

Georgia: Information sheet on climate change, air pollution, and health

Climate change and air pollution are closely related and pose significant risks to human health, environments, and economies. Climate change directly harms health while also impacting social and environmental determinants of health – clean air, safe drinking water, secure and sufficient food, housing, education and livelihoods. Greenhouse gases (GHGs), air pollution, and black carbon emitted from energy, industry, transport, household, agricultural, and waste management sectors harm both environment and population health. Countries have a unique opportunity to improve the environment, population health and wellbeing by integrating meaningful health and air pollution mitigation activities into Nationally Determined Contributions (NDCs). This info sheet provides an overview of some of the main health impacts of climate change in Georgia to help shape adaptation plans while also identifying opportunities to reduce GHG emissions and air pollution – and thus promote public health.

Ambient air pollution from human activities was responsible for 2,890 deaths from particulate air pollution ($PM_{2.5}$) in Georgia in 2021 [1]. Of these deaths, 43.5 percent came from fossil fuel burning, and 12.8 percent from biomass burning (Figure 1) [1]. The estimated economic value of these premature deaths was US\$850 million [1]. The World Health Organization (WHO) reports for Sustainable Development Goal Indicator 3.9.1 (Mortality from air pollution) that deaths attributable to ambient air pollution in Georgia represent 14 percent of chronic obstructive pulmonary disease, 22 percent of ischemic heart disease, 21 percent of lower respiratory infections, 14 percent of stroke, and 9 percent of lung cancer deaths [2]. Mitigation actions, including the shift to renewable energy sources that avoid the combustion of fossil fuels and biomass, can contribute to preventing most of these deaths, while simultaneously helping Georgia meet its mitigation goals. The associated benefits to human health and wellbeing translate to economic gains. If accounting for these, the benefits of climate action will vastly outweigh the cost of inaction.

GEORGIA'S ENGAGEMENT ON CLIMATE CHANGE, AIR POLLUTION, AND HEALTH

Thresholds of harmful pollutants in Georgia correspond to those mandated by the EU. However, their enforcement has been challenging. The law On Ambient Air Protection was ratified in 1999 [3]. Many measures aimed at improving air quality in Georgia are related to the EU-Georgia Association Agreement [4]. These include legislative changes, expansion and automation of the air quality monitoring

network, delivery of information on air quality to the public, creation of the national air quality portal (air.gov.ge), the establishment of air quality management zones and agglomerations, and preparation of action plans aimed at improving air quality. In 2018, air quality standard [5] was established, determining target levels for different substances and stating that air quality information should be publicly available in the

form of an annual report. Georgia is a member of the Climate and Clean Air Coalition (CCAC) [6] and has joined the Global Methane Pledge [7]. In 1999 Georgia ratified the Convention on Long-Range Transboundary Air Pollution (LRTAP) - a first multilateral agreement to create a regional framework to reduce transboundary air pollution and understand air pollution science [8]. The country committed to build a climate-resilient

health system by joining the Alliance for Transformative Action on Climate and Health (ATACH) [9]. Georgia has adopted Long-Term Low Emissions Development Strategies (LT-LEDS) targeting energy, transport, industry, agriculture, forestry, and waste sectors [10]. These policy objectives can be further strengthened in Georgia's third NDC, providing benefits for public health, wellbeing, development, and the economy.

SOURCES OF HEALTH-HARMING AIR POLLUTANTS IN GEORGIA

Particulate matter (PM) or particle pollution is a mixture of airborne solid particles and liquid droplets. Out of these, PM_{2.5} (inhalable particles 2.5 micrometres or smaller in diameter) are particularly harmful to health, increasing the risk of heart, cardiovascular, lung, and neurological disease, and cancer, amongst others. Black carbon, or soot, is a powerful pollutant and a short-lived climate pollutant (SLCP, also known as super pollutants). Methane (CH₄) is a GHG, SLCP, and major contributor to ground level ozone – which has powerful impact on both human

health and climate change. Polluting emissions share the same general sources as GHG emissions – namely energy / power, transport, industry, and waste sector combustion, and agriculture. The leading sector sources of PM_{2.5} in Georgia are residential buildings, energy, and agriculture [11]; while the lead sector sources of black carbon include transport, waste, buildings, and industry; and the leading sector sources of methane are waste, agriculture, buildings, energy, transport, and industry [12] (Table 1).

Table 1: Georgia sector sources of PM_{2.5}, Black Carbon, and Methane

PM _{2.5} (source: State of Global Air [9])		Black Carbon (source: Community Emissions Data Systems [10])		Methane (source: Community Emissions Data Systems [10])	
*Windblown dust	38.2 %	Transport	54.3 %	Waste	52.7 %
Residential buildings	9.3 %	Waste	19.3 %	Agriculture	36 %
Energy	9.0 %	Buildings	16.2 %	Buildings	7 %
Agriculture	8.4 %	Industry	9.1 %	Energy	3.6 %
Transport	7.6 %	Agriculture	.7 %	Transport	.55 %
Industry	7.3 %	Energy	.1 %	Industry	.07 %

Sources: State of Global Air 2024 [11]; Community Emissions Data System for Historical Emissions 2024 [12]. Note*: not anthropogenic.

