CHAPTER 7:

Planning and infrastructure

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Lead

MINISTER FOR
THE ENVIRONMENT
HON DAVID PARKER

SECRETARY FOR
THE ENVIRONMENT
VICKY ROBERTSON

Supporting

- Minister for Infrastructure
- Minister of Housing
- Minister of Climate Change
- Chief Executive of the Ministry of Housing and Urban Development
- Secretary for Transport
- Chief Executive of Te Waihanga
- Secretary to the Treasury

Contribution to our long-term vision

The development of planning, investment in infrastructure, and land and resource management will help to identify opportunities (and remove barriers) to meeting emissions budgets and 2050 targets, while also building climate resilience and improving people's wellbeing.

Planning and infrastructure

Why planning and infrastructure is important

How we use land and other natural and physical resources impacts on our greenhouse gas emissions and determines how well we cope with the effects of climate change. Decisions we make about land use, resources and infrastructure now will determine our emissions pathway well into the future.

Key actions

- Improve the resource management system to promote greenhouse gas emissions reductions and climate resilience.
- Support emissions reductions and climate resilience via policy, guidelines, direction and partnerships on housing and urban development.
- Address infrastructure funding and financing challenges so we can develop low-emissions urban environments and use infrastructure efficiently.
- Improve the evidence base and tools for understanding and assessing urban development and infrastructure greenhouse gas emissions.
- Promote innovation to reduce emissions in Crown-led urban regeneration projects.
- Identify ways to support the private sector to deliver low-emissions development.
- Integrate climate mitigation into central government decisions on infrastructure.

Our planning system and investment in infrastructure can reduce emissions, build resilience and improve wellbeing

The **planning and infrastructure systems** guide decisions on how we use our land and natural and physical resources. They also guide infrastructure investment. These decisions influence the form, location and type of development that takes place.

They have long-term impacts due to the lifespan of the built environment. These decisions cover investment and planning processes for infrastructure, including the development of new infrastructure, and significant renewals or major upgrades of existing assets.

Decisions about when, where and how to invest in infrastructure services should be outcome focused, align with national objectives[1] and consider built and non-built solutions.

We need to get the foundations right

Getting the foundations of our planning and infrastructure systems right today will help our towns and cities generate fewer greenhouse gas emissions in the future. The right planning and infrastructure settings will also ensure we are resilient to the impacts of climate change and help people and nature to thrive.

Over many decades, our towns and cities have been planned in ways that often lead to businesses, communities and households participating in activities that create emissions and make it harder for them to do things that avoid or reduce emissions. Many major infrastructure decisions have not adequately taken climate change into account.

1 These strategic objectives (from deciding when, where and how to invest in infrastructure) are set out across a range of regulatory and policy frameworks, including resource management reform, the Climate Change Response Act 2002, the Government Policy Statement on Housing and Urban Development, the New Zealand Infrastructure Strategy, Future for Local Government, MAIHI Ka Ora (the National Māori Housing Strategy) and the Three Waters Reform Programme.

We need to change the way we use our land and resources and plan, build and operate infrastructure, to support our transition to a low-emissions, resilient society over the next 30 years. To achieve that goal, we need to enable our planning and infrastructure systems to reduce emissions, increase removals and improve climate resilience now.

Our planning and infrastructure systems influence how and where our towns and cities grow. They shape how decisions are made on the types of infrastructure provided and how infrastructure is funded, financed and used.

When infrastructure and planning decisions are made in an integrated way, informed by national objectives, they can help us achieve well-functioning, low-emissions urban environments, while enabling us to use our land and resources more carefully and efficiently.

Well-functioning urban environments can reduce emissions and improve wellbeing

Urban environments with a variety of mixed-use, medium- and high-density development that is connected to urban centres, as well as active and public transport routes, will help reduce greenhouse gas emissions. That is partly because they provide more options for people to travel between where we work, live, play and learn.

