



THE UNIVERSITY OF
MELBOURNE

SUBMISSION TO THE HOUSE OF REPRESENTATIVES STANDING
COMMITTEE ON INFRASTRUCTURE, TRANSPORT AND CITIES' INQUIRY
INTO

THE AUSTRALIAN GOVERNMENT'S ROLE IN THE DEVELOPMENT OF CITIES

18 August 2017



Image credits: Victorian Eco Innovation Lab (VEIL), the CRC for Low Carbon Living, Angelica Rojas Gracia.

INTRODUCTION

The University of Melbourne welcomes the opportunity to respond to the House of Representatives Standing Committee on Infrastructure, Transport and Cities' Inquiry into the Australian Government's Role in the Development of Cities.

Australian cities contribute 80 per cent of Australia's economic output; house and employ more than three-quarters of our population; and have a reputation for being the most liveable in the world.¹ At the same time, Australia's urban citizens are some of the world's highest per capita carbon-emitters; face some of the highest housing prices in the world (a factor leading to increasing homelessness); and are challenged by increasing congestion and pollution as they move between homes, workplaces and services.

Australian Government leadership in urban development will be critical in maintaining and enhancing urban liveability. Well-designed policy and adoption of best practice will be necessary in order to achieve Australia's national commitment to the 2030 Sustainable Development Goals (SDGs), including the urban goal to 'make cities and human settlements inclusive, safe, resilient and sustainable'.²

As the Australian Government's [Smart Cities Plan](#) acknowledges, world-leading research institutions and a highly educated workforce will be key advantages for Australia in the twenty-first century. Australian universities' research expertise and role in educating the next generation of urban planners, engineers, architects and scientists can also add significant value to urban policy development, testing and implementation.

The University of Melbourne is a city university employing over 8,000 staff and enrolling approximately 50,000 students. As such, it is a 'city within the city', with the life of the campus interwoven with that of the city of Melbourne. Its research in urban development is organised through collaborative and cross-disciplinary platforms and research groups such as the [Future Cities Research Cluster](#) convened by the [Melbourne Sustainable Society Institute](#).

To guide our campus development, research excellence and social impact, the University has also embedded the principle of sustainability in all aspects of the University's operations, teaching and learning, research and engagement planning. These principles and our approach are reflected in our submission, along with our commitment to partnering with Government to ensure a positive future for our cities.

We suggest that the most critical areas for Australian Government leadership on cities development might include:

1. Partnering with other governments (local, state and international) and key stakeholders to enable rapid system-wide transition to sustainable, resilient and socially just urban forms;
2. Supporting metropolitan governance that can ensure more environmentally sound and equitable outcomes of infrastructure investments;
3. Supporting co-investment in 'smart' mass transport and social infrastructure to improve health and liveability, and decrease pollution and congestion;

¹ As [noted](#) by Australia's Ambassador and Permanent Representative to the United Nations at the 3rd UN Conference on Housing and Sustainable Urban Development ([Habitat III](#)) in Quito 2016.

² [Sustainable Development Goal 11](#) – Make cities and human settlements inclusive, safe, resilient and sustainable.

4. Co-investing in a stronger evidence-base for urban decision-making, the testing of policy and technology options, and the development of urban and land planning tools and platforms;
5. Investing in best-practice urban development education, research and workforce pathways;
6. Supporting policies and programs to enable innovation, productivity and specialisation in cities/city networks; and
7. 'Caring for Country' and seeking to close the gap for Indigenous Australians.

For further information regarding our submission, Director of the Melbourne Sustainable Society Institute Professor Brendan Gleeson can be contacted on brendan.gleeson@unimelb.edu.au or 03 9035 8235.

RECOMMENDATIONS

The Australian Government has a substantive role in facilitating the strategic development of Australian cities. Its national remit, global connections and convening power can facilitate coordination with, and leveraging of, academic, State/Territory/Local Government, non-government organisations and private sector expertise. This in turn can accelerate the productive export of Australian goods and services, including skills. The *Smart Cities Plan* correctly notes that the Australian Government has several key levers at its disposal, namely taxation, finance, welfare, superannuation and foreign investment policy.

