



## A Quick Guide to Green Roofs

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## "Nice Prospects"

More and more rooftops are being transformed into blooming natural oases. Whether you are simply adding greenery to your garage or creating an ambitious rooftop garden – a green roof stands for active conservation and is a key step towards improving your environment and your quality of life.

The installation of a green roof will quickly cover its costs through the thermal insulation, heat shielding, rainwater storage and the protection of the waterproofing that it provides. No other building concept creates such a range of positive effects for buildings, for people and for the environment.



## Added bonus – Environment

### Sustainable Land Use

New residential areas and new transportation routes are constantly being developed at the cost of the environment. Landscaped roofs can help reduce the local impact on nature. They act as "stepping stone biotopes" and give plants and animals a replacement for their natural habitat. Birds, wild bees and butterflies can all find nourishment and shelter here and create a lively ecosystem. Even endangered species can relocate to a green roof.

### Natural Stormwater Management

Green roofs make a key contribution to flood protection. Depending on the type of construction, between 50 and 90 % of the precipitation that falls on these rooftops is retained and returned directly to the water cycle via the process of evaporation. The excess rainwater is filtered and drained off with a temporal delay. This leads to reduced stress on the sewer system during the year and at peak flow periods.



## Added bonus – Environment

### City Climate

During the summer months many cities become true "heat islands". It is the increasing numbers of houses and the waste heat from traffic, industry and heating systems that are responsible. Landscaped roofs can reduce the levels of excess energy through absorption and the evaporation of water, and can thus make the city climate more bearable. At the same time dust and toxic particles are filtered out, leading to massive improvements in the air quality.

### Natural Scenery

The view over landscaped roofs and parks on underground garages increases the quality of life. Even a few blooming islands can help to break up the monotony of concrete and asphalt-grey city centres and can thus improve the living environment. New industrial settlements can also be better integrated into the open countryside if they employ rooftop landscaping.



## Added bonus – Building Owner

### Protection for the Waterproofing

"Naked" flat roofs stand unprotected against weather conditions, UV rays and mechanical strains. Over the years the roof waterproofing starts to experience material fatigue, cracking and leakages. With green roofs, a natural buffer is formed against the weather and other environmental effects. The lifespan of the waterproofing can increase by as much as double.

### Reduce Energy Costs

As a natural "coat", landscaped roofs can lead to marked improvements in a building's energy balance. House owners choosing to incorporate green roof systems will find that they quickly pay for themselves due to the resulting reduction in heating costs. They are also good for the environment as a whole, contributing to a reduction in the household's CO<sub>2</sub> emissions. During the summer months, residents will also profit from the cooling effects of the green rooftop.



## Added bonus – Building Owner

### Reduced Exposure to Noise and Radiation

One of the negative side effects of urbanization and industrialization lies in the increased levels of noise pollution that accompany them. Green roofs reduce the sound conduction of rooftops and improve the sound insulation of a building. This argument is particularly convincing in loud and hectic inner city areas.

### A Free Plot of Land

Landscaped roofs can be used for a range of purposes: from private rooftop gardens, to prestigious green areas on company buildings, to public parks. And the real highlight – rooftop gardens do not incur additional property costs. Both the panoramic views over the city's rooftops and the special atmosphere are also part of the concept. Rooftop gardens improve living and working environments and provide natural surroundings in the immediate vicinity.

