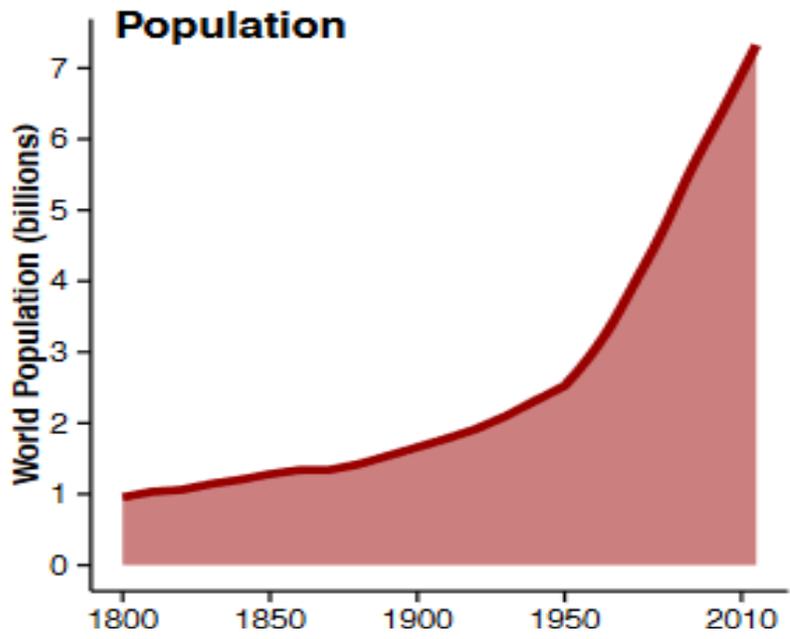
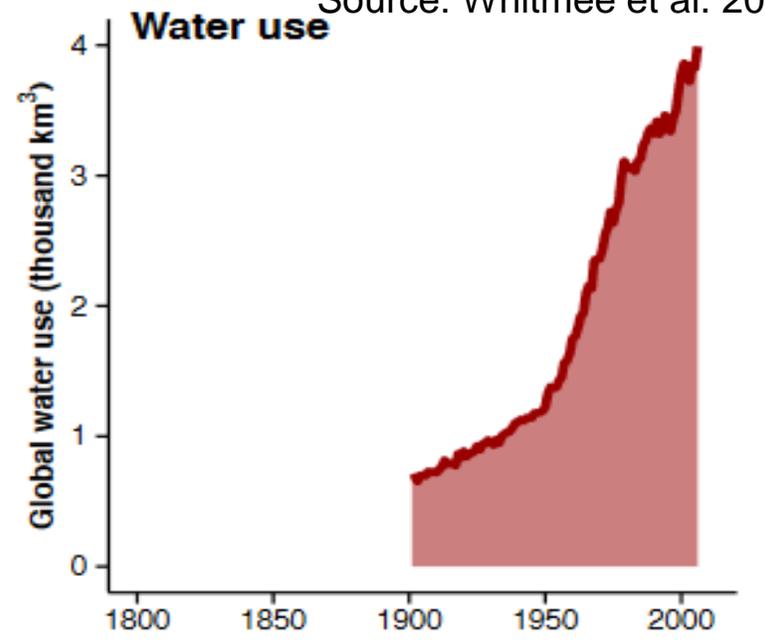
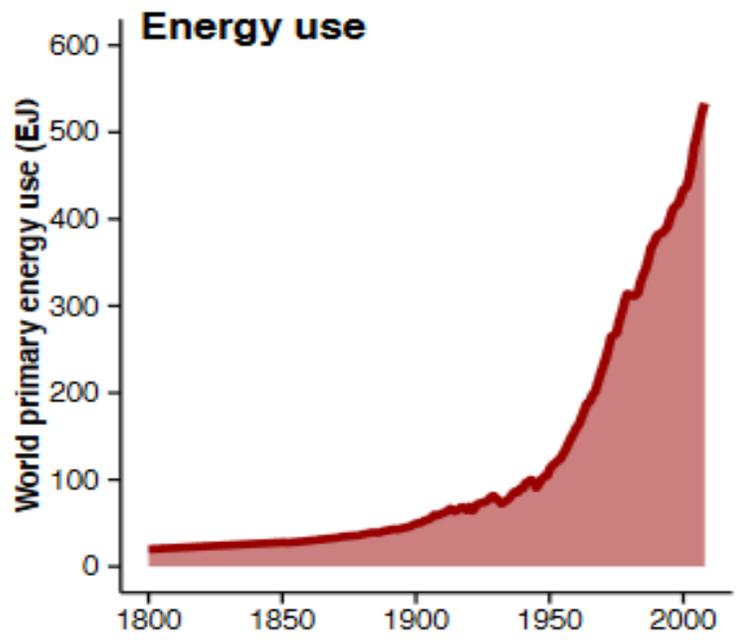
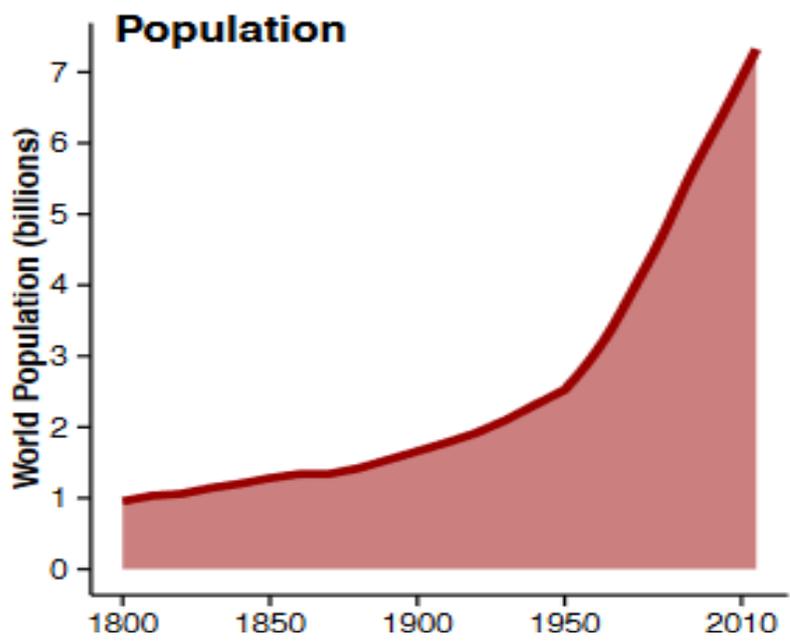