Cities around the world are anticipating disruption though significant population growth, new sensory technology, accessibility challenges and infrastructure demands along with emerging risks to privacy, safety and social equity. The University's research suggests that an effective framework for developing and advancing sustainable development solutions is a 'Living Lab' approach, which offers collaboratively designed and tested outcomes that transparently engage the general public in urban transition.

Sub-Inquiry – Sustainability Transitions in Existing Cities

Recommendation 1: The Australian Government should support cities to make a rapid *system-wide transition* to more sustainable and socially just urban forms, providing strategic leadership, partnership and supportive co-investment and/or incentives in areas such as: housing; mass transport links; energy and efficiency; data analytics and smart systems to underpin transport and land planning. This could be achieved through, for example:

- Investment in planning and decision-making tools and soft infrastructure, such as the urban analytics provided by Australian Urban Research Infrastructure Network (AURIN), to build an evidence base and inform cities' decision-making;
- Support of research that seeks solutions to the challenges of rapidly growing cities, including through existing collaborative vehicles such as CRC-P grants;
- Provision of incentives to align affordable housing construction with other infrastructure development as part of City Deals and Smart Cities;
- Support of emerging new industries such as prefabricated materials and emerging smart technology research and trials;
- Leadership on clean energy policy, energy efficiency and pollution monitoring, and promotion of associated technologies in urban environments and planning processes.

Recommendation 2: Effective and inclusive metropolitan governance frameworks are required to enable the participation of all levels of government in sustainable urban transitions. These must be transparent, evidenced-based, and well-coordinated.

Recommendation 3: Australian Government policy settings should facilitate co-investment in social and affordable housing, mass transportation, and social and health infrastructure.

Recommendation 4: Commonwealth regulations relating to development of cities should be guided by Caring for Country principles, drawing on Indigenous expertise in land management and bringing Indigenous Australian culture, history and identity more inclusively into our cities.

Recommendation 5: The Australian Government should invest in relevant education and research to support best-practice urban development.

Recommendation 6: In accordance with its undertakings Australia should aim to exceed the Goal 11 targets of the Sustainable Development Goals, as well as our commitments through the United Nations New Urban Agenda, relating to making cities inclusive, safe, resilient and sustainable.

Sub-Inquiry – Growing New and Transitioning Existing Sustainable Regional Cities and Towns

Recommendation 7: The Australian Government should continue to facilitate and support global city-to-city networks, to enable knowledge exchange, productivity growth and peer-driven development of regional Australian towns.

Recommendation 8: The Australian Government should engage the private sector and support policies and programs to enable greater data availability, access to information, smart technology/planning tools, and collaboration between recognised innovation hubs and regional cities and towns.

Recommendation 9: In promoting regional excellence and competitiveness, the Australian Government's policy response should emphasise Smart Specialisation approaches of building up existing capabilities, resources and assets with participatory governance.

Recommendation 10: The Australian Government should facilitate co-investment with other governments/stakeholders in public mass transport links between regional centres, and between regional centres and metropolitan centres, to advance regional development.

Recommendation 11: The Australian Government should consider the role of new technologies, including those that underpin evolving modes of mobility, and essential infrastructure as threshold investments for establishing new settlements.

1. SUSTAINABILITY TRANSITIONS IN EXISTING CITIES

1(a). Identifying how the trajectories of existing cities can be directed towards a more sustainable urban form that enhances urban liveability, resilience and quality of life and reduces energy, water, and resource consumption.

To meet the major challenges of this century, the regulation and governance architecture of cities will need to respond rapidly to accommodate growing populations, broadening social and spatial inequities (particularly on the urban fringe), climate change impacts, and increasing rates of chronic disease and road trauma.

Melbourne recently hosted the [Ecocity World Summit](#), at which academia, government, the private sector and urban practitioners reflected on best practice approaches to re-connecting our urban form with the wider ecological stocks, flows and systems that it depends upon. The Summit, which was co-hosted by the University, demonstrated that sustainability, productivity and liveability of cities is as much a concern for civil society as it is for academia and policy-makers.

