

SUBMISSION

Submission to the Department of Infrastructure, Transport, Regional Development,
Communications and the Arts

Submission to a National Urban Policy for Australia

4 July 2024

The Australian Academy of Technological Sciences and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia's leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

Australia is one of the most urbanised nations globally— more than 80% of the population lives in urban areas (O’Neil 2024). Today’s planning — at all levels of government — should contend with the effects of climate change, which are expected to increase in severity and unpredictability in coming decades. ATSE suggests that the National Urban Policy places pragmatism and resilience at its heart — including planning for and building more infrastructure that supports climate change and water resilience while minimising social risks and costs. ATSE also recommends that the National Urban Policy seeks to address climate change directly, including through supporting the infrastructure needed to support the expected volume of electric vehicles on our roads. This will contribute to achieving net zero sooner, making deep cuts within this decade, as put forth in ATSE’s [Becoming a Net Zero Nation](#) position statement (ATSE 2023).

ATSE thanks the Department of Infrastructure, Transport, Regional Development, Communications and the Arts for the opportunity to provide input and proposes the following recommendations for fine-tuning the final policy:

Recommendation 1: Engage local communities at project planning stages to establish social licence and connect the Australian Government with community needs.

Recommendation 2: Embed urban water resilience actions in the National Urban Policy.

Recommendation 3: Plan for water availability to support hydroelectricity generation and storage.

Recommendation 4: Leverage current capital investments in water infrastructure to minimise spending and resource wastage.

Recommendation 5: Include robustness, redundancy, resourcefulness and rapid recovery into Australia’s transportation network to prevent major supply chain issues.

Recommendation 6: Roll out charging infrastructure to support the uptake of electric vehicles.

Recommendation 7: Implement a transparent national framework for greenhouse gas accounting and monitoring, requiring all new federally funded infrastructure projects to submit a publicly available greenhouse gas budget.

Recommendation 8: Implement hybrid infrastructure that incorporates nature-based solutions in urban design to support community health outcomes.

Embedding climate resilience and community engagement into infrastructure projects

While linear infrastructure (e.g. powerlines, communication, pipelines, roads) is essential to economic and social development, it poses significant risks to the environment (e.g. habitat loss) and local communities (e.g. property loss) (WWF 2023). Linear infrastructure is vulnerable to a range of natural hazards, including cyclones, floods and landslides— many of which are becoming more frequent and intense due to climate change (WWF 2023).

The accountability and consequences of urban resilience are cross-sectoral. Inclusive and strategic planning must underpin linear infrastructure development to minimise environmental risks, social risks, downstream costs, disaster potential and community conflict (WWF 2023).

ATSE’s position statement on [Building Australia’s Future](#) (ATSE 2021) highlighted that good infrastructure design promotes social cohesion across demographics, delivers equitable access and promotes systemic ecological improvements. The most effective model for community engagement is a place-based approach, which seeks to connect infrastructure decision-making with the needs of a community at a local level.

Recommendation 1: Engage local communities at project planning stages to establish social licence and connect the Australian Government with community needs.

Integrating flexibility and adaptability into urban water resilience to support a green energy transition

Urban water resilience is critical to sustain towns and cities. Planning and investing in urban water infrastructure should focus on ensuring flexibility and adaptability. Urban water resilience can be addressed from three angles: a) water services (i.e. water supply, sewerage, drainage and flood management and environmental protection), b) water infrastructure planning and design, and c) water system administration

and governance. Aspects of water security that can be embedded into planning include water reticulation, stormwater management, local rainwater capture, reservoirs built into industrial developments, and water sensitive urban design.

Failing to plan for urban water resilience can have devastating and costly impacts on communities. For example, the 2010-11 Brisbane floods were found to cost \$14.1 billion, consisting of \$6.7 billion in tangible impacts and \$7.4 billion in intangible impacts (Ulubasoglu and Beaini 2020).

With the gradual elimination of coal and restriction of gas generation, significant attention should turn to the essential role of our water-dependent energy systems. The amount of water consumed in the energy sector could rise by almost 60% by 2040, while energy consumption in the water sector could double over the same period (Walton 2018). Conventional hydroelectric generation is a key element in firming our current energy network, making stored hydroelectricity increasingly important. Ensuring the availability of suitably graded treated water in the right places is essential.

