

Great Outdoors: How Our Natural Health Service Uses Green Space To Improve Wellbeing

Briefing Statement

A Faculty of Public Health publication In association with Natural England

Summary

There is mounting evidence demonstrating the contribution green spaces can make to mental and physical health and wellbeing.

This statement gives examples of good practice and advice on how to work in partnership to develop and make best use of green spaces for health and wellbeing.

Key Points

A wide range of evidence suggests that contact with safe, green spaces can improve a number of aspects of mental and physical health and wellbeing as well as various social and environmental indicators. For example:

- Contact with green spaces and natural environments can reduce symptoms of poor mental health and stress, and can improve mental wellbeing across all age groups.
- Access to green spaces can increase levels of physical activity for all ages.
- Having green spaces in an area can contribute to reduced health inequalities.
- Safe, green spaces can increase levels of communal activity across different social groups as well as increase residents' satisfaction with their local area.
- Green spaces can help with our response to climate change through their potential to reduce the impacts of heatwaves and reduce flooding and reducing CO₂ emissions.
- Green spaces and natural environments can improve air and noise quality and support sustainability through increasing biodiversity, encouraging active transport and community participation.

Recommendations:

- Local authorities should provide more accessible green spaces and open-air leisure facilities in which children, families, adults and older people can safely play and exercise.
- Local strategic partnerships, especially those in urban areas, should explore ways of maximising the use of available green space for promoting health and wellbeing among all groups and communities
- Local strategic partnerships should explore how best to develop and maintain the public health and economic benefits of green spaces, particularly in urban areas.
- GPs should make more use of alternatives to medication for mental illness, including advice to spend time and exercise in green spaces
- Exercise prescription schemes in general practice should encourage and incorporate physical activity in green spaces
- Programmes, such as *Walking for Health* and others, which encourage physical activity in green spaces and natural environments should continue to be fully supported
- Primary care organisations should consider how to support programmes which encourage contact with green spaces as an adjunct to treatment options within mental health.

Major research-funding bodies should specifically commission research on the potential role and cost-effectiveness of green spaces in preventing mental and physical ill-health and reducing health inequalities

Government should create a central web-based resource to collate evidence from across the range of disciplines and sources that are involved in green spaces.

Summary of Potential Benefits

- Improved mental health and wellbeing for children, young people and adults
- Increased likelihood of physical activity across all age groups.
- Reduced violence and aggression: a reduction in antisocial behaviour and incidence of crime in urban areas with green spaces
- Reduced health inequalities: significant reductions in mortality and morbidity from all causes and circulatory disease associated with areas of greater green space. This result takes into account effects of income deprivation.
- Improvement in air and noise quality
- Economic benefits

Key Terms

Green Spaces

Green space includes many types of land from formally designated areas such as parks, to more natural areas (e.g. corridors along river banks).¹ Green spaces can also be created through green roofs and tree-lined streets.

Mental Wellbeing

Is a dynamic state in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, is able to build strong and positive relationships with others and is able to make a contribution to his or her community²

Introduction

Green Spaces, Mental Health and Wellbeing

Almost one in six people in the UK will suffer from mental ill-health in their lifetime.³ Mental ill-health can lead to and maintain health and social inequalities. It accounts for almost 20% of the burden of disease in Europe.⁴ Poor mental health also costs the economy an estimated £26.1 billion a year, because of the thousands of people unable to work due to their mental illness.⁵

Since the 18th Century, we have been promoting good quality natural environments as an important determinant of health. David Hume lobbied Edinburgh council in 1724 to build a path up Calton Hill, 'for the health and amusement of the inhabitants', and you can still walk up Hume Walk today. The workers' village of Saltaire, Yorkshire, built in 1853 by Sir Titus Salt, included green spaces such as a park and allotments for the health and wellbeing of his mill's employees. Ebenezer Howard's Garden City movement was borne out of a desire to create "a healthy, natural, and economic combination of town and country life".⁶

But, over the last 20 years, fewer people have been visiting the countryside and urban green spaces such as parks and allotments. There is also pressure from developments and construction projects. However, there is growing recognition that outdoor and natural environments can have health benefits. There is also a growing evidence base, from a range of disciplines, on the positive health impacts – both mental and physical – of contact with natural environments.

