Forests and Trees for Human Health:
Pathways, Impacts, Challenges and Response Options

Contents

Foreword

In recent years, the increasing occurrence of infectious diseases, including the novel coronavirus (COVID-19), and non-communicable diseases, has become a major public health challenge. At the same time, forest loss and degradation and climate change continue to exacerbate the threat to human health, through the loss of ecosystem services, increased exposure to zoonotic diseases, air pollution, and extreme weather events, such as heat waves. Evidence shows that human health is intrinsically linked to the health of forests and to nature in general.

Consequently, international policy processes have increasingly recognised the crucial interlinkages between human health and the health of other species and the planet. The recently adopted Kunming-Montreal Biodiversity Framework calls for integrated approaches such as One Health, and linkages between forests and human health are evident in several targets of the third Sustainable Development Goal (SDG 3) "Ensure healthy lives and promote wellbeing at all ages". This is also reflected in the 2023 International Day of Forests, which is celebrated under the theme "Healthy forests for healthy people", highlighting the interrelationship of forests and SDG3.

The Global Forest Expert Panel (GFEP) on Forests and Human Health, a joint initiative of the Collaborative Partnership on Forests (CPF), led by the International Union of Forest Research Organizations (IUFRO), comprehensively assessed available scientific information on the interlinkages between forests and human health. The report presents crucial scientific information and evidence required to inform decisions that effectively utilise the synergies and minimise trade-offs to enhance the positive health impacts of forests.

Healthy forests contribute to healthy people. This policy brief and the associated scientific report enhance our understanding of the often-overlooked connection of forests in the context of human health. As such they serve as important sources of information, supporting decision-makers and stakeholders as they strive to address pressing global health challenges and achieve the United Nations 2030 Agenda for Sustainable Development.

I am confident that the readers will find this policy brief valuable in the development of effective policies and initiatives that address human health while ensuring the sustainable management of forests.

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Introduction

The relation between forests, trees and green spaces[1], and human health is complex. Forests and trees provide multiple goods and services that contribute to human health, including medicines, nutritious food and non-wood forest products. They also support climate change mitigation and adaptation, moderate microclimate, filter air pollutants and offer areas for recreation, all of which can contribute to better physical, mental and spiritual health and wellbeing. At the same time, poor practices in the conservation and management of forests and trees have contributed to adverse effects on human health and wellbeing, with the emergence of zoonotic diseases and forest fires.

In recent years, the surge in zoonotic (diseases naturally transmissible from vertebrate animals to humans) and vector-borne diseases such as COVID-19, MERS (Middle East Respiratory Syndrome) and malaria, and chronic non-communicable diseases such as diabetes, cancer and depression, have posed significant public health threats. Environmental factors, such as urbanisation, biodiversity loss and climate change, have further resulted in threats to human health through air pollution, noise and extreme weather events. At least 24% of global deaths and 28% of deaths among children under five are due to modifiable environmental factors.

Forest loss and degradation have a negative impact on the provision of critical ecosystem services, many of which are crucial for human wellbeing, for example, the provision of food, water and air purification, and recreational services. Ten million ha of forests were lost each year between 2015 and 2020, mainly due to land use changes for the production of commodities, forestry and fire. Climate change further exacerbates the impacts of these drivers. Urbanisation and disconnect from nature have contributed to the health challenges faced by today's society, including malnutrition and stress-related morbidity.

Understanding the relationship between forests and human health is essential to effectively utilise synergies and minimise trade-offs to enhance the positive health impacts of

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1 Forests and land, partly or completely covered with trees, shrubs, grass or other vegetation, including parks, street tree plantings, community gardens and cemeteries, but also rooftop gardens and vertical gardens, meadows and woods. In this policy brief 'forests, trees and green spaces' is sometimes abbreviated to 'forests and trees'.

forests on urban, rural and forest-dependent communities as well as ensure the sustainable management of forests. Several international policy processes and commitments have called for the inclusion of forests to contribute to human wellbeing. For example, the Kunming-Montreal Global Biodiversity Framework highlights the urgent need to reduce environmental degradation and increase urban spaces to reduce health risks and implement holistic approaches such as One Health. The third Sustainable Development Goal (SDG 3) aims to "Ensure healthy lives and promote wellbeing at all ages". Linkages between health and forests are evident in several targets of SDG 3 as well as of other SDGs.

