



## City heat can add six degrees to temperature

By Stefanos Evripidou

URBAN AREAS face summer temperatures that can be six degrees hotter than nearby rural areas, according to Environment Commissioner Charalampos Theopemptou, who proposed a number of easy measures to curb rising temperatures in the island's towns.

Theopemptou referred to a study by the US Environmental Protection Agency (EPA), which found that pavements, roads and buildings in urban and suburban areas raise temperatures by up to six degrees Celsius, compared to nearby rural areas. The phenomenon is known as the "Heat Island Effect".

According to the EPA website, heat islands form as cities replace natural land cover with pavement, buildings and other infrastructure. Trees are displaced and vegetation minimised, taking away the natural cooling effects of shading and evaporation of water from soil and leaves. Narrow streets and tall buildings trap hot air between them, reducing the air flow while waste heat from vehicles, factories and air conditioners further exacerbates the problem.

The urban-rural temperature difference usually peaks at night as rural areas cool off faster than cities, which retain most of the heat stored in roads, pavements and other structures.

Although the heat island effect refers to the local temperature differences between urban and rural areas, and not the rise in the earth's surface temperature, the phenomenon still has an impact on global warming.

As Theopemptou noted, elevated temperatures push up demand for air conditioning, resulting in increased power plant emissions of heat-trapping greenhouse gases, as well as heat-related illnesses and mortality among the elderly.

"The measures that can be taken to reduce this phenomenon are known to all but mainly because of indifference and ignorance, we forget them," said Theopemptou.

He listed a number of measures that could be taken to combat the heat island effect.

"Avoid dark-coloured roofs. You can paint a roof with solar reflective paint. The side walls of buildings should also have light colours," he said.

According to EPA, traditional roofing materials may reach summertime peak temperatures of up to 88 degrees Celsius, while "cool roofs" which help reflect the sun's energy only reach up to 49 degrees Celsius.

Another option is to encourage the installation of "green roofs". Rooftop gardens add aesthetic value to a building while replacing heat-absorbing surfaces with plants, shrubs and small trees. Planted rooftops cool the air through evaporation of water from leaves and keep the building's heat gain low.

"In Cyprus, unfortunately, I haven't seen companies with the right equipment or knowledge to make green roofs. Apart from improving the local climate, the green roof and right colouring

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mentioned earlier, will significantly improve the thermal performance of the building,” said Theopemptou.

The Environment Commissioner highlighted another “obvious” measure. “Unfortunately, we need to remember the many advantages that trees have to offer. The shade provided by trees stops walls of buildings and pavements from heating up, they offer shade and protection to pedestrians, delay water from the rains, filter dust and usually increase an area’s property value,” he said.

The EPA estimates that strategically planted trees and vegetation reduces cooling energy consumption by up to 25 per cent.

“It is known to all that parks and green spaces generally improve the local climate of an area, particularly when there are large trees,” added Theopemptou.

One additional measure to combat city heat is the use of cool paving materials that minimise the absorption of solar heat. Ideally, paving material should contain light colours and be made of porous materials. The lighter colour reflects the sun while porous pavements allow water to filter into the ground, keeping pavements cool when moist.

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