



HOW MICRO-DOSES OF NATURE HELP OUR HEALTH AND CLIMATE

Urban greening is emerging as a key part of the solution to some of our major health and environmental challenges. Providing nearby nature offers a surprising range of co-benefits

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Cities around the world are facing major challenges. Industrialised nations are experiencing epidemics of chronic diseases like diabetes, cardio-vascular disease and dementia, and it would be all too easy to give up hope of finding solutions.

But there is positive news.



Elevated temperatures and reduced air quality can trigger health concerns like heat stress and asthma.
Picture: Getty Images

A growing body of research reveals that spending time outdoors in and around trees, parks and gardens can boost our physical and mental health and help prevent a wide range of diseases.

And just as multiple short bursts of physical activity can have the same benefits as one long exercise session, [micro-doses](https://www.sciencedirect.com/science/article/abs/pii/S0272494418303013) (https://www.sciencedirect.com/science/article/abs/pii/S0272494418303013) of nature throughout the day really add up.

At the same time, climate change is altering everyday lives. Elevated temperatures and reduced air quality can trigger health concerns like heat stress and asthma.

Australia is expected to endure more extremely hot days in the future, making heatwaves like the one experienced in Melbourne in January 2014 more common.

[Studies](#)

(https://www.annualreviews.org/doi/full/10.1146/annurev-publhealth-032013-182443?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dpubmed)

across multiple decades outline the contributions of urban greening to improving our well-being and reducing urban heat. But we found little work was being done to translate research findings into practical interventions that communities can incorporate into their local environments.

We found a need for practical evidence-based solutions that can be used by the people responsible for managing our urban spaces, including local government, developers or managers of large institutional campuses.

We have assembled a set of [eight scalable evidence-based urban greening interventions](#)

(<https://www.mdpi.com/1660-4601/16/21/4241>) designed to increase urban green exposure during a typical day.



Spending time outdoors in and around trees, parks and gardens can boost our physical and mental health. Picture: Shutterstock

These include time spent indoors and traveling between buildings and casual time outdoors. These guidelines emphasise the use of city trees, as science shows that large scale vegetation offers the best benefits.

These interventions, outlined below, can be used by anyone interested in improving quality of life at the community and neighbourhood scale.

1. *View from Within*

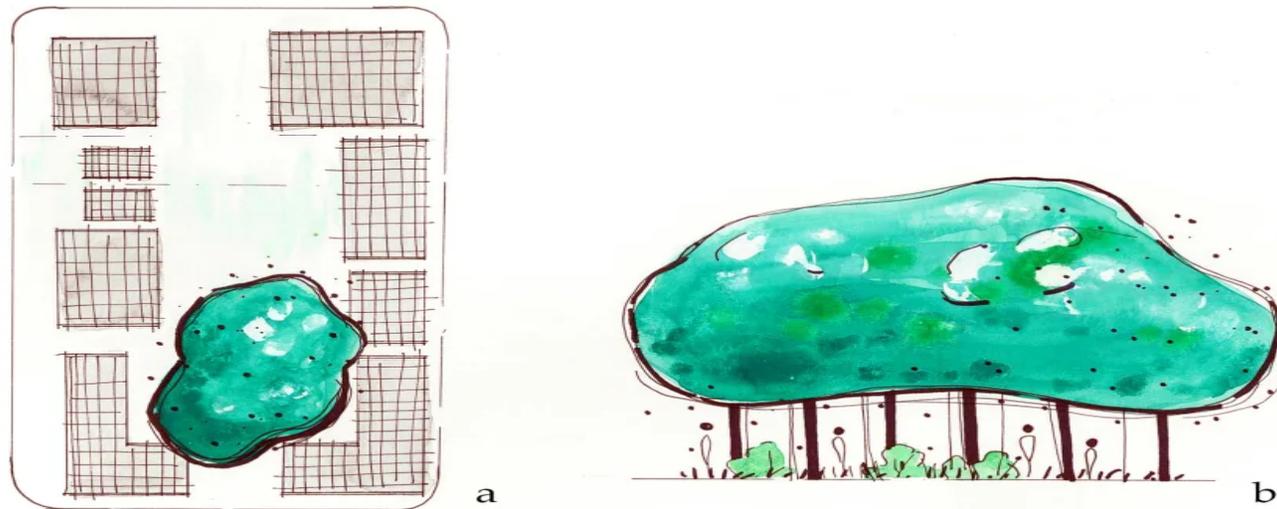
Consider the view from *within* the building when implementing urban greening. [Studies](https://www.sciencedirect.com/science/article/abs/pii/S0272494415000328) (https://www.sciencedirect.com/science/article/abs/pii/S0272494415000328) show that green views from buildings have restorative benefits. This intervention emerged from several [psychological studies](https://journals.sagepub.com/doi/abs/10.1177/0013916514552321) (https://journals.sagepub.com/doi/abs/10.1177/0013916514552321) that show reduced stress or increased focus when viewing green through windows. Greenery that shades windows will also reduce a building's energy use.

2. *Plant Entrances*

Does the building entrance have a welcoming green frame? Green entrances allow all building visitors to experience some nature in their day. Studies also show that greenery near entrances increases social interactions.

