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# Health, environment and climate change

## Human health and biodiversity

### Report by the Director-General

#### CONTEXT AND POLICY MANDATE

1. The Executive Board, in its consideration of health, environment and climate change at its 142nd session, adopted decision EB142(5) in which it requested the Director-General to prepare a report on actions taken on the interlinkages between human health and biodiversity for consideration by the Seventy-first World Health Assembly, bearing in mind the state of knowledge review on biodiversity and human health by WHO and the Secretariat of the Convention on Biological Diversity,<sup>1</sup> in order to prepare WHO's contribution to the Convention's fourteenth meeting of the Conference of the Parties due to be held in November 2018.<sup>2</sup>

2. Since 2008, each biennial meeting of the Conference of the Parties to the Convention on Biological Diversity has called for and welcomed the strengthening of cooperation with WHO on the nexus between biodiversity and human health. In 2012, Parties at the eleventh meeting of the Conference of the Parties requested the establishment of a joint work programme with WHO, in collaboration with relevant organizations and initiatives.<sup>3</sup> In 2014, at its twelfth meeting the Conference of the Parties adopted its first full decision on biodiversity and health.<sup>4</sup> In 2016, the Conference of the Parties adopted, at its thirteenth meeting, a comprehensive decision on biodiversity and human health,<sup>5</sup> considering the implications of the findings of the joint publication on state of knowledge review on biodiversity and human health.<sup>1</sup>

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<sup>1</sup> WHO, CBD. Connecting global priorities: biodiversity and human health: a state of knowledge review. Geneva: World Health Organization; and Montreal, Canada: Convention on Biological Diversity; 2015 (<http://www.who.int/globalchange/publications/biodiversity-human-health/en/>, accessed 21 February 2018).

<sup>2</sup> Consultations and collaboration between WHO and the secretariat of the Convention on Biological Diversity in the context of access to pathogens and the fair and equitable sharing of benefits for public health, pursuant to decision WHA70(10) (2017), are not addressed in the present document; they are covered in document A71/24.

<sup>3</sup> Decision XI/6. Cooperation with other conventions, international organizations, and initiatives (<https://www.cbd.int/doc/decisions/cop-11/cop-11-dec-06-en.pdf>, accessed 21 February 2018).

<sup>4</sup> Decision XII/21. Biodiversity and human health (<https://www.cbd.int/doc/decisions/cop-12/cop-12-dec-21-en.pdf>, accessed 21 February 2018).

<sup>5</sup> Decision XIII/6 Biodiversity and human health (<https://www.cbd.int/health/cop-13-dec-06-en.pdf>, accessed 21 February 2018).

3. In line with the Health in All Policies approach (resolution WHA67.12 (2014)), public health policies should seek to ensure that the impacts of ecosystem alteration are assessed and reflected in strategies through the engagement of different sectors, disciplines and local populations, as an opportunity to maximize the shared health and environment benefits of addressing the upstream drivers of hazards to health. The 2030 Agenda for Sustainable Development provides unique momentum and opportunity to develop coherent, coordinated, cross-sectoral action.

## **BIODIVERSITY AND HEALTH LINKS**

4. Human health ultimately depends on ecosystems for elements essential to human health and well-being (for instance, food and freshwater). Biodiversity underpins the ecological functions and processes that give rise to the benefits provided by ecosystems (“ecosystem services”), including purification of water and air, pest and disease control, pollination, soil fertility, and resilience to climate change. Furthermore, various species and genotypes of organisms provide diverse foods, essential nutrients and medicines. At the same time, biodiversity can sometimes be a source of pathogens and, when unsustainably managed, can exacerbate negative health outcomes. Thus the interactions between people and biodiversity can strongly influence population health, livelihoods, and the sustainability of public health interventions. The links are often non-linear and complex.

5. To address this complexity and the challenges posed by loss of biodiversity and rising global health burdens WHO and the Secretariat of the Convention on Biological Diversity produced the state of knowledge review, drawing on the knowledge and insights of a multidisciplinary group of more than 100 experts. The review examines the linkages between biodiversity and health, as broadly defined by WHO, across a range of topics, including: water and air quality; agro-ecosystems; food security and nutrition; microbial diversity and noncommunicable diseases; infectious diseases; biomedical discovery; traditional medicine; mental, physical and cultural well-being; sustainable consumption and production; climate change; and disaster risk reduction.

6. Drivers of change can affect biodiversity and health, both singly and together. Direct drivers of biodiversity loss include land-use change, loss of habitat, overexploitation, pollution, the arrival of invasive species, and climate change; many of these also affect human health both directly and through their impacts on biodiversity. For example, air and water pollution contribute to biodiversity loss and have direct deleterious effects on health.

7. An increasing body of evidence indicates that exposure to biodiverse green spaces, particularly in urban settings, can provide many health benefits in patients with noncommunicable diseases, including improved psychological, cognitive and physiological health.<sup>1</sup> There is also strong evidence demonstrating the health benefits of children’s interaction with nature.

