

# PERFECT factsheet 1



European Union  
European Regional  
Development Fund

# green infrastructure and health

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## Definitions

- **Green infrastructure:**

A strategically planned network of high-quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings.

- **Health:**

A state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity.

- **Public health:**

The art and science of preventing disease, prolonging life and promoting health through the organised efforts of society.

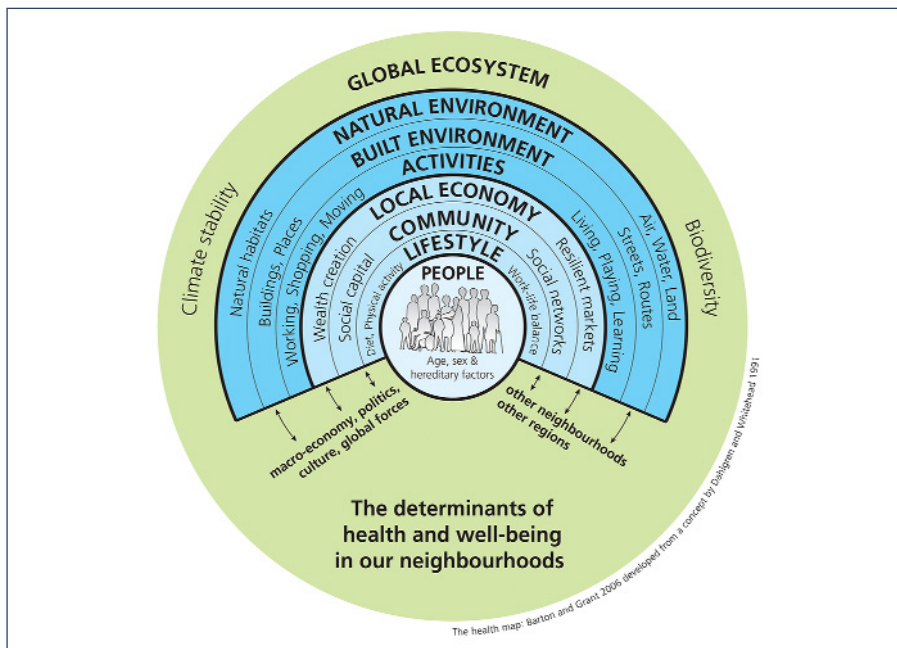
- **Mental health:**

A state of wellbeing in which every individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community.



## Why is green infrastructure important for health?

Throughout history, people have enjoyed spending time in gardens, parks and green spaces. There is now wide-ranging and robust evidence that green spaces have measurably positive effects on people's health. This is not just about taking exercise in green spaces, although that is, of course, beneficial; even being able to see trees through a window offers benefits to both mental and physical health.<sup>1</sup> Investing in what is now known as green infrastructure is a cost-effective way of investing in public health.



The 'wider determinants of health' – sometimes called the 'social determinants of health' (see the diagram produced by Hugh Barton and Marcus Grant above) – are the many factors that influence whether or not people live healthy lives. Some of them, such as our genes, our age and our gender, are things over which we have no influence. Others, such as our homes and neighbourhoods, our social networks, and the natural environment and climate, are things that are shaped by the societies in which we live.

The planning system has an influence over many of the wider determinants of health, including people's lifestyles, their local communities, the activities available to them, the local economy, the built environment, the natural environment, and the mitigation of and adaptation to the effects of climate change.

## The role of green infrastructure in health promotion

There is a lot of robust evidence that green infrastructure can help to improve people's health and wellbeing in many different ways. Investing in green infrastructure is cost effective because green infrastructure can deliver many benefits at once. It is also effective in reducing health inequalities.

This factsheet outlines some of the ways that green infrastructure can benefit health.



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## Improving mental health

There is wide-ranging international evidence that spending time in green spaces is good for a range of mental health conditions. It has been shown that people living in greener urban areas tend to be happier than people in areas with less urban greenery. General health questionnaire scores have shown that people living in greener areas experience significantly lower levels of mental distress, while life satisfaction scores have indicated significantly higher levels of wellbeing among people living in greener areas.<sup>2</sup>

The mental health and wellbeing benefits of green space can also result from participation in activities occurring in such spaces, such as social interaction or physical exercise.<sup>3</sup> Benefits include alleviation of stress and anxiety, and improved mood and attention span.<sup>4</sup>

A green urban environment that supports health in general may also produce healthier workforces, enhancing people's productivity and earning potential as well as their quality of life. Reductions in productivity due to obesity and depression are major cost factors affecting businesses. Improving access to green space can enhance mental and physical health and produce major economic benefits through reduced absenteeism. Engaging with nature benefits those living with conditions such as attention deficit hyperactivity disorder, depression and dementia, by improving cognitive functioning and reducing anxiety.<sup>5</sup>

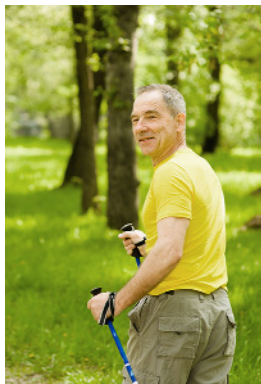
Evidence indicates that participation in physical activity in a natural setting is associated with more improved mental health outcomes than is the case for participation in physical activity in an indoor setting.<sup>6</sup>



