and regulations in a number of recent submissions as follows:

- Interim Climate Change Commission’s Call for Evidence (2019).
- Climate Change Commission’s Draft Advice (2021).
- Ministry of Business Innovation & Employment’s (MBIE) Building for Climate Change programme – Whole-of-Life Embodied Carbon Emissions Reduction Framework.
- Transforming Operational Efficiency and H1 consultation (2021).

BRANZ’s RESPONSE

We acknowledge and support the overall goal and the objectives of the proposed emissions reduction plan. We look forward to continuing the productive, open, and constructive relationship with the Ministry for the Environment and other government departments and agencies involved in creating and implementing the emissions reduction plan.

Due to the comprehensive nature of the questions involved in this consultation, BRANZ will provide high level feedback on some questions and more detailed responses on two areas. Detailed responses are provided in areas that relate to our experience, knowledge, and expertise: Research, science and innovation; building and construction.

ALIGNING THE TRANSITION WITH OTHER PRIORITIES

QUESTION 1

Do you agree that the emissions reduction plan should be guided by a set of principles? If so, are the five principles set out above the correct ones? Please explain why or why not.

We support the approach to have the emissions reduction plan guided by a set of principles. We support the principles and endorse the imperative to collaborate and work across sectors and undertake an inclusive and just transition on behalf of all New Zealanders.

QUESTION 2

How can we enable further private sector action to reduce emissions and help achieve a productive, sustainable and inclusive economy? In particular, what key barriers could we remove to support decarbonisation?

Private sector action to reduce emissions is essential if Aotearoa New Zealand is to meet its international obligations for emissions reduction. To help achieve this the Government needs to build its capability and capacity to take a systems convening role. Systems convening can leverage the know-how of experts, policymakers, as well as practitioners on the ground to drive transformative change. This may require a cross-governmental body to be mandated with this role. Key attributes to be successful as a systems convenor include:

- Enough freedom from institutional inertia to leverage connections and be innovative.
- Skills to deal with high-stakes conflict including the ability to use interest-based problem solving rather than seeing conflict as something to be eliminated or neutralized.
- Stakeholder engagement that goes beyond outreach, increased communication, or dissemination of information. System convenor’s need the ability, willingness and

authority to develop deep partnerships across boundaries. This is particularly important when considering how to engage the private sector in a meaningful way.

- A commitment to industry and community-based solution development. This requires involving people directly in leading the process of developing responses for their industries and communities. It requires skills to help them understand them examine their needs across constituencies, initiate projects, and undertaking the work of behaviour change.
- Finally, we believe a significant barrier to gaining private sector involvement is the lack of sufficient funding to support collaborative action across industries. BRANZ has been leading the development of the soon-to-be published *Construction Sector Environment Roadmap for Action* as part of the Construction Sector Accord. BRANZ provided the greater part of the co-funding (in cash and kind) for the development of this work alongside MBIE. While this has delivered a good outcome, a more appropriate funding level could have ensured greater pan-industry participation in the development of the Roadmap. We believe this would, in turn, increase the chances of gaining industry commitment to taking action under the Roadmap. Currently, while we have a comprehensive Roadmap, there is no committed funding stream to support implementation. Initial discussions are underway on this. We recommend that the Government allocate significant funding to support industry climate and sustainability response plans such as the Construction Sector Environment Roadmap for Action.

QUESTION 4

How can the emissions reduction plan promote nature-based solutions that are good for both climate and biodiversity?

We believe there is an important opportunity to enhance the role of nature-based solutions to support Aotearoa New Zealand's response to climate change. There is already a significant body of evidence that demonstrates that there are sufficient drivers for motivating organizations to adopt nature-based solutions. The most common primary and secondary drivers are:

- Lowering project costs.
- Managing regulatory requirements and risks.
- Mitigating natural disaster risk.
- Engaging community stakeholders.
- Positive brand value.
- Achieving sustainability goals.
- Promoting employee wellbeing.

The emissions reduction plan can promote nature-based solutions by aligning funding and financing mechanisms to these drivers in ways that also encourage other Government policies to be aligned to nature-based solutions.

QUESTION 5

Are there any other views you wish to share in relation to the Transition Pathway?

We would like to highlight the following views that inform our submission:

- We support the domestic emissions reduction targets and purpose of the Climate Change Response Act 2002 (the Act) to contribute to the global efforts under the Paris Agreement to limit warming to 1.5 degrees above pre-industrial levels.
- We understand and support the focus on gross emissions reductions. We agree that forestry offsets should not be the only mechanism relied. We support the proposal to not use offshore mitigation to meet New Zealand's first three domestic emissions budgets other than in circumstances prescribed in the Act.
- We recognise that the Emissions Trading Scheme (ETS) plays a key role in pushing choices towards low-emissions alternatives and needs ongoing improvement to ensure its efficacy.
- Education and awareness raising on the imperative and the case for changing behaviours beyond ETS signals and policies needs to be a central pillar to Aotearoa New Zealand's approach to climate action.

EQUITABLE TRANSITIONS STRATEGY

QUESTION 13

Do you agree with the objectives for an Equitable Transitions Strategy as set out by the Climate Change Commission? What additional objectives should be included?

We fully support the objectives for an *Equitable Transitions Strategy* as set out by the Climate Change Commission.

QUESTION 15

What models and approaches should be used in developing an Equitable Transitions Strategy to ensure that it incorporates and effectively responds to the perspectives and priorities of different groups?

