

Enabling Better Infrastructure



EBI dialogue summary: Strengthening strategic infrastructure planning in New Zealand

September 2024

Introduction

In 2022, the New Zealand government launched its Infrastructure Strategy, which set out an ambitious 30-year programme for delivering infrastructure.¹ The aim of the strategy was to set out a clear vision for infrastructure, providing a foundation for people, places and businesses to thrive now and in the future.²

In addition to clearly stating the vision, the strategy outlines the need for a National Infrastructure Plan (NIP). The NIP, to be delivered by the end of 2025, will focus on meeting needs through infrastructure investments, prioritising projects, and improving the infrastructure system overall.

The strategy sets out the following principles to develop an NIP.

- Principle 1: Equity – promote infrastructure that enhances the well-being of all New Zealanders.
- Principle 2: Aspiration – gather leading international practices and collaborate to find solutions to enable people to thrive.
- Principle 3: Efficiency – provide value for money, use evidence to inform trade-offs and adopt new technologies.

The New Zealand Infrastructure Commission (NZIC) is the government entity tasked with preparing the NIP.³ To date, the NZIC has carried out three activities to gather supporting evidence to promote the principles outlined for the NIP.

1. Conducting a study on long-term infrastructure needs.
2. Undertaking analysis to understand the current gap between infrastructure needs and service supply.
3. Outlining investment intentions for infrastructure based on the main needs.

The NZIC approached the Enabling Better Infrastructure (EBI) programme, convened by the Institution of Civil Engineers (ICE), to gain specialist insights into the strategic approach to follow when developing the NIP. This is to ensure the NIP incorporates international best practice and EBI guidance into its development.⁴

The EBI programme convened a group of specialists with deep, wide-ranging experience to support the NZIC in implementing EBI's principles for strengthening strategic infrastructure planning. Although the insights of the EBI specialists were shared with the New Zealand context in mind, they are of interest to any government official setting up or updating an infrastructure plan.

¹ ICE (2022) [IPW: New Zealand Infrastructure Commission Launches First Long-term Strategy](#)

² NZIC (2022) [New Zealand Infrastructure Strategy](#)

³ ICE (2024) [IPW: New Zealand details new infrastructure plan and agency](#)

⁴ ICE (2024) [Driving Purpose, Certainty and Pace in Strategic Infrastructure Planning](#)

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How can other governments benefit from the insights shared in this summary?

The insights shared by the EBI specialists are relevant to other governments around the world who are grappling with the following:

- *Deciding what their national infrastructure system should deliver.*
- *Considering how to evaluate their current infrastructure system.*
- *Identifying their future infrastructure needs.*
- *Determining their infrastructure performance gap.*
- *Creating an adaptive strategy for policy intervention and investments.*

1. Strengthening strategic planning – what should be considered?

Setting out the process

When planning infrastructure strategically, it is important to step back and assess the activities underway to develop an infrastructure plan to ensure they will deliver on the long-term vision. Understanding the key activities and how they will come together to develop the NIP will help to identify any information gaps or uncertainties. This clearly demonstrates where further work is necessary and where emphasis should be placed.

To take a step back, the EBI specialists identified three key questions that proved useful for the National Infrastructure Commission (NIC) when setting up the UK's first National Infrastructure Assessment.⁵ These could be relevant to the NZIC, and also to other governments wanting to set out their strategic process and how they will deliver on it.

1. What are you sure about?
2. What do you think is probably going to happen?
3. What are you uncertain about?

Working through these questions can help to develop a more adaptive infrastructure planning approach. In particular, it can help to break down the longer-term vision into shorter-term commitments. Breaking down the wider vision into separate commitments can be beneficial to governments, as it can provide the clarity needed to take the next step towards setting up and delivering on the strategic vision.

A key step is gathering sufficient information – for example, on infrastructure service use or costs over time, such as across a 30-year programme.

