Sustainability Research Institute
C/- Clout Advisory
Suite D6 The Promenade
319-321 Harbour Drive
Coffs Harbour NSW 2450

Department of Infrastructure, Transport,
Regional Development, Communications and the Arts
GPO Box 594
Canberra City ACT 2601
Emailed to: urbanpolicyinput@infrastructure.gov.au

A National Urban Policy for Australia - Submission

Sustainability Research Institute (SRI) is pleased to provide feedback on the development of a National Urban Policy (the Policy) which outlines the Australian Government's goals and objectives to enable our urban areas to be liveable, equitable, productive, sustainable and resilient.

SRI Background

SRI was established to conduct scientific research, education, and environment activities to promote sustainability, integrity, equality, diversity and longevity for the benefit of present and future generations.

SRI currently has three focus areas linked to its charitable objects:

- increase security and safety of communities through promoting self-sufficient resilience as a primary means to navigate the extreme events of the coming decades.
- explore new ways of living in the 21st century that create greater connection between human beings, community, and nature
- establishment of Australia's first Organic Regenerative Agriculture Research Institute and promoting the expansion of both organic and regenerative farming and land stewardship to increase food security for Australia.

SRI aims to integrate these focus areas to contribute to creating a new model of Australian urban and regional development, and environment, which will endure through the 21st Century. Underpinning its approach, is the analysis and modelling of complex systems to enhance delivery of beneficial outcomes in the context of an increasing global polycrisis that intersects economic, ecological, scientific, social, and cultural factors.

SRI notes its interest in any further stakeholder engagement, research and education opportunities related to progressing the sustainable settlement agenda in Australia.

We thank you for your consideration of SRI's submission.

We confirm that SRI's submission can be made public. For any enquiries or further information, please contact Bridie Guy on sribridie@gmail.com.

SRI Response to the draft National Urban Policy (the Policy)

Our submission includes:

- Section 1 – presents a complex systems-based response to the challenges Australian cities and regions will face in the 21st Century.
- Section 2 - responds to the specific issues and potential actions outlined in the draft National Urban Policy (the Policy).

Section 1 - A complex systems-based outcome to achieve the Policy goal: That our urban areas will be liveable, equitable, productive, sustainable, and resilient through the coming decades.

Achieving the Policy goals is a complex challenge in the context of a well-documented state of global polycrisis, i.e., multiple entrenched crises that are interconnected that addressing one can cause unintended consequences in others. For example, solving financially based inequality is one often stated wicked problem, where wealth division becomes ever more extreme because it is structural and entrenched in property and financial markets, and no easy solutions present. And another example, productivity is being revolutionised through AI, which opens the issue of the impact to people and small businesses.

In short, to deliver the Government's aims for urban areas that are liveable, equitable, productive, sustainable, and resilient through the coming decades means we must develop the capability to apply the tools of complex systems science to inform best policy outcomes, investment, and urban design in response to the growing polycrisis.

The polycrisis is characterised by an *"array of grave, long-term challenges, including climate change, biodiversity loss, pandemics, widening economic inequalities, financial system instability, ideological extremism and an escalating danger of nuclear war*[1]".

SRI is currently building capability to research, educate, and contribute to the creation of a new foundational model that is designed to provide resilience in the face of the above current global risk factors and in addition the risks from AI:

- The significant loss of jobs to Artificial Intelligence (AI) resulting in loss of identity (as in lives without purpose or meaning), loss of work and social relationships, loss of freedom to financially support one's life and a family of one's own, all core factors in human happiness.

[1] https://cascadeinstitute.org/polycrisis/

- Loss of jobs means loss of income and therefore on-flow effects to multiple industries (superannuation, retail, tourism etc), also reduced federal and state government revenue from taxation.
- Potential AI cybersecurity events which could affect entire cities (e.g., targeting of centralised infrastructure either from accidental or malicious cause)
- The inherent risk embedded in AI super intelligence itself, because of the billions being invested in Superclusters, a risk which is constantly being reassessed, cannot be ignored, and must be planned for[2].
- Exposure to financial crash, which is inevitable according to US SEC chairman Gary Gensler in the next decade, will be caused by AI[3]. This financial crash will be unique due to the ubiquitous presence of AI in every global system, resulting in a complex system cascade, i.e. a cascade of multiple global systems simultaneously. As a result, it may take considerable time, even years, to reinstate a healthy global economy.
- Potential for substantial loss in value of Australian superannuation funds resulting from a market crash and its prolonged effects.
- Risk that many jobs and sources of income, and current commercial, economic, and financial relationships are disrupted for an indeterminate period of time.

There is a concern that continued reliance on traditional development models and dominant urban structure and design poses a risk to the resilience of Australian cities and regions in the face of this growing polycrisis.

