

To significantly reduce urban heat islands in settlements, including small cities and municipalities, an ambitious set of measures is needed. The following are recommended for adaptation to urban heat islands now and in the future:

1. Cities should aim to plant one large tree (or the equivalent green or blue area) per inhabitant, dispersed across the city on private and public properties. The trees must be planted and protected, or substitution measures implemented, within the next 20 years. Substitution measures should have the same cooling effect as an average urban tree with an age of 30 years after 30 days of more than 30°C without rain (e.g., 20 kW cooling performance at 30°C).
2. The albedo (or reflectivity) of building roofs should be improved by 0.5% of the "current area" per year for the next 40 years, resulting in a 20% increase in albedo overall.



3. Cities should aim to substitute 3% per year of all sealed public and private pavements with permeable pavements within the next 25 years. This can include conversion to green spaces or changes to more permeable paving materials, e.g., that increase the permeability of the surface by 50%.

4. Sustainable outdoor shading of buildings (e.g., by trees and green facades or in combination with photovoltaics) should be implemented where possible, as well as other sustainable cooling measures (e.g., cooling by passive building measures as well as for public spaces, or via renewable energy in buildings).
5. Existing green and blue areas inside and outside of the city should be protected, while new green and blue areas should be added, including protection and generation of air flow paths in the city to improve cooling.
6. Where feasible, other building materials and types of construction should be considered to replace standard concrete buildings (e.g., the thermal conductivity of concrete is 16 times higher than wood, which is also a more sustainable building material).
7. Adaptation measures to address the urban heat island problem should be fully integrated in planning instruments, rules, subsidies and climate change strategies for public and private areas, including the avoidance of new heating sources (e.g., inefficient air conditioners) without additional cooling measures (i.e., full long-term substitution).



Significant additional benefits may be possible if there is regional cooperation in the implementation of measures, e.g., through joined up spatial planning across several neighbouring municipalities.