Evidence of Benefits of Green Spaces

Economic Benefits

Several sources have suggested that green spaces can have potential economic benefits for an area, especially in urban areas. This includes public health, as well as urban regeneration and encouraging inward investment.^{7, 8, 9}

A US study for Philadelphia estimated that maintaining city parks could achieve yearly savings of around \$69.4 million in health care costs. Parks could also have an estimated yearly value for the city of \$5.94 million in storm-water management, \$1.53 million in air pollution mitigation and \$8.6 million in social cohesion benefits.¹⁰

A recent Scottish study estimated that investment in conservation volunteering projects could yield £7.36 for every £1 invested.¹¹

Benefits to Health and Wellbeing

Green spaces has a role to play in improving wellbeing and treating mental ill-health. Physical activity has been shown to improve outcomes in the treatment of mental illness and to improve wellbeing.^{12, 13, 14} (Evidence Level A/B). Reviews of evidence suggest that that green spaces encourage physical activity in all age groups^{15, 16} (Evidence Level C). Modelling studies also suggest that active travel strategies can also reduce rates of depression (Evidence Level B)¹⁷ Experimental studies on volunteers have shown a reduction in measured physiological stress indicators (e.g. EEG alpha-wave activity, skin conductance, blood pressure) during nature viewing compared to a rise during non-nature viewing.¹⁸ (Evidence Level A). Surveys of mental health patients suggest that contact with green spaces may reduce the need for medication and services.¹⁹

In addition, faced with rising costs of medication for some conditions such as Attention Disorder Hyperactivity Syndrome (ADHD),²⁰ the use of green spaces might also be considered within the range of potential treatment options. At a population level, local partnerships might wish to consider the costs and benefits of green spaces for improving public mental health alongside their spending on mental health prescribing and care/support service provision.

Increasingly, good spatial planning is also seen as improving the health and wellbeing of whole communities, especially in urban areas. Green spaces could also have a role in the interplay between physical, cultural and socio-economic aspects of the built environment.²¹

Strength of the Evidence

Overall, the evidence from a range of disciplines and sources suggests that access to, and contact with, natural environments including urban green spaces can contribute to improved mental health and wellbeing. However, recent non-systematic reviews^{22, 23} have noted the wide variety in study design which can affect the strength of the evidence and the confidence in any conclusions drawn. For example, some studies have used self-reported outcomes, which are susceptible to bias – but others have used objective data (eg. physiological measurements, healthcare records) which are more robust. Many observational studies have shown significant correlations between health outcomes and use of green spaces – but this type of study cannot prove cause-and-effect. All in all, the evidence so far points to potential health benefits of exposure to green space, but there is a clear need for more experimental data and further research into issues of gender, ethnicity, ageing and disability, as well as quantifying the economic and social benefits and costs.²⁴

Levels of evidence of effectiveness

We have used the following framework to assess the level (ie. strength) of evidence within this report:

A – Systematic Review or several Randomised Controlled Trials (RCTs) or experimental studies

B – Single RCTs or experimental studies

C – Epidemiological studies (including those with comparison groups)

D – Large-scale observational studies, evaluations, qualitative studies

E – Evaluations, descriptive studies

It is important to remember that low-strength evidence does not necessarily mean lack of effectiveness or low public health impact or importance. NICE often uses low-strength evidence (eg. case series) to assess suitability in

Interventional Procedures Guidance (IPG). Lack of high-strength evidence often means a lack of appropriate research. Evidence for green spaces comes from a range of different disciplines.

As such, it is likely to need different qualitative and quantitative research to assess effectiveness.²⁵ This is particularly relevant, where a potentially wide range of benefits and interactions is likely within a single resource, such as an urban park.

The Positive Public Health Impact of Natural Environments

Green Space, Health, Disease and Survival

A number of observational studies show significant correlations between proximity to green space or amount of nearby green space and indices of health, disease and longevity irrespective of socioeconomic status. (Evidence Level C). For example,

- A large-scale study of GP records (345,143) in the Netherlands indicated that the annual prevalence rates for 15 of 24 chosen disease clusters was lower in areas with more green space within a 1 km radius. The study controlled for socioeconomic and demographic status. The correlation was strongest for anxiety disorder and depression. The correlation was also stronger for children than for adults. Although the individual effect sizes were small, there are potential positive impacts for population-level health gain.²⁶

- A Japanese study analysing death rates for 3341 people suggested that living in areas with walkable green spaces positively influenced longevity of urban senior citizens independent of their age, sex, marital status, baseline functional status, and socioeconomic status. The probability of 5-year survival was significant for residents with walkable green streets near the residence.²⁷

