



Comisiwn **Seilwaith**
Cenedlaethol **Cymru**
National **Infrastructure**
Commission **Wales**



INFRASTRUCTURE INSIGHTS

CROSS SECTOR ISSUES
AND PRIORITIES

in partnership with





Like every nation, Wales faces significant and complex infrastructure challenges. This research offers a clearer picture of the pressures and opportunities across five key sectors, strengthening our ability to understand, plan and act in a more joined-up way.

But Wales is also uniquely positioned. Our Future Generations Act requires us to think long term, work preventatively, and pursue a set of national well-being goals that enable our people, communities and ecosystems to thrive. If we embed these ways of working at the heart of infrastructure planning, we can turn today's challenges into catalysts for innovation and positive change.

There is a fine line between missed opportunity and meaningful progress. By understanding our current position and planning with future generations firmly in mind, we give ourselves the best chance of ensuring Wales stands on the right side of that line.

Dr David Clubb

NICW Chair

In 2025, the National Infrastructure Commission for Wales (NICW) commissioned Arcadis to assess the current and future infrastructure needs across the energy, water, transport, digital, and circular economy sectors and identify the key issues for Welsh Government attention.

The full findings of this study are presented as five stand-alone reports (one for each sector) each with an accompanying executive summary.

For each sector these reports:

- Assess and explain the current key issues impacting the sector
- Identify future needs, issues, challenges and risks and consider the potential impact or consequences of these risks to Wales, doing so through the lens of the Well-being of Future Generations (Wales) Act 2015
- Identify priority issues of most critical significance for Wales
- Provide commentary which will guide future Commissioners on the key issues and challenges they might consider as a priority for action and development within the next Senedd term
- Present existing data to evidence the state of each sector, to enable future monitoring of performance.

The individual sector reports provide a high-level overview of current, as well as future, issues and challenges. This paper does not repeat those sector specific issues but instead provides an overview of the common issues identified across all sectors. In doing so it highlights the areas that Welsh Government should look to prioritise in order to deliver cross-sector improvement for Wales.



For all the documents,
please scan the QR code.

CROSS SECTOR ISSUES AND CHALLENGES

Across the five individual reports a number of key trends and pressures were identified which have implications for multiple infrastructure sectors. Welsh Government's attention should be on better understanding these issues and the issues they raise for infrastructure delivery across Wales.

- Growth of new facilities such as data centres is already starting to have an impact on water consumption (requiring significant volumes of fresh, clean water) and puts new demands on the electricity network. New energy sources, such as hydrogen, also increase demand for water. These changing requirements need to be proactively planned for.
- Advances in digital connectivity stand to benefit multiple infrastructure sectors. There are particular synergies between the digital and transport sectors including, for example, opportunities for digital advances to facilitate more efficient, user-friendly transport systems including smart ticketing, integrated travel platforms, and real-time journey information. There is also wider potential to use digital services to improve monitoring of the condition or performance of infrastructure across various infrastructure sectors, such as to detect water leaks, monitor road condition or track energy usage. Collaboration between these sectors is critical.
- Effective water / flood risk management and climate adaptation strategies directly influence the resilience of transport networks. Close integration between transport and water sector planning is needed to safeguard transport infrastructure against extreme weather and long-term environmental changes.
- Water utilities are significant energy consumers, particularly in the abstraction, treatment, and distribution of water and wastewater,

while energy generation, especially hydropower, is dependent on water resources. Both sectors face common challenges in achieving decarbonisation, improving efficiency, and adapting to climate change, making integrated planning and innovation essential.

- Run off from roads and in urban areas has been highlighted as a significant cause of poor water quality in waterbodies. Measures to better manage highway runoff and address quality issues needs to be considered as part of road infrastructure investment and maintenance.
- The transition to ultra-low emission vehicles (ULEVs) places significant demands on electricity generation and grid capacity. Coordinated planning between transport and energy sectors is essential to ensure infrastructure keeps pace with ULEV adoption and does not present a barrier to uptake.
- The transport sector can play a pivotal role in promoting circular economy principles, for example by incorporating recycled materials in construction and maintenance. Strengthening links with this sector supports sustainability goals and reduces environmental impact.
- The energy transition itself, including measures to improve energy efficiency, reduces reliance on finite resources and supports circular principles, such as designing out waste and maximising the value of materials. Energy recovery from waste, such as through anaerobic digestion or waste-to-energy plants, further integrates circular economy thinking into energy systems, helping to decarbonise local communities and strengthen resource resilience.
- All sectors will face significant new changes and challenges in future and all need to adapt to and be resilient to climate change.

