The Lancet Countdown on Health and Climate Change

Policy brief for the EU

DECEMBER 2020

LANCET COUNTDOWN: TRACKING PROGRESS ON HEALTH AND CLIMATE CHANGE

CPME COMITÉ PERMANENT DES MÉDECINS EUROPÉENS STANDING COMMITTEE OF EUROPEAN DOCTORS

Introduction: Climate change, health and COVID-19 recovery in the European Union

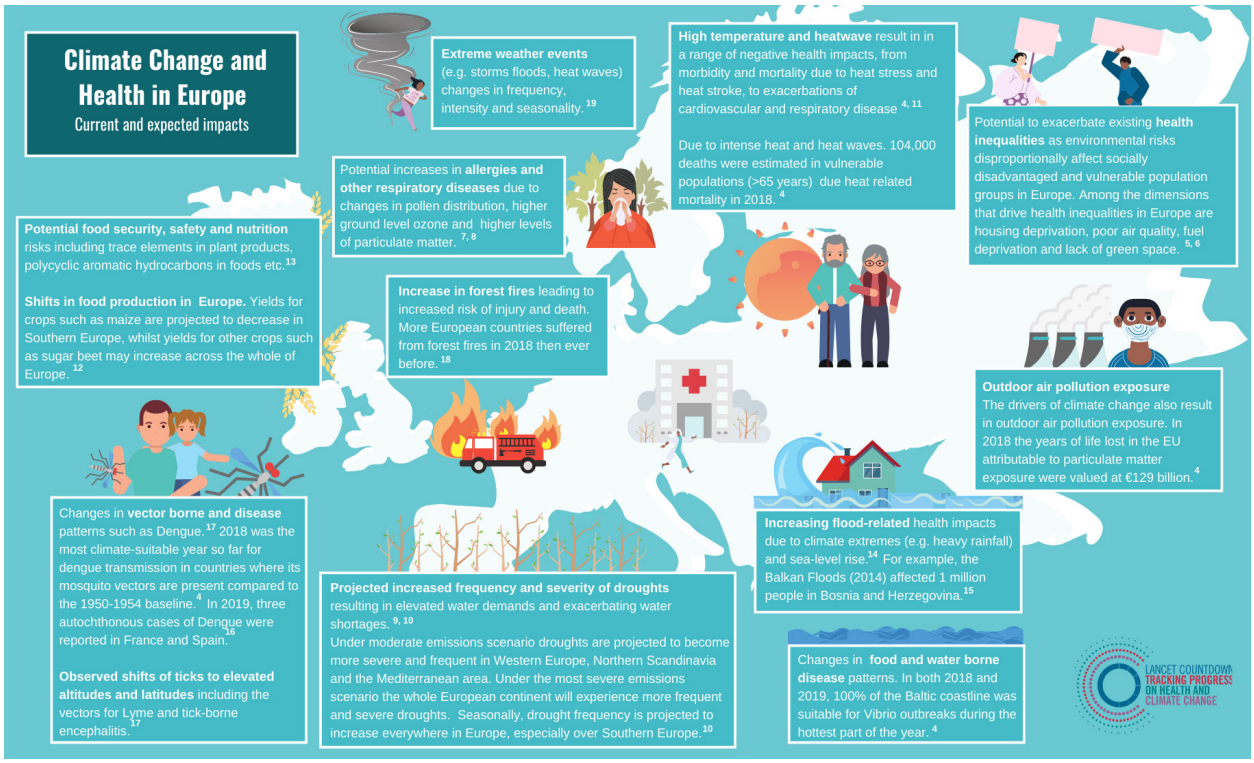
Last year the European Parliament declared a climate emergency, calling on the Commission to reduce emissions in line with limiting global warming to 1.5 C°.[1]

In the past decade, the European Union (EU) has increased its climate ambition including by ratification of the 2015 Paris Agreement, committing to reduce greenhouse gas emissions to at least 40% below 1990 levels by 2020; and commitment to the second phase of the Kyoto protocol. In October 2020, the European Parliament voted to further tighten climate change mitigation targets, committing to reduce greenhouse gas emissions by at least 60% by 2030.[2] These commitments have been complemented by a new clean energy policy adopted in 2018 focused on increasing the share of renewable energy consumed to 32% by 2030 and enabling people to produce and sell their own renewable energy. Most notably, as the third biggest greenhouse gas emitter in the world, the EU has pledged in the European Green Deal to reach net zero emissions by 2050, underpinned by sector-specific policies including the Farm to Form Strategy presented in May 2020. The European Green Deal is supported by significant financial investment such as the 2020 Sustainable Europe Investment Plan which seeks to mobilise at least €1 trillion over the next decade. It is also supported by a legal framework: the first European Climate law, enshrining political commitment into law.[3] Furthermore, EU countries increasingly recognise the direct and indirect impacts of climate change (Figure 1) on human health and the health benefits of climate policies.