The century old model of the city and satellite suburbs, which under immense projected population pressure have now evolved into the megacity (e.g. of two or three internal "cities" as in the case of Sydney) not only lacks the resilience needed due to its population and infrastructure concentration but could also expose huge numbers of people to mega events on a catastrophic scale in the coming decades. For important security reasons a new model should be developed in line with the reality of the polycrisis context currently facing Australia and expected to continue to intensify over the next few years and decades.

The global polycrisis is a complex system that requires complex systems risk analysis, solutions and whole of system outcomes

Creating policy solutions that can respond effectively to the polycrisis require a complex systems approach that enables consideration of the interconnected crises, their interactions and to model outcomes.

[2] https://www.forourposterity.com/situational-awareness-the-decade-ahead/
[3] https://www.politico.com/news/2024/03/19/sec-gensler-artificial-intelligence-00147665#:~:text=Gensler's%20warning%3A%20Unchecked%20AI%20could,a%20sliver%20of%20the%20sector

Stage One: Risk modelling

The Cascade Institute's *Introduction to Polycrisis Analysis* 2024 report[4], describes how relationships between stresses trigger events and crises across two or more interacting systems; suggesting that these can combine to create four broad causal pathways that "provide a 'grammar' for mapping the distinct system interactions that can form a polycrisis".

Therefore, as a first priority for modelling future urban planning solutions, complex systems risk analysis of the above factors must be done in a thorough and comprehensive manner.

Stage Two: Formulating, modelling and simulating complex systems solutions

As a result of identifying the complex interactions of potential threats and risks, an innovative solution space is created in which entirely new concepts can emerge that can then be formulated, modelled and simulated to assess which outcomes are potentially more beneficial than others.

From a complex systems perspective, decentralised networks of self-reliant, economically self-sufficient entities are key to risk reduction and resilience, particularly in view of AI, economic, financial and security risks.

So, what could this look like in an urban planning policy context?

Briefly, it could be a network of autonomous resilient economically self-sufficient but interconnected urban nodes (cities and towns) throughout Australia, that should one or two nodes be radically stressed, or even become dysfunctional, the rest of the network will survive intact.

Because Australia is one of the most climate change exposed countries in the world, each urban node would have the responsibility to protect, care for and steward the surrounding forests, farmlands, and conservation areas, such that, should there be fire or flood, the local populations can be easily mobilised to be self-sufficient in their emergency management response. In the event of a threat to food security or other basic needs such as energy, each individual node can rapidly deploy its citizens to mobilise for the supply of food or energy or other needs. In the event of a financial or cybersecurity event, nodes that are dysfunctional do not cause the paralysis of the whole instead they can be firewalled off and dealt with.

Australia is a big country, there is plenty of space and there are more reasons than ever, most importantly security reasons, for the population, the physical and

[4] https://wfabhmdrpib5-u5525.pressidiumcdn.com/wp-content/uploads/2024/04/Introduction-to-Polycrisis-Analysis-Guide.pdf

economic infrastructure and commercial production to not only be distributed throughout a decentralised complex systems network but also to operate within a model that is based on a new systems architecture, one that embeds all the goals of the government's Urban Policy into its foundational structure.

If Australia supported this research an entirely new model of urban planning and policy could emerge, which would lead the world and deliver an innovative model that could be applied in many contexts internationally and endure well into the 21st Century.

SRI recommendation 1

That the Australian Government include in the Policy a commitment to invest in research and modelling in complex systems that can inform integrated urban development responses to the polycrisis for Australia that deliver sustainable, resilient, productive, equitable and liveable urban and regional areas fit for the future.

We realise that this represents a significant departure from the proposed approach in the draft National Urban Policy and SRI welcomes further discussion and potential collaboration on this exciting initiative.

Section 2 – Response to issues and potential actions in draft National Urban Policy

SRI provides the following additional commentary on the government's proposed approach outlined in the draft Policy to propose additional actions to realise the aim of resilient urban areas.

<u>Resilience action – The circular economy in food systems</u>

The Policy promotes the National Circular Economy Framework initiative, which will set the strategic direction for a national effort across the regulatory, policy, research and market-based landscape, including consideration of opportunities to support circularity in urban planning, construction and manufacturing.

SRI encourages consideration that the circular economy initiative needs to be broader and consider whole of system circularity, including circularity in our food systems.

According to the Ellen Macarthur Foundation, *"changing our food system is one of the most impactful things we can do to address climate change, create healthy cities, and rebuild biodiversity. The current food system has fuelled urbanisation, economic development, and supported a fast-growing population. However, this has come at an enormous cost to society and the environment[5]".*

The Ellen Macarthur Foundation suggests that the true cost of the current approach to food production must be examined, and the catalytic role of cities explored to understand how they can transform the global food system through:

- *"Sourcing food grown regeneratively, and locally where appropriate*
- *Designing and marketing healthier food products*
- *Making the most of food[6]"*

SRI recommendation 2

That the Australian Government promote research programmes into circular economies, and specifically how they can promote organic and regenerative farming practice, including funding rapid transition opportunities that create new jobs and increase real economy resilience.