We would recommend that an interest-based problem-solving approach should be used in developing an *Equitable Transitions Strategy*. Interest-based problem solving is a collaborative approach to solving problems. It's strength, when done well, is focusing the parties on jointly defining the problem that needs to be solved. To jointly agree a problem requires the parties to truly work on understanding the perspectives surrounding the issue or opportunity, rather than assuming they all bring the same perspective. This is followed by the different interest groups outlining their interests – what they want to achieve or have addressed via the solution. This step works to uncover the shared interests which promotes collaboration. It also demonstrates

that many interests are not actually competing and can co-exist in solutions. This allows the parties to start to co-create a range of solutions that can address as many interests as possible.

This approach, if done well and at scale, provides the opportunity to effectively enable the perspectives and priorities of different groups to be heard, understood and woven together.

RESEARCH SCIENCE & INNOVATION

QUESTION 36

What are the big challenges, particularly around technology, that a mission-based approach could help solve?

One of the biggest challenges in the transition to a net-zero carbon economy is systems change. 'Systems change' refers to the way human behaviours, institutions, and the environment all interact to enable political economic change.

The challenge, as outlined in a recent paper by Simon Sharpe and Timothy Lenton (2021) is to activate 'system tipping points.' These will facilitate systems change through cascading impact. By upscaling these cascading tipping points we could accelerate progress in tackling climate change. To achieve this, we need a mission-based approach to identify the tipping points and then to address them. BRANZ is not in a position to comment on what the tipping points are, but we do have knowledge and expertise to share with others in working to uncover these.

The second research challenge is to ensure climate change reduction policies and initiatives are not based on technological optimism. It is too easy to be distracted by the "latest" technological innovation. Keeping a view of the desired outcomes will ensure that climate action is built on collaboration and research, to help inform and create active transition partnerships

The National Science Challenges (NSC), of which BRANZ is a host to *Building Better Homes, Town and Cities*, have demonstrated the ability of mission-led science to approach science from a systems perspective. The NSC have played a key role at building science capability in Aotearoa New Zealand. BRANZ would support the creation of a mission-based research collaboration, that addresses the transition to zero-carbon.

Reference:

Sharpe, S., & Lenton, T. M. (2021). [Upward-scaling tipping cascades to meet climate goals: Plausible grounds for hope](#). *Climate Policy*, 21(4), 421-433.

QUESTION 37

How can the research, science and innovation system better support sectors such as energy, waste or hard-to-abate industries?

Science-led organizations like BRANZ can better support the energy and waste sectors by collecting relevant information, analyzing, and being custodians of data to support industry and government in emissions reduction. An example of this is [BRANZ CO₂NSTRUCT](#), an open source database for industry that provides values for embodied greenhouse gas and energy for

construction materials. As independent experts we are best placed to hold data for the public good. The data can be used by others to report progress towards targets and to generate insights.

Another key area where science organizations can support other sectors is through knowledge transfer. BRANZ undertakes several education and training initiatives that turn science into accessible action. This includes a wide range of methods for knowledge transfer such as:

- e-learning modules, training seminars, webinars.
- Knowledge repositories such as BRANZ's sustainable buildings website, Level, and REBRI website which focuses on how to minimise waste in the building and related industries.
- Publications such as Build magazine and the BRANZ House insulation guide that helps designers' asses thermal performance for given levels of insulation and common construction options.
- Tools and calculators such as BRANZ's Annual Loss Factor Thermal Modelling tool and LCAQuick.

A good example of this is the BRANZ research that developed the whole building, whole-of-life framework. This research was co-created with industry and led to the creation of the [LCAQuick](#) tool. LCAQuick is a free tool that helps architects, designers and structural engineers make sustainable design decisions. It evaluates the carbon footprint and other environmental impacts of a building design. BRANZ offers free training and support to the industry to upskill expertise about the environmental impact of their buildings.

Science-led organizations have a key role to play in supporting sectors in the transition to zero-carbon. BRANZ's approach to research provides a good example of 'turning science into accessible and actionable knowledge.' BRANZ would be more than willing to share our learning and expertise in this area with other science organizations who wish to engage in value-added knowledge transfer.

QUESTION 39

How can Aotearoa grow frontier firms to have an impact on the global green economy? Are there additional requirements needed to ensure the growth of Māori frontier firms? How can we best support and learn from mātauranga Māori in the science and innovation systems, to lower emissions?

Action by the Ministry for the Environment and supporting departments and agencies to enable Māori co-design and governance in research relating to climate change and greenhouse gas emission reduction is critical. BRANZ, through its Transition to a Zero-Carbon Built Environment research programme has sought to develop a vision mātauranga. We have experienced several issues in attempting this, such as a limited number of mātauranga Māori experts in climate change and the built environment.

This is a central concern in achieving New Zealand's carbon reduction commitments. There is not enough mātauranga Māori capacity and capability to address research needs. We ask the Government to increase support for young Māori towards careers in science, and to support them undertaking research in the fields of climate change and the built environment.

The lack of mātauranga Māori expertise and capability in relation to the built environment is especially concerning. We recommend that the Ministry for the Environment to develop a

construction sector-specific mātauranga Māori advisory group to provide feedback to the sector and support emissions reduction initiatives. It is essential that our sector has actions and policies that incorporate mātauranga Māori and that they are undertaken in a way that is appropriate to kaupapa and tikanga Māori.

QUESTION 40

What are the opportunities for innovation that could generate the greatest reduction in emissions? What emissions reduction could we expect from these innovations, and how could we quantify it?

There are a number of opportunities for innovation in relation to emissions reduction within the built environment that have already been identified.

The BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* outlines four priority areas that can help support the construction sector to be more sustainable and assist with emissions reduction. They are:

1. Changing mindsets by improving our awareness of and our commitment to; addressing, improving and accounting for environmental outcomes.
2. Scaling up the sector's capability and capacity in environmentally sustainable construction.
3. Incentivising and aligning to ensure environmentally sustainable building practices are consistently facilitated.
4. Demonstrating impact by measuring construction sector progress in contributing to Aotearoa New Zealand's climate and environmental goals.