- Another Dutch study of 10,000 medical records, indicated that every 10% increase in green space was associated with a reduction in health complaints equivalent to an increase of five years of age.²⁸

Reducing Inequalities

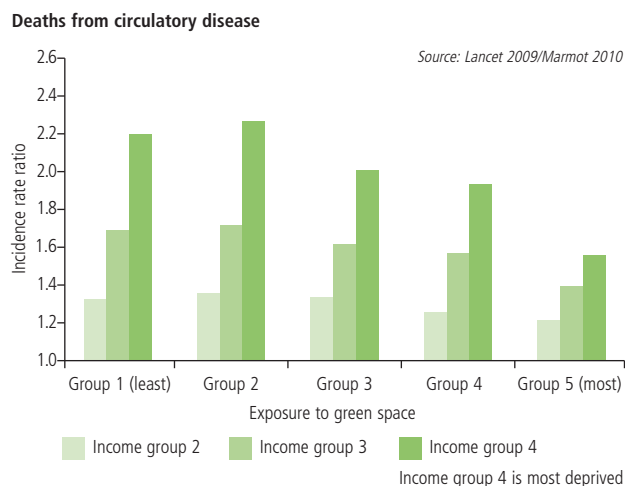
Several large-scale observational studies have shown a positive correlation between greater access to green spaces and reduced health inequalities. (Evidence Level C)

Reducing Inequalities in Health and Life Expectancy

A UK study of 336,348 patient records²⁹ showed significantly smaller differences in health inequality between highest and lowest income-deprived groups in areas with more green space than between these groups in similar areas with less green space. For example, the all-cause mortality rate for the most income-deprived quartile was about double that of the least deprived (ratio 1.93 (95% CI 1.86–2.01)) in the least green areas, whereas it was only about 40% higher (ratio 1.43 (1.34–1.53)) in the most green areas. For circulatory diseases, the ratio was 2.19 (2.04–2.34) in the least green areas and 1.54 (1.38–1.73) in the most green. There was no effect for causes of death unlikely to be affected by green space, such as lung cancer and intentional self-harm. The figures were adjusted for average income levels between the different areas.

A series of studies in deprived, urban areas in the U.S. showed that presence of green spaces contributed to an increased ability for the poorest, single-parent mothers to cope with major life issues³⁰ and reductions in aggression indicators.³¹

Figure 1: Relationship between Deprivation and Exposure to Green Spaces for Cardiovascular Deaths³²



The Marmot Review also suggests that there is a social gradient for access to green spaces with people in lower socio-economic groups accessing green spaces less than those in higher groups.³³

Green Space and Mental Health and Wellbeing

Regular access to natural environments has been shown to have a number of positive benefits for mental health and wellbeing for all ages.

In children, observational studies and one small RCT suggest evidence for:

- reduced symptoms among children with ADHD,^{34, 35} and increased concentration and self-discipline among inner city girls.³⁶
 - enhanced emotional and values-related development in schoolchildren.³⁷
 - reduced stress in children in rural areas.³⁸
- (Evidence Level B/C)

A UK correlation study showed a significant trend of reduced admissions for mental illness associated with increasing levels of green space in an area. This trend was adjusted to take into account levels of deprivation and population density.³⁹

(Evidence Level C)

Green Space and Physical Activity

Physical activity can reduce depression and promote wellbeing.⁴⁰ Several observational studies have shown a positive association between access to natural environments and increased rates of physical activity for all age groups.^{41, 42} (Evidence Level C)

- In densely populated urban areas, green space within walking distance is likely to promote physical activity outside the home for all age groups.^{43, 44, 45}
- Tree-lined routes can offer extra motivation to walk compared to routes without trees.⁴⁶
- Being outdoors is a powerful correlate of physical activity, particularly in pre-school children.⁴⁷

Observational/qualitative studies have also suggested benefits for physical activity in children:

(Evidence Level C/D)

- Increased accessible urban green space is associated with increased amounts of play for local children.⁴⁸
- More use of natural environments increased physical activity during play.⁴⁹
- Natural features, such as trees or hedges, can improve levels of creative play as well as play between different groups.⁵⁰
- Children playing in natural environments appeared to have improved concentration and motor skills than those playing in non-green environments.⁵¹

Green Spaces and Satisfaction with Place and Social Capital

Recent non-systematic reviews suggest a positive correlation between the proximity of trees and vegetation and residents' perceptions of wellbeing and security compared to areas with less green space.^{52, 53, 54} There is some evidence that parks and gardens can promote increased communal interaction between different groups of people as well as other social and community benefits.