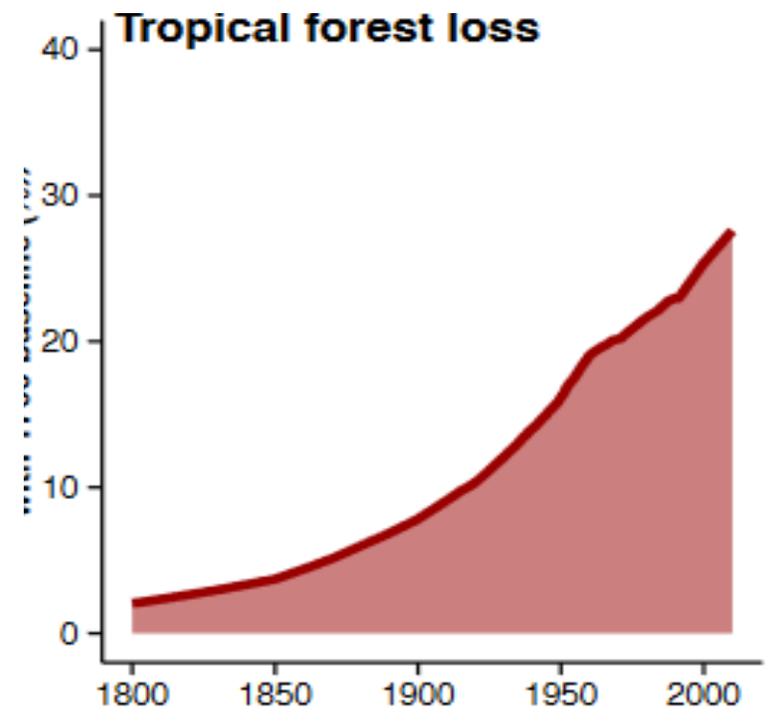
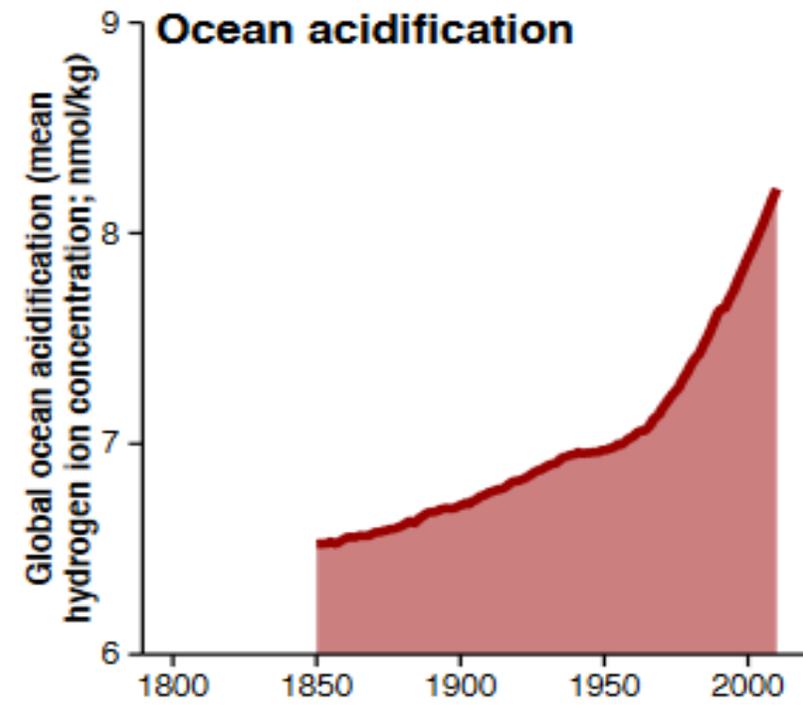
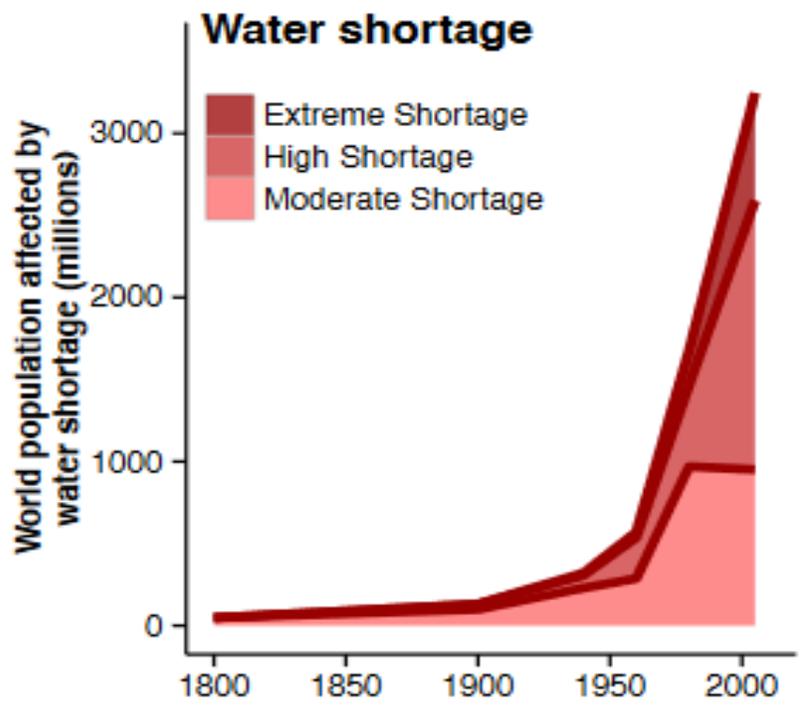
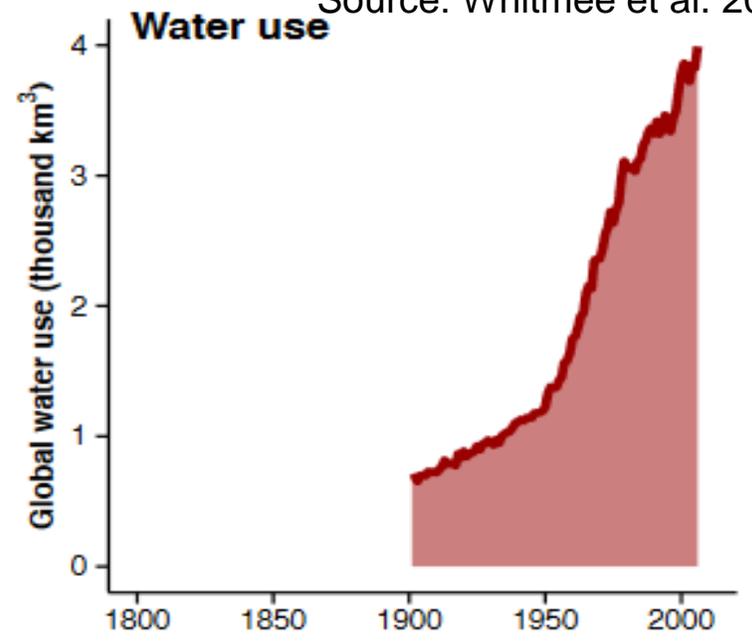
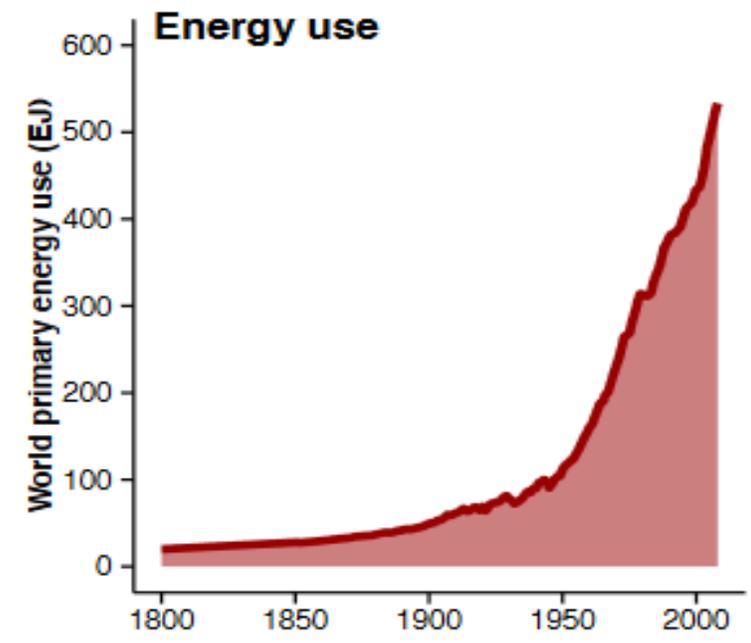
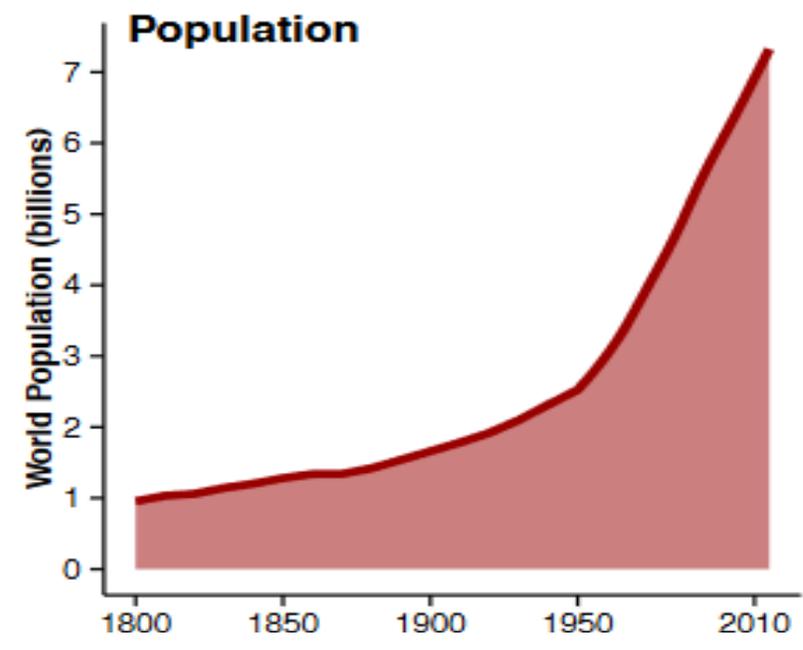


