

Inquiry into the Australian Government's role in the development of cities

House of Representatives Committee on
Infrastructure, Transport and Cities

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Coordinating Author:

Professor Simon Washington
Head, School of Civil Engineering
hos@civil.uq.edu.au
Phone: (07) 3365 4498

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Introduction

For more than a century, The University of Queensland (UQ) has maintained a global reputation for delivering knowledge leadership for a better world. UQ has won more Australian Awards for University Teaching than any other university. This commitment to quality teaching empowers our 52,000 current students, studying across UQ's three campuses, to create positive change for society.

Our research has global impact, delivered by an interdisciplinary research community of more than 1500 researchers within our six faculties, eight research institutes and more than 100 research centres. The most prestigious and widely recognised rankings of world universities also consistently place UQ among the world's top universities.

School of Civil Engineering

The UQ School of Civil Engineering was recently ranked 1st in Australia and 12th globally based primarily on research impact (National Taiwan University Rankings 2017). The School currently has approximately 40 teaching and research focussed staff from over 27 countries, with sub-disciplines including structural engineering, water and environmental engineering, geotechnical engineering, fire safety engineering, coastal engineering, and transport engineering. Six academic staff are focused in the area of transport engineering and planning, and enjoy strong relationships with state government agencies, industry and other academic institutions around the world.

School of Earth and Environmental Sciences

The UQ School of Earth and Environmental Sciences delivers practical solutions to the complex issues that affect our physical environment and how we interact with it. The School's interconnected teams of earth scientists, physical and social scientists, environmental management specialists, health and safety experts, and urban planners work together to address the increasingly critical global challenges of a growing population, climate change, urbanisation, food security, conservation and natural resource management. UQ's research excellence in earth and environmental sciences is world renowned; according to the latest QS World University Rankings by Subject, UQ Environmental Sciences are ranked 1st in Australia and 12th globally, and UQ Geography is ranked 37th in the world.

School of Architecture

The UQ School of Architecture is a national leader in architectural education and research, offering comprehensive programs focused on socially responsible design for a sustainable future. Its students are given a hands-on learning experience, where creativity and problem solving are encouraged and where the latest technology advancements and awareness of global social issues is inherent. The School is committed to improving the built environment and actively engages with a cross-section of industry partners, diverse communities and a range of professions in its research and learning.

This submission represents the opinions of the contributing authors listed in this document. It does not necessarily represent an official position of The University of Queensland.

Summary and recommendations

For generations, the great Australian lifestyle has been built on the dream of urban convenience, wide open spaces and security for families. As Australia's population grows and expectations evolve, governments at all levels face the enormous challenge of creating and improving liveable spaces while ensuring that responsible urban development aligns with our environmental and international commitments.

Australia is one of the most urbanised countries in the world, yet it is one of the few developed countries that lacks a national urban development or settlement policy. Urban policy has traditionally been the domain of state and local governments, however if Australia is to become a world leader for urban liveability and city development, the Federal Government must take a strategic, forward thinking approach. Such transformation requires significant vision and we are pleased to provide this submission to the *Inquiry into the Australian Government's role in the development of cities*.

Recommendations outlined in this document are:

1. The Federal Government should develop a national conversation, vision and framework around urban and regional planning and associated policies, along with compliance targets, to fill a much-needed leadership void.
2. The Federal Government should lead the national discussion on the penetration of driverless and connected vehicles in Australia. In addition, it should establish goals and/or standards regarding what KPIs will be measured when automated vehicles penetrate fleets in Australian cities.
3. The Federal Government should establish a federal repository of 'best practice' transport and urban planning, as well as engagement of stakeholders across government, industry, and academia.
4. Federal support is required for 'Smart Cities' demonstration projects with testing of urban and transport policy effectiveness around parking, pricing, travel demand management, and alternative fueled vehicle sales promotion.
5. Australia should adopt a Settlement and Growth Plan to guide its population growth in the coming decades.