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**'Improving access to green space can enhance mental and physical health and produce major economic benefits through reduced absenteeism'**





## Encouraging physical activity and improving physical health

The health benefits of physical activity are potentially huge. If there were medication that had a similar effect, it would be regarded as a 'wonder drug' or 'miracle cure'.<sup>7</sup> In the UK, illness as an outcome of physical inactivity has been calculated as costing the National Health Service alone between £0.9 billion and 1 billion per year.<sup>8</sup> Indirect costs have been estimated at £8.2 billion per annum.<sup>9</sup>

There are strong links between the availability of green space and greater levels of physical activity and its associated health benefits. A study carried out across Europe found that people living in areas with large amounts of green space were three times as likely to be physically active as people living in areas where there is little green space.<sup>10</sup>

There is evidence that improvements to air quality, prioritisation of neighbourhood tree planting and the provision of open and green spaces are all associated with increases in physical activity and improved general physical health outcomes.<sup>11</sup> It has been convincingly argued that planting trees is the best thing we can do for public health.<sup>12</sup>



**'Open space provides a platform for community activities, social interaction, physical activity and recreation'**

## Encouraging social cohesion and a sense of belonging

Social cohesion is vital for a sustainable community. Open space provides a platform for community activities, social interaction, physical activity and recreation, thus helping to reduce social isolation, improve community cohesion and positively affect the wider determinants of health.<sup>13</sup>

A study carried out in the Netherlands found an association between the quantity and – even more strongly – the quality of streetscape greenery and perceived neighbourhood-scale social cohesion, defined in the study as a sense of community, with a focus on trust, shared norms and values, positive and friendly relationships, and feelings of being accepted and belonging.<sup>14</sup>

## **Benefiting the health of children and older people**

Green infrastructure can have a positive impact on the wellbeing of children and young people. High levels of greenery at home and at school have been associated with improved cognitive development in schoolchildren (better progress in working memory and reduced inattentiveness).<sup>15</sup> Evidence also suggests that improving the appearance of parks can increase physical activity among children, as well as among adults.<sup>16</sup>

According to research in Switzerland, public urban green spaces play an important role in children's and young people's social networks, including friendships across cultures, thus helping to promote social inclusion.<sup>17</sup>

Green infrastructure can have a positive impact on the wellbeing of elderly people. Many older people find it very difficult to maintain even moderate levels of physical activity, so providing green spaces that encourage older people to be active, even if only at a light level, is important for public health.<sup>18</sup> A positive relationship between the amount of green space and self-reported health in senior adults has been demonstrated in the Netherlands. An assessment of the role of green spaces in helping to tackle sleep deficiency found a stronger beneficial effect for people aged 65 and older, compared with younger adults.<sup>19</sup>

## **Reducing air and noise pollution**

Evidence shows that air pollution in European cities is currently responsible for a significant numbers of deaths and hospital admissions and for exacerbating the symptoms of poor health.<sup>20</sup> Green infrastructure can help to improve air quality and reduce health risks from air pollution. However, to be fully effective it needs to be combined with other changes to land uses at broader spatial scales.

Natural capital is one of the key determinants of health, and air quality is one area where great gains can be made.<sup>21</sup> Trees and other vegetation can remove pollutants from the air and reduce atmospheric carbon dioxide through carbon storage and sequestration.<sup>22</sup>

Noise pollution is a major and increasing threat to human health in urban areas, due to industrial activity, rising traffic volumes, and the decreasing availability of quiet places.<sup>23</sup> Evidence suggests that well-designed urban green space can buffer the noise (or the negative perception of noise) emanating from non-natural sources such as traffic and can provide relief from city noise.<sup>24,25</sup>



**'There is growing evidence showing that the benefits of urban green space may be greater for the lowest socio-economic groups'**

### **Reducing health inequalities**

Provision and maintenance of appropriate green space in urban areas can make an important contribution to reducing health inequalities. There is growing evidence showing that the benefits of urban green space may be greater for the lowest socio-economic groups, including minority ethnic groups.<sup>26</sup>

One UK study found that the quality of, access to and use of urban green space was a significant predictor of overall health for African Caribbean, Bangladeshi, Pakistani and other minority ethnic groups<sup>27,28</sup> – who were also those with the poorest general health.

### **Mitigating the urban heat island effect**

The urban heat island effect can pose a serious health hazard during heatwaves and extreme heat events. It arises as a result of the replacement of vegetation with impervious heat-absorbing surfaces in urban areas.<sup>29</sup>

Urban greenery such as parks, street trees and green roofs mitigate the urban heat island effect.<sup>30</sup> During warmer weather, trees can offer shade and reduce the demand for air conditioning, and – especially in warmer countries – they can provide comfortable outdoor settings and allow people to avoid heat stress.<sup>31</sup>

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## About PERFECT

PERFECT (Planning for Environment and Resource efficiency in European Cities and Towns) is a five-year project, running from January 2017 to December 2021, funded by Interreg Europe. It aims to demonstrate how the multiple uses of green infrastructure can provide social, economic and environmental benefits. It will raise awareness of this potential, influence the policy-making process, and encourage greater investment in green infrastructure.

To find out more about PERFECT, visit <http://www.interregeurope.eu/perfect/>

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