Give Every House a Cool Roof to Reduce Carbon Emissions

Carbon emissions have become a major environmental concern on a global scale. Will cooling the climate locally by making light-coloured rooftops help? Temperatures are often a few degrees higher in urban areas in comparison to their surrounding rural areas. This is mainly due to the fact that heats from the surrounding areas are carried into the city by the wind and is known as the urban heat island effect. This results in an increase in temperature and the demand for air conditioning. This demand results in higher energy consumption and a greater increase in greenhouse gas emission from the power plants which provide this extra energy. To try and reduce this increase in heat, a new study by researchers at Lawrence Berkeley National Laboratory and colleagues used a global model to study whether light-coloured surfaces can be to offset carbon dioxide emissions. Light-colour roofs and light-coloured pavements would be implemented in cities around the world. This could reduce the temperature of cities locally because more sunlight would be reflected back into space. When the model's reflectivity of roofs and pavements materials were decreased to black in cities over a population greater than 1 million, far more heat was observed to flow into the city and into the atmosphere, compared with a control scenario. But when the reflectivity of these cities were increased to white, levels of carbon dioxide emissions offset were double the world wide carbon dioxide emissions in 2006. Cooler surfaces are only one solution. The model calculated an annual global surface temperature by 0.01 degrees Celsius. Global temperatures are expected to increase by 2 degrees by 2030. Even so, having a cooler roof will decrease the energy bills for house owners and businesses by decreasing the overall energy consumption for air-conditioning.

References

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