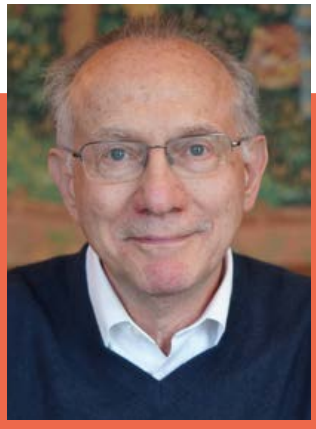


FOREWORD

Harvey V. Fineberg
Professor of Health Policy and Management, Emeritus, Harvard T.H. Chan School of Public Health,
Member of the Veolia Institute's Foresight Committee

Biodiversity and Human Health: A Vital Yet Underestimated Link

Six years ago, the world was shaken by the emergence of a novel disease, later identified as COVID-19 and declared a global pandemic by the World Health Organization. Although the exact origin of SARS-CoV-2 remains uncertain, many devastating human infections, such as HIV, originated as animal spillovers. Human health is tightly connected to wildlife and ecosystems.

We are linked to biodiversity both physically and mentally. It shapes our well-being in many ways, including the abundance, variety, and quality of food, the functioning of our immune system, and the medicines we use. This edition of the FACTS Reports review explores these multiple interdependencies between human wellbeing and biodiversity.

We are linked to biodiversity both physically and mentally. It shapes our well-being in many ways, including the abundance, variety, and quality of food, the functioning of our immune system, and the medicines we use

As noted, biodiversity influences health directly through the risk of zoonotic infections. Several articles examine how imbalances and shifts in species dynamics can create conditions for the emergence of human pathogens (see articles p. 44, p. 50 and p. 56).

Biodiversity is also a fundamental pillar of nutrition and food security. Pollinators, soil organisms, and plant-insect interactions sustain crop productivity and food quality, and biodiversity loss or intensive agricultural practices can compromise yields, degrade soils, and exacerbate nutritional inequalities. These and related issues are covered (see articles p. 10, p. 16 and p. 82).

This review also explores biodiversity as an inspiration for medical innovation and treatment. Biomimicry offers novel ideas for new preventive, diagnostic and therapeutic pathways (see article p. 26).

Biodiversity underpins essential ecosystem services that are fundamental to human well-being (physical and mental). Natural and restored ecosystems support clean air and water, climate regulation, and living environments that sustain quality of life. Several articles explore these links, underscoring the importance of preserving and restoring natural spaces (see articles p. 16, p. 66 and to some extent articles p. 92 and p. 96).

Beyond these benefits, the review also highlights what happens when these regulatory functions are weakened. It shows how pollution interacts with biodiversity loss to amplify health risks, and how degraded ecosystems – down to the human microbiome – struggle to maintain their essential regulatory roles, affecting air, water and soil quality (see articles p. 20, p. 34, p. 36 and p. 40).

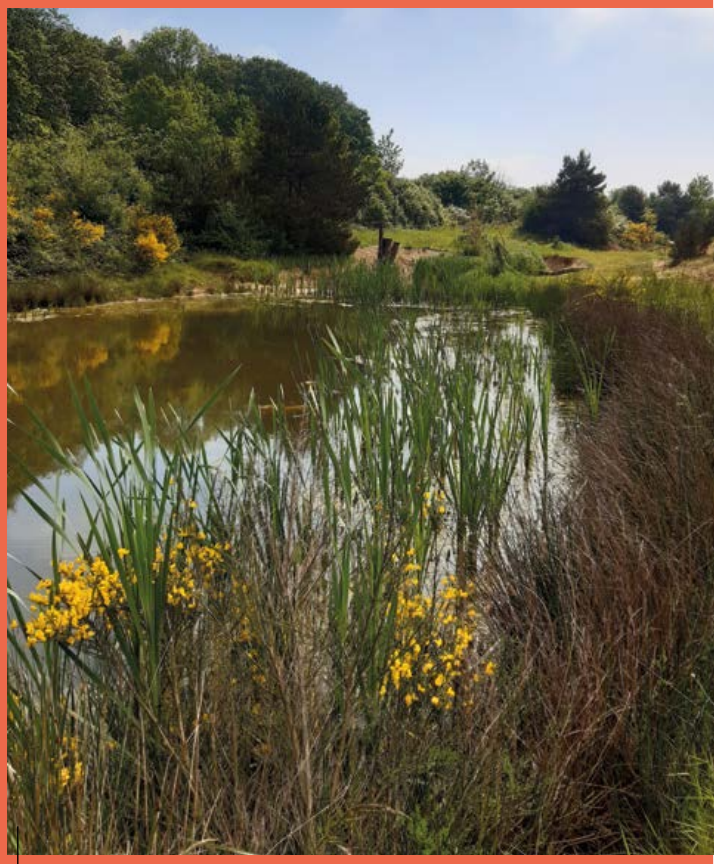
Many articles additionally underline the contribution of biodiversity to climate resilience. Diverse ecosystems help buffer extreme weather events, limit the spread of climate-sensitive disease vectors, and strengthen the adaptive capacity of communities and supply chains. Preserving biodiversity is therefore not only an ecological imperative but also a strategic priority for long-term human health and wellbeing.

Diverse ecosystems help buffer extreme weather events, limit the spread of climate-sensitive disease vectors, and strengthen the adaptive capacity of communities and supply chains

Beyond the diagnosis of threat of degraded biodiversity, the key question is: what do we do? The report outlines avenues for action, especially in the final section that identifies possible solutions: which must be rooted in science mainstreaming the One Health approach, rethinking food systems for resilience and equity, safeguarding the world's remaining "global pharmacy" (for example through initiatives such as "30 x 30")[1], and embedding biodiversity into urban and territorial planning. Sound public policy – from global frameworks to local initiatives – can accelerate progress (see article p. 72), and improved indicators and data infrastructures can better connect scientific knowledge to decision-making (see article p. 78).

Finally, progress will not be achieved without innovative financing solutions (see article p. 96) and without citizen engagement, calling for a renewed dialogue between science and the public (see articles p. 88 and p. 92).

Ultimately, the articles assembled here converge on a core message: protecting biodiversity is inseparable from protecting health. In an age of misinformation and political controversy, this review aims to reconnect evidence, policy, and collective responsibility – offering insights, solutions, and a forward-looking vision of planetary health.



© Sylvie Blin

1 A global goal aimed at protecting and conserving at least 30% of the planet's land, freshwater, and oceans by 2030, adopted as part of the Kunming-Montreal Global Biodiversity Framework in 2022.