Well-planned urban areas provide an opportunity to realise wider benefits too. They enable a greater supply and diversity of housing to be built at pace and scale, improving affordability. Good access to active and public transport routes that safely take people to workplaces and education centres can provide greater access to learning and job opportunities for households, improve public health and wellbeing and strengthen community cohesion.

How we plan and provide infrastructure can reduce emissions and increase resilience

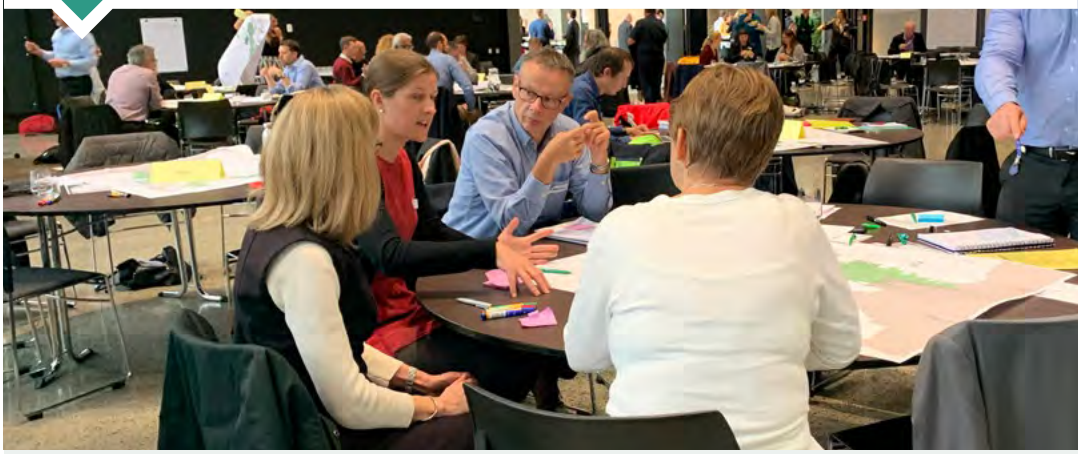
How we provide infrastructure also affects our emissions. Higher-density, mixed-use developments can have lower operational emissions per dwelling and allow infrastructure to be used more efficiently, avoiding or delaying the need for more infrastructure and associated emissions.

Non-built solutions to our infrastructure needs – including nature-based solutions – can also reduce the need for built infrastructure made of materials that carry embodied emissions. They can also help to sequester carbon, improve indigenous biodiversity and create more liveable environments that encourage people to walk or cycle, reducing emissions from transport.

Decisions about investment in infrastructure need to take account of the whole-of-life costs and benefits of that investment, including the cost of emissions associated with that infrastructure.

The planning and infrastructure systems can also help to prevent development in areas vulnerable to the impacts of climate change, such as flooding. Avoiding development in these areas will help us reduce the need for additional infrastructure to protect vulnerable land and assets – saving on emissions from building new infrastructure – and avoid the need to replace or relocate existing infrastructure and buildings.

CASE STUDY



WELLINGTON REGIONAL GROWTH FRAMEWORK

The Wellington Regional Leadership Committee (the Committee) is an Urban Growth Partnership for the Wellington-Wairarapa-Horowhenua area. The Committee is planning for growth that will support the transition to a resilient, low-emissions economy. This collaboration between local councils, central government and mana whenua aims to improve coordination and alignment for housing, land use, transport, climate change and emissions and infrastructure planning.

In July 2021 the Committee finalised the Wellington Regional Growth Framework (the Framework), the region's first joint spatial plan. The Framework describes a 30-plus-year vision for how the region will grow and change and the enabling infrastructure needed to accommodate an additional 200,000 people and 100,000 jobs, making best use of assets and resources, and achieving resilience and emissions reduction.

The Framework supports denser urban forms in locations that are well connected with active and public transport and ensures that new growth areas are well located, use land efficiently and are more self-supporting, with local employment and community facilities.

