

Harnessing the Potential of Biophilic Urbanism in Australian Cities

A response to the impacts of climate change

The concept of biophilic urbanism is based on the application of E. O. Wilson's concept of 'biophilia' that suggests humankind have an innate affinity with nature, something that Wilson suggests begins in early childhood and cascades into cultural and social patterns. Studies show that a connection with nature tends to lead to reductions in depression, anger, tension and fatigue. Having been applied to a number of aspects of psychology and interior design, the concept is now receiving strong interest as an urban design principle, not only for the human well being benefits, but a range of direct and in-direct economic and environmental benefits especially in cooling cities as climate change-induced heat island effects increase. With our connection to nature steadily reducing in cities around Australia the appeal of a more biophilic city is likely to reduce the sense of population pressures as our cities grow. There is a significant gap in research, strategy and policy development to effectively harness the potential of biophilic urbanism.

This research project will identify operational approaches to filling such gaps and harnessing the potential of biophilic urbanism in Australian cities. Research suggests that the increased use of biologic elements in urban design can lead to a range of benefits, such as reducing the urban heat island effect and improving thermal comfort, reducing indoor temperatures in buildings and homes leading to reduced cooling requirements, improving a range of direct and indirect social and economic outcomes. This research forms part of an industry collaboration project as part of the Sustainable Built Environment National Research Centre 'Greening the Built Environment' Program. The program is led by Professor Peter Newman (Curtin University Sustainability Policy Institute) and the Biophilic Urbanism project is led by Charlie Hargroves (Curtin) and Dr. Cheryl Desha (QUT Faculty Built Environment) and involves a range of industry partners including the Western Australian State Government, Parsons Brinkerhoff, PlantUp, and Townsville City Council.

Next steps

Following the literature review and stakeholder engagement to investigate the elements of biophilic urbanism, Australian and international case studies will be considered to develop an economic framework considering the costs and benefits of biophilic urbanism. Local case studies will be considered to provide information relevant to the Australian context and climate.

Following this, a planning and policy framework will be developed to inform the application of biophilic urbanism in Australian cities, including: potential building and infrastructure practices and guideline considerations, strategies to capture economic benefits, the potential to increase urban biodiversity, and the potential to create more inviting and liveable urban public spaces. Local and international case studies, a review of existing literature, and stakeholder engagement will be used.

If you would like to be involved, please contact the research team.



Sustainable Built Environment National Research Centre
Greening the Built Environment, Project 1.5
www.sbenrc.com.au

Project Leader: Charlie Hargroves, Curtin University
Phone: 0407 071 729
Research Team Leader: Angela Reeve, QUT (PhD candidate)
Phone: 0415 175 930
University Ethics approval number: 1100000750



Project Rationale:

Biophilic urbanism has the potential to make significant contributions to a range of national, state and local government policies related to **climate change mitigation and adaptation:**

- reducing urban energy consumption,
- enhancing urban biodiversity,
- improving resilience to natural disasters,
- improving worker productivity, and
- responding to pressures related to densification and revitalisation of cities.



Urban nature as architecture: Brisbane's Southbank

Project aims:

1. **Identify key aspects of Biophilic Urbanism** and undertake an assessment to identify the potential for application in Australian Cities.
2. Consider the **costs and benefits** associated with Biophilic Urbanism in Australian Cities, considering economic, social and environmental benefits of combining biophilic design with built environment planning and design.
3. Develop a **planning and policy recommendations** to inform the application of Biophilic Urbanism in Australian cities, considering potential barriers, limitations, and constraints.



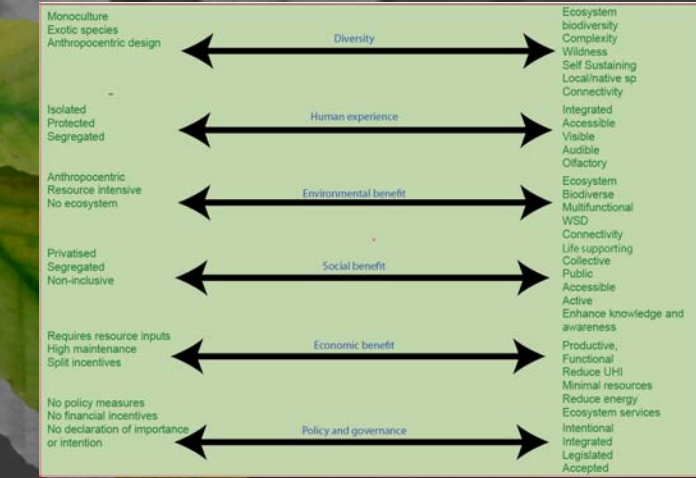
Other examples of Biophilic Urbanism include: Green walls (Above: Longwood Gardens Green Wall - the largest green wall in North America, Source: Lushe, 2011.; and below right: Sydney Airport); Community Gardens (below left: Brisbane's Northey Street City Farm Source: Northey Street City Farm., 2011); Water Sensitive Urban Design: Wharf 11, Sydney



Findings of literature review & stakeholder engagement



This table describes human and environmental experience and benefit of Biophilic Urbanism



This schematic shows a number of emerging dimensions of biophilic urbanism

Enablers	Disablers
<ul style="list-style-type: none"> - Innovative & adaptive frameworks, and building regulation flexibility - Leadership in planning authorities, & industry champions - Social pressures - community forums, grassroots movements - Local / State Gov policy able to be informed by BU metrics, - Demonstration sites & best practice case studies - Community gardens and associated community groups, - Corporate donations and sponsorship, - Supportive local governments that are connected to the needs of community - Availability of vacant lands to be used as biophilic elements, and - Growing level of education, experience, and exposure in nature in cities. - Economic analysis including current externalities and intangible benefits - Valuation techniques for buildings that recognise green features - Decision makers are human with innate biophilic tendencies - Creative leadership - Transparency in design and decision making 	<ul style="list-style-type: none"> - Planning frameworks and approval processes - Lack of quantitative/financial analysis of BU - Cultural stagnation and persistent mindset of the cost of 'green' - Control issues (e.g. at local government internal struggles about control and how things happen), - Lack of info at the level of the decision makers - Lack of research on local, holistic systems - Benefits/Costs fragmented, (split incentives) - Lack of integrated planning - Lack of rigorous cost benefit analysis using a systems approach - Level of social disconnection to natural environments - Long or uncertain payback periods - Competition for space - Short term focus of decision makers - Lack of consequences for poor design - Inertia in traditional thinking and design - Traditional economic theories and valuation methods

This table describes key enablers and disablers of biophilic urbanism in Australian cities, based on findings of SBEnrc Stakeholder Workshops hosted by the Western Australian Department of Finance (Perth) and Parsons Brinkerhoff (Brisbane) and facilitated by Curtin University and QUT, 2011.