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## **Health, environment and climate change**

### **Road map for an enhanced global response to the adverse health effects of air pollution**

#### **Report by the Director-General**

1. In 2015, the Sixty-eighth World Health Assembly, in resolution WHA68.8 on “Health and the environment: addressing the health impact of air pollution”, requested the Director-General to undertake numerous activities, including proposing a road map for an enhanced global response. In 2016, the Health Assembly in decision WHA69(11) welcomed the “road map for an enhanced global response to the adverse health effects of air pollution” and requested a further report on the road map progress. This document responds to that request.

#### **BACKGROUND AND OVERVIEW**

2. WHO estimates that more than six million deaths annually are due to household and ambient air pollution combined. Air pollution is a major contributory factor to the epidemic of noncommunicable diseases, accounting for between one quarter and one third of the burden of stroke, heart attack, lung cancer and chronic obstructive pulmonary disease, and more than one half of deaths due to pneumonia in childhood. Thus, air pollution is among the top three global risk factors for disease and death; in some regions, it is the leading risk factor. The costs of air pollution to health and well-being worldwide have been estimated by the World Bank to be more than US\$ 5000 billion.<sup>1</sup> The number of these deaths can be rapidly reduced through adoption of available and affordable strategies by sectors such as transport, energy, waste, agriculture, housing and industry.

3. The Health Assembly’s resolution WHA68.8 (2015) and the subsequent road map, covering the period 2016–2019, aim to strengthen the capacity of the health sector to prevent diseases and deaths caused by air pollution. These instruments mandate Member States inter alia to take a leading role in (a) raising awareness of the impacts of air pollution on health and (b) integrating public health considerations into decision-making and the evaluation processes of relevant national, regional and local policies leading to reduced exposures.

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<sup>1</sup> World Bank Group, Institute for Health Metrics and Evaluation. The cost of air pollution: strengthening the economic case for action. Washington, DC: World Bank Group; 2016 (<http://documents.worldbank.org/curated/en/781521473177013155/The-cost-of-air-pollution-strengthening-the-economic-case-for-action>, accessed 21 March 2018).

4. In resolution WHA68.8 the Health Assembly further requested the Director-General inter alia to identify, develop and regularly update WHO's air quality guidelines and cost-benefit tools, including monitoring systems. WHO is responsible for monitoring and reporting progress relating to three Sustainable Development Goal indicators: 3.9.1 (Mortality rate attributed to household and ambient air pollution), 7.1.2 (Proportion of population with primary reliance on clean fuels and technology) and 11.6.2 (Annual mean levels of fine particulate matter (e.g. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted)).

## **PROGRESS SINCE 2016**

5. The road map for the period 2016–2019 focuses on four areas of action: expanding the knowledge base about impacts of air pollution on health; monitoring and reporting on health trends and progress towards the air pollution-related targets of the Sustainable Development Goals; leveraging the health sector to raise awareness of health benefits from air pollution reduction measures; and enhancing the health sector's capacity to work with other sectors and at all levels – local, national, regional and global – to help address the adverse health effects from air pollution through training, guidelines and national action plans. Progress since 2016 and the Secretariat's activities are thus described by these categories as follows.

### **Expanding the knowledge base**

6. Evidence is emerging that air pollution is a risk or causative factor for an increasingly wide range of diseases and conditions – including dementia (as a causative factor), poor lung development in children (a risk factor), and low birth weight – adding to the existing evidence that air pollution causes heart disease, stroke, lung cancers, chronic obstructive pulmonary disease and childhood pneumonia, the five diseases upon which current estimates of disease burden attributable to air pollution are based. There is also more knowledge about how reductions in emissions in sectors such as energy, transport, agriculture, housing and industry actually prevent disease and improve life expectancy.

### **Monitoring and reporting**

7. The quality and coverage of information about human exposure to urban ambient air pollution have improved significantly; more than 1000 cities and towns have been added to the WHO Global Urban Ambient Air Pollution database since 2016.<sup>1</sup> This source will contribute to the tracking of progress towards Sustainable Development Goal indicator 11.6.2. The database has been updated, and the updated version will be released in May 2018, featuring more than 4000 human settlements publicly reporting their ambient air quality levels.

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<sup>1</sup> WHO Global Urban Ambient Air Pollution Database (<http://www.who.int/airpollution/data/cities/en/>, accessed 21 March 2018).

8. WHO's national-level estimates of human exposure to ambient air pollution, one of the data sources for indicator 3.9.1, have also improved, as a result of better integration of data from ground-level measurements, satellite remote sensing and chemical transport models. This improvement has been facilitated, in part, through the WHO-led Global Platform on Air Quality and Health,<sup>1</sup> which has enabled greater cooperation between partners (including academia) on data assessment and modelling methods. Challenges still remain with many developing countries, especially in Africa and parts of Asia, which lack any air quality monitoring systems. Portable air-quality monitors are now widely available but their reliability remains a question.