Resilience action – Re-localising supply chains in the construction industry

The draft Policy identifies that a circular economy approach to managing supply chains is an important contributor to resilience.

This is significant considering the Australian Government target to deliver 1.2 million new well-located homes over the next five years. There are a range of market factors which are likely to impede housing delivery and impact the construction industry including supply chain disruptions and tearaway inflation in materials[7].

The re-localisation of supply chains offers the opportunity for multiple benefits, including:

- De-risking supply chains to unexpected shocks across international supply chains
- Creating new capacity for local jobs by increasing the capacity to manufacture building materials onshore
- Contribute to creating a circular economy and reducing carbon emissions associated with transport miles.

[5] https://www.ellenmacarthurfoundation.org/food-and-the-circular-economy-deep-dive
[6] https://www.ellenmacarthurfoundation.org/food-and-the-circular-economy-deep-dive
[7] https://www.afr.com/property/commercial/grimmest-in-45-years-building-collapses-to-get-worse-20230424-p5d2xp

Among the possible actions to support this are:

- Investing in pre-fabrication technologies to deliver homes more efficiently with less waste.
- Investing in natural materials which can be grown, manufactured and scaled up on shore.
- Supporting development and capacity building regarding the use of natural materials.
- Developing clear standards for climate resilient housing in a range of climatic contexts.

SRI recommendation 3

That the Australian Government consider a range of actions to re-localise supply chains in the construction industry and support the development of climate resilient housing, and in the process establish the next generation of sustainable and circular economy manufacturing production capital.

Resilience action – Research opportunity into scalable natural building materials

Industrial hemp represents a significantly opportunity to sequester carbon.

According to materials scientist at Cambridge University's Centre for Natural Material Innovation, Industrial Hemp can capture carbon twice as effectively as forests, absorbing between 8 to 15 tonnes of CO2 per hectare of cultivation while forests typically capture 2 to 6 tonnes of CO2 per hectare per year depending on a variety of factors[8].

The University of Technology Sydney is currently undertaking research into the creation of an integrated, prefabricated panel that uses both hempcrete and green wall technologies and developing a novel low-carbon binder (the material that binds hempcrete together) as an opportunity to develop alternatives to highly carbon intensive construction materials such as concrete[9].

In addition to carbon sequestration, the significant attributes of hemp as fast growing, durable, fire and pest resistant, moisture resistant, breathable, zero toxicity as well as providing thermal mass and insulation[10] suggest that this is a material which warrants further research and may present an important solution for climate resilient housing into the future.

[8] https://www.dezeen.com/2021/06/30/carbon-sequestering-hemp-darshil-shah-interview/
[9] https://www.uts.edu.au/research-and-teaching/research/explore/impact/hemp-mix-ultra-green-walls
[10] https://www.yourhome.gov.au/materials/hemp-masonry

SRI recommendation 4

That the Australian Government undertake further research into industrial hemp and other natural building materials including examination of their beneficial properties and how they can be deployed at scale such as through prefabricated solutions.

That the Australian Government explore barriers and solutions to enabling their deployment in mainstream construction practice.

Resilience action – Wetland protection

The draft Policy identifies the important role of nature-based solutions such as wetland restoration in contributing to greater resilience.

While Australia's 67 wetlands of international significance are protected through the Ramsar Convention, Ramsar expert and Australian National University professor Jamie Pittock suggests that many more sites across Australia are eligible for Ramsar protection however, *"Federal government has a policy, not law, of only listing wetlands with the support of the relevant state government," he says. "[But] state governments have not supported new designations, largely concerned at Commonwealth regulation of the sites*[11]"

Wetlands also play an important role in ensuring social and economic resilience to disasters caused by natural, biological, and technological hazards, and which are further exacerbated by climate extremes and slow-onset events under the Sendai Framework for Disaster Risk Reduction 2015-2030[12].

SRI recommendation 5

That the Australian Government revise its policy to enable further listing of Ramsar sites which meet the eligibility criteria.

That the Australian Government provide stronger protections for nationally listed wetlands, to prevent new and reduce existing disaster risks and assist Australia in meeting its obligations under the Sendai Framework for Disaster Risk Reduction 2015-2030.

[11] https://www.abc.net.au/news/science/2024-04-22/developers-keep-trying-to-build-in-australian-wetlands-toondah/103312736

[12] https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

Resilience action – Implementing the EPBC Review

The importance of the natural environment and biodiversity is acknowledged in the draft Policy, including through the following existing initiatives:

- *Environment Protection and Biodiversity Conservation Act (EPBC) 1999* reform to deliver better protection; aligning regional plans with the new National Environmental Standards to guide decision-makers, developers and communities on biodiversity protection requirements in specific locations; and
- a National Biodiversity Strategy and Action Plan to set national targets to halt and reverse biodiversity loss nationally and promote high-quality green and blue spaces in densely populated urban areas.