Observational and qualitative studies in urban areas have shown associations between access to green spaces and:

- Positive effects on social interaction and cohesion in different age groups, by providing inclusive places to meet^{55, 56}
- Increases in social interaction indicators (eg. knowing neighbours).⁵⁷

Project evaluations and observational studies indicate that natural environments can also provide opportunities to increase volunteering and community participation and community satisfaction indicators.^{58, 59} (Evidence Level C/D)

Green Spaces and Rehabilitation

Small-scale observational/evaluation studies point to potential benefits for stress reduction in rehabilitative and workplace settings (Evidence Level D):

- Patients with views of nature through hospital windows had improved post-operative recovery and lower need for pain relief, while patients with symptoms of stress began to show lower levels of fear and anger.^{60, 61}
- Looking at nature through a window can lead to reduced stress and enhanced work performance in the office.⁶²
- Older residents who sat in a small garden for one hour each day significantly improved all measures of concentration compared to those staying in their room.⁶³

Green Space and Reduced Antisocial Behaviour

An observational study in disadvantaged urban areas in the United States indicated that residential blocks with more green space had half the level of crime compared to similar blocks with less green space.⁶⁴ (Evidence Level C)

A follow-up study of families randomly allocated to identical housing blocks showed lower levels of aggressive behaviour and domestic violence in families in green space areas than 'non-green' areas.⁶⁵ (Evidence Level C)

Physiological Effects

Experimental studies showed a reduction in measured physiological stress indicators (eg. EEG alpha-wave activity, skin conductance, blood pressure) during nature viewing compared to non-nature viewing.⁶⁶ Alpha-wave states are associated with increased activity in the parasympathetic autonomic nervous system. This can lower blood pressure and heart rate, reduce stress hormones, including cortisol, and slow metabolism.

(Evidence Level A)

Green Space and Adaptation to Climate Change

Evidence from modelling studies suggests that green spaces can reduce the 'heat island effect' which in turn can help to reduce heat stress among vulnerable people, such as older people, during heatwaves.^{67, 68} The shading effect of trees around buildings has also been estimated to reduce use of air conditioning by up to 30%.⁶⁹ (Evidence Level C)

An Australian study suggested that shaded areas with trees had up to five times less skin-damaging levels of ultraviolet radiation than shaded areas without trees.⁷⁰ A US non-systematic review also suggested that proximity to trees could reduce skin-damaging exposure to the solar spectrum.⁷¹ (Evidence Level D)

Observational studies suggest a lower risk of flooding in areas with high levels of green spaces. This could in turn reduce post-flooding mental health problems; as flooding is associated with a fourfold increased risk of post-event psychological distress.^{72, 73} (Evidence Level C)

Improvement in Air and Noise Quality

Other studies have shown that green spaces improve air and noise quality in urban areas.^{74, 75}

Green Space and the Quality of the Environment

Reduces flooding – 1.3 million trees would catch seven billion tons of rainwater each year, reducing the load on storm water drainage and consequent flooding, and potentially avoiding the mental health impact on flood victims⁷⁶

Reduces noise – a belt of trees can reduce noise levels by as much as 6–8 decibels for every 30 metres width of woodland⁷⁷

Reduces pollution – a modelling study of 5 U.S. cities estimated that 1.3 million trees would remove 2535 tonnes of pollutants from the air each year.⁷⁸

Reduces urban 'heat islands' – modelling studies suggest that creating 10% more green cover in urban areas could keep temperatures to only 1°C above current levels despite global warming.⁷⁹

Ways Forward

Improving Access and Use

User surveys report that green spaces need to be emotionally attractive with diverse scenes, landmarks, water, accessibility and safety.⁸⁰ Perceived lack of safety can reduce use of green spaces (eg. densely vegetated, poor visibility, no view distance, poorly maintained areas, dog fouling, graffiti and vandalism.^{81, 82} Safety and design of green space may also depend on many local factors. Safety in children's areas should also be balanced with challenging environments to stimulate children and develop their motor skills.⁸³

This section gives practical examples of how organisations and partnerships can develop safe, green spaces. Initiatives can usefully be linked to existing mechanisms to promote health and wellbeing for local populations, such as Local Strategic Partnerships and Local Area Agreements (LAAs) in England and statutory guidance on promoting well-being.⁸⁴

Promoting Engagement with Natural Environments and Green Spaces

Promoting the 'Natural Health Service'.

