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

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Abstract

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

Keywords Green infrastructure; green walls; green roofs; sustainable development; urban vegetation

1. Introduction

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

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