The dependence of economic stability on public health has been clearly evidenced by the COVID-19 pandemic. Economic, climate and public health objectives are intrinsically linked. While EU countries must urgently respond to acute economic challenges as a result of COVID-19, immediate interventions aimed at protecting the climate are equally necessary. Without such attention, European economies risk being severely compromised by the future costs of climate impacts including extreme weather events, treatment of exacerbated chronic disease, and reduced workforce productivity. The scale of funding available through COVID-19 stimulus packages offers vast potential benefit for health and climate change. COVID-19 has made the interconnectedness of environment and health abundantly clear, and submission of an ambitious updated Nationally Determined Contribution (NDC) is crucial to realise the targets set out in the Paris Agreement. The window of opportunity is narrow, and if COVID-19 policies are not fully aligned with climate ambitions, Europe will be unable to meet its emissions reduction commitments, impacting health and economies for decades to come.

Against a backdrop of the healthy and sustainable recovery required in response to the effects of the COVID-19 pandemic and to protect future populations, this briefing focuses on data and policy recommendations on three themes featured in the 2020 global Lancet Countdown report[4], namely infectious disease, city-level climate change, and the health-related economic costs of climate change.

Figure 1. Climate change impacts on health in Europe.[4-19]



Recommendations

1. Overarching recommendation: In the aftermath of the COVID-19 pandemic, implement 'triple win' policies and investments which preserve the climate, protect public health, and promote economic sustainability. Climate, health, and economic objectives are not only mutually reinforcing but mutually dependent, and should be considered in the next phases of COVID-19 recovery planning and the updated EU Nationally Determined Contribution (NDC) to the Paris Agreement. These policies will define societies for decades to come.

2. Strengthen prevention, preparedness, and control of infectious disease by implementing holistic strategies that modernise surveillance, early warning systems, data collection, European coordination, and health system resilience by improving WHO's International Health Regulations (IHR) core capacities and taking into account the changing climatic conditions influencing infectious disease transmission.

3. Undertake climate risk and vulnerability assessments for all major national urban centres to understand current and future climate hazards, the areas at most risk, and economic costs and benefits of interventions to inform city-level adaptation and mitigation planning.

4. Enhance city-level climate change adaptation and mitigation and promote mental and physical health by increasing urban green spaces (such as parks, playgrounds and residential greenery), facilitating active transport (such as biking and walking) and improving air quality by reducing air pollution.

5. Include health in all cost-benefit analyses of climate change mitigation and adaptation policies and identify strategies that reduce carbon emissions to net-zero whilst positively benefitting health.

Climate change and infectious diseases

As the COVID-19 pandemic continues, attention to the impact of climate change and other environmental disturbances on infectious diseases distribution, seasonality and emergence is growing. Many infectious diseases are sensitive to climate variation and globally changing climatic conditions are increasingly suitable for transmission of water-, food-, and vector-borne diseases. This is reflected by an increase in suitability for all diseases tracked by the 2020 global Lancet Countdown report namely, dengue, malaria, and ***Vibrio*** bacterial infections. For example, the global climate suitability for the transmission of dengue fever increased by 15.0% for ***A. albopictus*** from 1950 to 2018.[4]

Similarly, although average suitability for dengue fever transmission remains low in Europe, 2018 was the most suitable year for *A. albopictus,* with a 40.7% increase in vectorial capacity compared to the 1950-1954 baseline (figure 2). Increasing trends can be observed for all EU countries. Regionally, the Baltic coastline, which borders nine European countries, is an area at high risk for outbreaks of Vibrio bacterial infections, which can can cause gastrointestinal infections, wound infections and severe sepsis. The proportion of coastline suitable for Vibrio has increased by 61% compared to the 1980s baseline, and the past two years have seen the highest number of days with suitable conditions for Vibrio transmission and 100% of the coastline suitable during the hottest part of the year (figure 3).[4]

It has been suggested that other non-endemic infectious diseases (such as malaria,[17] chikungunya[20] and West Nile fever[21]), not monitored in this report, may similarly acquire the potential to be more easily transmitted in Europe. The potential expansion of leishmaniasis from southern into central Europe has also been linked to a more competent vector species (Phlebotomine sand-flies) due climate change.[22] Nevertheless, changing trends in infectious diseases are more complex than conveyed by examining the climate suitability alone. To strengthen prevention, preparedness for and control of infectious disease interventions should therefore implement holistic strategies that modernise surveillance, early warning systems, data collection, European coordination, and health system resilience by improving International Health Regulations (IHR)* core capacities.