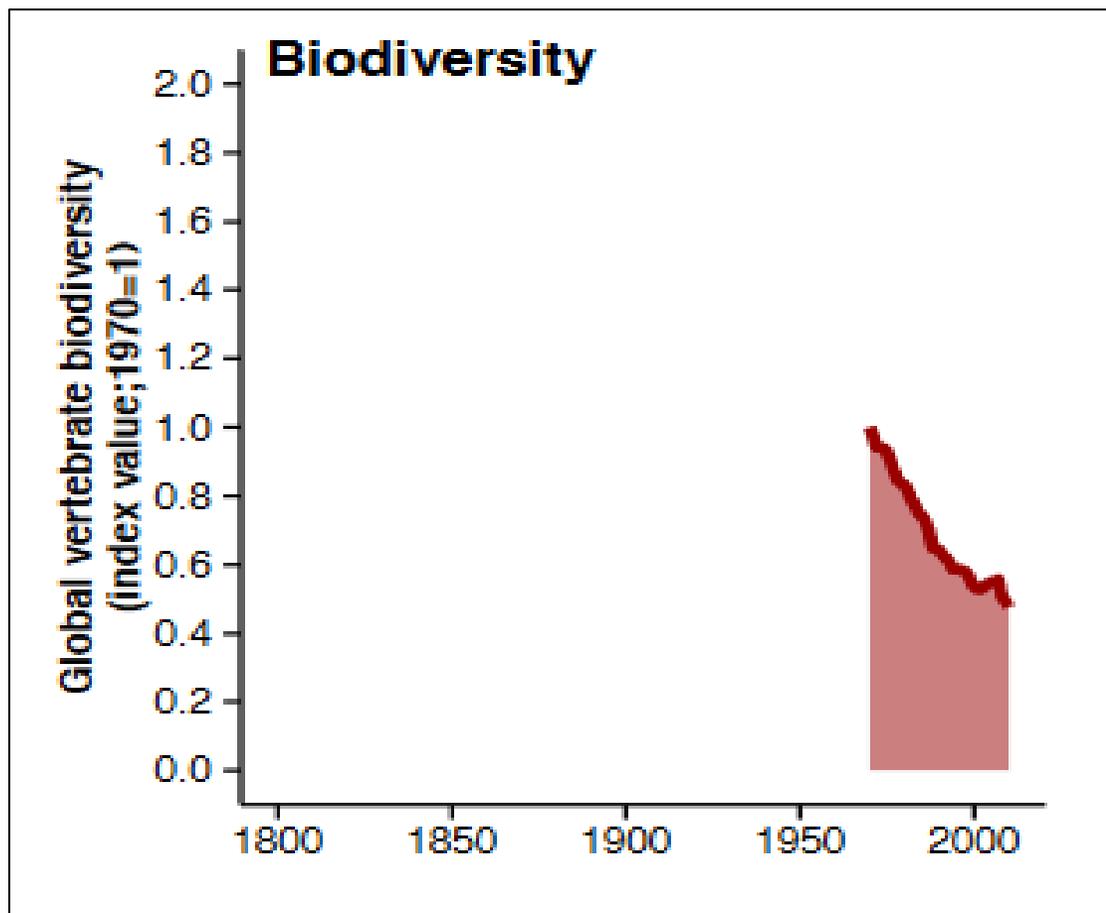
Urban nature and its health relevance

Matthias Braubach, WHO European Centre for Environment and Health







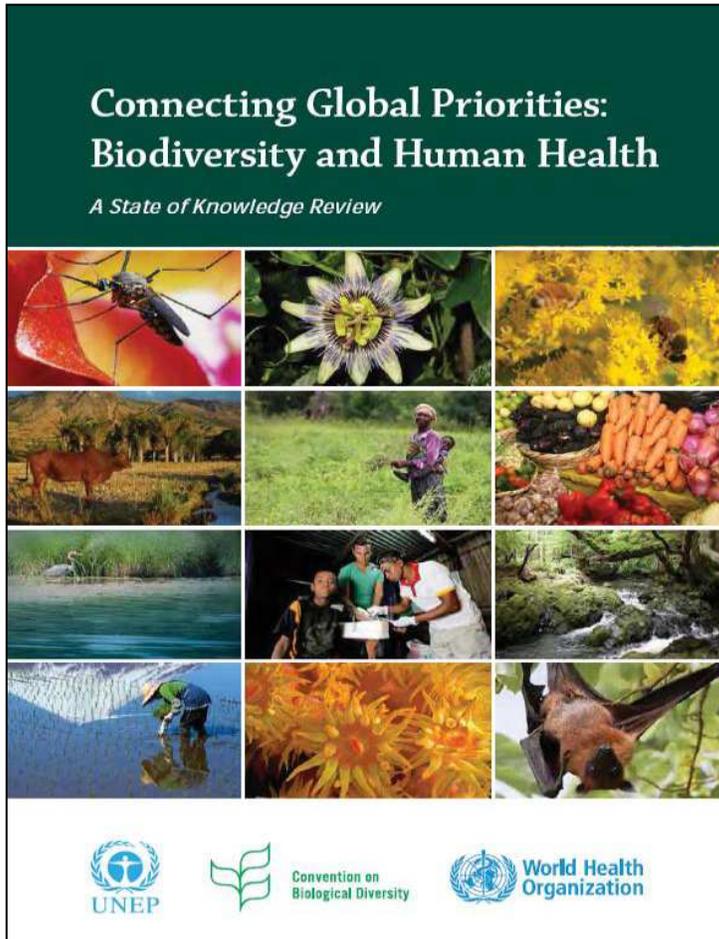


Source: Whitmee et al. 2015

Any type of nature is added value, in any type of setting

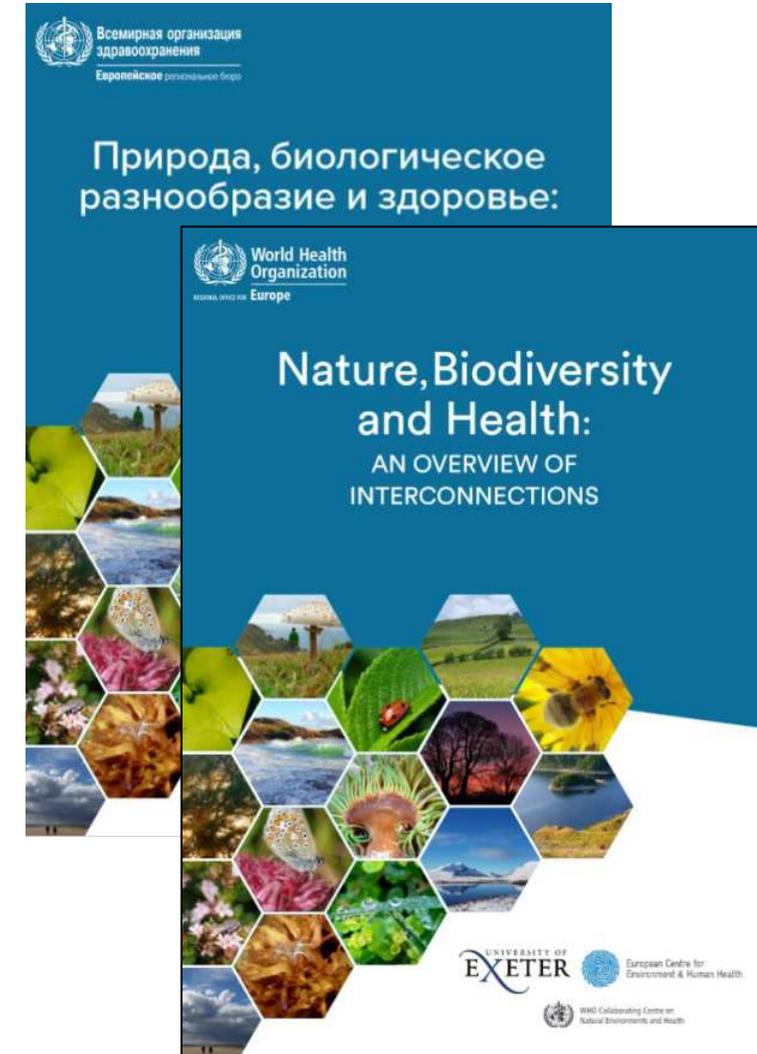
State of Knowledge Review on Biodiversity and Health

Overview report for WHO
European Region, May 2021



Biodiversity and health connections covered include:

- Water
- Air quality
- Food security / nutrition
- Green spaces
- Infectious diseases
- Noncommunicable diseases
- Biomedicine and pharmaceuticals
- Traditional medicine
- Climate change
- Resilience and disaster risk reduction



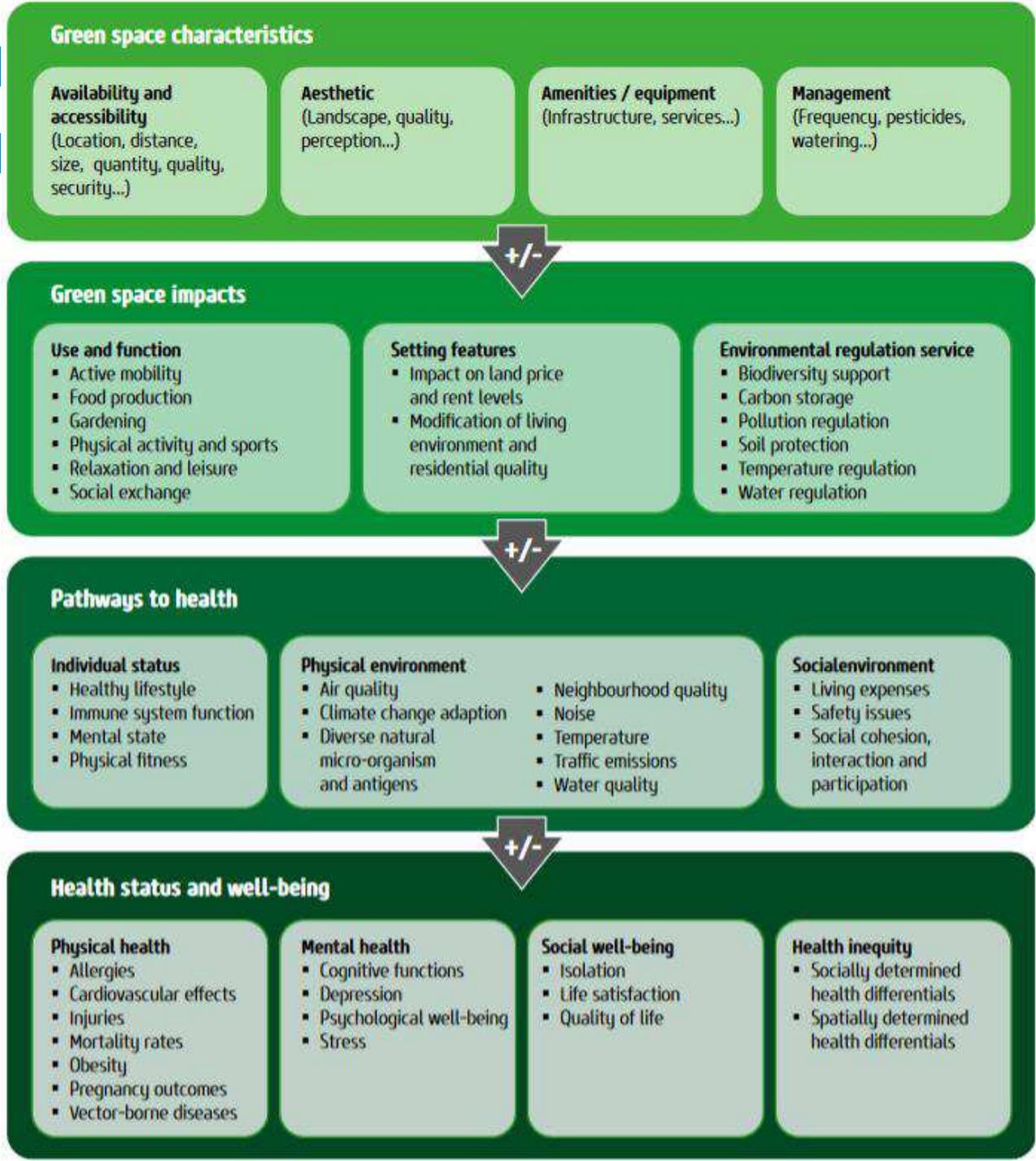
WHO work on urban green health: key messages for u



Urban green spaces and health

WHAT???