In coordination with State/Territory Governments and Councils, key Australian Government areas of influence over the trajectories of existing cities are: housing; human service accessibility; mass transport links; energy efficiency and pollution monitoring; urban planning and land use tools and analytics.

System-wide transitions are required in the way urban systems and infrastructures are designed, organised and delivered, encompassing the use of new technologies and corresponding changes in markets, user practices, governing institutions, policy and societal aspirations.³ Managing this system-wide transition will be a key challenge for urban policy-makers and planners, and the Australian Government can provide support through complementary or facilitative policy settings.

As pioneered by [Resilient Melbourne](#) and its engagement in the Rockefeller Foundation's [100 Resilient Cities](#) program, cities increasingly mitigate and adapt to economic, social and environmental change through interrelated technological, institutional and social innovations at the urban level.

To deal with the challenge of rapid changes, there is a growing emphasis on testing new urban governance instruments operating across and within cities, and local and regional public-private initiatives. In support of this approach, the University of Melbourne has established a globally unique partnership with the City of Melbourne by funding a Chair in Resilient Cities, and by supporting collaborative research on resilience initiatives.

Within its own domain, sustainability is a universal principle for the University. The University has released its first [Sustainability Plan for 2016-2020](#) that was co-designed with staff, students and other stakeholders. Integrating resilience into the University's Teaching, Learning, and Research programs tackles the present operating environment of our business, but also addresses the future by providing students and researchers with a foundation based on sustainability principles.

³ See: <https://www.routledge.com/Urban-Sustainability-Transitions/Frantzeskaki-Broto-Coenen-Loorbach/p/book/9780415784184>

Housing affordability

[High housing costs](#) are creating a spatial mismatch between jobs, amenities, and services, as well as the households most in need of accessing these opportunities.⁴ This is reflected in the [growing segregation of high income earners](#) in the core of Melbourne and dispersion of lower income households around its periphery.⁵ As recognised in the *Smart Cities Plan*, correcting course will require more affordable housing in areas with good transport and social infrastructure, better infrastructure in areas with less expensive housing, and much better public transportation between homes, jobs and services.

Models of good practice in capturing value from transport and infrastructure investment and aligning affordable housing with infrastructure development are evident elsewhere, including the [Portland Plan](#) (2012), the [Housing Vancouver Strategy](#) (2012 – currently being updated), [The London Plan](#) (2016) and the [Housing New York Plan](#) (2014) . These include:

- Minimum requirements for integrating [social and affordable housing](#) in all new developments;
- Incentives like density bonuses to projects offering affordable housing; and
- Leveraging private financing for affordable rentals through government bonds, loan guarantees, subsidies and matched funds.

These efforts can be effectively coordinated through the integration of affordable housing production targets into metropolitan and local government area plans. Targets should reflect a diverse mix of household structures and a range of housing types. The development of national policy settings and incentives such as bond aggregators, City Deals, and direct investment in social housing will enable these sustainable and affordable housing approaches to ensure every sector of society can benefit from rapid urban growth.

Transport

The urban form is shaped by accessibility. Investment in urban mass transport can shape healthy centres and peripheries while counteracting the increase in car dependency, segregation and the undesirable consequences of laissez-faire urban growth. Clear goals for infrastructure investment and planning policy are needed to achieve an Australia-wide shift from private cars to active, public and shared modes that reduce energy consumption and overall motorised distances travelled. The University encourages the Australian Government to adopt a proactive approach to this important modal shift. There is much to be leveraged from the digital revolution and the array of opportunities that come from partnering with industry on innovative transport solutions for efficient and affordable public transport.