Terms of reference

- a. Sustainability transitions in existing cities:
 - a. Identifying how the trajectories of existing cities can be directed towards a more sustainable urban form that enhances urban liveability and quality of life and reduces energy, water, and resource consumption;
 - b. Considering what regulation and barriers exist that the Commonwealth could influence, and opportunities to cut red tape.

Rapid population growth, climate change and technological disruption have put urban development in Australia at a crossroads. These challenges will be the drivers of significant change in communities across the planet and are therefore changing the way Australians live – yet the detailed nature of their combined impact will be unique to each urban centre. The vast influence of these levers of change has led to an obvious need for national and international leadership. The Federal Government has a responsibility to ensure Australia's urban development aligns with community and international expectations; meets the needs of future generations; improves our quality of life; and enables economic development.

Article 52 of the Australian Constitution does not allow the Commonwealth to be involved in the minutiae of planning legislation. During the drafting of the Constitution, the states' deliberately excluded planning and cities from federal responsibility. As a result, the current situation has emerged where states are protective of the development of their cities, and the overarching national strategy requires strengthening.

We are of the firm view that the Federal Government has an important role to play in demonstrating intellectual and pragmatic leadership in leading forums, discussions and debates on progressive planning and associated urban and regional policy, and providing commensurate funding to encourage these activities. This would provide Australia's urban and regional centres with the tools for tackling the challenges that lie ahead. Moreover, the challenges associated with population growth, climate change, and technological disruption know no boundaries, and thus federal leadership has a natural and important – if not critical – role to play in facilitating communication across cities, regions and states to facilitate and foster world-leading planning outcomes.

Never has the argument been stronger for the Federal Government to take a leadership role in this area. Australia has committed itself to a number of international obligations that, combined with the current national economic environment, provide an opportunity for strong federal leadership. Examples of these commitments include:

- The Paris Agreement (COP21) regarding Australia's commitment on carbon emissions under the United Nations Framework Convention on Climate Change (UNFCCC); and
- The federal banking regulation and tax policies which impact the housing market (via mortgage financing).

Despite these federal commitments, there are some key federal and supporting initiatives lacking, including:

- A conspicuous lack of regulations or incentives aiming to promote the purchase of alternative fuelled vehicles through federal tax credits, reduced registration fees, etc., which many other countries have adopted to promote these more sustainable technologies;
- A lack of stringent exhaust emission standards for vehicles on par with similarly developed countries around the world; and
- The absence of a formal, national settlement and growth framework profoundly and negatively impacts the development of cities in Australia.

Moreover, the lack of comprehensive, supportive federal policy means that overarching approaches to meeting the key challenges facing urban and regional centres in the near future are unlikely to be integrated or structured, nor informed by essential communication across stakeholders. Furthermore, responses to specific issues will be haphazard and reactive rather than coherent and proactive.

The development of a national conversation, vision and framework around urban and regional planning and associated policies, along with compliance targets, would enable the Federal Government to fill this much-needed leadership void. This 'soft' hierarchical approach would ensure that the national conversation brings best practice to the forefront to benefit a national vision that informs state and regional visions. The national conversation would also inform the guidelines, which would lead to the identification of key performance measures and targets. This would allow the Federal Government to monitor the status quo and progress of state and regional policies, thereby ensuring that planned urban and regional development in Australia is keeping our cities and regional areas strong, competitive and vibrant.

Conversation

Strong federal leadership is necessary to help guide and facilitate the growth and development of Australia's urban and regional areas. One key area of leadership needed is to provide a coordinated approach to funding infrastructure that is required to promote and enhance Australia's economic competitiveness. Many of the 'SMART' city strategies, being developed and coordinated globally (for example, driverless cars, ride-sharing schemes, intelligent buildings, smart user-pricing schemes) require the close coordination and engagement of state and federal government agencies, high-end consulting firms, small and medium enterprises (SMEs) and academia. Moreover, with strong Australian federal leadership, the SMART city strategies will result in innovation and the development of exportable technologies, SMART City development capabilities, and the creation of intellectual property for Australian governments, SMEs and academic institutions.

