

## 4 Services provided by nature

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- 4.1 This section provides evidence about the different services provided by nature. Specific services may be of interest to different policy makers and practitioners, so you may choose to focus just on those. Alternatively, you may be interested in overarching themes such as economic competitiveness, so [Chapter 2](#) and [Chapter 3](#) may be useful in identifying how the environment contributes to those themes.
- 4.2 It is important to note that not all services provided by nature are included here. The ones chosen are the ones which on the basis of current evidence are most important in the context of environmental projects. The ones selected are also those for which we have available scientific and economic evidence.

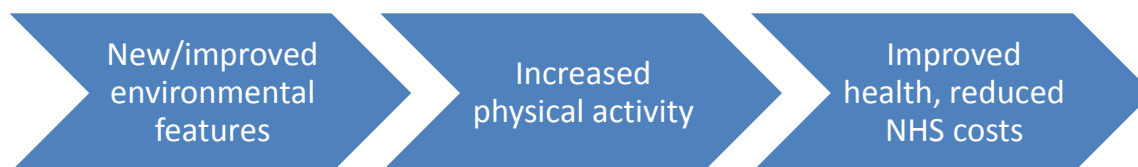
## 4i Physical activity

*The evidence that access to the natural environment contributes to increases in physical activity is inconclusive. This benefit should be considered as possible but unproven.*

### Introduction

- 4.50 Being physically active is strongly linked to improvements in health and wellbeing. Some of this evidence is presented below. However, this section primarily examines the evidence that the natural environment (particularly managed greenspaces such as parks) impacts on the amount of physical activity undertaken by individuals. The link between the natural environment, mental health and physical activity is discussed in Section 4f **Mental health**.
- 4.51 In 2008, only 39 percent of men and 29 percent of women aged 16 and over met the UK Chief Medical Officer's minimum recommendations for physical activity (Aresu, Becares et al. 2009)<sup>104</sup>. There is an established causal link between physical activity and at least 20 different chronic health conditions, including coronary heart disease, stroke, cancer, type 2 diabetes, mental health problems and musculoskeletal conditions (Department of Health 2011). A one percent decrease in the UK sedentary population is estimated to result in 848 fewer deaths per year, and 30,363 fewer illnesses (Mourato, Atkinson et al. 2010).
- 4.52 In 2006-07, an estimated £0.9 billion was spent by the NHS on physical inactivity related ill-health (Scarborough, Bhatnagar et al. 2011). It is estimated that by 2050, 60% of adult men, 50% of adult women and 25% of children under 16 could be obese and that this would cost the National Health Service (NHS) £10 billion a year and wider society £49.9 billion a year (Foresight 2007)<sup>105</sup>. Any increase in the amount of physical activity undertaken could therefore lead to significant social and economic benefits.

### Theory of change



### Can the benefit be quantified?

- 4.53 In principle, the health outcomes of increased levels of activity can be quantified (on an appropriate average basis) and this can then be linked to health outcomes and economic values. Tools to do this for walking and cycling have been developed by the World Health Organisation (see <http://www.heatwalkingcycling.org/>). The difficulty lies in quantifying the relationship between the new or improved environmental features and any change in activity levels, particularly given the need to allow for substitution effects (i.e. people changing exercise locations, but not the total amount of activity undertaken).

### How strong is the evidence?

- 4.54 The evidence that changes in the natural environment impact on physical activity levels is mixed, particularly in the UK. A review for the UK National Ecosystem Assessment found that there was 'no conclusive evidence on the strength of the relationship between the amount of greenspace in

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<sup>104</sup> At least 30 minutes of moderate or vigorous activity 5 times per week or more.

<sup>105</sup> Figures at 2007 prices.

the living environment and the level of physical activity' (Mourato, Atkinson et al. 2010: 65). This finding is supported by Lachowycz and Jones (2010) who found that out of 50 papers reviewed, 20 reported positive results linking greenspace and physical activity, 28 reported no relationship or weak/mixed results, and the remaining 2 reported a negative link between greenspace and physical activity.