Policies at different levels have increasingly acknowledged the health-environment nexus, and the close relationship between human health and the health of other species, ecosystems and the planet has been recognised by integrative health frameworks such as One Health[2]. The positive impacts of forests and green spaces on mental, physical and social health are increasingly considered in urban areas, especially in high-income countries, and zoonotic diseases and food and nutrition aspects have received some, though insufficient, attention. Initiatives are often fragmented, unsustainable and not always evidence-based, or do not explicitly focus on the interlinkages between human health and forests.

Against this background, the Collaborative Partnership on Forests (CPF) tasked the Global Forest Expert Panel (GFEP) on Forests and Human Health to carry out a comprehensive assessment of the existing scientific information on the linkages between forests, trees outside forests and green spaces on the one hand, and human health on the other. This policy brief summarises the key messages distilled from the assessment[3].

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2 An integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems.

3 All relevant references are avaliable in the associated global assessment report: Konijnendijk, C., Devkota, D., Mansourian, S., & Wildburger, C. (eds) 2023. *Forests and Trees for Human Health: Pathways, Impacts, Challenges and Response Options.* Vienna: International Union of Forest Research Organizations (IUFRO).
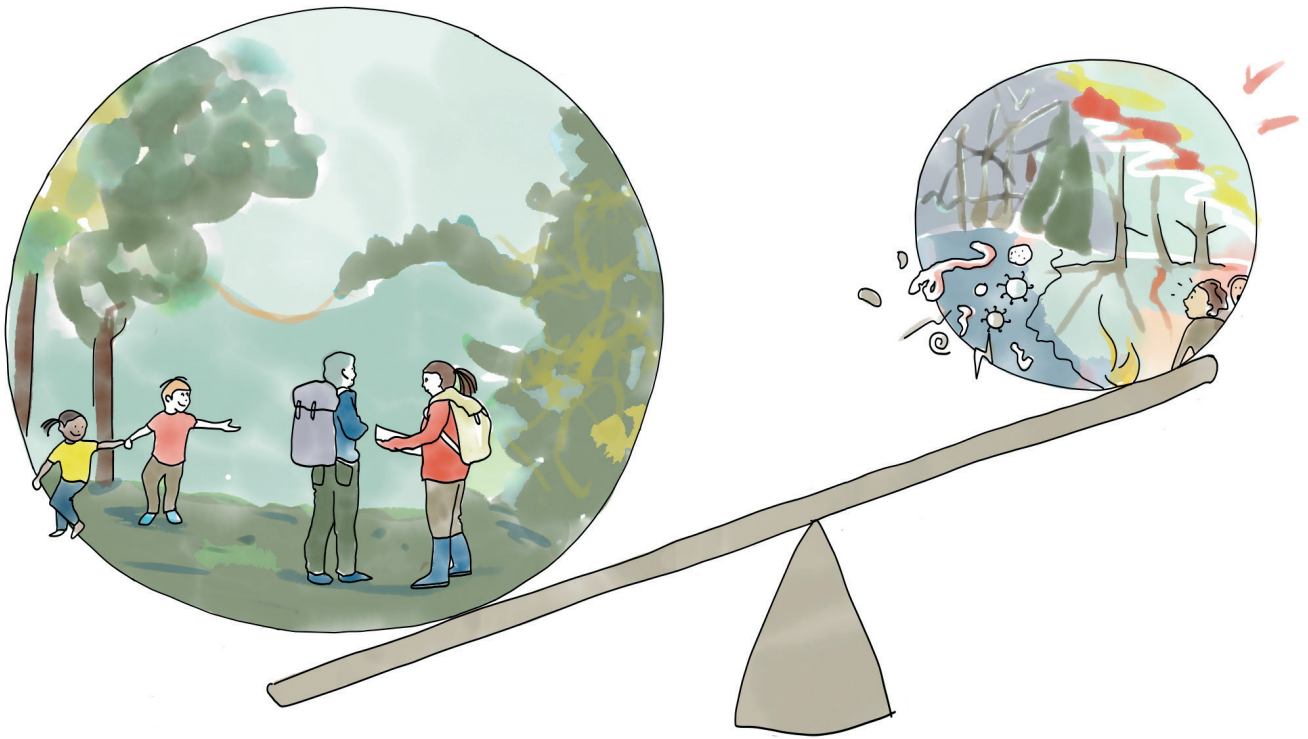
KEY MESSAGES