BRANZ's Transition to a Zero-Carbon Built Environment research programme (<https://www.branz.co.nz/environment-zero-carbon-research/transition/>) has also identified areas concerned with reducing embodied and operational carbon as key areas for innovation. For example, there is a need for innovative digital solutions, such as cloud-based carbon assessment tools that provide standardized and consistent carbon footprinting. Other examples are those that focus on operational carbon, such as innovative hot water solutions. We also see that having a central repository of carbon footprinting data is essential to providing confidence in the results produced by independently developed tools. These areas of innovation have great potential to reduce greenhouse gas emissions within the sector.

QUESTION 41

Are there any other views you wish to share in relation to research, science and innovation?

A lot of the policies, strategies and funding related to research, science and innovation tend to focus on new opportunities. This approach often fails to fully understand and map the work completed or underway and seek to develop complementary programmes. The research, science and innovation system would benefit from support to collaborate on creating comprehensive research strategies across the system. Such mapping should include understanding where there

is existing research groups with established records of accomplishment in climate change research and identify how to further grow this expertise and capability.

For example, BRANZ has invested the Building Research Levy in building capability in climate change research over many years. As a result, BRANZ has been able to support the following, among others, to develop their policies and strategies:

- MBIE's Building for Climate Change programme.
- The Ministry of Education's Environmental Action Plan.
- Kāinga Ora's Carbon Neutral housing programme.

Further, BRANZ's research and expertise has also been able to support industry. Some examples of this include:

- Naylor Love's Carbon calculator that uses BRANZ data.
- New Zealand Green Building Council's Carbon Calculator for Homestar Version 5, which was built by BRANZ and uses BRANZ data.

The BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* has also identified a need for several priority actions in the research, science and innovation sector:

- Develop a Sustainable Built Environment Research Strategy for Aotearoa New Zealand. This programme needs to identify research priorities, enhance coordination across the science and innovation system, and support the implementation of te ao Māori approaches to the sustainable built environment.
- Prioritise funding, accelerator programmes, and collaborative projects to improve the impact of research on more environmentally sustainable materials and practices.
- Support the adoption and use of modern methods of construction such as Offsite Manufacturing and Building Information Modelling, sensors, and network technologies that enable more environmentally sustainable buildings.
- Improve locality-based mapping and modelling of climate change hazard exposure and risk to support appropriate land use and infrastructure choices.

BEHAVIOUR CHANGE - EMPOWERING ACTION

QUESTION 44

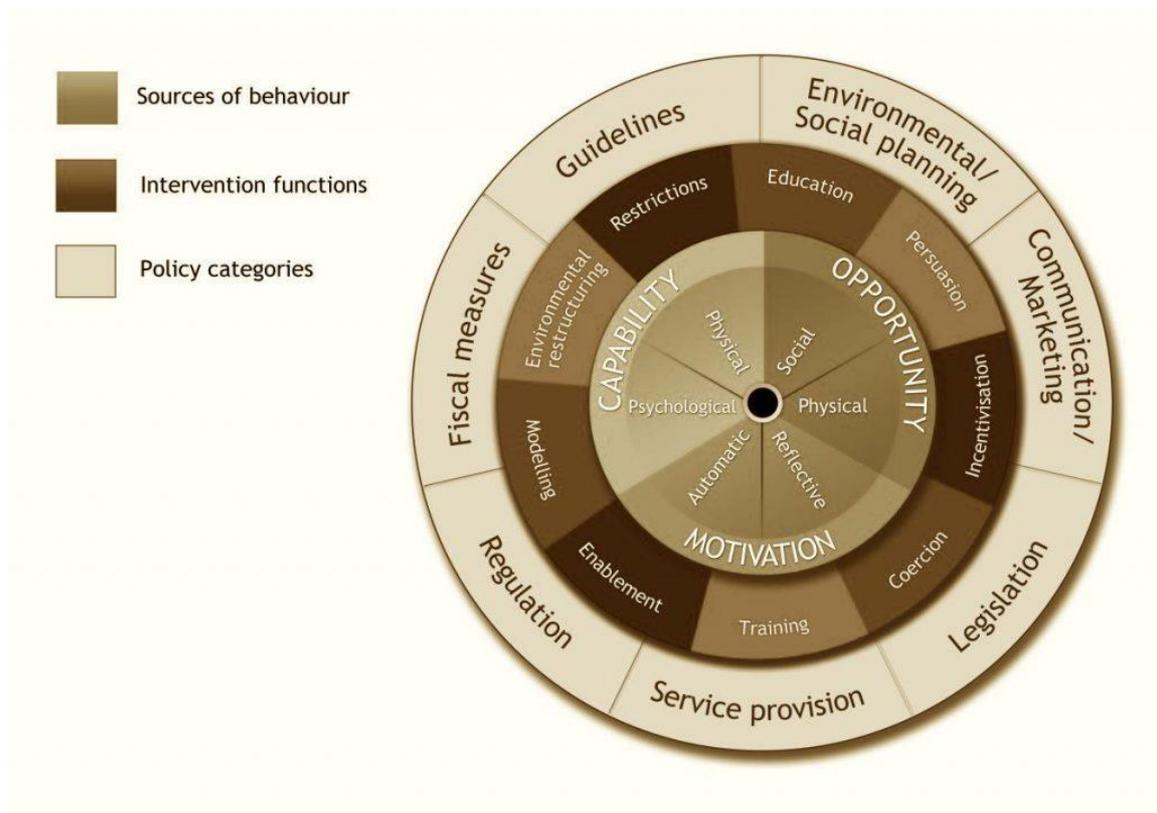
Are there other views you wish to share in relation to behaviour change?

