GREEN CITIES

Cities can lead the way on climate change mitigation through green spaces

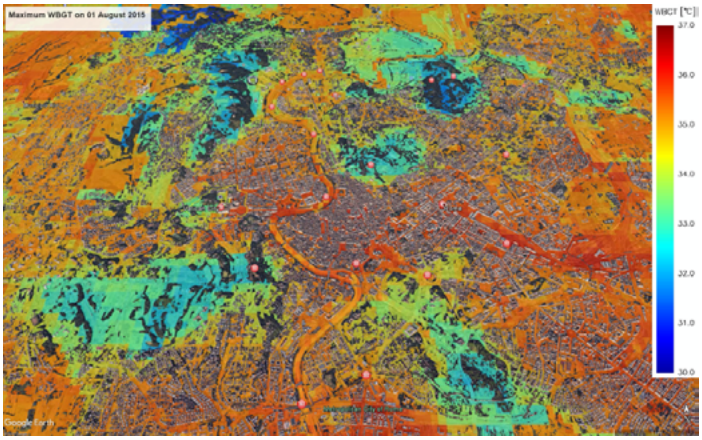
There are many benefits to green spaces in cities. They can reduce air pollution, mute noise and improve biodiversity in cities. They can improve cities' livability by providing spaces for social interaction and recreation and by increasing neighbourhoods' aesthetic appeal. Urban green spaces can also play an important role in climate change adaptation and mitigation.

Green makes cities cooler

As the earth becomes hotter, cities will bear the brunt of these temperature increases. Due to the urban heat island effect, cities tend to be warmer than urban areas. Materials commonly used in large quantities in urban areas, such as concrete and asphalt heat up quickly and easily conduct heat. In addition, tall buildings in urban areas not only catch heat, they can also block wind streams that might cool cities down.

Urban green spaces can help make cities cooler. Plants convert more heat than concrete and trees especially have a remarkable impact on temperature. They offer natural shelter from the sun but also evaporate water, which helps to cool the surrounding environment.

While adjusting the overall temperature in a city requires large-scale greening, small adjustments in urban planning can have a considerable impact. To tackle localised heat stress, a single tree in a street, or a small green square, can already make a significant difference. They can improve thermal comfort by providing shade as well as localised cooling. Larger green areas, however, can have more far-reaching impacts, reducing the air temperature by several degrees.



Rome on a hot day, with Wet Bulb Globe air temperatures over 40°C. Large green areas are a lot cooler than the paved city centre. They can reduce the temperature below 32°C, the threshold for strong heat stress.

Green makes cities bluer

Climate change puts considerable pressures on urban water management. Not only are many cities likely to face longer periods of drought, but also when rain does occur, it will do so in the form of extreme weather events with intense rainfall over a short period of time. Hence, the challenge cities face is twofold:

- they must ensure that their (ground)water reserves can weather longer periods of drought
- and they have to put in place a rainwater management plan to cope with floods, especially sewage floods.

Green spaces in cities can do both.

Green city areas can improve both stormwater retention and infiltration. Right now, most city squares are paved and covered in concrete. However, by turning these grey squares into open green space, they offer an enormous water storage potential, especially in lower-lying parts of a city or when squares are given more relief. A green square can catch rainwater from close-by roofs and paved driveways. The water will collect in the lowest parts of the square, where it can seep into the soil to replenish groundwater reserves. Only when these green catchment areas overflow, does rainwater end up in the sewers. As a result, these urban green areas help prevent floods in case of intense rainfall.

Further reading

- *https://iwaponline.com/wst/article-abstract/70/11/1825/18520/Green-blue-water-in-the-city-quantification-of?redirectedFrom=fulltext*
- *https://climate-fit.city/wp-content/uploads/2018/06/EWAYearbook2018-2019.pdf*
- *https://iopscience.iop.org/article/10.1088/1748-9326/ab5638/meta*

Get citizens involved

City gardens and driveways have become increasingly paved. This means that more rainwater is more quickly transported down sewers, causing water stress downstream and increasing the effects of droughts in areas with much concrete-covered soil.

Cities can encourage citizens to turn their paved gardens into a small urban green space. This will not only improve a city's water management; it can also make citizen's homes cooler during heat waves and increase biodiversity.

Conclusion

Cities can take a leading role in the response to climate change. While an effective response to climate change impacts undoubtably requires large-scale, coordinated efforts at an international level, local actions do have an impact. Every small green space helps make a city, a neighbourhood or a street cooler. Every open green space or area where concrete and asphalt are removed can improve local water management. By making green space an integral part of their approach to urban planning and by encouraging citizens to make their own homes greener, cities can affect real change at the local level.

Climate-fit.city helps cities prepare for the effects of climate change. It provides detailed scientific urban data to predict how a specific city will be affected by climate change and helps cities find tailored mitigation and adaptation strategies.

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