9. Estimates of human exposure to household air pollution have also improved through the expansion and refinement of WHO's household energy database, which is the source of data for tracking SDG indicator 7.1.2. Household surveys have been improved to better capture information on different household fuels and stove types used as well as use of polluting space heating and lighting technologies. The surveys also cover social determinants of health, such as time spent collecting fuelwood. These improvements also have led to a better understanding of the causes of household air pollution and the range of diseases that are affected.

### **Institutional capacity strengthening**

10. Key roles of health sector in reducing ambient air pollution exposures include assessment of both health impacts of air pollution and potential health impacts of strategies in other sectors to reduce emissions. However, the unfamiliarity with assessment tools remains a barrier for many health ministries. Since 2016, several workshops and training sessions have been held in different regions of the world in order to expand proficiencies in the use of available procedural (for example, health impact assessment) and quantification tools (for instance, AirQ+ software) at local and regional levels. Available tools help decision-makers to make choices about alternatives and improvements to prevent disease, promote health and allow for local quantification of mortality and morbidity from air pollution exposures.

11. Also since 2016, pilot projects of WHO's Urban Health Initiative have been launched in Ghana (Accra) and Nepal (Kathmandu), where new tools to quantify potential savings in both lives and health care costs are being tested and refined. The Initiative is a model process aimed at equipping the health sector with the capacity and tools to demonstrate to the public and decision-makers the full range of health and climate benefits that can be achieved from implementing local emission reduction policies and strategies. For instance, in the transport sector, expanding mass transit with safe walking and cycling networks may yield extended results for health in terms of reducing traffic injury and increasing population physical activity levels in addition to reducing air pollution.

12. In an effort to build the capacity of the health sector to tackle household air pollution, the Secretariat, through the regional offices of Africa, the Americas and South-east Asia, held regional training courses on implementation of the WHO's guidelines for indoor air quality: household fuel combustion. The Secretariat has collaborated with national agencies in Ethiopia, Ghana, India and Kenya to pilot rapid situational assessments and stakeholder mappings of household energy policies

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<sup>1</sup>Global Platform on Air Quality and Health ([http://www.who.int/phe/health\\_topics/outdoorair/global\\_platform/en/](http://www.who.int/phe/health_topics/outdoorair/global_platform/en/), accessed 21 March 2018).

and stakeholders, using some of the new tools in WHO's Clean Household Energy Solutions Toolkit,<sup>1</sup> so as to facilitate adoption of clean fuels and technologies at country level.

### **Global leadership and coordination**

13. WHO has significantly increased its leadership in global air pollution, energy and health forums. It has been in the vanguard of, for instance: the development of health-relevant indicators for the relevant targets of Sustainable Development Goals 3, 7, and 11; mainstreaming health into the New Urban Agenda endorsed by the United Nations General Assembly in 2016;<sup>2</sup> providing technical support and leadership to the UN Energy inter-agency mechanism and associated global indicator framework for tracking progress to the targets of Goal 7 in order to better ensure positive health gains from interventions on household energy and health care facility energy access; the Health Task Force of the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants; and providing technical inputs to other health initiatives such as the Global Strategy for Women's, Children's and Adolescents' Health (2016–2030).

14. A new Memorandum of Understanding signed in January 2018 between WHO and the United Nations Environment Programme paves the way for closer technical coordination between the two agencies on vital air pollution and health goals, particularly with respect to cities, including joint expansion of the communications activities through the BreatheLife campaign.<sup>3</sup>

15. The BreatheLife campaign has expanded rapidly since its formal launch in October 2016. About 37 cities and subnational regions worldwide (for example, London, Santiago and Washington DC) and two countries (Ethiopia and Mongolia) have officially joined, or are in the final stages of joining, with commitments to reduce pollution emissions and improve air quality in line with WHO's air quality guideline goals and targets. BreatheLife's messages, infographics and video products have reached more than 21 million social media users. Recently, the campaign has adopted a regional approach with further outreach and expansion, cosponsoring a workshop with the Regional Office for the Americas on both communications and technical tools (Medellín, Colombia, 18–20 October 2017), co-chairing sessions at the ninth World Urban Forum (Kuala Lumpur, 7–13 February 2018), and in making presentations at the Asian Pacific Clean Air Week (19–23 March 2018) led by the Regional Office for South-East Asia. The BreatheLife campaign has also organized side events and exhibitions at major global and regional events, including the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) (Quito, 17–20 October 2016), the twenty-first, twenty-second and twenty-third sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change, and the Sixty-ninth and Seventieth World Health Assemblies.