Energy efficiency

Building codes that focus on insulation will passively help reduce peak energy demand in heatwaves and cold periods, improving energy stability and security while diversifying the energy mix and reducing dependency on fossil fuels. Similarly, the encouragement of mixed built forms at building and

⁴ See Baker et. al (2016). Housing affordability and residential mobility as drivers of locational inequality. *Applied Geography*, 72, 65-75, doi: <http://dx.doi.org/10.1016/j.apgeog.2016.05.007>

⁵ See Randolph & Tice (2017). Relocating Disadvantage in Five Australian Cities: Socio-spatial Polarisation under Neo-liberalism. *Urban Policy and Research*, 35(2), 103-121, doi: <http://dx.doi.org/10.1080/08111146.2016.1221337>

neighbourhood scales will improve liveability by enabling life stage transitions within a community, maintaining a sense of place as people progress through different stages in their lives.

It is important to recognise the potential impacts on occupant health and well-being. Specifically, tighter buildings with reduced ventilation can concentrate pollutants indoors. Given that most of exposure to hazardous pollutants occurs indoors rather than outdoors, and these pollutants are regulated and monitored outdoors but not indoors, energy efficiency measures such as insulation need to be implemented together with an understanding of the effects on indoor air quality.

Urban analytics to inform planning

Application of [urban analytics](#) through sophisticated use of open and big data allows for an evidence-based approach to urban planning. The use of urban analytics in public policy is being extensively developed at the University of Melbourne through [AURIN](#), which hosts over 1800 urban datasets and provides tools for modelling, analytical and scenario-planning. Opportunities for Australian, State and Local Government policy-makers to participate in interactive sessions using such tools are available.

One such application of data analytics is in the urban transport sector. With transport emissions making up a large portion of the carbon footprint of cities in Australia, sustainable urban development must include a focus on transport network planning, balancing land uses with associated travel distance. Use of measures of the spatial diversity in land uses within particular planning scales and areas would allow for a more sophisticated understanding of the purpose and distribution of concepts of 'mixed-use'. These [land-use mix 'entropy' measures](#) can then be applied in urban intensification strategies and green-field development planning (see, for example, the University's development of a [Transport Walkability Index](#) for Melbourne). Re-evaluating how we understand the interactions between land uses in existing, future, and evolving urban areas is crucially important to directing cities to more sustainable urban forms.

With buildings and cities lasting centuries and millennia, it is crucial to take into account all of the resource inputs and outputs that occur across their life cycle stages. The [design of buildings](#), the land-use distribution and [the choice of materials](#) could all be less resource-intensive if life cycle models are applied in decision-making. This holistic approach will ensure that reducing energy use or greenhouse gas emissions at one stage of the life cycle, or one scale of the built environment, does not simply result in a shift to another. There is therefore a need to develop the models that can facilitate life cycle decision-making in the built environment to effectively reduce resource consumption.

Recommendation 1: The Australian Government should support cities to make a rapid *system-wide transition* to more sustainable and socially just urban forms, providing strategic leadership, partnership and supportive co-investment and/or incentives in areas such as: housing; mass transport links; energy and efficiency; data analytics and smart systems to underpin transport and land planning. This could be achieved through, for example:

- Investment in planning and decision-making tools and soft infrastructure, such as the urban analytics provided by Australian Urban Research Infrastructure Network (AURIN), to build an evidence base and inform cities' decision-making;
- Support of research that seeks solutions to the challenges of rapidly growing cities, including through existing collaborative vehicles such as CRC-P grants;
- Provision of incentives to align affordable housing construction with other infrastructure development as part of City Deals and Smart Cities;

- **Support of emerging new industries such as prefabricated materials and emerging smart technology research and trials;**
- **Leadership on clean energy policy, energy efficiency and pollution monitoring, and promotion of associated technologies in urban environments and planning processes.**

1(b). Considering what regulation and barriers exist that the Commonwealth could influence, and opportunities to cut red tape.

Transparent, evidenced-based, coordinated metropolitan governance [could lead to much greater effectiveness](#) of strategic planning for Australia's major cities. It is a precondition for a coordinated policy response that could better address climate change, resource insecurity and social inequalities such as housing affordability. Rather than a planning system that relies on individual assessments of development applications by multiple municipalities, which is often inconsistent and stretches local government resourcing, metropolitan governance could reduce red tape and ensure consistency.