Vision

Addressing the absence of a national strategic plan creates opportunities. The implementation of a truly visionary urban development plan that hits a high benchmark should be the aspiration, with an equally ambitious yet achievable vision statement. We propose:

In order to make the Australian urban setting more productive, successful and liveable, society should strive for environmentally responsible and healthy cities where people and economic activity thrive. Cities should aim to become carbon neutral and water sufficient places where natural ecosystems are integrated with the urban form. To achieve this aim, successful precedents from Australia and internationally must be advanced, integrated and scaled up.

Framework

In past decades a number of government initiatives have addressed the future development and planning of cities, but these have not been sustained. The Federal Government should be commended for the Smart Cities Program as it provides the foundation for the more comprehensive approach needed, not only in terms of establishing the vision and objectives, but also for the non-political institutional arrangements needed to implement the strategy and program over the long term.

The Smart Cities Program signifies a renewed interest in the topic, but does not fulfil the need for an overarching strategic vision; it represents only a single component of what should be a broader overall implementation framework. The Program includes the National Cities Performance Frameworkⁱ, which is a useful start and provides a series of existing statistical measures that should be used as performance indicators. However, there is still much to be done.

For example, to illustrate some of the limitations, the measurement of health of city inhabitants is recognised as a key indicator, but the statistics selected are life expectancy (which has a long latency regarding impacts to exposures), suicide rates and air quality (which it notes are not available for all cities). Various other candidate statistics could be considered, such as obesity rates given the 'obesogenic' environment of many cities, or hospitalisations due to asthma attacks as an indicator of urban air quality. The framework does not go beyond using existing resources or set out the level of monitoring that should be required, such as the specific requirements for monitoring urban air quality.

A key responsibility of an overarching governing body would be to draw together best practice examples, programs and resources from across the country and abroad. It could look at other domains of national public policy as examples of best practice, such as health and health services, which have successfully implemented long-term and coherent approaches with the same challenging issues of balancing national and state responsibilities.

For example: The Australian Institute of Health and Welfare which, among other major outputs, produces an outstanding biennial report examining current statistics and trends in key aspects of the health of Australians; identifies areas of progress; and identifies emerging issues that require attention. It also includes a focus on key priority areas, such as the provision of regional health and issues specific to vulnerable population groups.

For example: The National Strategic Framework on Chronic Conditionsⁱⁱ produced by the COAG Health Council guides the Federal Government response to enable Australia to reach its World Health Organisation commitments on non-communicable diseases. The report illustrates the overarching strategic approach needed, covering: Vision, Principles, Enablers, Partners, Objectives, Strategic Priority Areas, Outcomes and Measuring Progress. Importantly it identifies the main research areas needed to support evaluation and guide detailed implementation of the framework. It is worth noting that metabolic, cardiovascular, and respiratory diseases are potentially key performance indicators of healthy cities.

The resulting national vision and framework for the development of cities would also act as an enabling mechanism, whereby sustainable urbanisation strategies could be shared and implemented across state boundaries. As examples:

1. South East Queensland is one of the few places in the world that has a statutory urban growth boundary, widely considered world's best practice. This boundary supports a strong public transport system, environmentally friendly development, and intact land for agriculture and wildlife. This model could be utilised in other areas of the country which have previously failed to either introduce or sustain urban growth boundaries. Without such legally enforceable boundaries, sprawling development locks in unsustainable private transport and anti-social built environments.
2. More than a century ago Bendigo and Ballarat were developed as small urban regional centres in their own right. Today housing affordability, proximity to Melbourne and good public transport links have ensured these cities have not only survived but thrived. Again, there are strong lessons that can be shared with other parts of the country.

The framework should consider leveraging and integrating existing resources on cities that have already been developed in academia, and state and local governments. In addition, there is the opportunity for the framework to partner with corporations, such as Alphabet (owners of Google) and Apple, that already have 3-D models of major Australian cities that likely exceed the detail and integration of those currently used in government at all levels.