16. WHO's leadership has also been evident in the hundreds of media reports published about air pollution at the time of major WHO events and data releases. WHO has provided evidence enabling national and local leaders to take bolder steps towards change, such as setting new limitations on diesel vehicle use in many major developed cities and, in developing countries, shifting towards cleaner power generation. The impact is beginning to be reflected in the most recent data trends.

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<sup>1</sup> Clean Household Energy Solutions Toolkit (CHEST) (<http://www.who.int/airpollution/household/chest/en/>, accessed 21 March 2018).

<sup>2</sup> United Nations General Assembly resolution 71/256.

<sup>3</sup> [www.breathelife2030.org](http://www.breathelife2030.org) (accessed 21 March 2018).

## **Resources for implementation of the road map**

17. The level of resources allocated to this area of work by governments and health systems globally contrasts sharply with the magnitude of the impact of air pollution on health. Following the adoption of resolution WHA68.8 and the welcoming of the road map, resource mobilization efforts increased to support implementation. The resources raised enabled piloting of innovative measures to strengthen health sector capacity, to engage in mass communication, and to work across sectors in energy and in urban areas as planned in the road map. Experience so far makes it clear that there is even greater potential for preventing diseases caused by air pollution should these strategies be scaled up further.

## **THE SECRETARIAT'S ACTIVITIES**

### **Expanding the knowledge base**

18. The Secretariat has convened regular meetings of the Global Platform on Air Quality and Health in order to: review the evidence base on air quality and health for policy-making; identify research gaps; and synergize efforts for enhanced air quality and health monitoring. The Platform includes representatives of leading research institutes, multilateral organizations, civil society and other stakeholders.

19. The Secretariat is developing guidance for the response of citizens and health sectors to acute episodes of air pollution, including information on the efficacy of protective measures such as masks. Additionally, it is examining the reliability of low-cost sensors for monitoring air quality in areas with poor coverage and the use of air quality indices.

20. The Secretariat has been leading the further development and refinement of tools to support planning for clean household energy policies (the Clean Household Energy Solutions Toolkit); to quantify the health impacts of air pollution (supporting the AirQ+ software); and to estimate the expected health impacts of policies taken by other sectors (for example, transport, waste management and land-use planning).

### **Monitoring and reporting**

21. The Secretariat has led the rapid expansion of the WHO global ambient air quality database, the coverage of which has risen from 1100 cities seven years ago to more than 4000 in March 2018. Robust surveys and statistical methods have been developed to assess household energy use. The household energy database has been expanded from 900 surveys in 2016 to more than 1100 nationally representative surveys for cooking fuels and technologies in March 2018, covering all WHO regions.

### **Institutional capacity strengthening**

22. Through the Urban Health Initiative, the Secretariat has expanded regional and country-based efforts to build capacity in the health sector for assessing and quantifying the impacts of air pollution on health and identifying strategies to reduce risks to health. The Initiative is undertaken with the leadership of health ministries, the full engagement of WHO country offices, and in cooperation with environmental partners as well as municipalities and sector representatives (for example, transport, energy, waste, and urban planning).

23. The Secretariat led the joint work on the piloting of rapid needs assessments and situational analyses and on identification of stakeholders for the Clean Household Energy Solutions Toolkit in five countries in Africa, Asia and Latin America, informing policy discussions with relevant ministers of health, energy, environment and urban development.

24. The Secretariat has worked in several regions providing technical support at country level, introducing and piloting tools and models for work with energy policies and for enhancing urban development. The WHO European Centre for Environment and Health has coordinated various missions and analyses of the impacts of air pollution in the European Region, particularly in the western Balkans.

### **Global leadership and coordination**

25. The Secretariat maintains the leadership in collecting and assessing the scientific evidence on the effects of air pollution on health. The update of the WHO Air Quality Guidelines for ambient air pollution, led by WHO and the European Centre for Environment and Health, is progressing and due to be completed in 2020.

26. The Secretariat has been working closely with intergovernmental organizations, national governments and non-State actors worldwide, including: Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants and the World Bank; Health Canada, United States' Environmental Protection Agency, United States Centers for Disease Control and Prevention; Local Governments for Sustainability – ICLEI, C40 Cities Climate Leadership Group, Global Alliance for Clean Cookstoves, Clean Air Asia, Bloomberg Philanthropies, Partnership on Sustainable Low Carbon Transport, and medical and other health professional associations.

27. The Secretariat has engaged with representatives of key economic sectors to raise awareness and to advocate sectoral policies that reduce air pollution and create health co-benefits, including bodies concerned with energy (for example, UN-Energy, the International Energy Agency, and Sustainable Energy for All) and transport (for example, Sustainable Mobility for All).

