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To: New Zealand Infrastructure Commission *Te Waihanga*
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From: Electricity Engineers' Association of NZ

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Subject: EEA Submission – Discussion Paper – *Testing our Thinking: Developing an enduring National Infrastructure Plan*

OVERVIEW

The EEA welcomes the opportunity to provide feedback on *Te Waihanga's* discussion paper, *Testing our Thinking: Developing an Enduring National Infrastructure Plan.*

The Electricity Engineers' Association (EEA) represents professionals and organisations across New Zealand's electricity sector. Our members include electricity generators, transmission and distribution companies, consultants, and equipment suppliers. The EEA plays a key role in driving innovation, enabling safe and resilient electricity networks, and ensuring the sector can meet the challenges of decarbonisation and electrification while supporting the transition to a net-zero carbon future.

Our submission reflects the perspectives of EEA members and highlights the critical role of electricity infrastructure in underpinning New Zealand's economic, social, and environmental wellbeing.

We focus on:

- Promoting workforce safety in infrastructure project delivery.
- Ensuring the resilience and adaptability of electricity networks to meet the needs of a decarbonising economy.
- Addressing challenges related to integrating distributed energy resources (DER), renewable generation, and emerging technologies.
- Advocating for a long-term, system-wide perspective on infrastructure planning that considers climate impacts, population growth, changing workforce needs and technological advancements.
- Highlighting the importance of collaboration between government, industry, and communities to achieve a sustainable and enduring infrastructure framework.

The EEA appreciates *Te Waihanga's* commitment to inclusive and forward-looking infrastructure planning and welcomes further dialogue to ensure the perspectives of the electricity sector are considered as part of this vital initiative.

We trust this submission provides valuable insights and look forward to supporting the development of the National Infrastructure Plan. The EEA is eager to continue collaborating with *Te Waihanga*, industry participants, and stakeholders on this pivotal issue.

Discussion Questions

Section one: Why we need a National Infrastructure Plan

Q1: What are the most critical infrastructure challenges that the National Infrastructure Plan needs to address over the next 30 years?

The EEA believes that New Zealand's National Infrastructure Plan (NIP) must focus on creating a cohesive, long-term strategy to address critical infrastructure challenges. These challenges include:

1. **Developing a National Infrastructure Investment Pipeline:** New Zealand can draw inspiration from models in Ireland and Norway to establish a cross-party, agreed-upon, prioritised investment pipeline. Such a pipeline would ensure a sustainable and consistent infrastructure program that is resilient to political changes and economic cycles, providing certainty for all stakeholders so that they can plan and act with confidence.
2. **Planning for and Building Workforce Capacity:** Workforce planning is critical to deliver the infrastructure projects of the future. Demand modelling can help predict skill needs, while industry-led initiatives can ensure a pipeline of qualified professionals to support long-term infrastructure goals. Infrastructure training providers must be supported and invested in. Workforce needs will be met by a mix of domestic and international skillsets, and so ensuring the right immigration settings will also be crucial to unlocking the capability needed. The EEA is prepared to support these initiatives through workforce development programs and partnerships.
3. **Prioritising Safety:** Aotearoa New Zealand must continue to make progress on workplace health and safety, particularly during periods of delivery pressure and influx of new workers. Development and implementation of an NIP must promote commitment to keeping our infrastructure workers safe, including through better leadership and coordination, investment, regulation and guidance.
4. **Adopting a Data-Driven Approach to Infrastructure Planning:** The NIP should leverage robust data and modelling to inform infrastructure priorities, including:
    - Demographic Analysis and Forecasting: To understand regional population growth and shifts, aligning infrastructure investment with future demand.

- Economic Modelling: Regional-level economic data to prioritize projects that deliver the greatest benefits.
- Integrated Infrastructure Needs and Forecast Modelling: Utilising Asset Management Plans (AMPs) to analyse current and future demand, accounting for interdependencies and interactions between utilities to avoid overbuilding while ensuring long-term viability.
- Risk Profiling: To define resilience standards and assess critical risks to infrastructure systems, with guidance from organizations like the EEA.
- Workforce Needs Modelling: To understand the capability needed to deliver this national programme of work and ensure a data driven approach to changes needed in education and immigration settings.

5. Enabling Long-Life Asset Investment Through Regulatory Flexibility: The regulatory framework must not deter long-term infrastructure investment that balances adaptability and economic efficiency. Regulatory certainty will enable utilities and stakeholders to make decisions that optimise asset life cycles while accommodating future technology and demand changes.
6. Enabling the Transition to a Low-Carbon Economy: New Zealand's commitment to achieving net-zero emissions by 2050 requires an accelerated shift to renewable energy sources and widespread electrification of transport, industry, and heat. The infrastructure to support this transition, including reliable and resilient electricity networks, needs to scale rapidly and enable proactive action, while ensuring equitable access for all New Zealanders.
7. Facilitating Demand Flexibility and Grid Modernization: Managing growing peak electricity demand, accommodating distributed energy resources (DERs) like solar and batteries, and integrating electric vehicles (EVs) into the grid will be critical. This requires investment in advanced grid management technologies, demand-side flexibility programs, and the adoption of smart grid infrastructure.
8. Promoting Standardisation Through Coordination: The EEA can play a key role in developing standardisation in design and delivery to streamline efforts across organisations and gain the resourcing efficiencies of reducing duplication and taking a nationally consistent approach.
9. Strengthening Interagency and Industry Collaboration: Interagency and industry coordination will be vital to addressing infrastructure challenges, ensuring that investments are aligned across sectors. The EEA is committed to facilitating collaboration among utilities, policymakers, and regulators to create integrated, system-wide solutions.

In conclusion, by addressing these critical areas, the National Infrastructure Plan can provide a framework for a resilient, efficient, and sustainable infrastructure future. The EEA is ready to contribute expertise and coordination to help achieve these goals – leveraging its close connection with

stakeholders across the whole electricity sector and its trusted reputation as objective and independent. We welcome the opportunity to work collaboratively to ensure the success of the NIP and the long-term prosperity of New Zealand.

Q2: How can te ao Māori perspectives and principles be used to strengthen the National Infrastructure Plan's approach to long-term infrastructure planning?

Te ao Māori perspectives and principles provide a powerful framework for strengthening the National Infrastructure Plan's approach to long-term infrastructure planning. Recent demographic statistics emphasises the workforce opportunities in our growing young Māori population, which could be engaged more effectively through adopting Te ao Māori approaches. EEA suggests that incorporating these principles ensures a holistic, sustainable, and inclusive approach that reflects the values and aspirations of all communities in Aotearoa New Zealand.

EEA suggest that the Infrastructure Commission should consider:

1. Establishing a structured processes to ensure Māori participation at all stages of infrastructure planning and decision-making.
2. Incorporate Māori cultural frameworks, such as Te Tiriti o Waitangi principles, into the overarching structure of the National Infrastructure Plan.
3. Develop mechanisms to integrate mātauranga Māori into infrastructure design, construction, and management.
4. Foster capacity building to enable Māori organisations to contribute effectively to infrastructure governance and development.
5. Embed a commitment to long-term relationships with iwi and hapū, ensuring enduring partnerships beyond project timelines.
6. Recognise and invest in the enormous potential in young Māori as our future workforce, including targeted investment in STEM education in regions with high Māori populations, and supporting service providers with a demonstrated track record attracting and developing Māori into infrastructure career pathways.