By answering the three questions listed above, the NZIC could identify where they may need to experiment before committing to long-term investment. In practice, this would mean committing to a 10-year investment within a fixed budget and revising this every 10 years. Doing so can also allow for an updated analysis of what individuals and society are willing to pay for infrastructure over any investment period.

The UK's High Speed 2 (HS2) rail network demonstrates the implications of not following an adaptive planning approach, with the project costing far more than what was originally committed. This led to the northern leg of the rail line being cancelled in October 2023.⁶

⁵ NIC (2018) [National Infrastructure Assessment 1](#)

⁶ ICE (2023) [HS2 – What Went Wrong? Learning Lessons for Infrastructure Policymaking and the Profession](#)

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Understanding service needs

Understanding infrastructure, social and environmental needs, including how they will evolve, is central to delivering on an infrastructure vision. Examples of core service needs identified in the UK's first infrastructure plan were energy and transport infrastructure, digital communications, flood management, water and use, and intellectual capital. These were assessed over time and predictions were made regarding future needs.⁷ Subsequent infrastructure plans picked up on these and evolving needs over time.

The EBI specialists advised that it is important to understand what the minimum acceptable level of service is, based on community inputs and supporting data.

It is worth noting which needs are to be addressed in the medium to long term as part of the strategic planning process by flagging what is essential. This includes regular renewals for hospitals and schools, for example, and other impactful projects of political significance. The renewal of known social service needs can then be allocated fixed funding or financing, which can be geographically distributed as needed. Other impactful projects can then be layered onto these needs and clearly separated from more politically inclined projects.

Identifying the infrastructure gap

Setting out a country's needs can help to identify the infrastructure gap. The gap is determined by identifying how the system delivers services, and if the system is allowed to deteriorate, where focused investment is required.

Examining the supply and demand drivers can help governments to understand the gap between needs and service provision and can provide information that informs decision-making about infrastructure trade-offs. Key demand-led drivers can include population changes, natural hazards and decarbonisation. Supply-led drivers include sectoral needs, infrastructural renewal, workforce considerations and the skills needed to deliver infrastructure.

Skills shortages or workforce concerns may affect the delivery of the long-term vision or how the infrastructure gap is addressed. The Hong Kong Development Bureau is an example of a government that considers workforce concerns as part of its strategic planning process. Using monthly data published by the Hong Kong Construction Industry Council and its capital expenditure forecasts, the Hong Kong Development Bureau determined how many workers it had and their skills.⁸ To address the infrastructure gap, double the number of workers was needed, which helped clarify the number of workers, their skills and the training required.

Policy clarity

Strategic planning is not just about investment consideration and delivering capital projects; it is also about gaining the policy clarity needed to make better decisions on infrastructure, both now and in the future. There is often a misconception about what is important regarding infrastructure. In many instances building new infrastructure, such as a new road, is prioritised. However, this is not always what is needed. Being more specific about what is needed through clear policy can help to drive the clarity needed to deliver an impactful project.

The UK's Better Roads initiative considered the key policy priorities for the road network, which helped to determine the most beneficial action for delivery.⁹ Assessing the policy priorities was instrumental to the setting up of Highways England, which followed a more strategic approach to assess policy priorities and how to deliver on them. Key priorities could include ensuring traffic flows freely at 70 mph or allowing the maximum amount of traffic through. Gaining this certainty of what policy outcomes are needed can help deliver a wider strategic vision while also providing the clarity needed for funding and financing.

⁷ Infrastructure UK (2010) [National Infrastructure Plan 2010](#)

⁸ Hong Kong Construction Industry Council (n.d.) [Statistics of Registered Construction Workers](#)

⁹ House of Commons Transport Committee (2014) [Better Roads: Improving England's Strategic Road Network](#)

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2. Taking a programmatic approach – what is needed?

