



Briefing 22 – 27

Trees, Levelling Up and Heatwaves

To: All Chief Executives, Senior Policy Officers Main Contacts and APSE Contacts in England, Scotland, Wales and Northern Ireland

Key issues

- The recent heatwave has shown how vulnerable the UK is to the negative impacts of climate change.
- It has been widely recognised that there is a need to address rising temperatures particularly with regards to the negative health impacts on our most vulnerable, particularly in deprived areas.
- The large-scale planting of trees and provision of access to greenspaces has been seen as one way to address this problem due to the cooling effect such areas provide and their wider health and mental well-being benefits.
- Urban areas are particularly susceptible to high temperatures because of their lack of green spaces and the prevalence of hardscapes (roads, buildings etc.) which can absorb and irradiate heat. It is also these very areas which have some of the largest concentrations of deprivation with the poorest levels of access to greenspaces.
- As part of the Levelling Up agenda, government has pledged to increase access to greenspace by allocating funding to improve parks and greenspaces in the most deprived areas. However, there is a clear lack of understanding about the scale of the need, its multiple issues and the level of funding being allocated.
- If there is to be a real desire to 'level-up' communities there needs to be a wider study undertaken about the way greenspaces and trees are built into the core fabric of the way we develop our urban areas both physically and socially both now, and in the future.

1. Background

The 2022 July heatwave has shown how the UK's climate is changing. With temperatures peaking at over 40C the living conditions of millions have been adversely affected, none more so than those people living in neighbourhoods lacking any shade or benefitting from the cooling effects of trees and greenspaces.

As well as providing shade and the additional benefit of transpiration (the process whereby plants release water into the air from their leaves which cools the surrounding area), green spaces in times of extreme heat, provide oasis of calm and respites from the excessive heat, thereby contributing significantly to the health and well-being of residents.

Research has shown that people living in areas lacking greenspaces have a higher risk of death from heat related causes. Increases in heat also exacerbate existing health issues such as cardiovascular and respiratory diseases, increased hospital admissions, psychological stress and aggressive behaviour.

During heat waves the highest temperatures are often found in urbanised areas where the predominance of pavements, roads, buildings and other impervious areas readily absorb heat, storing it and eventually releasing it, thus causing temperatures in our towns and cities to increase disproportionately to more rural areas. This phenomenon is known as the 'heat island effect'. The lack of greenery and open spaces in many of our urban areas only adds to this increase in heat.

There are also clear links regarding the warmest areas often being in the most deprived areas where there is very little green spaces and properties are often close together, such as tower blocks and high density housing.

People who live in deprived areas often tend to have poorer health and have higher rates of chronic conditions which are only made worse by the higher temperatures. These areas have become known as 'heat/high deprivation hotspots.'

Analysis by the BBC satellite data from 4 Earth Intelligence, and figures on relative poverty in England, Scotland and Wales, suggests people in deprived areas are more than twice as likely to live in places which are significantly hotter than neighbouring areas.

Furthermore, a Lancet study by Dr Richard Mitchell and Frank Popham of 40 million British people found a link between income inequality, access to green spaces and life expectancy. The report found that in rural areas with plenty of access to green spaces, the life expectancy of those on the highest and lowest incomes was roughly the same. However, in urban environments, the gap in life expectancy was significantly wider. People on the lowest incomes living in cities were expected to live 10 years less than those on the highest incomes. This is due in part to the green spaces available to the richest people, who often live in open, leafy areas, while the poorest are often left living in overcrowded, heavily concreted areas.

But the problem is that life expectancy and health differences can't be solved simply by creating green spaces in poorer areas. This is because high-quality urban areas,

with good access to nature, are more expensive to live in. Consequently, as green spaces are created, these areas become more desirable and housing costs increase - often pricing out the lower income families and residents currently living there.

This inequality is particularly concerning when we consider that the MET Office estimates that the temperatures we have recently experienced are now ten times more likely to occur as a result of climate change; in fact they believe things could worsen in respect that not only will temperatures increase, but that future heatwaves, will last longer based on the fact that warm spells have doubled in duration over the past 50 years.

2. The role of trees and green spaces in reducing the impacts of heat waves.

The changing climatic conditions are now showing the undeniable value of trees and associated green spaces in not only addressing the issue of reducing heat in urban areas, but also playing a key role in potentially improving the health of millions particularly in deprived areas. Protecting residents against increasing temperatures is now becoming a growing concern for local authorities, particularly for those communities living in deprived areas with little access to green spaces. As such the need for the better and more equal provision of greenspace, should be playing a much more significant role in achieving the objectives of the Levelling Up agenda.