A review of evidence

Green spaces – pathways to health

Environmental benefits



Reduced urban heat island effect
(e.g. Bowler et al., 2010)



Flood mitigation
(Gill et al., 2007)



Improved air quality
(e.g. Nowak et al., 2006)

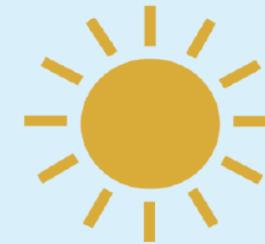
Nature benefits for humans



Anthropogenic noise buffering and production of pleasant sounds
(e.g. Pathak et al., 2008)



Exposure to diverse microbiota
(e.g. von Hertzen et al., 2015)



UV exposure
(e.g. Grant and Holick, 2005)

Social benefits



Social interaction
(e.g. Maas et al., 2009)



Community Cohesion
(e.g. Weinstein et al., 2015)



Promotion of physical activity
(e.g. Bowler et al., 2010a)

Mental benefits



Enhanced nature connection
(e.g. Cleary et al., 2017)



Stress reduction
(Ulrich et al., 1991)



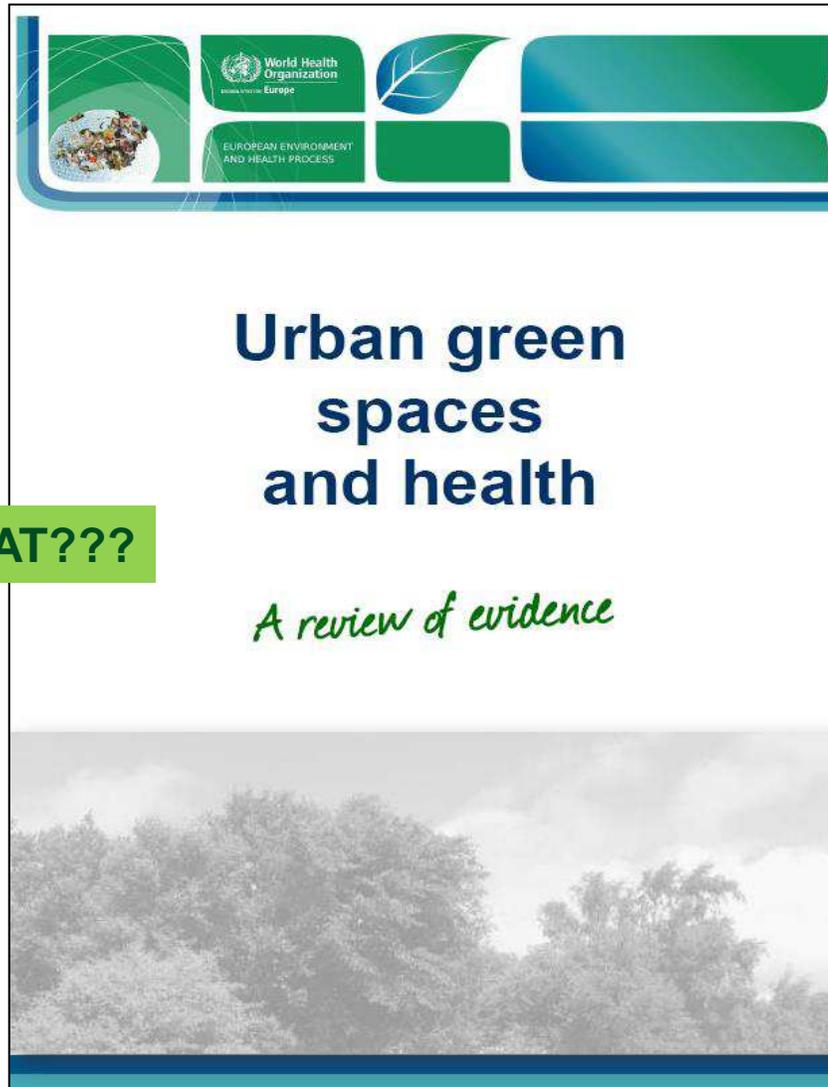
Attention restoration
(Kaplan, 1995)

Green space and mortality in European cities: a health impact assessment study

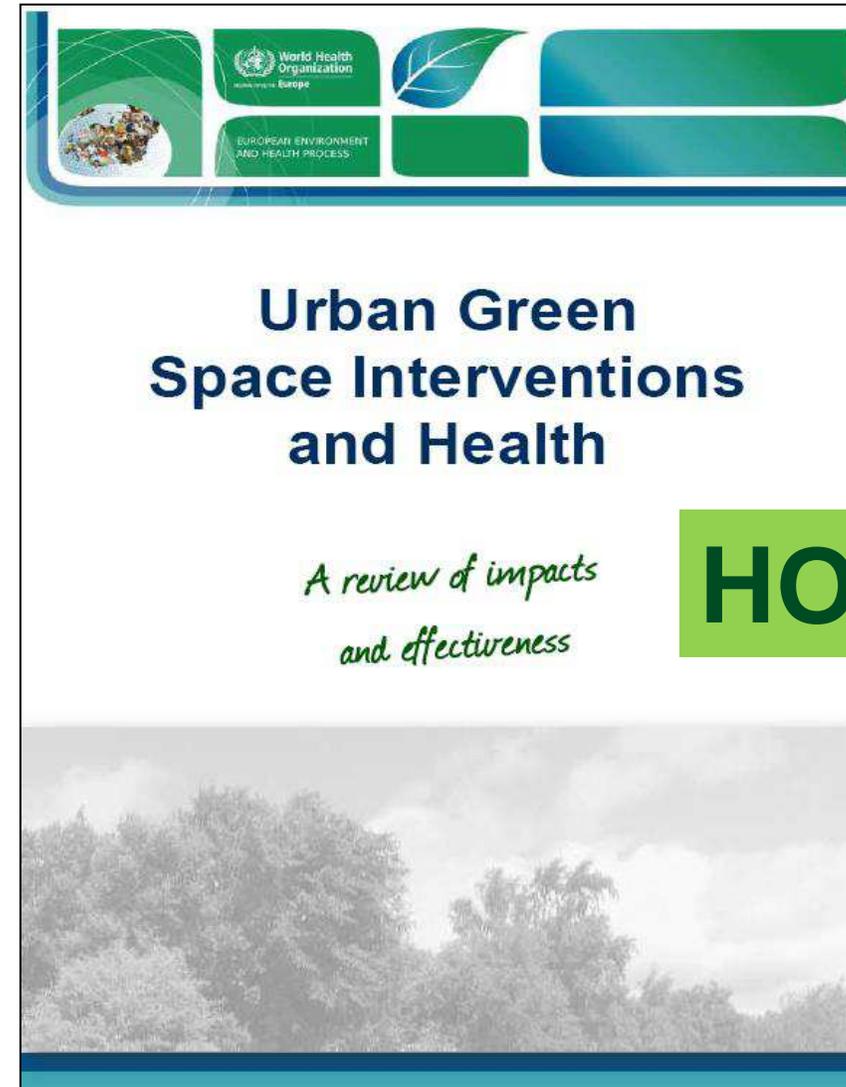
This is the **first large study to estimate the annual number of deaths that could be prevented if European cities and greater cities achieved the WHO recommendation for access to green space** (*WHO recommends that green spaces (of at least 0.5 hectares) should be accessible within a 300 m linear distance of residences*).

- The study found that meeting the WHO recommendation of access to green space could prevent **2.3% of the total natural-cause mortality**, which represents ca. 43 000 deaths annually.
- Among the European capital cities, Athens, Brussels, Budapest, Copenhagen, and Riga showed some of the highest mortality burden attributable to the lack of green space.
- An even larger number of deaths could be prevented by providing more green space than the WHO recommendations.

WHO work on urban green spaces: deriving key messages for urban practitioners



WHAT???



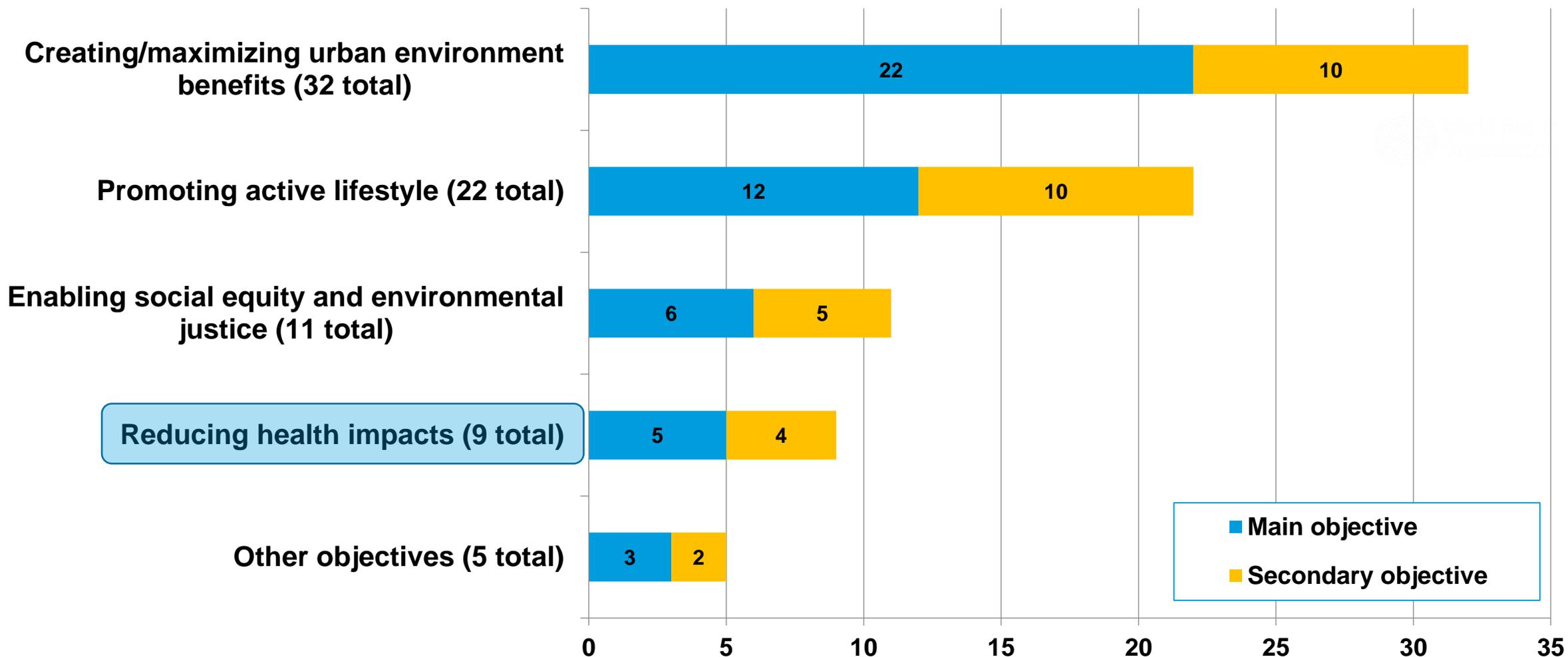
HOW???