Focusing on objectives

A programmatic approach involves setting up and managing a range of projects and programmes simultaneously to deliver on the long-term vision. When setting up a programmatic approach, the EBI specialists stressed it was not necessarily about the size or scale of the infrastructure projects in question; rather, it was about the overall objective and how the range of projects came together to deliver on the wider vision. In other words, it is about thinking through the range of projects and how they are grouped together to deliver on the vision.

Germany was listed as an example of a country that has implemented a successful programmatic approach to electrifying its railway network, which was broken down into actionable and measurable steps.¹⁰ At the start of the initiative, a decision was taken to break down the project into the delivery of 200 km of electrified railway line per year until the entire length was delivered, supporting a stable and steady implementation. Based on its success in Germany, a similar approach has been followed in Spain.

Enhancing efficiency and pace

Taking a programmatic approach can assist with delivering the infrastructure project pipeline, with a steady flow of projects helping to boost pace. Setting up a steady flow of projects not only provides clarity on the project programme for all stakeholders but also demonstrates efficiency and pace in delivery. It also ensures there is a skilled workforce and the capacity to deliver what is needed.

Demonstrating efficiency can benefit investors who help build the supply chain, enabling them to invest in the capacity, skills, people and companies needed to deliver projects. An example was observed at Highways England, where setting up a clear and stable delivery programme increased company interest in committing resources to projects.

These benefits can, in general, help build momentum in delivering strategic infrastructure planning, demonstrating how all stakeholders have aligned themselves to deliver on the vision, including how they have kept programmes on track.

Furthermore, infrastructure delivery bodies such as water and road bodies often engage in activities at different times. Building a steady flow of projects, with increased confidence in the activities, offers an opportunity to manage the delivery of services, allowing for what is needed to be refined and adapted over time, where projects can be brought forward or shifted to support political or other objectives.

Considering dependencies and transferability

Dependencies between different infrastructure types are critical to delivering infrastructure programmatically. Delivering electricity generation, telecoms, data centres and airports will not succeed until their interactions are considered. For example, providing an airport without also providing public transport is problematic and reduces investor and private sector confidence. Understanding dependencies between infrastructure types is, therefore, key to delivering a succession of successful projects.¹¹

In addition, understanding which programmes and spending can be used across different kinds of projects is important. For example, developing a programme to fund and build social infrastructure can be used to build both schools or hospitals, thus taking advantage of the ability to allocate funds and incorporating some flexibility into what needs to be delivered.

Data to reinforce a programmatic approach

Data is critical for setting up and strengthening a programmatic approach as it can provide a clear understanding of the condition of infrastructure and its performance in relation to needs. Over time, data can

¹⁰ Railway Industry Association (2019) [RIA Electrification Cost Challenge Report](#)

¹¹ ICE (2022) [A Systems Approach to Infrastructure Delivery – Putting the Principles into Practice](#)

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provide much-needed evidence to convince politicians and investors to prioritise and invest in infrastructure renewal.

To gather data, the EBI specialists suggested a live public platform would prove useful for the government, investors and other stakeholders. Mandating government entities to input their data into this platform can inform the development of projects. Digitalisation and artificial intelligence could assist with developing the first set of data, which infrastructure bodies could update directly, with an external entity or contractor performing regular auditing.

Further reading

- EBI guidance: [Driving Purpose, Certainty and Pace in Strategic Infrastructure Planning](#) (2024)
- Journal article: [Tried-and-tested guidance for helping governments deliver the infrastructure people need](#) (2024)
- ICE Presidential Roundtable summary: [What opportunities are there to use EBI guidance to strengthen how governments do strategic infrastructure planning?](#) (2024)

About the ICE

The Institution of Civil Engineers (ICE) is a 97,000-strong global membership organisation with over 200 years of history.

It is a centre of engineering excellence, qualifying engineers and helping them maintain lifelong competence, assuring society that the infrastructure they create is safe, dependable and well designed.

Its network of experts offers trusted, impartial advice to politicians and decision-makers on how to build and adapt infrastructure to create a more sustainable world.

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