The approach set out in the Emissions reduction plan discussion document around behaviour change signals a lack of governmental understanding of how to drive behaviour change. The proposed approach falls into one of the key traps which is overestimating the significance of education and evidence in behaviour change. Often, people don't change their behaviour, even though they know they should and why they should. This is well understood in the context of health and wellbeing.

It is important that the Government promotes public awareness, communicates and educates. But this will not in itself drive behaviour change. Behavioural change is a dynamic and iterative process, where desire and motivation are the prerequisites to change, self-reflection facilitates

progress, and social influences sway interest and support change. As a result of this, the actions to drive behaviour change must also be multifaceted.

The Behaviour Change Wheel, developed by Michie, van Stralen and West, is a theory that can help understand the complexities of behaviour change. The Behaviour Change Wheel considers conditions that are internal to a person alongside the external conditions in one's social and physical environment. It seeks to help you identify which conditions need to be in place to achieve a behaviour change target. They found that the key drivers of behaviour change are two internal conditions, motivation and capability, and one external condition, opportunity. These are interlinked and can influence one another.



Behavioural Change Wheel by Michie, van Stralen & West (2011).

Michie, van Stralen and West also identified a number of different interventions which can be used to drive behaviour change which are aligned to the three conditions notes above.

Given the complexity of behaviour change, we recommend that the Commission's advice on embedding behavioural change and funding a lead agency to drive behaviour change be adopted. In addition, we recommend that Government consider developing capability and capacity across government to understand and develop behaviour change programmes, beyond education and communication, to support the emissions reduction plan.

In BRANZ's current organizational strategy, we recognize the importance of creating impact with our research by driving behaviour change. We are in the early stages of developing our own capability and capacity to do this within our spheres of influence.

Reference:

Michie, S., Van Stralen, M. M., & West, R. (2011). [The behaviour change wheel: a new method for characterising and designing behaviour change interventions](#). *Implementation Science*, 6(1), 1-12.

TRANSPORT

QUESTION 52

Do you support the target to reduce VKT by cars and light vehicles by 20 per cent by 2035 through providing better travel options, particularly in our largest cities, and associated actions?

We support the development of a national public transport network to reduce travel by private vehicles and to increase walking, cycling, low-emissions public and shared transport. We recommend government articulate a clear, systems-level approach to a strategy for our future mobility.

Specifically, we recommend that the individual policies floated in the discussion document be considered in a more holistic way to ensure that linkages are identified and cross-system barriers, large and small can be tackled. We would like to see a particular emphasis on the development of this in the context of building better urban and suburban forms. The importance of aligning national public transport design with creating built environments that support people, communities and nature to thrive cannot be underestimated. This is an area where considerations to nature-based solutions and equitable transitions also need to be given prominence.

As noted above, we believe in the importance of embedding behaviour change incentives within all actions. Therefore, the development of a national public transport network must be informed by drivers of, and barriers to, behaviour change. We strongly support the action in the emissions reduction plan to invest for a better understanding of travel accessibility, preferences and behaviour.

QUESTION 53

Do you support the target to make 30 per cent of the light vehicle fleet zero-emissions vehicles by 2035, and the associated actions?

We support this target in principle as being consistent with the CCC's advice in this area. We would like to see consideration to the impact of this on a just transition by analysing how this target could impact different parts of the society. This needs to be done in conjunction with other policies that may affect transport choices such as congestion charging.

We note that to support this target infrastructure will need to keep pace with the switch from internal combustion engines to electric vehicles. We recommend that the national infrastructure plan notes in the discussion plan be accelerated. We would request that consideration be given to partnering with businesses who are investing in EV infrastructure within their own properties. Rural-based businesses, like BRANZ, may be able to support cost effective and speedier access to such infrastructure in rural communities, if partnering approaches were considered.

We recommend that government considers complementary measures aimed at getting older vehicles off the road to support the proposed target.

QUESTION 55

Do you support the target to reduce emissions from freight transport by 25 per cent by 2035, and the associated actions?

BRANZ is a member of the Sustainable Business Council and are aware of the Council's Low Carbon Freight Pathway. We support the Council's recommendation that the Government investigate whether a more ambitious target could be adopted by implementing the measures recommended in the SBC Low Carbon Freight Pathway.

BUILDING AND CONSTRUCTION

QUESTION 70

The Commission recommended the Government improve the energy efficiency of buildings by introducing mandatory participation in energy performance programmes for existing commercial and public buildings. What are your views on this?

BRANZ supports the mandatory introduction of NABERSNZ (the National Australian Built Environment Rating System – New Zealand edition) for existing commercial and public buildings. BRANZ also supports the introduction in 2022 of minimum Green Star rating five for new non-residential government buildings.

BRANZ sees the introduction of energy performance certificates for existing residential housing as essential. Recent research by [BRANZ and Massey University](#) has found that the climate impact of New Zealand residential buildings in 2018-2050 is projected as 170 MtCO₂eq. The climate targets for New Zealand residential dwellings were calculated by assigning the global carbon budget for limiting temperature increase to 1.5 °C during 2018-2050. The research found that pre-existing residential buildings contribute 63% of the total climate impact, whereas the new-built buildings contribute 37% of the impact.

Given the emission impact of existing residential buildings, we believe that action to address the energy performance of existing residential housing beyond existing plans such as 'Warmer Kiwi homes' cannot be delayed further.

BRANZ has undertaken research on energy performance certificates targeting residential buildings. We have interviewed international developers and certifiers of energy performance certificates to gain better insights into opportunities for application in New Zealand. Further, the project also tested existing international energy performance tools with New Zealand consumers to see how they would like the information presented, to better understand New Zealanders' needs. Potential key barriers to implementation and operation have been explored, from the perspective of New Zealand consumers.