CROSS CUTTING PRIORITIES

Across the five individual sectors a number of cross-cutting challenges, which are currently hampering efforts to improve infrastructure across Wales, were identified. It will be important for Welsh Government to tackle these wider issues in order to ensure infrastructure can be delivered efficiently and effectively going forward.

Need for long term, consistent policy

Stakeholders across all sectors commented on the need for infrastructure delivery across Wales to be driven by a clear and consistent long-term policy and noted the importance of this being independent of political cycles. The organisations involved in delivering and maintaining infrastructure require clarity, certainty and commitment. Therefore, if Wales is to present itself as open to business and investment it needs a clear, confident vision and a long-term policy stance which the sectors can rely on and plan around.

Need for better integration and better working across Government

Across all the sectors there is a need for stronger direction and better integration across Government. Government departments need to be more aligned and more coordinated around core, central Government aspirations to enable infrastructure to be developed at pace. This research has indicated that priorities within Government sometimes seem conflicting or unclear, which has led to inconsistency in policy and decision making.

Updated roles and responsibilities

Organisations that deliver and plan infrastructure will need to work in new ways or evolve their remit to address changing issues. For example, in the water sector, clarity is needed on who should take on responsibility for predicting and monitoring future increases in non-domestic water consumption, and consumption from new sectors.

Constraints within the planning and consenting system

Planning and consenting were frequently identified by stakeholders as a challenge to the delivery of enhanced infrastructure across Wales. This is particularly evident in the energy sector where the consenting process is complex and time consuming and where energy projects of all types, including grid upgrades and renewables, often face considerable delay despite aligning directly with net zero ambitions and policy. On a smaller scale, development of digital infrastructure is hampered by a permitted development system which is more restrictive in Wales than in England. Overall, the planning system in Wales needs to support and enable the delivery of nationally important infrastructure at a rate commensurate with the challenge.

Need for integrated and aligned planning policy

Across the sectors stakeholders identified the need for planning policy to be refreshed and streamlined to better align with national priorities and to better facilitate infrastructure improvements that align with Welsh national priorities, in particular those around Net Zero. A key example cited was around the policy preference in Wales for undergrounding of electricity lines being at odds with evidence on deliverability and cost, and the impact this is having on delivery of essential new grid connections.

The need for joined up and integrated policy is particularly evident at a local level where there is need for spatial and transport planning to work together to bring forward development sites which are easily accessible.

Need for clear tools, rules or regulations to enable delivery

Infrastructure providers need to be able to deliver improvements at pace. Across various sectors there is a need to embed new tools and update systems to mandate change. For example, Circular Economy principles prioritising refurbished or repaired alternatives should be embedded consistently within Local Authority procurement systems in order to drive a step change. Delivery of energy efficiency measures, circular economy principles and digital enhancements would benefit from being formalised through amendments to design standards, Building Regulations and Permitted Development Rights.

Need for policy at the right scale

The need for policy to recognise specific local circumstances was identified in several sector reviews. In the water sector there is a particular need for a greater focus on catchment area planning. In the transport sector, it was highlighted that whilst spatially the majority of Wales is rural, current policy is directed toward interventions that are more suited to urban areas.

Access to consistent long-term funding

All sectors would benefit from consistent, long-term funding streams that would allow infrastructure improvements to be confidently planned and delivered. Currently short-term funding arrangements lead to uncertainty and ad hoc delivery. For example, in the circular economy sector Wales repair cafes and repair hubs offer a valuable service but are operating hand to mouth with very little funding certainty from year to year. Similarly in transport, annual funding allocations make it difficult to plan major projects.

Skills shortage and training needs

Development of high quality, resilient infrastructure across Wales depends on having appropriate skills and workforce. Across various sectors, lack of appropriate skilled staff and challenges around recruitment, upskilling and attracting and retaining talent are evident and risk holding back infrastructure improvements in future. Examples cited in the research include lack of resource in Local Planning Authority teams to deal with major planning applications for significant infrastructure projects, as well as gaps in the workforce to construct and operate new facilities. Knowledge gaps around circularity also risk holding back progress towards a Circular Economy.

CROSS SECTOR PRIORITIES AND CONCLUSIONS

Across all sectors the delivery of improved infrastructure for Wales will require:



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