POTENTIAL FOR HEALTH BENEFITS RESULTING FROM MITIGATION IN GEORGIA

While Georgia is a relatively minor emitter of GHGs, it stands to gain major and immediate benefits from climate change mitigation efforts. By targeting leading sources of GHG emissions, and reducing PM_{2.5}, black carbon, methane, and other super pollutants, Georgia can achieve near-term climate gains while improving its air quality, public health, and the economy. Strengthening the links between climate and GHG mitigation policy, and air pollution and health objectives, including through Georgia's third NDC, could help shape policy and plans that save thousands of lives, promote healthier populations, improve well-being, and boost productivity.

These targeted actions to reduce emissions can lead to substantial health benefits:

- **Avoiding death and disease associated with human-caused air pollution:**

In addition to helping reduce climate change-related threats to people's health and wellbeing, interventions to reduce the use of dirty fuels would have major benefits to people's health. Replacing dirty fuels with clean renewable energy sources, as well as increasing energy efficiency, can significantly reduce exposure to the air pollution which increases the risk of asthma, respiratory infections, cardiovascular disease, cancer, dementia, and many other adverse health outcomes. If supported through adequate technology transfer, capacity building, and

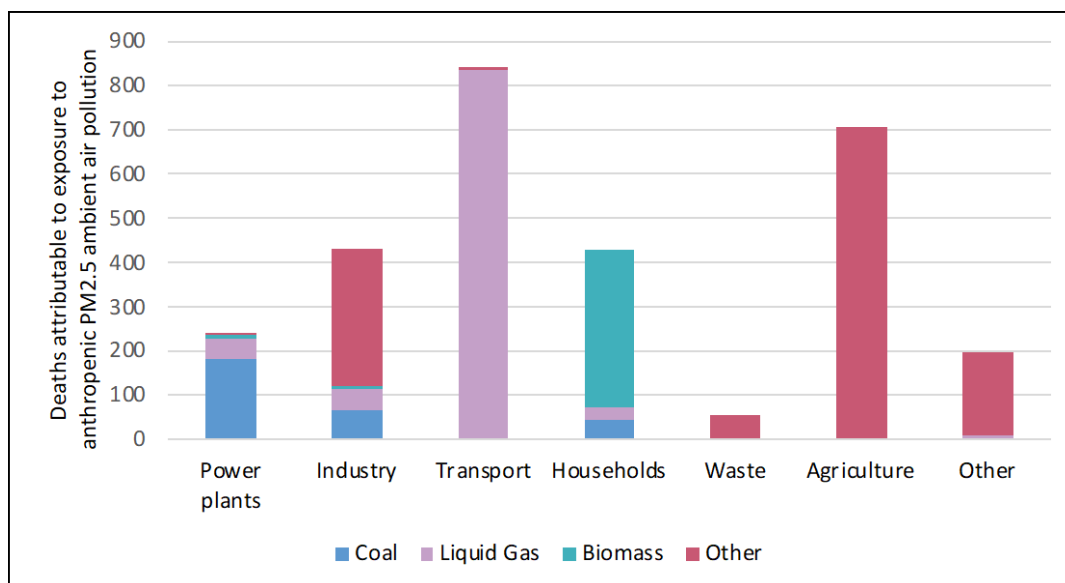
finance, the deployment of clean renewables can also help reduce energy poverty, providing clean fuel sources in remote locations.

- **Sectors with the highest potential to save lives from improved air quality:**

Transport sector: Ambient air pollution from the use of fossil fuels in the transport sector was responsible for 842 deaths in 2021, 29 percent of all air pollution-related deaths [1]. These deaths could be prevented by transitioning to zero-emissions transport systems, including by promoting the use of zero-emission public transport, electric vehicles, and active travel. Active travel, in turn, can have major health benefits by increasing physical activity.

Household sector: With 68 percent of its household energy supply coming from fossil fuels and 15.5 percent from biomass, Georgia has the opportunity to prevent each year over 420 deaths caused by exposure to household-derived outdoor air pollution, by promoting the transition to clean renewable energies in the household sector [1]. In addition to this, interventions in the household sector can also help avoid thousands more deaths coming from exposure to air pollution inside people's homes.

Figure 1: Deaths attributable to exposure to anthropogenic PM2.5 ambient air pollution in Georgia by sector and source of emissions in 2021



Source: The 2024 Report of the Lancet Countdown on Health and Climate Change [1].

HEALTH IMPACTS OF CLIMATE CHANGE AND NEEDS FOR ADAPTATION IN GEORGIA

People in Georgia face growing threats to their health and wellbeing due to climate change. Complementing mitigation efforts, adequate adaptation measures can help address these threats and save thousands of lives every year. Including these opportunities in Georgia's NDC and National Adaptation Plan offers a unique opportunity to build resilience and protect communities.