By embedding te ao Māori perspectives and clearer career pathways for young Māori into the National Infrastructure Plan, Aotearoa can create infrastructure systems that are more equitable, resilient, and reflective of the nation's cultural identity. This approach will strengthen the Plan’s ability to meet the long-term needs of all communities, while honouring the unique heritage of Māori as tangata whenua.

Section Two: Long-term expectations

Q3: What are the main sources of uncertainty in infrastructure planning, and how could they be addressed when considering new capital investments?

The EEA considers that uncertainty in infrastructure planning stems from several key factors, particularly in the electricity sector. These include political, investment, economic, regulatory, workforce, and resilience challenges. Addressing these uncertainties requires targeted strategies that align stakeholders and create stability for decision-making.:

1. Political Uncertainty: The lack of long-term political alignment on infrastructure priorities and policies creates challenges for planning and investment, including attracting international investment. Certainty can be enhanced by identifying and committing to priority projects through a National Infrastructure Plan, which provides a stable framework for investment decisions. Establishing bipartisan support for key initiatives ensures continuity and reduces risk associated with policy changes. For example, changing levels of political support for electric vehicles has impacted investment rates in the electrical infrastructure needed to support load growth.
2. Investment Risk: Clear and consistent funding models, combined with improved contract management practices, can reduce investment risk. Transparent and equitable mechanisms to allocate funding, such as co-investment opportunities with industry and public-private partnerships, will further enhance certainty and confidence.
3. Technological Advancements: The rapid evolution of technologies such as distributed energy resources (DERs), electric vehicles (EVs), and grid management systems introduces uncertainty regarding the future operational landscape and asset requirements. Enhanced scenario planning, pilot projects, and adaptive investment strategies can help integrate emerging technologies into long-term planning.
4. Demand Growth and Load Profiles: The transition to electrification, particularly in transport and industrial sectors, will significantly alter demand patterns. Accurate load forecasting, enabled by the integration of big data, AI, and advanced modelling techniques, can provide a more reliable foundation for capital investment decisions.
5. Economic Risk: Infrastructure projects are vulnerable to broader economic conditions, including inflation and global market fluctuations. Mitigating this requires reducing the influence of political uncertainty on economic planning. A cohesive national infrastructure strategy that integrates economic forecasts with infrastructure needs can provide a more stable basis for decision-making and investment.
6. Regulatory Framework: Rigid and outdated regulatory frameworks often lag behind technological advancements and emerging infrastructure needs. A more flexible and

responsive regulatory framework is required to adapt to changes in technology, demand, and policy. This includes enabling regulatory sandboxes for innovation, streamlining approval processes, and aligning incentives with desired outcomes. Similarly, the current regulatory model for electricity infrastructure deters the long-term planning and proactive investment needed to plan optimally, applying a long term view and a whole of system approach.

7. Workforce Development: New Zealand's education and workforce systems are not sufficiently aligned with the skills required to deliver future infrastructure needs, particularly in the electricity sector. Addressing this requires a strategic overhaul of the education system, focusing on STEM pathways, vocational training, and industry collaboration to ensure a pipeline of skilled workers. Additional intervention is essential to increase participation by women and Māori. Delivering our national infrastructure programme requires the mobilisation of all corners of our future workforce and this will require targeted approaches for different demographic groups.
8. Community and Stakeholder Expectations: Rising expectations for community engagement and stakeholder inclusion in decision-making can introduce variability in project timelines and outcomes. Transparent communication strategies and early engagement with communities can address this uncertainty, ensuring projects are aligned with societal needs and values.
9. Resilience: The increasing frequency and intensity of extreme weather events necessitate a stronger focus on resilience in infrastructure planning. To address this uncertainty, agreement must be reached on acceptable levels of resilience under agreed climate change scenarios. Developing benchmarks and standards for resilience will help ensure investments are future-proofed against these risks. Updated frameworks, such as the EEA's Resilience Guide, can support this approach.

Proposed Actions:

To address these uncertainties, we recommend a system-led approach that emphasizes flexibility, adaptability, and collaboration. Key actions include:

- Integrate resilience criteria and climate adaptation measures into all national infrastructure planning.
- Commit to a long-term National Infrastructure Plan with bipartisan support to prioritize key projects.
- Create a workforce development strategy aligned with future infrastructure needs, focusing on STEM and trades, with specific interventions targeting women and Māori.

- Develop a more agile and adaptive regulatory environment to support proactive and optimised future planning, innovation and streamline processes.
- Promote public-private partnerships and co-investment models to secure funding and reduce investment risk.
- Developing comprehensive, system-wide scenarios to explore a range of plausible futures and identify resilient investment pathways.
- Leveraging pilot projects and digital twins to test new technologies, operational models, and regulatory frameworks before large-scale implementation.
- Enhancing collaboration between government, industry, and academia to align efforts and share knowledge on best practices.
- Establishing data-sharing platforms to improve the quality and consistency of inputs used in infrastructure planning.

By addressing these uncertainties through a coordinated, strategic approach, New Zealand can ensure that its infrastructure investments are robust, adaptable, and aligned with the nation's long-term goals.

Section Three: Existing investment intentions

Q4: How can the National Infrastructure Pipeline be used to better support infrastructure planning and delivery across New Zealand?

Regarding the National Infrastructure Pipeline (NIP), the EEA sees significant potential for it to become a foundational tool for improving infrastructure planning and delivery across New Zealand. To achieve this, we recommend the following:

1. **Enhanced Visibility of Infrastructure Projects:** The NIP should provide detailed, publicly accessible information on infrastructure projects across sectors. This visibility allows stakeholders, including the electricity sector, to identify opportunities for collaboration, optimise resource allocation, and avoid duplication of efforts.
2. **Integration Across Sectors:** Infrastructure planning and delivery increasingly require cross-sector integration. For example, electrification of transport and decarbonisation of industrial processes depend on coordinated investments in electricity networks and renewable generation. The NIP should actively facilitate cross-sector insights and synergies by clearly highlighting interdependencies and overlaps.
3. **Incorporation of Electrification and Resilience Goals:** The NIP should explicitly align with national goals for electrification and resilience. Prioritising infrastructure projects that advance these goals ensures alignment with broader strategic objectives. For example, the electricity sector's resilience is critical to economic performance and managing natural disaster risks.