The public interest must [prevail in planning](#). Higher densities can add to the liveability of cities, but they must be appropriately regulated in order to avoid tragedies like the recent [London Grenfell Tower fire](#) and prevent inappropriate development that undermines the amenity of established areas. The current imbalance favouring market-led development can also result in a greater dependency on government support in the long term: see, for example, the City of Melbourne's [Heatwave Response Plan](#), which re-appropriates public venues in light of residents' inadequate private cooling capacities.

Recommendation 2: Effective and inclusive metropolitan governance frameworks are required to enable the participation of all levels of government in sustainable urban transitions. These must be transparent, evidenced-based, and well-coordinated.

Increasingly, cities in transition are being shaped by emergent technologies that require immediate regulatory planning responses to avoid inefficiencies due to ad-hoc and post-hoc legislation. One example of this is new transport technologies (autonomous, connected and shared), which are already beginning to disrupt twentieth-century models of transport provision and modelling. These technologies are currently being tested through collaborative Living Labs, such as the University of Melbourne's [intelligent transport systems project](#) in inner Melbourne (in partnership with VicRoads, Public Transport Victoria, local government authorities and the private sector).

Living Labs represent sites in cities where stakeholders come together in order to design, test and learn from social and technical innovation in real time. The evidence base generated in Living Labs and similar trials will be available to inform the development of clear and consistent metropolitan planning. Living Labs also invite the participation of the general public as a core element of their practice, recognising that the consequences of urban transition are difficult to foresee but have significant influence on human well-being. The Living Lab approach acknowledges citizens as 'everyday experts' in fast-changing cities that are themselves large-scale laboratories for change.

Recommendation 3: Australian Government policy settings should facilitate co-investment in social and affordable housing, mass transportation, and social and health infrastructure.

Any review of the Commonwealth's suite of regulatory, legal and institutional roles in the development of cities should be guided by our oldest Australian value: [Caring for Country](#). As demonstrated through the work of the University's Clean Air and Urban Landscapes (CAUL) Hub, in partnership with the Monash

Sustainable Development Institute, Indigenous Australian perspectives have [much to contribute](#) to the development of our cities. This also presents opportunities to learn from the contribution of Indigenous peoples to urban landscapes, before and since European settlement. As noted by Stan Grant in his delivery of the [2016 University of Melbourne Narmm Oration](#), the role of Indigenous Australian professionals in our urban centres to-date has been largely overlooked, but is central to the emergence of a 'new Indigenous middle class'. It is also integral to the future of our cities.

Recommendation 4: Commonwealth regulations relating to development of cities should be guided by Caring for Country principles, drawing on Indigenous expertise in land management and bringing Indigenous Australian culture, history and identity more inclusively into our cities.

1(c). Examining the national benefits of being a global 'best practice' leader in sustainable urban development.

The benefits of being a global 'best practice' leader in sustainable urban solutions are demonstrable and already well-recognised outside Australia. For instance, the UK made 'Future Cities' the theme of one of its seven [Catapult Centres](#), all of which focus on transforming innovation capability and developing state-of-the-art applied technologies to boost Britain's future economic growth. In Australia, there is capability but also significant scope for improvement.

The Australian Government has a powerful role to play in supporting Australia's global reputation for excellence in sustainable urban development practice through targeted investment in education and research, building on our existing strengths. Australian universities are highly ranked globally for the study of architecture, development studies and environmental studies, signifying research excellence as well as a strong pipeline of talented graduates and professionals with ready capability.

Australia is well-positioned to lead the world in a number of new technologies. For example we are home to a number of significant innovations in construction materials, including the use of locally prefabricated timber components and the use of an *in situ* podium to develop the world's largest modular prefabricated tower. These advances allow us to deliver high and medium density housing at significantly lower costs. In combination with Australia's leadership in low-energy buildings, they position our builders, developers, and universities as leaders in sustainable housing construction.