8. Conversely, recent research has demonstrated that biodiversity loss in the natural environment, and reduced human contact with the natural environment, may lead to reduced diversity in the human microbiota, leading to weakening of the human microbiome’s immunoregulatory role and onset of noncommunicable diseases. Furthermore, use of antibiotics and antimicrobial agents can alter the composition and function of the human microbiome. Limiting their unnecessary use could provide

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<sup>1</sup> For example, it has been projected that the costs of mental health alone, estimated at US\$ 2500 billion in 2010 could increase to US\$ 10 000 billion by 2030. See Bloom D, Cafiero ET, Jané-Llopis E, Abrahams-Gessel S, Bloom LR, Fathima S, et al. The global economic burden of noncommunicable diseases. Geneva: World Economic Forum; 2011 (<http://apps.who.int/medicinedocs/documents/s18806en/s18806en.pdf>, accessed 22 February 2018).

biodiversity and improve health. In addition, benefits to mental health have been associated with greater exposure to microbial diversity.

9. Consideration of the links between health and biodiversity will be central to the coherent and successful implementation of the 2030 Agenda for Sustainable Development and achievement of the Sustainable Development Goals.<sup>1</sup>

## **COLLABORATIVE ACTIVITIES**

10. Particularly since the establishment of the joint work programme on biodiversity and health in 2012 WHO has worked closely with the Secretariat of the Convention on Biological Diversity. Joint activities include: writing papers for publication in peer-reviewed journals, synthesizing scientific information, generating awareness-raising materials and communication tools, developing capacity, holding combined events in relevant international forums, interagency collaboration and elaborating policy guidance.

11. In 2015, WHO and the Secretariat of the Convention on Biological Diversity signed a Memorandum of Understanding in order to strengthen collaboration and, with relevant partners, capitalize on their respective scientific and technical expertise on the links between health and biodiversity. In line with that Memorandum of Understanding, a liaison group was established, co-chaired by both Parties in order to provide a platform for requesting expert advice and assistance, exchanging information and coordinating activities relating to linkages between human health and biodiversity.<sup>2</sup> The report of the group's first meeting (Geneva, 4 and 5 May 2017) has been published.<sup>3</sup>

12. To support countries in mainstreaming biodiversity and health in national strategies, programmes and plans, both Parties (including WHO regional offices) and other partners have co-convened a series of regional capacity-building workshops, bringing together representatives from health ministries and those responsible for biodiversity. Workshops were held in the Region of the Americas (Manaus, Brazil, 4–6 September 2012),<sup>4</sup> the African Region (Maputo, 2–5 April 2013)<sup>5</sup> and the European Region (Helsinki, 23–25 October 2017).<sup>6</sup> Altogether, government representatives from more than 80 countries attended these workshops.

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<sup>1</sup> Consideration of the links between health and biodiversity is of particular relevance to Goals 3 (Ensure healthy lives and promote well-being for all at all ages), 14 (Conserve and sustainably use the oceans, seas and marine resources) and 15 (Sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss). The linkages are also relevant to Goals 1 (End poverty in all its forms everywhere), 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), 6 (Ensure access to water and sanitation for all), 11 (Make cities inclusive, safe, resilient and sustainable), and 13 (Take urgent action to combat climate change and its impacts).

<sup>2</sup> Besides WHO and the Secretariat of the Convention on Biological Diversity, core members of the liaison group include FAO, OIE, United Nations Office for Disaster Reduction, UNEP, the United Nations Framework Convention on Climate Change, International Union for Conservation of Nature, United Nations University, CGIAR and Future Earth.

<sup>3</sup> See link to the report of the first meeting of the Interagency Liaison Group on Biodiversity and Human Health at <https://www.cbd.int/health/ilg-health/default.shtml> (accessed 23 February 2017)

<sup>4</sup> For further information, see <https://www.cbd.int/health/workshops/americas/default.shtml> (accessed 23 February 2018).

<sup>5</sup> <https://www.cbd.int/health/workshops/africa/default.shtml> (accessed 23 February 2018).

<sup>6</sup> <https://www.cbd.int/health/europe/default.shtml> (accessed 23 February 2018).

13. Further to decision XIII/6 of the Conference of the Parties to the Convention on Biological Diversity at its thirteenth meeting in 2016, guidance has been prepared, in consultation with WHO, to support the consideration of biodiversity and ecosystem management in the One Health approach. The Convention's Subsidiary Body on Scientific, Technical and Technological Advice approved this guidance and a summary of recent activities carried out under the joint work programme, for submission to the Conference of the Parties at its fourteenth meeting in November 2018.

## WAYS FORWARD

14. Systematic use of risk analyses, vulnerability assessments and integrated impact and strategic assessments relating to the links between human health and biodiversity could help to identify actions to proactively manage noncommunicable and infectious disease risks associated with biodiversity change, wildlife trade and other drivers of disease emergence and ill health, including the socioeconomic and behavioural factors that contribute to these threats. The development of common metrics and the linkage of indicators on biodiversity with those on health, coupled with economic valuation tools, would also contribute to the evaluation of measures and the monitoring of their impacts on both biodiversity and human health.