The **Natural Health Service** is a Natural England project with support from the Department of Health. It is founded on the principle that contact with the natural environment, has quantifiable health benefits. The Natural Health Service provides sustainable, equitable access to high-quality green space. http://www.naturalengland.org.uk/about_us/news/2009/220709.aspx

Health Walks (Natural England (NE)/DH) operate throughout England. Some 32,000 people take part in health walks each week. The target is for 130,000 by 2012.

Green Gym (BTCV) uses conservation work to benefit the health of the participants and their local environment.

Blue Gym (Peninsular Medical School, NE, Environment Agency, DH) will promote the use of water for health benefits and so connect people to the natural environment (and create a value for those that use it).

NHS Forest (Campaign for Greener Healthcare, NE, Forestry Commission) will plant 1.3 million trees, one for each NHS staff member, in and around NHS estates over the next three years. Other schemes will include care farms, cycling, woodland and allotments. These will be integrated with the local NHS and its strategic partners and rigorously evaluated.

We have seen that access to green space and natural environments (including views of nature) can have a rehabilitative

effect on patients in hospitals, as well as improving mental health and wellbeing in other groups. This could have important implications for the NHS workforce, which is the largest in Europe. The NHS, with its annual budget of almost £100 billion, could support the development of the natural environment as a means of promoting good physical and mental health, including:

- Promote 'green exercise' (for example walking and cycling) for patients, public and staff
- Work with partners and planners to promote equitable access to local green spaces for all individuals, families and communities
- 'Green' NHS facilities to promote wellbeing and reduce effects of climate change
- Twin every health organisation and NHS trust with a local green space as an 'extension' of their infrastructure
- Create a NHS Forest of 1.3 million trees (through investment and donations)

Green Flag Award Schemes

This is the national standard for parks and green spaces in England and Wales. It is expanding into Scotland and Northern Ireland. Awards are given on a yearly basis; and winners must apply each year to renew their status. Each green space is judged against a set of eight criteria: including health, safety and security, community involvement, access and sustainability.^{85, 86}

Funding Green Spaces

The National Audit Office estimates that the cost of maintaining and renovating urban green space was about £700 million in 2004-05.⁸⁷ The Commission for Architecture and the Built Environment (CABE)'s 2006 publication *Paying for Parks* gives options on how local authorities and partnerships could fund maintenance and management of green spaces and natural environments.⁸⁸ In the current economic climate, maintaining green spaces could provide benefits for a range of health, social and wellbeing outcomes. These benefits could also have an economic value.⁸⁹ Benefits could potentially be realised by collaborative working, such as joint commissioning, between local authorities, PCTs and other agencies.

Principles for Encouraging Use of Parks in Urban Areas

1. Ensure easy access for all: nearby location for local residents; remove barriers to specific groups
2. Provide appropriate resources: capital and revenue
3. Maintain a high level of safety from hazards including crime (both perceived and actual)
4. Increase visitor satisfaction by attractive facilities and events
5. Consult, produce and implement regularly updated management plans
6. Promote benefits for the wider city (eg. cultural, socio-economic)⁹⁰

What makes a Green Space Safe?^{91, 92}

For people to use green spaces they must feel 'safe'. This can be helped by:

- Having well-maintained areas
- Improving visibility: reducing high-level, dense vegetation, having long views
- Having numerous meeting points
- Reducing dog fouling/graffiti/vandalism
- Having park staff

Recommendations for Partnerships in Developing and Implementing Green Spaces

- **Audit current and future need** for green spaces (Policy Planning Guidance17; use of Joint Strategic Needs Assessment (JSNA))
- **Collate regional information on parks and other green spaces** to provide a data resource to strengthen future planning for improving green spaces.
- **Include more green space indicators** in Comprehensive Performance Assessment.