The Australian Government should coordinate efforts between these stakeholders to market a distinctly Australian brand of affordable, sustainable housing design and construction to the world, leveraging existing ARC-funded research such as that undertaken at the [Centre for Advanced Manufacturing of Prefabricated Housing](#).

Success in emerging innovation and technology applications also requires complementary support from long-term policies and investment, such as codes for sustainable building, pathways to transition to a lower carbon emissions energy supply, intelligent and integrated mobility infrastructure, and master planning to accommodate all generations.

Therefore, as part of Government investment in research and research infrastructure, the University recommends that a research and education focus on sustainable urban development should be developed. This could involve the Government being more closely engaged with the University and research sector to map new skills and workforces required and ensure the right education and training are in place.

Recommendation 5: The Australian Government should invest in relevant education and research to support best-practice urban development.

Recent partnerships between the University of Melbourne and the United Nations Human Settlements Programme (UN-Habitat) [UNI Initiative](#) have highlighted the export potential of building on these strengths. The possibility of building up Australia's leadership role in the Asia-Pacific was [emphasised](#) by the United Nations Under-Secretary General, Dr Joan Clos, during his visit to Melbourne in May 2017, who said: 'as a key regional player and a highly urbanised country itself, Australia has the potential to influence urbanisation processes in the Asia-Pacific region in many positive ways'.

The [Sustainable Development Goals](#) set out a global agenda towards 2030, and apply equally to all member states (in contrast with their predecessors, the Millennium Development Goals, which focused on developing nations). For the first time, an urban-focused goal is included, reflecting the projection that by 2030 almost 60 per cent of the world's population will live in urban areas. If Australia is to be a global 'best practice' leader in sustainable urban development, the [Goal 11 targets](#) on making cities inclusive, safe, resilient and sustainable must be exceeded. These include provision of participatory, integrated and sustainable human settlement planning, reductions in the adverse per capita environmental impact of our cities, accessibility of green and public space, expansion of public transport, and supporting least developed countries in building their own sustainable and resilient settlements.

Recommendation 6: In according with its undertakings Australia should aim to exceed the Goal 11 targets of the Sustainable Development Goals, as well as our commitments through the United Nations New Urban Agenda, relating to making cities inclusive, safe, resilient and sustainable.

The University of Melbourne's approach to sustainable and innovative campus/precinct/city development

The University is working with governments to identify and encourage planning tools that introduce controls and levers to grow the knowledge and innovation economy. Through our campus development we are purposefully strengthening linkages between emerging innovation precincts and high-potential employment clusters. A key way we are achieving this is through strategic precinct development that enables physical peer-to-peer contact and collaborative access to high-value research platforms.

The University is also working with State Government on ways to strengthen linkages through public transport (bus, light rail, heavy rail), and active transport (walking, cycling). These will be a catalyst for private sector investment and will support research precincts that are innovative, resilient and healthy.

As part of our campus development, the University is developing assets and partnerships that connect our institution with the 'knowledge city' zone identified by the City of Melbourne and with Victorian Government future industry employment clusters. This will ensure a concentration of innovation activity and anchor institutions, and enable the growth of productive research links between community participants, local businesses and global industry partners.

On our campuses, including in Parkville, the University is installing 2500kW of solar PV arrays to generate energy and applying 'smart city' practices such as location-based wireless technologies to enable targeted building modernisation and energy efficiency. These measures and more are outlined in our [Sustainability Report 2016](#).

2. GROWING NEW AND TRANSITIONING EXISTING SUSTAINABLE REGIONAL CITIES AND TOWNS

2(a). Promoting the development of regional centres, including promoting master planning of regional communities.

The engagement of representatives from Australia's regional cities, including Bendigo, Newcastle and Townsville, at Habitat III in Quito in 2016 demonstrated the growing role of these cities in shaping the international agenda. This trend is also evident in the increasing number of global city-to-city networks in which Australia's regional centres are engaged.

