

Growing more plants and trees can cut down the heat in Nigerian cities

21 August 2017, by Olumuyiwa Adegun And Tobi Eniolu Morakinyo



Plants and trees cool themselves and the surrounding environment like this building in Paris, France. Credit: Shutterstock

Nigeria is regarded as a hot country. Average maximum temperature [can reach 38°](#) - one of the hottest in sub Saharan Africa. In the last few years extreme heat and intense heatwaves have become a common experience in both rural and urban areas, showing that the country is getting hotter. This year, the Nigerian Meteorological Agency has [warned](#) of an "above danger heat stress".

These experiences are in line with [projections](#) that the mean temperature of the planet is increasing, and expected to go on doing so. In Nigeria, the average air temperature is expected to rise by between 0.2 and 2.5° over the next five decades, according to the [UN's Intergovernmental Panel on Climate Change](#).

These increases can't be overlooked. The effect is already being felt in cities which have developed what is known as ["heat islands"](#). These are [urban areas](#) that have higher temperatures than surrounding rural areas due to the fact that natural landscapes have been replaced by paved surfaces

and buildings.

Some [predict](#) that Nigerian cities may become too hot to live in.

Practical solutions are needed. One approach that's been shown to work elsewhere is urban greening. This involves introducing trees and plants in places such as parks and gardens, streets, on walls and on top of roofs. By constantly releasing moisture into the atmosphere through their leaves, plants and trees cool themselves and the surrounding environment. This helps to reduce heat. This principle is well known and has been implemented in many European and [North American cities](#).

We [studied](#) the temperatures inside and around two typical buildings in Akure, Nigeria. One of the buildings had trees around it while the other had none. The study was carried out for six months and spread across the two seasons (rainy and dry). It showed that tree shading had an impact on thermal conditions in buildings and their surroundings.

This evidence, alongside other research, shows that plants and trees need to be grown in the country's cities. And everyone must play a part - individuals, households, communities, cities and states.

Reducing temperatures and energy saving

Our study showed that air temperature was higher and stayed that way for longer inside the building without vegetation, with indoor-outdoor temperature reaching a peak of 5.4°C for the unshaded building and 2.4°C for the tree-shaded one. The outdoor area around the tree-shaded [building](#) was cooler than around the unshaded one, irrespective of the season.

But the impact of the trees went beyond just the temperature. The cooler temperatures meant that there was less demand for indoor cooling like air-

conditioners.

Two [separate studies](#) done in Nigeria [show](#) that greening buildings can reduce the use of air-conditioning, leading to annual savings of about 34,500 NGN (US\$218) in Akure and 17,255 NGN (US\$162) in Owerri. These cities are in two different regions of Nigeria yet the results were similar.

Other studies support our research findings. A difference in the average [temperature of 7.5°C](#) between spaces with trees and those without was recorded in Enugu, a city in South East Nigeria. In Abuja, researchers [found](#) that bare surfaces and built-up areas had higher land surface temperatures while green surfaces maintained lower land surface temperatures.

Vertical greening systems like green walls in Lagos was found to have around 0.5°C reduction in [temperature](#).

What must be done

State and local governments have the main responsibility of introducing policies that would lead to more greening in Nigeria's cities. In the last ten years [some states](#) and the Federal Capital Territory have [built urban parks](#). But much more needs to be done to significantly increase the amount of vegetation and green spaces in the country's cities. Urban tree planting projects should be promoted on streets and beyond.

There should be programmes to plant [trees](#) in neighbourhoods and to create vegetated play parks, community gardens and other forms of green open spaces. Plants should also be planted in road setbacks and spaces within dual carriage ways. Vacant lots and derelict buildings can also be purposefully vegetated.

There should also be a push for gardens to be created – for food as well as aesthetic reasons – inside houses, on the roof or on the walls. Densely packed built environment in cities make space a challenge. But this can be overcome through plant growing techniques that use up little or no space. Good examples of vertical greening systems are

[available in Mexico City](#).

These examples provide proof that vegetation at the household and community level can directly influence temperature in the neighbourhood. We believe urban greening is a task that can, and must, be done.

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