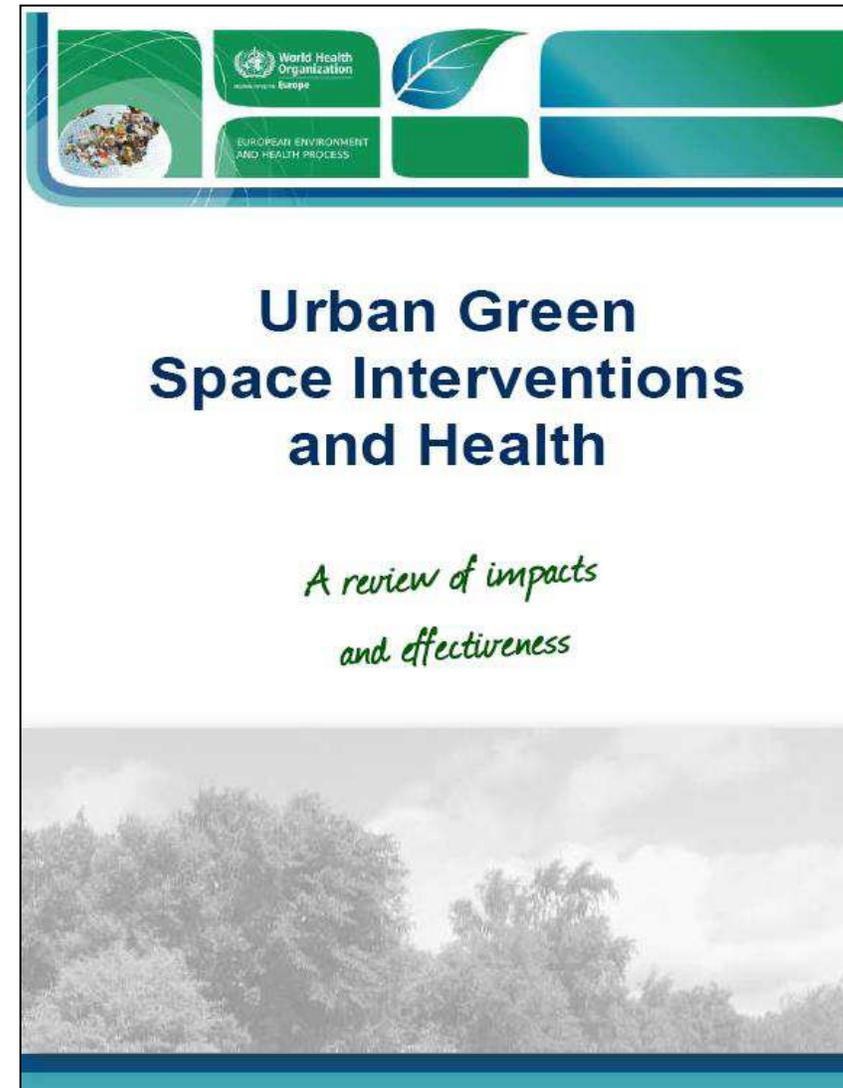
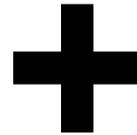
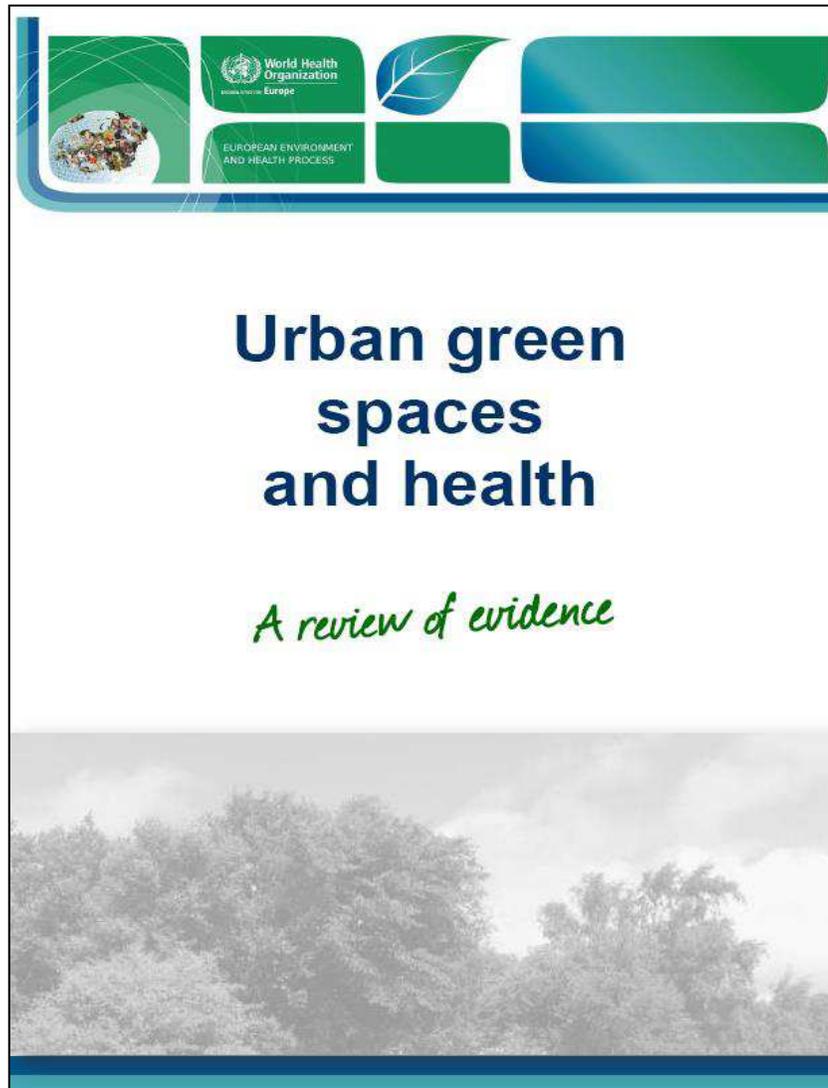
- ***Regional, urban, local dimensions***
- ***Small to large budget***
- ***Urban parks and playgrounds***
- ***Combination with blue spaces***
- ***Brownfield interventions and area regeneration***
- ***Gardening and “edible” green spaces***
- ***Schools and institutionalized settings***
- ***Social + infrastructural action (dual approach)***



Intervention objectives in case studies: Focus on environmental and active lifestyle

