Researching the air pollution filtering effects of green walls

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Professor Rob MacKenzie (/staff/profiles/gees/mackenzie-rob.aspx), in collaboration with researchers from Lancaster University, has produced a paper which suggests that by 'greening up' our streets a massive 30% reduction in pollution could be achieved.

The researchers have found that, because pollution cannot easily escape street canyons, 'green walls' of grass, climbing ivy and other plants have a better opportunity than previously thought to act as an air pollution filter. Instead of reducing pollution by 1 or 2%, reductions of more than ten times this magnitude could be achieved, according to this study.

Using a computer model that captures the trapping of air in street canyons, as well as the hundreds of chemical reactions that can affect pollution concentrations, the research team could distinguish the effects of plants in canyons from those of plants in parks or on roofs. Green walls emerged as clear winners in terms of pollutant removal. Street trees were also effective, but only in less polluted streets where the tree crowns did not cause pollution to be trapped at ground level.

The research emerges from the broader interdisciplinary study of resilient urban regeneration in the EPSRC-funded Urban Futures project, led by Chris Rogers of Civil Engineering and which involved researchers from across GEES including Rob MacKenzie, Austin Barber, Julie Brown, John Bryson, James Hale, Chantal Hales and Jon Sadler.

Rob MacKenzie is now taking the work to stakeholders, including the Singapore government, West Midlands city councils, Farnham Town Council, Transport for London, and private companies in the green infrastructure sector.

As well as forming the basis of a report on BBC Radio 4's Costing the Earth programme, broadcast Wednesday 14 September 2011, a **news article describing the research has been featured on the BBC News web site (http://www.bbc.co.uk/news/science-environment-18873391)**.

Reference

Pugh, T. A. M., A. R. MacKenzie, J. D. Whyatt, and C. N. Hewitt (2012). "The effectiveness of green infrastructure for improvement of air quality in urban street canyons." Environmental Science & Technology, 46 (14), 7692-7699. DOI: 10.1021/es300826w.

Listen to the podcast

Professor Rob Mackenzie has featured in a podcast relating to this research. Listen to the podcast **'Greening up our cities: tackling air pollution with plants (MP3 - 13.3MB)' (/Audio/news/Prof-Rob-MacKenzie-podcast.mp3)**
Read full transcript (/accessibility/transcripts/Prof-Rob-MacKenzie.aspx)

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