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More Reflective Roofs and Pavements Could Help Offset Climate Emissions

Washington, DC, February 19, 2010 – Increasing the reflectivity or “albedo” of roofs and pavements in urban areas could offset greenhouse gas emissions by a significant amount, according to a paper published last month in *Environmental Research Letters*. The research performed by scientists at Lawrence Berkeley National Laboratory and NASA’s Goddard Space Flight Center shows that a 25% and 15% increase in the albedos of roofs and pavements, respectively, in urban areas, could lead to an offset of approximately 57 billion tonnes of carbon dioxide.

“Increasing urban albedo is something that should be done now to buy time for implementing other near-term and long-term climate mitigation strategies,” said Durwood Zaelke, President of the Institute for Governance & Sustainable Development.

Surfaces with high albedo reflect more solar radiation, preventing the radiation from heating the surface and the atmosphere. Introducing “cool roofs” and more reflective paving materials could replace some of the albedo that has been lost through the melting of Arctic sea ice.

“Although it does not solve the root of the climate change problem – substantial reductions in CO₂ and other climate forcers are essential for that – urban albedo can delay the onset of more severe climate impacts, and reduce the risk of passing the thresholds for abrupt and irreversible climate changes,” added Zaelke.

Because CO₂ emissions can remain in the atmosphere for up to 1,000 years, there is an urgent need for complementary, fast mitigation measures that will result in significant near-term reductions to avoid passing the tipping points for abrupt climate change, which may only be decades away. In addition to increasing urban albedo, such strategies include reducing emissions of black carbon soot, methane, and tropospheric ozone, as well as using the Montreal Protocol ozone treaty to phase down hydrofluorocarbons, which could prevent the emissions of more than 100 billion tonnes of CO₂-eq. by 2050. Carbon-negative measures such as better forest management and production of biochar will also be necessary to bring atmospheric concentrations of CO₂ back down to safe levels.

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For more information, see:

[Radiative forcing and temperature response to changes in urban albedos and associated CO₂ offsets by Surabi Menon, Hashem Akbari, Sarith Mahanama, Igor Sednev and Ronnen Levinson \(*Environmental Research Letters*, Jan 2010\).](#)