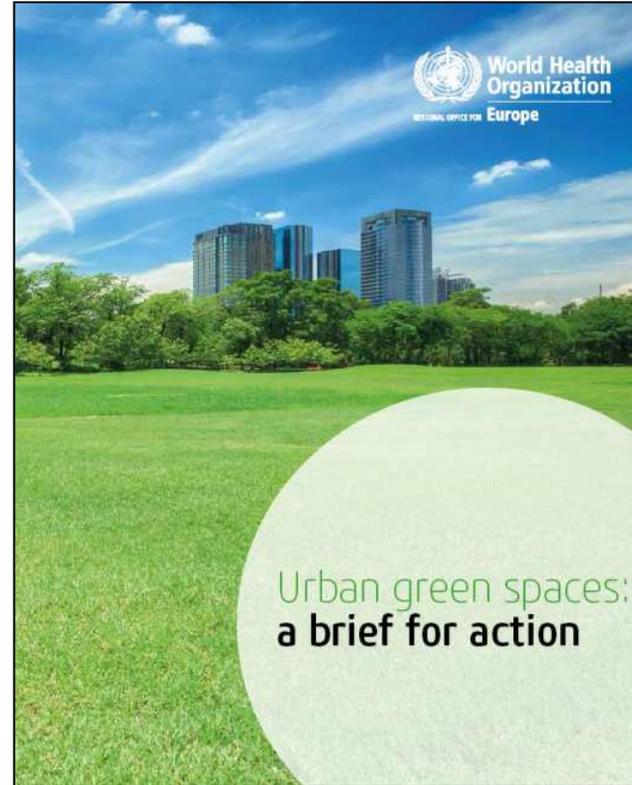


WHO work on urban green spaces: deriving key messages for urban practitioners

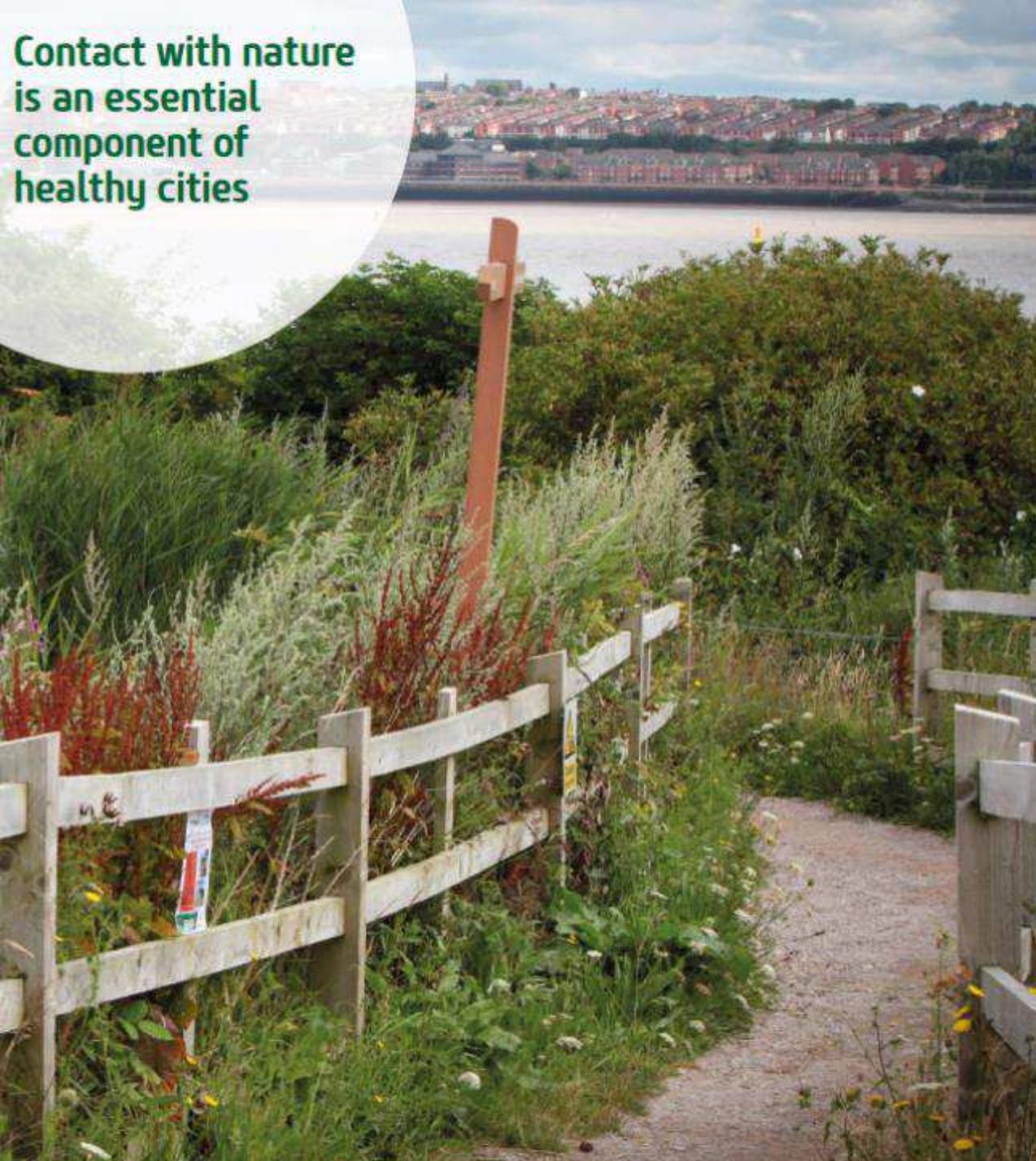


Practical green space guidance for cities & local actors

<https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/publications/2017/urban-green-spaces-a-brief-for-action-2017>



Contact with nature
is an essential
component of
healthy cities



6. How to design urban green spaces

Urban policy-makers and practitioners are advised to consider four practical implications for the planning and design of urban green spaces identified from the review of evidence and practice.

- Put the green space **close to people**.
 - Establish street greenery, urban gardens and green trails in close vicinity to urban residents, and use public open spaces for greenery.
 - As a rule of thumb, urban residents should be able to access public green spaces of at least 0.5–1 hectare within 300 metres' linear distance (around 5 minutes' walk) of their homes.
 - Ensure access to urban green space of sufficient quality for all population groups and users (universal access).
 - Use greening opportunities in other sectors and projects (greening of schools, business areas, shopping areas, housing estates and similar) and promote private green areas.
- Consider **simple design** features to improve the comfort of urban green space use.
 - Establish clearly visible entrance or access areas.
 - Use signing within parks or for greenways and trails.
 - Prepare for different seasons (lighting, drainage, materials).
 - Consider safety issues (lighting, visibility, accessibility).
 - Supply infrastructural features such as benches, waste bins, toilets and so on.
- Think of the **maintenance needs** of the urban green space.
 - Regular maintenance is necessary so that end users perceive the urban green space as safe, clean and cared for.
 - Combat signs of vandalism and antisocial behaviour quickly.
 - Use maintenance-friendly designs, avoiding the need for expensive and/or complex maintenance requirements.
 - Use plant species with no or small allergic potential – especially native species with fewer maintenance needs.
 - Apply ecological maintenance practices and avoid potential health risks.
- Plan for a **diversity of urban green space types**, responding to diverse demands.
 - Consider various types of urban green space – street greening, small and large parks, greenways, nature playgrounds and so on – to satisfy different needs.
 - Make use of biodiversity, using different plants to create diverse settings.
 - Do not over-design urban green spaces to support only very specific functions or attract only specific users – they should facilitate activities by all population groups.

7. How to ensure adequate targeting, stakeholder collaboration and community engagement

Urban green space interventions improve the quality of life for the whole city, and a wide range of community groups and stakeholders need to be involved in their planning. Such interventions provide opportunities specifically to support disadvantaged or underserved areas and to reach out to individual population groups.

- Green spaces can be used to **target specific user groups** and create health and social benefits.
 - Local data on urban green space quantity and quality can be used to guide equitable planning.
 - Adequate provision of urban green spaces with in disadvantaged areas can provide a means of improving health promotion and social integration for specific target groups.
 - Green space functions and equipment can be tailored to specific target groups, but should not exclude other functions or population groups.
- Community participation** in the planning, design and maintenance of urban green spaces is important to assure that local needs are met.
 - Planning *for* people is planning *with* people – the community should be involved from the beginning to create urban green spaces that match the needs of local residents.
 - Sufficient time and funding should be arranged to facilitate community engagement in the planning phase.
 - Active involvement of local residents in building urban green spaces increases their identification with and use of the space.
- Practitioners should nevertheless clarify that community engagement is not a recipe for satisfying all demands and requirements from all population groups, and that the best compromise must be found.
- Collaboration with stakeholders and other sectors** can help urban green space interventions to be more effective.
 - Multisectoral collaboration (including, for example, environment, transport, health, social affairs, police and so on) can help to maximize urban green space benefits and prevent unintended negative impacts.
 - Partnerships with local businesses and organizations can help to fund the establishment of new urban green spaces (especially on private land) and support maintenance.
 - Collaboration with environmental experts, academic institutes and research centres aids effective planning, monitoring and evaluation of urban green space interventions.
 - Within local authorities, urban green spaces should be considered across regional and local planning processes to achieve a higher impact.



Community participation assures use and acceptance of urban green spaces

10. How to prevent and manage potential challenges and conflicts

It is important to be aware that **unintended side-effects** and conflicts can occur with any urban green space intervention (Table 2). These should be considered during the planning process and monitored after implementation to enable early detection and countermeasures.

Experience from urban green space intervention case studies shows that such challenges can be tackled through adequate planning and maintenance and effective communication with local users.

Table 2. Potential challenges and suggested solutions

Potential challenge/conflict	Suggested solutions
Conflict between users and competition for space	<ul style="list-style-type: none"> ▪ Early community engagement ▪ Providing adequate urban green space to allow for parallel functions catering to different groups ▪ Mixing determined use of urban green space with specific equipment features for certain activities, with spaces that are less structured and allow all kinds of activities
Degradation of urban green spaces due to overuse	<ul style="list-style-type: none"> ▪ Providing local urban green space close to people's homes to distribute the demand pressure ▪ Restricting planning to functions that match the size and capacity of the urban green space ▪ Ensuring adequate and frequent maintenance and cleaning ▪ Avoiding the establishment of "event places" that attract too many customers (unless the size is sufficient for this)
Community dissatisfaction with urban green space features/services	<ul style="list-style-type: none"> ▪ Early community engagement ▪ Involving local residents in design and construction ▪ Managing expectations during the planning phase, making clear that it will not be possible to meet all requests ▪ Clarifying at an early stage that urban green space interventions need time to deliver their full benefits

Potential challenge/conflict	Suggested solutions
Safety issues, antisocial behaviour, vandalism and fear of crime	<ul style="list-style-type: none"> ▪ Ensuring adequate and frequent maintenance to avoid the impression that the place is not taken care of ▪ Providing adequate lighting to improve safety perceptions ▪ Scheduling regular patrol walks by local police ▪ Involving local residents in planning, building and maintaining the urban green space to increase the sense of ownership ▪ Making the urban green space lively and used at different times of the day, such as by promoting social events and recreational use
Gentrification and replacement of residents with low socioeconomic status	<ul style="list-style-type: none"> ▪ Cooperating with urban and housing managers to avoid significant rent increases caused by public green space investment ▪ Distributing green space investments evenly between city districts
Increase of health risks related to urban green spaces	<ul style="list-style-type: none"> ▪ Inspecting and maintaining urban green spaces and associated equipment regularly ▪ Providing walkable paths for elderly and physically impaired people to minimize the risks of falls ▪ Using plant species that do not produce large amounts of allergic pollen or poisonous fruit or leaves ▪ Informing users about potential health risks related to the use of urban green spaces (such as ultraviolet exposure or vector-borne diseases like ticks) and how to avoid them ▪ Considering protection from potential risks arising from water bodies and blue spaces such as lakes, wells and rivers
Uncertain or reduced budgets for maintenance of urban green spaces	<ul style="list-style-type: none"> ▪ Ensuring a low-maintenance design ▪ Looking at innovative models of funding (such as community ownership models like land trusts, foundations or cooperatives) ▪ Ensuring local political support early on ▪ Working with community groups, nongovernmental and other organizations to support maintenance

COVID-19 impact on community mobility in Berlin (mid-February to end of March 2020)

Retail & recreation

-83% compared to baseline



Grocery & pharmacy

-55% compared to baseline



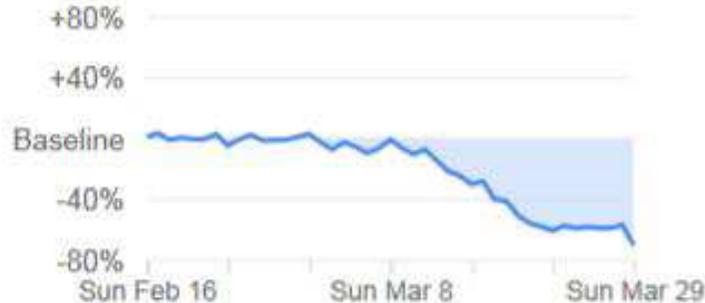
Parks

-63% compared to baseline



Transit stations

-70% compared to baseline



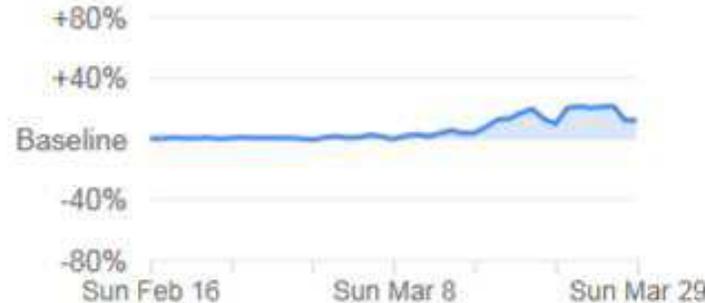
Workplace

-44% compared to baseline



Residential

+12% compared to baseline



The Washington Post

Keep parks open. The benefits of fresh air outweigh the risks of infection.