4. Improved Data and Analytics: A robust pipeline requires comprehensive and accurate data on project timing, scale, and investment. The NIP could integrate analytical tools to forecast supply chain constraints, workforce needs, and resource bottlenecks. This would provide a basis for more proactive planning and intervention.
5. Mechanism to Agree Priorities: The NIP should include a data-driven mechanism for identifying and agreeing on national and regional infrastructure priorities. This mechanism would enable earlier identification of challenges and opportunities, allowing for a more coordinated and timely response. A focus on shared problem-solving and prioritisation would foster better interagency and industry collaboration, ensuring that projects align with both immediate needs and long-term goals.
6. Stakeholder Engagement and Feedback Loops: Regular, structured engagement with stakeholders—including the electricity sector, local councils, iwi, and private investors—is essential. Establishing feedback loops would ensure the NIP remains responsive to changing conditions and priorities.
7. Support for Regional and Community Outcomes: Infrastructure projects must deliver regional benefits and align with community aspirations. The NIP could better support regional planning by including data and insights specific to local contexts and needs, such as regional electricity demand and generation forecasts or grid capacity challenges and opportunities.
8. Facilitation of Funding and Co-investment Opportunities: The NIP should act as a platform to highlight funding gaps and opportunities for co-investment. In the electricity sector, co-investment between EDBs, the government, and private entities is critical for accelerating grid modernisation and enabling demand flexibility initiatives. Regulatory barriers for proactive and optimised long-term investment should be identified and actions recommended.
9. Integration with Digital and Emerging Technologies: The NIP should also highlight opportunities to integrate digital technologies, such as digital twins or smart grid innovations, into infrastructure projects. These technologies enhance efficiency, planning accuracy, and long-term operational performance.

By incorporating these elements, including a structured mechanism to agree on priorities, the EEA believe that the National Infrastructure Pipeline can play a central role in enabling well-coordinated, efficient, and forward-looking infrastructure planning and delivery. A focus on early identification of issues, coordinated problem-solving, and cross-sector collaboration will ensure that New Zealand's infrastructure meets both present demands and future aspirations.

Section Four: Changing the approach

Q5: Are we focusing on the right problems, and are there others we should consider?

Yes, the EEA agrees that the identified problems are important and relevant, but there are additional considerations that the EEA think should be included to ensure a more comprehensive and future-focused National Infrastructure Strategy. We recommend expanding the strategy to address the following key areas:

1. Asset Lifecycle Management and Environmental Standards: A strong focus on the lifecycle of infrastructure assets is essential to ensure sustainability and cost-effectiveness. This should include alignment with international environmental standards to improve resilience, reduce environmental impact, and promote sustainable practices in infrastructure development and maintenance.
2. Infrastructure Demand Management Through Customer Offset Options: Promoting customer "offset" options, such as demand-side management initiatives, can alleviate infrastructure pressure. These programs should incentivise users to shift or reduce demand during peak periods, enhancing the efficiency and longevity of infrastructure assets.
3. Operation of Smart Technologies: The integration of smart technologies is pivotal in managing demand and optimizing existing infrastructure. However, their successful operation often relies on access to electricity and internet connectivity. The strategy should include targeted investments to ensure universal access to these enabling technologies, particularly in underserved areas.
4. Delivering Outcomes, Not Just Defining Problems: The strategy must go beyond problem identification and focus on delivering tangible outcomes. This requires clear implementation pathways, measurable goals, and mechanisms for monitoring and evaluating progress to ensure the intended benefits are realised.
5. Interoperability and Interdependency Considerations: Infrastructure systems do not operate in isolation. The strategy should address interoperability and interdependency issues, such as planning roads as effective utility corridors. Prioritising roading infrastructure planning with utility coordination can reduce redundancy, lower costs, and enhance long-term resilience.

These enhancements will ensure the strategy is robust, forward-thinking, and capable of delivering sustainable and integrated infrastructure outcomes for Aotearoa, New Zealand.

Theme One: Capability to plan and build

Investment management: Stability, consistency and future focus

Q6: What changes would enable better infrastructure investment decisions by central and local government?

The EEA suggest that the following changes should be considered to enable better infrastructure investment decisions by central and local government:

1. Integrated Infrastructure Planning Frameworks: Developing and implementing integrated planning frameworks that consider cross-sector interdependencies, long-term energy transition goals, and resilience challenges would enhance investment decisions. These frameworks should align central and local government priorities with national objectives such as emissions reductions and economic productivity, while enabling flexibility for regional requirements. Regulatory barriers to implementing a coordinated, system approach should be identified and commitment made to bold, effective change.
2. Improved Access to Data and Insights: Providing central and local government with better access to granular, real-time infrastructure data and predictive analytics tools will improve the understanding of asset performance, demand patterns, and future requirements. This can be achieved through digital twins, open data initiatives, and enhanced collaboration between public and private sectors.
3. Clear and Adaptive Funding and Regulatory Models: Establishing clear and stable funding mechanisms is critical to de-risking infrastructure investments and ensuring long-term financial viability. Complementing this, more flexible and dynamic regulatory resets are essential to respond to the inherent uncertainty in infrastructure planning. These approaches will allow central and local governments to adapt to evolving conditions, technological advancements, and societal needs while maintaining investment confidence.
4. Incorporating Whole-of-Life and Resilience Perspectives: Decision-making processes should account for the whole-of-life costs of infrastructure, including operations, maintenance, and decommissioning, alongside resilience to future climate and societal stresses. Policies and funding criteria must reward sustainable and adaptive designs that reduce vulnerability and enhance reliability across the electricity and broader infrastructure sectors.
5. Strengthening Workforce Capacity and Capability: A skilled workforce is fundamental to making informed infrastructure investment decisions. Central and local governments should prioritize investments in education, training, and upskilling programs tailored to the infrastructure sector, ensuring that decision-makers have access to the expertise required to evaluate complex trade-offs.
6. Enhancing Community Engagement and Transparency: Strengthening the mechanisms for engaging with communities ensures that infrastructure decisions are equitable and reflective of public needs. Transparency in decision-making processes will build public trust and support for infrastructure projects, particularly those requiring significant investment.

7. Embedding Flexibility in Decision-Making: As technological advancements and societal needs evolve; central and local governments should adopt adaptive investment approaches that allow for mid-course corrections. Piloting and scaling innovative projects, such as those demonstrating demand flexibility in the electricity sector, provide valuable insights to inform larger-scale investments.

The EEA believe that by adopting these changes, including clear funding models and more responsive regulatory frameworks, infrastructure investment decisions can better align with the needs of New Zealand's electricity sector and broader society, enabling the transition to a low-emissions, resilient, and equitable infrastructure landscape.

Q7: How should we think about balancing competing investment needs when there is not enough money to build everything?

The EEA recognises the complexities of balancing competing investment priorities within a constrained funding environment. Effective prioritisation requires a transparent, principles-based framework that delivers immediate and long-term benefits across societal, environmental, and economic dimensions. We believe the following approaches are critical to achieving this balance:

1. Prioritise Resilience and Electrification Goals
    - Investments should focus on critical infrastructure that enhances resilience, particularly in response to climate change and extreme weather events. Strengthening grid infrastructure to maintain reliable power supply and integrating technologies to manage future risks are crucial for national resilience.
    - Electrification initiatives across key sectors—including transport, industry, and housing—should be a priority to enable decarbonisation and support New Zealand's Net Zero 2050 goals. This includes accelerating infrastructure upgrades to facilitate the widespread adoption of electric vehicles, electrification of industrial processes, and deployment of distributed energy resources such as solar PV and battery storage.
2. Identify opportunities to take an optimised system approach
    - Cost and resourcing can be reduced by taking an optimised and coordinated system approach that identifies and bundles interrelated projects (or their parts). For example, separate electrification projects frequently rely on upgrades to the same item of electricity infrastructure multiple times. Bundling separate projects can significantly reduce cost and resource duplication across the system. But achieving a system approach will require innovative investment models and bold thinking that allows current and known future needs to be addressed contemporaneously.