By facilitating knowledge exchanges and peer-to-peer networks, in partnership with other levels of government, academia and the private sector, the Australian Government can support a growing movement of transition towns, productivity growth and sustainable regional development beyond our capital cities. This can build on existing bilateral networks, such as the [Southern Cities Research Centre](#), a multi-institutional, multi-disciplinary research centre with hubs in Brazil and Australia and university, government, private and community sector partners.

Recommendation 7: The Australian Government should continue to facilitate and support global city-to-city networks, to enable knowledge exchange, productivity growth and peer-driven development of regional Australian towns.

2(b). Promoting private investment in regional centres and regional infrastructure.

Private investment in regional centres hinges in part on access to market information. Universities are already partnering with government to provide improved accessibility to national urban datasets, spatial models and data tools, such as through [AURIN](#). To support access to information, Open Data and data sharing initiatives at all levels of government need to be broadened, and must include sensor data (real-time and historic) to foster private investment in knowledge industries and urban innovation. In this regard, the University notes the comprehensive recommendations in the Productivity Commission's final report on *Data Availability and Use 2017* and reiterates our support for nationally-led reforms along these lines.

Additionally, facilitating access to, and the use of, smart technology and planning tools will help grow regional cities that attract and retain a population critical mass. Regional cities become more attractive to inward migration if they have the hard and soft infrastructure that allows people to live and work in those centres – such as connections to cities, information and other businesses.

Innovation and flow-on productivity outcomes can be sparked by collaboration between governments, universities, industry, and citizens in local Living Labs of any scale and between geographies. The University trials Living Lab approaches in a number of campus-based initiatives, including the Melbourne Innovation District (a partnership with RMIT and the City of Melbourne) and the [Carlton Connect Initiative](#). The latter is a planned innovation precinct based on the site of the former Royal Women's Hospital in Carlton. The precinct will be anchored by the University's strengths in science, technology, engineering and mathematics.

The impact of urban initiatives such as Carlton Connect can be readily extended, with available resourcing, to regional centres. For instance, the [Melbourne Accelerator Program](#) in Carlton Connect and industry partner Australia Post are linking with regional councils to deliver the Regional Pitchfest program in 2017, which enables entrepreneurs, artisans and innovators from regional towns to pitch to an expert panel and win support to develop their idea.

The University notes that private investment can be attracted to create impact for regional towns and cities, as seen in the emergence of consulting firms starting to engage in regenerative design thinking. For instance, the [Seacombe West project](#) on Lake Wellington (Gippsland Lakes) is an example of a privately-funded project that is regenerative. In creating a new waterways development this project focuses on [restoring decaying ecosystems](#) through a series of design interventions while creating regional jobs, new infrastructure in terms of road access, energy generation, boating, education and research facilities among others.

This type of development can be supported through early engagement with research teams and Government support for the development of such corporate practices.⁶ The overall benefits to environment, local economy and community has the effect of incentivising private investment in regional centres and infrastructure.

Recommendation 8: The Australian Government should engage the private sector and support policies and programs to enable greater data availability, access to information, smart technology/planning tools, and collaboration between recognised innovation hubs and regional cities and towns.

2(c). Promoting the competitive advantages of regional location for businesses.

For many years, clusters – understood as specialised sectoral agglomerations – have been considered to be a cornerstone of firms' competitive advantage in regional economies. Cluster strategies were embraced by many policy-makers around the world to promote regional and local competitiveness, innovation and growth. Often, however, cluster strategy implementation gave rise to hasty adoption of “best-practices” found in global success-stories, notably that of Silicon Valley, which proved to be ill-suited to the particular needs and requirements of local businesses.

Learning from the limitations of ‘one-size-fits-all’ blueprints for regional innovation, current approaches pioneered in Europe under the paradigm of Smart Specialisation emphasise the importance of place-based innovation and regional strategies. Smart Specialisation strategies build upon existing capabilities, resources and assets in a region as well as inclusive participatory stakeholder governance arrangements to identify opportunities for regional development. Here, competitive advantage for businesses is sought by creating opportunities for entrepreneurial discovery and innovation, including practice-based advancements, social innovation and local skills-sets and expertise. This approach could usefully expand and supplement the high-tech focus in existing Australian Government frameworks like the National Science and Innovation Agenda.