28. After playing the lead role in launching the BreatheLife campaign, the Secretariat adopted a strategy of regionally expanding the campaign. Following outreach in the Americas and Europe, the Secretariat is targeting cities in Africa and Asia. The Secretariat has led the production of new films, for instance, on how air pollution damages the body, released in March 2018.<sup>1</sup> Following review for potential engagement with WHO under the Framework of Engagement with Non-State Actors, the Secretariat is collaborating with eligible non-State actors that are well-positioned to promote the campaign in key developing regions. The Secretariat is also supporting communications campaigns in Ghana (Accra) and Nepal (Kathmandu), as part of WHO's Urban Health Initiative and the BreatheLife campaign.

29. In collaboration with the United Nations Environment Programme, the World Meteorological Organization, the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants, the secretariat of the United Nations Framework Convention on Climate Change, and the United Nations Economic Commission for Europe, the Secretariat is organizing the first WHO Global Conference on Air Pollution and Health (Geneva, 30 October–1 November 2018). WHO staff members have participated in sessions of the Executive Body for the Convention on Long-range Transboundary Air

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<sup>1</sup> <https://www.youtube.com/watch?v=GVBey1jSG9Y> (accessed 22 March 2018).

Pollution, and the WHO European Centre for Environment and Health chaired the 20th meeting (Bonn, Germany, 16 and 17 May 2017) of the Joint Task Force on the Health Aspects of Air Pollution, which was established within the Convention. WHO staff members have also been involved in panel discussions during the Saltsjöbaden VI Workshop on Clean Air for a Sustainable Future, organized by the Swedish Environmental Protection Agency and IVL Swedish Environmental Research Institute in collaboration with the Convention on Long-range Transboundary Air Pollution (Gothenburg, Sweden, 19–21 March 2018).

30. The Secretariat worked with partners in the United Nations system to incorporate health considerations and health-relevant policies into the outcome document, *New Urban Agenda*, adopted at the third United Nations Conference on Housing and Sustainable Urban Development (Habitat III) (Quito, 17–20 October 2016).

## **NEXT STEPS**

31. Activities planned for 2018–2019 will build on the achievements reported above, and fall into the four broad categories of the road map: (a) expanding the knowledge base; (b) reporting on progress towards the air pollution targets of the Sustainable Development Goals in terms of the indicators of exposure to air pollution with increasing coverage and precision (for instance, indicators 3.9.1, 7.1.2 and 11.6.2), (c) continued capacity-building of health systems and (d) expanded awareness-raising and advocacy through WHO's leadership and the inter-agency *BreatheLife* campaign. The *Urban Health Initiative* and the *Clean Household Energy Toolkit* will be expanded in order to cut across these areas of action, subject to the availability of voluntary resources.

32. Further efforts will be made to fully integrate reduction of air pollution risks and the associated directly attributable burden of disease into strategies, policies and guidance related to noncommunicable diseases. Strategies to reduce air pollution also mitigate other leading risk factors for noncommunicable diseases, such as physical inactivity, road injuries and noise.

33. The Secretariat will finalize reviews on the effectiveness of personal-level interventions, such as air filters and face masks, and the impacts on health of sand and desert dust. It will also undertake a review of the health effects (positive or negative) of physical activity in various scenarios of exposure to air pollution, and develop further guidance during acute episodes of air pollution.

34. Work will also be completed on tools for estimating health care cost savings attributable to reductions in emissions; tools for integrated health assessments of policies in sectors such as transport, energy and land-use planning; and tools to support mainstreaming health in urban and territorial planning.

35. Training packages are being designed to support health care professionals (including family doctors and front-line health care workers) in assessing the risk of adverse effects of air pollution to patients, and advising the public about how they can protect themselves against the dangers of air pollution, through behavioral choices for example, such as adoption of cleaner cookstoves or better home ventilation.

36. New channels for awareness-raising, such as webinars, professional conferences, and the use of specialists as champions, will be tested and expanded, with training of front-line health workers, in the context of both WHO's *Urban Health Initiative* and the *BreatheLife* campaign. In terms of advocacy, collaboration with health sector groups and civil society engaged in reducing noncommunicable disease risks is also a priority.

37. The WHO Global Conference on Air Pollution and Health later this year (see paragraph 29) will present a major opportunity for Member States to make bold commitments to reducing air pollution's toll of deaths and disease by 2030, by setting concrete targets in line with the broad objectives of the road map and Sustainable Development Goals. It will also provide an opportunity for ministers to display health sector leadership in long-term action plans.

**ACTION BY THE HEALTH ASSEMBLY**

38. The Health Assembly is invited to note this report.

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