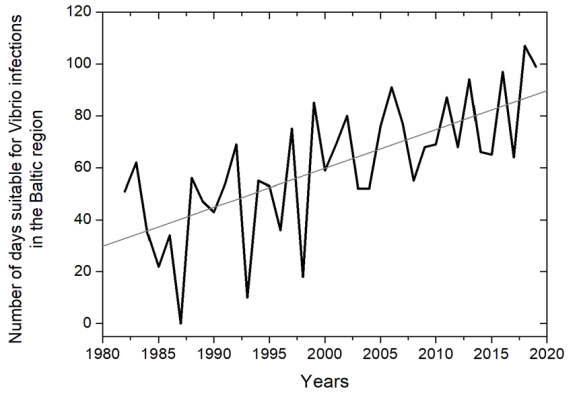


Figure 3. Annual number of days suitable for *Vibrio* infections in the Baltic region.[4]

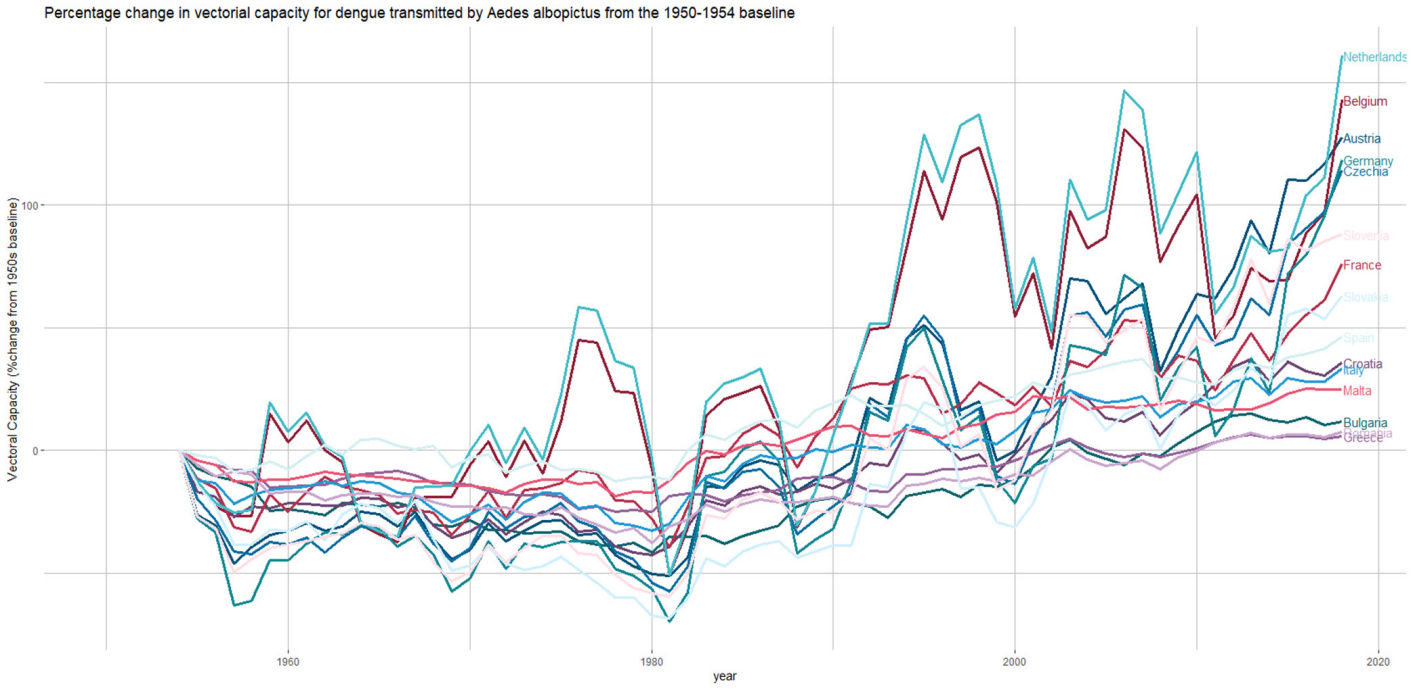


Figure 2. Percentage change in vectorial capacity for the dengue virus transmitted by *Aedes albopictus* from the 1950-1954 baseline to 2018 in Europe. Vectorial capacity refers to the ability of the mosquito *(A. albopictus)* carrying the virus to cause new infections.[4]

*In response to the increase in international trade and travel, and the emergence and re-emergence of international disease threats and other health risks, 196 countries worldwide agreed (2005) to implement the World Health Organization's International Health Regulations (IHR) with as purpose to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.