Targets

In committing resources to a long-term vision and framework, the Federal Government should also consider setting milestones and targets that have the potential to alter community behaviour; challenge and change individual expectations; and ultimately shape the way Australian cities develop.

To be effective, these targets should be based on what is needed to achieve sustainability goals rather than incremental improvements to current practice. Existing built infrastructure carries a legacy of unsustainable resource consumption and carbon emissions – to compensate, new development should achieve much higher targets for energy, resources, water, transport planning and ecology. Net Positive Developmentⁱⁱⁱ provides a framework for effective targets where new developments have an overall positive impact on critical environmental and social factors.

One of the most effective and cost-efficient ways to impact urban environments is to set ambitious targets across a number of industries. Below is a summary of targets that could have significant impact:

- A price on carbon drives energy efficiency and transformation across all industries including the built environment. An effective carbon price in Australia would support sustainability transformations through building energy efficiency, energy generation and renewables, transport strategies and construction material choices, among others. As of 2017, 42 national and 25 subnational jurisdictions are pricing carbon^{iv}.
- Ambitious energy efficiency targets for new buildings based on global best practice with new developments to be carbon neutral. In NSW, BASIX has proved ineffective in delivering on energy targets.
- Investing in the retrofit of existing building stock to improve energy efficiency will provide high return on investment. This will be further offset by reduced peak energy load, reducing infrastructure costs.
- Greater control of the vehicle import industry with consideration to the following international examples:
 - Japan: vehicles are required to be replaced at least every six years to leverage safety and environmental developments

- California, USA: fuel efficiency standards have been set for all vehicles, reducing overall emissions
- Netherlands and Denmark: proposed – but ultimately didn't implement – the removal of all vehicle related levies and taxes to be replaced by a per kilometre road pricing scheme.
- High levels of urban vegetation provide multiple benefits for transitioning cities to sustainable forms. Urban vegetation:
 - Improves well-being and promotes more active lifestyles
 - Reduces the heat island effect, cooling buildings and reducing energy demand
 - Regenerates native ecology and provides habitat for species displaced by expanding cities
 - Promotes good health by cleaning air, filtering water and reducing heat stress.
- Developing a requirement for 'new' cities to be carbon neutral, for example with:
 - Walkable public transport options
 - Ecosystems that are integrated with urban form.

Planning targets are amongst the most impactful ways to reduce the nation's carbon emissions, thereby meeting our international commitments. Further, the milestones will improve liveability in urban centres, enabling current cities and regional centres to prosper, and increasing the attractiveness of emerging communities. The implementation of stringent targets will have far reaching benefits.

Recommendation:

The development of a national conversation, vision and framework around urban and regional planning and associated policies, along with compliance targets, would enable the Federal Government to fill this much-needed leadership void.

i. Sustainability transitions in existing cities:

c. Examining the national societal and economic benefits of being a global 'best practice' leader in sustainable urban development.

Australia is considered the 'lucky country' in many ways: climate, natural beauty and resources, land availability, tenacity, diversity, creativity of the population and geopolitical position. Yet Australia has long been seen as a country with significant economic and environmental constraints that stifle its ability to become a global 'best practice' leader in sustainable urban development. Moreover, the confluence of technological disruption – particularly with regard to personal mobility, climate change and population growth – will threaten the very productivity and liveability of our cities and regional centres, particularly in the absence of world-leading best practice planning practices. Conversely, the economic advantages of becoming a world-leader in transport and urban and regional planning are substantial.

To understand the benefits of world-leading transport and urban planning practice, we must remember the externalities of providing mobility in Australian cities. As in other developed nations around the world, our urban and regional centres are facing increasing threats from:

1. Traffic congestion: This cripples poorly designed and planned cities, resulting in staggering economic losses; stifling air quality issues and resulting impacts on health; and a significant reduction in the perceived quality of life and liveability of congested cities. In most developed and developing cities globally, congestion ranks as the number one threat to quality of life.
2. Fatalities and injuries: The transport network gives rise to one of the top causes of death, particularly for Australia's young, and contributes to minor and major injuries for thousands of Australians annually. Many incidents involve pedestrians and cyclists pursuing routine activities within our cities.
3. Liveability: Some of the most liveable and desirable cities in the world have large numbers of pedestrians and cyclists, good air quality, low crime, natural and man-made aesthetic beauty, and most importantly world leading urban and transport planning policy and regulations.
4. Noise, social inequity and crumbling infrastructure: The transport system contributes to urban noise and resultant stress, contributes to social inequality through unequal access to transport services and urban amenity, and requires enormous planning to manage and maintain the infrastructure.

