

## Accepted Manuscript

Title: The distribution of green walls and green roofs throughout Australia: Do policy instruments influence the frequency of projects?

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PII: S1618-8667(16)30502-7  
DOI: <http://dx.doi.org/doi:10.1016/j.ufug.2017.03.026>  
Reference: UFUG 25886

To appear in:

Received date: 15-11-2016  
Revised date: 17-1-2017  
Accepted date: 30-3-2017

Please cite this article as: Irga, P.J., Braun, J.T., Douglas, A.N.J., Pettit, T., Fujiwara, S., Burchett, M.D., Torpy, F.R., The distribution of green walls and green roofs throughout Australia: Do policy instruments influence the frequency of projects?, *Urban Forestry and Urban Greening* (2017), <http://dx.doi.org/10.1016/j.ufug.2017.03.026>

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1 **The distribution of green walls and green roofs throughout Australia: Do policy**  
2 **instruments influence the frequency of projects?**

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15 **Abstract**

16 Green roofs and green walls are gaining popularity as a means of mitigating a range of  
17 environmental impacts associated with urbanisation. Although this technology has been  
18 widely implemented in some parts of the world, uptake within Australia has been slow. This  
19 might be attributed to a range of factors, including a lack of awareness; a scarcity of urban  
20 green infrastructure policies; a lack of examples to give urban designers confidence in the  
21 technology; and perhaps also a limited number of professionals capable of installing green  
22 infrastructure systems. This paper researches the distribution of green wall and green roof  
23 projects in urban Australia, and the possible influence of local government policies and  
24 guidelines that have been designed to promote the increase of green infrastructure in  
25 Australia's cities. Differences were observed among project distributions and frequency, both  
26 within and between cities. In addition, councils that offered policy instruments and guidance  
27 tended to have more green wall and green roof projects than those which have no such  
28 policies in place. Compared to successful examples seen internationally, further policy  
29 implementation in Australia could increase the frequency of green infrastructure projects,  
30 indicating that governmental influence may play a substantial role in encouraging green  
31 infrastructure installation.

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33 **Keywords** Green infrastructure; green walls; green roofs; sustainable development; urban  
34 vegetation

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36 **1. Introduction**

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38 The majority of the world's population now lives in cities, and urban populations are  
39 densifying and urban areas are expanding faster than any other land-use type (United Nations  
40 2015; Dallimer, 2011). Urbanisation has been linked with a range of negative environmental  
41 impacts, such as increased air pollution, stormwater runoff, and urban heat island effects, plus  
42 greatly reduced vegetation areas and biodiversity (Berndtsson, 2010; Shwartz et al., 2014;  
43 Łopucki and Kiersztyn, 2015). These impacts also have secondary effects, such as increased  
44 physical discomfort and health problems, and a greater demand for building cooling, leading  
45 to increased energy consumption (Pantavou et al., 2011; Santamouris, 2015; Wang et al.,  
46 2015). Consequently, there is a requirement for sustainable practices to be integrated into  
47 new and existing developments, to assist in mitigating the detrimental effects of urbanisation  
48 (Berardi, 2012).

49 Urban forestry, green infrastructure (GI) and, in particular, living greenery integrated  
50 into building design, including green wall and green roof (GWGR) projects, are gaining in

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