

## Question 8

# How can forests improve human health and wellbeing?

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The interest of both the scientific community and the public in the complex topic of forests and health has increased considerably in recent years (Harting et al., 2014). The wider connection of health and wellbeing to green space accessibility and air quality improvements has been a topic of interest in the public health context for years. The growing interest in the role of forests can be viewed through the lens of an increasing awareness of living in a world where technical and social progress have changed lifestyles and impacted the quality of life and well-being of people (Kotte et al., 2019). Indeed, according to current estimates, more than 60% of the world's population will live in cities with at least half a million inhabitants by 2030. Considering this trend in the light of the implementation of the 2030 Agenda for Sustainable Development, including SDG 11 to “Make cities and human settlements inclusive, safe, resilient and sustainable” (United Nations, 2018); green infrastructure such as forests has become one of the ‘go to’ solutions for policy makers wanting to achieve this goal. The effects of forests on our health and well-being are diverse and comprise both indirect and direct effects. The latter range from direct physical to mental to social benefits.

### Indirect effects

Forests provide ecosystem services such as food, fuelwood, medicinal plants, clean water and income, all of which indirectly impact human health and well-being. Another aspect of the contribution of forests to human health is related to the better environmental quality in and around forest areas - ambient air quality is better, there are reduced (urban) heat island effects and increased thermal comfort, along with the mitigation of noise impacts (see also **Question 10**). Overall, forests reduce environmental harm. Research on the impact of forest design, forest composition and forest structure on human health will reveal further indirect benefits as the evidence base expands.



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### Direct effects

- **Direct physical effects**

Contact with nature, for example by taking a walk in the forest, has a positive influence on the activity of the autonomic nervous system. Studies (e.g. Lee et al., 2011; Park et al., 2009; Park et al., 2008; Tsunetsugu et al., 2013) show that a forest visit reduces sympathetic nervous activities that are connected to increased physical activity and reduce energy reserves and increased parasympathetic nervous activities, which are connected with the body's restorative and regenerative potential (Cervinka et al., 2014). As a result of these effects, heart rate and blood pressure decrease (Kotte et al., 2019). Furthermore, forest walks improve the quality of sleep (Morita et al., 2011) and encourage exercise (Health Council of the Netherlands, 2004). In the case of hospitals and other healthcare facilities, viewing green spaces can reduce patient stress and improve health outcomes. Hence, with confidence it can be said that forests are proven to contribute to health and well-being and lead to both short-term and long-term health improvements. To better understand the manifold and still unrevealed health and well-being benefits along with the dose-response relationship, there is a strong case for more research on forest-based care activities.

- **Direct mental effects**

Staying in forest environments has a stress-reducing and attention-enhancing effect on people. These impacts are caused by physical activities but also by the enjoyment, recreation and perception of the forest atmosphere in general. The time spent in the forest has a positive effect on the emotional state. Indeed, studies have shown that forests contribute to recovering from stress-related exhaustion, and that people feel more balanced and in a better mood after regularly visiting forests (Sonntag-Öström et al., 2015; Yu et al., 2017). While the subject of the impact of forest products as building materials is still relatively new and research has been limited so far (Augustin and Fell, 2015), there are indications that if wood is used as a building material, stress levels of people living in these buildings are generally lower (e.g. Kelz et al., 2011; Fell, 2010; Tsunetsugu et al., 2002; Tsunetsugu et al., 2007; Sakuragawa et al., 2005). Research also shows that using wood in interior design also adds to health and well-being regardless if it is in a home or work environment (Burnar and Kutnar, 2015).

- **Direct social effects**

Natural settings such as parks, woodland and forests facilitate social contact and foster communication between different user groups (Cervinka et al., 2014). Programmes of health interventions delivered in these spaces have the potential to positively impact particularly vulnerable groups, such as children and youth, elderly people, people with low income, with disabilities or with a migratory background (Morris and O'Brien, 2011), and hence could support better social integration. For instance, national parks in Austria and Finland, among others, have recognised the need for accessible activities for people with disabilities and elderly people and offer paths that are barrier-free and therefore accessible to people moving with aid, or allow people to rent wheelchairs and traction devices. Lastly, forests also stimulate adults in their personal development and goal setting and contribute to lifelong learning.

### Recent developments

The COVID-19 pandemic has shed new light on forest recreation and the importance of forests for public health, especially those that can easily be reached from home. Visitor numbers in urban green spaces and forests have increased and novel user groups have visited the forest following restrictions placed on freedom of movement and assembly. A study conducted in a peri-urban forest in Bonn, Germany, shows that visitor numbers in urban green spaces and forests have increased and novel user groups have visited more after COVID-19 lockdowns were introduced in early 2020 (Derks et al., 2020). This increased awareness presents an opportunity for the forestry sector to engage with new stakeholders in health services.



## Conclusion

Forests have proven positive effects on physical, mental and social health as well as individual well-being. Access to forests, the quality of their management for public enjoyment and proximity to large populations are key factors in maximising their value for health and wellbeing. Forest should be viewed as key components of a green infrastructure network along with parks and other open green spaces. A stronger anchoring of forest managers in cross-sectoral cooperation with public health professionals and other sectors will help maximise their benefits in any given locality.



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