



Climate change is one of the biggest challenges for present and future generations. It is linked to many different types of environment distress, including air pollution and extreme temperatures. Air pollution is already the most significant environmental health risk and a major cause of death and disability, and its future impact is likely to be even greater without adequate policy action. Projections have estimated that outdoor air pollution may cause between 6 million and 9 million premature deaths a year worldwide by 2060, and cost 1% of global gross domestic product (GDP) as a result of sick days, medical bills and reduced agricultural output (OECD, 2015[44]).

Among OECD countries, ambient (outdoor) particulate matter pollution (especially PM 2.5) caused about 29 deaths per 100 000 people in 2019 (Figure 4.21). Death rates ranged from over 60 deaths per 100 000 in the Slovak Republic, Hungary and Poland, to fewer than 7 deaths per 100 000 in Sweden, New Zealand and Iceland. In partner countries, death rates were particularly high in India (around 72 deaths per 100 000) and China (around 99 deaths per 100 000); they were also higher in Russia and Indonesia than in most OECD countries. Since 2000, deaths per 100 000 from ambient particulate matter pollution have declined markedly – by 25% on average – in most OECD countries, although the rates rose in seven countries over the period (Chile, Colombia, Costa Rica, Mexico, Japan, Korea and Turkey). Over the same period, deaths rose rapidly in a number of partner countries – by 43% in Indonesia, 58% in China and 97% in India.

Extreme temperatures are also a consequence of climate change. Both extreme heat and extreme cold can cause health problems and lead to death. For OECD countries, extreme cold has generally had a greater impact on mortality than heatwaves – particularly in eastern Europe and the Nordic countries – although heatwaves have also caused significant numbers of deaths in certain years. The record warm summer of 2003, for example, caused around 80 000 deaths in Europe, and the heatwaves in the summer of 2015 caused more than 3 000 deaths in France alone. Furthermore, the 2021 heat wave in Western Canada and the United States caused hundreds of deaths, especially among older adults. Temperature records were broken, and scientists have determined that the heat wave would have been “virtually impossible” without climate change (Philip et al., 2021[45]).

While the origins of SARS-CoV-2 have not been determined definitively, the pandemic has nevertheless drawn attention to the impact of environmental degradation and the possible effects of changes in land use on the spillover of disease from animals to humans. Even before COVID-19, a number of recent pandemics of global concern – including SARS, the 2009 H1N1 pandemic influenza and the Middle East respiratory syndrome coronavirus – were found to have originated in animals before passing to humans. The continued degradation of natural ecosystems, including the loss or change of key habitats for wildlife due to changes in land use, has meant growing threats

to biodiversity and an increasing risk of transmission of new zoonotic diseases from wildlife to humans (Plowright et al., 2021[46]).

Between 2000 and 2014, built-up areas increased by more than 15% on average across OECD countries (Figure 4.22). This increase was lowest in Japan and the United Kingdom – two countries whose proportion of total land devoted to built-up areas is higher than the OECD average – but the increase in built-up areas was 30% in Mexico and Norway between 2000 and 2014. The increase was notably high in a number of OECD countries with relatively low population density, including Finland and Norway. OECD partner countries also experienced high rates of change in land use, with China’s built-up area growing by 34% and India’s by 30% over the period. In OECD countries, the development of mostly artificial surfaces, including buildings, was largely built on what was formerly cropland, while natural and semi-natural areas remained mostly stable (OECD, 2021[47]).

Inter-sectoral policies are needed to address the impact of climate change. Countries can start planning to address pollution and its impacts on health, for instance, by creating partnerships with various international, national and local stakeholders, including local city authorities and ministries of industry, environment, transport and agriculture. Reducing crop burning and lowering emissions from motor vehicles and industries would lower ambient air pollution. Health systems can also contribute, by preparing for new diseases that can develop with new climate and biodiversity conditions; promoting consumption of sustainably grown and sourced food; and reducing the carbon footprint of health facilities. In addition, health providers can reduce the environmental footprint in hospitals and in nursing homes by encouraging healthier food consumption, waste reduction and efficient energy use (Landrigan et al., 2018[48]; OECD, 2017[49]).