3. Promote Demand-Side and Offset Solutions
    - As outlined in the National Infrastructure Strategy, offset options should be actively pursued to reduce the need for large-scale investments in new infrastructure. Encouraging demand-side measures in electricity (e.g., load shifting, demand flexibility) and customer-led initiatives can significantly optimise infrastructure usage.
    - Investments in technologies and programs that empower consumers—such as advanced metering, distributed energy resources, and localised water storage—help defer or avoid expensive capital works while delivering environmental and cost-saving benefits.
4. Set Priorities at National and Regional Levels
    - A clear prioritisation framework must balance national and regional infrastructure needs. Nationally significant projects—such as backbone grid enhancements and transport electrification—must align with overarching decarbonisation and economic objectives.
    - Structures need to be put into place to ensure that regional stakeholders contribute to a shared understanding of system needs, opportunities and interdependencies. Identified regional priorities should address localised challenges and opportunities including equitable access to infrastructure, supporting economic development, and building community resilience. Tailored solutions reflecting regional characteristics are essential for ensuring investments are impactful and efficient.
5. Maximise Co-Benefits Through Systems Thinking
    - Infrastructure investments should deliver multiple benefits. For example, upgrading the electricity grid to support distributed generation can simultaneously enable renewable energy integration, transport electrification, and industrial decarbonisation.
    - Systems thinking fosters cross-sector integration, where investments in one sector (e.g., water storage or transport) complement and enhance outcomes in others, avoiding redundancy and maximising resource efficiency.
6. Transparent and Equitable Prioritisation
    - A robust cost-benefit analysis framework should guide prioritisation, incorporating broader factors such as environmental sustainability, social equity, and community well-being.
    - Equity must be central to decision-making, ensuring that all regions and communities, particularly underserved or vulnerable populations, have access to reliable and affordable infrastructure.
    - Cost-benefit analysis must take a long-term perspective that deters short-term thinking and include costs and benefits of taking a system approach across multiple projects.

7. Foster Innovation and Private Sector Participation
    - Encourage private sector co-investment in areas such as renewable generation, energy storage, and demand-side management to reduce reliance on public funding.
    - Innovation through pilots and scalable programs (e.g., distributed energy resources, digital twins, or demand flexibility initiatives) should be supported to identify cost-effective solutions and inform long-term infrastructure strategies.
8. Engage Stakeholders and Communities
    - Comprehensive stakeholder and community engagement is crucial to aligning infrastructure investments with local needs and ensuring public confidence in funding decisions.

Balancing investment needs requires a thoughtful and coordinated approach, prioritising resilience, electrification, and equity while leveraging demand-side solutions and offset options. By integrating national and regional priorities, adopting systems thinking, and fostering innovation, New Zealand can optimise its infrastructure investments for the greatest long-term benefit.

The EEA is committed to contributing expertise and supporting the alignment of electricity infrastructure with broader national goals, ensuring sustainable, resilient, and equitable outcomes for all New Zealanders.

Workforce and project leadership: Building capability is essential

Q8: How can we improve leadership in public infrastructure projects to make sure they're well planned and delivered? What's stopping us from doing this?

The EEA supports the need for strengthened leadership in public infrastructure projects to ensure they are well-planned, efficiently delivered, and capable of meeting New Zealand's long-term needs. Effective leadership requires a clear vision, enhanced capability, and strong collaboration across all levels of governance, industry, and communities.

To achieve this, the following measures could be taken:

1. Establish a Coordinated National Framework: Leadership should be underpinned by a unified strategy that aligns infrastructure planning across sectors, regions, and timelines. This framework should prioritise sustainability, resilience, and adaptability to future challenges, such as climate change and technological advancements.
2. Reduce Investment Uncertainty: Implementing a cross-party agreed, prioritized, and funded National Infrastructure Investment Pipeline can significantly reduce investment uncertainty. Countries like Ireland and Norway have successfully established such pipelines to deliver

sustainable, long-term infrastructure investment programs. New Zealand can adopt a similar approach, providing clarity for stakeholders and ensuring consistent progress regardless of political cycles.

3. Embed Whole-of-System Thinking: Leaders must adopt a holistic approach that considers interdependencies between infrastructure systems, such as energy, transport, and water. This ensures projects maximise value and avoid unintended consequences, particularly as we transition to a more electrified and decarbonised economy. Achieving optimal system solutions will require political, regulatory and business leaders to commit to transformational change and challenging the way things have always been done.
4. Strengthen Capacity and Capability: Investment in leadership training and knowledge-sharing initiatives is critical. Building skills in areas such as systems thinking, stakeholder engagement, and project management will enhance the ability to plan and deliver infrastructure effectively.
5. Enhance Stakeholder Collaboration: Leadership in infrastructure should be inclusive, involving early and meaningful engagement with iwi/Māori, local communities, and industry stakeholders. This builds trust, fosters innovative ideas, and aligns outcomes with diverse community needs.
6. Improve Decision-Making Transparency and Accountability: Clear and transparent decision-making processes, supported by robust governance structures, can ensure leadership remains focused and accountable. Establishing performance benchmarks and independent review mechanisms would also help.

What's Stopping Us from Doing This?

1. Fragmented Governance: A lack of alignment between central and local government objectives, alongside siloed approaches within industries, hinders cohesive planning and delivery.
2. Short-Termism: Political and funding cycles often prioritise immediate outcomes over long-term strategic investments, undermining project resilience and sustainability.
3. Skills Shortages: A shortage of skilled professionals in key areas such as engineering, project management, and systems design limits leadership effectiveness.
4. Inadequate Funding Mechanisms: Current funding structures often do not support innovative, cross-sectoral projects or the adoption of emerging technologies.
5. Regulatory Barriers: Complex and inconsistent regulatory requirements can delay project approvals and discourage innovation. Regulatory models currently deter the ability to take an optimised system approach to multiple projects involving the same location, workforce or investors - adding unnecessary cost and complexity.

The EEA urges the government to address these barriers and create an environment that enables strong, forward-thinking leadership for public infrastructure projects. By prioritising collaboration, reducing investment uncertainty through a National Infrastructure Investment Pipeline, integrating planning, and taking a system approach to cost benefit analysis, New Zealand can deliver infrastructure that supports a sustainable, resilient, and inclusive future.

Q9: How can we build a more capable and diverse infrastructure workforce that draws on all of New Zealand's talent?

