The social and economic importance of green and blue areas

In recent years, more and more data has become available about the benefits of green in towns and cities. Most people prefer living in green districts. House prices in green districts or along water or areas of vegetation are relatively higher than elsewhere. To draw citizens with higher levels of education, towns and cities need to be attractive and offer green and culture. Highly educated engineers, in particular, prefer to remain close to green areas: both for where they live and for their holiday destinations. That fact has motivated Eindhoven, for example, to increase the amount of vegetation in the city. It was also the principle underlying the restructuring of the Ruhr area in Germany. London has defined a policy aimed at increasing the amount of green in the metropolis for a variety of reasons, such as to create greater biodiversity and to reduce heat stress, but not least to improve the quality of life and appeal of the city.

Vegetation helps people to recover faster from illness; this reduces costs of healthcare and improves the patients' quality of life. This aspect of introducing vegetation in and around hospitals is increasingly becoming a topic of focus in connection with the concept of a 'healthy environment'.

Since the creation of the first people's parks, urban planners have been aware of the fact that vegetation enhances the quality of life for townspeople. Green areas are places where people can go for recreation and physical exercise or simply to find some peace and quiet. This benefits their health and reduces the stress levels of the average city dweller. Creative play areas in nature are important for children to enhance their social skills and concentration. Both vegetation near their homes for everyday play and larger green facilities in the town or city or on the periphery, for example for bicycle rides, are important.

The fact of the matter is that almost 40% of the Dutch population lives in districts with insufficient green recreational facilities. The shortages are greatest in the Randstad urban conglomerate. [PBL, 2011]. *'In practice, the lack of sufficient vegetation means, among other things, that there are insufficient possibilities for walking, sports or games and that children are becoming more and more removed from green and nature.' [Brosens, 2008]* Old districts and the new VINEX districts particularly lack sufficient green areas, which then puts added pressure on what little vegetation there is. Unless these areas are properly maintained, they are also below par in qualitative terms.

'The monitor of the National Spatial Strategy and a study conducted by Alterra (2005) show that a great deal needs to be done to bring Dutch towns and cities back to the level where they should be: almost two-thirds of the fifty largest Dutch municipalities offer less than 75 m^2 of green within a radius of 500 metres of a given home. Many green areas have disappeared or have been moved to the periphery. In addition, around a thousand hectares has been trimmed off the green areas around towns and cities (National Buffer Zones), to be replaced by buildings. Forecasts predict that the pressure on urban vegetation will increase further, since the population is growing and policy dictates that the density of existing built-up areas be increased.' [Brosens, 2008]

Vegetation and health

Children in green districts are less likely to be overweight. Of course this might be caused by a variety of possible reasons, for example the income and level of education of the parents and the corresponding financial opportunities and living patterns. However, no one will question the fact that appealing and green playing facilities are important for all children and that many districts lack such areas.

The presence of green areas nearby encourages residents to go cycling or walking or to work in their gardens, all of which help to improve their health. Evidence shows that vegetation in people's living environments reduces the possibility of depression and many other diseases [Maas, 2008]. As is explained elsewhere in this book, green districts remain cooler on hot days and nights, which helps create a healthier microclimate. Views of green areas accelerate recovery and reduce the number of days patients stay in hospital and the use of painkillers [Ulrich, 1984]. People feel healthier in green surroundings [Maas, 2008]. Initial studies show the positive impact of vegetation in living environments. As urbanisation will continue to increase and the preferred solution is to increase the density of development, it is important to conduct research into the importance of vegetation for people's wellbeing and health. Little research has been done into the importance of small areas of green, such as neighbourhood vegetation, street trees, green roofs and facades and private gardens, for people's health and wellbeing. This important task is still waiting to be done.

The importance of nature for playing

Natural playing areas help children's development, wellbeing and health. It is becoming more and more apparent that children no longer seek out nature, are unable to explain where food comes from or are concerned about the world's environmental problems; improving the relationship between young people and nature is becoming an increasingly important task. Children of primary-school age in particular feel a special connection to natural surroundings. Natural surroundings are much more appealing to them then built-up environments [Health Council of the Netherlands and Advisory Council for Research on Spatial Planning, Nature and the Environment (RMNO), 2004]. Being able to seek out nature close to their own homes offers children innumerable benefits which are fundamental to their personal development. Children gain very intensive experiences in nature. Contact with nature enhances feelings of self-awareness and autonomy and stimulates processes of assigning meaning and value [Margadant in Health Council of the Netherlands and RMNO, 2004]. Multiple studies have shown that natural playgrounds influence the development of children's motoric skills more favourably than traditional playgrounds. By experiencing nature close up, children develop a sense of responsibility and involvement: a nurturing attitude toward nature. They learn about different aspects of nature and the importance of preserving nature and the environment [Van den Berg et al., 2007]. If modern-day children learn about green surroundings at an early stage, it is more probable that later in life they will be concerned about variety in nature, healthy food and different landscapes [Council for Rural Areas, 2008]. Adventuresome surroundings filled with natural elements encourage construction play and imaginary play, which in turn have a positive influence on their cognitive and social skills. [Faber Tayor et al., 1998 in Health Council of the Netherlands and RMNO, 2004]

Social importance of green areas

Neighbourhood vegetation situated between 0 and 300 metres from the home is perhaps the most important to town and city dwellers. A distance of 300 metres can be covered on a daily basis. Neighbourhood vegetation is in fact the only place where people can meet and spend time together without obligations and without needing to spend any money. Attractive neighbourhood vegetation and parks are therefore vital to how a district functions. Neighbourhood vegetation and parks should be designed with the needs of various age groups and the preferences of the different cultures in the district in mind. The best solution, obviously, is to involve the locals in the design and upkeep of the green space or park. The Poptahof project in Delft, the EVA-Lanxmeer project in Culemborg and the Hof van Heden project in Rotterdam, which are all described in greater detail elsewhere in this book, are examples of what involving the residents can mean for a district. Studies show that people with more vegetation in their living environments feel less lonely and are less likely to experience a perceived lack of social support. [Maas, 2008]