Other relevant BRANZ research includes examining opportunities to reduce carbon emissions. This project combines a housing stock model with residential building carbon footprint data to explore different possible decarbonising strategies implemented in both existing and new houses.

The research seeks to understand and estimate the potential greenhouse gas savings associated with the implementation of these strategies relative to “business as usual” emissions. The evaluation considers potential embodied carbon costs as well as “operational carbon benefits.” In brief, we need to understand what combination of strategies (in new and existing dwellings) provides the greatest potential for net carbon savings and relate this to New Zealand’s net-zero carbon commitment.

BRANZ would welcome the opportunity to share this research within interested government stakeholders.

QUESTION 71

What could the Government do to help the building and construction sector reduce emissions from other sectors, such as energy, industry, transport and waste?

BRANZ believes the best way for the Government to help the construction sector reduce emissions from other sectors is for the Government to demonstrate system convening leadership (see response to question two).

Research undertaken by Tonkin and Taylor and BRANZ for the Ministry of Education in 2021 suggests that the best way for Government to show leadership in the area of waste is to:

1. *Improve the understanding of waste generated in construction and demolition.* This will involve developing clear data requirements and closely collaborating with those able to collect data.
2. *Develop and support waste minimisation requirements for Government-led projects through procurement and operational practice.* This starts at project conception and features in planning and procurement processes for design and construction.
3. *Strengthen waste policies, standards, and processes.* In addition to material supporting the Government and its partners to deliver on the zero-carbon vision, this will require clear and measurable targets to show progress over time.
4. *Work with public sector partners, direct suppliers to the Government (designers, construction contractors), the construction supply chain, and the waste sector to improve access to appropriate sorting and processing infrastructure across New Zealand.* The Government, with other public sector construction clients, has the ability to encourage the provision of waste recovery and re-processing services. This will include the use of recovered materials on Government projects as well as recovery of waste generated.

Furthermore, the Government can help the building and construction sector reduce emissions from other sectors by supporting coordinated action. The BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* seeks to ensure that the building and construction sector is clear about how it can contribute to Aotearoa New Zealand’s climate and environmental commitments. The *Roadmap for Action* will help support the sector in reducing emissions in other sectors through its goals regarding zero-carbon construction, a circular construction economy, and regenerative construction. We encourage government and the construction sector to support and implement this Roadmap for Action as it provides a plan that all sectors can support.

QUESTION 72

The Building for Climate Change programme proposes capping the total emissions from buildings. The caps are anticipated to reduce demand for fossil fuels over time, while allowing flexibility and time for the possibility of low-emissions alternatives. Subsequently, the Commission recommended the Government set a date to end the expansion of fossil gas pipeline infrastructure (recommendation 20.8a). What are your views on setting a date to end new fossil gas connections in all buildings (for example, by 2025) and for eliminating fossil gas in all buildings (for example, by 2050)? How could Government best support people, communities and businesses to reduce demand for fossil fuels in buildings?

BRANZ does not have enough information to make an informed response to MBIE's Building for Climate Change programme's proposed cap on the total emissions from buildings.

Any comments on the impacts of fossil fuel use are outside of BRANZ's area of research and expertise.

QUESTION 73

The Government is developing options for reducing fossil fuel use in industry, as outlined in the Energy and industry section. What are your views on the best way to address the use of fossil fuels (for example, coal, fossil gas and LPG) in boilers used for space and water heating in commercial buildings?

BRANZ support the options for reducing fossil fuel use. We also acknowledge that while we must reduce greenhouse gas emissions, we must ensure our commercial buildings are resilient and able to maintain energy security. This is particularly important for lifeline utility services such as hospitals. If full electrification is not possible to meet resilience and energy security, we support the use of other environmentally appropriate fuels that are sustainably sourced, such as biomass.

QUESTION 74

Do you believe that the Government's policies and proposed actions to reduce building-related emissions will adversely affect any particular people or groups? If so, what actions or policies could help reduce any adverse impacts?

BRANZ believes energy hardship amongst vulnerable populations is an area of concern. There is a significant risk that a transition to zero-carbon could be unfair and unjust; how policies and interventions are designed and delivered will have huge implications for the distribution of costs and benefits.

For example, analysis undertaken by Ian Preston and others from the Centre of Sustainable Energy and University of Oxford outlined the distributional impacts of climate change and fuel poverty policies on energy consumers. This analysis showed a 'triple injustice' on low-income households who:

1. Benefit least from energy policies;
2. Pay a higher share of the cost for these policies; and

3. contribute least to the problem – i.e., carbon emissions– which the policies are designed to address.

BRANZ supports policies where everyone should have the capacity and capability to participate in a zero-carbon economy. This will not happen without purposeful action to mitigate adverse and unfair impacts. BRANZ will outline a more detailed response to this issue in its submission to the current consultation relating to energy hardship undertaken by the Ministry of Business, Innovation and Employment (MBIE).

Reference:

Preston, I. White, V. Thumim, J. Bridgeman, T. & C. Brand (2013) [Distribution of Carbon Emissions in the United Kingdom: implications for domestic energy policy](#). London, UK: Joseph Rowntree Foundation.

QUESTION 75

How could the Government ensure the needs and aspirations of Māori and iwi are effectively recognised, understood and considered within the Building for Climate Change programme?

BRANZ supports the mana motuhake of Māori. BRANZ believes the integration of te ao Māori into the Building for Climate Change programme is critical to its success. We outlined in our response to question 39, that the lack of mātauranga Māori expertise and capability in relation to the built environment is especially concerning.