Smart Specialisation in a localised setting has reversed the fortunes of regional locations in the ‘rustbelt’ of the US as well as in Europe. Much has been written on the transformation of some US cities (such as Akron, Ohio) from declining automotive, manufacturing and rubber industry towns to emerging ‘brain belts’, or centres of innovation. By redeploying local skill-sets and physical infrastructure for new

⁶https://www.researchgate.net/publication/318452283_Putting_Regenerative_Development_into_Action_Understanding_the_Decision_Making_Process_of_a_680_Hectare_Regenerative_Project

collaborative purposes and linking previously siloed research/industry/business in a multidisciplinary way, these hubs have created new economies and regenerated towns in decline.⁷

Recommendation 9: In promoting regional excellence and competitiveness, the Australian Government's policy response should emphasise Smart Specialisation approaches of building up existing capabilities, resources and assets with participatory governance.

2(d). Examining ways urbanisation can be re-directed to achieve more balanced regional development.

The sustainability of regional centres will rely on their ability to attract consistent flows of people as well as specialised industry partnership, presence and investment. A clear and ambitious target for public mass transport (shared passenger transport services) to connect regional centres with metropolitan centres, and with each other in less than 30 minutes for 150km distances, is feasible. It would better integrate regional cities with each other and major population centres and energise regional cities as innovation and growth hubs. The role of the Australian Government in this regard must be framed in partnership with State Governments and other key stakeholders.

Recommendation 10: The Australian Government should facilitate co-investment with other governments/stakeholders in public mass transport links between regional centres, and between regional centres and metropolitan centres, to advance regional development.

2(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.

Infrastructure for transport is a clear area for Australian Government policy activity where settlements of reasonable size are developed away from existing infrastructure. Global 'best practice' leaders plan and build transport infrastructure long before new development processes are initiated (see, for example, Vienna's extension of their subway network into greenfield sites). Instructively, leading global examples also set firm performance standards for urban energy, water use and waste management, with enforcement of those standards through rigorous and transparent regulation. By contrast, much of Australia's recent greenfield urban development has been characterised by minimal provision of transport infrastructure mode choice, beyond road networks focused on private car use.

New transport technologies – connectedness of modes, shared forms of mobility, mobility-as-a-service – will be able to contribute to the objectives of sustainable access and mobility by complementing enhanced mass transit for intra-city and inter-city travel. Infrastructure investment needs to reflect this opportunity.

Emerging social technologies in particular have the potential to fill the gap in areas facing a transport infrastructure deficit. They can improve access and mobility immediately and reduce private car use and dependency. Such technologies should cater for shared mobility that is deeply integrated in public transport. The integration should be delivered by mobility-as-a-service technologies, integrating the hierarchy of modes down to the last kilometre, and explicitly including private shared forms of mobility such as ride-, car-, or bike-sharing.

⁷ Antoine van Agtmael and Fred Bakker, *The Smartest Places on Earth: Why Rustbelts Are the Emerging Hotspots of Global Innovation*, Public Affairs, 2016.

This mobility-as-a-service technology, which increasingly must serve a sharing economy as well, needs to consider micro-cost sharing models, and trust measures. Neither of these are required for traditional transport, and thus are not considered in commercial mobility-as-a-service solutions.

The recent report by ITS Australia, [Smart Transport for Australia](#), identified mobility-as-a-service technologies as a key for future urban mobility, and opportunity for innovation in Australia.

Recommendation 11: The Australian Government should consider the role of new technologies, including those that underpin evolving modes of mobility, and essential infrastructure as threshold investments for establishing new settlements.

APPENDIX A: CONTRIBUTING AUTHORS

This submission was developed through a collaboration between the University of Melbourne's Chancellery, the [Faculty of Architecture, Building and Planning](#), the [Melbourne School of Engineering](#), the [Faculty of Arts](#), and the [Melbourne Sustainable Society Institute](#).

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