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European  
Commission

# Looking to nature for a healthier Europe

Over three quarters of Europeans now live in urban areas. Whilst this has many advantages, urban living can nevertheless lead to increased health problems for its citizens. In recent years, the relationship between public health and nature has been increasingly documented. Nature-based solutions offer decision-makers a new and innovative approach to addressing some of today's key health challenges.

Urban parks, Natura 2000 sites, green spaces, tree-lined streets, green roofs and ecological sound barriers are just some of the measures that have been used successfully to help improve the health and well-being of Europeans in cities and other urbanised areas.

## Health and social benefits of biodiversity and nature protection

### Health benefits

Improved air quality

Improved climatic conditions

Noise reduction

Attractive living environment

Healthier lifestyles and physical activities

### Social benefits

Reduced social tension

Societal engagement

## Improving air quality

The European Commission has estimated that 420,000 people died prematurely in 2010 as a result of air pollution in Europe. Healthcare spending on respiratory diseases in the EU represents €47.3 billion, or 6% of the total healthcare budgets of the Member States (HEAL & HCWH, 2010). This means that even small improvements in air quality can pay substantial dividends.

Scientific and empirical evidence shows that natural spaces play an important role in controlling air pollutants, particularly in heavily polluted urban areas. Vegetation has a natural capacity to absorb and remove pollutants and can fix particulate matter on the leaves and stems of plants, thus removing it from the atmosphere. Natural spaces also provide oases of clean air away from roads, cars and industrial sites.

### 'Green Ventilation Corridors' – Stuttgart, Germany



**CASE STUDY** Stuttgart's geography, industry and heavy traffic make the city particularly susceptible to poor air quality. Since 2008, the city has complemented at source pollution policies with a GIS and green infrastructure strategy. The strategy which integrates four Natura 2000 sites has increased green space coverage to 60%, including 300,000 m<sup>2</sup> of green rooftops and 40 km of vegetated tram tracks. For 2016 and 2017 the city will invest €1.8 million in new GI projects. In addition, €400,000 will be invested in a 100 m-long moss wall designed to catch harmful pollutants on a busy road.

## Reducing the heat-island effect

Densely populated cities often suffer from a heat-island effect, with markedly higher temperatures in the city than in its surroundings. With climate change, the risks to health in cities from heat stress are expected to increase in the future, especially amongst the more vulnerable members of society, such as the elderly or young children.

Protected areas, green open spaces with no or low-density development as well as various forms of green urban

infrastructure, such as green roofs, can help mitigate the heat-island effect by generating cool-air corridors. Two processes are at work here: firstly, green structures provide shading which reduces the extent to which hard surfaces such as tarmacked roads heat up; and secondly, green structures cool their environment through evapotranspiration.

### River redevelopment scheme – Lyon, France



**CASE STUDY** The heat wave in 2003 increased the mortality rate in Lyon by 80% above the average for a French city. To prevent this from happening again, the authorities adopted a new climate adaptation plan to increase access to cool and shaded areas. A €42 million redevelopment programme was subsequently launched to implement the new strategy. In 2007, the banks of the Rhône River, which runs through the heart of the city, were re-opened for the first time, thanks to the redevelopment scheme, providing citizens with 5 km of attractive riverside pathways and green spaces.

## Reducing noise

The World Health Organisation estimates that 40% of the EU population is exposed to road traffic noise at levels exceeding 55 db. Auditory effects mainly include hearing impairment and tinnitus but it can also cause annoyance, sleep disturbance, stress, hypertension and cardiovascular diseases, as well as impaired cognitive development in children.

Natural vegetation can significantly reduce noise levels. There is also evidence that the mere presence of vegetation influences noise perception, regardless of whether the noise is actually reduced or not. Vegetation along roads, for instance, can increase the effectiveness of traditional noise barriers and enhance their integration in the landscape. Green walls and green roofs have also been proven to reduce exposure for residents and pedestrians living close by.

**CASE STUDY** A former industrial zone in Villejuif (a southern suburb of Paris) was recently converted into a large urban park spread over 23 hectares. The park acts as a buffer zone between the highway and the residential area and offers an attractive space for recreation and biodiversity. There are sports pitches, a 'silent garden' in the shape of an amphitheatre and a medicinal garden.



## Le Parc des Hautes Bruyères, Villejuif, France



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To reduce noise levels even further, a 60 m-wide earth berm was installed to act as a sound barrier. Thanks to these measures, inhabitants located in the east of the park are now experiencing much lower noise levels than before.

## Creating an attractive living environment

The presence of green spaces close to people's living and working places can have a positive impact on their general health and wellbeing, as well as on their overall quality of life. Living close to a green area has been shown to not only reduce stress levels and mental fatigue, but also generate a beneficial effect on mood and concentration.