❥ KEY MESSAGE 1

Forests, trees and green spaces impact human health across all life stages

Forests, trees and green spaces affect human health at all stages, from the prenatal stage to the elderly. Existing evidence strongly supports a wide range of health benefits associated with forests, including neurodevelopment in children, mental health and wellbeing, spiritual wellbeing and cardiometabolic health in adults, and mental health and wellbeing, cognitive ageing and longevity in the elderly. Forests and trees are also crucial in enhancing social interactions and social health during all life stages. Medicinal plants derived from forests (and other ecosystems) are another vital component of human wellbeing at all life stages, as they provide primary healthcare to more than 70% of the world's population.

Decision-makers from different sectors and at different scales, especially those concerned with forests, land use and human health, need to have access to the latest knowledge on forest-health outcomes at different life stages to effectively integrate the benefits of forests and trees to human health in their strategies and policies. Although forests and trees impact human health across all life stages, the significant impacts on children, mainly because of repercussions in later life, need to be noted and addressed in decisions. A sound understanding of the complex relationships between forests and human health will allow tailored forest management that optimises health benefits across all life stages.

Illustration: Karin Grönberg

❥ KEY MESSAGE 2

Positive health outcomes of forests, trees and green spaces significantly outweigh negative ones

Forests, trees and green spaces have a predominantly positive impact on various health outcomes, ranging from mental wellbeing, to reduced cardiovascular events, to an overall reduction in mortality and morbidity. Evidence of beneficial association is stronger for some outcomes, such as mental health and wellbeing, than others, such as cancers. For some health outcomes, evidence is mixed as forests and trees can also sometimes affect human health negatively through zoonotic and infectious diseases, reduced air quality because of forest fires, respiratory and allergic outcomes and human-wildlife conflict. These negative impacts primarily result from disturbed forest-people relationships, including poor conservation and management practices and wrong choice of tree species in residential areas. For example, changes in land-use, including deforestation, is estimated to have caused the emergence of more than 30% of new diseases since 1960.

It is clear, however, that the positive health outcomes from interactions with forests and trees far outweigh the negative impacts. It is crucial that decision-makers in both forests and health domains understand the contexts that result in positive health impacts and their extent to ensure that policies and strategies effectively secure and enhance them. Adverse effects need to be managed and minimised through policies that sustainably manage forests and promote healthy forest-people relationships. Vulnerable populations who are more significantly affected need to be carefully considered in forest and health policies.

❥ KEY MESSAGE 3

The health outcomes of forests are the result of several pathways that are dependent on context and individual lifestyles

Forests and trees affect human health through multiple pathways dependent on the specificities of forests and communities. While all population groups may depend on forests for health to a certain extent, the intensity, pathways and health outcomes depend on context and individual lifestyles. Health outcomes of forests and trees are different between urban, rural and forest-dependent communities. Differences also exist between countries and regions. Health outcomes related to forests differ between low- and middle-income countries, and high-income countries, for example, due to differences in major health issues and contextual differences in the use of green spaces and forests. The association between forests and human health also varies across income, gender, ethnicity and culture. Similarly, the proximity and accessibility of a forest, its density and size, diversity, type, and the biodiversity it hosts, all affect the health and wellbeing outcomes of a forest.

Policies and initiatives that aim to promote the positive health outcomes of forests and trees should recognise these differences and adjust to the specific contexts, lifestyles and demographics of the target groups. Response options should be based on an understanding of the attributes and characteristics of forests that affect their health impacts while promoting synergies and minimising trade-offs between different uses of forests for optimal health outcomes. Armed with this information, decision-makers can better tailor policies to different communities and promote opportunities for vulnerable populations and disadvantaged neighbourhoods to benefit from forests and trees.