European cities, climate vulnerability and adaptation

Urban areas are now home to almost three quarters of the EU population and urbanisation is expected to further increase to approximately 83.7% in 2050.[23] Due to the physical characteristics of the built environment, and density of infrastructure and people, and ecological interdependence with urban ecosystems, people in cities are particularly vulnerable to the health impacts of climate change.[24] Importantly, the urban heat island effect means that city dwellers are exposed to higher temperatures than surrounding rural areas, particularly at night, putting them at higher risk of heat-related illnesses. Furthermore, the combustion of fossil fuels exposes people to increased regional atmospheric air pollution with associated reductions in life expectancy due to cardiovascular and respiratory disease.[25]

More than 40 million people in the 115 largest EU cities are exposed to pollution levels exceeding WHO guidelines.[26] Additionally, in many European cities, populations with lower socio-economic status tend to live in environments with worse air pollution, further exacerbating existing health inequalities.[27] The EU has established a dedicated urban agenda in the 2016 Pact of Amsterdam, with a focus on EU policymaking and implementation. There are 12 partnerships that bring together representatives from cities, EU member states, the EU Commission, and stakeholders, exchanging on the challenges facing cities and developing solutions.[28] Many urban regions in the EU are also part of global networks, such as the Covenant of Mayors for climate and energy,[29] or the C40 network.[30]

Transport systems are a major source of air pollution. According to the 2020 global Lance Countdown report, 34,800 deaths occurred in EU countries due to transport related $PM_{2.5}$ air pollution in 2018 (15% of all deaths from anthropogenic ambient $PM_{2.5}$ pollution). In addition to reducing CO_2 emissions, facilitating active transport such as walking and cycling offers dual benefits for health resulting from improved physical activity levels and by reducing transport-related air pollution.[4] In the midst of COVID-19 recovery, some cities have launched initiatives to facilitate higher proportions of walking and cycling, including Milan, whose Strade Aperte plan includes low-cost temporary cycle lanes, new and broader pavements, and streets with pedestrian and cyclist priority. Such measures, if they were to be made a permanent part of the city's infrastructure, offer the potential to reduce car use and consequently the high carbon footprint of transport in the region.

Cities are emerging as leading settings for climate adaptation.[26] Local authorities are best placed to ensure adaptation is tailored to their circumstances. Adaptation planning requires an understanding of vulnerable urban sectors and current and projected climate hazards impacting the local population. Therefore, a climate change risk or vulnerability assessment can be undertaken.[32,33] In 2019, 73% of 126 European cities surveyed (primarily in Denmark, Italy, Portugal, and Sweden) had completed a climate-change risk or vulnerability assessment (Figure 4). A further 23% were either in the process of doing so, or were expecting to have completed one within the next two years.[4]

Urban green space contributes to mitigating climate change impacts whilst offering several co-benefits in cities. When effectively designed, green space can reduce air and noise pollution, provide a setting for social interaction and physical activity, relieve stress, provide local cooling effects to reduce urban heat islands and reduce all-cause mortality.[34,35] Based on the findings of the 2020 global Lance Countdown report, 11 of the 16 European capitals with populations over 1 million people had high levels of green space coverage in 2019, but none of these cities had 'very high' or 'exceptional' levels of green space coverage (Figure 5). Concerningly, the other five European capitals studied, home to more than 16 million people, had low or moderate levels of urban greenness.[4]

