Chapter 18
Vertical Landscape Design

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ABSTRACT
Vertical landscapes are areas of vegetation growing directly on the facade of a building or on separate structural systems; they are usually made up of modular units, vegetated mats, or trellises attached to structural walls or frames. In general, they are vertical planting systems used on the inside walls or on the exteriors of buildings. They are irrigated by either closed or open drainage systems to minimize water consumption. In their construction, the integrity of the structural support elements must be protected by durable and long-lasting waterproofing to preclude damage and the need for later reconstruction, which may be costly. Vertical landscapes are aesthetically pleasing and sustainable, and they contribute to the greening of urban settings by utilizing vertical surfaces: they enliven built-up commercial and office areas, parks and public facilities, educational and health-care buildings, and retail shopping areas; and they also bring additional color to eco-friendly buildings and their surroundings. At present, vertical landscapes are generally thought of as aesthetic additions, but as the technology used in them develops, they may play a significant role in the future of sustainable urban environments. Vertical landscapes are explored in this chapter.

INTRODUCTION
We are now in an era when cities need to act decisively to increase their green spaces. Given the growth of new cities and the contemporary limitations of cities created with a 20th-century infrastructure, it is gradually being understood that the addition of vegetation and creation of new kinds of public spaces are central to enhancing the vitality of global urban environments (Dinnie, 2011). The need for development in this direction is reflected in the current interest in vertical landscapes.

The idea of a vertically designed landscape can be traced back to the Hanging Gardens of Babylon in 600BCE; it was much more recently,
however, in 1931-38, that Stanley Hart White of the University of Illinois at Urbana-Champaign obtained the first known patent for the “green wall” or vertical landscape, which he theorized as a solution to the problem of designing a garden in the context of the times. The design elements of the modern vertical garden were developed in the 1980s by Patrick Blanc, a French botanist. Considered as artworks in the West, vertical gardens are increasingly being used in India for practical reasons related to rapid urbanization and space limitations.

The term “green walls” refers to a range of vegetated shading devices designed to offset extreme climatic conditions in an aesthetically pleasing manner (Hopkins & Goodwin, 2011). Variously referred to as “living walls”, “green facades”, “bio walls” or “vertical gardens”, these landscapes along vertical built surfaces and spaces contribute to the greening of urban environments. They generally take the form of vegetation growing directly on a building’s facade, or grown on a separate structural system that may be either freestanding and adjacent, or attached to a wall. They typically comprise pre-vegetated panels, vertical modules, or planted blankets, attached to a structural wall or frame. Because of their aesthetic quality and sustainability, they can bring new life to commercial and office buildings, stores, parks, public buildings, and educational and healthcare facilities, as well as to eco-friendly buildings.

Benefits of Vertical Landscapes

In the initial stages, vertical landscapes were of interest primarily as enabling gardening in urban settings with limited space for traditional gardens. Today, however, they are attracting interest from beyond urban centers, because of their aesthetic qualities and versatility, and because they can benefit buildings and the surrounding microclimate in various ways.

Aesthetic Improvement

A building’s aesthetic qualities are determined by people’s perceptions of it rather than on the materials used in its construction or on its functions. Green walls and the vegetated environment can enhance the quality of experience and of life for people in urban spaces, in such contexts as waiting areas, entryways and halls, and gardens used for physical or psychological recuperation, or as part of gardens built on city roofs. Green walls, either free-standing or mounted, may be used to highlight views or to conceal equipment, service

Figure 1. Vertical landscape (Vertical Garden DIY Checklist, 2013)
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