The EEA supports the goal of building a capable and diverse infrastructure workforce and we believe the following actions are critical to achieving this goal:

1. Collaboration with Industry Associations
    - Collaborate with industry associations to conduct workforce analysis and capability and capacity planning. This will help identify current gaps, forecast future needs, and ensure workforce development initiatives are well-targeted and effective.
2. Government-Led Initiatives
    - Grow STEM Outcomes in Schools: Increase emphasis on Science, Technology, Engineering, and Mathematics (STEM) education in schools, with a particular focus on engaging underrepresented groups such as women, Māori, and Pasifika.
    - Vocational and Professional Education Standards: Review and reform vocational and professional education standards to align with the skills and competencies required in infrastructure roles. This will ensure a pipeline of well-prepared graduates ready to meet industry demands.
    - Support Industry Infrastructure Initiatives: Provide government backing for initiatives led by industry to address immediate workforce challenges and foster long-term talent development.
3. Sustainable Learning Models
    - Establish sustainable delivery models for low-volume, highly specialised learning programs that develop core capabilities in key infrastructure sectors (e.g., electricity systems, gas, communications). These programs should address current and future needs while remaining accessible and viable for learners across New Zealand.
4. Focus on Quality Learning Pathways
    - Strengthen pathways for quality learning through on-the-job training, polytechnics, and Private Training Establishments (PTEs). Support systems should be in place to ensure that these training models are industry-relevant, accessible, and inclusive.

5. Upskilling and Career Progression
    - Invest in upskilling initiatives and professional development programs to ensure the existing workforce can adapt to emerging technologies and infrastructure needs.
    - Provide clear career progression pathways to retain talent and foster leadership within the sector.
6. Promoting Diversity and Inclusion
    - Invest in proven providers who are already creating accessible pathways and support for women, Māori and Pasifika to increase their participation in infrastructure careers.
7. Workforce Development Through Collaboration
    - Establish partnerships between government, industry, and education providers to align curricula with industry needs, ensuring a future-ready workforce.

These steps will collectively contribute to a more capable and diverse infrastructure workforce, ready to meet the challenges of a rapidly evolving sector.

Project costs: Escalation means less infrastructure services

Q10: What approaches could be used to get better value from our infrastructure dollar? What's stopping us from doing this?

The EEA acknowledges that achieving better value from infrastructure investment is critical for New Zealand's future, particularly in light of growing demands and aging assets. Our recommendations reflect both short-term and long-term opportunities, as well as key systemic challenges that need to be addressed.

Approaches for Better Value

1. Integrated planning and project assessment: In collaboration with regional stakeholders, identify interrelated projects (or their parts) that can be bundled to reduce cost and resource duplication. This may mean investing in known future needs in addition to current needs, and the adoption of innovative investment models that take a long-term view of time and cost savings across the system.
2. Short-Term Focus: Optimizing Existing Assets: Prioritising the efficient management of modern infrastructure assets can defer the need for new capital-intensive projects. This includes using advanced analytics, predictive maintenance, and digital technologies to maximise asset performance.

For example, leveraging demand-side flexibility, such as smart grid technologies and DERs, can optimise energy networks and reduce peak demand without requiring additional infrastructure.

3. Long-Term Planning: Addressing Aging Infrastructure: Many infrastructure systems, including water and energy, have suffered from underinvestment over decades. Aging infrastructure requires significant capital investment to replace or upgrade.

   The cost of these investments will ultimately need to be borne by users, emphasising the importance of transparent and equitable funding mechanisms to ensure social acceptability and fairness.

4. Coordinated and Sustained Investment Programmes: A lack of coordinated and sustained infrastructure investment has been a recurring issue. The current "tap on/tap off" approach—driven by regulatory cycles (such as the Default Price Pathway for electricity distribution) or government spending cuts—creates inefficiencies and delays critical work.

   Additionally, insufficient incentives for skilled workers to remain in New Zealand exacerbate capacity constraints, delaying project delivery and increasing costs. Addressing workforce retention through training, immigration, and incentives must be a priority.

5. Access to Assets: Value and Equity Considerations: Infrastructure investment must consider value and equity in access, particularly for essential services like water and energy and particularly between generations. This includes re-evaluating pricing models to ensure equitable access while reflecting the true cost of maintaining and upgrading assets.

   Policies that address disparities in asset access and affordability are essential for ensuring public support for future investments.

6. Lifecycle Costing and Innovative Solutions: Emphasising lifecycle costs over initial capital expenses and adopting innovative, adaptable solutions can provide better long-term value. For instance, using demand flexibility in the energy sector or smart water management technologies can reduce operational costs while extending asset life.

Barriers to Implementation

1. Aging Infrastructure and Deferred Maintenance: Decades of underinvestment have created significant challenges in sectors like water, requiring substantial catch-up investment. Short-term budget constraints often push critical maintenance and upgrades further down the road, compounding costs.

2. Fragmented Planning and Policy Alignment: Inconsistent and siloed infrastructure planning across sectors leads to inefficiencies and missed opportunities for integration and shared investment. A national infrastructure strategy with clear, long-term goals is needed.
3. Skilled Workforce: A shrinking pool of skilled workers in key sectors due to demographic change poses a major challenge. To deliver critical infrastructure projects effectively we need to replenish this pool by building domestic capability or attracting international capability (at all skill levels) and create a consistent pipeline of work to ensure reliable employment opportunities and career pathways. . Critically, we need to invest in the infrastructure training providers providing our workers with the qualifications and skills they need to deliver on our infrastructure programme.
4. Regulatory and Institutional Barriers: Legacy regulations and a short-term focus in decision-making processes often hinder innovation and adoption of new technologies. Streamlined regulatory reforms are necessary to encourage innovative approaches.
5. Public Acceptance and Equity Concerns: Resistance to necessary infrastructure investment due to cost concerns can delay projects. Building public understanding and ensuring equitable funding models will be key to gaining social license.

The EEA advocates for a balanced approach that optimises existing infrastructure in the short term while addressing long-term underinvestment in aging assets. A coordinated, sustained investment strategy, coupled with equitable access and a focus on skilled workforce attraction, development and retention, will maximise the value of New Zealand's infrastructure dollar. We urge the adoption of these principles in the National Infrastructure Plan to ensure resilient, efficient, and sustainable infrastructure for all New Zealanders.

Theme 2: Taking care of what we've got

Asset management: Managing what we already have is the biggest task

Q11: What strategies would encourage a better long-term view of asset management and how could asset management planning be improved? What's stopping us from doing this?

EEA considers the following strategies for Encouraging a Long-Term View of Asset Management should be considered:

1. Better Governance for Asset Management: Strengthen governance frameworks to ensure boards and senior leaders have a robust understanding of asset management principles, their importance, and how to support 'good' practices. Establish accountability mechanisms that hold decision-makers responsible for aligning asset management strategies with long-term objectives, such as resilience, efficiency, and sustainability.

2. Focus on Asset Data, Analytics, and Evidence-Based Actions: Elevate the role of high-quality asset data and analytics as the foundation of 'good' asset management. Encourage organisations to invest in data collection, predictive analytics, and evidence-based decision-making tools. Measuring and demonstrating success through tangible actions and outcomes linked to data-driven insights should be central to asset management frameworks.
3. Enhanced Education and Skills Development: Address gaps in vocational and professional education standards by establishing national programs focused on asset management skills, knowledge, and capability. Align training with industry needs, including certifications that reflect modern practices, and promote ongoing professional development. Invest in national training providers and take targeted action to increase participation and progression by Māori and women.
4. Integration of Advanced KPIs: Expand beyond delivery-focused KPIs, such as SAIDI (System Average Interruption Duration Index), to include metrics that incentivise proactive asset management, lifecycle optimisation, and alignment with broader goals like electrification and resilience.