15. There is an urgent need for further scientific research on the links between biodiversity and health in order to fill scientific gaps, to generate more integrated data, monitoring and indicators, and for broader dissemination of these findings.

16. Even though further research is important, sufficient knowledge exists to support many “no regrets” measures.<sup>1</sup> These include investing in nature-based solutions, such as the integration of biodiverse green spaces in urban development; improving availability of and accessibility to diverse diets; tightening control and rationalizing use of antimicrobial agents, pesticides and other biocides; maximizing the health benefits of exposure to biodiverse environments; and better monitoring of environmental change in line with the “One Health” approach.

17. Mainstreaming health and biodiversity linkages into national strategies and programmes provides novel opportunities for nature-based solutions for strengthening resilience and facing major societal challenges that affect human health, such as food and water insecurity, climate change, disaster risk, social and economic inequity.

18. In order to provide support to Member States in the mainstreaming of linkages between biodiversity and health, and as a contribution to ongoing collaborative activities under its joint work programme with the Secretariat of the Convention on Biological Diversity and to the fourteenth meeting of the Conference of the Parties, the WHO Secretariat plans to carry out the following actions:

- (a) to facilitate and encourage Member States to undertake the activities set out in paragraph 19 below;

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<sup>1</sup> “No regrets” strategies are based on concepts and measures that can begin to be enacted now without being certain about all dimensions of future change. Measures are taken and strategies are thus adopted in a precautionary sense with the aim of responding to possible negative impacts before they intensify.” (See <http://www.circlesofclimate.org/>, accessed 7 March 2018).

(b) to participate in the fourteenth meeting of the Conference of the Parties to the Convention on Biological Diversity and contribute to a high-level dialogue among ministries responsible for health and those responsible for biodiversity, with a view to strengthening cross-sectoral collaboration and supporting mainstreaming of the links between biodiversity and health;

(c) to continue to convene, jointly with the Secretariat of the Convention on Biological Diversity and institutional partners, side events in relevant international forums in order to contribute to the mainstreaming of health and biodiversity interlinkages and the wide dissemination of the findings of the state of knowledge review;

(d) to strengthen cross-sectoral cooperation among intergovernmental and international agencies, including the interagency liaison group on biodiversity and health;

(e) to collaborate with the Secretariat of the Convention on Biological Diversity, and other relevant partners as appropriate, in the compilation of best practices and lessons learned, and the development and application of guidance, tools and indicators, for the mainstreaming of biodiversity and health in relevant national strategies, programmes and plans;

(f) to promote capacity-building, for instance through the development of communication, education and public awareness tools for the general public and for policy-makers in the health sector, and by jointly convening capacity-building workshops on biodiversity and health with the Secretariat of the Convention on Biological Diversity and other relevant partners.

19. The Secretariat also stands ready to support Member States to consider the following activities, further to previous decisions of the governing bodies of WHO and the Convention on Biological Diversity, in line with national priorities and capacities:

(a) facilitating dialogue among agencies responsible for health, those responsible for biodiversity, and other relevant sectors;

(b) better integrating health, biodiversity and ecosystem management into holistic approaches such as One Health in order to target a broader spectrum of issues threatening health outcomes including antimicrobial resistance, vector-borne and waterborne diseases, food security and malnutrition, and interactions with other drivers of biodiversity loss and ill health, including climate change;

(c) considering relevant health-biodiversity linkages when developing and updating relevant national policies and strategies, programmes, plans and accounts, including national health strategies, environmental health action plans, poverty eradication strategies and related reporting instruments;

(d) considering health-biodiversity linkages in environmental impact assessments, risk assessments and health impact assessments; and acting to address, monitor and evaluate any unintended and undesirable negative impacts of biodiversity interventions on health and vice versa;

(e) identifying opportunities to promote healthy lifestyles, sustainable production and consumption and associated behavioural change that would benefit both human health and biodiversity;

(f) supporting interdisciplinary education, training, capacity-building and research programmes on health-biodiversity linkages, using integrative approaches, at various levels and different spatial and temporal scales, and building communities of practice on biodiversity and health;

(g) strengthening the capacity of health, environment and other relevant ministries, agencies and organizations to consider health-biodiversity linkages in approaches to prevent ill-health and promote sustainable development, and to promote the multiple dimensions of health and well-being, with particular attention to vulnerable populations; and

(h) strengthening national capacities for monitoring and data collection, including integration of monitoring, surveillance and early warning systems into a unified structure that enables health systems to anticipate, prepare for and respond to public health threats resulting from biodiversity loss and ecosystem change.

#### **ACTION BY THE HEALTH ASSEMBLY**

20. The Health Assembly is invited to note the report and to provide further guidance.

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