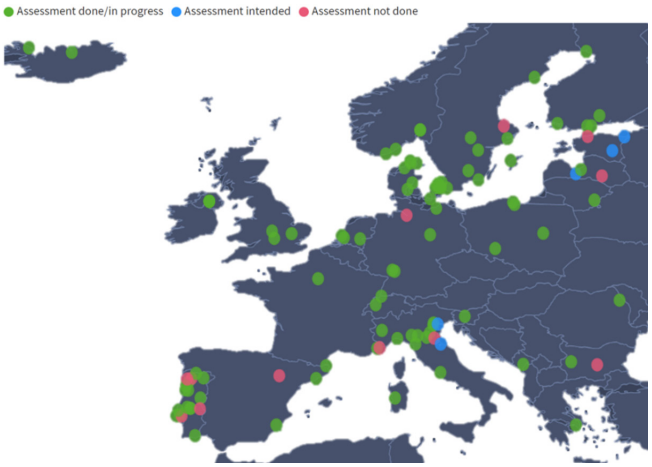


Figure 4. Progress of city-level climate change risk or vulnerability assessment in Europe. 126 European cities surveyed are included. Cities either performed, are in progress, intend to do or have not done a climate change risk or vulnerability assessment.[4]

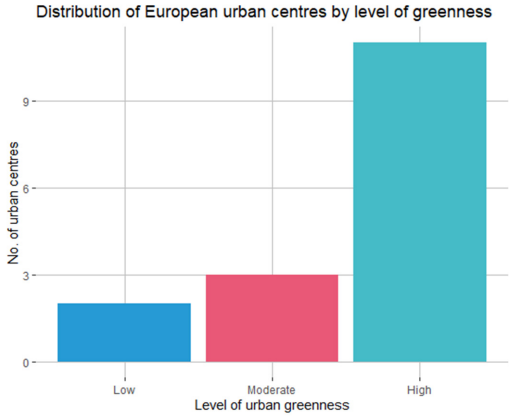


Figure 5. Number of European urban centres by level of greenness. 16 centres were included. Green space magnitude was estimated using the Normalized Difference Vegetation Index (NDVI). This was categorized as exceptionally low (0.1-0.2), very low (0.2-0.3), low (0.3-0.4), moderate (0.4-0.5), high (0.5-0.6), very high (0.6-0.7) and exceptionally high (0.8-0.9) levels of urban greenness.[4] All 16 European cities fell within the range of an NDVI of 0.3-0.6.

Economic cost of climate change and benefits of climate action

"The health benefits far outweigh the costs of climate change action"

Effective planning and budgeting for climate mitigation and adaptation is necessary for an effective response to the health effects of climate change. Some of the major economic costs of climate change health impacts include climate-related extreme events, heat-related mortality, loss of income from heat-related labour capacity and air pollution.

Data from the 2020 global Lance Countdown report shows that there were 236 recorded climate-related extreme events in 2019 globally, with absolute economic losses of €112 billion.[4] Further data published by the European Environment Agency indicates that floods, heatwaves, droughts, and other climate-related events in Europe over 1980-2017 have resulted in economic losses of €453 billion.[36]

In 2018, the monetised value of European health-related mortality was equal to 1.2% regional Gross National Income. Highest costs were observed in Germany, equivalent to the average income of 1.75 million citizens. Moreover, rising temperatures complicating result in the reduction of labour activity.[4]

Notably, whilst global ambient fine particulate matter ($PM_{2.5}$) mortality increased, improvements in European air quality over 2015-2018 (e.g. through measures to reduce emissions) resulted in a decrease of premature mortality related to air pollution. Assuming that the EU were to experience $PM_{2.5}$ emissions at the 2018 levels (versus 2015) during the course of their life, the annual average economic value of the reduction of Years Life Lost would be around €9.85 billion (Figure 6). Nevertheless, 2018 level $PM_{2.5}$ total average costs are still estimated to be €129 billion per year. This highlights the economic value of associated health co-benefits in climate mitigation efforts.[4]

Placing health at the centre of the transition to net zero in 2050 could yield benefits for the public and the economy with cleaner air, safer cities as well as healthier diets and increased physical activity. Previous analyses suggest that health economic gains substantially outweigh the costs of any intervention focused on cleaner air through transport and power generation systems by a 1.45 to 2.45 ratio.[37,38] When benefits of physical activity are considered these benefits increase significantly.[38,39]