We recommend that the Ministry for the Environment to develop a construction sector-specific mātauranga Māori advisory group to provide feedback to the sector and support emissions reduction initiatives. It is essential that our sector has actions and policies that incorporate mātauranga Māori and that they are undertaken in a way that is appropriate to kaupapa and tikanga Māori.

BRANZ would like to see:

- Greater consultation with iwi, hapu, and Māori businesses within the sector about the programme's work plan.
- Greater integration of mātauranga Māori within the Building for Climate Change programme.
- Better support for Māori scholars and experts to develop a vision mātauranga for the building and construction sector that is focused on climate change and the transition to zero-carbon.
- For the Government to provide more financial support for the development of papa kāinga that demonstrates zero-carbon construction.

The BRANZ Transition to a Zero-Carbon Built Environment research programme has a specific objective relating to collaboratively working with Māori on buildings, climate change, and the transition to zero-carbon. The programme objective is:

Enable the creation of a Vision Mātauranga that builds capability and leadership amongst Māori, iwi, hapu, whanau and businesses with respect to buildings and the net-zero carbon economy.

The programme vision mātauranga will be achieved by two key actions:

1. By 2025 BRANZ will have completed nation-wide hui and consultation on climate change and the built environment. The hui seeks to engage with Māori to understand how they wish to be involved in the development of a building and construction industry zero-carbon collaborative research and information center.
2. By 2030, Māori will have been involved in the development and operation of the building and construction industry net-zero carbon collaborative research and information centre and are involved in further research and implementation as appropriate. This can include resources, advice, and engagement for industry to help share a Māori cultural perspective and integrate this knowledge into industry specific plans, strategies, and policies relevant to the building and construction industry.

BRANZ welcomes collaboration with the MBIE Building for Climate Change programme to work with us on this important area.

QUESTION 76

Do you support the proposed behaviour change activity focusing on two key groups: consumers and industry (including building product producers and building sector tradespeople)? What should the Government take into account when seeking to raise awareness of low-emissions buildings in these groups?

BRANZ is supportive of creating behavioural and cultural change within the building and construction industry and amongst consumers. However, this is dependent on several factors:

1. Behaviour change in this context refers to more than a focus on knowledge and information deficits, but a focus on trying to change the actual practices (what people do).
2. Behaviour change is not about individuals. For behaviour change to be successful the practices need to happen within an 'eco-system'. By this we mean an environment that helps support the desired behaviour change through infrastructure, information, financial support, and change agents etc. It is through this 'eco-system' that behaviour change can be supported and sustained over a period.
3. Any behaviour change must be collaborative between consumers and industry so that it doesn't become a top-down approach, but rather a co-designed and collaborative one. BRANZ has undertaken some research that shows that small and medium-sized enterprises (SMEs) in the construction sector were already under pressure before the COVID-19 outbreak. BRANZ investigated the sources of stress on construction sector SMEs before and during the pandemic. These were most frequently related to financial pressure and the day-to-day demands of running the business. Well-managed SMEs are generally more resilient workplaces. Given existing industry stresses, we support change happening in a collaborative way that does not place added stress on the industry.

The BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* outlines a key priority: Changing mindsets by improving awareness of and commitment to; addressing, improving, and accounting for environmental outcomes. The roadmap priority for changing mindsets outlines a four-point action plan:

1. Develop and apply a 'whole-of-government as a client' approach to sustainable construction, leveraging existing information, standards and consistent KPIs.
2. Establish and implement a programme that enables the sector's clients and consumers to learn about the value of, and how to ask for, improved environmental performance from construction work.
3. Establish and implement an outreach programme that:
 - (a) Monitors, scans, and identifies how new practices and approaches being used by other sectors and jurisdictions can be adopted in the Aotearoa New Zealand construction context.
 - (b) Identifies how to support and amplify existing and new projects focused on improving environmental and sustainability performance within the sector.
 - (c) Supports firms to develop environmental impact plans that understand, measure, and manage their greenhouse gas emissions and other environmental impacts.
 - (d) Shares best-practice examples of effective environmental impact plans, including use of best practice tools.
 - (e) Helps firms and clients profile and tell their environmentally sustainable performance stories.
 - (f) Profiles opportunities for, and the benefits of, switching to low emission vehicles, equipment, and more sustainable and recyclable materials, products and projects.
4. Support key industry associations to develop new, or update existing, environmental sustainability plans that are aligned to this Roadmap.

We support the implementation of this action plan to help develop the eco-system for behaviour change that is required within industry. See additional comments around behaviour change in our response to question 44.

The emissions reduction plan's proposed behaviour change activities are focused on two groups: consumers and industry. BRANZ supports the focus on consumers and the building and construction industry. However, we also believe that the Government behaviour change activities should also focus on the *relation between both groups*.

BRANZ Research Now [Strategies for Changing Behaviour:](#)

BRANZ Research Now [Alleviating stress on small and medium-sized construction companies.](#)

QUESTION 77

Are there any key areas in the building and construction sector where you think that a contestable fund could help drive low-emissions innovation and encourage, or amplify, emissions reduction opportunities? Examples could include building design, product innovation, building methodologies or other?

BRANZ believes that (to a large extent) we already have the knowledge required for zero-carbon construction. What is needed is for this knowledge to be disseminated amongst industry supported by incentives that encourage uptake and use of techniques such as these. BRANZ has been actively doing this through several webinars and nation-wide seminar series: *The Carbon Challenge: Science and Solutions* seminar series in February/March 2022.