- 4.55 This particular area of research is still relatively under-developed, and many studies use relatively crude or inappropriate measures of greenspace and physical activity, which may affect the results obtained (Lachowycz and Jones 2010). A large amount of the research to date is cross-sectional, so it may show a possible relationship between physical activity and the natural environment, but not whether or not the natural environment causes a change in physical activity.
- 4.56 The majority of adult physical activity occurs at home, travelling to/from work, or at work. It could be considered that these are more functional or goal-oriented forms of activity, and therefore less likely to be affected by the environmental surroundings in which they take place (Mytton, Townsend et al. 2012). Factors such as safety and convenience may be potentially stronger influences.

## Evidence

- Baumann and Bull (2007)<sup>106</sup> examined existing literature reviews on environmental attributes correlated with physical activity. They found that proximity to recreation facilities, attractive destinations, land use composition, urban 'walkability' scores and aesthetics were all correlated with physical activity.
- A study in Bristol, UK found that people who reported difficulty in accessing greenspace were 22% less likely to report physical activity at recommended levels, than those who found it very easy to access. The likelihood of reporting participation in physical activity at recommended levels was 48 percent lower for those who visited greenspaces 2-3 times per month, compared to weekly or more. Increasing distance to greenspaces was associated with less physical activity (Hillsdon, Jones et al. 2011)<sup>107</sup>.
- By contrast, Hillsdon et al. (2006) found no significant relationship between distance to parks, quality of parks, and activity levels in Norwich, UK, amongst middle aged adults (aged 45-74) (Hillsdon, Panter et al. 2006)<sup>108</sup>.
- Using data from the Health Survey for England, Mytton, Townsend et al. (2012)<sup>109</sup> found that people living in the greenest quintile of England were 24 percent more likely to achieve the recommended levels of physical activity, than those who live in the least green quintile. However, no positive association was found between the amount of greenspace and specific physical activities such as walking, which may be more likely to occur in greenspace. In fact, those living in the least green quintile were significantly more likely to walk than those in the greener quintiles.

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<sup>106</sup> Most of the research examined came from the USA or Australia, however it seems reasonable that the attributes identified would also be relevant to the UK.

<sup>107</sup> This study relied on self-reported physical activity levels. It also looked at only the probability of achieving recommended activity levels, not any increase/decrease in physical activity that might occur.

<sup>108</sup> This study considered both distance to and quality of local greenspaces, and found no significant relationship with activity levels, even when level of deprivation and car ownership was controlled.

<sup>109</sup> This study used the Generalised Land Use Database to map greenspaces. This is a somewhat basic measure and does not account for the quality of the greenspace. Survey respondents were not asked about the locations of their physical activity, so it is unclear if those living in greener quintiles actually spent more time being physically active in greenspaces, or in other locations. The finding that those living in less green quintiles are more likely to walk could possibly be explained by lower rates of car ownership, as greenspace tends to be less present in areas that are economically deprived.

- Cohen's (2007)<sup>110</sup> research in deprived predominantly ethnic minority areas of Los Angeles found that residents said that parks were the most important place to exercise and that only 13% of park users lived more than 1 mile from the park. However, this research took place in Southern California, which for climatic reasons is likely to have an outdoor exercise culture.
- Nielsen and Hansen's (2007)<sup>111</sup> study in Denmark found a statistically significant relationship between access to a garden or local greenspace and lower levels of stress and obesity. However, they concluded that the strength of the effect was too strong to be explained only by visits to these spaces and that this may be an indicator of an area more conducive to spending time outdoors and active travel.

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<sup>110</sup> This study found that only 6 per cent of residents reported using a health club for exercise, which highlights the importance of parks to poorer communities who may not be able to afford access fees. The study relates park facilities to demographic groupings and has an appropriate stratified random sampling model, however due to the study location, it may be limited in its relevance to the UK.

<sup>111</sup> The study controlled for housing condition, employment, level of education, ownership to dwelling, age, gender, household type, second home and bicycling for work.