Some simple strategies can help keep you healthy. Remember to wear a mask.



People headed to Central Park in New York City on Saturday. Closing parks during the pandemic would be a mistake. (Getty Images) (Cindy Ord/Getty)

The positive impact of nature during the pandemic

International online survey coordinated by AZTI, Spain, from April to May 2020 (n=6080):



Nature exposure and impacts

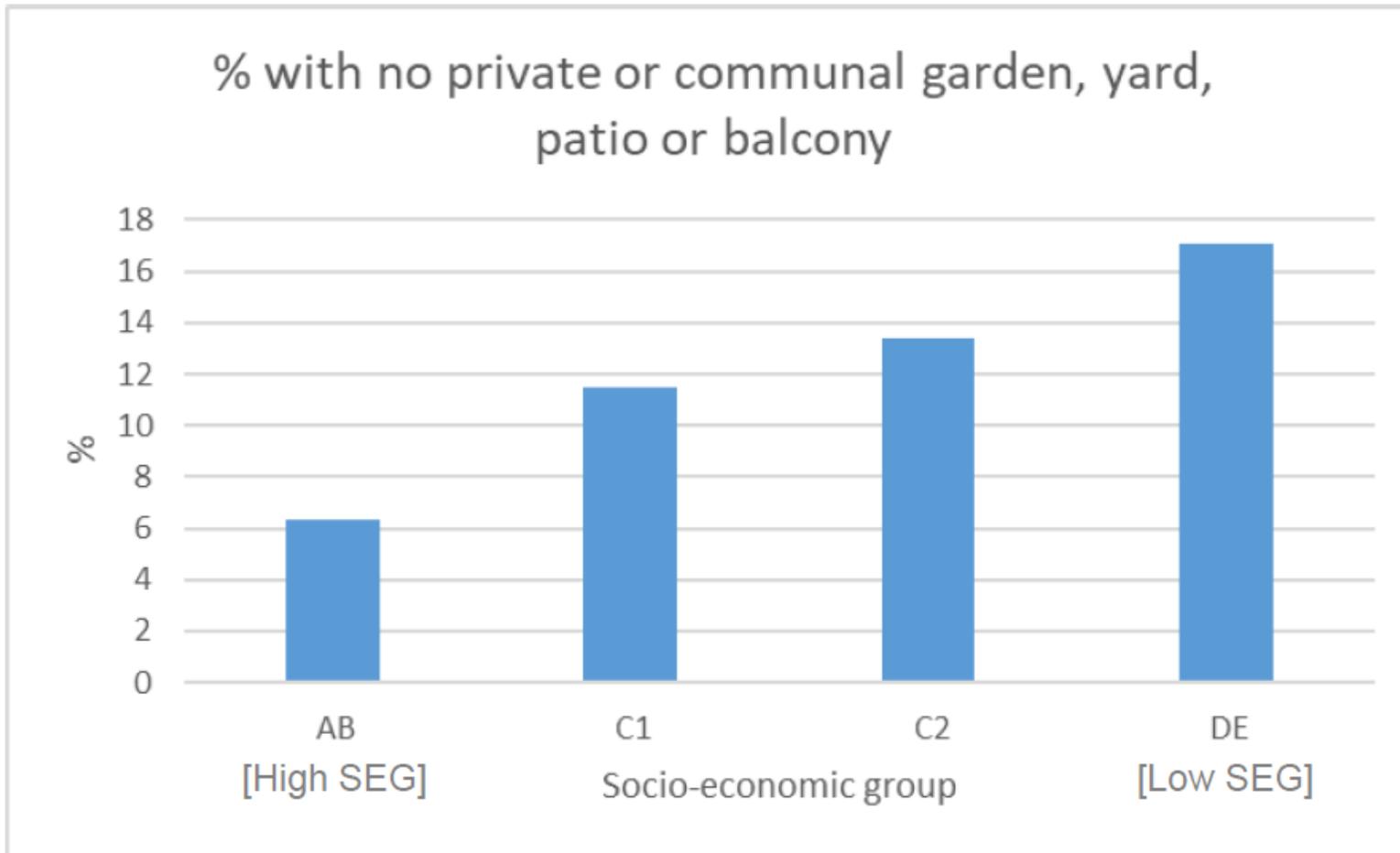


Symptoms of depression and anxiety

-  with lockdown severity
-  with accessible outdoor spaces
-  with natural elements in window views

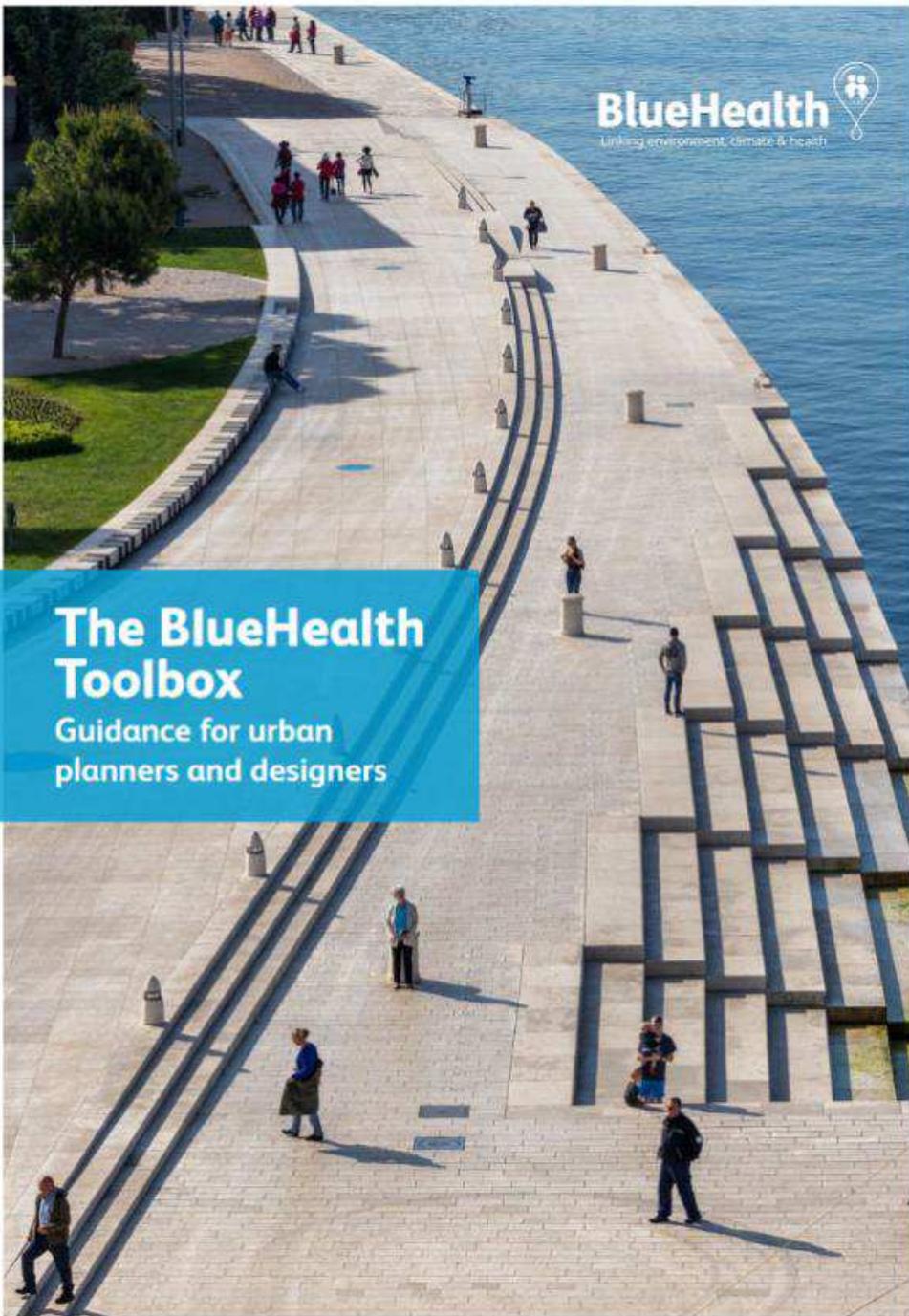


However: inequalities remain or increase



de Bell et al (2020) Spending time in the garden is positively associated with health and wellbeing: Results from a national survey in England
<https://doi.org/10.1016/j.landurbplan.2020.103836>

Data for England from Monitor of Engagement with the Natural Environment Survey years: 2009-2016
n=7814



BlueHealth
Linking environment, climate & health



The BlueHealth Toolbox

Guidance for urban planners and designers

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Research areas

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[Creating access to blue spaces](#)

[Virtual realities](#)

[Landscape & urban planning](#)

[Future scenarios](#)

[Translating the evidence](#)

Landscape & urban planning

OPTIMISED 'BLUE INFRASTRUCTURE' FOR HEALTH [WP5]

The access and use of urban blue spaces is controlled by their design. BlueHealth researchers have assessed the impact of planning practices intended to support the use of blue infrastructure at both a city and local level. They have provided guidance on how to improve access, aesthetic value, and the motivation to visit spaces, whilst minimising risks.