Acute and chronic stress is an important public health concern. Prolonged stress is linked to several diseases such as infections, cardiovascular, gastro-enterological and immunological diseases, diabetes, depression and aggression. Being in contact with nature can support health and wellbeing at different periods in life. Nature has restorative, stress-reducing effects and even a short break from work in a green area can have positive effects on one's mental and physical wellbeing.

## The Alnarp Rehabilitation Garden – Skåne, Sweden



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**CASE STUDY** In 2001, a rehabilitation garden was built on the university campus of Alnarp. The aim was to pilot the effectiveness of nature-based rehabilitation on individuals recovering from stress-related disorders and stroke. The garden has proven to be a success. Just one year after rehabilitation, the costs for primary care dropped by 28% for those participating in the scheme, and the number of days spent in hospital fell by 64%. The local municipality has since expanded the scheme to a further 11 rehabilitation gardens in and around the town.

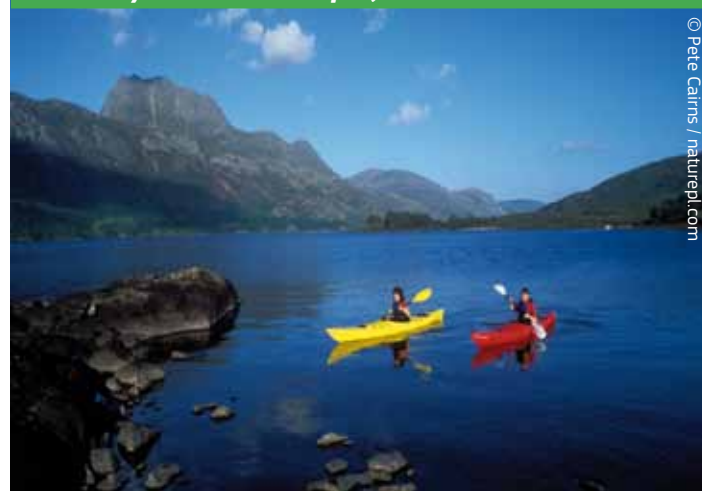
## Promoting outdoor recreation and physical activity

In Europe, low physical activity is one of the biggest health risks. In many European countries, the national recommendation for children and young adults is at least 60 minutes of moderate to vigorous physical exercise each day, in line with the WHO global recommendations.

Evidence shows that exercising in the presence of nature leads to a whole range of positive short- and long-term health benefits, including higher vitality levels and improved physical as well as mental health. People also tend to spend more time exercising in a green space as compared to other environments.

Various studies have indicated that people living more than 1 km away from the nearest green area reported poorer health problems than those living closer to a green space.

## Moved by Nature – Kuopio, Finland



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**CASE STUDY** The 'Moved by Nature' initiative was set up to enable vulnerable groups to benefit from access to physical activity in natural spaces across Finland. The pilot study in Kuopio included men at risk of Type 2 diabetes. Participants were given a choice of different outdoor activities (e.g. canoeing, hiking, horse riding, ice fishing) in the Puijo protected area, a Natura 2000 site. The vast majority of men participating in the programme have since lost weight which has in turn lowered their risk of developing diabetes.

## Encouraging greater social cohesion and stakeholder engagement

Having access to, and using, shared green public spaces and a wider green infrastructure can contribute to increased social cohesion and reduced social tension. Engagement in the natural environment, such as urban green spaces, woodlands or protected areas, can take various forms – including volunteering, training and employment and other communal actions, such as maintaining community gardens and allotments.

Volunteering in the natural environment helps build a stronger sense of community by enabling people to strengthen existing social relationships and develop new ones. Studies indicate that volunteering also increases social support and reduces social isolation, and can enhance people's personal development and self-esteem.

### Community Initiatives – Zmeeva Dupka, Bulgaria



**CASE STUDY** In 2011, the Bulgarian NGO – SOS Children's Village Tryavna – constructed an eco-trail within a Natura 2000 site to improve access to nature for local children who are without parental care. A group of exchange students from Hong Kong contributed to the costs and construction of the trail by collecting donations and helping to collect litter in the park. Prior to the construction of the trail, the protected area was rarely visited and suffered from misuse. Today, the route is a popular site for school trips from Tryavna and is increasingly used by tourists, demonstrating a growing appreciation of the community's ecological assets.

## Natura 2000



The Natura 2000 network is made up of over 26,000 sites across Europe, covering around a fifth of the EU territory, some of which are located in urban areas. The main purpose of Natura 2000 is to protect Europe's most endangered biodiversity. But, in doing so, the network also provides a range of ecosystem services to society which are estimated to be worth in the order of €200 to €300 billion/year.

There is a clear synergetic relationship between Natura 2000 sites and health and wellbeing benefits. In general, the current evidence indicates that, while having a protected area status is not an absolute precondition for an area to deliver health and social benefits, Natura 2000 sites and other protected areas, especially when located within or close to urban areas, are a very useful mechanism for maintaining and promoting such benefits. Creating awareness of these multiple benefits should encourage different stakeholders to drive forward further health-social-nature initiatives.