This intervention was inspired by [studies](https://www.ncrs.fs.fed.us/pubs/jrnl/2003/nc_2003_kuo_001.pdf) (https://www.ncrs.fs.fed.us/pubs/jrnl/2003/nc_2003_kuo_001.pdf) on the social benefits of greenery near entrances in social housing projects. It was also inspired by the concept of [Eco-acupuncture](https://www.researchgate.net/publication/271613998_Eco-Acupuncture_Designing_and_facilitating_pathways_for_urban_transformation_for_a_resilient_low-carbon_futures) (https://www.researchgate.net/publication/271613998_Eco-Acupuncture_Designing_and_facilitating_pathways_for_urban_transformation_for_a_resilient_low-carbon_futures) – the idea that small interventions can make large ripples through urban fabric.

Green entrances can also clean and cool air before it enters a building.



Graphic: Design scheme to incorporate a shaded refuge, providing enough green shade to protect people during an extreme heat event. Image supplied

3. *Bring Nature Nearby*

Are there spaces near your building where people can relax while surrounded by plants? Nearby greenspaces provide opportunities for those with limited mobility or time to take a break near nature. This intervention was inspired by recent [studies](https://www.ncbi.nlm.nih.gov/pubmed/25014041) (https://www.ncbi.nlm.nih.gov/pubmed/25014041) showing more positive birth outcomes from nature close to home.

Having small green spaces throughout a community can also help manage local stormwater.

4. *Retain the Mature*

When designing a landscape, it is important to keep older trees that provide aesthetic and emotional benefits. [Studies](https://academic.oup.com/jof/article/103/8/396/4598678) (https://academic.oup.com/jof/article/103/8/396/4598678) show that people have a heightened response to large, mature trees.

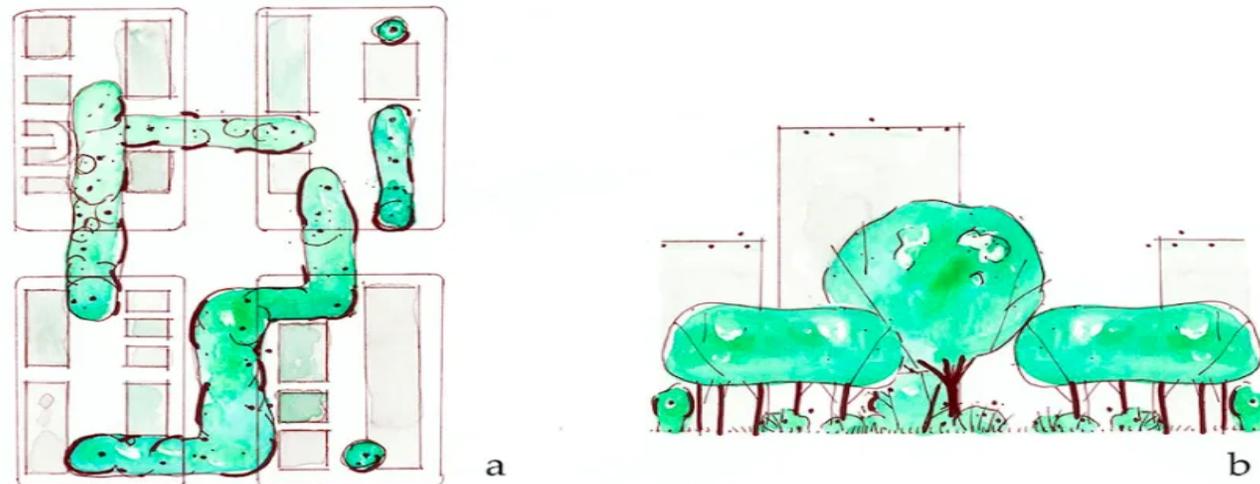
This intervention was inspired by our ongoing research in a new suburban community where residents spoke about the loss of mature trees, and how they felt they hadn't "made it" as a community because their neighbourhood lacked large canopy trees.

Large trees also provide exponentially higher ecosystem services like air filtering, cooling and CO2 removal, than small trees.

5. Generate Diversity

Have you measured the diversity of your landscape plants? Diverse plantings are more resilient to changes in climate and to new pests and diseases. Planting a diverse range of tree species protects against forest health risks and also provides aesthetic benefits.

Though a wide range of species is recommended, we need to be careful about using species that fall into the [ecosystem disservices](https://dl.sciencesocieties.org/publications/jeq/abstracts/45/1/119) category, like high pollen producing trees that can affect people with allergies.



Graphic: Design scheme to incorporate cool walking routes during summertime and increase physical activity. Image supplied

6. Create Refuge

It is important to ensure there is enough green shade to protect everyone during an extreme heat event. The [shade](https://www.sciencedirect.com/science/article/pii/S0169204614002503) from a large area of continuous canopy provides shelter during a heat wave. Studies have also shown that large groups of trees provide higher cooling benefits than smaller trees.

7. *Connect Experiences*

Can people walk continuously along a shaded pathway? Having a continuous pleasant walking area can increase physical activity and green routes can be inviting and encourage recovery from disease. Recent work in Australia is mapping [shadeways](https://www.sciencedirect.com/science/article/pii/S2210670719316130) through neighbourhoods to promote cool walking routes during summertime.

8. *Optimise Green Infrastructure*

Finally, our changing climate means there is increasing need for adequate green and permeable spaces to allow stormwater runoff to escape. Recent [studies](https://www.pnas.org/content/116/15/7575.short) have found that 40 per cent canopy cover makes an important contribution to urban cooling and to further reduces stress.

Finding space for these necessary green spaces and dedicating areas to grow healthy trees benefits everyone! But to be successful developers, councils and community need to work together to green our modern cities.

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