- **Improve collaborative working** to develop and implement Green Spaces Strategy, drawing on existing best practice.
- **Link Green Spaces Strategy to other strategies**, such as physical activity.
- **Improve quality of green spaces** by raising user-satisfaction reports, aiming for Green Flag Award status across all Local Authorities, improving procurement of maintenance and targeting support for poor performers
- **Identify effective and efficient ways to sustain green spaces** (eg. funding mechanisms)
- **Have a green spaces champion** represented in formal partnership structures (eg. LSP)
- **Develop the public health role of parks and park staff** by coordinating involvement and input from local agencies (eg. Walking to Health programmes, Green Gyms, GP referral/social prescribing, cycling programmes)
- **Increase status and skills of green spaces managers** – training in conservation, increased knowledge of local community and users, encouraging community involvement in park management
- **Increase community involvement** in management/maintenance of spaces.(eg. neighbourhood trusts to manage local areas, setting up park ‘friends’ schemes for volunteers to organise events and help with maintenance)
- **Encourage facilities for children** (eg. play areas and increased school use)
- **Use health promotion techniques** such as social marketing and social prescribing to increase park usage

NICE (National Institute for Health & Clinical Excellence) recommends incorporating green spaces into area cycling/walking infrastructures and promoting maintained, safe green spaces within strategies to encourage physical activity. It is also aiming to produce guidance on spatial planning for health recognising the health impacts of social and physical environments.^{93, 94, 95}

Wider Policies Related to Green Spaces

As we have seen, green spaces and natural environments link to wider aspects of mental and physical health and wellbeing. Developing and improving access to green spaces will be relevant to a number of policy areas. For example, a key policy objective within the Marmot Review Final Report (2010)⁹⁶ is to promote and develop healthy and sustainable places and communities:

Marmot Review Policy Objective E
Improving good quality spaces available across the social gradient
 Green infrastructure networks can potentially reduce urban temperatures and improve drainage, reducing the risks to health associated with heat waves and flooding. Well designed and maintained green spaces can encourage social interaction, exercise, play, and contact with nature. Well designed, car free and pleasant streets encourage feelings of well-being, chance interactions and active travel; good quality and good access to public spaces contributes to pride in the community, integration and social cohesion.⁹⁷

Green spaces could also support other policies and strategies, both in the UK and Europe, for health and well being across the life-course as well as the wider determinants.

UK Policy

New Horizons available at <http://www.dh.gov.uk/en/Healthcare/Mentalhealth/index.htm> accessed on 14.10.09

Choosing Health available at http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094550 accessed on 14.10.09.

HM Government. *Be Active, Be Healthy: A plan for getting the nation moving*. London: Department of Health; 2009.

2009 Annual Report of the Chief Medical Officer. DH. 2010. Sustainable Communities: Building for the Future available at <http://www.communities.gov.uk/communities/sustainablecommunities/sustainablecommunities/> accessed on 14.10.09

Every Child Matters (health and well-being) available at <http://www.dcsf.gov.uk/everychildmatters/healthandwellbeing/> accessed on 14.10.09

Climate Change Act http://www.opsi.gov.uk/acts/acts2008/ukpga_20080027_en_1 This has obligations for all agencies to consider adaptation and carbon budgeting.

Health Inequalities: The Marmot Review Final Report. <http://www.ucl.ac.uk/gheg/marmotreview>

Europe


Zagreb Declaration for Healthy Cities 2009 focuses on creating caring and supportive environments, healthy living and healthy urban environment and design

WHO European Healthy Cities Network a network of cities from around Europe that are committed to health and sustainable development (for further information on WHO Healthy Cities Programmes (http://www.euro.who.int/healthy-cities/city/20040714_1))

Green Spaces and National Performance Indicators

In the UK, there are different national indicators to measure performance (eg. Performance Measurement Frameworks, Local Area Agreements, and national indicators across a range of health, social, educational and environmental domains. Green spaces are relevant to a number of the National Indicators (NIs) below and highlight common health and wellbeing outcomes. This broader, public health approach integrates physical and mental health and the impact of wider social, economic and cultural determinants on mental health and well-being. Below are the relevant indicators for England.

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FPH is the leading professional body for public health specialists in the UK. It aims to promote and protect the health of the population, and improve health services by campaigning on key policy issues, maintaining professional and educational standards, and providing practical information and guidance for public health professionals.