The planning system and investment in infrastructure needs to support emissions reductions across sectors

Our planning and infrastructure systems need to support emissions reductions across a range of sectors.

- **Transport:** In our urban areas – where most people live – planning that supports low-emissions urban form – the shape, size, density and configuration of settlements – through more mixed-use, medium- and high-density development close to urban centres creates more accessible, healthy, resilient and vibrant towns and cities. In rural areas, planning can support interregional connections for people and freight. In urban and rural areas, infrastructure investment and planning can help make lower-emissions transport an easy, affordable, reliable option for people and freight.
- **Building and construction:** The planning system can promote developments with higher-density buildings, including apartments and townhouses. This type of development can have lower construction and operational emissions than standalone dwellings. We can better provide more efficient and low-emissions infrastructure services to communities and businesses when infrastructure is integrated with development.
- **Forestry and nature-based solutions:** The planning system can promote the location, scale and type of forestry – and forest management techniques – that we need to realise the significant climate and biodiversity benefits that forestry can bring (see chapter 14: Forestry).

  The planning system and infrastructure investment can also support the use of nature-based solutions or blue/green infrastructure – such as water-sensitive urban design, rain gardens and urban trees – which may support carbon removals and improve climate resilience (see chapter 4: Working with nature).

- **Energy:** The planning system can enable the development of renewable energy and infrastructure that we need to decarbonise our energy system and promote low-emissions development – residential, commercial, industrial and infrastructure – that reduce energy demand. When we use less energy, we can delay the need for new electricity infrastructure. As we transition to a low-emissions electricity grid, the planning and investment systems can make sure we develop the right infrastructure in the right places, maximising efficiency and resilience. In turn, those decisions can ensure that embodied emissions – those that arise as a result of construction processes and manufacturing the materials needed to build the infrastructure – are as low as practicable.
- **Waste:** Moving to a circular economy will minimise waste in a number of ways, including by recovering materials – or resources – for reuse. The planning system and infrastructure investment decisions can support us to recover resources at higher rates. They will play a role in:
  - enabling the development of the infrastructure we need to recover resources and stop them going to landfill, which aligns with the new Waste Strategy
  - capturing more of the methane generated at municipal landfills.
- **Agriculture:** The planning system can indirectly support emissions reductions in the agriculture sector. For example, it can support whole-of-farm system assessment of emissions-mitigation scenarios and help to achieve freshwater and biodiversity outcomes via integrated farm planning.

Figure 7.1. The planning and infrastructure system has an important role to play in supporting climate outcomes

Low-emissions buildings and infrastructure

Planning and infrastructure systems support the delivery of low-emissions and efficient buildings and infrastructure to be delivered at pace and scale.

Well-functioning urban environments

Urban areas are liveable, resilient, supported by high-quality urban design with good access to community amenities, and active and public transport.

Mixed-use, medium- and high-density development

Medium- and high-density development close to urban centres and active/public transport provides more choice about where people live and how they travel to the places we work, learn and play.

Strategic planning

Integrated and strategic planning ensures land and resource use in rural and urban areas help to reduce emissions, build resilience and support high-emitting sectors to transition.

Access to active and public transport

Urban environments provide easy access to walking, cycling, scootering and public transport routes.

Freight and transport

Planning and infrastructure systems support improvements to interregional rail services, more on-demand public transport services in provincial towns and the decarbonisation of freight.

Māori

The planning system supports hapū, iwi and Māori to protect areas of cultural significance and to contribute to decisions on land use and local place-making.

Working with nature

Planning and infrastructure systems work with nature to support biodiversity, enable green and blue infrastructure, sequester carbon and manage the effects of a changing climate.

Actions to reduce emissions through improvements to the planning and infrastructure systems

Getting the fundamentals right for the next 30-plus years, and ensuring decisions taken today will not hold us back, is critically important for placing Aotearoa New Zealand on a low-emissions pathway to meeting the 2050 target.