Evolving and imminent technological disruption threatens to reduce the liveability of Australian cities and will require advance planning and federal leadership to coordinate the Australian policy responses. A fundamental and often poorly understood premise regarding congestion is that travel time is the most important factor – or 'cost' – that deters individual travel. However, even during the most severely congested time periods, some motorists are not deterred from traveling. With the imminent release of and transition to automated and connected vehicles on Australian roads, the time cost of travel will plummet. As a result of significantly reduced travel times, longer vehicle trips will be less onerous; suburban land will become more valuable; and zero-occupant travel will enable a brand-new type of travel (e.g. dropping off and picking up people and household goods). Whilst these same technologies promise to make significant reductions in motor-vehicle involved crashes, their impact on liveability and congestion will depend on the planning and policy response of Australian city and urban transport planners.

In order for the Australian community to be adequately prepared for the disruption that will arise from the introduction of automated and connected vehicles, it needs a Federal Government that can facilitate

discussion, policy options and funding for research into urban transport planning and policy. In particular, urban and transport planners in Australian cities need to know:

- How will consumers respond to these technologies and adjust their travel behaviour?
- How can state and local governments effectively manage the increased transport demand that will arise from self-driving vehicles?
- What will be the safety benefits of these technologies and various market penetrations?
- What urban transport policies will be needed and effective to encourage ride and vehicle sharing?
- What pricing policies and mechanisms will assist in managing travel demand?
- What pricing policies and mechanisms will be equitable for transport network users?
- What city parking policies and provision will be needed in a future with self-driving cars?
- How should city parking best be re-purposed to increase the liveability and productivity of cities?

These and other questions will require the development of a new suite of complex, detailed tools for use by governments. Importantly, these tools will be needed before these technologies are adopted, so that appropriate state, regional and city policies can be in place to effectively manage transport demand and to facilitate the right mix of personal mobility options. For example, to achieve a significant mix of shared autonomous vehicles—an outcome increasingly seen as imperative for managing congestion—supportive, tested, sensible government policies are required.

While presenting some significant challenges, this ‘disrupted personal mobility future’ also presents significant opportunities for the Australian government. As the emergence of these disruptions are being anticipated globally, the economic development opportunity is enormous to develop exportable capability, and policy and planning intelligence among Australia’s government agencies, supporting consultancies, small and medium enterprises, and academia. However, such an outcome would require federal oversight, conversation, policy support and funding to ensure that Australia is on track to be a world leader in urban transport policy relating to autonomous and connected vehicles.

Another critical area in mobility disruption surrounds the role of the Federal Government in the sale and promotion of alternative fuelled vehicles. Australian sustainability lags behind Europe and North America in its support for and involvement in the transition from fossil fuelled vehicles to a range of substitutes including electric, hybrid electric, plug-in electric, natural gas and hydrogen-based fuels. Now that all vehicle manufacturing has ceased in Australia, the contribution to the development of powertrains for alternative fuelled vehicles for Australian SMEs that support the automotive sector serves as a natural progression to retain Australian jobs, retain and develop new intellectual property (IP), and contribute to Australian exports. Moreover and as important, the transition away from fossil fuelled vehicles will assist Australia in achieving its climate change goals, will reduce exposure to air pollution in cities, and encourage the development of exportable, renewable energy technologies and associated IP.

As outlined in Section 1 (a) (b), evolving Australia to be a world leader in this area will require the development of a strong vision, setting targets and an implementation plan. As a nation, we are currently lagging behind the rest of the OECD in the development of a strategic plan – however the current absence of a strategic plan creates opportunities. Australia has previously been at the forefront of urban development: our relatively low population and large land area position Australia to once again drive change and become a world leader in the medium-term.