- **Health impacts from heat exposure:**

As temperatures rise, populations in Georgia face growing risks of disease and mortality associated with heat exposure. Elderly populations, those with underlying chronic health conditions (including cardiovascular disease, heart disease, diabetes), and very young children are most at risk. From 2014-2023, each infant under the age of one and adult over the age of 65 in Georgia were exposed to an average of at least 20 heatwave days per year [1]. This is an approximate 165 percent and 250 percent increase in

heatwave days, respective to each group, compared to annual averages from 1986-2005 [1]. Rising temperatures and aging populations resulted in a 128 percent increase in average annual heat-related deaths among adults over 65 from 1990-1999 to 2014-2023 [1]. Without climate change, the increase would have been just 15 percent (driven mostly by a growth in the size of the over-65 population), showing how much rising temperatures have worsened heat-related mortality.

- **Labour productivity loss due to heat exposure:**

Beyond presenting a direct risk to health, exposure of workers to high temperatures also reduces labour productivity, as workers' capacity to do physical labour decreases, and they need to take more breaks. In the period between 2014 and 2023, heat exposure of local workers caused the loss of over 33.75 million potential labour hours annually on



average in Georgia - a 45 percent increase in the loss of potential labour hours due to heat exposure from the 1990s [1]. This translates to an estimated US\$75.5 million in potential income lost annually due to heat exposure between 2014 and 2023, with the agricultural sector bearing 81.2 percent of the total impact (losing approximately US\$51.8 million) [1].

- **Drought and extreme weather impacts:**

Climate change is changing precipitation patterns and, alongside increased incidence of extreme heat events, is increasing incidence of droughts. Droughts have multiple

and pervasive impacts on health, including by threatening crop yields, undermining food security, water security and sanitation, increasing the risk of malnutrition, promoting the transmission of infectious diseases, and causing erosion. The latter, in turn, causes an increase in exposure to dust, which can cause harms on respiratory health, and increase the risk of soil-borne disease transmission. From 2019 to 2023, 62 percent of Georgia's land area experienced at least 1 month of extreme drought on average per year [1]. Additionally, in the period between 2018 and 2022, approximately 75 percent of the population experienced sand and dust storms - an increase of 13 percent from 2003-2007 [1].



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ABOUT THIS REPORT

This information sheet was developed with support from the Clean Air Fund and Wellcome. It was produced in collaboration between the Lancet Countdown and the United Nations Development Programme (UNDP), and with invaluable contributions from the World Health Organization (WHO) and the Global Climate and Health Alliance (GCHA).

The data in this document comes from the 2024 Report of the Lancet Countdown, with specific focus on the findings for Georgia. Please reference this report when using this data:

Romanello M, Walawender M, Hsu SC et al. The 2024 report of the Lancet Countdown on health and climate change: Facing record breaking threats from delayed action. Lancet 2024; published online October 2024. [https://doi.org/10.1016/S0140-6736\(24\)01822-1](https://doi.org/10.1016/S0140-6736(24)01822-1)

ABOUT THE LANCET COUNTDOWN

The Lancet Countdown: Tracking Progress on Health and Climate Change is an international research collaboration tracking the world's response to climate change, and the health benefits that emerge from this transition. The Lancet Countdown was established in partnership with Wellcome, which continues to provide core financial support. Based at University College London (UCL), it brings together over 300 researchers from academic institutions and United Nations (UN) agencies and publishes its findings annually in The Lancet journal ahead of the UN Climate Change Conference.

The data in this report can be explored in further detail in the [Lancet Countdown's Data Platform](#). For more information, including previous annual reports, visit www.lancetcountdown.org.

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The United Nations Development Programme (UNDP) is the United Nations' lead agency on international development. We support countries and communities as they work to eradicate poverty, implement the Paris Agreement on climate change and achieve the Sustainable Development Goals. We advocate for transformative change and connect countries to the resources they need to help people build a better life. Working with a broad network of experts and partners in 170 countries, UNDP helps nations to build integrated, lasting solutions for people and planet. Learn more at undp.org or follow at @UNDP.

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The World Health Organization (WHO) is the United Nations' specialized agency on health, produces evidence-based knowledge, norms and guidelines on various environmental health topics, steers research and monitor health risks, including through Sustainable Development Goals Indicators. WHO promotes primary prevention and supports countries to ensure healthy environments for all and a just and inclusive, clean and sustainable energy transition through cross-sectoral collaboration by integrating health considerations across relevant sectors and international processes to leverage co-benefits and cost reductions while addressing climate change. Learn more at who.int or follow at @WHO.

ABOUT GCHA

The Global Climate and Health Alliance (GCHA) unites and mobilizes the health community worldwide and accelerates climate action to protect and improve health for all. With 200+ organizational members, from every region and reaching over 125 countries, we work at the frontline of a global movement of health professionals and health and development organizations dedicated to promoting a healthy, equitable, and sustainable future for all. We address the climate crisis through evidence-based advocacy, policy, movement building, research and strategic communications.



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