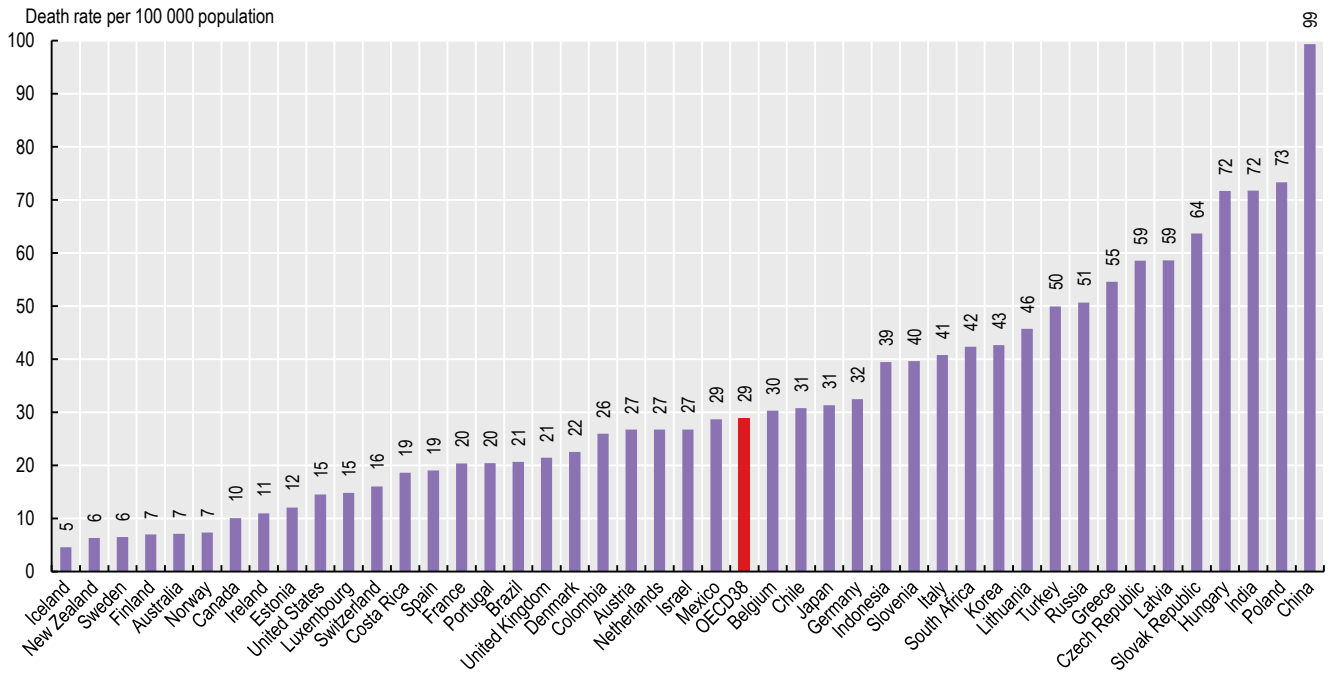
#### Definition and comparability

Ambient (outdoor) particulate matter pollution results from emissions from industrial activity, households, cars and trucks, which are complex mixtures of air pollutants, many of which are harmful to health. Of all these pollutants, fine particulate matter, even at low levels, has the greatest effect on human health. Polluting fuels include solid fuels such as wood, coal, animal dung, charcoal, crop waste and kerosene. Data on mortality and disability-adjusted life-years from exposure to environmental risks are taken from the Global Burden of Disease (GBD) Study 2019 results (Abbas et al., 2020[50]).

Data on land cover are based on Land Cover Annual Maps from the Copernicus/European Space Agency and Université catholique de Louvain Geomatics Climate Change Initiative.



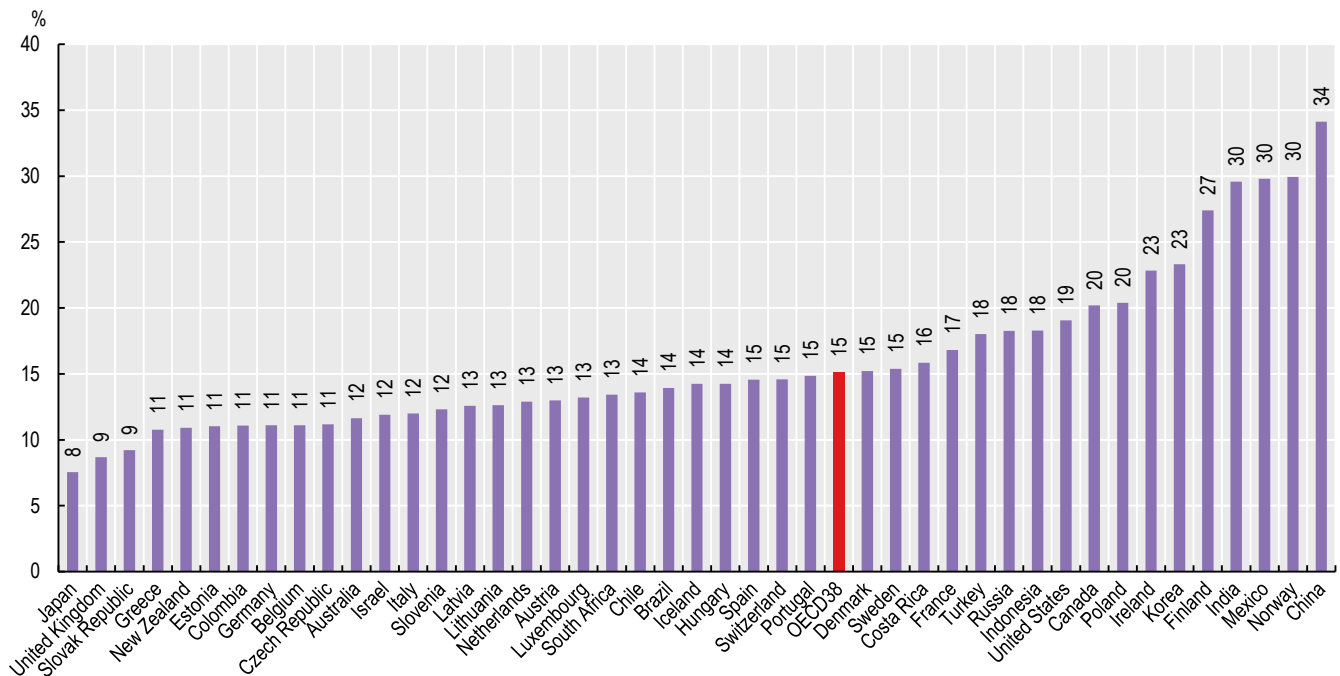
Figure 4.21. Premature deaths attributable to ambient particulate matter pollution, 2019



Source: OECD Environment Statistics, 2020.

StatLink <https://stat.link/isdgaw>

Figure 4.22. Change in land use: increase in built-up areas, 2000-14



Source: OECD Environment Statistics, 2020.

StatLink <https://stat.link/rn3fb1>

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