Current Barriers to Effective Long-Term Asset Management:

1. Lack of High-Quality Data and Analytics: Organisations often lack the reliable, detailed data and analytical tools necessary for effective long-term planning. This inhibits their ability to forecast asset performance, prioritize maintenance, and justify investment in proactive strategies.
2. Limited Asset Management Skills and Knowledge: A shortage of skilled professionals with expertise in modern asset management practices hinders organizations' capacity to implement comprehensive and effective strategies.
3. Narrow KPI Focus: Current KPIs often prioritize short-term delivery outcomes, such as reliability or service restoration, without adequately rewarding investments in resilience, innovation, or long-term cost efficiency.

How Asset Management Planning Could Be Improved:

1. Improved Governance Structures: Establish governance structures that integrate asset management into strategic decision-making processes. Provide training for leaders to understand the value of long-term asset strategies and ensure accountability mechanisms drive adherence to best practices.
2. Invest in Data and Analytics Capabilities: Support initiatives to improve the collection, standardisation, and use of asset data. Invest in technologies like digital twins, predictive

maintenance tools, and centralised data platforms to enable more sophisticated analysis and decision-making.

3. National Standards for Education and Training: Develop a clear framework for vocational and professional education that emphasises the skills and knowledge needed for effective asset management. Promote industry partnerships with educational institutions to ensure training programs meet current and future needs.
4. Balanced and Forward-Looking KPIs: Redefine success metrics to include measures of asset lifecycle performance, climate resilience, and alignment with national infrastructure priorities. This approach incentivizes long-term thinking and innovation in asset management.

The EEA emphasises the need for a cohesive approach that combines better governance, enhanced data and analytics, skilled professionals, and comprehensive KPIs to support long-term asset management planning. These improvements will help overcome existing inhibitors and ensure infrastructure systems are resilient, sustainable, and fit for the future needs of New Zealand.

Resilience: Preparing for greater disruption

Q12: How can we improve the way we understand and manage risks to infrastructure? What's stopping us from doing this?

The EEA acknowledges the increasing complexity of risks facing New Zealand's infrastructure and emphasises the need for nationally coordinated efforts to improve risk understanding and management. Below, we outline key measures and barriers to achieving these goals.

Improving Risk Understanding and Management

1. Developing a Nationally Agreed Engineering Framework for Resilience Risk Analysis and Modelling: A consistent, nationally agreed framework is essential to ensure all infrastructure sectors use standardised methodologies for assessing and modelling resilience risks. This framework should incorporate both traditional risk metrics and emerging challenges like climate change impacts, cyber risks, and interdependencies between systems.
2. Benchmarking Climate Change Risks: Establishing benchmarks for climate change risks would enable consistent and comparative assessments across infrastructure sectors. This would allow stakeholders to quantify potential impacts, prioritize adaptation efforts, and measure progress toward resilience goals.
3. Standardisation of Design and Equipment: Harmonising design standards and equipment specifications across the sector can improve interoperability, reduce costs, and enhance resilience. Standardisation also supports quicker recovery and replacement during emergencies by ensuring compatibility across systems and regions.

4. Enhanced Data Sharing and Use of Digital Tools: Creating shared platforms for data exchange between stakeholders is vital. Incorporating tools like digital twins, geospatial analysis, and predictive analytics would support a more accurate understanding of vulnerabilities and interdependencies.
5. Scenario-Based Planning and Stress Testing: Regular scenario planning and system stress testing, guided by the nationally agreed framework, would allow infrastructure managers to simulate and evaluate responses to extreme events or cascading failures. This ensures preparedness and the ability to adapt quickly.
6. Strengthening Policies to Incentivise Resilience: Aligning regulatory and policy frameworks to require risk assessments and resilience measures in design, operation, and planning would incentivise long-term investment in risk mitigation and adaptive infrastructure solutions.

Barriers to Progress

1. Fragmentation Across Sectors and Jurisdictions: Responsibility for risk management is often fragmented between government agencies, infrastructure owners, and operators. This lack of coordination hampers the development and implementation of cohesive resilience strategies.
2. Data and Knowledge Gaps: Limited access to high-quality, standardised data and methodologies for risk assessment, particularly for climate change impacts, restricts the ability to benchmark and manage risks effectively.
3. Short-Term Planning Horizons: Infrastructure investments are often constrained by short-term economic and political considerations, discouraging long-term resilience planning and investment.
4. Resource and Funding Limitations: Infrastructure operators face budgetary constraints, making it difficult to prioritise risk management activities over immediate operational needs.
5. Divergent Standards: A lack of standardised design and equipment specifications across sectors and regions leads to inefficiencies, increased costs, and slower recovery in the event of disruptions.
6. Capacity and Skills Deficits: Addressing emerging risks requires upskilling professionals in resilience engineering, climate risk modelling, and digital tools. Limited expertise in these areas constrains progress.

EEA's Role in Supporting Improvements

The EEA supports a coordinated approach to risk management through:

- Advocating for the development of a nationally agreed engineering framework for resilience risk analysis.

- Partnering with stakeholders to benchmark climate change risks and integrate these into planning and operational frameworks.
- Promoting standardisation in design and equipment to improve efficiency and resilience.
- Leveraging insights from initiatives like the Resilience Guide update and system-led demonstration projects to provide actionable recommendations and tools.

By addressing these barriers and implementing the outlined measures, New Zealand can better understand and manage risks to its infrastructure, ensuring long-term resilience and reliability for all sectors.

Decarbonisation: A different kind of challenge

Q13: How can we lower carbon emissions from providing and using infrastructure? What's stopping us from doing this?

The EEA supports a national focus on decarbonising infrastructure to meet New Zealand's net-zero goals. Achieving lower emissions from infrastructure requires an integrated approach that spans the entire lifecycle of infrastructure assets, from design and construction to operation and decommissioning. Key areas for action include:

How to Lower Emissions:

1. **Electrification and Renewable Energy Integration:** Transitioning to low-emission technologies, such as electrification of transport, industrial processes, and heating systems, while integrating renewable energy sources into infrastructure.
2. **Energy Efficiency and Demand Flexibility:** Optimising energy use through efficiency improvements and leveraging smart grid technologies to enable demand response and load flexibility.
3. **Low-Carbon Materials and Construction Practices:** Incorporating sustainable design principles and low-carbon materials in infrastructure projects to reduce embodied carbon.
4. **Infrastructure Design for Electric Vehicle Charging:** Roading and electricity infrastructure should include provision for significant electric vehicle (EV) charging capacity. It is no longer a question of "if" this will be required, but "when." Incorporating this capability at the design stage ensures that infrastructure can accommodate future needs, avoiding costly retrofits and accelerating EV adoption.
5. **Circular Economy Principles:** Encouraging recycling and reuse of materials to extend asset lifecycles and minimise waste.

6. Digital and Data-Driven Solutions: Employing digital twins and advanced analytics to optimise infrastructure performance, reduce maintenance costs, and identify emission-reduction opportunities.