There is an opportunity to maximise the use of current capital investments rather than spending further on new investments. For example, schemes that direct potable water recycling can be used, rather than expensive up-hill pumping to distant dams as a source of indirect potable water. This will require building social licence for applications of recycled water.

Recommendation 2: Embed urban water resilience actions in the National Urban Policy.

Recommendation 3: Plan for water availability to support hydroelectricity generation and storage.

Recommendation 4: Leverage current capital investments in water infrastructure to minimise spending and resource wastage.

Building resilience into urban road networks

Transport infrastructure is vital to our way of life. Weather events have caused communities to be cut off from supplies due to a lack of redundancy in transportation networks. This poses an increasing risk due to the impacts of climate change. According to the Second National Action Plan, 70% of Australians lived in a disaster declared region in 2022, and 92% of Local Government Areas have been affected by disasters since 2013 (NEMA 2023).

ATSE's position statement on [Building a Resilient Australia](#) (ATSE 2022) urged that planning and design for resilience is a key component in mitigating the damage of major hazards. Achieving resilience relies on a system designed to include robustness, redundancy, resourcefulness and rapid recovery. This includes long-term planning for public transport, and investment in efficient road systems.

Planning for road networks should also consider the transition from combustion engine vehicles to electric vehicles (EVs). Further investment from all levels of government can incentivise building EV charging infrastructure, including in public spaces such as car parks and highways, as outlined in the 2023 National Electric Vehicle Strategy (DCCEEW, 2023).

There are over 180,000 EVs on Australian roads, with ~98,000 new EVs purchased in 2023 (Electric Vehicle Council 2023). In 2022, the Australian EV fast charging company, Tritium, had a 75% market share of direct current (DC) fast chargers in Australia (Tritium 2023). The recent collapse of Tritium (Parkinson 2024) now places Australia behind in its rollout of EV infrastructure. The National Urban Policy should interface with the Electric Vehicle Strategy to plan for, build and maintain infrastructure within and between urban centres, to keep up with the rapid uptake of domestic EVs. Alongside building EV charging infrastructure, reducing travel emissions can also be addressed in the National Urban Policy by planning for high frequency, interlinked public transport.

Recommendation 5: Include robustness, redundancy, resourcefulness and rapid recovery into Australia's transportation network to prevent major supply chain issues.

Recommendation 6: Roll out charging infrastructure to support the uptake of electric vehicles.

Integrating more green spaces for improved community health, urban liveability and climate resilience

Climate change expedites challenges facing urban communities and magnifies economic and social impacts. Heatwaves are becoming hotter and more frequent. For example, in Victoria the 2009 and 2014 heatwaves caused 374 and 167 excess deaths respectively, and it is expected that the number of very hot days in Victoria will double by the 2050s (compared with the 1986 – 2005 average) (Victorian Government 2024).

Infrastructure is responsible for 79% of all greenhouse gas emissions— buildings account for around 19% of total energy use in Australia (DCCEE 2024; IEA 2023). ATSE's [Submission to the 2024-25 Pre-Budget Consultation](#) identified a need for a transparent greenhouse gas accounting framework for projects (ATSE 2024a). This would include the requirement for all federally funded projects to submit publicly available greenhouse gas budgets.

One aspect of climate change adaptation is the development of hybrid infrastructure that incorporates nature-based solutions into urban design— enabling cities to deliver ecosystem or environmental services while enhancing urban liveability. The integration of urban landscape design with sustainability can help buffer the impact of climate change and urbanisation on natural environments.

In addition to climate change, there are community health risks related to urban environments. Growing up in urban environments is associated with a risk of developing psychiatric disorders— up to 55% higher risk in the lowest levels of green space (Engemann et al. 2019). ATSE's [Submission to the National Adaptation Plan Issues Paper](#) called for Australia's infrastructure, people and socio-cultural artifacts to be protected in a warming world (ATSE 2024b). Integrating green spaces into urban designs can help address the consequences of climate change and improve community health.

Recommendation 7: Implement a transparent national framework for greenhouse gas accounting and monitoring, requiring all new federally funded infrastructure projects to submit a publicly available greenhouse gas budget.

Recommendation 8: Implement hybrid infrastructure that incorporates nature-based solutions in urban design to support community health outcomes.

ATSE thanks the Department of Infrastructure, Transport, Regional Development, Communications and the Arts for the opportunity to respond to the National Urban Policy for Australia. For further information, please contact academypolicyteam@atse.org.au.

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