FACULTY OF PUBLIC HEALTH

National Indicators England

Stronger Communities

- NI 5: Overall/general satisfaction with local area DCLG DSO
- NI 2: Percentage of people who feel that they belong to their neighbourhood (PSA 21)
- NI 3: Civic participation in the local area PSA 15
- NI 17: Perceptions of anti-social behaviour PSA 23

Children and Young People

- NI 50: Emotional health of children PSA 12
- NI 55: Obesity among primary school age children in Reception Year DCSF DSO
- NI 56: Obesity among primary school age children in Year 6 DCSF DSO
- NI 57: Children and young people's participation in high-quality PE and sport DCSF DSO
- NI 110: Young people's participation in positive activities PSA 14

Adult Health and Well-being

- NI 119: Self-reported measure of people's overall health and wellbeing DH DSO
- NI 138: Satisfaction of people over 65 with both home and neighbourhood PSA 17

Environmental Sustainability

- NI 185: CO2 reduction from Local Authority operations PSA 27
- NI 186: Per capita CO2 emissions in the LA area PSA 27
- NI 188: Adapting to climate change PSA 27
- NI 189: Flood and coastal erosion risk management Defra DSO
- NI 197: Improved local biodiversity – active management of local sites PSA 28
- NI 198: Children travelling to school – mode of travel usually used DfT DSO

Related Public Service Agreements (PSA) and Departmental Strategic Objectives (DSO)

- PSA 12 Improve the health and well-being of children and young people
- PSA 18 Promote better health and well-being for all
- PSA 21 Build more cohesive, empowered and active communities
- PSA 23 Make communities safer
- PSA 27 Lead the global effort to avoid dangerous climate change
- PSA 28 Secure a healthy natural environment for today and the future
- DCMS DSO Encourage more widespread enjoyment of culture and sport
- DCSF DSO Secure the well-being and health of children and young people
- DEFRA DSO: Climate change tackled internationally; and through domestic action to reduce greenhouse gas emissions
- DEFRA DSO: Economy and society resilient to environmental risk and adapted to the impacts of climate change
- DEFRA DSO: Sustainable patterns of consumption and production
- DEFRA DSO A healthy, resilient, productive and diverse natural environment
- DH DSO Ensure better health and well-being for all
- HO DSO Help people feel secure in their homes and local communities

Useful Organisations

- Natural England: www.naturalengland.org.uk
- Faculty of Public Health www.fph.org.uk
- CABE (Commission for Architecture and the Built Environment): www.cabe.org.uk
- CIEH (Chartered Institute of Environmental Health): www.cieh.org
- RTPI (Royal Town Planning Institute): www.rtpi.org.uk
- HPA (Health Protection Agency): www.hpa.org.uk
- DH (Department of Health): www.dh.gov.uk
- WHO Collaborating Centre for Healthy Cities and Urban Policy: www.bne.uwe.ac.uk/who

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- 3 Office for National Statistics (2001) *Psychiatric Morbidity Among Adults Living In Private Households, 2000* http://www.statistics.gov.uk/downloads/theme_health/psychmorrb.pdf
- 4 World Health Organisation (2001) "Mental And Neurological Disorders Factsheet" *The World Health Report 2001* http://www.who.int/whr/2001/media_centre/en/whr01_fact_sheet1_en.pdf
- 5 King's Fund "Paying The Price: The Cost Of Mental Health Care In 2026" http://www.kingsfund.org.uk/research/publications/paying_the_price.html
- 6 Ebenezer Howard (1902) *Garden Cities of To-Morrow* Faber and Faber
- 7 Commission for Architecture and the Built Environment (2004) *The value of public space* CABE
- 8 McPherson,G. et al (2005) "Municipal Forest Benefits And Costs In Five US Cities" *Journal of Forestry* December 2005 http://gis.fs.fed.us/psw/programs/cufr/products/2/cufr_646_Munclpl%20For%20Bnfts%20Csts%20Five%20City.pdf
- 9 Green Space Scotland (2008) *Transforming Urban Spaces: The Links Between Green Spaces And Health – A Critical Literature Review* <http://www.greenspacescotland.org.uk/upload/File/greenspace%20and%20quality%20of%20life%20literature%20review%20aug2008.pdf>
- 10 The Trust for Public Land and Philadelphia Parks Alliance (2008) *How Much Value Does The City Of Philadelphia Receive From Its Park And Recreation System?* http://www.tpl.org/content_documents/PhilaParkValueReport.pdf
- 11 Greenspace Scotland (2009) *Social Return On Investment (SROI) Analysis Of The Greenlink, A Partnership Project Managed By The Central Scotland Forest Trust (CSFT)*. <http://www.greenspacescotland.org.uk/default.asp?page=517>
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