Barriers to Action:

1. Regulatory and Policy Misalignment: The lack of coordinated policy frameworks and incentives across sectors limits the pace of decarbonisation efforts. For example, existing regulations may not fully support the integration of distributed energy resources, grid modernisation, or EV charging infrastructure.
2. Investment and Funding Constraints: High upfront costs for low-carbon infrastructure and the absence of clear investment signals hinder progress.
3. Skill Gaps and Capacity: A shortage of skilled professionals in emerging fields like energy storage, digital engineering, and grid resilience slows adoption of innovative solutions.
4. Data Access and Interoperability: Limited access to granular, real-time data and the lack of interoperable systems make it challenging to optimize infrastructure efficiently.
5. Cultural and Institutional Resistance: Established practices and a lack of consensus among stakeholders can delay the transition to low-emission alternatives.

Overcoming Barriers:

1. Policy and Incentive Alignment: Develop integrated national policies that prioritise decarbonisation, including carbon pricing, incentives for renewable energy, and standardised emission-reduction targets.
2. Strategic Investment: Mobilise public and private funding to de-risk innovative projects and enable large-scale deployment of low-carbon technologies, including EV charging infrastructure.
3. Capacity Building: Strengthen workforce development through training programs, scholarships, and industry partnerships to address skill shortages.
4. Data-Driven Collaboration: Foster open data sharing between infrastructure operators, government, and other stakeholders to drive coordinated action.
5. Community Engagement: Build consensus through education and consultation to support the social license for transformative changes in infrastructure systems.

By addressing these barriers and embedding provisions for EV charging into roading and electricity infrastructure design, New Zealand can accelerate the shift towards a resilient, low-emission infrastructure network that supports economic growth and environmental sustainability. The EEA

remains committed to collaborating with stakeholders across the energy and infrastructure sectors to achieve these outcomes.

Theme 3: Getting the settings right

Institutions: Setting the rules of the game

Q14: Are any changes needed to our infrastructure institutions and systems and, if so, what would make the biggest difference?

The EEA recognise the critical importance of ensuring New Zealand's infrastructure institutions and systems are fit-for-purpose to support the transition to a low-carbon economy, increased electrification, and enhanced resilience. The following changes are recommended to address gaps and leverage opportunities across the infrastructure landscape:

1. Role of the Electricity Authority (EA)

Why: The EA plays a pivotal role in ensuring a competitive, efficient, and reliable electricity market. As we face increasing electrification and the rise of distributed energy resources, the EA's role must evolve to enable systems-level optimisation while maintaining market integrity.

Recommendations:

- Expand the EA's scope to include proactive support for demand-side flexibility and integration of distributed energy resources (DERs) into the wider grid.
- Provide the EA with a mandate to collaborate more closely with other infrastructure sectors, ensuring the electricity market facilitates cross-sector opportunities (e.g., water/wastewater pump operations).
- Encourage the EA to drive market settings that incentivize the uptake of smart grid technologies and equitable access for consumers to participate in flexibility markets.

2. Role of the Commerce Commission (ComCom)

Why: The ComCom oversees critical regulation of electricity distribution businesses (EDBs) and transmission entities, ensuring fair pricing and efficient operation. However, the regulatory framework must be updated to support investment in transformative technologies and infrastructure.

Recommendations:

- Update the Input Methodologies (IMs) to incentivise EDBs and Transpower to invest in resilience, digitalisation, and systems integration.

- Allow for greater innovation funding under the Default Price-Quality Path (DPP) and Customised Price-Quality Path (CPP) mechanisms, supporting initiatives like dynamic pricing, battery storage, and demand response.
- Ensure regulatory settings reflect the growing need for cross-sector infrastructure alignment and the delivery of public good outcomes, such as emissions reductions and resilience.

3. Opportunities from Systems Integration

Why: Cross-sector integration creates significant opportunities for cost savings, efficiency, and sustainability. For example, better coordination between electricity and water infrastructure can optimise water/wastewater pump station operations, reduce peak demand, and improve resilience during extreme events.

Recommendations:

- Foster partnerships between electricity providers, local councils, and water management entities to develop integrated solutions for energy and water systems.
- Utilise demand flexibility from water infrastructure (e.g., scheduling pump operations during off-peak electricity periods) to support grid stability and reduce operational costs.
- Leverage data-sharing platforms to coordinate infrastructure planning and operations, enabling predictive maintenance and real-time optimisation across sectors.
- Establish pilot projects demonstrating the value of systems integration, with funding support from the Government, Electricity Authority, and EECA.

4. Systems-Wide Recommendations for Infrastructure Institutions and Systems

- Enhanced Coordination: Establish a cross-sectoral coordination body to oversee infrastructure planning and ensure alignment of energy, water, and transport systems to national objectives.
- Strategic Planning: Develop a unified infrastructure strategy integrating decarbonization, resilience, and systems optimisation goals.
- Investment Signals: Enable regulatory settings that align investment incentives with long-term needs, such as demand flexibility, DERs, and resilience measures.
- Resilience Focus: Embed climate adaptation and disaster recovery into infrastructure planning and standards.
- Workforce and Capability: Support workforce development to meet cross-sector needs in engineering, data science, and systems optimisation.
- Digital Enablement: Promote the adoption of digital twins and real-time monitoring systems to enhance operational efficiency and planning accuracy.

By refining the roles of the Electricity Authority and Commerce Commission, enabling cross-sector systems integration, and embedding resilience and digitalisation in infrastructure planning, New Zealand can address current challenges and unlock significant opportunities. Coordinated action will enhance system-wide efficiency, reduce emissions, and deliver better outcomes for consumers and communities.

The EEA looks forward to supporting the Government in implementing these recommendations and collaborating with infrastructure institutions and stakeholders to achieve shared goals.

Network pricing: How we price infrastructure services impacts what we think we need

Q15: How can best practice network pricing be used to provide better infrastructure outcomes?

Best practice network pricing is a critical tool to improve infrastructure outcomes by incentivising efficient use of existing assets, encouraging investment where it is most needed, and ensuring fairness and transparency. To be effective, network pricing must be supported by a regulatory framework that enables innovation and flexibility while protecting consumer interests.

Potential ways network pricing could improve infrastructure outcomes:

- Cost-Reflective Pricing to Drive Efficient Use of Infrastructure: Aligning network prices with the actual costs of providing services encourages consumers to use infrastructure in ways that optimize capacity and reduce congestion. For example, time-of-use tariffs, demand-based pricing, and dynamic pricing can promote demand-side flexibility, shifting energy use away from peak periods. This reduces pressure on infrastructure and delays the need for costly upgrades.
- Enabling Investment Through Clear Signals: Best practice pricing provides clear signals for both consumers and investors. It enables customers to understand the value of shifting or reducing demand while ensuring infrastructure providers receive adequate compensation to maintain and upgrade assets. This balance is critical for long-term sustainability and resilience in infrastructure systems.
- Enhancing Fairness and Equity: Transparent and equitable pricing ensures that costs are distributed fairly among users, avoiding cross-subsidisation that could disadvantage certain customer groups. By reflecting the benefits received and costs imposed by different users, pricing can foster a sense of fairness and shared responsibility in infrastructure use.
- Regulation: Charting a More Enabling Path: The role of regulation is critical in ensuring that network pricing achieves these objectives. A more enabling regulatory framework can foster

innovation, promote new business models, and support the deployment of technologies such as smart meters, energy storage, and distributed energy resources (DERs). For example:

- Regulators can encourage trials of new pricing structures that incorporate demand-side flexibility or reflect the value of distributed generation to the network.
- Simplifying regulatory processes can reduce barriers to innovation, allowing infrastructure providers to experiment with and scale pricing mechanisms that deliver better outcomes.
- By embedding principles of adaptability, regulation can help networks respond to the evolving needs of consumers and the decarbonisation agenda.