Illustration: Karin Grönberg
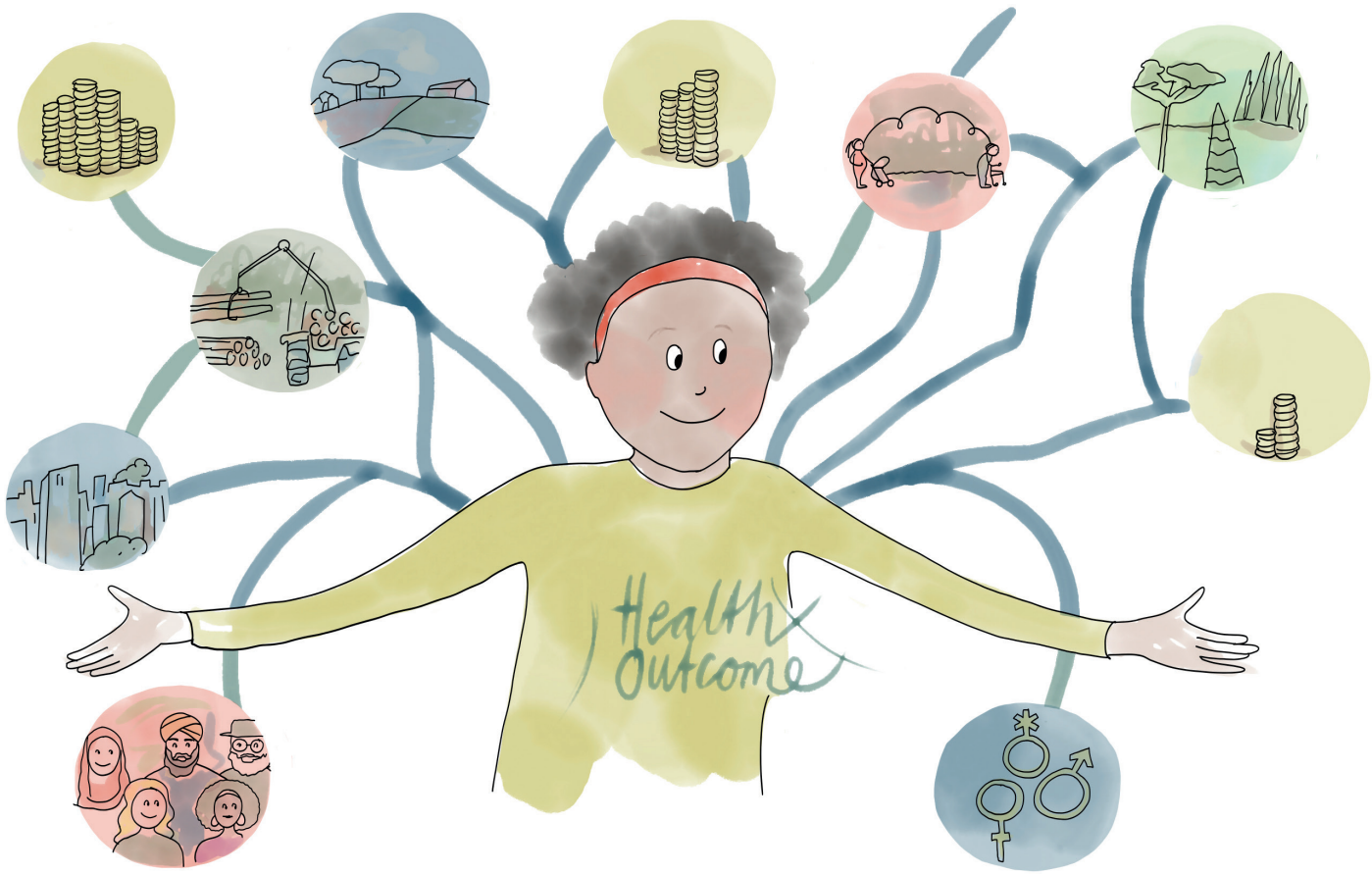
➤ KEY MESSAGE 4

Forest-health relations offer solutions to global crises

Forest-health relations can provide solutions for tackling global crises, notably pandemics and climate change. Major health crises, such as the COVID-19 pandemic, have devastating and far-ranging impacts on human societies. Global crises such as climate change, land-use change and biodiversity loss endanger the important role that forests and trees provide as 'safety nets' for vulnerable populations. The impacts of climate change on forests are many, including increasing degradation and forest fires, which can lead to respiratory illnesses and reduced ecosystem services, adversely impacting human health. At the same time, forests and trees provide measures to adapt to the negative health impacts of climate change. Green spaces and trees contribute substantially to cooling infrastructure and humans during heat waves. Similarly, biodiversity loss can gravely affect food security, particularly for forest-dependent communities. Forests, trees and sustainable forestry can help in the recovery from the COVID-19 pandemic and in combatting the global biodiversity crisis. This will require recognising the value and crucial role of forests in building inclusive, resilient and sustainable economies.

