

P E R F A C E

Cities are generally warmer than surrounding rural areas, and a city is often referred to as an urban heat island. Urban Heat Island effect is primarily caused by the absorption of solar radiation by building/urban materials and its subsequent re-radiation to the surroundings. Cities have less vegetation cover compared to suburban areas. As a result, there is also less “evaporative cooling” in cities. These factors all contribute towards the Urban Heat Island effect.

This increase in temperature, coupled with the presence of air pollutants, can result in the accumulation of smog, damage to the natural environment, and jeopardize human health. Increases in energy consumption to cool buildings will also translate into higher utility bills.

The importance of greenery in urban settings was locally recognized as early as the 1960s when Singapore embarked on the Garden City concept. Since then, active steps have been taken to green Singapore and conserve the mature greenery.

However, as land development further intensifies in Singapore, there is a need to complement this intensification with a greater provision for greenery, looking beyond the ground. With adequate above-ground greenery, we could then prevent an aggravation of the Urban Heat Island effect. To that end, the use of plants for skyrise greening needs to be promoted. The use of plants for skyrise greening has gained popularity around the world and much research has demonstrated the benefits of skyrise greenery. But there is a need to validate these findings in the local context. A collaboration between the National Parks Board (NParks) and the Centre for Total Building Performance (CTBP), National University of Singapore studied the effects and usefulness of rooftop gardens and their application locally. The components of this study, ‘A Study of Rooftop Gardens in Singapore’, are presented as case studies in this handbook.

This handbook outlines the benefits and issues to consider in developing skyrise greenery and aims to be a handy guide and a source of information for parties interested in implementing skyrise greenery.