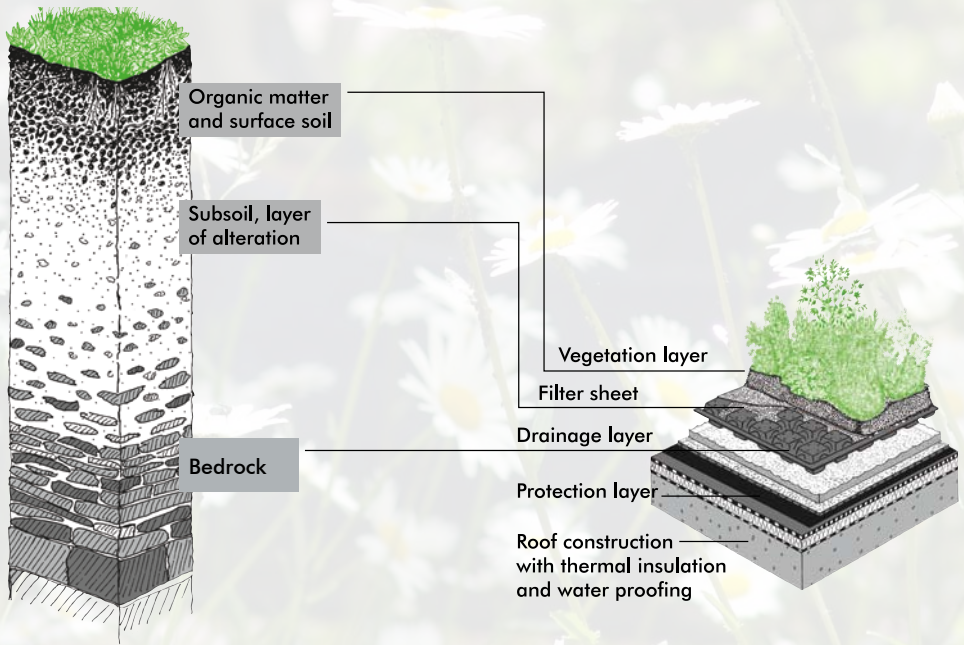


	Extensive Green Roof	Semi-Intensive Green Roof	Intensive Green Roof
<b>Maintenance</b>	Low	Periodically	High
<b>Plant communities</b>	Moss-Sedum-Herbs and Grasses	Grass-Herbs and Shrubs	Lawn or Perennials, Shrubs and Trees
<b>System build-up height and weight</b>	60 - 200 mm 60 - 150 kg/m <sup>2</sup> 13 - 30 lb/sqft	120 - 250 mm 120 - 200 kg/m <sup>2</sup> 25 - 40 lb/sqft	150 - 1000 mm 180 - 500 kg/m <sup>2</sup> 35 - 100 lb/sqft
<b>Costs</b>	Low	Middle	High

## Types of Green Roofs: An Overview

An amazingly beautiful rooftop garden or a so called "extensive" green roof to stand as an ecological habitat for plants and insects – the intended function plays a key role in the planning of a green rooftop. The maintenance, the choice of plants, the structures and the costs will also differ.

You can use the criteria listed above to differentiate between the three main types "Extensive Green Roof", "Semi-Intensive Green Roof" or "Intensive Roof Garden". All of the figures mentioned are averages that can vary according to factors such as climate and local substrates.



## Green Roof Technology

The specifications for a landscaped roof's construction are manifold. Optimal growth conditions must be ensured for the plants selected, and protection of the roof's superstructure and the drainage system must be guaranteed to last for decades.

At the same time, the building's structure often places a limit on the weight of the installation. For this reason, most green roof systems imitate the natural ground and use functional layers, each with an optimised weight.



## Policies and Funding

In order to stimulate the wider use of green roofs local governments in many states offer various forms of sponsorship: These range from attractive financial subsidies, to recognition for being an ecological compensatory measure, to the stipulation of green roofs in building codes.

Many communities are also looking to make a good example and install green roofs on communal buildings. The International Green Roof Association (IGRA) is happy to provide you with information concerning the various possibilities of green roof policies as well as sample applications.

## Online Information Portal – For those who want to know more:

The International Green Roof Association (IGRA) is a global network for the promotion and dissemination of information on green roof topics and green roof technology. IGRA's services include networking, workshops, conferences and all kinds of public relation work. Our newsletter service will keep you up to date with the latest developments in the green roof sector and features prime examples for green roofs projects from around the world.



Please visit our website [www.igra-world.com](http://www.igra-world.com) for comprehensive information about the numerous advantages of roof landscaping and the technical basics. We are looking forward to staying in touch with you.



### A System for Success

It does not matter how large the rooftop that is to be landscaped is, the visual appearance and the long-term value of a rooftop's landscaping are always determined by the lasting functionality of the structure. Whichever purpose you choose, approved green roof technology will guarantee you flourishing success for many years to come.



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