But whilst this briefing note is concentrating on the value of trees and greenspaces in mitigating the effects of heatwaves, it would be remiss not to briefly mention non-greenspace related actions which are being taken to address and combat rising temperatures.

By changing how our cities and towns are built, it is felt that this could help us to manage rising temperatures better.

Some of the approaches include:

- Constructing buildings at different heights to create shades and breezes.
- Using less glass in buildings and retrofitting buildings with lighter coloured and more reflective materials is helping reduce the amount of energy absorbed.
- Public warning systems and access to cool places and drinking water are also being considered.
- In Athens, the second most densely populated area in Europe, there is a move to reduce peoples' reliance on cars in order to free up space for the creation of cooling green areas.
- One of the most dramatic attempts to reduce heat stress by re-designing the built environment, can be seen in Berlin which is planning to undertake an innovative retrofitting approach, in which the city plans to become a *Stadtschwamm* or 'Sponge City' aiming to build resilience against both extreme temperatures and flooding by seeing hard surfaces such as cement and asphalt on buildings, roads, and walkways, replaced with trees, grass, green roofs and urban wetlands. If implemented city-wide, these measures would keep the City several degrees cooler during periods of hot weather and absorb water during heavy rains.

3. Funding and cost-effectiveness

Whilst many of these ideas are achievable, they do not come without significant costs and may take years to implement. Also, certain initiatives have had some negative impacts, for instance in Los Angeles, where 10% of its area is made up of tarmac which absorbs heat and releases it throughout the day. The decision was taken to paint its roads and some of its buildings a lighter colour as lighter surfaces reflect more solar radiation back into the atmosphere. Whilst reducing heat off these surfaces by up to 6C, it was found that some of the reflected heat was being absorbed by people nearby.

It is in this context therefore that we can see that the increased provision of trees and greenspaces in comparison, can be achieved with relatively low costs and requiring relatively little technical development. Clearly there are long term maintenance costs but these would be far outweighed by the multiple benefits trees and greenspaces bring, as well as being increasingly popular with the public.

Data shows that an increase in greenspaces within the UK's cities and towns, including trees, parks, gardens, green roofs and waterways could help to reduce the impacts of future heat waves and general increases in annual temperatures. Unfortunately, in spite of these well-documented benefits, parks and greenspaces have suffered drastic reductions in financial support. This has had a negative impact on both capital and revenue funding for parks and open spaces. Indeed APSE's research '[State of the UK Parks Report](#)', in association with CFP, found that funding for parks is once again at a tipping point with the loss of parks funding in further decline from £500 million lost between 2010 and 2016 to a further £190 million in 2021. A total of £690 million over the past decade.

On the subject of funding some new funding is being made available to support the creation of smaller woodlands through various government grants of which more details can be found [using this link](#).

Opportunities may also be made available through Biodiversity Net Gain credits, which is due to become mandatory in 2023.

4. Introducing more trees and greenspaces into an urban setting

With regards the need to increase tree planting and greenspaces in an urban environment, some would argue that cities and towns rarely have the opportunity to add large green spaces to help counter the effects of heatwaves due to space restrictions. However, it has been shown that many cities and towns do in fact have considerable numbers of unused and vacant areas, for example where industries have declined. Consequently, urban wastelands or gaps in the built environment are left behind as forgotten land or gaps between buildings and other constructions. It is now being recognised that these gaps in a city can be used in different ways depending on the needs of the respective neighbourhoods, for instance to provide trees and greenspaces where access to such spaces is limited or non-existent.

Therefore, many of these spaces could be used for the planting of trees which are known to have a significant capacity to reduce localised daytime surface temperatures. However, it is acknowledged that trees do take a long time to grow, so initially a mixture of greenery is the ideal until the trees establish themselves. Also, when considering trees, it would be wise to select those species which have the greatest cooling effect, as it is important that the right type of trees are planted to help combat climate change, for example broadleaved species – such as oak, beech and maple – are best due to having a larger surface area of leaves which generates more transpiration of water from leaves thus cooling the air, provide greater levels of shade as well as storing carbon, which contributes to climate actions. Green spaces with a high diversity of tree species have a greater year-round cooling effect.