BRANZ believes there are two key areas where a contestable fund could help emission reduction opportunities:

1. Support the building and construction industry to do environmental product declarations:

Action 21 of the BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* is:

Support the collection of performance and impact data by:

- a) Developing a consistent reporting framework that can be used across the sector by system players to demonstrate their commitment and accountability for performance at firm and sector level.
- b) Identifying data needs and gaps that prevent the sector from measuring and reporting on its impacts.
- c) Establishing a mechanism that ensures the regular, standardised collection of performance and impact data.

Having a consistent and reliable data set about building materials and product's embodied carbon is critical to any efforts to reduce greenhouse gas emission from buildings. It is therefore also critical that there is support for the building and construction industry to undertake environmental product declarations (EPDs).

EPDs are important in understanding the embodied carbon of construction products. EPDs are unfortunately not common within the building and construction industry, mainly due to their cost. Funding support for more EPDs would help provide much needed New Zealand-specific data that will help accurately address whole-of-life carbon assessments of buildings.

2. Support for innovative building solutions:

BRANZ is undertaking research into innovative water heating solutions for residential application. This research is focused on reducing operational carbon emissions - which is the largest within a residential houses carbon footprint (approximately 64% of a residential dwellings carbon footprint over its lifetime).

This research into innovative water heating solutions is showing great promise for low carbon ways to heat hot water. However, for technologies like this to be upscaled and installed into New Zealand's homes there needs to be funding available to help them be brought to market. Funding is needed to develop these innovative solutions that target our key emission areas. Without this funding New Zealand will struggle to make evidence-based solutions to the carbon challenge.

QUESTION 78

The Ministry of Business, Innovation and Employment (MBIE) is considering a range of initiatives and incentives to reduce construction waste and increase reuse, repurposing and recycling of materials. Are there any options not specified in this document that you believe should be considered?

BRANZ supports the circular economy package of initiatives.

We believe some top priorities in relation to the circular economy package include standards around the repurposing of building products and materials, and less fragmentation within industry around building and construction waste.

The BRANZ Construction Sector Accord *Construction Sector Environment Roadmap for Action* has as a priority: Scaling up the sector's capability and capacity in environmentally sustainable construction. There are action areas pertaining to recycling, reuse, and waste minimization that support the Government work in in this area.

However, in addition to *Construction Sector Environment Roadmap for Action*, we recommend that the Government develop a building and construction waste management roadmap aimed at reducing, reusing, and recycling building and construction waste. Waste is a particular concern for the building and construction industry. It has been estimated that construction and demolition waste may represent up to "50% of all waste generated in New Zealand" (Greater Wellington Regional Council). BRANZ research has identified an industry willingness to support waste reduction, but this is often impacted by the lack of cost-effective infrastructure.

BRANZ believes there is an opportunity for government to demonstrate system convening leadership in this area. BRANZ is undertaking an initiative to support central and local government leadership through a hui on building and construction waste. This is a partnership with Kāinga Ora, the Ministry for the Environment, the Ministries of Education, Health and Defense, Auckland Council and Wellington Council. The purpose of the hui is to bring central and local government together to learn about challenges and barriers, as well as share ideas and strategies to address and minimize construction waste.

Hui outcomes:

- The group will have a greater understanding of what is happening in the sector regarding construction waste.
- Greater awareness and knowledge of current challenges and barriers in relation to the handling of construction waste across the country.
- Exploration and creation of awareness of actions and strategies to address construction waste.
- Promotion of discussion on coordinated and standardized solutions that can help drive change within industry.
- Creation of an action group to support construction waste initiatives within Aotearoa.

The hui should be seen as an action group that can help government demonstrate leadership in this area and provide a template for industry to normalize behaviours and strategies that reduce building and construction waste.

QUESTION 79

What should the Government take into account in exploring how to encourage low-emissions buildings and retrofits (including reducing embodied emissions), such as through financial and other incentives?

Support for SMEs:

Most companies within the building and construction industry are small to medium enterprises (SMEs). SMEs do not often have the resources, manpower, or time to quickly learn and change construction practices that will be needed if we are to meet our 2050 climate emissions target.

The BRANZ-Construction Sector Accord *Construction Sector Environment Roadmap for Action* outlines a priority action focused on 'Changing mindsets' as outlined in question 76. As part of this priority area, we suggest several actions that are needed to support SMEs:

1. Establish and implement a programme that enables the sector's clients and consumers to learn about the value of, and how to ask for, improved environmental performance from construction work.
2. Establish and implement an outreach programme that:
 - a) Monitors, scans, and identifies how new practices and approaches being used by other sectors and jurisdictions can be adopted in the Aotearoa New Zealand construction context.
 - b) Identifies how to support and amplify new and existing projects focused on improving environmental and sustainability performance within the sector.
 - c) Supports firms to develop environmental impact plans that understand, measure, and manage their greenhouse gas emissions and other environmental impacts.
 - d) Shares best-practice examples of effective environmental impact plans, including use of best practice tools.
 - e) Helps firms and clients profile and tell their environmentally sustainable performance stories.
 - f) Profiles opportunities for –and the benefits of– switching to low emission vehicles, equipment and more sustainable and recyclable materials, products, and projects.
3. Support key industry associations to update existing or develop new environmental sustainability plans that are aligned to the *Construction Sector Environment Roadmap for Action*.

Encouraging policies and industry advice that are formed by evidence:

BRANZ believes one of the biggest challenges for retrofits is identifying the key construction strategies to ensure retrofitting reduces emissions. The Beacon Pathway Papakowhai renovation project identified a number of strategies to promote better energy efficiency, but this research is now over 10 years old.

The new BRANZ Household Energy End-use Study or HEEP 2.0 will provide much needed data about energy use in New Zealand's homes since the wide uptake of heat pumps. Although a greater understanding of energy use is important to make evidence-based policies in this area, we also need to make sure that any suggested strategies are also low in embodied carbon and

do not have unintended consequences. It is important to consider that embodied carbon emissions also account for a significant portion of the 2050 emissions target.