Horizon 2020
grant agreement
No 666773.

Decision Support Tool (DST) on Blue Spaces

Supporting decisions for planning, management and evaluation of blue spaces based on their health and well-being impacts

⇒ Structured in three tracks

⇒ Minimizing health risks

⇒ Promoting health benefits

⇒ Maximizing eco-benefits

and for six blue space settings

⇒ marine coast ⇒ river front

⇒ lake front ⇒ urban water front

⇒ blue in green ⇒ ornamental

- Integrating blue space functions and intervention intensity
- Launched in 2020

Risk and benefit coverage in the DST

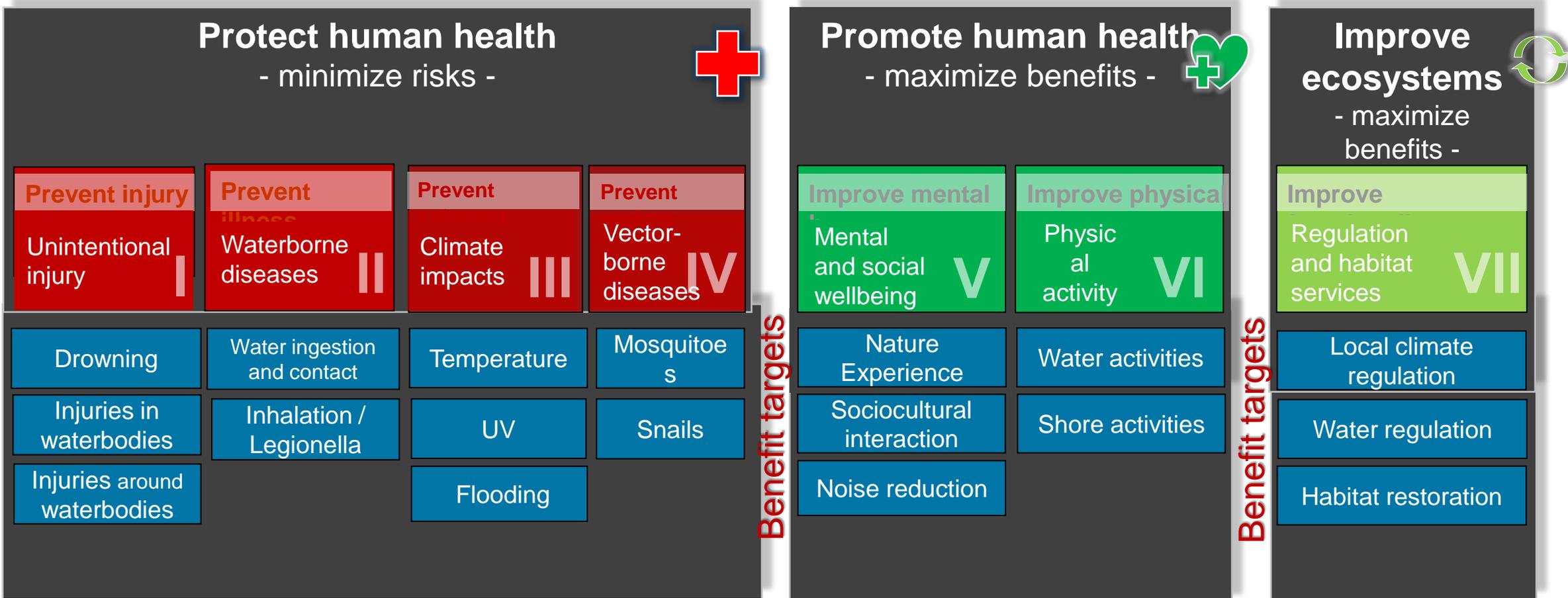
Goals

Targets

Risk targets

Benefit targets

Benefit targets



Pooled risk and benefit assessment

4) Extract and print guidance sheets



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 966773



Goal 1: Protect human health and minimize risks

Prevent injury

Drowning

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Prevent illness

Water ingestion and contact

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Prevent extremes

Flooding

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Prevent vectors

Mosquitos

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Goal 2: Promote human health benefits - Goal 3: Promote ecosystem benefits

Improve mental health

Nature Experience

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Improve physical health

Shore activities

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

Improve ecosystem functions

Local climate regulation

[READ GUIDANCE SHEET ONLINE](#)

[DOWNLOAD THE GUIDANCE SHEET](#)

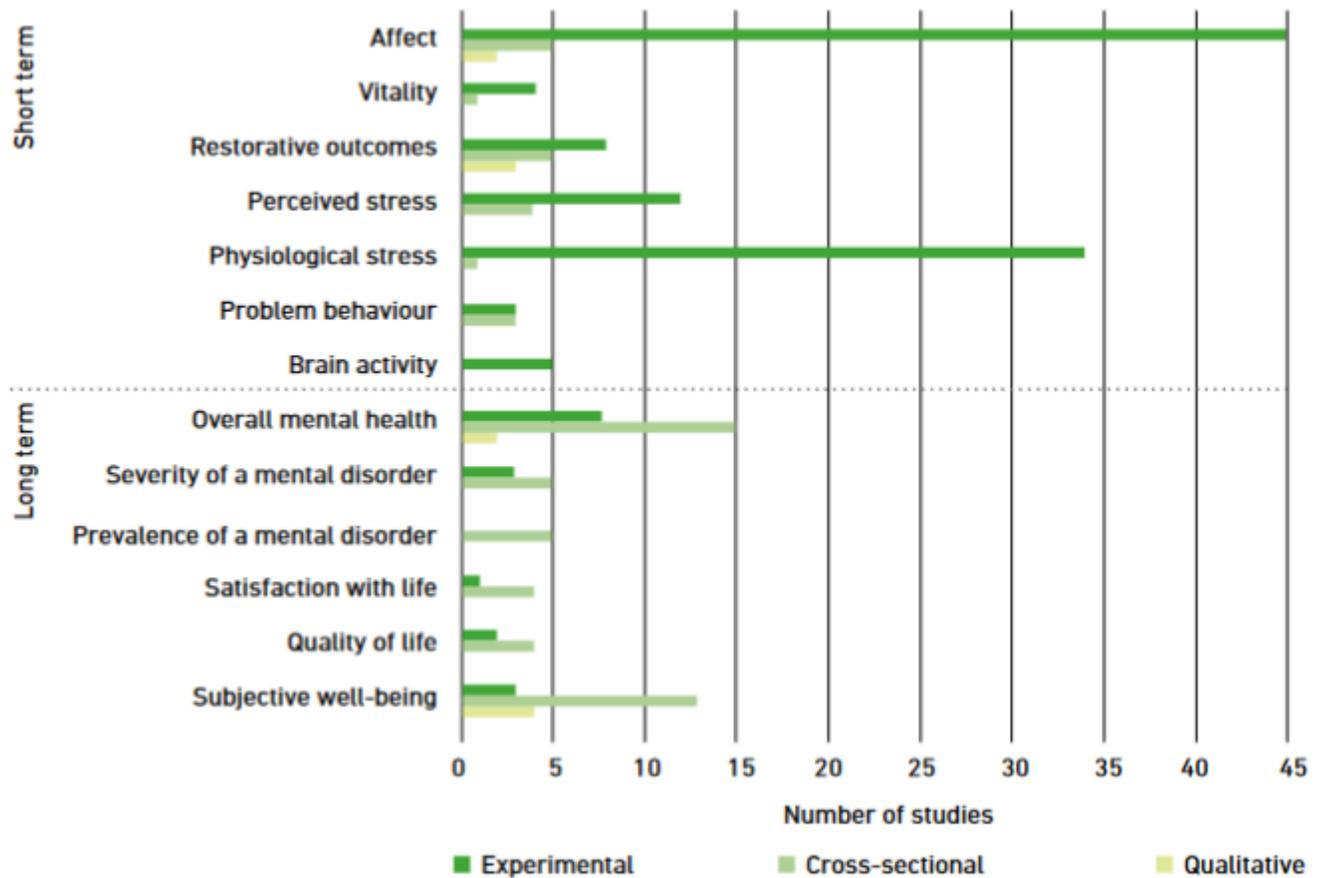
POOLED ASSESSMENT

Guidance sheet structure:

1. Health relevance and related disease burden
2. Vulnerable groups and population at risk
3. Information on potential interventions and information needs related to
 - Locational context / water body
 - Users and target groups
 - Design, management and maintenance decisions

Nature and mental health

Fig. 2. Number of studies per mental health outcome and per study type



Green and Blue Spaces and Mental Health

New Evidence
and Perspectives for Action



Nature and mental health

- For all green space types, beneficial effects were found on affect.
- Positive effects were reported for all green space types on perceived stress, except for trees and other plants (no studies were available).
- Mental health and subjective well-being were positively associated with all green space types, except for gardens (only neutral outcomes).
- Quality of life was positively associated with all green space types except grassland (no studies were available).
- Restorative outcomes yielded positive effects for all green space types, except for gardens and grassland (no studies were available).
- Severity of a mental disorder was positively associated with all green space types, except for urban green space and grassland (no studies were available).

Green and Blue Spaces and Mental Health

New Evidence
and Perspectives for Action



Positive impacts on wellbeing and mental health, physical health, social cohesion, physical activity, and relaxation:

If nature were a pill, it would be reimbursed by health care insurance



...but we need to ensure that it is available locally and for all!!!

Thank you very much!

Contact:

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WHO European Centre for Environment and Health

braubachm@who.int