With the above information in mind, there is now a growing interest in creating ‘mini forests’ in disused urban areas. These mini forests cover only a small area of land, and are often densely planted with fast growing native tree species. Not only do mini forests transform barren landscapes into luscious green spaces, but their vegetation also provides habitat for a wildlife; insects and birds, lessens the risk of flooding and purifies the air we breathe. By creating a network of these small spaces this can thus make an impressive contribution to lowering urban heat.

Further details on mini or tiny forests in the UK can be found [using this link](#).

This proposal is not simply a good idea with little empirical data to back it up. Researchers using a large UK city as a model, showed that by increasing green space within its urban area by just 10%, this could reduce the extremes in surface temperatures during future heatwaves.

Networks of small wooded or greenspaces, can offer a great deal of summer cooling in cities and towns. When supplemented by parks, green roofs and walls, increasing porous surfaces, conserving wider open spaces and developing non-green space adaptations on roads and buildings, then collectively, they can help deliver a broader whole system approach aimed at mitigating the effects of future temperature increases.

5. APSE Comment

It is widely recognised that we now live in a rapidly increasing urbanised world. It is estimated that by 2050 almost two-thirds of the world population will live in towns and cities.

The recent heatwaves have shown that if we do not take appropriate actions, and quickly, populations will be put at untold risks, and the costs of protecting these people will rise as health problems increase

From evidence now being gathered, we know that the impacts of climate change will not be evenly balanced, with the most deprived areas being the hardest hit.

The evidence is showing the crucial role that trees and greenspaces have to our local and wider national communities, both in terms of reducing extreme heat levels but also in the wider health benefits they bring.

Both nationally and globally there is a scramble to increase tree cover as temperatures in the UK increase the urban heat island effect, which will become more extreme alongside the associated negative health and mental well-being impacts, which will be even more starkly felt in areas of deprivation. It is therefore critical that green and blue spaces need to be taken more seriously as a key part of the current and future urban core infrastructure.

This need to recognise the value of green spaces was succinctly put by Helen Griffiths, chief executive of Fields in Trust, as part of her organisation's response to The Levelling Up, Housing and Communities Committee evidence session held on Wednesday 20 July 2022, which examined a range of issues relating to public parks, including park usage and the impact of the Covid-19 pandemic on parks, inequality of access to green space, and the funding of public parks and green spaces.

As part of her response she argued:-

“we've got to recognise green spaces as a core part of the levelling up agenda. When we are thinking about placemaking we're not thinking about parks and green spaces through the lens of the parks department but looking at the multiple benefits – pride of place, climate resilience and health and wellbeing outcomes – that can be generated from them.”

However, greener cities will not only require investment but they will also mean giving up some control of our surroundings by allowing nature in - but for our long-term benefit such sacrifices may be necessary. The recent Covid pandemic showed that people need and want to interact with nature whenever the opportunity arises. It has been shown that something as simple as a five-to ten-minute break during the workday can improve well-being and boost productivity. However, particularly in the more deprived areas as already noted, access to green spaces isn't universal and can be seen as a driver of inequality. What is needed therefore, is for the widespread recognition that green spaces are vital for everyone, and that everyone should share in the benefits such assets bring.

Parks and open green spaces should be easily accessible, democratic spaces - somewhere people can go without the pressure to spend money and be able to interact with members of their community whilst benefiting from the health and well-being benefits such areas bestow. This need to provide equality of access to green spaces could therefore be addressed by increasing the amounts of greenspaces in our urban areas as previously highlighted.

The UK Government, as part of the Levelling Up agenda, has announced a total of £39 million to refurbish parks in areas of the country with the lowest access to green space. Although welcome, it falls far short of the hundreds of millions of pounds lost from parks and greenspace budgets across the country as highlighted in APSE's State of the UK Parks report 2021.

Whilst it is acknowledged that the number of other national priorities are equally worthy of consideration and support, the greater focus on parks and greenspaces from both a public health and climate change perspective, is becoming more urgent as time passes, and only when realistic levels of funding are made available to address these issues will we be able to improve the national capabilities to address rising temperatures and thereby protect the most vulnerable people in our society.

Therefore, taking into consideration the information contained within this briefing note APSE believes that the value of trees and greenspaces in the quest for equality both socially, economically and most importantly, environmentally, should be a fundamental consideration within the levelling up agenda if we are to have a sustainable future.

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