While forests are an important component of climate change and biodiversity policies, there is a lack of awareness of the complex and important relationship between forests and human health. Decision-makers need to include forests and human health relationships in relevant policies urgently as the various global challenges continue affecting both forests and human health. Understanding and addressing the underlying causes of increasing exposure to zoonotic diseases – namely disturbed forest-people relations - can help to prevent the emergence of such pandemics in the future.

❧ KEY MESSAGE 5

Integrative and cross-sectoral approaches need to be adopted to improve the forest-health link

In recent years, new integrative approaches - such as the One Health, Planetary Health and EcoHealth frameworks - that consider the nature-human relation more inclusively have been developed. These frameworks stress the importance of considering human health along with the health of other beings, ecosystems and the planet to improve the understanding of the human-forest link and design more integrative solutions. As healthcare shifts its focus to more holistic approaches, including preventing ill health, linking health and environment, universal health coverage, and building resilience, along with curing illness, forest policies also need to recognise their essential interlinkages and consider health outcomes as one of the key aspects of forest and tree management. Forest-health interactions offer an opportunity to broaden the solution space in policy, practice and stewardship, both for forest and health management.

Decision-makers in both forest and health sectors, as well as related domains, should adopt more integrated approaches such as the One Health framework, which can lead to better consideration of forests and health relationships and design holistic solutions. Cross-sectoral policies and initiatives that combine the efforts of health, forestry and climate change domains, as well as other related sectors, can promote positive health impacts of forests and trees while mitigating the negative ones in a meaningful, impactful and equitable manner. Better consideration of health impacts can also result in increased preservation and multi-targeted management of forests, trees and green spaces. Collaborative approaches between government, market and civil society actors are crucial to realise and utilise the health benefits of forests.

Illustration: Karin Grönberg

Knowledge Gap

Major Knowledge Gaps

Although the evidence base on forest-human health outcomes has been growing, there are still major knowledge gaps. So far, most research has taken place in urban areas in high-income countries, resulting in a skewed evidence base and major knowledge gaps, especially pertaining to low-income countries and rural and forest-dependent communities. Some specific contexts and population groups are also better covered by the body of evidence, such as urban populations in high-income countries. Knowledge and understanding of the complexity of forest-health relations and the direct and indirect pathways that lead to specific outcomes need to be improved. Specific focus should be on vulnerable populations and communities that are directly dependent on forests for their livelihoods. Moreover, some dimensions of human health, such as social and spiritual health, have received limited attention in research to date.

Decision-makers should prioritise and fund research that addresses the above needs. Given their importance and potential, forest-human health relations should also be considered in healthcare funding programmes rather than only in forest and environmental funding. Obvious links also exist with climate change, and the multiple relations between climate change and forest health in different contexts and amongst different populations need to be better studied. Key research priorities include:

1. Developing rigorous methods and studies

2. Studying the variation of forest-health relations, pathways, and outcomes across different populations and contexts

3. Strengthening the valuation, assessment and sharing of health benefits (and costs)

4. Broadening the scope of forest-health research and initiatives to apply more holistic and integrated perspectives in the climate-forest-health nexus

5. Strengthening the science-policy interface

Acknowledgements

A short publication such as this cannot do justice to all the complexities related to the linkages between forests, trees and green spaces, and human health. For a more comprehensive assessment, the reader is directed to the Expert Panel's full report. The central thread running through the full report and this policy brief is the importance of a greater understanding of the interlinkages between forests and trees and human health, the effective management and design of landscapes to provide optimal health benefits, and improved governance. It is our sincere hope that this policy brief may assist policy- and decision-makers in tackling complex human health challenges in a wide range of contexts while also enhancing the health of ecosystems.

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