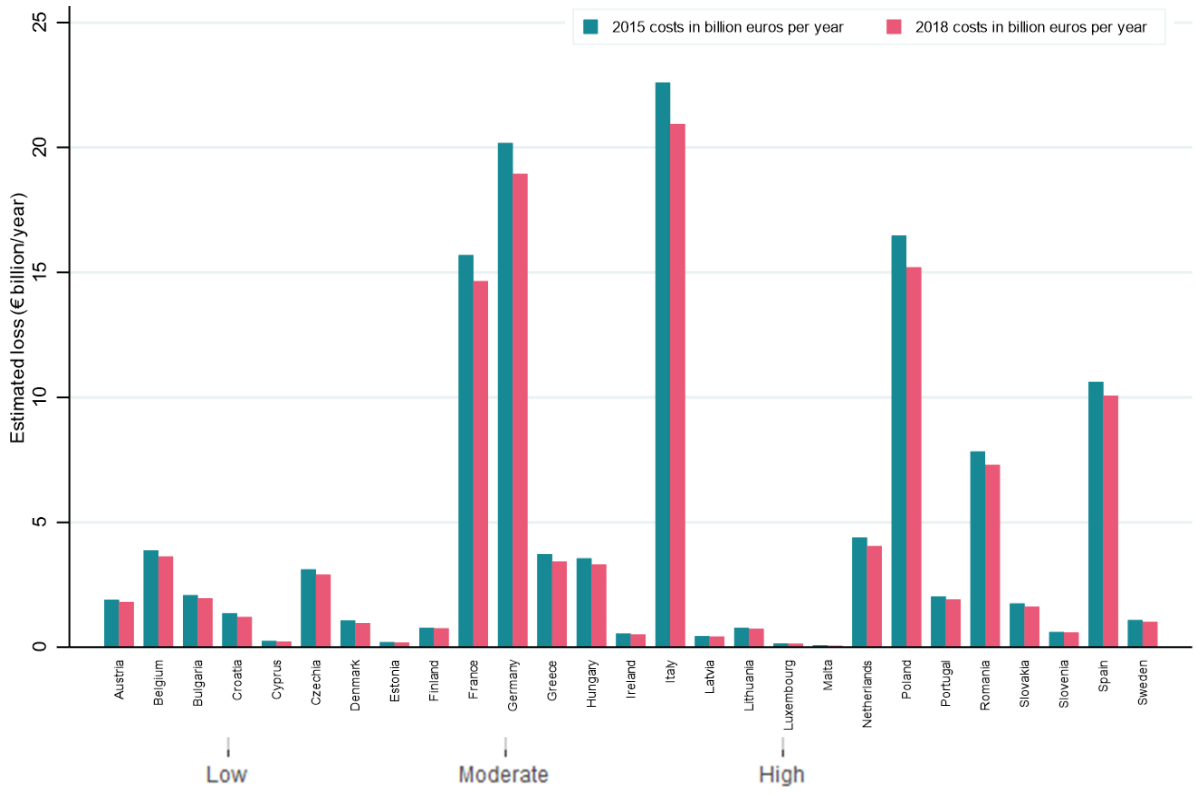


Figure 6. Annual monetised value of Years Life Lost due to anthropogenic $PM_{2.5}$ exposure.[4]

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Organisations and acknowledgements

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THE LANCET COUNTDOWN

The Lancet Countdown: Tracking Progress on Health and Climate Change is an international, multi-disciplinary collaboration that exists to monitor the links between public health and climate change. It brings together 38 academic institutions and UN agencies from every continent, drawing on the expertise of climate scientists, engineers, economists, political scientists, public health professionals and doctors. Each year, the Lancet Countdown publishes an annual assessment of the state of climate change and human health, seeking to provide decision-makers with access to high-quality evidence-based policy guidance. For the full 2020 assessment, visit www.lancetcountdown.org/2020-report/

STANDING COMMITTEE OF EUROPEAN DOCTORS (CPME)

The Standing Committee of European Doctors (Comité Permanent des Médecins Européens, CPME) represents national medical associations across Europe. CPME is committed to contributing the medical profession's point of view to EU institutions and European policy-making through pro-active cooperation on a wide range of health and healthcare related issues.

CPME notes the increasing evidence on the effects of climate change and air pollution on human health. The changing pattern of both communicable and non-communicable diseases related to climate change may result in significant public health challenges in the future. The CPME position paper on Global Warming and Health provides a reminder that medical practitioners have been aware of the adverse effect of pollution of the environment on human health since the beginning of organized society and certainly since the Hippocratic treatise "Airs, Waters and Places".*

CPME therefore fully supports and endorses the recommendations of this policy brief, and strongly encourages its national member associations, and individual physicians to continue to bring home this message for action to their national authorities in the best interest of the health and quality of life of their patients.

*CPME. Global Warming and Health (CPME 2009/021 final EN/Fr), 2009. Available from: http://doc.cpme. eu:591/Adopted/2009/CPME_AD_EC_220409_021_final_EN.pdf