Quality of life and safety

A positive correlation exists between the amount of green in a person's living environment and that person's sense of safety. In highly urbanised locations, enclosed green spaces are felt to be unsafe and the design of green elements requires special attention. [Maas, 2008]

Economic value

Urban vegetation and water have a direct economic value. *'That increase in value varies between 4% and 12%, depending on where the home is situated and on the type of water or vegetation. The average buyer is prepared to pay an estimated 7% more for a home bordering directly on a public green space or water. Unobstructed views of the open space leads to a 12% price increase, and the presence of appealing nature close to the town or city generates an increase of value of 5-10%. Houses with gardens bordering on water connected to a recreation lake are a special case: the increase in the value of these homes can run as high as almost 30%.'. [Jókövi, 2003]*

Higher house prices also mean higher values for property tax and so lead to more income for the municipality.

Green areas in towns and cities are also important in terms of the climate for attracting knowledge-intensive and internationally operating businesses and highly-educated individuals. *'The living environment is only a factor in the choice of location for research and development businesses and other businesses with highly educated employees. Businesses measure the quality of the living and recreation environment primarily by the amount of physical variation in the living environment and by the presence of good schools and pleasant outdoor recreation areas. Vegetation plays a part here, but green areas within the same district are felt to be more important than large green elements in the region.' [Jókövi, 2003].* Naturally, green facilities and water in and around the town or city also add to the tourist value and stimulates incomes in the recreation sector.

As discussed in the chapter on Heat, vegetation in towns and cities helps to lower maximum temperatures in summertime, which in turn reduces the loss of labour productivity during heat waves.

Connection between urban and rural areas

The presence of a web of attractive slow-traffic routes for cyclists and pedestrians throughout a city keeps people out of their cars. As temperatures increase, they will be more inclined to travel by bicycle (see

Chapter 5: Heat). These slow traffic routes can easily be combined with green zones and so form a pleasant connection between the urban environment and its surroundings. Green connections between towns and cities are also important for the inflow of fresh and cool air. As explained previously, urban green zones can be designed to incorporate many more economic functions than is currently common practice: urban agriculture, water treatment and retention facilities, and biomass production.

Climate adaptation

Depending on how the vegetation and the ground below are structured, some green surfaces have a significant sponge effect on precipitation, eliminating the need for drainage. The same is true of water surfaces designed to retain water by allowing for fluctuations in water levels. Green roofs, bioswales with vegetation, a minimum percentage of impervious surfaces and a maximum of vegetation can help create a more climate-proof town or city. Green surfaces and green banks also help to keep the surface water clean. More extensive wetlands and flood zones along rivers reduce the risk of flooding, help to improve the quality of the water and contribute towards recreation and biodiversity.

Green areas in towns and cities increase the urban retention capacity, helping to reduce the costs for drainage and retention facilities elsewhere and for water treatment. Using vegetation more efficiently in flood barriers can render expensive mono-functional retention facilities superfluous. Green retention facilities serve more functions and as such are much more efficient in economic terms, too.

Heat reduction

On hot days, districts with large amounts of vegetation or surface water can be up to 10 degrees cooler than largely paved urban areas. Trees have a favourable effect on the microclimate due to the shade they provide and the fact that the ground below them retains less heat. All forms of green and water surfaces have a cooling capacity because of evaporation.

Green areas in the shape of green roofs, green facades and strategically positioned trees can help reduce the amount of energy used for air conditioning in buildings. Spaces below green roofs and behind green walls stay cooler. Spaces under trees stay cooler because of the shade, but also because of evaporation.

Today many offices already use more energy for air conditioning than they do for heating. Climate change will only cause the need for energy for air conditioning to increase. Using vegetation to keep urban temperatures down is becoming more and more important for reasons of energy consumption, health, labour productivity and well-being.

Enhanced biodiversity

Contrary to popular belief, towns and cities house many species of flora and fauna. This can be improved by extending green-blue networks and making better use of the many surfaces in towns and cities as homes for vegetation and biodiversity, for example roofs and facades, and by eliminating unnecessary paving.

Loss of biodiversity can cause economic harm, for example because the chance of disease is greater when the ecosystem becomes unbalanced.

Food production

In many of the world's metropolises, urban food production is still a reality. However, in Western towns and cities it is becoming a new trend once more, as evidenced by the emergence of urban agriculture, city gardening, guerrilla gardening and farmers' markets. The increase of sales of products from organic farmers is growing. Similarly, town and city dwellers appear to feel the need to know where and how their food is produced. This offers a significant growth potential for urban farmers.

Improved air quality

Green areas cannot compensate for all the pollution caused by human activity and will never be able to replace active measures to deal with sources of pollution. Nevertheless, vegetation and urban trees can absorb CO_2 and sulphur dioxide and bind particulate matter, and as such can help bring about at least a degree of improvement. It is probably more important for our urban conglomerates that open green zones draw in air from the outlying areas. Vegetation also cools towns and cities during hot spells, which can help reduce the number of days with inversion. Improved air quality has a direct impact on public health.

Energy produced from biomass and water

Green waste and wood from urban production forests can be used for fermentation or as fuel. Solid matter in waste water and organic urban waste can also be fermented. This can be used to produce energy and biogas. Heat can be extracted from waste water for reuse. Heat can also be extracted from surface water. Using these methods, vegetation and waste can contribute to the town or city's energy supply and cycles of substances can be closed.