- Adapting to the Transition to Decentralized and Renewable Systems: As New Zealand transitions toward a low-carbon economy, network pricing must adapt to support decentralized and renewable energy systems. This includes valuing flexibility services, such as demand response and battery storage, which can offset the need for traditional infrastructure investment. The regulatory framework should enable the integration of these services into the network pricing model.

EEA believe that best practice network pricing, underpinned by an enabling regulatory environment, can deliver significant infrastructure benefits. It ensures cost-efficient utilization of existing assets, provides clear signals for investment, and supports a fair and sustainable energy transition. The EEA consider that fostering a collaborative approach between regulators, infrastructure providers, and consumers will be essential to realizing these benefits.

Regulation: Charting a more enabling path

Q16: What regulatory settings need to change to enable better infrastructure outcomes?

The EEA believes that the following changes to improve the current regulatory framework to enable better infrastructure outcomes.

1. Facilitating Demand Flexibility and Distributed Energy Resources (DER): Regulatory settings must evolve to enable greater participation of consumers and distributed energy resources (DER) in the electricity system. This includes:
   - Introducing clear market rules for aggregators and flexible demand providers.
   - Revising pricing and cost-recovery mechanisms to reflect the value of flexible load and DER to the grid.

These changes will enhance system efficiency and support decarbonisation efforts by maximising the value of infrastructure investments.

2. Addressing the Role of the Commerce Commission (ComCom): The Commerce Commission plays a pivotal role in ensuring infrastructure investments deliver long-term benefits for consumers. However, the current regulatory framework may not always align with the need for proactive, forward-looking infrastructure development. Key recommendations include:

- Dynamic Default Price-Quality Path (DPP) Resets: Greater flexibility in DPP resets to account for changing market conditions, such as the rapid adoption of DERs, electrification of transport, and climate adaptation needs. The timing and scope of resets should ensure networks can respond effectively to evolving demands while maintaining affordability.
- Incentives for Innovation: Revising the regulatory framework to encourage investment in innovative technologies and infrastructure upgrades that align with decarbonisation goals.
- Enhanced Stakeholder Engagement: Facilitating deeper collaboration between the Commerce Commission, network businesses, and other stakeholders to ensure regulatory settings reflect sector priorities and consumer needs.

3. Streamlining Connections and Network Planning: To address growing demand and decarbonization goals, regulatory frameworks must support:

- Simplified Connection Processes: Standardising and expediting the processes for connecting new generation and load.
- Integrated Network Planning: Encouraging coordinated, long-term planning across distribution networks to ensure efficient deployment of infrastructure and support for DER integration.

4. Encouraging Co-Investment Models: The shift to a low-carbon economy requires innovative funding mechanisms. Regulatory changes should enable co-investment models that:

- Share risks and rewards between public and private stakeholders.
- Enable collaboration on projects like renewable energy integration, energy storage, and EV infrastructure development.

5. Supporting Innovation Through Regulatory Sandboxes: Establishing regulatory sandboxes allows testing of new technologies and business models in a controlled environment. This approach can:

- Accelerate the deployment of innovative solutions.
- Facilitate ongoing learning to ensure regulations remain adaptive and fit for purpose.

6. Modernising Resilience Standards: To address climate risks and infrastructure vulnerabilities, regulatory settings should mandate:

- Long-term climate adaptation plans for critical infrastructure.
- Incentives for investment in resilience-enhancing technologies and practices.

7. Aligning Incentives for Decarbonisation and Electrification: Regulatory performance measures should be aligned with decarbonisation objectives by:

- Encouraging efficient network investment to integrate renewable energy and electrify transport.
- Revising pricing structures to ensure fair cost allocation while incentivising sustainable energy use.

By addressing these areas, including reforms to the role of the Commerce Commission and the flexibility of DPP resets, New Zealand can unlock significant improvements in infrastructure outcomes. The EEA is committed to collaborating with policymakers and stakeholders to deliver effective regulatory solutions that support a sustainable, resilient, and electrified future.

The EEA welcome the opportunity to engage further on these issues and contribute to the development of robust regulatory frameworks.

Q17: Do you have any additional comments or suggestions that you would like us to consider as we develop the National Infrastructure Plan?

The EEA appreciates the opportunity to provide feedback on the development of the National Infrastructure Plan (NIP). As the NIP evolves, we would like to emphasise several key considerations and suggestions to ensure its alignment with New Zealand's infrastructure needs in the energy sector:

1. Integrated Energy Planning: The transition to a low-carbon economy requires an integrated approach to energy infrastructure planning. The NIP should support coordination between electricity distribution networks, generation developers, and other critical infrastructure providers to ensure alignment with decarbonisation and electrification goals. Clear mechanisms for collaboration and data sharing between sectors will be essential.
2. Resilience and Adaptability: Infrastructure must be resilient to climate change impacts, including extreme weather events. We recommend embedding resilience into all stages of infrastructure planning and development. This includes incentivising upgrades and adaptations to existing infrastructure to withstand future challenges, drawing on lessons learned from recent events such as Cyclone Gabrielle.
3. Demand Flexibility and Energy Efficiency: The NIP should highlight the importance of demand-side measures, such as demand flexibility and energy efficiency, as cost-effective means of optimising

infrastructure use. Supporting technologies like smart meters, batteries, and electric vehicle charging infrastructure will enhance consumer participation and reduce the need for costly upgrades.

4. **Workforce Development and Capability Building:** Delivering New Zealand's infrastructure goals requires addressing skills shortages in the electricity sector. The NIP should prioritise workforce development initiatives, including training programs and partnerships with educational institutions, to ensure a sustainable pipeline of skilled workers.
5. **Future-Proofing through Innovation:** Emerging technologies, such as digital twins and grid-edge solutions, should be supported to ensure that infrastructure investments are forward-looking and scalable. The NIP could play a role in fostering innovation hubs and pilot projects that explore the integration of these technologies.
6. **Stakeholder Engagement:** Ongoing and meaningful engagement with industry stakeholders is critical to ensuring the NIP reflects operational realities. The EEA welcomes further opportunities to provide input and collaborate on initiatives to shape the future of New Zealand's infrastructure.
7. **Policy and Regulatory Alignment:** The Plan should consider how infrastructure investments align with broader regulatory and policy frameworks, including the Electricity Industry Participation Code and emissions reduction targets. Streamlined approvals processes and clear guidance will facilitate timely and efficient implementation of projects.

The EEA looks forward to continued engagement with the development of the NIP and is committed to supporting the Government's efforts to build a sustainable, resilient, and efficient infrastructure framework for New Zealand.

Contact

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