Significant reform to the resource management system – which will help to embed necessary changes to the way we manage land and resources – has already begun. The new system will have an impact on emissions reductions beyond the first emissions budget period.

Together, the package of initiatives outlined below will:

- create a pathway for integrating climate change throughout the planning system – from the legislative framework, through to national direction, regional spatial planning, plan-making and consenting
- build the evidence base to make sure that central and local government, Māori, and the private sector can make decisions and investments that will reduce our emissions and meet our 2050 targets
- show that lower-emissions approaches are viable and affordable, providing a pathway for others to follow
- identify ways to support the private sector, including developers and Māori housing providers, to accelerate development that will have wider benefits for health and wellbeing of our communities
- make sure that government infrastructure decisions help us reduce emissions, in line with our 2050 targets and adapt to the effects of climate change.

Action 7.1: Improve the resource management system to promote lower emissions and climate resilience

The resource management system will be improved to support emissions reductions and climate resilience.

Key initiatives

Among other things, the new resource management system will:

- embed emissions reduction and climate adaptation into resource management frameworks (for example, the proposed Strategic Planning Act and Natural and Built Environments Act), including measures that help to achieve urban density that improves access to community amenities
- support managed retreat for existing buildings and infrastructure at risk of the impacts of climate change through the proposed Climate Adaptation Act
- embed Te Tiriti o Waitangi and Te Oranga o te Taiao – particularly the concept of wellbeing of the natural environment – into the decision-making framework, which will better enable urban development and design to incorporate mātauranga Māori
- establish joint committees with central and local government and iwi and hapū to better align policy and investments
- develop direction on achieving climate outcomes in regional spatial strategies and plans via the proposed National Planning Framework – which will provide strategic and regulatory direction from central government on implementing the new resource management system under the proposed NBA, noting that these outcomes will be consistent with future emissions reduction plans
- assess existing and emerging national direction under the Resource Management Act 1991 against the policy intent of the present emissions reduction plan to determine how to support local authorities in the interim.

Action 7.2: Support emissions reductions and climate resilience via policy, guidelines, direction and partnerships on housing and urban development

To reduce emissions, we need more energy-efficient, mixed-use urban development at medium and high densities, supported by active and public transport. A range of initiatives are underway in partnership with local government, Māori and the private sector that promote housing and development that will help deliver low-emissions and climate-resilient urban environments. It is important that housing and urban development also support accessibility for those living with a disability.

Key initiatives

- The National Policy Statement on Urban Development (NPS-UD) includes emissions-reduction objectives and policies that local authorities must give effect to, including requiring intensification in and around urban centres and rapid transit stops.
- The Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 improves housing supply in Aotearoa New Zealand's largest cities by speeding up implementation of the NPS-UD and enabling more medium-density homes to be built. The Government developed a voluntary design guide to support implementation, in consultation with local government, Māori and industry stakeholders.
- The Government will develop urban design guidance to support local authorities to promote low-emissions urban design initiatives, which may be explored in the future National Planning Framework. Examples of local urban design initiatives (also see chapter 10: Transport) include:
  - designing public spaces (including streets) that appeal to people in higher-density areas, making them more accessible, walkable and bikeable
  - nature-based solutions, such as urban forestry and vertical greening
  - blue and green infrastructure, such as water sensitive urban design.
- The Government Policy Statement on Housing and Urban Development includes reducing emissions among priorities for housing and urban development.
- Urban Growth Partnerships between central government, local government and hapū and iwi in high-growth urban areas are supporting the development of jointspatial plans with emissions-reduction and climate-resilience objectives.
- The MAIHI Ka Ora (the National Māori Housing Strategy) includes plans for supporting Māori housing with self-sustaining technologies that can help drive emissions reductions.

Action 7.3: Address infrastructure funding and financing challenges

The Government will address funding and financing challenges for delivering infrastructure investment that supports urban development and to use infrastructure funding and financing tools in a way that helps to reduce emissions.