SRI acknowledges that the independent review of the *EPBC Act 1999* will play an important role in protecting the environment, and notes that the review was completed, and the final report was published on 28 January 2021[13].

The final report identifies that the 38 reform recommendations will be implemented in 3 tranches:

1. Immediate reforms
2. A second tranche of reform completed within 12 months; and
3. A third and final tranche completed within 2 years.

The report summary states:

"The 38 recommendations in this review amount to substantial and necessary reforms to reverse the current state of environmental decline. They will enable Australia to meet future development needs in a sustainable way and will support long-term economic growth, environmental improvement and the effective protection of Australia's iconic places and heritage for the benefit of current and future generations[14]."

While the final report did not specify a precise date for the revised legislation to come into effect, three and a half years after the final report publication and 18 months after the intended implementation of the final tranche of recommendations, would appear to represent a substantial delay and urgent action is required to, in the government's own words "reverse the current state of environmental decline".

[13] https://epbcactreview.environment.gov.au/resources/final-report
[14] https://epbcactreview.environment.gov.au/resources/final-report/key-messages

SRI recommendation 6

That the Australian Government implement the Environment Protection and Biodiversity Conservation (EPBC) Review as an urgent priority.

Objective 3 of the draft Policy seeks to ensure "our urban areas are safe" and notes that urban safety includes enhancing climate resilience and disaster preparedness.

The draft Policy identifies the government's initiative on nationally agreed principles for disaster and climate resilience to provide a national approach to disaster and climate risk considerations in land use planning decisions, based on agreed principles. The draft Policy identifies that the New South Wales Government is leading the development of a framework for and guidance on these principles and that this work will be progressed through the Planning Ministers' meeting.

In July 2023, planners, builders and insurers united to call for urgent planning reform to ensure that state governments overhaul their approach to land use planning to ensure no more homes are built without regard to risk on flood plains. Andrew Hall, CEO Insurance Council of Australia indicated that *"the flood events of 2022, with almost 300,000 disaster-related claims costing around $7 billion, has driven up premiums and has resulted in affordability constraints for those at highest risk. Without insurance, homeowners likely can't access a mortgage, and that is the wrong direction for our country[15]".*

SRI recommendation 7

That the Australian Government ensure development avoids or minimises exposure to known and foreseeable inland and coastal flood hazards to protect future residents and homeowners and reduce cost exposure to insurance and national and state budgets.

Regional Investment Framework

The draft Policy recognises the important role the regions play in accommodating future urban development and investing in the regions, through the Australian Government's Regional Investment Framework which seeks to provide targeted investment for sustainable growth which enhances liveability and prosperity in the regions driven by the ambition for "no one held back and no one left behind"[16].

[15] https://masterbuilders.com.au/planners-builders-and-insurers-unite-to-call-for-urgent-planning-reform/

[16] https://www.infrastructure.gov.au/territories-regions-cities/regional-australia/regional-investment-framework

SRI welcomes the Australian Government's new approach to regional investment which provides for a transparent and evidenced based approach supported by data and research, which will invest in skills, education, training, and local leadership capacity to grow the regions[17].

SRI recommendation 8

Legislate a mechanism to ensure the long-term funding for intergenerational infrastructure and enable the sustainable growth of the regions over the next 50-100 years, which leverage the monetary sovereignty of Australia and its capacity to issue the funds required to deliver infrastructure requirements in a planned and structured way that is protected from short-term changes in government policy and political cycles.

Enabling innovation

The draft Policy recognises the importance of improving the evidence base to underpin urban innovation.

SRI recognises that to deliver on the government's ambitions outlined in the draft Policy, there is a need for locations for innovative solutions to be piloted and demonstrated which may not be permitted by standard development processes.

SRI notes that investment in research is declining and that increased investment in cutting edge research will be key to Australia recognising its competitive strengths to plan for equitable, productive, sustainable and resilient urban areas into the future.

SRI recommendation 9

That the Australian Government lead the creation of innovation zones, which engage all levels of government in certain locations or regions to provide a special environment to achieve productive gains and generate new value by enabling demonstration of contemporary development approaches and building of future ready developments that deliver advances in urban settlement outcomes.

That the Australian Government consider increased investment in applied research for innovative models to enable Australia to translate innovative policy, international best practice, and new delivery mechanisms operating in other jurisdictions, and to adapt and demonstrate their application fit for the Australian context.

[17] https://www.infrastructure.gov.au/department/media/publications/regional-investment-framework-australian-governments-approach-supporting-strong-and-sustainable