Recommendation:

The recommendations from these urban and transport planning issues include:

1. The Federal Government should lead the national discussion on the penetration of driverless and connected vehicles in Australia. In addition, it should establish goals and/or standards regarding what KPIs will be measured when automated vehicles penetrate fleets in Australian cities.
2. The establishment of a federal repository of 'best practice' transport and urban planning, as well as engagement of stakeholders across government, industry and academia.
3. Federal support for 'Smart Cities' demonstration projects with testing of urban and transport policy effectiveness around parking, pricing, travel demand management and alternative fueled vehicle sales promotion.

- ii. Growing new and transitioning existing sustainable regional cities and towns
 - a. Promoting the development of regional centres, including promoting master planning of regional communities;
 - b. Promoting private investment in regional centres and regional infrastructure;
 - c. Promoting the competitive advantages of regional location for businesses;
 - d. Examining ways urbanisation can be re-directed to achieve more balanced regional development; and
 - e. Identifying the infrastructure requirements for reliable and affordable transport, clean energy, water and waste in a new settlement of reasonable size, located away from existing infrastructure.

Across many decades, there has been considerable research undertaken into the optimal city size. What this research has consistently found is that there is no 'perfect' size. Rather, cities should be developed based on strategy, demand and location.

Before Australia can determine the extent, scale and features of its existing and emerging cities, the nation should consider the development of a Settlement and Growth Plan. Australia is the only OECD country that does not have a strategy that considers the nation's growth through to 2050. Such a plan would contemplate many difficult questions (such as how many people should be allowed to migrate to Australia annually), while also addressing city growth and development, and the location and extent of these urban centres. The development of 'Smart Cities' in Australia cannot occur without the development of a Settlement and Growth Plan.

Our view is that if the vision, framework and targets outlined in Section 1 (a) (b) are implemented, our large cities will become increasingly more liveable; existing regional centres will be appropriately resourced and, where desirable, grow; and new hubs will emerge in areas where people want to live. Such a strategy would ensure economic gains for individual communities, as well as the recognition of non-economic considerations: for example a vibrant hub with proximity to the natural environment and shorter commute times through improved public transport.

Recommendation:

Our strong view is that the Federal Government must implement a strong vision, framework and targets if it is to take a responsible approach to the development of the nation's cities. Further, Australia should adopt a Settlement and Growth Plan to guide its population growth in the coming decades.

Contributing authors

This submission is the result of a collaboration between The University of Queensland's School of Civil Engineering, School of Architecture, School of Earth and Environmental Sciences and the Centre for Policy Futures.

Contributing authors were:

- **Professor Simon Washington**, School of Civil Engineering
- **Ray Maher**, School of Earth and Environmental Sciences
- **Professor Neil Sipe**, School of Earth and Environmental Sciences
- **Dr Alex Summerfield**, School of Architecture.

This submission was coordinated by Ms Anna Moloney, Centre for Policy Futures (contact: 07 3443 3109 or a.moloney@uq.edu.au).

End notes

ⁱ <https://cities.infrastructure.gov.au/performance-framework>

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[https://www.health.gov.au/internet/main/publishing.nsf/Content/A0F1B6D61796CF3DCA257E4D001AD4C4/\\$File/National%20Strategic%20Framework%20for%20Chronic%20Conditions.pdf](https://www.health.gov.au/internet/main/publishing.nsf/Content/A0F1B6D61796CF3DCA257E4D001AD4C4/$File/National%20Strategic%20Framework%20for%20Chronic%20Conditions.pdf)

ⁱⁱⁱ Birkeland, J. (2012). Positive development: from vicious circles to virtuous cycles through built environment design: Routledge

^{iv} World Bank; Ecofys; Vivid Economics. 2017. State and Trends of Carbon Pricing 2017. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/28510> License: CC BY 3.0 IGO.