QUESTION 80

What should the Government take into account in seeking to coordinate and support workforce transformation, to ensure the sector has the right workforce at the right time?

One of the major difficulties for the building and construction industry to transition to zero-carbon is the implementation of "Green" policies into mainstream approaches to construction. This has been demonstrated by a number of overseas construction workforces (Canada, UK, EU)– zero-carbon and low energy construction requires close co-ordination between different occupations. Close co-ordination between these different occupations should be focused on worksites. This places demands on those occupations that go beyond their immediate scope of responsibilities to understanding the building fabric as a unified system. This requires enhanced technical knowledge and soft skills that include a high level of communication, interpersonal coordination, and self-management (among others).

Enabling our building and construction industry to regularly achieve this standard of zero-carbon construction would require significant changes to how we understand and undergo training and qualification within Aotearoa New Zealand's vocational education system.

A new conceptualization of the building and construction training and curriculum is required so that it can be centered around the transition to zero-carbon – especially zero-carbon construction. To facilitate the development of this new curriculum BRANZ is undertaking a research project entitled the *Future of Work: what do we need to know to transition to zero-carbon*.

The *Future of Work* research project seeks to answer the following:

What expertise (knowledge, skills and competencies) is required of tradespeople and professionals to design and construct a zero-carbon building?

At present this is unknown. To date, industry and government plans and initiatives have tended to omit climate change and the transition to a net-zero carbon economy when addressing expertise and future of work for the industry. This research project has been developed via co-creation and consultation with key stakeholders, such as the Climate Change Commission and the MBIE Building for Climate Change programme team. This has resulted in a research project that will support industry to develop workforce solutions to the transition to a zero-carbon economy.

This research project is split into two parts.

Part 1 focuses on what expertise is needed within industry. It seeks to explore this in relation to existing literature, international case studies of best practice, and industry engagement through an industry wide survey. The survey is being undertaken in partnership with ConCoVE and will include semi-structured interviews with key stakeholders.

This part of the study also looks at skills and the impact on the transition to zero-carbon on Māori (within Professor Regan Potangaroa, Victoria University of Wellington). It focuses on

critical areas that are necessary to meet our 2050 carbon reduction targets. These areas are designing for zero-carbon, building for zero-carbon, and refurbishing buildings to be zero-carbon (within their allowable building carbon budget).

Part 2 of the research project examines how this expertise will be provided and seeks to co-create solutions with key industry and government stakeholders. The objective of this research project will be to outline a new curriculum to help facilitate change with the sector.

For more information on this project contact the lead researcher: Dr Casimir MacGregor, casimir.macgregor@branz.co.nz or (04) 238 1315.

QUESTION 81

Our future vision for Aotearoa includes a place where all New Zealanders have a warm, dry, safe and durable home to live in. How can we ensure that all New Zealanders benefit from improved thermal performance standards for our buildings?

BRANZ supports any efforts to ensure all New Zealanders have a warm, dry, safe, and durable home to live in. The best strategies to ensure that all New Zealanders benefits from improved thermal performance standards for our buildings is through good Government leadership and regulation. These mechanisms set minimum performance levels and create support packages for building owners to meet the improved thermal performance standards.

BRANZ does not support market-based solutions. Improved thermal standards must be led by Government. The Government has an obligation to ensure that the societal settings under its control act to ensure the health and wellbeing of all New Zealanders. In addition, the Government is a key beneficiary of the many co-benefits that come from improved thermal performance standards, including reduced health costs.

QUESTION 82

Are there any other views you wish to share on the role of the building and construction sector in the first emissions reduction plan?

BRANZ has nothing to add to this question.

WASTE

QUESTION 89

The Commission's recommended emissions reduction target for the waste sector significantly increased in its final advice. Do you support the target to reduce waste biogenic methane emissions by 40 per cent by 2035?

We support the Commission's recommendations in this area, including the recommended target to reduce waste biogenic methane emissions by 40 per cent by 2035. New Zealand's waste emissions

have reduced 19.3 per cent since 1990. This makes it the only emissions source that is currently reducing. This trajectory should be encouraged with additional measures.

QUESTIONS

Do you support more funding for education and behaviour change initiatives to help households, communities and businesses reduce their organic waste (for example, food, cardboard, timber)?

We **support** more funding for education and behaviour change initiatives to help households, communities and businesses reduce their organic waste. As noted in our earlier responses, behaviour change is not about individuals. For behaviour change to be successful, the practices need to happen within an 'eco-system'. By this we mean an environment that helps support the desired behaviour change through infrastructure, information, financial support, and change agents etc. It is through this 'eco-system' that behaviour change can be supported and sustained over a period.

Any behaviour change initiatives must be co-designed and collaborative between households, communities, businesses and government industry so that it doesn't become a top-down approach.

QUESTIONS

What other policies would support households, communities and businesses to manage the impacts of higher waste disposal costs?

We support a more standardised approach to collection systems for households and businesses, which prioritises separating recyclables such as fibre (paper and cardboard) and food and garden waste to help with understanding and compliance. This needs to be support by the development of national standards for waste collection, inclusive of material type for collection and collection receptacles. Households are currently demotivated from waste management activities by seeing their efforts squandered by local government's inability to handle the waste streams other than via landfill.

FURTHER INFORMATION

If you have any questions about this submission or wish to seek further advice, please do not hesitate to get in touch with BRANZ. We welcome the opportunity to continue to partner with Government to achieve Aotearoa New Zealand's environmental, sustainability and climate goals and aspirations.

Yours faithfully,



Chelydra Percy

Chief Executive Officer