Key initiatives

- Respond to recommendations in the Rautaki Hanganga o Aotearoa | New Zealand Infrastructure Strategy by 14 September 2022. This strategy makes recommendations for enabling the development of low-emissions energy infrastructure; reducing the emissions produced by our infrastructure during construction and use; and a principles-based approach to infrastructure decision-making, including consideration of non-built solutions, the cost of carbon and whole-of-life emissions.
- Progress options, through the urban growth work programme (in 2022/23), to address funding and financing constraints for urban infrastructure – for example, the limitations of existing tools and misaligned investment incentives – in a way that responds to climate change and other objectives.
- Consider barriers and opportunities to infrastructure funding and financing to support emissions reductions in the context of other work programmes, including:
  - the review into the Future of Local Government
  - development of transport pricing tools
  - the review of the transport revenue system
  - the review of the future pricing system for water assets under Three Waters Reform.

Action 7.4: Improve the evidence base and tools for understanding and assessing urban development and infrastructure emissions

The Government will look to improve the evidence base and tools to better understand the emissions from urban development and infrastructure. These improvements could inform future frameworks for reducing those emissions.

Key initiatives

- Improve the evidence base for understanding what can help reduce urban greenhouse gas emissions in Aotearoa, for instance, how land use planning and delivering infrastructure in our urban areas can reduce emissions.
- Review existing tools and methodologies and develop new tools, to establish a nationally consistent emissions measurement toolkit to assist decision making on urban and infrastructure development.
- Assess the extent to which existing urban development and infrastructure policy and programmes (eg, NPS-UD) are aligned with emissions-reduction goals.
- This work could also support other planning objectives, such as encouraging trees and vegetation in urban areas for both temperature control and carbon sequestration.

Action 7.5: Promote innovation in low-emissions, liveable neighbourhoods through Crown-led urban regeneration projects

To demonstrate how to deliver low-emissions, liveable neighbourhoods, the Government will:

- identify and aim to pilot innovative approaches that deliver low-emissions alternatives to traditional neighbourhood and infrastructure approaches. Kāinga Ora – Homes and Communities may lead this work within an existing project.

Action 7.6: Identify ways to support the private sector to deliver lower emissions development

To further accelerate the development by the private sector of medium- and high-density development, the Government will:

- engage with the development sector – including non-profit, community and Māori housing providers and developers – to identify barriers to low-emissions urban development.

Action 7.7: Integrate climate mitigation into government decisions on infrastructure

To ensure that government infrastructure investment decisions properly consider emissions reduction and the need to adapt to the effects of climate change, the Government will:

- revise central government guidance, guidelines and tools to ensure they factor climate outcomes into decision-making about infrastructure investments
- implement changes, where appropriate.

Role of local government and private sector

Local government and the private sector have a role to play in ensuring that our planning system and investment in infrastructure support our transition to a low-emissions and climate-resilient society.

Local government engages with local community and tangata whenua to help inform decisions it makes on land use, resource management, urban form, road and transport services, infrastructure funding and servicing, waste management, flood risk management and coastal management.

The private sector funds, finances, designs, constructs, delivers and maintains much of the built environment. This includes developers; community housing providers; infrastructure providers; and those in the finance, building and construction, architecture, engineering sectors.

This emissions reduction plan is published by the Minister of Climate Change under section 5ZI of the Climate Change Response Act 2002.

Published in May 2022
by the Ministry for the Environment
Manatū Mō Te Taiao
PO Box 10362, Wellington 6143,
New Zealand

ISBN: 978-1-99-102543-2 (online)
978-1-99-102542-5 (print)

Publication number: ME 1652

This document and the full emissions reduction plan are available on the Ministry for the Environment website: environment.govt.nz.

Ministry for the
Environment
Manatū Mō Te Taiao

Te Kāwanatanga o Aotearoa
New Zealand Government